November 1, 2019

Ms. 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 373 Chamberlain Hill Road, Higganum, CT 06441**

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 373 Chamberlain Hill Road, Higganum, CT 06441(the "Property"). The existing 365-foot self-support tower is owned by American Tower Corp. ("ATC"), the underlying property is also owned by ATC. Sigfox requests that the Council find that the proposed shared use of the ATC tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. A copy of this filing is being mailed to the Town of Haddam and American Tower Corporation.

Background

The existing ATC facility consists of a 365-foot self-support tower located within an approximate 10,000 square foot compound positioned +/- 1700-feet south of Chamberlain Hill Road. There are existing carrier antennas located at various elevations throughout the tower (see Sheet C-1 of Exhibit 1 for more information). Equipment associated with these antennas is located at various positions within the tower compound.

Sigfox is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. Sigfox and ATC have agreed to the proposed shared use of the 373 Chamberlain Hill Road, Higganum, CT 06441 tower pursuant to mutually acceptable terms and conditions. Likewise, Sigfox and ATC have agreed to the proposed installation of equipment cabinets within an existing adjacent utility building located south of the tower within the compound. ATC has authorized Sigfox to apply for all necessary permits and approvals that may be required to share the existing tower. (See the attached Letter of Authorization).

Sigfox proposes to add one (1) omni antenna, one (1) line of coaxial cable; one (1) filter, and one (1) TMA on the existing tower at 315-feet above ground level. They propose to add one (1) equipment cabinet within the adjacent shelter. There is no back-up plan for the SIGFOX equipment, therefore, no batteries or generators will be a part of this project. The SIGFOX microwave unit is set to receive only.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the 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 ATC tower is structurally capable of supporting Sigfox's proposed improvements. The proposed 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 ATC 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 ATC 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 315-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 ATC facility other than periodic maintenance. The proposed shared use of the ATC 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 ATC 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 ATC tower.

Conclusion

For the reasons discussed above, the proposed shared use of the existing Crown Castle tower at 373 Chamberlain Hill Road, Higganum, CT 06441 satisfies the criteria state in C.G.S. §16-50aa and advances 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,

Craig Russo

Digitally signed by Craig Russo
Date: 2019.11.01 13:12:08 -04'00'

Craig A. Russo, P.E.
Engineer
T-Squared Site Services
2500 Highland Road, Suite 201
Hermitage, PA 16148
724.308.7855
craig.r@t-sqrd.com

Attachments:

Exhibit-1: Compound Plan and Elevation Depicting the Planned Changes
Exhibit-2: Structural Analysis
Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)
Exhibit-4: Letter of Authorization
Exhibit-5: Proof of Mailing to Local Municipality Chief Elected Official
Exhibit-6: Proof of Mailing to Tower Owner/Property Owner
Exhibit-7: Additional Information

Copies to:

Ms. Lizz Milardo, First Selectman
Town of Haddam
Town Office Building
30 Field Park Drive
Haddam, CT 06438

Mr. Jason Hastie
Account Project Manager, Vertical Markets/Broadcast Repack
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

EXHIBIT 1:

Compound Plan and Elevation Depicting the Planned Changes

T-Squared Site Services
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

SIGFOX

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SITE NUMBER: CT9184

373 CHAMBERLAIN HILL RD
HIGGANUM, CT 06441
MIDDLESEX COUNTY

811 Know what's below. Call before you dig.

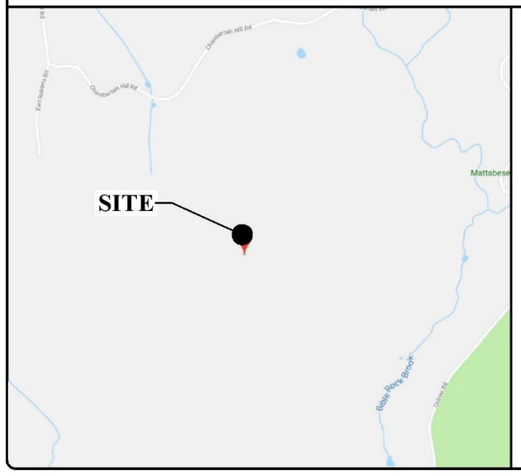
SITE INFORMATION

SCOPE OF WORK:	PROJECT CONSISTS OF INSTALLING THE FOLLOWING: • (1) PROCOM CXL-900-3LW OMNI ANTENNA • (1) LNA • (1) CAVITY FILTER • (1) 1/2" COAX CABLE • (1) RG6 CABLE • (1) EQUIPMENT CABINET FOR BASE STATION
SIGFOX SITE NUMBER:	CT9184
911 SITE ADDRESS	373 CHAMBERLAIN HILL RD HIGGANUM, CT 06441
TOWER OWNER: ADDRESS:	AMERICAN TOWER CORP. 116 HUNTINGTON AVE. 11TH FLOOR BOSTON, MA 02116
OWNER SITE NUMBER:	88010
LATITUDE (NAD 83): LONGITUDE (NAD 83):	41.49611° -72.61813°
JURISDICTION:	MIDDLESEX COUNTY
PARCEL OWNER: ADDRESS:	AMERICAN TOWER CORP. 116 HUNTINGTON AVE. 11TH FLOOR BOSTON, MA 02116
GROUND ELEVATION:	590' AMSL
STRUCTURE TYPE:	SELF SUPPORT
STRUCTURE HEIGHT:	366' (AGL)

PROJECT TEAM

APPLICANT:	SIGFOX, INC. 545 BOYLSTON STREET, 10TH FLOOR BOSTON, MA. 02116
PROJECT MANAGEMENT FIRM:	T-SQUARED SITE SERVICES, LLC 2500 HIGHLAND ROAD, SUITE 201 HERMITAGE, PA. 16148
ENGINEERING FIRM:	T-SQUARED SITE SERVICES, LLC 2500 HIGHLAND ROAD, SUITE 201 HERMITAGE, PA. 16148

VICINITY MAP



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND 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 CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

- 2015 INTERNATIONAL BUILDING CODE
- 2018 CONNECTICUT BUILDING CODE
- 2017 NATIONAL ELECTRIC CODE
- 2015 INTERNATIONAL ENERGY CONSERVATION CODE
- 2015 INTERNATIONAL EXISTING BUILDING CODE
- 2015 INTERNATIONAL FIRE CODE
- 2015 INTERNATIONAL MECHANICAL CODE
- 2015 INTERNATIONAL RESIDENTIAL CODE

DRAWING INDEX

Digitally signed by Gary Clower
DN: c=US, st=Pennsylvania, l=Hermitage, o=T-Squared Site Services, cn=Gary Clower, email=gary.c@t-sqrd.com
Date: 2019.07.03 14:43:18 -04'00'

DO NOT SCALE DRAWINGS

THESE DRAWINGS ARE FORMATTED TO BE FULL-SIZE AT 11"X17". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE DESIGNER / ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME. CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICE TO PREVENT STORM WATER POLLUTION DURING CONSTRUCTION.

