Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

April 20, 2018

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

RE: **Request of Sigfox NIP LLC for an Order to Approve the Shared Use of an Existing Tower at 36 Prospect Street , Newington, CT 06109**

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, Sigfox NIP LLC ("Sigfox") hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by Sigfox of an existing telecommunication tower at 36 Prospect Street, Newington, Connecticut (the "Property"). The existing 136-foot monopole is owned by Crown Castle International Corp. ("Crown Castle"), the underlying property is owned by John W. Oldman, Trustee. Crown Castle also has a perpetual easement on the property. Sigfox requests that the Council find that the proposed shared use of the Crown Castle tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared us. A copy of this filing is being mailed to the land owner, The Honorable Roy Zartarian and Craig Minor, Town Planner.

Background

The existing Crown Castle facility consists of a 136-foot monopole tower on a 20,300 square foot lease area on the north east side of the intersection of US-5 and Prospect Street. Sprint maintains antennas at the 120-foot, 116-foot level, and 65-foot. Equipment associated with the Sprint antennas is located east of the tower. Verizon maintains antennas at the 106-foot level. Equipment associated with the Verizon antennas is located north west of the tower.

Sigfox is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. Sigfox and Crown Castle have agreed to the proposed shared use of the 36 Prospect Street tower pursuant to mutually acceptable terms and conditions. Likewise, Sigfox and Crown Castle have agreed to the proposed installation of equipment cabinets on the ground on the southeast side of the tower. Crown Castle has authorized Sigfox to apply for all necessary permits and approvals that may be required to share the existing tower. (See Owner's authorization letter).

Sigfox proposes add one (1) omni antenna, one (1) line of coaxial cable; one (1) filter, and one (1) TMA on the existing tower at 131 feet above ground level. They propose to add one (1) equipment cabinet

within the existing ground space. Included in the Construction Drawings are Sigfox's project specifications for locations of all proposed site improvements.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that het proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." Sigfox respectfully submits that the shared use of the tower satisfies these criteria.

A. Technical Feasibility. The existing Crown Castle tower is structurally capable of supporting Sigfox's proposed improvements. The prosed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support Sigfox's proposed loading. A copy of the Structural Report has been included in this application.

B. Legal Feasibility. Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the Crown Castle tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. Environmental Feasibility. The proposed shared use of the Crown Castle tower would have a minimal environmental effect for the following reasons:

1. The proposed installation of one (1) omni antenna, one (1) line of coaxial cable; one (1) filter, and one (1) TMA on the existing tower at 131 feet above ground level, would have no visual impact on the area of the tower. Sigfox's cabinet will be installed within the facility compound. Sigfox's shared use of this tower therefore, does not cause any significant change or alteration in the physical or environmental characteristics of the existing site.

2. Operation of Sigfox's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that Sigfox's proposed facility will operate well within the FCC RF emissions safety standards.

3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the

proposed installations would not generate any increased traffic to the Crown Castle facility other than periodic maintenance. The proposed shared use of the Crown Castle tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

D. Economic Feasibility. As previously mentioned, Sigfox has entered into an agreement with Crown Castle for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible. (Please see included authorization.)

E. Public Safety Concerns. As discussed above, the tower is structurally capable of supporting Sigfox's full array of one (1) omni antenna, one (1) line of coaxial cable; one (1) filter, and one (1) TMA and all related equipment. Sigfox is not aware of any public safety concerns relative to the proposed sharing of the existing Crown Castle tower.

Conclusion

For the reasons discussed above, the proposed shared use of the existing Crown Castle tower at 36 Prospect Street satisfies the criteria state in C.G.S. §16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the prosed shared use.

Sincerely,

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

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

Copies to:

The Honorable Roy Zartarian
131 Cedar Street
Newington, CT 06111

Craig Minor – Town Planner
131 Cedar Street
Newington, CT 06111

Crown Castle (Tower Owner)
12 Gill Street, Suite 5800
Woburn, MA 01801

John Oldman (Land Owner)
174 Fox Hill Road
Wethersfield, CT 06109

IMPORTANT!
FedEx is closely monitoring the winter storms across portions of the U.S. Learn More

772052434553

Ship date:
Fri 4/20/2018

Crown Castle
Amanda Cornwall
Suite 5800
12 Gill St
Woburn, MA US 01801
339 205-7017

Delivered
Signature not required

Actual delivery:
Mon 4/23/2018 8:53 am

John Oldham
174 Fox Hill Road
WETHERSFIELD, CT US 06109
339 205-7017

Travel History

Date/Time	Activity	Location
- 4/23/2018 - Monday		
8:53 am	Delivered Left at front door. Package delivered to recipient address - release authorized	WETHERSFIELD, CT
8:00 am	On FedEx vehicle for delivery	WINDSOR LOCKS, CT
7:17 am	At local FedEx facility	WINDSOR LOCKS, CT
5:14 am	At destination sort facility	EAST GRANBY, CT
- 4/21/2018 - Saturday		
11:07 am	Arrived at FedEx location	MEMPHIS, TN
- 4/20/2018 - Friday		
8:05 pm	Left FedEx origin facility	WILMINGTON, MA
6:13 pm	Picked up	WILMINGTON, MA
1:02 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking Number	772052434553	**Service**	FedEx Priority Overnight
Reference	1766.6680	**Weight**	0.5 lbs / 0.23 kgs
Delivery attempts	1	**Delivered To**	Residence
Total pieces	1	**Total shipment weight**	0.5 lbs / 0.23 kgs
Terms	Not Available	**Invoice number**	907651
Shipper reference	1766.6680	**Packaging**	FedEx Envelope
Special handling section	Deliver Weekday, Residential Delivery	**Standard transit**	4/23/2018 by 10:30 am

IMPORTANT!
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772052295906

Ship date:
Fri 4/20/2018

Crown Castle
Amanda Cornwall
Suite 5800
12 Gill St
Woburn, MA US 01801
339 205-7017

Delivered
Signed for by: C.DIAZ

Actual delivery:
Mon 4/23/2018 9:12 am

Town Planner
Craig Minor
131 Cedar Street
NEWINGTON, CT US 06111
860 665-8575

Travel History

Date/Time	Activity	Location
- 4/23/2018 - Monday		
9:12 am	Delivered	NEWINGTON, CT
7:39 am	On FedEx vehicle for delivery	WINDSOR LOCKS, CT
7:18 am	At local FedEx facility	WINDSOR LOCKS, CT
5:14 am	At destination sort facility	EAST GRANBY, CT
- 4/21/2018 - Saturday		
11:07 am	Arrived at FedEx location	MEMPHIS, TN
- 4/20/2018 - Friday		
8:05 pm	Left FedEx origin facility	WILMINGTON, MA
6:13 pm	Picked up	WILMINGTON, MA
12:53 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking Number	772052295906	**Service**	FedEx Priority Overnight
Reference	1766.6680	**Weight**	0.5 lbs / 0.23 kgs
Delivery attempts	1	**Delivered To**	Receptionist/Front Desk
Total pieces	1	**Total shipment weight**	0.5 lbs / 0.23 kgs
Terms	Not Available	**Invoice number**	907651
Shipper reference	1766.6680	**Packaging**	FedEx Envelope
Special handling section	Deliver Weekday	**Standard transit**	4/23/2018 by 10:30 am

Ask FedEx

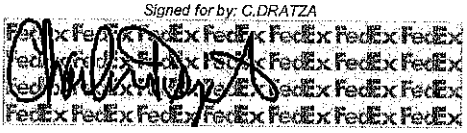
IMPORTANT!
FedEx is closely monitoring the winter storms across portions of the U.S. Learn More

772052314938

Ship date:
Fri 4/20/2018

Crown Castle
Amanda Cornwall
Suite 5800
12 Gill St
Woburn, MA US 01801
339 205-7017

Delivered
Signed for by: C.DRATZA



Actual delivery:
Mon 4/23/2018 9:07 am

Town of Newington
Mayor Roy Zartarian
131 Cedar Street
NEWINGTON, CT US 06111
860 665-8510

Travel History

Date/Time	Activity	Location
- 4/23/2018 - Monday		
9:07 am	Delivered	NEWINGTON, CT
7:39 am	On FedEx vehicle for delivery	WINDSOR LOCKS, CT
7:18 am	At local FedEx facility	WINDSOR LOCKS, CT
5:14 am	At destination sort facility	EAST GRANBY, CT
- 4/21/2018 - Saturday		
11:07 am	Arrived at FedEx location	MEMPHIS, TN
- 4/20/2018 - Friday		
8:05 pm	Left FedEx origin facility	WILMINGTON, MA
6:13 pm	Picked up	WILMINGTON, MA
12:55 pm	Shipment information sent to FedEx	

Shipment Facts

Tracking Number	772052314938	**Service**	FedEx Priority Overnight
Reference	1766.6680	**Weight**	0.5 lbs / 0.23 kgs
Delivery attempts	1	**Delivered To**	Receptionist/Front Desk
Total pieces	1	**Total shipment weight**	0.5 lbs / 0.23 kgs
Terms	Not Available	**Invoice number**	907651
Shipper reference	1766.6680	**Packaging**	FedEx Envelope
Special handling section	Deliver Weekday	**Standard transit**	4/23/2018 by 10:30 am

Ask FedEx

File

TOWN OF NEWINGTON

Town Hall • 131 Cedar Street, Newington, Connecticut 06111
FAX 665-8507 Telephone 665-8500

Certified Mail: P 917 666 630

CERTIFICATE OF ACTION

OFFICE OF: Town Planner

TO: Mr. Thomas F. Flynn III
300 Research Parkway
Meriden, CT 06450

DATE: April 11, 1997

SUBJECT: PETITION 2-97 36 Prospect Street, SBA, Inc. for Sprint PCS Limited Partnership applicant, Patricia Oldham property owner represented by Thomas F. Flynn III 300 Research Parkway Meriden, CT 06450 requests Special Exception Section 3.2.2 and Section 3.2.4 communications tower, B-BT Zone.

At a meeting held April 9, 1997 the Newington Town Plan and Zoning Commission voted to approve the above referenced PETITION subject to the following conditions:

A. Findings

1. The applicant has been granted a variance of the required minimum setback distance equal to the height of the tower (Section 3.2.4) by the Zoning Board of Appeals; December 12, 1996. At the Zoning Board of Appeals meeting, April 3, 1997, the Board accepted the applicant's professional engineer's letter prepared by Clough, Harbour & Associates, dated April 3, 1997, certifying that the design of the monopole will be such that it will collapse upon itself and will not have any impact on adjoining properties.

2. The tower will benefit the public by enhancing wireless communication services known as, Personal Communication Services (PCS).

3. Wireless communication services can improve emergency communication for Newington public safety services, businesses and residents traveling the Route I-91/5 & 15 corridor in Central Connecticut.

B. Conditions

1. The Sprint PCS tower and ground facilities at 36 Prospect Street shall be construction as shown on site plan entitled Lucent Technologies/Bechtel Alliance SSLP Project, sheet 1-3, Site Plan sheet 2, scale 1"=20'.

2. The Sprint PCS tower shall be a co-location site and may accommodate a maximum of two (2) additional FCC licensed carriers.

3. Provision shall be made on the tower for use by Newington emergency communication services.

4. Prior to the signing of the site plan mylar by the Chairman, Sprint PCS shall submit to the Newington Building Department written documentation from their structural engineer certifying that the design and construction of the tower at 36 Prospect Street will prevent its fall onto adjoining properties.

5. Telephone and electric utilities serving the tower compound area shall be located underground.

6. The west and north side of the tower compound area shall be screened with 6' to 8' evergreens planted seven feet on center.

7. Prior to the signing of the site plan mylar by the Chairman Sprint PCS shall submit a concise site location justification statement for 36 Prospect Street explaining the following:

   a) why 36 Prospect Street was chosen by Sprint PCS

   b) Sprint PCS network coverage area

   c) need for future Sprint PCS sites in Newington

8. Sprint PCS shall be responsible for removal of the tower and ground equipment, and restoration of the site to its previous condition, if the tower is not used by Sprint PCS or its co-location FCC licensed commercial wireless services for a period of six (6) months. Removal of the tower shall occur within 90 days of the end of such six (6) month period. Sprint PCS shall notify the Commission in writing that it is terminating the use of the tower.

9. Pursuant to Section 5.2.9 of the Zoning Regulations this Special Exception approval shall be void and of no effect unless construction of the tower begins within one year from the date of this approval. The term "construction of the tower" pertains to installation of the ground facilities and tower monopole. In addition, this Special Exception is not transferable to other FCC licensed commercial wireless companies without prior approval of the Commission.

Certified by:

Edmund J. Meehan
Town Planner

EJM:bjs

This Special Exception will not become effective until this Certificate of Action is filed by the applicant on the Land Records of the Town of Newington.

Ca4997-1/2

TOWN OF NEWINGTON
TOWN PLANNING AND ZONING COMMISSION
APPLICATION FORM
(FORM 1)

PA 92-235 FEE	
Yes ✓	No

TOWN OF NGTN. BUILDING DEPT.

T.P.Z. 75.00
CASH 75.00
CLK E 00N90008
15:53
12-16-96

...ND ZONING COMMISSION ACTION

...TION #: 2-97
...ED DATE: 12-9-96
...D DATE: 12-11-96
...D DATE:
...EARING DATE: 1-22-97
...AN REVIEW DATE:
...ON DATE:
...TION ACTION DATE: 4-9-97

THIS APPLICATION (3-originals and 7-sets of plans) SHALL BE SUBMITTED TO THE PLANNING AND ZONING COMMISSION OFFICE TWO (2) WEEKS PRIOR TO A REGULARLY SCHEDULED MEETING. THE APPLICATION SHALL BE RECEIVED BY THE PLANNING AND ZONING COMMISSION AT THE NEXT REGULARLY SCHEDULED MEETING ON THE 2nd AND 4th WEDNESDAY OF THE MONTH (Excepting Holiday Periods).

approved 5/4

APPLICANT: SBA, INC. FOR SPRINT PCS LIMITED PARTNERSHIP

ADDRESS: 300 RESEARCH PARKWAY MERIDEN, CT. 06450 TELEPHONE:

OWNER OF RECORD ON NEWINGTON LAND RECORDS: PATRICIA OLDHAM ✓

COMPLETE DESCRIPTION OF LOCATION OF PROPERTY: 36 PROSPECT STREET, ASSESOR'S MAP NE2107, LAND RECORDS V 1068 PG 104 ZONE: B_BT

NAME, ADDRESS & TELEPHONE OF PERSON TO WHOM CORRESPONDENCE AND INQUIRIES SHOULD BE DIRECTED: THOMAS F. FLYNN III 300 RESEEARCH PKWY TELEPHONE: 203-237-1747
MERIDEN, CT. 06450

THIS APPLICATION IS FOR: (CHECK ONE OF THE FOLLOWING)

___ 1. Zone Change to _____ Zone. (Public Hearing)
___ 2. Amendment to the Zoning Regulations. (Public Hearing)
___ 3. Filing for Subdivision
___ 4. Filing for Resubdivision. (Public Hearing) $75.00
X 5. Special Exception to Section 3.2.2 & 3.2.4 of the Zoning Regulations. (Public Hearing)
___ 6. Site Development Plan
___ 7. Permit as required by Section ___ of the Zoning Regulations. (Public Hearing)
___ 8. Other (Describe in Detail) see attached project description

SIGNATURE(S)

THIS APPLICATION MUST BE SIGNED BY THE APPLICANT AND THE OWNER OF THE PROPERTY AND SUBMITTED ALONG WITH SEVEN SETS OF PLANS.

Thomas F. Flynn III
SBA APPLICANT Thomas F. Flynn III

Patricia Oldham
OWNER

NOTE: PROPERTIES LOCATED WITHIN THE NEWINGTON INDUSTRIAL PARKS (BUDNEY ROAD, PROGRESS CIRCLE, ROCKWELL ROAD, HOLLAND DRIVE AND PANE ROAD) ARE SUBJECT TO THE REGULATIONS, COVENANTS AND RESTRICTIONS OF THE NEWINGTON ECONOMIC DEVELOPMENT COMMISSION. APPLICANTS PROPOSING TO BUILD, MODIFY EXISTING SITE PLANS, CHANGE OR ADD TO BUILDING ELEVATIONS OR PLACE SIGNAGE ON THE PROPERTY ARE RESPONSIBLE FOR SECURING THE NECESSARY APPROVALS FROM THE DEVELOPMENT COMMISSION PRIOR TO INITIATING THE WORK.

PROJECT DESCRIPTION

SPRINT PCS plans to erect a telecommunications facility at 36 Prospect Street, Newington, Ct. As part of it's new Personal Communication System in the State of Connecticut. This facility will consist of a 128 foot monopole, antenna array on the monopole, and the accessory ground equipment. The facility will be placed on a leased parcel of land 60' X 60' (3,600 square feet). The area will be fenced, screened and secured. Access to the site will be by a gravel driveway from Prosect Street. No sanitary facilities will be required and the facility will not be manned.

This telecommunications facility will service the greater Newington area and is part of an overall plan to create a new PCS system in Connecticut. Public Utility Installations (Section 3.2.2) and Radio Antennas (Section 3.2.4) are permitted uses in all zones by way of the Special Permit Process. This property is in Newington's B-BT zone.

Doc ID: 000204520014 Type: LAN
Book 1959 Page 32 - 45
File# 20209

After recording return to:

AFTER RECORDING, PLEASE RETURN TO:
LandAmerica Comm Lender & Search
5600 Cox Road
Richmond, VA 23060
Attn: Hope Trader

GRANT OF EASEMENT AND ASSIGNMENT OF LEASE

Facility:	876332 – 36 Prospect Street
Street Address:	40 Prospect Street (06111)
City:	Newington
County:	Hartford
State:	Connecticut

between

GLOBAL SIGNAL ACQUISITIONS IV LLC,
a Delaware limited liability company,
"GSA IV" or "Grantee"

and

BU# 876332 DOC#

JOHN W. OLDHAM, JR., and PATRICIA C. OLDHAM, husband and wife collectively, "Grantor"

GRANT OF EASEMENT AND ASSIGNMENT OF LEASE

THIS GRANT OF EASEMENT AND ASSIGNMENT OF LEASE (the "Easement") is made this 21 day of December, 2007, by and between **John W. Oldham, Jr., and Patricia C. Oldham, husband and wife**, having a mailing address of 174 Fox Hill Rd., Wethersfield, CT 06109 (collectively, "Grantor"), and **Global Signal Acquisitions IV LLC, a Delaware limited liability company**, with its national headquarters located at 2000 Corporate Drive, Canonsburg, Pennsylvania 15317-8564 ("GSA IV" or "Grantee").

1. Description of Grantor's Property. Grantor is the owner of that certain land and premises in the Town of Newington, County of Hartford, State of Connecticut, as shown on the Tax Map of the Town of Newington as lot NE2061 and having Tax ID of 03-01-0008008, by grant or conveyance described in the Newington Land Records, Volume 1068, Page 104, and the description of said property is attached hereto as Exhibit "A" (hereinafter "Grantor's Property").