APPROVAL BLOCK

		APPROVED	APPROVED AS NOTED	DISAPPROVED REVISE
PROPERTY OWNER	DATE	☐	☐	☐
SITE ACQUISITION	DATE	☐	☐	☐
CONSTRUCTION MANAGER	DATE	☐	☐	☐
ZONING	DATE	☐	☐	☐
RF ENGINEER	DATE	☐	☐	☐

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BOSTON, MA. 02116

REVISIONS

DESCRIPTION	DATE	BY	REV
FINAL CD	7.3.19	KE	B
PRELIMINARY	7.2.19	KE	A

PROFESSIONAL SEAL

STATE OF CONNECTICUT · GARY W. CLOWER · No. 27934 · LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

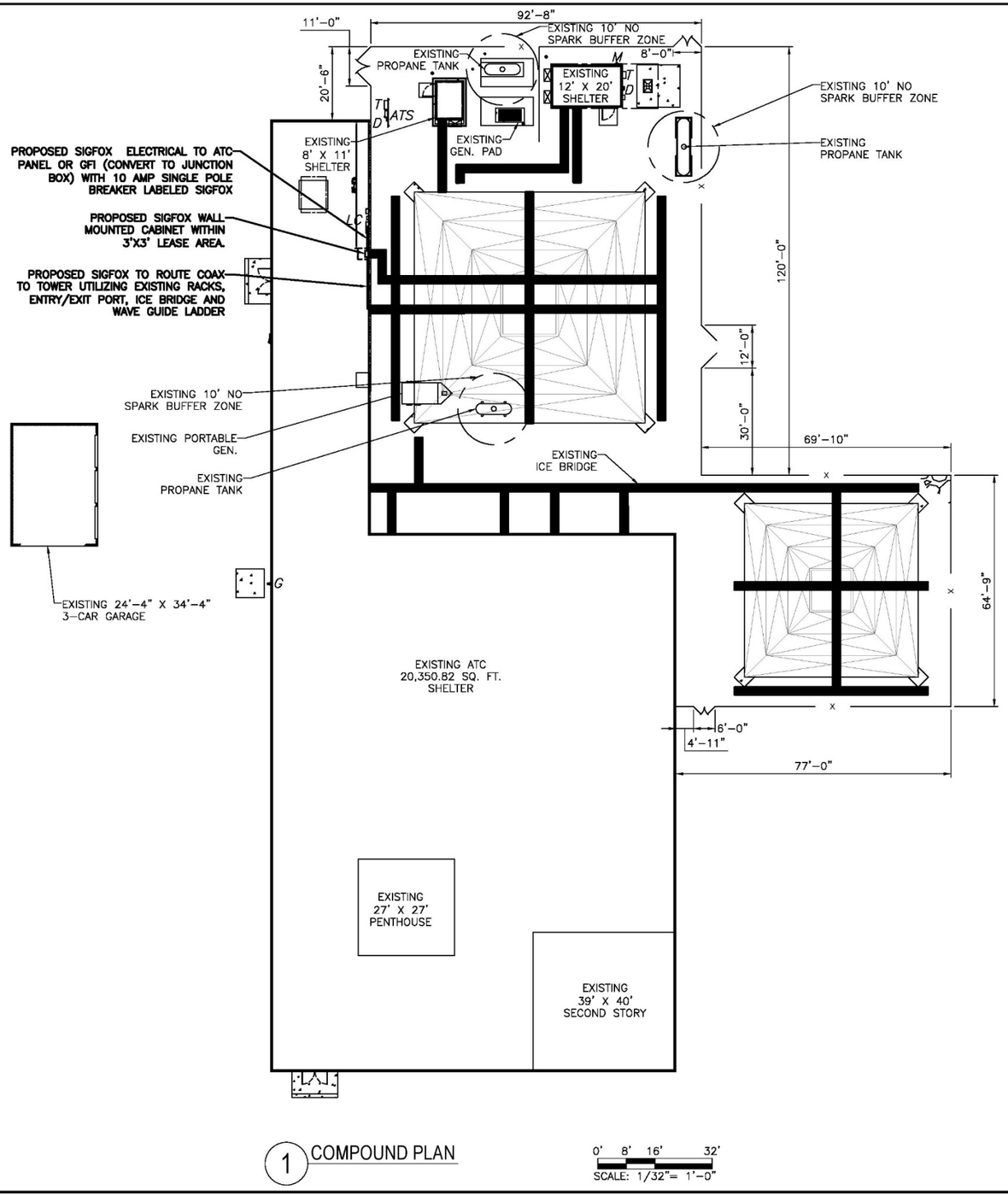
SITE INFORMATION

CT9184
373 CHAMBERLAIN HILL RD
HIGGANUM, CT 06441
MIDDLESEX COUNTY

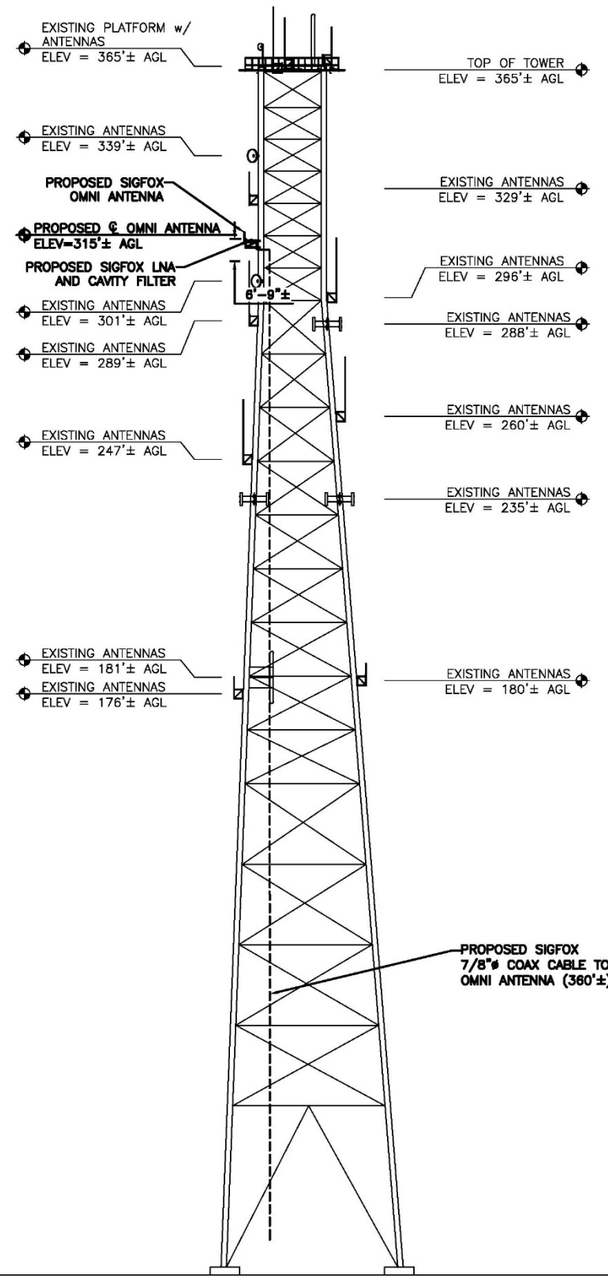
SHEET TITLE

TITLE SHEET

SHEET NUMBER	
T-1	SCALE: AS NOTED
	DRAWN BY: JW
	CHECKED BY: KE
	DATE: 7/3/19



1 COMPOUND PLAN



2 ELEVATION

NOT TO SCALE

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CT9184
373 CHAMBERLAIN HILL RD
HIGGANUM, CT 06441
MIDDLESEX COUNTY

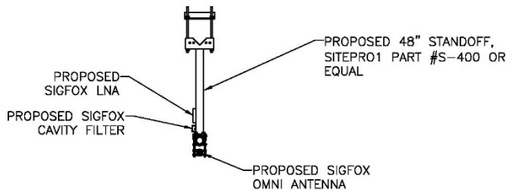
SHEET TITLE

COMPOUND PLAN & ELEVATION

SHEET NUMBER

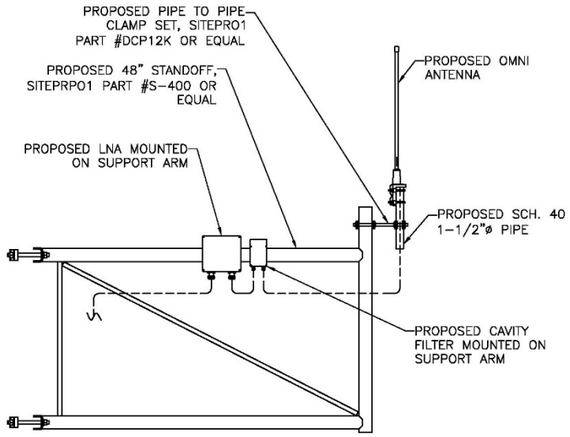
C-1

SCALE: AS NOTED
DRAWN BY: JW
CHECKED BY: KE
DATE: 7/3/19

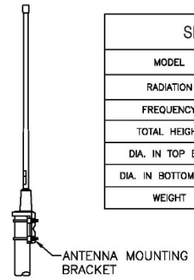


1 PROPOSED ANTENNA PLAN
N.T.S.

APPROX TRUE NORTH

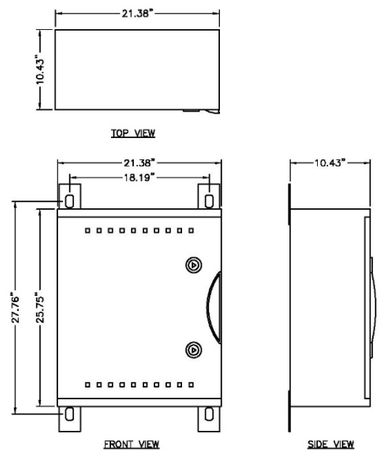


2 ANTENNA MOUNTING DETAIL
N.T.S.

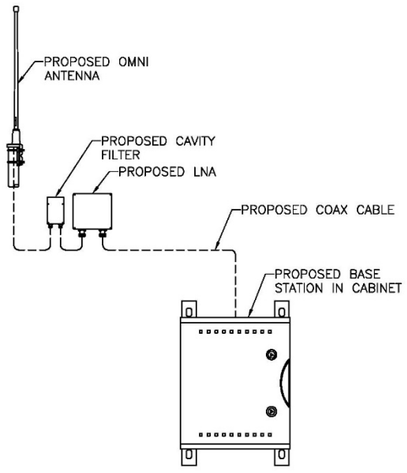


SPECIFICATIONS	
MODEL	CXL 900-3LW/...
RADIATION	OMNIDIRECTIONAL
FREQUENCY	WITHIN 824-960 MHz
TOTAL HEIGHT	700 MM (27.5")
DIA. IN TOP END	12 MM (0.47")
DIA. IN BOTTOM END	16 MM (0.63"
WEIGHT	660 G (1.5 LBS)

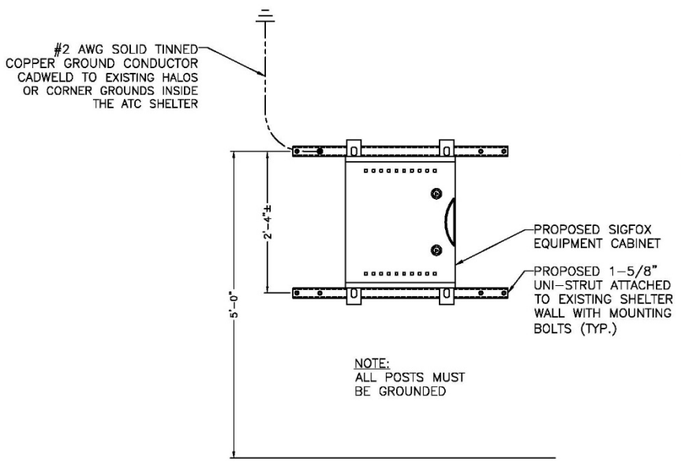
3 OMNI ANTENNA DETAIL
N.T.S.



4 SIGFOX EQUIPMENT CABINET
N.T.S.



6 EQUIPMENT SCHEMATIC
N.T.S.



7 H-FRAME / ICE BRIDGE DETAIL
N.T.S.

5 NOT USED
N.T.S.

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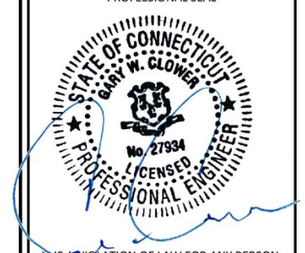
BOSTON, MA. 02116

REVISIONS

DESCRIPTION	DATE	BY	REV
FINAL CD	7.3.19	KE	B
PRELIMINARY	7.2.19	KE	A

PROFESSIONAL SEAL



SITE INFORMATION

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373 CHAMBERLAIN HILL RD
HIGGANUM, CT 06441
MIDDLESEX COUNTY

SHEET TITLE

ANTENNA PLAN AND DETAILS

SHEET NUMBER	
A-1	SCALE: AS NOTED
	DRAWN BY: JW
	CHECKED BY: KE
	DATE: 7/3/19

ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING AT EXPOSED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC OR RIGID SCHEDULE 80 PVC FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) (AS PERMITTED BY CODE).
6. ELECTRICAL AND TELCO WIRING AT CONCEALED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING, ELECTRICAL NONMETALLIC TUBING, OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC AS PERMITTED BY CODE).
7. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING, ABOVE GRADE AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS (RGS) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
8. BURIED CONDUIT SHALL BE RIGID NONMETALLIC CONDUIT (RIGID SCHEDULE 40 PVC); DIRECT BURIED IN AREAS OF OCCASIONAL LIGHT TRAFFIC, ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY TRAFFIC.
9. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED INDOORS AND OUTDOORS IN AREAS WHERE VIBRATION OCCURS AND FLEXIBILITY IS NEEDED.
10. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE THHN,THWN-2, OR THIN INSULATION.