2. Description of Easement. For good and valuable consideration, the actual consideration paid or to be paid in connection with this Easement being Four Hundred Thirty-Three Thousand Three Hundred Thirty-Three Dollars ($433,333.00), the receipt and sufficiency of which the parties hereby acknowledge, Grantor grants and conveys unto GSA IV, its successors and assigns, forever, an exclusive, perpetual easement for the use of a portion of Grantor's Property, that portion being described as an approximately 20,300 square feet parcel within Grantor's Property (the "Easement Area"), as such Easement Area is more particularly shown as the "Lease Area" and "Tower Site Lease Area" in the Site Plan attached hereto as Exhibit "B" and described by metes and bounds in Exhibit "C" attached hereto. The Grantor also grants to GSA IV, its successors and assigns, as part of this Easement, an exclusive, perpetual right-of-way for ingress and egress, seven days per week, twenty-four hours per day, on foot or motor vehicle, including trucks, along a twenty-five foot wide right-of-way extending from the nearest public right-of-way, together with the right to install, replace and maintain utility wires, poles, cables, conduits and pipes (the "Access Easement"), as is more particularly shown as the "25' Access & Utility Easement" in the Site Plan attached hereto as Exhibit "B" and described by metes and bounds in Exhibit "C" (hereinafter the term "Easement Area" shall be deemed to also include the Access Easement unless stated to the contrary). In the event any public utility is unable or unwilling to use the above-described Access Easement, Grantor hereby agrees to grant an additional right-of-way, in form satisfactory to GSA IV, either to GSA IV or directly to the public utility at no cost and in a location acceptable to either GSA IV or the public utility (the "Revised Access Easement"). For any such Revised Access Easement to be effective, such easement shall be recorded among the Newington Land Records, Connecticut.

3. Easement Area. The Easement Area, excluding the Access Easement, shall be used solely for constructing, maintaining and operating a wireless communications facility including but not limited to tower structures, equipment shelters, cabinets, meter boards, utilities, antennas, equipment, any related improvements and structures and uses incidental thereto for GSA IV's use and the use of its lessees and/or licensees (the "Permitted Use"). It is the intent of the parties that GSA IV's communications

facility shall not constitute a fixture. Grantor acknowledges that Grantor has no right to object to or approve any improvements to be constructed by GSA IV on the Easement Area. If requested by GSA IV, Grantor will execute, at GSA IV's sole cost and expense, all documents required by any governmental authority in connection with any development of, or construction on, the Easement Area, including documents necessary to petition the appropriate public bodies for certificates, permits, licenses and other approvals deemed necessary by GSA IV in GSA IV's absolute discretion to utilize the Easement Area for the Permitted Use. Grantor agrees to be named applicant if requested by GSA IV. Grantor shall be entitled to no further consideration with respect to any of the foregoing matters. Grantor shall take no action that would adversely affect the status of the Easement Area with respect to the Permitted Use.

4. Perpetual Easement. This Easement and GSA IV's rights and privileges hereunder shall be perpetual and may be terminated only as provided for herein.

5. GSA IV's Right to Terminate. GSA IV shall have the unilateral right to terminate this Easement for any reason. Said termination shall be effective upon GSA IV providing written notice of termination to Grantor. Upon termination of this Easement, this Easement shall become null and void and all of the parties shall have no further obligations to each other. Upon termination of this Easement, GSA IV shall, within a reasonable time, remove its building(s), tower and all above ground property and restore the surface of the Easement Area to its original condition, reasonable wear and tear excepted.

6. Hazardous Substances and Hazardous Wastes.

(a) GSA IV shall not (either with or without negligence) cause or permit the use, storage, generation, escape, disposal or release of any Hazardous Substances or Hazardous Wastes in any manner not sanctioned by law. In all events, GSA IV shall indemnify and hold Grantor harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities or losses (including, without limitation, any and all sums paid for settlement of claims, attorneys' fees, and consultants' and experts' fees) from the presence or release of any Hazardous Substances or Hazardous Wastes on the Easement Area if caused by GSA IV or persons acting under GSA IV. GSA IV shall execute such affidavits, representations and the like from time to time as Grantor may reasonably request concerning GSA IV's best knowledge and belief as to the presence of Hazardous Substances or Hazardous Wastes within the Easement Area.

b) Grantor shall not (either with or without negligence) cause or permit the use, storage, generation, escape, disposal or release of any Hazardous Substances or Hazardous Wastes in any manner not sanctioned by law. In all events, Grantor shall indemnify and hold GSA IV harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities or losses (including, without limitation, any and all sums paid for settlement of claims, attorneys' fees, and consultants' and experts' fees) from the presence or release of any Hazardous Substances or Hazardous Wastes on Grantor's Property unless caused by GSA IV or persons acting under GSA IV. Grantor shall execute such affidavits, representations and the like from time to time as GSA IV may reasonably request concerning Grantor's best knowledge and belief as to the presence of Hazardous

Substances or Hazardous Wastes on Grantor's Property.

(c) For purposes of this Easement, the term "Hazardous Substances" shall be as defined in the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 *et seq.*, and any regulations promulgated pursuant thereto, and as used to define "Hazardous Wastes" in the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et seq.*, and any regulations promulgated thereto.

7. Insurance. At all times, GSA IV, at its sole expense, shall obtain and keep in force insurance which may be required by any federal, state or local statute or ordinance of any governmental body having jurisdiction in connection with the operation of GSA IV's business upon the Easement Area. GSA IV shall provide evidence of such insurance to Grantor upon request, and such evidence shall name Grantor as an additional insured.

8. Security of Communications Facility. GSA IV may construct a chain link or comparable fence around the perimeter of the wireless communications facility.

9. Removal of Obstructions. GSA IV has the right to remove obstructions, including but not limited to vegetation, which may encroach upon, interfere with or present a hazard to GSA IV's use of the Easement Area. GSA IV shall be responsible for disposing of any materials related to the removal of obstructions.

10. Assignment of Lease Agreement. The parties hereby acknowledge that certain Option and Lease Agreement ("Lease Agreement") dated September 16, 1996, by and between Sprint Spectrum L.P., as lessee, and Grantor, as lessor, being recorded in the Newington Land Records in Volume 1148, Page 89. Upon the execution and recording of the Easement in the Newington Land Records, Connecticut, Grantor hereby assigns to GSA IV all of Grantor's right, title and interest in the Lease Agreement.

11. Right of First Refusal. If Grantor elects to sell all or any portion of the Easement Area, whether separate or as part of a larger parcel of property, GSA IV shall have the right of first refusal to meet any bona fide offer of sale on the same terms and conditions of such offer. If GSA IV fails to meet such bona fide offer within thirty days after written notice thereof from Grantor, Grantor may sell that property or portion thereof to such third person in accordance with the terms and conditions of the offer, which sale shall be under and subject to this Easement and GSA IV's rights hereunder. If GSA IV fails or declines to exercise its right of first refusal as hereinabove provided, then this Easement shall continue in full force and effect, and GSA IV's right of first refusal shall survive any such sale and conveyance and shall remain effective with respect to any subsequent offer to purchase the Easement Area, whether separate or as part of a larger parcel of property.

12. Real Estate Taxes. GSA IV and Grantor agree to execute any form or application necessary to create a new tax lot on the Easement Area and, if established, be solely responsible for all taxes attributable to the Easement Area. Grantor shall pay all real estate taxes on Grantor's Property; provided that if no separate tax account is established for the Easement Area, GSA IV agrees to pay for any real estate taxes levied against Grantor's Property that are directly attributable to the Easement Area and the improvements constructed by GSA IV within the Easement Area. Grantor agrees

to provide GSA IV any documentation evidencing how such taxes are attributable to GSA IV's use. GSA IV reserves the right to challenge any such assessment, and Grantor agrees to cooperate with GSA IV in connection with any such challenge. In the event that Grantor fails to pay all real estate taxes on Grantor's Property prior to such taxes becoming delinquent, GSA IV may, at its option, pay such real estate taxes (the "Delinquent Taxes") and GSA IV shall have the right to collect the Delinquent Taxes from Grantor together with interest on the Delinquent Taxes at the rate of 12% per annum (calculated from the date GSA IV pays the Delinquent Taxes until Grantor repays such sums due to GSA IV).

13. Waiver of Subrogation. The parties hereby waive any and all rights of action for negligence against the other which may hereafter arise on account of damage to the Easement Area or any other portion of Grantor's Property resulting from any fire or other casualty of the kind to the extent covered by property insurance policies with extended coverage regardless of whether or not, or in what amount, such insurance is now or hereafter carried by the parties.

14. Enforcement. In the event Grantor or Grantee fails to cure any violation of the terms of this Easement within ten (10) days after written notice from non-defaulting party, non-defaulting party shall have the right to injunctive relief, to require specific performance of this Easement, to collect damages from the defaulting party, and to take such actions as may be necessary in the non-defaulting party's discretion to cure such violation and charge the defaulting party with all reasonable costs and expenses incurred by the non-defaulting party as a result of such violation (including, without limitation, non-defaulting party's reasonable attorneys' fees ("Reimbursable Costs"). All rights and remedies provided under this Easement are cumulative and may be pursued singularly, in any combination, and in any order. The failure to enforce any of the terms and provisions contained herein shall in no event be deemed to be a waiver of the right to thereafter strictly enforce the terms and provisions hereof.

15. Limitation on Damages. Intentionally omitted.

16. Recording. Grantor acknowledges that GSA IV intends to record this Easement with the appropriate recording officer upon execution of this Easement.

17. Hold Harmless. Each party shall indemnify and hold the other harmless against any claim of liability or loss from personal injury or property damage arising from the use and occupancy of the Easement Area (or the Grantor's Property of which the Easement Area is a part) by the other party, its servants or agents, excepting, however, such claims or damages as may be due to or caused by the acts of the other party, its servants or agents. In no event shall either party be liable to the other party for consequential, indirect, speculative or punitive damages in connection with or arising from the use and occupation of the Easement Area or Grantor's Property. For purposes of this paragraph "consequential damages" shall mean damages that do not flow directly and immediately from the injurious act, but that result indirectly from the act.

18. Grantor's Covenant of Title. Grantor covenants: (a) Grantor is seized of fee simple title to the Grantor's Property of which the Easement Area is a part and has the right and authority to grant this Easement; (b) that this Easement is and shall be free and clear of all liens, claims, encumbrances and rights of third parties of

any kind whatsoever; (c) subject to the terms and conditions of this Agreement, GSA IV shall have quiet possession, use and enjoyment of the Easement Area; (d) there are no aspects of title that might interfere with or be adverse to GSA IV's interests in and intended use of the Easement Area; and (e) that Grantor shall execute such further assurances thereof as may be required.

19. Non-Interference. From and after the date hereof and continuing until this Easement is terminated (if ever), GSA IV and its lessees and/or licensees shall have the exclusive right to construct, install and operate communications facilities that emit radio frequencies on Grantor's Property. Grantor shall not permit (i) the construction, installation or operation of any communications facilities that emit radio frequencies on Grantor's Property other than the communications facilities constructed, installed and/or operated on the Easement Area pursuant to this Easement or the Lease Agreement or (ii) any condition on Grantor's Property which interferes with GSA IV's Permitted Use. Each of the covenants made by Grantor in this Section 19 is a covenant running with the land for the benefit of the Easement Area and shall be binding upon Grantor and each successive owner of any portion of Grantor's Property and upon each person having any interest therein derived through any owner thereof.

20. Eminent Domain. If the whole or any part of the Easement Area shall be taken by right of eminent domain or any similar authority of law, the entire award for the value of the Easement Area and improvements so taken shall belong to the GSA IV.

21. Entire Agreement. Grantor and GSA IV agree that this Easement contains all of the agreements, promises and understandings between Grantor and GSA IV. No verbal or oral agreements, promises or understandings shall be binding upon either Grantor or GSA IV in any dispute, controversy or proceeding at law. Any addition, variation or modification to this Easement shall be void and ineffective unless made in writing and signed by the parties hereto.

22. Construction of Document. Grantor and GSA IV acknowledge that this document shall not be construed in favor of or against the drafter and that this document shall not be construed as an offer until such time as it is executed by one of the parties and then tendered to the other party.

23. Applicable Law. This Easement and the performance thereof shall be governed, interpreted, construed and regulated by the laws of the State where the Easement is located. The parties agree that the venue for any litigation regarding this Agreement shall be Hartford County, Connecticut.

24. Notices. All notices hereunder shall be in writing and shall be given by (i) established express delivery service which maintains delivery records, (ii) hand delivery, or (iii) certified or registered mail, postage prepaid, return receipt requested. Notices may also be given by facsimile transmission, provided that the notice is concurrently given by one of the above methods. Notices are effective upon receipt, or upon attempted delivery if delivery is refused or if delivery is impossible because of failure to provide reasonable means for accomplishing delivery. The notices shall be sent to the parties at the following addresses:

If to Grantor:

John W. Oldham, Jr., &
Patricia C. Oldham
174 Fox Hill Rd.

Wethersfield, CT 06109

If to Grantee:

Global Signal Acquisitions IV LLC
c/o Crown Castle International Corp.
E. Blake Hawk, General Counsel
Attn: Real Estate Department
2000 Corporate Drive
Canonsburg, PA 15317-8564

25. Assignment. The parties hereto expressly intend that the easements granted herein shall be easements in gross, and as such, are transferable, assignable, inheritable, divisible and apportionable. GSA IV has the right, within its sole discretion, to sell, assign, lease, convey, license or encumber any of its interest in the Easement Area. Any such sale, assignment, lease, license, conveyance or encumbrance shall be binding upon the successors, assigns, heirs and legal representatives of the respective parties hereto. An assignment of this Easement shall be effective upon GSA IV sending written notice thereof to Grantor at Grantor's mailing address stated above and shall relieve GSA IV from any further liability or obligation accruing hereunder on or after the date of the assignment.

26. Partial Invalidity. If any term of this Easement is found to be void or invalid, then such invalidity shall not affect the remaining terms of this Easement, which shall continue in full force and effect.

27. Mortgages. This Easement shall be subordinate to any mortgage given by Grantor which currently encumbers Grantor's Property including the Easement Area, provided that any mortgagee holding such a mortgage shall recognize the validity of this Easement in the event of foreclosure of Grantor's interest and GSA IV's rights under this Easement. In the event that the Easement Area is or shall be encumbered by such a mortgage, Grantor shall obtain and furnish to GSA IV a non-disturbance agreement for each such mortgage, in recordable form.

28. Successors and Assigns. The terms of this Easement shall constitute a covenant running with the Grantor's Property for the benefit of GSA IV and its successors and assigns and shall extend to and bind the heirs, personal representatives, successors and assigns of the parties hereto and upon each person having any interest therein derived through any owner thereof. Any sale, mortgage, lease or other conveyance of Grantor's Property shall be under and subject to this Easement and GSA IV's rights hereunder.

29. Construction of Easement. The captions preceding the Sections of this Easement are intended only for convenience of reference and in no way define, limit or describe the scope of this Easement or the intent of any provision hereof. Whenever the singular is used, the same shall include the plural and vice versa and words of any gender shall include the other gender. As used herein, "including" shall mean "including, without limitation."

[Remainder of Page Intentionally Blank]

IN WITNESS WHEREOF, Grantor and GSA IV, having read the foregoing and intending to be legally bound hereby, have executed this Grant of Easement as of the day and year first written above.

GRANTOR:

Witnesses:

Print Name: MARK OLDHAM

John W. Oldham, Jr.

Rita M. FitzGerald
Print Name: RITA M. FITZGERALD

STATE OF CONNECTICUT

COUNTY OF HARTFORD

Personally appeared before me, the undersigned authority in and for the said county and state, on this 17th day of DECEMBER, 2007, within in my jurisdiction, the within named **John W. Oldham, Jr.** who acknowledged that he executed the above and foregoing instrument. He is personally known to me or has produced HIS DRIVING LIC (type of identification) as identification.

NOTARIAL SEAL

Name: EUGENE V. FALCONE
Notary – State of HARTFORD
My Commission Expires: SEPT 30-2011

GRANTOR:

Witnesses:

Print Name: MARK OLDHAM

Patricia C. Oldham

Print Name: ROBIN M. FITZGERALD

STATE OF CONNECTICUT

COUNTY OF HARTFORD

Personally appeared before me, the undersigned authority in and for the said county and state, on this 17TH day of DECEMBER, 2007, within in my jurisdiction, the within named **Patricia C. Oldham** who acknowledged that she executed the above and foregoing instrument. She is personally known to me or has produced THEIR DRIVERS LICENSE (type of identification) as identification.

NOTARIAL SEAL

Name: EUGENE V. FALCONE
Notary – State of CONNECTICUT
My Commission Expires: OCT 31 2011

BUN#876332

RAL 380982v2

Witnesses:

Print Name: C. BISSONNET

Print Name: Heather K Green

GRANTEE:
Global Signal Acquisitions IV LLC,
a Delaware limited liability company

By: _____
Print: R.Christopher Mooney
Title: Director - Land Acquisition Operations

STATE OF TEXAS

COUNTY OF HARRIS

PERSONALLY appeared before me, the undersigned authority in and for the said county and state, on this 13 day of December 2007, within my jurisdiction, the within named R.C. Mooney, who acknowledged that he is Director of Global Signal Acquisitions IV LLC, a Delaware limited liability company, and as its act and deed he executed the above and foregoing instrument, after first having been duly authorized by said company so to do. He is personally known to me or has produced _____ (type of identification) as identification.

NOTARIAL SEAL

ELIZABETH SAENZ
Notary Public, State of Texas
My Commission Expires
MARCH 30, 2008

Name: _____
Notary – State of Tx
My Commission Expires: _____

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

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

Customer Site Name:	**CT8612**	**Crown Castle Site ID Number:**	**876332**
Site Address:	**36 PROSPECT STREET, Newington, CT 06109**	**Crown Castle Site Name:**	**36 PROSPECT STREET**

This authorization is fully contingent upon **Sigfox NIP LLC** authorized contractors/agents' compliance with the following conditions:

1. Crown Castle must review the application prior to submittal. Crown Castle must be provided all applications, narratives, drawings and attachments at least 72 hours in advance of their submittal to the locality. Use of email and electronic attachments is encouraged. A Crown Castle Zoning Subject Matter Expert (SME) will review and provide written comment to the customer within 48 hours of receipt of a complete set of application materials. If Crown Castle indicates that changes are required, submissions shall be altered in accordance with Crown Castle comments prior to submission to the locality. Verification of corrections should also be accomplished via emails and attachments.
2. In no event may **Sigfox NIP LLC** encourage, suggest, participate in, or permit the imposition of any restrictions or additional obligations whatsoever on the tower site or Crown Castle's current or future use or ability to license space at the tower site as part of or in exchange for obtaining any approval, permit, exception or variance.
3. A copy of the final permit and/or a written summary of the zoning/entitlement decision rendered by the locality and any/all conditions placed on that decision shall be communicated in detail to Crown Castle well within the appeal period provided by the locality (typically 10-15 days).
4. All conditions of approval pertinent to the construction of the proposed project must be included in the construction drawings for the project. The conditions of approval pertinent to the construction of the project shall be copied verbatim from the zoning permit approval language, and shall be present in the drawings prior to submission for building permits and contractor bidding. Crown Castle shall verify the inclusion of appropriate conditions of approval in the construction drawing redline process.
5. Crown Castle will provide a Notice To Proceed (NTP) to construction to the customer upon receipt of the final approved zoning permit and the approved Building Permit.

By Crown Castle:

Signature: *Amanda Cornwall*

Printed Name: Amanda Cornwall

Title: Real Estate Specialist – East Area

Date: April 20, 2018

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2015.

Information on the Property Records for the Municipality of Newington was last updated on 4/11/2018.