ELECTRICAL PANEL

PANEL NAME: N/A | 120/240 VOLTS | 3 WIRE | 1 PHASE | MAIN BREAKER: 100A

CCT NO	LOAD DESCRIPTION	LOAD (VA)	POLE	AMP	AMP	POLE	LOAD (VA)	LOAD DESCRIPTION	CCT NO
1	SIGFOX BASE UNIT	1440	1	10					2
3									4
5									6
7									8
9									10
11									12

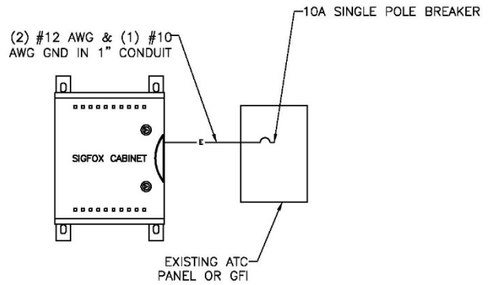
TOTAL CONNECTED LOAD (VA): 1,440
MAXIMUM LOAD CURRENT (A): 6
PANEL CAPACITY (A): 100
SPARE CAPACITY (A): 96

1 PANEL SCHEDULE
N.T.S.

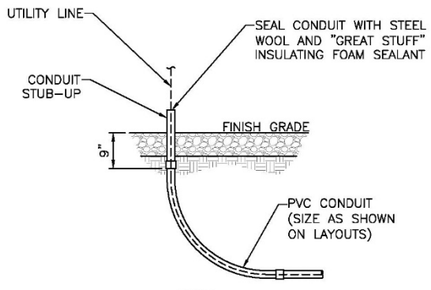
ELECTRICAL NOTES

ISOLATION OF SIGFOX POWER MUST BE MAINTAINED USING A 10 AMP SINGLE POLE BREAKER, LABELED SIGFOX, BETWEEN POWER SOURCE AND SIGFOX EQUIPMENT.

SUPPLY NEW BREAKER IN EXISTING PANELS AND/OR NEW BREAKERS IN DISCONNECT IF NEEDED.

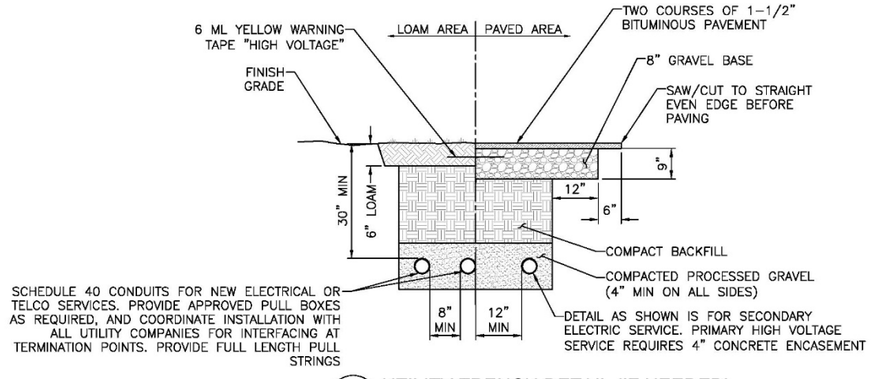


2 ELECTRICAL ONE-LINE DIAGRAM
N.T.S.



NOTE:
CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF CONDUIT STUB-UP

3 CONDUIT STUB-UP DETAIL (IF NEEDED)
N.T.S.



4 UTILITY TRENCH DETAIL (IF NEEDED)
N.T.S.

GENERAL NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANY OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY, OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATIONS AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET ANSI/EIA/TIA 222-G (NJ EDITION) REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL NOT BE DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROJECT AREA, CONTRACTOR MUST LOCATE IT AND CONTACT THE APPLICANT & THE OWNER'S REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
14. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
15. NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
16. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED).
17. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SEWER SERVICE.

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STATE OF CONNECTICUT · GARY W. CLOWER · No. 27934 · LICENSED PROFESSIONAL ENGINEER

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MIDDLESEX COUNTY

SHEET TITLE

ELECTRICAL DETAILS

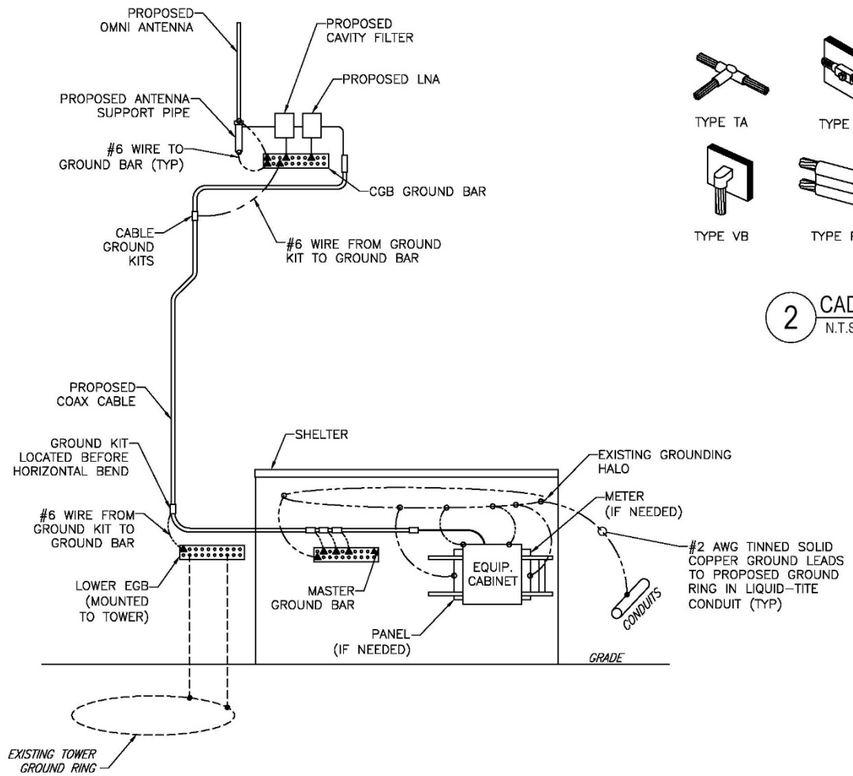
SHEET NUMBER	SCALE: AS NOTED
E-1	DRAWN BY: JW
	CHECKED BY: KE
	DATE: 7/3/19

GROUNDING NOTES

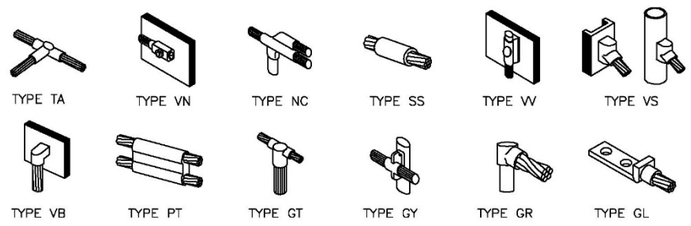
1. GROUNDING SHALL COMPLY WITH BED ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTING PROTECTION SHALL BE DONE IN ACCORDANCE WITH METRO MOD CELL SITE GROUNDING STANDARDS.
2. GROUND CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
3. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING
4. ALL POWER AND GROUND CONNECTIONS TO BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND NUTS BY HARGER (OR APPROVED EQUAL) RATED FOR OPERATION AT NO LESS THAN 75'C OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
5. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
6. CONNECTIONS TO BE GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
7. APPLY OXIDE INHIBITING COMPOUND TO ALL MECHANICAL GROUND CONNECTIONS.
8. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MAKER SYSTEM (EMS) CALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
9. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
10. CONTRACTOR SHALL CONDUCT ANTENNA, CABLE, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

GROUNDING LEGEND

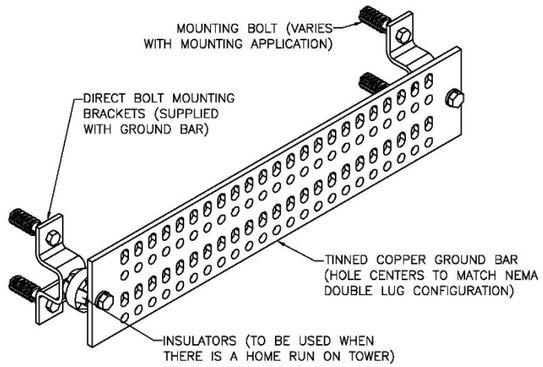
▲	COMPRESSION FITTING CONNECTION
•	EXOTHERMIC WELD CONNECTION
— — — —	PROPOSED GROUND WIRING
- - - - - - -	EXISTING GROUND WIRING



1 GROUNDING RISER DIAGRAM
N.T.S.



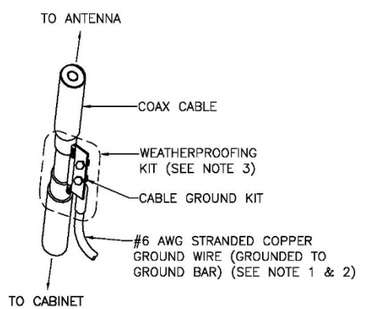
2 CADWELD GROUNDING CONNECTION DETAILS
N.T.S.



GROUND BAR SCHEDULE				
TYPE	QTY	MANUFACTURER	PART NO.	REMARKS
MGB	2	COMMSCOPE	UGBKIT-0120-T	OR EQUAL
CBG	1	COMMSCOPE	UGBKIT-0412	OR EQUAL

3 GROUND BAR DETAIL
N.T.S.

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 SUPPLIED WITH KIT. COLD SHRINK SHALL NOT BE USED.



6 COAXIAL CABLE GROUNDING
N.T.S.

4 NOT USED
N.T.S.

5 NOT USED
N.T.S.

T-SQUARED SITE SERVICES
2500 HIGHLAND ROAD, SUITE 201
HERMITAGE, PA 16148
www.t-squared.com

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

REVISIONS

DESCRIPTION	DATE	BY	REV
FINAL CD	7.3.19	KE	B
PRELIMINARY	7.2.19	KE	A

PROFESSIONAL SEAL

STATE OF CONNECTICUT · GARY W. CLOWER · No. 27934 · LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION

CT9184
373 CHAMBERLAIN HILL RD
HIGGANUM, CT 06441
MIDDLESEX COUNTY

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER **G-1**

SCALE: AS NOTED
DRAWN BY: JW
CHECKED BY: KE
DATE: 12/3/18

EXHIBIT 2:

Structural Analysis

T-SQUARED SITE SERVICES
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**365 ft Self Supported AT&T TAG Tower**
ATC Site Name	:	**DURHAM CT, CT**
ATC Asset Number	:	**88010**
Engineering Number	:	**OAA744811_C3_03**
Proposed Carrier	:	**SIGFOX S.A.**
Carrier Site Name	:	**CT9184_ATC_88010**
Carrier Site Number	:	**CT9184**
Site Location	:	**373 CHAMBERLAIN HILL RD** **Higganum, CT 06441-4062** **41.496100,-72.618100**
County	:	**Middlesex**
Date	:	**September 25, 2019**
Max Usage	:	**100%**
Result	:	**Pass**

Prepared By:
Adam Pittman
Structural Engineer II

Adam S Pittman

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Sep 27 2019 5:24 PM cosign

COA: PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 365 ft self supported tower to reflect the change in loading by SIGFOX S.A..

Supporting Documents

Tower Drawings	CSEI Analysis: ATC Eng. #41405921, dated January 22, 2008
Foundation Drawing	Rose, Chulkoff & Rose Job #55101, dated October 21, 1955 CSEI Analysis: ATC Eng. #41405921, dated January 22, 2008
Modifications	CSEI Project #06175, dated June 26, 2006 ATC Project #59445536, dated November 6, 2014