Parcel Information

Location:	36 PROSPECT ST	Property Use:	Industrial	Primary Use:	Warehouse
Unique ID:	O2219600	Map Block Lot:	18/051/000	Acres:	1.29
490 Acres:	0.00	Zone:	B-BT	Volume / Page:	2157/782
Developers Map / Lot:	N/E 472	Census:			

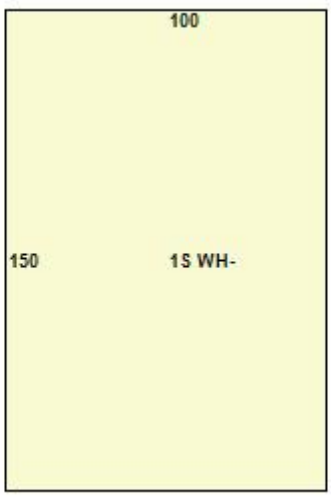
Value Information

	Appraised Value	Assessed Value
Land	100,000	70,000
Buildings	351,000	245,700
Detached Outbuildings	0	0
Total	451,000	315,700

Owner's Information

Owner's Data
OLDHAM JOHN W TRUSTEE 174 FOX HILL ROAD WETHERSFIELD CT 06109

Building 1



Category:	Industrial	Use:	Warehouse	GLA:	15,000
Stories:	1.00	Construction:	Masonry	Year Built:	1956

Heating:	Forced Hot Air	Fuel:	Natural Gas	Cooling Percent:	0
Siding:	Brick Veneer	Roof Material:	Other	Beds/Units:	0

Special Features

Attached Components

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
OLDHAM JOHN W TRUSTEE	2157	782	10/23/2014	Warranty Deed	No	$0
OLDHAM JOHN W JR	329	282	12/12/1977		No	$0
THE 635 CORPORATION	93	275	04/06/1955		No	$0
HARRY E RUGAR	93	93	03/02/1955		No	$0
GUERRERA MICHAEL & MANCINI PASQUALE	93	86	03/02/1955		No	$0
CALLAHAN CLIFFORD J	65	385	10/09/1950		No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
B-15-764	Comm Renovations	02/22/2016		Closed	9 ANTENNA PANELS
B-14-453	Remodel	07/29/2014		Closed	ADD 3 ANTENNAS, 3 REMOTE
B-13-156	Remodel	05/09/2013		Closed	3 ANTENNAS ON EXISTING MONOPOLE
62445	Building	08/16/2001		Closed	TELECOMM FACI

SIGFOX
One network A billion dreams

SIGFOX SITE NUMBER: CT8612
SIGFOX SITE NAME: 36 PROSPECT STREET
SITE TYPE: MONOPOLE
TOWER HEIGHT: 136'-0"

CROWN CASTLE BU #: 876332
SITE ADDRESS: 36 PROSPECT STREET NEWINGTON, CT 06109
COUNTY: HARTFORD
JURISDICTION: TOWN OF NEWINGTON

SIGFOX PHASE 1

SITE INFORMATION

CROWN CASTLE SITE NAME:	36 PROSPECT STREET
SITE ADDRESS:	36 PROSPECT STREET NEWINGTON, CT 06109
COUNTY:	HARTFORD
MAP/PARCEL #:	NEWI-221955-O000000
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 41' 23.66"
LONGITUDE:	-72° 42' 18.85"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	256 FT.
CURRENT ZONING:	NOT AVAILABLE
JURISDICTION:	TOWN OF NEWINGTON
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	GLOBAL SIGNAL ACQUISITION PO BOX 277455 ATLANTA, GA 30384-7455
TOWER OWNER:	GLOBAL SIGNAL ACQUISITIONS II LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	SIGFOX 545 BOYLSTON STREET 10TH FLOOR BOSTON, MA 02116
CROWN CASTLE APPLICATION ID:	426716
ELECTRIC PROVIDER:	NORTHEAST UTILITIES 800-286-2000
TELCO PROVIDER:	AT&T (866) 620-6900

PROJECT TEAM

CROWN CASTLE A&E FIRM:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWNAE.APPROVAL@CROWNCASTLE.COM
CROWN CASTLE CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 BRENT MCPHERSON - PROJECT MANAGER (980) 209-8249 JASON D'AMICO - CONSTRUCTION MANAGER (860) 209-0104 AMANDA CORNWALL - A&E PROJECT MANAGER AMANDA.CORNWALL@CROWNCASTLE.COM (339) 205-7017
SIGFOX CONTACT:	FRANCO CORBO (201) 887-2226

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	OVERALL SITE PLAN
C-2	TOWER ELEVATION & ANTENNA LAYOUT
C-3	DETAILS
C-4	UTILITY FRAME ELEVATION
C-5	BILL OF MATERIALS
E-1	ONE LINE DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

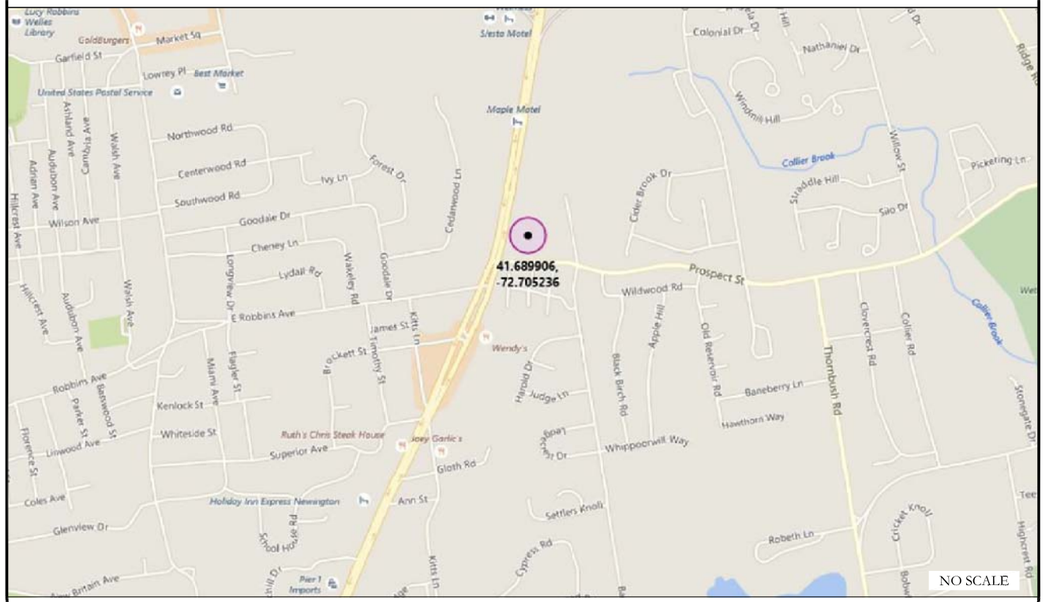
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK
- INSTALL VALMONT RING MOUNT & 2-1/2" SCH 40 PIPE
- INSTALL CONNECT-IT - S4 4'-0" STAND OFF
- INSTALL (1) PROCOM - CXL 900-3LW OMNI ANTENNA W/ MOUNTING CLAMPS
- INSTALL LNA W/ CAVITY FILTER
- INSTALL (1) 1/2" EC4-50 FEEDLINE

GROUND SCOPE OF WORK
- INSTALL BASE STATION, UPS, PRIMARY CONNECTIVITY MODEM, & BACKUP CONNECTIVITY GSM USB KEY IN NEW CABINET ON NEW UTILITY FRAME IN A 3'-0"x3'-0" AREA
- INSTALL POWER TO CABINET (METER TO BE SUPPLIED BY CROWN)

DESIGN PACKAGE BASED ON THE APPLICATION
ID: 426716
REVISION: 2

LOCATION MAP



APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2016 CT STATE BUILDING CODE/2012 IBC W/ CT AMENDMENTS
MECHANICAL	2016 CT STATE BUILDING CODE/2012 IMC W/ CT AMENDMENTS
ELECTRICAL	2016 CT STATE BUILDING CODE/2014 NEC W/ CT AMENDMENTS

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY CROWN CASTLE USA INC. DATED MARCH 23, 2018
MOUNT ANALYSIS:	BY OTHERS

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

SIGFOX
One network A billion dreams
545 BOYLSTON STREET 10TH FLOOR
BOSTON, MA 02116

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

SIGFOX SITE NUMBER: **CT8612**

BU #: **876332**
36 PROSPECT STREET

36 PROSPECT STREET
NEWINGTON, CT 06109

EXISTING 136'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/02/18	ASJ	PRELIMINARY	KK
B	04/03/18	KK	PRELIMINARY	KK
0	04/16/18	KK	CONSTRUCTION	AJF

DocuSigned by:
BAD6060DD903F4...

STATE OF CONNECTICUT
ANDREW JOSEPH FANDOZZI
No. 30515
LICENSED
PROFESSIONAL ENGINEER

Crown Castle USA Inc. Certificate of Registration #PEC.0001101

4/17/2018 | 8:53:36 AM EDT

SHEET NUMBER: T-1
REVISION: 0

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE TOWER SITE" AND LATEST VERSION OF TIA 1019 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR 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 SEDIMENT CONTROL.
13. NOTICE TO PROCEED- NO WORK TO COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
3. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8"ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. SLAB FOUNDATION DESIGN ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALLS.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

MASONRY NOTES:

1. HOLLOW CONCRETE MASONRY UNITS SHALL MEET A.S.T.M. SPECIFICATION C90, GRADE N. TYPE 1. THE SPECIFIED DESIGN COMPRESSIVE STRENGTH OF CONCRETE MASONRY (F'm) SHALL BE 1500 PSI.
2. MORTAR SHALL MEET THE PROPERTY SPECIFICATION OF A.S.T.M. C270 TYP. "S" MORTAR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. GROUT SHALL MEET A.S.T.M. SPECIFICATION C475 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
4. CONCRETE MASONRY SHALL BE LAID IN RUNNING (COMMON) BOND.
5. WALL SHALL RECEIVE TEMPORARY BRACING. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL GROUT IS FULLY CURED.

GENERAL NOTES:

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

CONTRACTOR-	
SUBCONTRACTOR-	GENERAL CONTRACTOR (CONSTRUCTION)
CARRIER-	SIGFOX
TOWER OWNER-	CROWN CASTLE
OEM-	ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR AND CROWN CASTLE.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

-|S/G|-	SOLID GROUND BUS BAR
-|S/N|-	SOLID NEUTRAL BUS BAR
	SUPPLEMENTAL GROUND CONDUCTOR
	2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	CHEMICAL GROUND ROD
	TEST WELL
	DISCONNECT SWITCH
M	METER
	EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
	MECHANICAL CONNECTION
	GROUNDING WIRE

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC. HILTI EPOXY ANCHORS ARE REQUIRED BY CROWN CASTLE.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
21. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER).
22. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHIN ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL; SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
24. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
25. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
28. INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "SIGFOX".
29. ALL CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 TINNED SOLID IN 3/4" LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

NEC INSULATOR COLOR CODE

DESCRIPTION	PHASE/CODE LETTER	WIRE COLOR
240/120 1Ø	LEG 1	BLACK
	LEG 2	RED
AC NEUTRAL	N	WHITE
GROUND (EGC)	G	GREEN
VDC POS	+	*RED-POLARITY MARK AT TERMINATION
VDC NEG	-	*BLACK-POLARITY MARK AT TERMINATION
240V OR 208V, 3Ø	PHASE A	BLACK
	PHASE B	RED(ORG. IF HI LEG)
	PHASE C	BLUE
480V, 3Ø	PHASE A	BROWN
	PHASE B	ORANGE
	PHASE C	YELLOW

* SEE NEC 210.5(C)(1) AND (2)

SIGFOX
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545 BOYLSTON STREET 10TH FLOOR
BOSTON, MA 02116

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

SIGFOX SITE NUMBER: **CT8612**

BU #: **876332**
36 PROSPECT STREET

36 PROSPECT STREET
NEWINGTON, CT 06109

EXISTING 136'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/02/18	ASJ	PRELIMINARY	KK
B	04/03/18	KK	PRELIMINARY	KK
0	04/16/18	KK	CONSTRUCTION	AJF

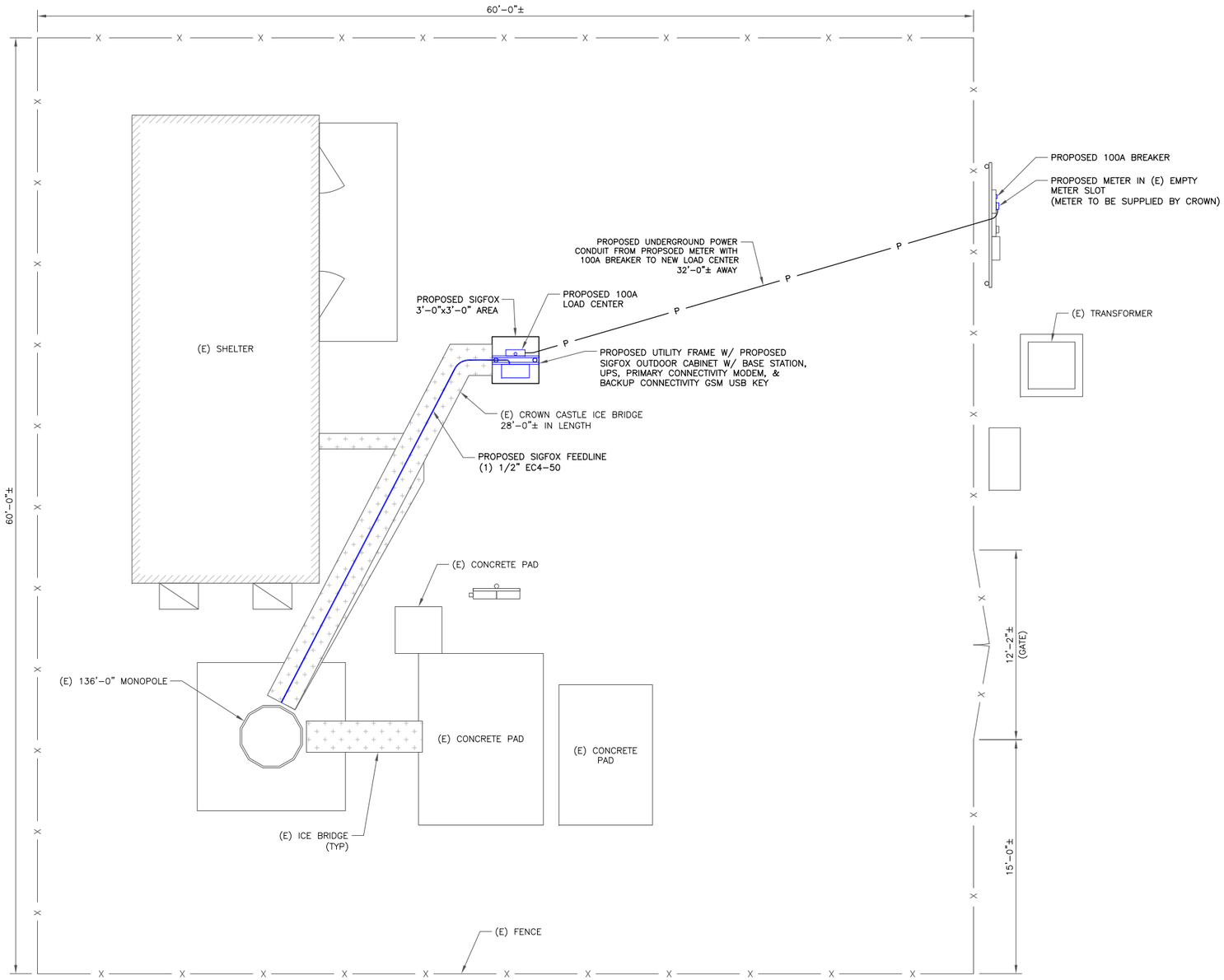
DocuSigned by:
BAD6060D9034F4...

STATE OF CONNECTICUT
ANDREW JOSEPH FANDOZZI III
No. 30515
LICENSED PROFESSIONAL ENGINEER

Crown Castle USA Inc. Certificate of Registration #PEC.0001101

4/17/2018 | 8:53:36 AM EDT

SHEET NUMBER: T-2
REVISION: 0



1 OVERALL SITE PLAN

SCALE: 4' 3' 2' 1' 0 4' 1/4"=1'-0" (FULL SIZE) 1/8"=1'-0" (11x17)

N

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0	04/16/18	KK	CONSTRUCTION	AJF

DocuSigned by:
BAD6060D1D9C4F4...

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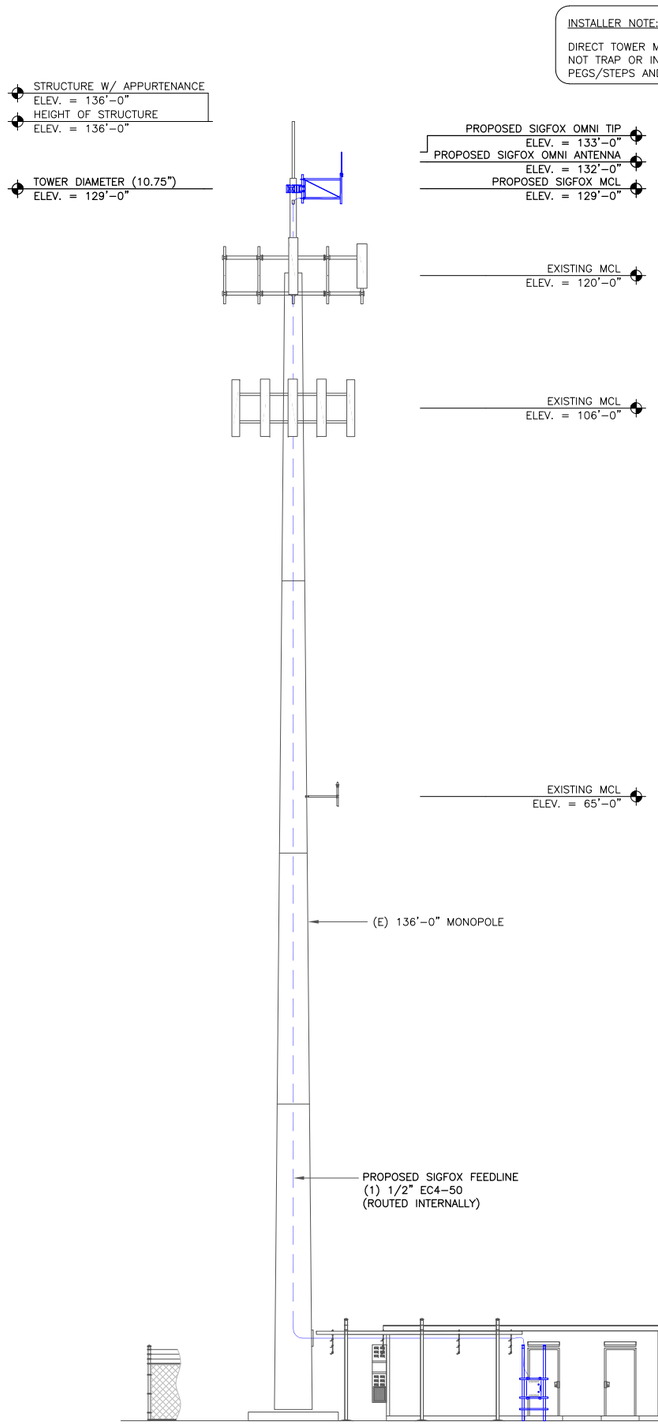
Registration #PEC.0001101

4/17/2018 | 8:53:36 AM EDT

SHEET NUMBER: C-1

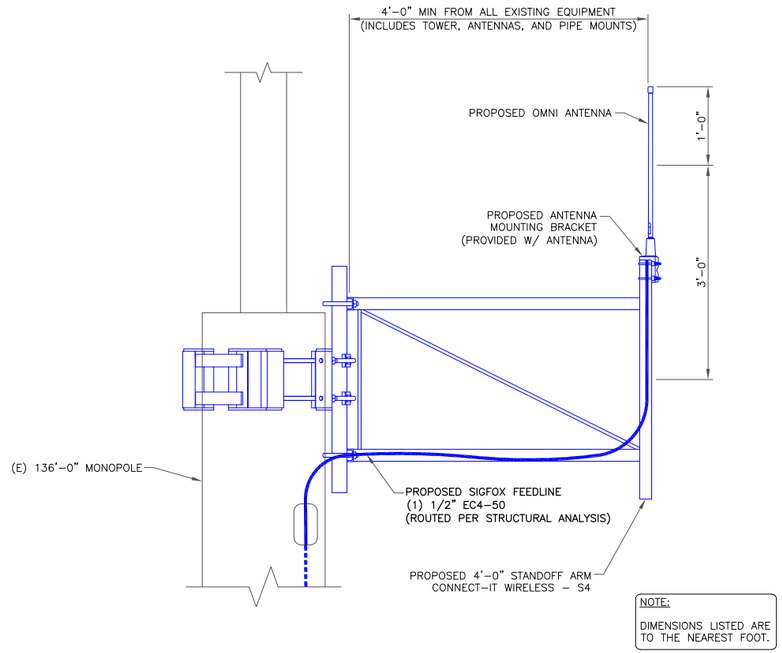
REVISION: 0



INSTALLER NOTE:

DIRECT TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ CLIMBING PEGS/STEPS AND SAFETY CLIMB.

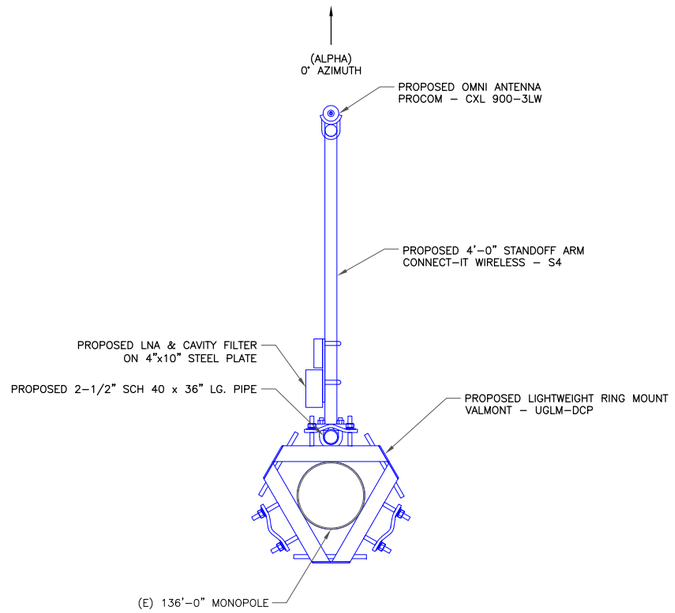
1 FINAL ELEVATION
SCALE: NOT TO SCALE



NOTE:

DIMENSIONS LISTED ARE TO THE NEAREST FOOT.

2 TYPICAL MOUNTING DETAIL
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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3 CORPORATE PARK DRIVE, SUITE 101
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SIGFOX SITE NUMBER: **CT8612**

BU #: **876332**
36 PROSPECT STREET

36 PROSPECT STREET
NEWINGTON, CT 06109

EXISTING 136'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/02/18	ASJ	PRELIMINARY	KK
B	04/03/18	KK	PRELIMINARY	KK
0	04/16/18	KK	CONSTRUCTION	AJF

DocuSigned by:
BAD6068DD9034F...

STATE OF CONNECTICUT
ANDREW JOSEPH FANDOZZI III
No. 30515
LICENSED
PROFESSIONAL ENGINEER

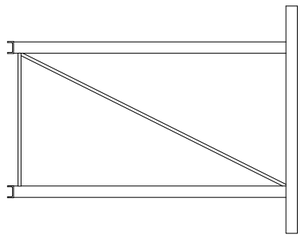
Crown Castle USA Inc. Certificate of Registration #PEC.0001101

4/17/2018 | 8:53:36 AM EDT

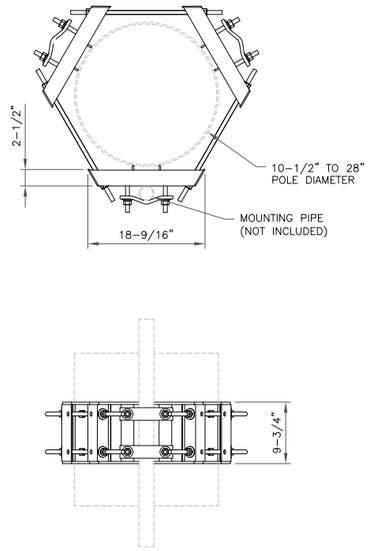
SHEET NUMBER: C-2

REVISION: 0

Product Specifications	
Material	Galvanized Steel, 1-1/2" ID (1.9" OD)
Standoff	4'
End Pipe Length	38"
Horizontal Pipes' Length	46-1/2"
Max Combined Load Weight	90 lbs
Max Combined Load Force (P.A.)	350 lbs
Max Combined Load Area at 140 MPH	1,006 Square Inches (P-0.348 LBS/IN.2)
Max Combined Load Area at 150 MPH	875 Square Inches (P-0.400 LBS/IN.2)
Max Projected Assembly Area	77 Square Inches (EPAT)
Max Normal Projected Assembly Area	275 Square Inches (EPAN)
Weight	42 lbs

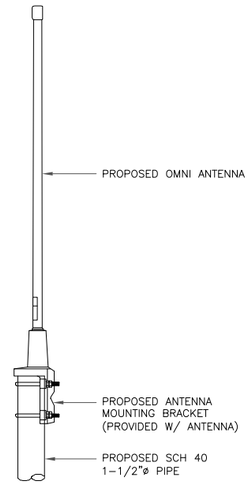


1 CONNECT-IT WIRELESS STANDOFF ARM
SCALE: NOT TO SCALE



2 VALMONT - UGLM-DCP
SCALE: NOT TO SCALE

SPECIFICATIONS	
MODEL	CXL 900-3LW
RADIATION	OMNIDIRECTIONAL
FREQUENCY	824-960 MHz
TOTAL HEIGHT	27.5"
DIA. AT TOP	0.47"
DIA. AT END	0.63"
WEIGHT	1.5 LBS



3 PROCOM - CXL 900-3LW
SCALE: NOT TO SCALE

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SIGFOX SBS-T-902

SIGFOX SBS-T-902 series are ultra wide range, high linearity transceivers and feature first class performance radio and innovative software defined processing, for use in Ultra Narrow Band Machine-To-Machine wireless communication systems. SBS-T-902 variant is targeting M2M applications compliant with FCC regulations. It operates in the band 902-928 MHz. SIGFOX TAP series are indoor units with aluminum chassis, suitable for wall mount, rack mount or desktop installations.

ABOUT SIGFOX TECHNOLOGY

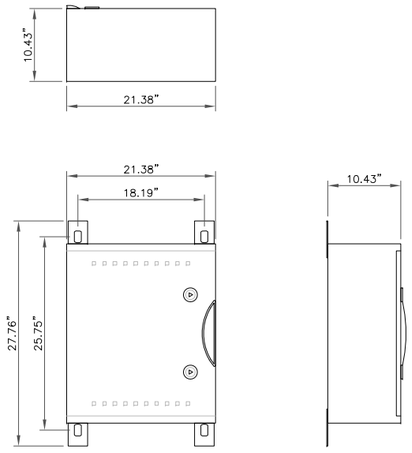
SIGFOX is the first and only operator of a cellular network fully dedicated to low-throughput communication for connected objects. With an extremely cost effective and very low energy consuming out-of-the-box connectivity offer, SIGFOX brings a revolution to the world of Internet of –Things and M2M. The network, which already connects tens of thousands of objects, is being rolled out worldwide.

Key Features

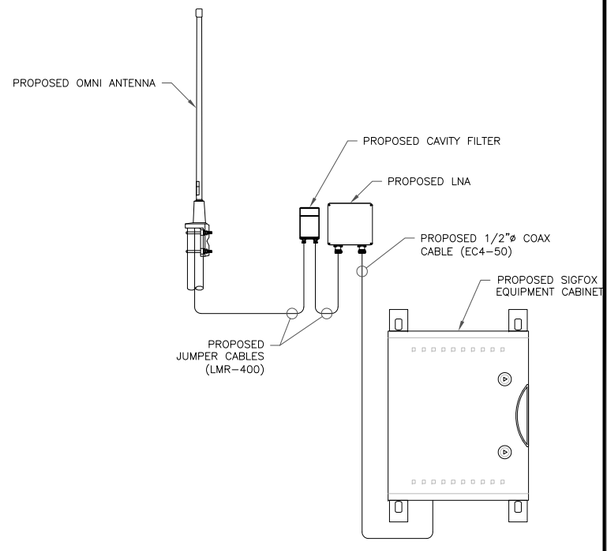
- Ultra Wide Flange Radio transmitter
- Software Defined Radio operation
- -134 dBm receiver sensitivity
- 120dB receiver linearity
- 200kHz monitor spectrum
- Web based management tools
- Remote firmware upgrade

RADIO INTERFERANCE CHARACTERISTICS	
Standard	SIGFOX Ultra Narrow Band Protocol for M2M
Operating Frequency	902.2 to 918.1 MHz -- Rx and Tx
Monitored Spectrum Bandwidth	192 kHz
Radio Mode	Access Point
Receiver Sensitivity	Typ. - 134 dBm @ 600bps
Transmit Power	Max 36 dBm e.i.r.p. with specific omnidirectional antenna (8dBa gain) Max 28 dBm conducted power at base station output with specific omnidirectional antenna (8dBi gain)
Date Rate and Modulation	600 bps D-BPSK
Pre-amplifier Filter	NF 2db G=20db/rejection 30db @ +/- 10MHz
Antenna Connector	Type N Female
INTERFACES	
Ethernet	1 x 10/100BaseT (RJ45)
USB	2x USB 2.0 ports (optional for 3G key and or external inverter)
Maintenance port	RJ45 socket with specific cable (only for maintenance)
POWER SUPPLY	
Power Consumption	40 W typical, 70W max peak (in transmit mode)
Power Supply	100-240 VAC 50Hz-60Hz -- 120VDC/7A max
MECHANICAL & ENVIROMENTAL	
Product Dimensions	480 x 350 x 85 mm (19";2U standard format)
Product Weight	Cr 8kg (16 lbs)
Operating Temperature	-20 to +50°C
Storage Temperature	-40°C to +85°C
Maximum Altitude Operation	2000m
Pollution Degree	2
Overvoltage Category	II
Casting Material	Aluminum
COMPLIANCE	
Compliance	CE (EMC EN 301 489 rado EN 300 220, safety EN60950-1) FCC ID: 2ACK7SBST902 IC ID: 12204A-SBST902

4 SIGFOX - SBS-T-902
SCALE: NOT TO SCALE



5 EQUIPMENT CABINET DETAIL
SCALE: NOT TO SCALE



6 EQUIPMENT DIAGRAM
SCALE: NOT TO SCALE

SIGFOX
One network A billion dreams
545 BOYLSTON STREET 10TH FLOOR
BOSTON, MA 02116

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

SIGFOX SITE NUMBER: **CT8612**

BU #: **876332**
36 PROSPECT STREET

36 PROSPECT STREET
NEWINGTON, CT 06109

EXISTING 136'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/02/18	ASJ	PRELIMINARY	KK
B	04/03/18	KK	PRELIMINARY	KK
0	04/16/18	KK	CONSTRUCTION	AJF

DocuSigned by:
BAD6068DD9034F4...

STATE OF CONNECTICUT
ANDREW JOSEPH FANDOZZI, III
No. 30515
LICENSED
PROFESSIONAL ENGINEER

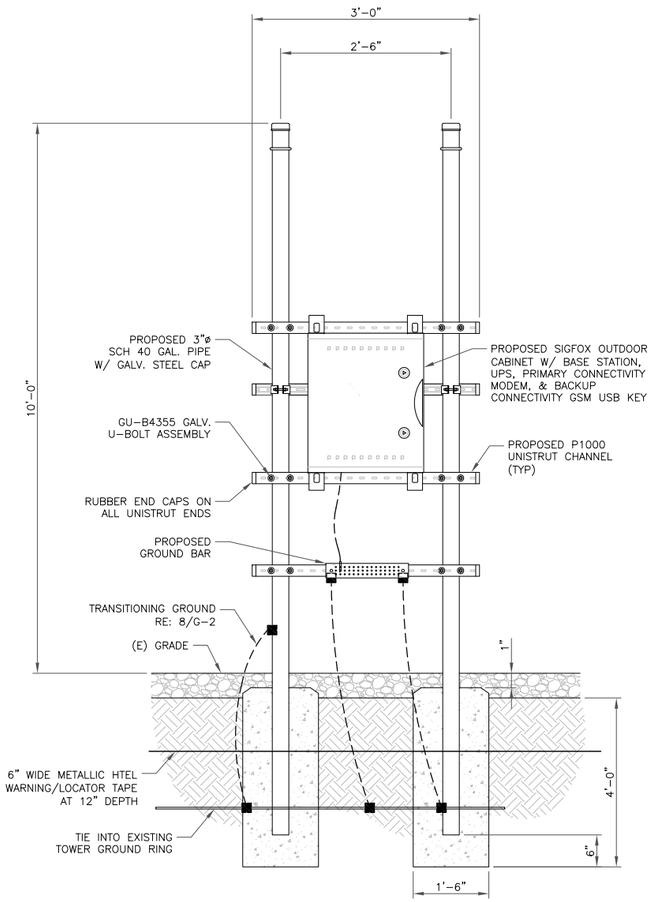
Crown Castle USA Inc. Certificate of Registration #PEC.0001101

4/17/2018 | 8:53:36 AM EDT

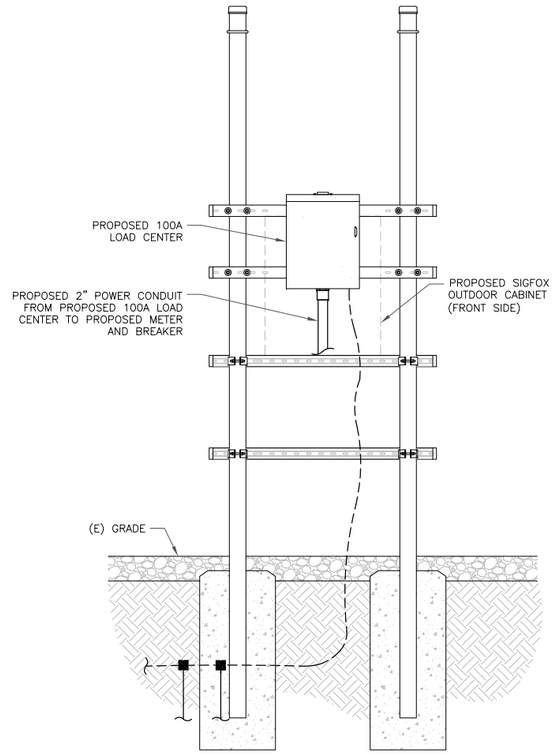
SHEET NUMBER: C-3

REVISION: 0

NOTE:
1. ALL EXPOSED ELECTRICAL CONDUIT MUST BE GALVANIZED STEEL RIGID CONDUIT.
2. THREADLESS CONNECTORS ARE NOT ALLOWED.
3. EMT CONDUIT CAN ONLY BE USED INSIDE.
4. USE ONLY COMPRESSION TYPE FITTINGS ON EMT CONDUIT.
5. USE ONLY STRANDED CONDUCTORS FOR ALL ELECTRICAL WIRING. (EXCEPT TELCO AND THERMOSTAT)
6. USE SCHEDULE 80 CONDUIT UNDER DRIVEWAYS AND/OR ANY VEHICLE CROSSING AREA.



1 UTILITY FRAME ELEVATION (FRONT)
SCALE: NOT TO SCALE



2 UTILITY FRAME ELEVATION (BACK)
SCALE: NOT TO SCALE

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BOSTON, MA 02116

CROWN CASTLE
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EXISTING 136'-0" MONOPOLE

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SHEET NUMBER: C-4

REVISION: 0

ANTENNA AND FEEDER

COMPONENT	DESCRIPTION	INDEX	SUPPLIER	QUANTITY
ANTENNA	OMNIDIRECTIONAL ANTENNA (2.1M HIGH MAX)	–	SIGFOX	1
ANTENNA MOUNTING SUPPORT	RING MOUNT (VALMONT UGLM–DCP) STANDOFF ARM (CONNECT–IT S4) 2–1/2" SCH 40 x 36" LG. PIPE	–	CROWN CASTLE	1
LOW NOISE AMPLIFIER	SIGFOX PREAMP 868	–	SIGFOX	1
LNA V2 MOUNTING PLATE	4"x10" STEEL PLATE	–	CROWN CASTLE	1
FEEDER CABLE	1/2" COAXIAL CABLE (< 262'–0") 7/8" COAXIAL CABLE (> 262'–0")	2	CROWN CASTLE	1
	JUMPER CABLE LMR400 : ANT<–>LNA (L=1.5M MAX) CONNECTOR NMALE/NFEMALE	1	CROWN CASTLE	1
	JUMPER CABLE LMR400 : LNA<–>FEEDER (L=1.5M MAX) CONNECTOR NMALE/NFEMALE	7	CROWN CASTLE	1
	JUMPER CABLE LMR400 : FEEDER<–>TAP (L=1.5M MAX) CONNECTOR NMALE/NFEMALE	8	CROWN CASTLE	1 OR 2
CONNECTOR	NMALE FEEDER CONNECTOR	–	CROWN CASTLE	2
SURGE SUPPRESSOR	TELEGARTNER 90V J01028A0034	–	SIGFOX	1
GROUNDING KIT FOR FEEDER	CLICK–ON COAX GROUNDING KIT (SABRE INDUSTRIES C20–114–001)	–	CROWN CASTLE	1
BARREL CUSHION	VALMONT BCU12X FOR 1/2" COAX VALMONT BCU78X FOR 7/8" COAX	–	CROWN CASTLE	TBD
BUTTERFLY HANGER	VALMONT BUG12 FOR 1/2" COAX VALMONT BUG78 FOR 7/8" COAX	–	CROWN CASTLE	TBD
HOISTING GRIP	VALMONT GRIP12 FOR 1/2" COAX VALMONT GRIP78 FOR 7/8" COAX	–	CROWN CASTLE	1
ANGLE ADAPTER	GALVANIZED 3/8" ANGLE ADAPTERS (VALMONT GAP38)	–	CROWN CASTLE	TBD

BASE STATION

COMPONENT	DESCRIPTION	INDEX	SUPPLIER	QUANTITY
TAP	TAP–868 V2	–	SIGFOX	1

INTERNET CONNECTION

COMPONENT	DESCRIPTION	INDEX	SUPPLIER	QUANTITY
MODEM	ADSL MODEM + POWER CABLE	–	SIGFOX	TO BE CONFIRMED
ETHERNET CABLE	CABLE RJ45 1M	3	SIGFOX	1
USB 3G KEY	3G KEY SIGFOX APPROVED MODEL : HUAWEI E352/K3806	–	SIGFOX	1
	STANDARD M2M SIM CARD WITHOUT PIN CODE NEITHER PASSWORD	–	SIGFOX	1
	USB CABLE – 50CM	5	SIGFOX	1

ELECTRICAL PANEL

COMPONENT	DESCRIPTION	INDEX	SUPPLIER	QUANTITY
20A, SINGLE POLE BREAKER	BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING BREAKERS	–	CROWN CASTLE	1
100A, 12 SPACE LOAD CENTER	SQUARE D PART No. QO112M100RB	–	CROWN CASTLE	1
#12 STRANDED COPPER WIRE	INSULATED ELECTRICAL CONDUCTORS TYPE THWN–2 OR XHHW–2 (90° C)	–	CROWN CASTLE	TBD
3/4" CONDUIT AND FITTINGS	ELECTRICAL METALLIC TUBING (EMT)	–	CROWN CASTLE	1