Analysis

The tower was analyzed using Power Lines Systems tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	101 mph (3-Second Gust, Vasd) / 130 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
375.0	375.0	1	dbSpectra DS9A09F36D-N	Flush	(1) 7/8" Coax	Eversource Energy
374.0	374.0	1	20' Dipole	Leg/Flush	-	Other
373.0	373.0	3	TX RX Systems 101-68-10-X-03N	Leg/Flush	(5) 1 1/4" Coax	Marcus Comm.
372.0	372.0	1	Kreco CO-41A	Pole Mount	(3) 7/8" Coax	Eversource Energy
		1	Rohde & Schwarz ADD090	Side Arm		US Dept Of Homeland Security
365.0	365.0	1	Bird 429-83H-01-T	Flush	(1) 1/2" Coax	Eversource Energy
339.0	339.0	2	4' Dish w/ Radome	Stand-Off	(2) 1/2" Coax	Marcus Comm.
329.0	329.0	1	10' Omni	Side Arm	(1) 7/8" Coax	
300.0	300.0	1	RFS SBX4-W60AC	Stand-Off	(2) E60	Eversource Energy
294.0	294.0	1	Sinclair SC281-L	Side Arm	-	US Dept Of Homeland Security
289.0	289.0	1	Sinclair SC381-HL	Side Arm	(1) 7/8" Coax	
288.0	288.0	2	Andrew DB844H90E-XY	Sector Frame	(2) 1 5/8" Coax	Sprint Nextel
282.0	282.0	1	20' FM	Side Arm	-	Qualcomm
260.0	260.0	1	Sinclair SC281-L	Side Arm	(1) 7/8" Coax	US Dept Of Homeland Security
247.0	247.0	-	-	-	(1) 7/8" Coax	
235.0	235.0	2	Decibel DB844H90E-XY	Sector Frame	(4) 1 5/8" Coax	Sprint Nextel
		2	Andrew 844G65VTZASX			
180.0	180.0	1	Comprod 531-70HD	Side Arm	(1) 7/8" Coax	Eversource Energy
179.0	179.0	1	Telewave ANT450F6	Side Arm	(1) 7/8" Coax	
175.0	175.0	1	Kreco CO-41A	Side Arm	(1) 7/8" Coax	

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
315.0	315.0	1	Procom CXL 900-3LW	Side Arm	(1) 7/8" Coax	SigfoxS.A.
		1	5" x 3" x 2" Cavity Filter			
		1	Low Noise Amplifier			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax on the tower face with the least amount of existing coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	74%	Pass
Diagonals	93%	Pass
Trussed Diagonals	88%	Pass
Horizontals	100%	Pass
Trussed Horizontals	41%	Pass
Anchor Bolts	55%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	341.8	95%
Axial (Kips)	521.7	10%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

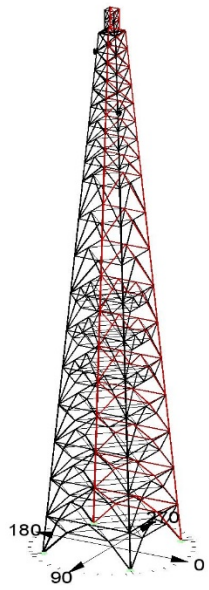
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

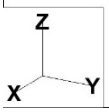
All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

American Tower Corp., Project: "2019.01.30 - Sigfox S.A. - OAA744811_C3_03"
Tower Version 15.30, 11:08:52 AM Friday, September 27, 2019
Undeformed geometry displayed





Project Name : 88010 - Durham CT, CT
Project Notes: OAA744811_C3_02 - Sigfox S.A.
Project File : N:\L2 - ATC\88010\2019.01.30 - Sigfox S.A. - OAA744811_C3_03\2019.01.30 - Sigfox S.A. - OAA744811_C3_03.TCW
Date run : 11:05:54 AM Friday, September 27, 2019
by : Tower Version 15.30
Licensed to : American Tower Corp.

Successfully performed nonlinear analysis

Member check option: ANSI/TIA 222-G-1
Connection rupture check: Not Checked
Crossing diagonal check: Fixed
Included angle check: None
Climbing load check: None
Redundant members checked with: Actual Force
Loads from file: N:\L2 - ATC\88010\2019.01.30 - Sigfox S.A. - OAA744811_C3_03\2019.01.30 - Sigfox S.A. - OAA744811_C3_03.eia

*** Analysis Results:

Maximum element usage is 99.74% for Angle "H 11P" in load case "W -90"

Foundation Design Forces For All Load Cases:

Note: loads are factored.

Load Case	Foundation Description	Axial Force (kips)	Shear Force (kips)	Bending Moment (ft-k)	Foundation Usage %
W 0	OP	382.26	66.96	3.78	0.00
W 0	OX	373.27	65.33	3.61	0.00
W 0	OXY	-194.08	41.75	4.60	0.00
W 0	OY	-196.47	43.01	4.73	0.00
W 180	OP	-195.88	43.19	4.77	0.00
W 180	OX	-189.62	41.52	4.65	0.00
W 180	OXY	371.99	65.45	3.65	0.00
W 180	OY	378.49	66.77	3.82	0.00
W 45	OP	521.66	87.53	2.47	0.00
W 45	OX	92.57	29.39	4.84	0.00
W 45	OXY	-341.81	66.00	4.93	0.00
W 45	OY	92.57	29.20	4.82	0.00
W -45	OP	95.69	30.58	4.99	0.00
W -45	OX	517.48	87.10	2.50	0.00
W -45	OXY	93.21	28.63	4.71	0.00
W -45	OY	-341.39	66.24	4.97	0.00
W 90	OP	382.72	67.08	3.81	0.00
W 90	OX	-196.81	43.16	4.75	0.00
W 90	OXY	-193.74	41.65	4.59	0.00
W 90	OY	372.81	65.25	3.59	0.00
W -90	OP	-195.18	43.19	4.78	0.00
W -90	OX	379.62	66.95	3.84	0.00
W -90	OXY	370.55	65.23	3.62	0.00
W -90	OY	-190.01	41.47	4.63	0.00
W 0 Ice	OP	218.32	32.07	2.97	0.00
W 0 Ice	OX	213.30	31.50	2.93	0.00
W 0 Ice	OXY	78.50	7.53	4.14	0.00
W 0 Ice	OY	80.69	7.54	4.18	0.00
W 180 Ice	OP	84.01	7.83	4.22	0.00
W 180 Ice	OX	82.87	7.93	4.19	0.00
W 180 Ice	OXY	209.51	31.30	2.90	0.00
W 180 Ice	OY	214.43	31.83	2.95	0.00
W 45 Ice	OP	252.81	38.19	2.57	0.00
W 45 Ice	OX	148.37	19.99	3.83	0.00
W 45 Ice	OXY	41.64	0.26	4.41	0.00
W 45 Ice	OY	148.00	19.96	3.63	0.00
W -45 Ice	OP	151.70	20.34	3.88	0.00
W -45 Ice	OX	249.29	37.93	2.54	0.00
W -45 Ice	OXY	144.84	19.81	3.59	0.00
W -45 Ice	OY	44.99	0.08	4.45	0.00
W 90 Ice	OP	218.41	32.09	2.98	0.00
W 90 Ice	OX	80.99	7.56	4.19	0.00
W 90 Ice	OXY	78.56	7.54	4.14	0.00
W 90 Ice	OY	212.85	31.46	2.92	0.00
W -90 Ice	OP	84.12	7.85	4.22	0.00
W -90 Ice	OX	215.01	31.89	2.95	0.00
W -90 Ice	OXY	209.23	31.26	2.90	0.00
W -90 Ice	OY	82.44	7.89	4.18	0.00