POWER SUPPLY

COMPONENT	DESCRIPTION	INDEX	SUPPLIER	QUANTITY
BASE STATION POWER CABLE	POWER CABLE (PLUG TO FEM) TO TAP	11–1	SIGFOX	1

UTILITY FRAME

COMPONENT	DESCRIPTION	INDEX	SUPPLIER	QUANTITY
UNISTRUTS	3'–0" LONG UNISTRUTS W/ RUBBER END CAPS ON ALL UNISTRUT ENDS	–	CROWN CASTLE	4
U–BOLTS	GU–B4355 GALV. U–BOLT ASSEMBLY	–	CROWN CASTLE	8
3"ø SCH 40 PIPE 10'–0" ABOVE GRADE	GALV. PIPE W/ GALV. STEEL CAP (TYP)	–	CROWN CASTLE	2

1 BILL OF MATERIALS
SCALE: NOT TO SCALE

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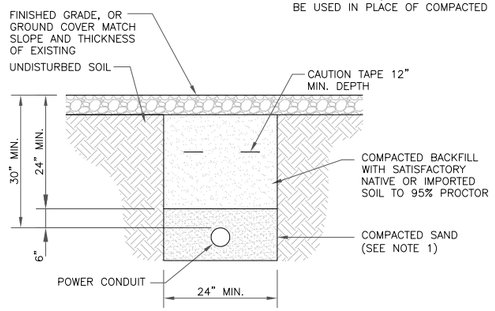
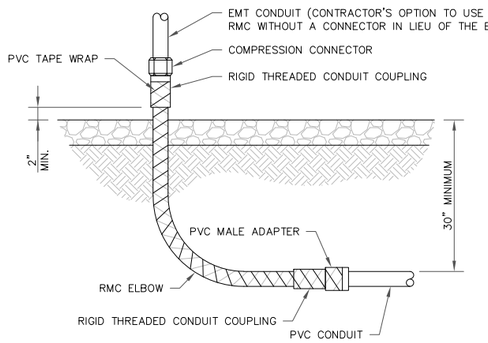
REVISION: 0

NOTES:

1. LEAN CONCRETE, RED-COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND



1 TYP TRENCH DETAIL
SCALE: NOT TO SCALE

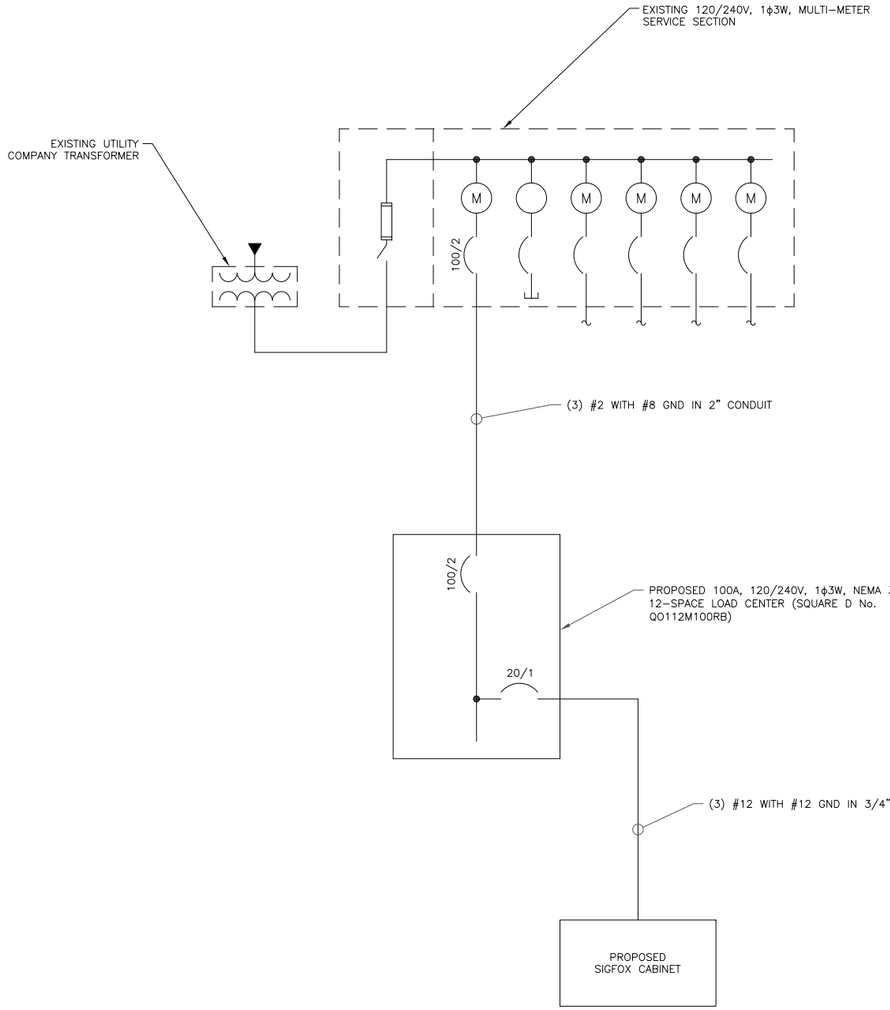


ALL METAL CONDUIT INSTALLED IN DIRECT CONTACT WITH THE EARTH SHALL BE CONSIDERED TO BE INSTALLED IN A SEVERELY CORROSIVE ENVIRONMENT AND IS REQUIRED TO HAVE SUPPLEMENTAL PROTECTION AGAINST CORROSION (NEC ARTICLE 342.10(B) & 344.10(B)(1)). THIS PROTECTION SHALL EITHER BE AN APPROVED MANUFACTURER INSTALLED PROTECTIVE COATING ON THE CONDUIT OR SHALL BE (2) LAYERS OF 10 MIL PVC PIPE WRAP TAPE INSTALLED USING OPPOSING SPIRAL WRAPS. ON VERTICAL PIPE THE OUTSIDE LAYER OF TAPE SHALL BE WRAPPED SO AS TO PROVIDE SHEDDING OF WATER (i.e. TAPE SHOULD WRAP IN AN UPWARD DIRECTION WITH LOWER WRAP BEING BENEATH THE WRAP ABOVE). SPIRAL WRAPS SHALL HAVE A MINIMUM OF 1/4" OVERLAP WITH THE PRECEDING TAPE WRAP. ANY OTHER METHODS OF CORROSION PROTECTION SHALL REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO BEING USED.

2 CONDUIT STUB UP DETAIL
SCALE: NOT TO SCALE

NOTES:

1. ALL NEW CONDUCTOR WIRE TO BE INSTALLED SHALL BE COPPER. ALL WIRE LARGER THAN #10 SHALL BE XHHW-2, THWN-2, THW-2, OR RHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



3 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

SIGFOX
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BOSTON, MA 02116

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
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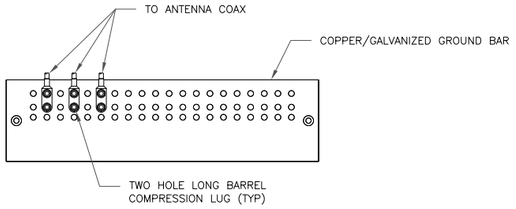
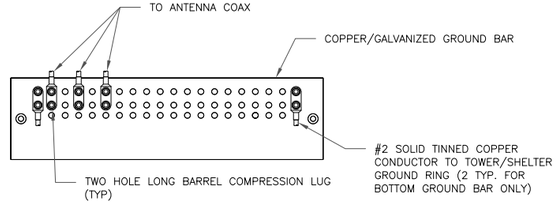
SHEET NUMBER: E-1
REVISION: 0



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

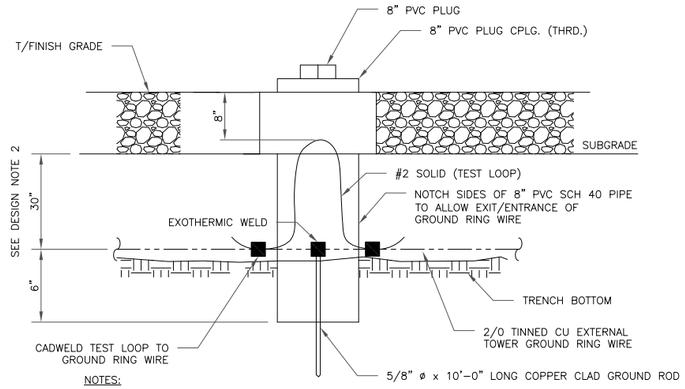
1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

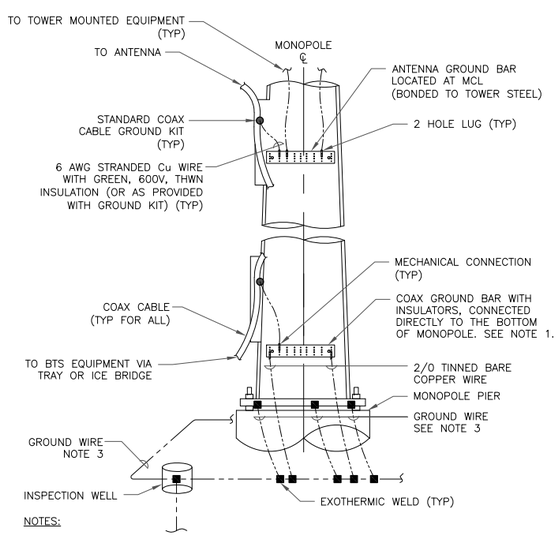
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

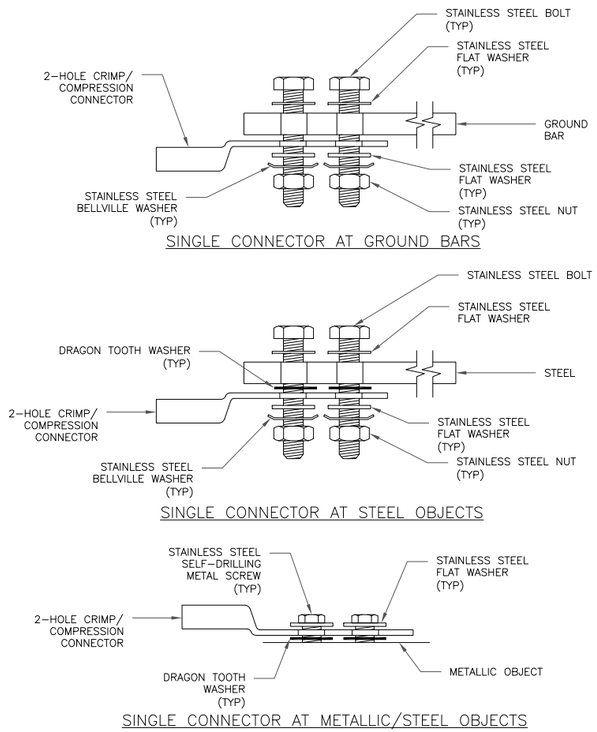
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



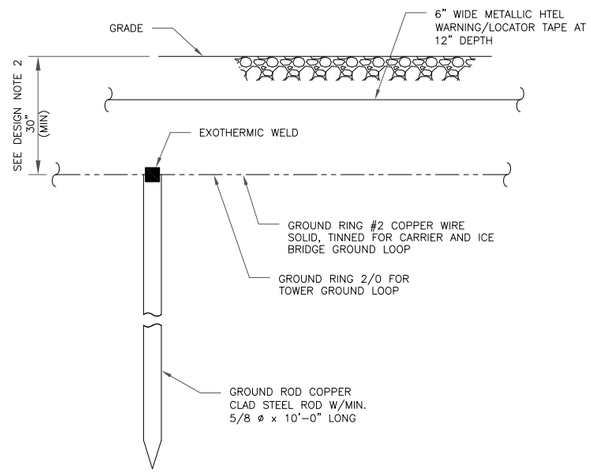
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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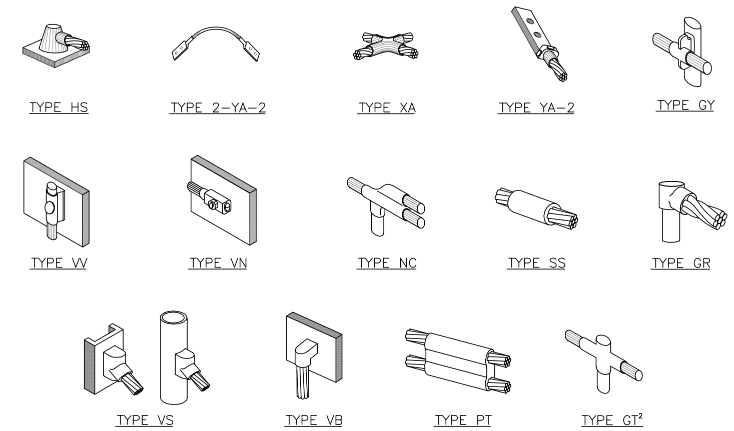
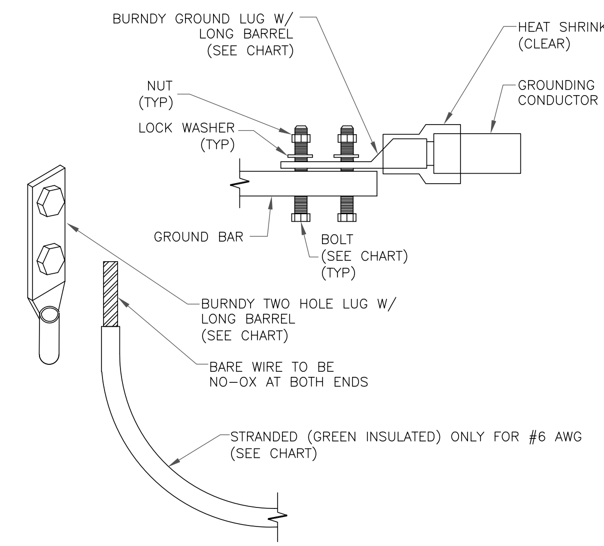


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

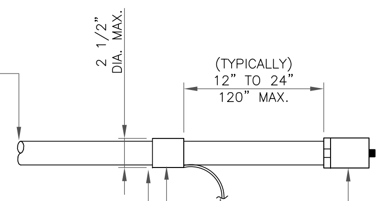
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

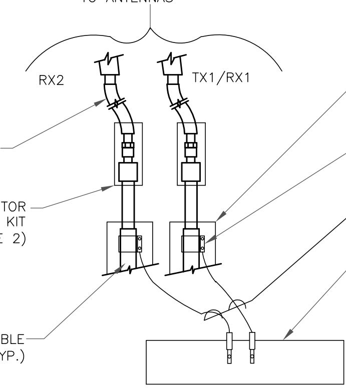
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

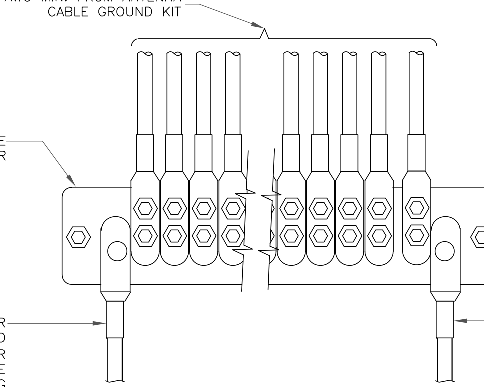
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



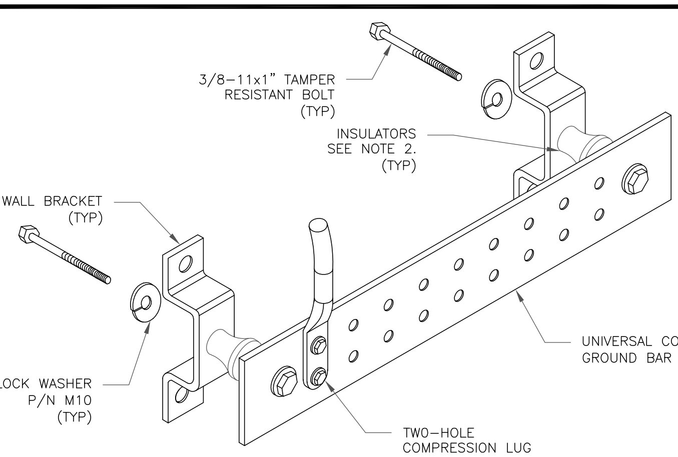
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



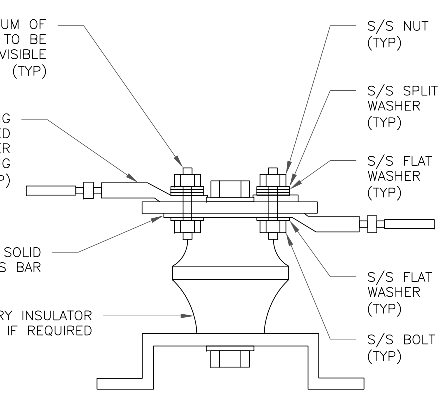
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



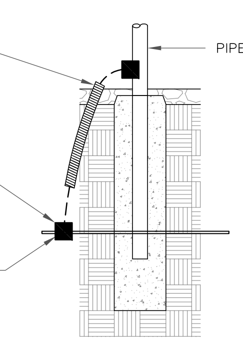
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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SHEET NUMBER: G-2
REVISION: 0

Date: **March 23, 2018**

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

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

Subject: **Structural Analysis Report**

Carrier Designation:	***SIGFOX SA* Co-Locate**	
	Carrier Site Number:	CT8612
Crown Castle Designation:	**Crown Castle BU Number:**	876332
	Crown Castle Site Name:	36 PROSPECT STREET
	Crown Castle JDE Job Number:	485341
	Crown Castle Work Order Number:	1529700
	Crown Castle Application Number:	426716 Rev. 2
Engineering Firm Designation:	**Crown Castle Project Number:**	1529700
Site Data:	**36 Prospect Street, NEWINGTON, Hartford County, CT 06109** **Latitude *41° 41' 23.66"*, Longitude *-72° 42' 18.85"*** **136 Foot - Monopole Tower**	

Dear Charles McGuirt,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1529700, in accordance with application 426716, revision 2.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

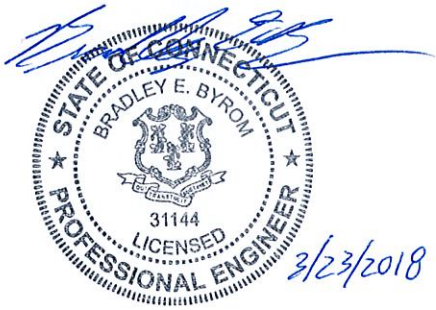
All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

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

Structural analysis prepared by: Bernadette Rossmiller / SM

Respectfully submitted by:

Bradley E. Byrom, P.E., S.E.
Senior Project Engineer



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1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by SUMMIT in May of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower has a 16' extension that was mapped by TEP in March of 2018, bringing the total tower height to 136'.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category B.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
131.0	132.0	1	sigfox	CAVITY FILTER	1	1/2	-
		1	sigfox	CXL 900-3LW			
		1	sigfox	LNA			
	131.0	1	tower mounts	Side Arm Mount [SO 306-1]			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
120.0	121.0	3	alcatel lucent	TD-RRH8X20-25	3 1	1-1/4 1-5/8	1
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
	120.0	1	tower mounts	Platform Mount [LP 1201-1]			
116.0	118.0	3	alcatel lucent	PCS 1900MHZ 4X45W 65MHZ	-	-	1
	116.0	1	tower mounts	Side Arm Mount [SO 102-3]			
	114.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
106.0	106.0	3	alcatel lucent	RRH2X60-700	3 3 12 2	1/2 5/8 1-1/4 1-5/8	1
		3	alcatel lucent	RRH2X60-AWS			
		3	alcatel lucent	RRH2X60-PCS			
		9	andrew	SBNHH-1D65B w/ Mount Pipe			
		6	decibel	DB846F65ZAXY w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	tower mounts	Platform Mount [LP 713-1]			
65.0	66.0	1	lucent	KS24019-L112A	1	1/2	1
	65.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	120.0	12	Decibel	DB980 H90	-	-
105.0	105.0	12	Allgon	ALP9212N	-	-
95.0	95.0	12	Allgon	ALP9212	-	-
80.0	80.0	2	-	PD10017	-	-
39.0	39.0	1	-	GPS	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	SUMMIT MANUFACTURING, INC.	1615432	CCISITES
4-TOWER MANUFACTURER DRAWINGS	SUMMIT MANUFACTURING, INC.	1440581	CCISITES
TOWER EXTENSION MAPPING	TEP	-	ON FILE

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The tower structure from 120' to 122' was assumed to exceed the capacity of the pipe section from 122' to 130'.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	136 - 130	Pole	TP4.5x4.5x0.216	1	-0.11	91.57	4.5	Pass
L2	130 - 129.5	Pole	TP10.75x4.5x0.216	2	-0.12	91.57	4.5	Pass
L3	129.5 - 120.5	Pole	TP10.75x10.75x0.322	3	-0.50	332.29	4.1	Pass
L4	120.5 - 120	Pole	TP22x10.75x0.322	4	-0.52	332.29	4.1	Pass
L5	120 - 87.5	Pole	TP29.476x22x0.1875	5	-9.99	922.01	49.1	Pass
L6	87.5 - 58.75	Pole	TP35.715x28.2384x0.25	6	-13.94	1578.79	60.4	Pass
L7	58.75 - 32.25	Pole	TP41.311x34.1798x0.375	7	-19.84	3297.65	41.9	Pass
L8	32.25 - 0	Pole	TP47.98x39.3533x0.4375	8	-31.32	4555.94	42.9	Pass
							Summary	
						Pole (L6)	60.4	Pass
						Rating =	60.4	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Bolts	130	1.5	Pass
	Flange Plates		8.3	Pass
1	Bolts	120	6.6	Pass
	Flange Plates		33.2	Pass
1	Anchor Rods	0	40.2	Pass
	Base Plate		40.3	Pass
1,2	Base Foundation (Compared w/ Design Loads)	0	42.4	Pass

Structure Rating (max from all components) =	60.4%

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

4.1) Recommendations

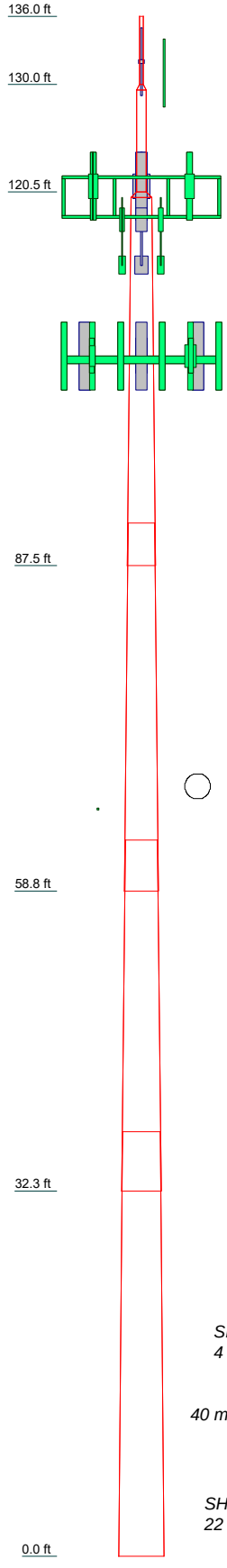
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8
Length (ft)	6.00	0.50	9.00	0.50	32.50	32.50	31.00	37.50
Number of Sides	1	1	1	1	12	12	12	12
Thickness (in)	0.2160	0.2160	0.3220	0.3220	0.1875	0.2500	0.3750	0.4375
Socket Length (ft)					3.75	4.50	5.25	
Top Dia (in)	4.5000	4.5000	10.7500	10.7500	22.0000	28.2384	34.1798	39.3533
Bot Dia (in)	4.5000	4.5000	10.7500	10.7500	29.4760	35.7150	41.3110	47.9800
Grade	A53-B-35					A572-60		A572-65
Weight (K)	0.1	0.0	0.3	0.0	1.7	2.8	4.8	7.8

Total Weight (K) 17.5



ALL REACTIONS ARE FACTORED

AXIAL 60 K

SHEAR 4 K *MOMENT 327 kip-ft*

TORQUE 0 kip-ft

40 mph WIND - 1.0000 in ICE

AXIAL 31 K

SHEAR 22 K *MOMENT 1862 kip-ft*

TORQUE 0 kip-ft

REACTIONS - 97 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
CXL 900-3LW	131	6' x 2" Mount Pipe	116
CAVITY FILTER	131	6' x 2" Mount Pipe	116
LNA	131	Side Arm Mount [SO 102-3]	116
Side Arm Mount [SO 306-1]	131	RRH2X60-700	106
APXVSPP18-C-A20 w/ Mount Pipe	120	RRH2X60-700	106
APXVSPP18-C-A20 w/ Mount Pipe	120	RRH2X60-700	106
APXVSPP18-C-A20 w/ Mount Pipe	120	(3) SBNHH-1D65B w/ Mount Pipe	106
APXVTM14-C-120 w/ Mount Pipe	120	(3) SBNHH-1D65B w/ Mount Pipe	106
APXVTM14-C-120 w/ Mount Pipe	120	(3) SBNHH-1D65B w/ Mount Pipe	106
APXVTM14-C-120 w/ Mount Pipe	120	RRH2X60-AWS	106
TD-RRH8X20-25	120	RRH2X60-AWS	106
TD-RRH8X20-25	120	RRH2X60-AWS	106
TD-RRH8X20-25	120	(2) DB846F65ZAXY w/ Mount Pipe	106
(3) 6' x 2" Mount Pipe	120	(2) DB846F65ZAXY w/ Mount Pipe	106
(3) 6' x 2" Mount Pipe	120	(2) DB846F65ZAXY w/ Mount Pipe	106
(3) 6' x 2" Mount Pipe	120	RRH2X60-PCS	106
Platform Mount [LP 1201-1]	120	RRH2X60-PCS	106
PCS 1900MHZ 4X45W 65MHZ	116	RRH2X60-PCS	106
PCS 1900MHZ 4X45W 65MHZ	116	DB-T1-6Z-8AB-0Z	106
PCS 1900MHZ 4X45W 65MHZ	116	Platform Mount [LP 713-1]	106
800MHz 2X50W RRH W/FILTER	116	KS24019-L112A	65
800MHz 2X50W RRH W/FILTER	116	2' x 2" Pipe Mount	65
800MHz 2X50W RRH W/FILTER	116	Side Arm Mount [SO 701-1]	65
6' x 2" Mount Pipe	116		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 ksi
A572-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 60.4%

CROWN CASTLE
The Pathway to Possible

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

Job: ***BU# 876332***			
Project: ***WO# 1529700***			
Client: Crown Castle	Drawn by: SMandal	App'd:	
Code: TIA-222-G	Date: 03/23/18	Scale: NTS	
Path: R:\SA Models - Letters\Work Area\BRossmiller\WIP\876332 - WO 1529700\QA-SM\876332 - WO 1529700.eri		Dwg No. E-1	

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 40 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	136.00-130.00	6.00	0.00	Round	4.5000	4.5000	0.2160		A53-B-35 (35 ksi)
L2	130.00-129.50	0.50	0.00	Round	4.5000	10.7500	0.2160		A53-B-35 (35 ksi)
L3	129.50-120.50	9.00	0.00	Round	10.7500	10.7500	0.3220		A53-B-35 (35 ksi)
L4	120.50-120.00	0.50	0.00	Round	10.7500	22.0000	0.3220		A53-B-35 (35 ksi)
L5	120.00-87.50	32.50	3.75	12	22.0000	29.4760	0.1875	0.7500	A572-60 (60 ksi)
L6	87.50-58.75	32.50	4.50	12	28.2384	35.7150	0.2500	1.0000	A572-60 (60 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L7	58.75-32.25	31.00	5.25	12	34.1798	41.3110	0.3750	1.5000	A572-65 (65 ksi)
L8	32.25-0.00	37.50		12	39.3533	47.9800	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	4.5000	2.9071	6.6860	1.5165	2.2500	2.9715	13.3719	1.4527	0.0000	0
	4.5000	2.9071	6.6860	1.5165	2.2500	2.9715	13.3719	1.4527	0.0000	0
L2	4.5000	2.9071	6.6860	1.5165	2.2500	2.9715	13.3719	1.4527	0.0000	0
	10.7500	7.1482	99.1919	3.7251	5.3750	18.4543	198.3838	3.5720	0.0000	0
L3	10.7500	10.5489	143.5267	3.6886	5.3750	26.7026	287.0534	5.2713	0.0000	0
	10.7500	10.5489	143.5267	3.6886	5.3750	26.7026	287.0534	5.2713	0.0000	0
L4	10.7500	10.5489	143.5267	3.6886	5.3750	26.7026	287.0534	5.2713	0.0000	0
	22.0000	21.9293	1288.4548	7.6652	11.0000	117.1323	2576.9097	10.9581	0.0000	0
L5	22.7761	13.1693	799.7595	7.8089	11.3960	70.1790	1620.5296	6.4815	5.3935	28.765
	30.5158	17.6829	1936.1299	10.4853	15.2686	126.8049	3923.1240	8.7030	7.3971	39.451
L6	30.1276	22.5306	2252.7622	10.0198	14.6275	154.0089	4564.7070	11.0889	6.8979	27.592
	36.9749	28.5493	4583.3363	12.6965	18.5004	247.7430	9287.0819	14.0511	8.9016	35.606
L7	36.4572	40.8193	5953.9787	12.1021	17.7051	336.2856	12064.3751	20.0900	8.1552	21.747
	42.7683	49.4302	10572.7826	14.6551	21.3991	494.0761	21423.3239	24.3281	10.0663	26.844
L8	41.9919	54.8226	10597.3562	13.9319	20.3850	519.8603	21473.1168	26.9820	9.3742	21.427
	49.6726	66.9755	19322.6161	17.0202	24.8536	777.4562	39152.8588	32.9633	11.6861	26.711

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 136.00-130.00				1	1	1			
L2 130.00-129.50				1	1	1			
L3 129.50-120.50				1	1	1			
L4 120.50-120.00				1	1	1			
L5 120.00-87.50				1	1	1			
L6 87.50-58.75				1	1	1			
L7 58.75-32.25				1	1	1			
L8 32.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
EC4-50(1/2)	A	No	Inside Pole	131.00 - 0.00	1	No Ice	0.00	0.16
						1/2" Ice	0.00	0.16
						1" Ice	0.00	0.16
***								
HB114-1-08U4-M5J(1-1/4)	B	No	Inside Pole	120.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
HB158-1-13U6-S6F18(1-5/8)	B	No	Inside Pole	120.00 - 0.00	1	No Ice	0.00	1.90
						1/2" Ice	0.00	1.90
						1" Ice	0.00	1.90
***								
LDF4-50A(1/2)	A	No	Inside Pole	106.00 - 0.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF6-50A(1-1/4)	A	No	Inside Pole	106.00 - 0.00	12	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
HB058-1-08U1-S1J(5/8)	A	No	Inside Pole	106.00 - 0.00	3	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
HB158-1-08U8-S8J18(1-5/8)	A	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
***								
LDF4-50A(1/2)	A	No	Inside Pole	65.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	136.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	130.00-129.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	129.50-120.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	120.50-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	120.00-87.50	A	0.000	0.000	0.000	0.000	0.23
		B	0.000	0.000	0.000	0.000	0.17
		C	0.000	0.000	0.000	0.000	0.00
L6	87.50-58.75	A	0.000	0.000	0.000	0.000	0.36
		B	0.000	0.000	0.000	0.000	0.15
		C	0.000	0.000	0.000	0.000	0.00
L7	58.75-32.25	A	0.000	0.000	0.000	0.000	0.34
		B	0.000	0.000	0.000	0.000	0.14
		C	0.000	0.000	0.000	0.000	0.00
L8	32.25-0.00	A	0.000	0.000	0.000	0.000	0.41
		B	0.000	0.000	0.000	0.000	0.17
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	136.00-130.00	A	2.299	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	130.00-129.50	A	2.293	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	129.50-120.50	A	2.285	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	120.50-120.00	A	2.276	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L5	120.00-87.50	A	2.241	0.000	0.000	0.000	0.000	0.23
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	0.000	0.000	0.00
L6	87.50-58.75	A	2.164	0.000	0.000	0.000	0.000	0.36
		B		0.000	0.000	0.000	0.000	0.15
		C		0.000	0.000	0.000	0.000	0.00
L7	58.75-32.25	A	2.064	0.000	0.000	0.000	0.000	0.34
		B		0.000	0.000	0.000	0.000	0.14
		C		0.000	0.000	0.000	0.000	0.00
L8	32.25-0.00	A	1.857	0.000	0.000	0.000	0.000	0.41
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	136.00-130.00	0.0000	0.0000	0.0000	0.0000
L2	130.00-129.50	0.0000	0.0000	0.0000	0.0000
L3	129.50-120.50	0.0000	0.0000	0.0000	0.0000
L4	120.50-120.00	0.0000	0.0000	0.0000	0.0000
L5	120.00-87.50	0.0000	0.0000	0.0000	0.0000
L6	87.50-58.75	0.0000	0.0000	0.0000	0.0000
L7	58.75-32.25	0.0000	0.0000	0.0000	0.0000
L8	32.25-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
131								
CXL 900-3LW	A	From Leg	2.00 / 0.0000	131.00	No Ice	0.14	0.14	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	0.33	0.33	0.00
			1.00				1" Ice	0.48	0.48	0.01
CAVITY FILTER	A	From Leg	2.00		0.0000	131.00	No Ice	0.19	0.08	0.00
			0.00				1/2" Ice	0.25	0.12	0.00
			1.00				1" Ice	0.32	0.17	0.01
LNA	A	From Leg	2.00		0.0000	131.00	No Ice	0.14	0.05	0.00
			0.00				1/2" Ice	0.19	0.09	0.00
			1.00				1" Ice	0.25	0.13	0.00
Side Arm Mount [SO 306-1]	A	None			0.0000	131.00	No Ice	0.98	2.18	0.04
							1/2" Ice	1.70	3.80	0.06
							1" Ice	2.42	5.42	0.08
120										
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00		0.0000	120.00	No Ice	8.26	6.95	0.08
			0.00				1/2" Ice	8.82	8.13	0.15
			1.00				1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00		0.0000	120.00	No Ice	8.26	6.95	0.08
			0.00				1/2" Ice	8.82	8.13	0.15
			1.00				1" Ice	9.35	9.02	0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00		0.0000	120.00	No Ice	8.26	6.95	0.08
			0.00				1/2" Ice	8.82	8.13	0.15
			1.00				1" Ice	9.35	9.02	0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00		0.0000	120.00	No Ice	6.58	4.96	0.07
			0.00				1/2" Ice	7.03	5.75	0.13
			1.00				1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00		0.0000	120.00	No Ice	6.58	4.96	0.07
			0.00				1/2" Ice	7.03	5.75	0.13
			1.00				1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00		0.0000	120.00	No Ice	6.58	4.96	0.07
			0.00				1/2" Ice	7.03	5.75	0.13
			1.00				1" Ice	7.47	6.47	0.19
TD-RRH8X20-25	A	From Leg	4.00		0.0000	120.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			1.00				1" Ice	4.56	1.90	0.13
TD-RRH8X20-25	B	From Leg	4.00		0.0000	120.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			1.00				1" Ice	4.56	1.90	0.13
TD-RRH8X20-25	C	From Leg	4.00		0.0000	120.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			1.00				1" Ice	4.56	1.90	0.13
(3) 6' x 2" Mount Pipe	A	From Leg	4.00		0.0000	120.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			1.00				1" Ice	2.29	2.29	0.05
(3) 6' x 2" Mount Pipe	B	From Leg	4.00		0.0000	120.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			1.00				1" Ice	2.29	2.29	0.05
(3) 6' x 2" Mount Pipe	C	From Leg	4.00		0.0000	120.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			1.00				1" Ice	2.29	2.29	0.05
Platform Mount [LP 1201-	C	None			0.0000	120.00	No Ice	23.10	23.10	2.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
1]						1/2" Ice	26.80 30.50	26.80 30.50	2.50 2.90
						1" Ice			
116									
PCS 1900MHZ 4X45W 65MHZ	A	From Leg	1.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.23 2.43 2.64	0.06 0.08 0.11
PCS 1900MHZ 4X45W 65MHZ	B	From Leg	1.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.23 2.43 2.64	0.06 0.08 0.11
PCS 1900MHZ 4X45W 65MHZ	C	From Leg	1.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.23 2.43 2.64	0.06 0.08 0.11
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.00 -2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.00 -2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.00 -2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.93 2.11 2.29	0.06 0.09 0.11
6' x 2" Mount Pipe	A	From Leg	1.00 0.00 1.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	1.00 0.00 1.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	1.00 0.00 1.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
Side Arm Mount [SO 102-3]	C	None		0.0000	116.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
106									
RRH2X60-700	A	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-700	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-700	C	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
(3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
RRH2X60-AWS	A	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-AWS	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-AWS	C	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	7.27 7.83 8.35	7.82 9.01 9.91	0.05 0.11 0.19
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	7.27 7.83 8.35	7.82 9.01 9.91	0.05 0.11 0.19
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	7.27 7.83 8.35	7.82 9.01 9.91	0.05 0.11 0.19
RRH2X60-PCS	A	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	C	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
Platform Mount [LP 713-1]	C	None		0.0000	106.00	No Ice 1/2" Ice 1" Ice	31.27 39.68 48.09	31.27 39.68 48.09	1.51 1.93 2.35
65									
KS24019-L112A	C	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.10 0.18 0.26	0.10 0.18 0.26	0.01 0.01 0.01
2' x 2" Pipe Mount	C	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.02 0.05 0.09	0.02 0.05 0.09	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	C	None		0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
***									

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	136 - 130	Pole	Max Tension	8	0.00	0.00	-0.00
			Max. Compression	26	-0.40	-0.00	0.15
			Max. Mx	8	-0.11	-0.43	0.01
			Max. My	2	-0.11	0.00	0.46
			Max. Vy	8	0.21	-0.43	0.01
			Max. Vx	14	0.22	-0.00	-0.44
			Max. Torque	8			0.03

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	130 - 129.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-0.42	-0.00	0.15
			Max. Mx	8	-0.12	-0.54	0.01
			Max. My	2	-0.12	-0.00	0.57
			Max. Vy	8	0.22	-0.54	0.01
			Max. Vx	14	0.23	-0.00	-0.55
			Max. Torque	8			0.03
L3	129.5 - 120.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-1.14	-0.00	0.14
			Max. Mx	8	-0.50	-3.56	0.01
			Max. My	2	-0.50	0.00	3.67
			Max. Vy	8	0.45	-3.56	0.01
			Max. Vx	14	0.46	-0.00	-3.64
			Max. Torque	8			0.03
L4	120.5 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-1.20	-0.00	0.14
			Max. Mx	8	-0.53	-3.78	0.01
			Max. My	2	-0.53	-0.00	3.90
			Max. Vy	8	0.47	-3.78	0.01
			Max. Vx	14	0.48	-0.00	-3.87
			Max. Torque	8			0.03
L5	120 - 87.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.99	-1.15	-0.51
			Max. Mx	8	-9.99	-255.77	-0.72
			Max. My	14	-9.99	-0.81	-255.32
			Max. Vy	8	13.02	-255.77	-0.72
			Max. Vx	14	12.99	-0.81	-255.32
			Max. Torque	17			0.31
L6	87.5 - 58.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.79	-1.04	-0.58
			Max. Mx	8	-13.94	-658.13	-1.89
			Max. My	14	-13.94	-1.90	-656.72
			Max. Vy	8	15.81	-658.13	-1.89
			Max. Vx	14	15.77	-1.90	-656.72
			Max. Torque	17			0.31
L7	58.75 - 32.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.63	-1.04	-0.58
			Max. Mx	8	-19.84	-1098.90	-2.93
			Max. My	14	-19.84	-2.94	-1096.52
			Max. Vy	8	18.40	-1098.90	-2.93
			Max. Vx	14	18.37	-2.94	-1096.52
			Max. Torque	17			0.30
L8	32.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.37	-1.04	-0.58
			Max. Mx	8	-31.32	-1858.84	-4.42
			Max. My	14	-31.32	-4.43	-1855.07
			Max. Vy	8	22.12	-1858.84	-4.42
			Max. Vx	14	22.08	-4.43	-1855.07
			Max. Torque	17			0.30