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
W 0	OP	-59.22	-31.25	-382.26	66.96	-1.54	-3.46	3.78	-4.53	0.00
W 0	OX	-57.28	31.42	-373.27	65.33	1.39	-3.33	3.61	4.49	0.00
W 0	OXY	-38.57	-16.00	194.08	41.75	0.51	-4.57	4.60	3.97	0.00
W 0	OY	-40.04	15.72	196.47	43.01	-0.45	-4.71	4.73	-3.97	0.00
W 180	OP	40.24	15.70	195.88	43.19	-0.45	4.75	4.77	3.98	0.00
W 180	OX	38.50	-15.55	189.62	41.52	0.51	4.62	4.65	-3.98	0.00
W 180	OXY	57.45	31.36	-371.99	65.45	1.39	3.37	3.65	-4.50	0.00
W 180	OY	59.18	-30.93	-378.49	66.77	-1.54	3.50	3.82	4.54	0.00
W 45	OP	-61.80	-61.98	-521.66	87.53	1.76	-1.73	2.47	0.00	0.00
W 45	OX	-27.56	-10.21	-92.57	29.39	4.14	-2.51	4.84	6.18	0.00
W 45	OXY	-46.74	-46.60	341.81	66.00	3.48	-3.49	4.93	-0.00	0.00
W 45	OY	-10.03	-27.42	-92.57	29.20	2.50	-4.12	4.82	-6.18	0.00
W -45	OP	-28.61	10.82	-95.69	30.58	-4.26	-2.60	4.99	-6.20	0.00
W -45	OX	-80.67	62.50	-517.48	87.10	-1.88	-1.64	2.50	-0.03	0.00
W -45	OXY	-9.15	27.13	-93.21	28.63	-2.46	-4.02	4.71	6.18	0.00
W -45	OY	-47.46	46.20	341.39	66.24	-3.44	-3.58	4.97	0.01	0.00
W 90	OP	-31.14	-59.41	-382.72	67.08	3.47	1.56	3.81	4.53	0.00
W 90	OX	15.64	40.22	196.81	43.16	4.73	0.44	4.75	3.97	0.00
W 90	OXY	-16.08	-38.42	193.74	41.65	4.56	-0.52	4.59	-3.97	0.00
W 90	OY	31.53	-57.12	-372.81	65.25	3.32	-1.37	3.59	-4.49	0.00
W -90	OP	15.51	40.31	195.18	43.19	-4.76	0.44	4.78	-3.98	0.00
W -90	OX	-30.90	59.39	-379.62	66.95	-3.51	1.56	3.84	-4.54	0.00
W -90	OXY	31.37	57.19	-370.55	65.23	-3.36	-1.37	3.62	4.50	0.00
W -90	OY	-15.71	38.37	190.01	41.47	-4.60	-0.52	4.63	3.98	0.00
W 0 Ice	OP	-25.26	-19.76	-218.32	32.07	-2.56	1.52	2.97	-0.99	0.00
W 0 Ice	OX	-24.53	19.76	-213.30	31.50	2.49	1.55	2.93	0.98	0.00
W 0 Ice	OXY	2.11	7.23	-78.50	7.53	2.40	-3.37	4.14	0.96	0.00
W 0 Ice	OY	2.06	-7.25	-80.69	7.54	-2.43	-3.40	4.18	-0.95	0.00
W 180 Ice	OP	-2.01	-7.57	-84.01	7.83	-2.43	3.45	4.22	0.96	0.00
W 180 Ice	OX	-2.13	7.64	-82.87	7.93	2.40	3.43	4.19	-0.97	0.00
W 180 Ice	OXY	24.56	19.41	-209.51	31.30	2.49	-1.49	2.90	-0.99	0.00
W 180 Ice	OY	25.26	-19.38	-214.43	31.83	-2.56	-1.46	2.95	1.01	0.00
W 45 Ice	OP	-26.88	-27.03	-252.81	38.19	-1.81	1.82	2.57	0.00	0.00
W 45 Ice	OX	-17.49	9.68	-148.37	19.99	3.19	1.73	3.63	1.45	0.00
W 45 Ice	OXY	-0.19	-0.18	-41.64	0.26	3.12	-3.12	4.41	-0.00	0.00
W 45 Ice	OY	9.70	-17.44	-148.00	19.96	-1.73	-3.19	3.63	-1.45	0.00
W -45 Ice	OP	-17.96	-9.53	-151.70	20.34	-3.26	1.71	3.68	-1.46	0.00
W -45 Ice	OX	-26.48	27.16	-249.29	37.93	1.75	1.84	2.54	-0.01	0.00
W -45 Ice	OXY	9.56	17.35	-144.84	19.81	1.70	-3.17	3.59	1.46	0.00
W -45 Ice	OY	-0.03	0.07	-44.99	0.08	-3.15	-3.14	4.45	0.01	0.00
W 90 Ice	OP	-19.72	-25.32	-218.41	32.09	-1.51	2.56	2.98	0.99	0.00
W 90 Ice	OX	-7.28	2.04	-80.99	7.56	3.41	2.43	4.19	0.95	0.00
W 90 Ice	OXY	7.23	2.12	-78.56	7.54	3.37	-2.40	4.14	-0.96	0.00
W 90 Ice	OY	19.76	-24.48	-212.85	31.46	-1.55	-2.48	2.92	-0.98	0.00
W -90 Ice	OP	-7.59	-2.01	-84.12	7.85	-3.45	2.43	4.22	-0.96	0.00
W -90 Ice	OX	-19.39	25.32	-215.01	31.89	1.46	2.57	2.95	-1.01	0.00
W -90 Ice	OXY	19.43	24.48	-209.23	31.26	1.50	-2.48	2.90	0.99	0.00
W -90 Ice	OY	7.59	-2.14	-82.44	7.89	-3.42	-2.40	4.18	0.97	0.00