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	60.37	-0.00	-0.00
	Max. H_x	20	31.33	22.11	0.04
	Max. H_z	2	31.33	0.04	22.07
	Max. M_x	2	1854.77	0.04	22.07
	Max. M_z	8	1858.84	-22.11	-0.04
	Max. Torsion	17	0.30	11.02	-19.09
	Min. Vert	5	23.50	-11.02	19.09
	Min. H_x	8	31.33	-22.11	-0.04

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	14	31.33	-0.04	-22.07
	Min. M_x	14	-1855.07	-0.04	-22.07
	Min. M_z	20	-1858.52	22.11	0.04
	Min. Torsion	5	-0.30	-11.02	19.09

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	26.11	0.00	0.00	0.12	-0.13	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	31.33	-0.04	-22.07	-1854.77	4.11	0.26
0.9 Dead+1.6 Wind 0 deg - No Ice	23.50	-0.04	-22.07	-1843.12	4.12	0.27
1.2 Dead+1.6 Wind 30 deg - No Ice	31.33	11.02	-19.09	-1604.13	-925.81	0.30
0.9 Dead+1.6 Wind 30 deg - No Ice	23.50	11.02	-19.09	-1594.05	-919.93	0.30
1.2 Dead+1.6 Wind 60 deg - No Ice	31.33	19.12	-11.00	-923.62	-1607.70	0.26
0.9 Dead+1.6 Wind 60 deg - No Ice	23.50	19.12	-11.00	-917.83	-1597.52	0.26
1.2 Dead+1.6 Wind 90 deg - No Ice	31.33	22.11	0.04	4.42	-1858.84	0.14
0.9 Dead+1.6 Wind 90 deg - No Ice	23.50	22.11	0.04	4.35	-1847.08	0.14
1.2 Dead+1.6 Wind 120 deg - No Ice	31.33	19.16	11.07	931.31	-1611.96	-0.01
0.9 Dead+1.6 Wind 120 deg - No Ice	23.50	19.16	11.07	925.40	-1601.76	-0.01
1.2 Dead+1.6 Wind 150 deg - No Ice	31.33	11.09	19.13	1608.69	-933.20	-0.16
0.9 Dead+1.6 Wind 150 deg - No Ice	23.50	11.09	19.13	1598.51	-927.28	-0.16
1.2 Dead+1.6 Wind 180 deg - No Ice	31.33	0.04	22.07	1855.07	-4.43	-0.26
0.9 Dead+1.6 Wind 180 deg - No Ice	23.50	0.04	22.07	1843.34	-4.36	-0.26
1.2 Dead+1.6 Wind 210 deg - No Ice	31.33	-11.02	19.09	1604.43	925.48	-0.30
0.9 Dead+1.6 Wind 210 deg - No Ice	23.50	-11.02	19.09	1594.27	919.69	-0.30
1.2 Dead+1.6 Wind 240 deg - No Ice	31.33	-19.12	11.00	923.91	1607.37	-0.26
0.9 Dead+1.6 Wind 240 deg - No Ice	23.50	-19.12	11.00	918.05	1597.28	-0.26
1.2 Dead+1.6 Wind 270 deg - No Ice	31.33	-22.11	-0.04	-4.12	1858.52	-0.14
0.9 Dead+1.6 Wind 270 deg - No Ice	23.50	-22.11	-0.04	-4.13	1846.85	-0.14
1.2 Dead+1.6 Wind 300 deg - No Ice	31.33	-19.16	-11.07	-931.01	1611.64	0.01
0.9 Dead+1.6 Wind 300 deg - No Ice	23.50	-19.16	-11.07	-925.18	1601.52	0.01
1.2 Dead+1.6 Wind 330 deg - No Ice	31.33	-11.09	-19.13	-1608.39	932.88	0.16
0.9 Dead+1.6 Wind 330 deg - No Ice	23.50	-11.09	-19.13	-1598.29	927.04	0.16
1.2 Dead+1.0 Ice+1.0 Temp	60.37	0.00	0.00	0.58	-1.04	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	60.37	-0.00	-3.54	-324.20	-0.61	0.03
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	60.37	1.77	-3.07	-280.41	-163.29	0.04
1.2 Dead+1.0 Wind 60	60.37	3.07	-1.77	-161.32	-282.52	0.03

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	60.37	3.55	0.00	1.16	-326.35	0.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	60.37	3.07	1.78	163.50	-283.05	-0.01
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	60.37	1.78	3.07	282.20	-164.21	-0.02
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	60.37	0.00	3.54	325.45	-1.67	-0.03
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	60.37	-1.77	3.07	281.67	161.00	-0.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	60.37	-3.07	1.77	162.58	280.23	-0.03
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	60.37	-3.55	-0.00	0.10	324.07	-0.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	60.37	-3.07	-1.78	-162.25	280.77	0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	60.37	-1.78	-3.07	-280.94	161.93	0.02
Dead+Wind 0 deg - Service	26.11	-0.01	-4.73	-396.82	0.78	0.06
Dead+Wind 30 deg - Service	26.11	2.36	-4.10	-343.19	-198.22	0.06
Dead+Wind 60 deg - Service	26.11	4.10	-2.36	-197.56	-344.14	0.06
Dead+Wind 90 deg - Service	26.11	4.74	0.01	1.03	-397.88	0.03
Dead+Wind 120 deg - Service	26.11	4.11	2.37	199.38	-345.05	-0.00
Dead+Wind 150 deg - Service	26.11	2.38	4.10	344.34	-199.80	-0.03
Dead+Wind 180 deg - Service	26.11	0.01	4.73	397.07	-1.04	-0.06
Dead+Wind 210 deg - Service	26.11	-2.36	4.10	343.43	197.95	-0.06
Dead+Wind 240 deg - Service	26.11	-4.10	2.36	197.81	343.87	-0.06
Dead+Wind 270 deg - Service	26.11	-4.74	-0.01	-0.79	397.61	-0.03
Dead+Wind 300 deg - Service	26.11	-4.11	-2.37	-199.14	344.78	0.00
Dead+Wind 330 deg - Service	26.11	-2.38	-4.10	-344.10	199.53	0.03

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-26.11	0.00	0.00	26.11	0.00	0.000%
2	-0.04	-31.33	-22.07	0.04	31.33	22.07	0.000%
3	-0.04	-23.50	-22.07	0.04	23.50	22.07	0.000%
4	11.02	-31.33	-19.09	-11.02	31.33	19.09	0.000%
5	11.02	-23.50	-19.09	-11.02	23.50	19.09	0.000%
6	19.12	-31.33	-11.00	-19.12	31.33	11.00	0.000%
7	19.12	-23.50	-11.00	-19.12	23.50	11.00	0.000%
8	22.11	-31.33	0.04	-22.11	31.33	-0.04	0.000%
9	22.11	-23.50	0.04	-22.11	23.50	-0.04	0.000%
10	19.16	-31.33	11.07	-19.16	31.33	-11.07	0.000%
11	19.16	-23.50	11.07	-19.16	23.50	-11.07	0.000%
12	11.09	-31.33	19.13	-11.09	31.33	-19.13	0.000%
13	11.09	-23.50	19.13	-11.09	23.50	-19.13	0.000%
14	0.04	-31.33	22.07	-0.04	31.33	-22.07	0.000%
15	0.04	-23.50	22.07	-0.04	23.50	-22.07	0.000%
16	-11.02	-31.33	19.09	11.02	31.33	-19.09	0.000%
17	-11.02	-23.50	19.09	11.02	23.50	-19.09	0.000%
18	-19.12	-31.33	11.00	19.12	31.33	-11.00	0.000%
19	-19.12	-23.50	11.00	19.12	23.50	-11.00	0.000%
20	-22.11	-31.33	-0.04	22.11	31.33	0.04	0.000%
21	-22.11	-23.50	-0.04	22.11	23.50	0.04	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
22	-19.16	-31.33	-11.07	19.16	31.33	11.07	0.000%
23	-19.16	-23.50	-11.07	19.16	23.50	11.07	0.000%
24	-11.09	-31.33	-19.13	11.09	31.33	19.13	0.000%
25	-11.09	-23.50	-19.13	11.09	23.50	19.13	0.000%
26	0.00	-60.37	0.00	-0.00	60.37	-0.00	0.000%
27	-0.00	-60.37	-3.54	0.00	60.37	3.54	0.000%
28	1.77	-60.37	-3.07	-1.77	60.37	3.07	0.000%
29	3.07	-60.37	-1.77	-3.07	60.37	1.77	0.000%
30	3.55	-60.37	0.00	-3.55	60.37	-0.00	0.000%
31	3.07	-60.37	1.78	-3.07	60.37	-1.78	0.000%
32	1.78	-60.37	3.07	-1.78	60.37	-3.07	0.000%
33	0.00	-60.37	3.54	-0.00	60.37	-3.54	0.000%
34	-1.77	-60.37	3.07	1.77	60.37	-3.07	0.000%
35	-3.07	-60.37	1.77	3.07	60.37	-1.77	0.000%
36	-3.55	-60.37	-0.00	3.55	60.37	0.00	0.000%
37	-3.07	-60.37	-1.78	3.07	60.37	1.78	0.000%
38	-1.78	-60.37	-3.07	1.78	60.37	3.07	0.000%
39	-0.01	-26.11	-4.73	0.01	26.11	4.73	0.000%
40	2.36	-26.11	-4.10	-2.36	26.11	4.10	0.000%
41	4.10	-26.11	-2.36	-4.10	26.11	2.36	0.000%
42	4.74	-26.11	0.01	-4.74	26.11	-0.01	0.000%
43	4.11	-26.11	2.37	-4.11	26.11	-2.37	0.000%
44	2.38	-26.11	4.10	-2.38	26.11	-4.10	0.000%
45	0.01	-26.11	4.73	-0.01	26.11	-4.73	0.000%
46	-2.36	-26.11	4.10	2.36	26.11	-4.10	0.000%
47	-4.10	-26.11	2.36	4.10	26.11	-2.36	0.000%
48	-4.74	-26.11	-0.01	4.74	26.11	0.01	0.000%
49	-4.11	-26.11	-2.37	4.11	26.11	2.37	0.000%
50	-2.38	-26.11	-4.10	2.38	26.11	4.10	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00020421
3	Yes	4	0.00000001	0.00012402
4	Yes	5	0.00000001	0.00026923
5	Yes	5	0.00000001	0.00012235
6	Yes	5	0.00000001	0.00026125
7	Yes	5	0.00000001	0.00011844
8	Yes	4	0.00000001	0.00017944
9	Yes	4	0.00000001	0.00010616
10	Yes	5	0.00000001	0.00026766
11	Yes	5	0.00000001	0.00012128
12	Yes	5	0.00000001	0.00027065
13	Yes	5	0.00000001	0.00012276
14	Yes	4	0.00000001	0.00028940
15	Yes	4	0.00000001	0.00017984
16	Yes	5	0.00000001	0.00026035
17	Yes	5	0.00000001	0.00011805
18	Yes	5	0.00000001	0.00026830
19	Yes	5	0.00000001	0.00012190
20	Yes	4	0.00000001	0.00011391
21	Yes	4	0.00000001	0.00005936
22	Yes	5	0.00000001	0.00026800
23	Yes	5	0.00000001	0.00012153
24	Yes	5	0.00000001	0.00026503
25	Yes	5	0.00000001	0.00012011
26	Yes	4	0.00000001	0.00000570
27	Yes	5	0.00000001	0.00019485
28	Yes	5	0.00000001	0.00020850
29	Yes	5	0.00000001	0.00020908
30	Yes	5	0.00000001	0.00019762
31	Yes	5	0.00000001	0.00021104

32	Yes	5	0.00000001	0.00021087
33	Yes	5	0.00000001	0.00019654
34	Yes	5	0.00000001	0.00020738
35	Yes	5	0.00000001	0.00020697
36	Yes	5	0.00000001	0.00019412
37	Yes	5	0.00000001	0.00020649
38	Yes	5	0.00000001	0.00020649
39	Yes	4	0.00000001	0.00002327
40	Yes	4	0.00000001	0.00010813
41	Yes	4	0.00000001	0.00009745
42	Yes	4	0.00000001	0.00002125
43	Yes	4	0.00000001	0.00010301
44	Yes	4	0.00000001	0.00010712
45	Yes	4	0.00000001	0.00002384
46	Yes	4	0.00000001	0.00009638
47	Yes	4	0.00000001	0.00010675
48	Yes	4	0.00000001	0.00002093
49	Yes	4	0.00000001	0.00010330
50	Yes	4	0.00000001	0.00009950

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	136 - 130	12.132	43	0.7512	0.0006
L2	130 - 129.5	11.191	43	0.7442	0.0005
L3	129.5 - 120.5	11.113	43	0.7440	0.0005
L4	120.5 - 120	9.716	43	0.7361	0.0006
L5	120 - 87.5	9.639	43	0.7360	0.0006
L6	91.25 - 58.75	5.468	43	0.6075	0.0003
L7	63.25 - 32.25	2.510	43	0.3789	0.0001
L8	37.5 - 0	0.882	43	0.2138	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.00	CXL 900-3LW	43	11.347	0.7447	0.0005	39777
120.00	APXVSPP18-C-A20 w/ Mount Pipe	43	9.639	0.7360	0.0006	51167
116.00	PCS 1900MHZ 4X45W 65MHZ	43	9.024	0.7322	0.0006	36512
106.00	RRH2X60-700	43	7.516	0.6998	0.0005	13798
65.00	KS24019-L112A	43	2.659	0.3923	0.0001	7683

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	136 - 130	56.585	10	3.4959	0.0025
L2	130 - 129.5	52.205	10	3.4668	0.0024
L3	129.5 - 120.5	51.843	10	3.4661	0.0024
L4	120.5 - 120	45.339	10	3.4325	0.0026
L5	120 - 87.5	44.980	10	3.4321	0.0026
L6	91.25 - 58.75	25.537	10	2.8369	0.0016
L7	63.25 - 32.25	11.729	10	1.7703	0.0006
L8	37.5 - 0	4.120	10	0.9992	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.00	CXL 900-3LW	10	52.932	3.4691	0.0024	10211
120.00	APXVSPP18-C-A20 w/ Mount Pipe	10	44.980	3.4321	0.0026	11941
116.00	PCS 1900MHZ 4X45W 65MHZ	10	42.115	3.4147	0.0026	8054
106.00	RRH2X60-700	10	35.090	3.2653	0.0023	2999
65.00	KS24019-L112A	10	12.421	1.8331	0.0006	1649

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	136 - 130 (1)	TP4.5x4.5x0.216	6.00	0.00	0.0	2.9070	-0.11	91.57	0.001
L2	130 - 129.5 (2)	TP10.75x4.5x0.216	0.50	0.00	0.0	2.9070	-0.12	91.57	0.001
L3	129.5 - 120.5 (3)	TP10.75x10.75x0.322	9.00	0.00	0.0	10.5489	-0.50	332.29	0.002
L4	120.5 - 120 (4)	TP22x10.75x0.322	0.50	0.00	0.0	10.5489	-0.52	332.29	0.002
L5	120 - 87.5 (5)	TP29.476x22x0.1875	32.50	0.00	0.0	17.1621	-9.99	922.01	0.011
L6	87.5 - 58.75 (6)	TP35.715x28.2384x0.25	32.50	0.00	0.0	27.7160	-13.94	1578.79	0.009
L7	58.75 - 32.25 (7)	TP41.311x34.1798x0.375	31.00	0.00	0.0	47.9719	-19.84	3297.65	0.006
L8	32.25 - 0 (8)	TP47.98x39.3533x0.4375	37.50	0.00	0.0	66.9755	-31.32	4555.94	0.007

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	136 - 130 (1)	TP4.5x4.5x0.216	0.46	10.41	0.044	0.00	10.41	0.000
L2	130 - 129.5 (2)	TP10.75x4.5x0.216	0.46	10.41	0.044	0.00	10.41	0.000
L3	129.5 - 120.5 (3)	TP10.75x10.75x0.322	3.67	91.94	0.040	0.00	91.94	0.000
L4	120.5 - 120 (4)	TP22x10.75x0.322	3.67	91.94	0.040	0.00	91.94	0.000
L5	120 - 87.5 (5)	TP29.476x22x0.1875	256.23	534.65	0.479	0.00	534.65	0.000
L6	87.5 - 58.75 (6)	TP35.715x28.2384x0.25	659.34	1108.13	0.595	0.00	1108.13	0.000
L7	58.75 - 32.25 (7)	TP41.311x34.1798x0.375	1100.77	2665.01	0.413	0.00	2665.01	0.000
L8	32.25 - 0 (8)	TP47.98x39.3533x0.4375	1861.65	4407.14	0.422	0.00	4407.14	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	136 - 130 (1)	TP4.5x4.5x0.216	0.22	45.79	0.005	0.00	15.60	0.000
L2	130 - 129.5 (2)	TP10.75x4.5x0.216	0.23	45.79	0.005	0.00	15.60	0.000
L3	129.5 - 120.5 (3)	TP10.75x10.75x0.322	0.46	166.15	0.003	0.00	140.19	0.000
L4	120.5 - 120 (4)	TP22x10.75x0.322	0.48	166.15	0.003	0.00	140.19	0.000
L5	120 - 87.5 (5)	TP29.476x22x0.1875	13.05	461.01	0.028	0.02	1084.11	0.000
L6	87.5 - 58.75 (6)	TP35.715x28.2384x0.25	15.83	789.40	0.020	0.01	2246.95	0.000
L7	58.75 - 32.25 (7)	TP41.311x34.1798x0.375	18.43	1648.82	0.011	0.01	5403.81	0.000
L8	32.25 - 0 (8)	TP47.98x39.3533x0.4375	22.14	2277.97	0.010	0.01	8936.33	0.000

Pole Interaction Design Data

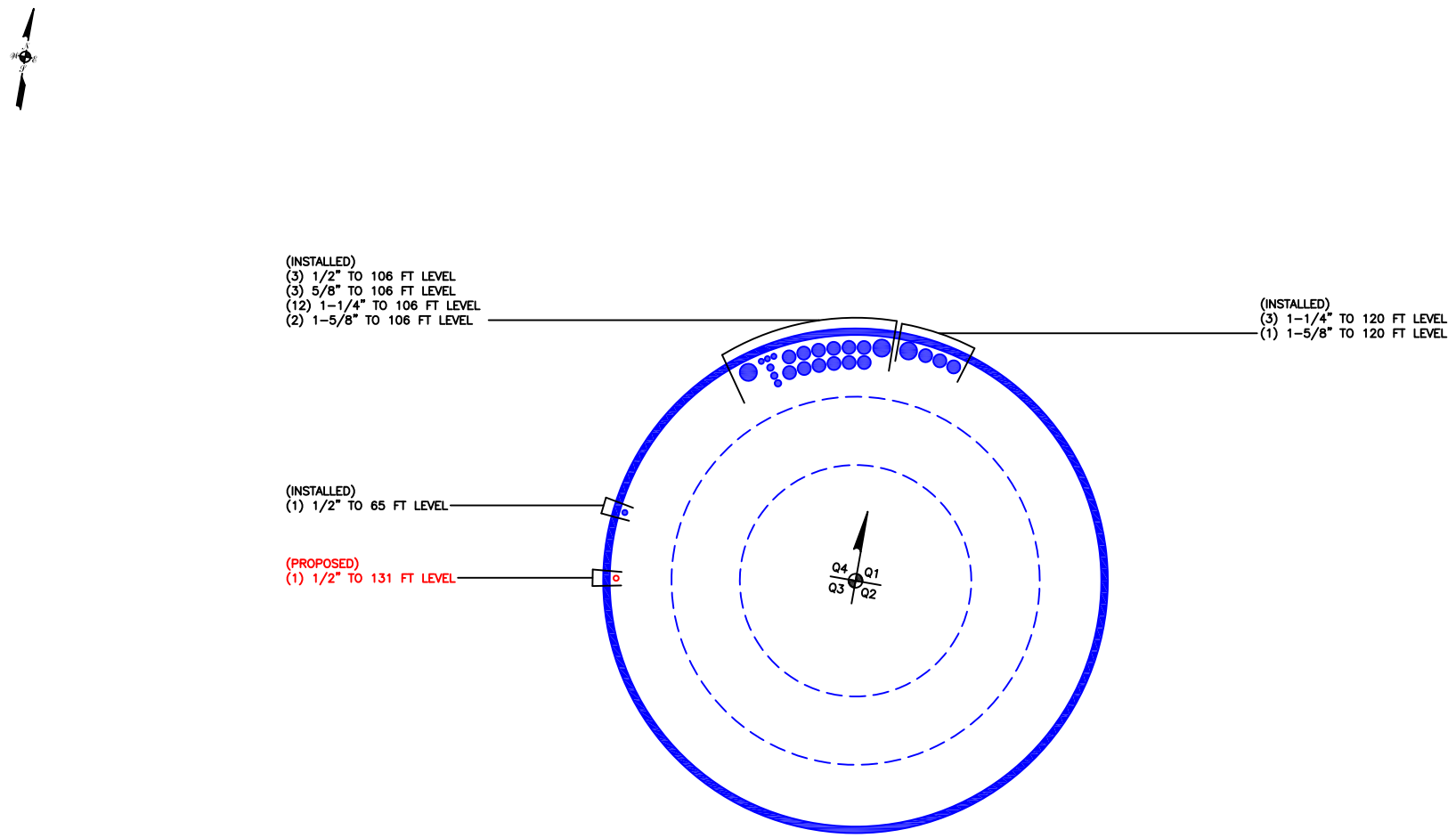
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	136 - 130 (1)	0.001	0.044	0.000	0.005	0.000	0.045	1.000	4.8.2
L2	130 - 129.5 (2)	0.001	0.044	0.000	0.005	0.000	0.045	1.000	4.8.2
L3	129.5 - 120.5 (3)	0.002	0.040	0.000	0.003	0.000	0.041	1.000	4.8.2
L4	120.5 - 120 (4)	0.002	0.040	0.000	0.003	0.000	0.041	1.000	4.8.2
L5	120 - 87.5 (5)	0.011	0.479	0.000	0.028	0.000	0.491	1.000	4.8.2
L6	87.5 - 58.75 (6)	0.009	0.595	0.000	0.020	0.000	0.604	1.000	4.8.2
L7	58.75 - 32.25 (7)	0.006	0.413	0.000	0.011	0.000	0.419	1.000	4.8.2
L8	32.25 - 0 (8)	0.007	0.422	0.000	0.010	0.000	0.429	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	136 - 130	Pole	TP4.5x4.5x0.216	1	-0.11	91.57	4.5	Pass
L2	130 - 129.5	Pole	TP10.75x4.5x0.216	2	-0.12	91.57	4.5	Pass
L3	129.5 - 120.5	Pole	TP10.75x10.75x0.322	3	-0.50	332.29	4.1	Pass
L4	120.5 - 120	Pole	TP22x10.75x0.322	4	-0.52	332.29	4.1	Pass
L5	120 - 87.5	Pole	TP29.476x22x0.1875	5	-9.99	922.01	49.1	Pass
L6	87.5 - 58.75	Pole	TP35.715x28.2384x0.25	6	-13.94	1578.79	60.4	Pass
L7	58.75 - 32.25	Pole	TP41.311x34.1798x0.375	7	-19.84	3297.65	41.9	Pass
L8	32.25 - 0	Pole	TP47.98x39.3533x0.4375	8	-31.32	4555.94	42.9	Pass
							Summary	
						Pole (L6)	60.4	Pass
						RATING =	**60.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876332 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876332*
Site Name: *36 Prospect Street*
App #: *426716 Rev. 2*

Reactions		
Mu	0.46	ft-kips
Axial, Pu:	0.11	kips
Shear, Vu:	0.22	kips
Elevation:	130	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
21.87

Pole Manufacturer:	Other

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	4		
Diameter (in.):	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle (in.):	11.5		

Plate Data		
Diam:	15.5	in
Thick, t:	0.5	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.53	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	4.5	in
Thick:	0.216	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,**B1**:	30.06	kips	Non-Rigid: φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	30.06	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	0.45	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.426	in	
Min PL "treq" for actual **T w/ Pry**:	0.131	in	
Min PL "t1" for actual **T w/o Pry**:	0.175	in	
T allowable with Prying:	6.54	kips	α'>1 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	0.45	kips	
Prying Bolt Stress Ratio=(Tu+q)/(B):	1.5%	**Pass**	

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	2.7	ksi	Non-Rigid: TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	8.3%	**Pass**	Comp. Y.L. Length: 10.58
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	6.9%	**Pass**	

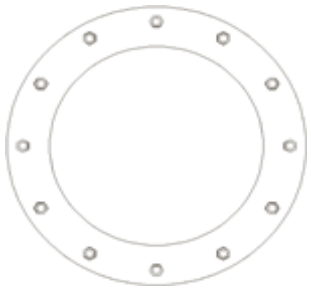
n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876332*
Site Name: *36 Prospect Street*
App #: *426716 Rev. 2*

Reactions		
Mu	0.46	ft-kips
Axial, Pu:	0.11	kips
Shear, Vu:	0.22	kips
Elevation:	130	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
21.87

Pole Manufacturer:	Other

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data				
Qty:	4			
Diameter (in.):	0.75	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:	100	<-- Disregard		
N/A:	75	<-- Disregard		
Circle (in.):	11.5			

Plate Data		
Diam:	16.5	in
Thick, t:	0.75	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.53	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	4.5	in
Thick:	0.216	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

Bolt Tension Capacity, φ*Tn,**B1**:	30.06	kips	
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	30.06	kips	
Max Bolt directly applied Tu:	0.45	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.426	in	
Min PL "treq" for actual **T w/ Pry**:	0.131	in	
Min PL "t1" for actual **T w/o Pry**:	0.175	in	
T allowable with Prying:	14.71	kips	α'>1 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	0.45	kips	
Prying Bolt Stress Ratio=(Tu+q)/(B):	1.5%	**Pass**	

Non-Rigid
φ*Tn
φTn[(1-(Vu/φVn)^2]^0.5

Exterior Flange Plate Results

	Flexural Check		
Compression Side Plate Stress:	1.2	ksi	
Allowable Plate Stress:	32.4	ksi	
Compression Plate Stress Ratio:	3.7%	**Pass**	
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	3.1%	**Pass**	

Non-Rigid
TIA G
φ*Fy
Comp. Y.L. Length:
10.58

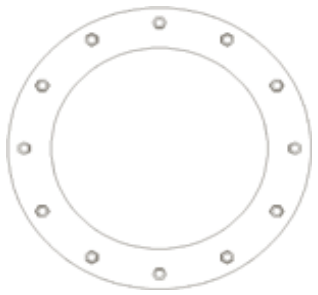
n/a

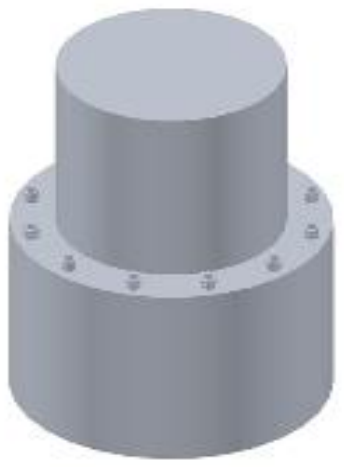
Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *876332*
Site Name: *36 Prospect Street*
App #: *426716 Rev. 2*

Manufacturer:	Other

Reactions		
Moment:	5.96	ft-kips
Axial:	4.06	kips
Shear:	3.51	kips
Exterior Flange Run, T+q:	0.00	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
21.87

Elevation: 120 feet

Bolt Data			
Qty:	3		
Diam:	0.75	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	
N/A:	75	<-- Disregard	
Circle:	18	in	

Plate Data		
Plate Outer Diam:	21.356	in
Plate Inner Diam:	10.75	in (Hole @ Ctr)
Thick:	0.75	in
Grade:	36	ksi
Effective Width:	5.50	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Pole OuterDiam:	22	in
Thick:	0.322	in
Pole Inner Diam:	21.356	in
Grade:	35	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	3.9	Kips, Ext. Tu=Interior Tu
Adjusted φ*Tn (due to Vu=Vu/Qty)	30.0	Kips
*Bolt Stress Ratio:	6.6%	**Pass**

*considered (6) bolts to calculate the exact capacity

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	6.7	Kips, Ext. Cu=Interior Cu
Plate Stress:	10.7	ksi
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	33.2%	**Pass**

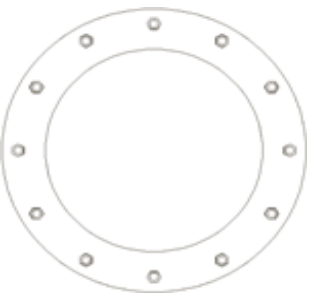
n/a

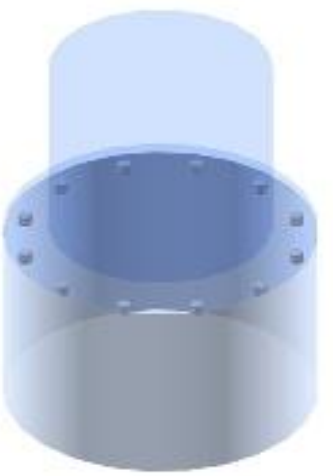
Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a





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

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

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

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

Site Data

BU#: *876332*
Site Name: *36 Prospect Street*
App #: *426716 Rev. 2*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	56	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	56	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	7	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	47.98	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	1862	ft-kips
Factored Axial, Pu:	31	kips
Factored Shear, Vu:	22	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	104.5	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	40.2%	**Pass**

Base Plate Results — Flexural Check

Base Plate Stress:	18.1	ksi
PL Design Bending Strength, Φ*Fy:	45.0	ksi
Base Plate Stress Ratio:	40.3%	**Pass**

PL Ref. Data
Yield Line (in):
31.22
Max PL Length:
31.22

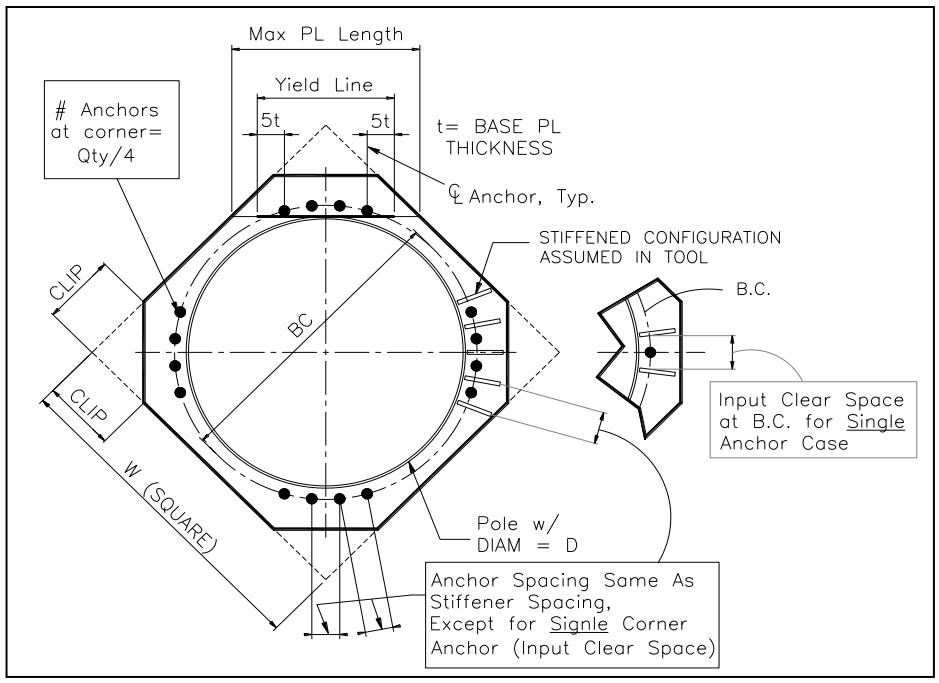
N/A - Unstiffened

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	N/A



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

FOUNDATION REACTION COMPARISON

BU# 876332
WO# 1529700

REACTIONS	DESIGN REACTIONS	*MODIFIED DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	3250.0	4387.5	1862.0	42.4%
SHEAR (kips)	31.0	41.9	22.0	52.6%

Design loads from: CCIsites Doc #1615432

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

Although the shear capacity is at 52.6%, the moment reaction is the governing criteria for a monopole drilled pier foundation. Therefore, the overall capacity for this foundation is 42.4%.

CCISeismic - Design Category

Per *2012/2015 IBC*

Site BU:	876332
Work Order:	1529700
Application:	426716 Rev. 2

	Degrees	Minutes	Seconds		
Site Latitude =	41	41	23.66	41.6899	degrees
Site Longitude =	-72	42	18.84	-72.7052	degrees
Ground Supported Structure =	Yes				
Structure Class =	II			*(Table 2-1)*	
Site Class =	D - Stiff Soil			*(Table 2-11)*	

Spectral response acceleration short periods, S_S =	0.182	USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.064	

Importance Factor, I =	1.0	*(Table 2-3)*
Acceleration-based site coefficient, F_a =	1.6	*(Table 2-12)*
Velocity-based site coefficient, F_v =	2.4	*(Table 2-13)*

Design spectral response acceleration short period, S_{DS} =	0.194	*(2.7.6)*
Design spectral response acceleration 1 s period, S_{D1} =	0.102	*(2.7.6)*

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

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

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of Sigfox NIP, LLC

Crown Castle BUN: 876332
Application ID: 426716
Site Name: 36 Prospect Street
Address: 36 Prospect Street
Newington, CT 06109
4/9/2018

Report Status:

Sigfox NIP, LLC Is Compliant

Prepared By:

Sitesafe, LLC.

200 North Glebe Road, Suite 1000 Arlington, VA 22203 Voice 703-276-1100
Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
“36 Prospect Street”
Newington, CT 06109

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, LLC. in Arlington, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC” and “the FCC Rules") both in general and specifically as they apply to the FCC’s Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Sigfox NIP, LLC (See attached Site Summary and Carrier documents), and that Sigfox NIP, LLC’s installations involve communications equipment, antennas and associated technical equipment at a location referred to as the “36 Prospect Street” (“the site”); and

That Sigfox NIP, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by Sigfox NIP, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the “general public”), or may not be able to control their exposure to a transmission facility; and (2) “controlled environments,” which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of Sigfox NIP, LLC’s operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed Sigfox NIP, LLC operation is no more than 0.011% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 2.357% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that Sigfox NIP, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

36 Prospect Street
Site Summary

Carrier	Area Maximum Percentage MPE
Sigfox NIP LLC (Proposed)	0.011 %
Sprint	0.121 %
Sprint	0.42 %
Sprint	0.1 %
Verizon Wireless	0.448 %
Verizon Wireless	0.477 %
Verizon Wireless	0.189 %
Verizon Wireless	0.328 %
Verizon Wireless	0.263 %
Composite Site MPE:	2.357 %

Sigfox NIP LLC (Proposed)
36 Prospect Street
Carrier Summary

Frequency:	902.2	MHz
Maximum Permissible Exposure (MPE):	601.47	µW/cm^2
Maximum power density at ground level:	0.06389	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.01062	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Sigfox	CXL 900-3LW	132	0	61	0.063892	0.010623	0.063892	0.010623

Sprint
36 Prospect Street
Carrier Summary

Frequency:	2496	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.20947	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.12095	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVTM14-C-I20	121	20	1600	0.372111	0.037211	0.765199	0.07652
RFS	APXVTM14-C-I20	121	120	1600	0.372111	0.037211	0.765199	0.07652
RFS	APXVTM14-C-I20	121	215	1600	0.372111	0.037211	0.765199	0.07652

Sprint
36 Prospect Street
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.20259	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.42026	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVSPP18-C-A20	121	20	5072	1.579072	0.157907	3.171839	0.317184
RFS	APXVSPP18-C-A20	121	120	5072	1.570888	0.157089	3.171838	0.317184
RFS	APXVSPP18-C-A20	121	215	5072	1.570888	0.157089	3.171839	0.317184

Sprint
36 Prospect Street
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	µW/cm^2
Maximum power density at ground level:	0.5734	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.09978	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVSPP18-C-A20	121	20	867	0.430098	0.074843	0.437343	0.076104
RFS	APXVSPP18-C-A20	121	120	867	0.430098	0.074843	0.437343	0.076104
RFS	APXVSPP18-C-A20	121	215	867	0.430098	0.074843	0.437343	0.076104

Verizon Wireless
36 Prospect Street
Carrier Summary

Frequency:	869	MHz
Maximum Permissible Exposure (MPE):	579.33	µW/cm^2
Maximum power density at ground level:	2.59638	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.44817	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	DB846F65ZAXY	106	90	3382	2.346502	0.405035	2.568368	0.443332
ANDREW	DB846F65ZAXY	106	210	3382	2.346503	0.405035	2.568368	0.443332
ANDREW	DB846F65ZAXY	106	330	3382	2.346503	0.405035	2.568368	0.443332

Verizon Wireless
36 Prospect Street
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.76576	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.47658	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Andrew	SBNHH-1D65B	106	90	2292	3.682443	0.368244	4.709146	0.470915
Andrew	SBNHH-1D65B	106	210	2292	3.682443	0.368244	4.709148	0.470915
Andrew	SBNHH-1D65B	106	330	2292	3.63018	0.363018	4.709147	0.470915

Verizon Wireless
36 Prospect Street
Carrier Summary

Frequency:	880	MHz
Maximum Permissible Exposure (MPE):	586.67	µW/cm^2
Maximum power density at ground level:	1.10925	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.18908	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Andrew	SBNHH-1D65B	106	90	542	0.60657	0.103393	0.666932	0.113682
Andrew	SBNHH-1D65B	106	210	542	0.60657	0.103393	0.666932	0.113682
Andrew	SBNHH-1D65B	106	330	542	0.590782	0.100701	0.666932	0.113682

Verizon Wireless
36 Prospect Street
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	3.28285	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.32829	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Andrew	SBNHH-1D65B	106	90	2577	2.065315	0.206531	3.154343	0.315434
Andrew	SBNHH-1D65B	106	210	2577	2.067568	0.206757	3.154342	0.315434
Andrew	SBNHH-1D65B	106	330	2577	2.065315	0.206531	3.154342	0.315434

Verizon Wireless
36 Prospect Street
Carrier Summary

Frequency:	746	MHz
Maximum Permissible Exposure (MPE):	497.33	µW/cm^2
Maximum power density at ground level:	1.30712	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.26283	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Andrew	SBNHH-1D65B	106	90	1021	0.677611	0.136249	1.104453	0.222075
Andrew	SBNHH-1D65B	106	210	1021	0.677611	0.136249	1.104453	0.222075
Andrew	SBNHH-1D65B	106	330	1021	0.676823	0.136091	1.104453	0.222075