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support Joint	Origin Joint	Member	Leg Dir.	Leg Force In (kips)	Residual Shear Perpendicular To Leg (kips)	Residual Shear Horizontal To Leg - Res. (kips)	Residual Shear Horizontal To Leg - Long. (kips)	Residual Shear Horizontal To Leg - Tran. (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
W 0	OP	1P	L 1P	386.872	30.586	30.685	30.574	2.609	-59.22	-31.25	-382.26
W 0	OX	1X	L 1X	377.902	29.412	29.513	29.310	-3.453	-57.28	31.42	-373.27
W 0	OXY	1XY	L 1XY	-197.064	23.994	24.069	24.025	1.456	-38.57	-16.00	194.08
W 0	OY	1Y	L 1Y	-199.530	25.258	25.334	25.314	-1.002	-40.04	15.72	196.47
W 180	OP	1P	L 1P	-198.962	25.504	25.581	-25.581	-1.026	40.24	15.70	195.88
W 180	OX	1X	L 1X	-192.589	24.253	24.328	-24.291	1.340	38.50	-15.55	189.62
W 180	OXY	1XY	L 1XY	376.540	29.679	29.781	-29.576	-3.490	57.45	31.36	-371.99
W 180	OY	1Y	L 1Y	383.097	30.824	30.924	-30.817	2.570	59.18	-30.93	-378.49
W 45	OP	1P	L 1P	527.982	32.068	32.247	22.714	22.890	-61.80	-61.98	-521.66
W 45	OX	1X	L 1X	93.344	26.823	26.824	20.628	17.147	-27.56	-10.21	-92.57
W 45	OXY	1XY	L 1XY	-346.865	29.613	29.779	21.130	20.984	-46.74	-46.60	341.81
W 45	OY	1Y	L 1Y	93.346	26.597	28.599	16.989	20.483	-10.03	-27.42	-92.57
W -45	OP	1P	L 1P	96.479	27.985	27.986	21.436	-17.992	-28.61	10.82	-95.69
W -45	OX	1X	L 1X	523.772	32.106	32.286	21.892	-23.729	-80.67	62.50	-517.48
W -45	OXY	1XY	L 1XY	94.027	25.807	25.809	16.137	-20.142	-9.15	27.13	-93.21
W -45	OY	1Y	L 1Y	-346.466	29.903	30.070	21.883	-20.624	-47.46	46.20	341.39
W 90	OP	1P	L 1P	387.341	30.733	30.832	2.468	30.734	-31.14	-59.41	-382.72
W 90	OX	1X	L 1X	-199.881	25.416	25.492	-0.895	25.476	15.64	-40.22	196.81
W 90	OXY	1XY	L 1XY	-196.720	23.879	23.954	1.563	23.903	-16.08	-38.42	193.74
W 90	OY	1Y	L 1Y	377.340	29.309	29.411	-3.594	29.190	31.53	-57.12	-372.81

W -90	0P	1P	L 1P	-198.255	25.629	25.705	-0.883	-25.690	15.51	40.31	195.18
W -90	0X	1X	L 1X	384.238	30.943	31.042	2.452	-30.946	-30.90	59.39	-379.62
W -90	0XY	1XY	L 1XY	375.082	29.541	29.643	-3.609	-29.422	31.37	57.19	-370.55
W -90	0Y	1Y	L 1Y	-192.978	24.106	24.181	1.478	-24.136	-15.71	38.37	190.01
W 0 Ice	0P	1P	L 1P	220.458	9.487	9.531	8.903	3.402	-25.26	-19.76	-218.32
W 0 Ice	0X	1X	L 1X	215.417	9.297	9.343	8.545	-3.777	-24.53	19.76	-213.30
W 0 Ice	0XY	1XY	L 1XY	78.759	4.002	4.006	3.772	-1.351	2.11	7.23	-78.50
W 0 Ice	0Y	1Y	L 1Y	80.933	4.161	4.167	3.989	1.204	2.06	-7.25	-80.69
W 180 Ice	0P	1P	L 1P	84.258	4.466	4.471	-4.286	1.275	-2.01	-7.57	-84.01
W 180 Ice	0X	1X	L 1X	83.133	4.315	4.320	-4.075	-1.434	-2.13	7.64	-82.87
W 180 Ice	0XY	1XY	L 1XY	211.617	9.559	9.605	-8.858	-3.713	24.56	19.41	-209.51
W 180 Ice	0Y	1Y	L 1Y	216.559	9.724	9.768	-9.189	3.313	25.26	-19.38	-214.43
W 45 Ice	0P	1P	L 1P	255.425	11.340	11.404	8.037	8.090	-26.98	-27.03	-252.81
W 45 Ice	0X	1X	L 1X	149.566	6.521	6.531	6.371	1.438	-17.49	9.68	-148.37
W 45 Ice	0XY	1XY	L 1XY	41.378	4.644	4.670	3.308	3.296	-0.19	-0.18	-41.64
W 45 Ice	0Y	1Y	L 1Y	149.198	6.491	6.502	1.392	6.351	9.70	-17.44	-148.00
W -45 Ice	0P	1P	L 1P	152.902	6.840	6.849	6.598	-1.835	-17.96	-9.53	-151.70
W -45 Ice	0X	1X	L 1X	251.896	11.462	11.526	7.802	-8.484	-26.48	27.16	-249.29
W -45 Ice	0XY	1XY	L 1XY	146.034	6.613	6.625	1.289	-6.498	9.56	17.35	-144.84
W -45 Ice	0Y	1Y	L 1Y	44.735	4.812	4.839	3.403	-3.440	-0.03	0.07	-44.99
W 90 Ice	0P	1P	L 1P	220.545	9.517	9.561	3.357	8.952	-19.72	-25.32	-218.41
W 90 Ice	0X	1X	L 1X	81.235	4.204	4.209	1.216	4.030	-7.28	2.04	-80.99
W 90 Ice	0XY	1XY	L 1XY	78.825	3.995	3.999	-1.347	3.765	7.23	2.12	-78.56
W 90 Ice	0Y	1Y	L 1Y	214.963	9.300	9.345	-3.815	8.531	19.76	-24.48	-212.85
W -90 Ice	0P	1P	L 1P	84.370	4.474	4.480	1.285	-4.292	-7.59	-2.01	-84.12
W -90 Ice	0X	1X	L 1X	217.145	9.731	9.775	3.279	-9.209	-19.39	25.32	-215.01
W -90 Ice	0XY	1XY	L 1XY	211.342	9.528	9.573	-3.753	-8.807	19.43	24.48	-209.23
W -90 Ice	0Y	1Y	L 1Y	82.710	4.274	4.279	-1.417	-4.037	7.59	-2.14	-82.44

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Torsional Moment (ft-k)	Resultant Moment (ft-k)	Transverse Force (kips)	Longitudinal Force (kips)	Vertical Force (kips)
W 0	214.250	-37218.891	125.112	37219.508	0.104	195.097	364.982
W 180	7.451	36891.115	-121.647	36891.115	-0.589	-195.363	364.982
W 45	28041.363	-28041.409	-20.966	39656.509	146.203	146.139	364.982
W -45	-27810.999	-27972.126	202.806	39444.791	-146.655	145.888	364.982
W 90	37219.167	-222.083	-159.468	37219.829	195.177	0.053	364.982
W -90	-36870.781	-126.685	156.819	36870.998	-195.265	-0.270	364.982
W 0 Ice	233.907	-8847.292	26.077	8850.384	0.019	45.622	590.813
W 180 Ice	196.981	8347.907	-25.440	8350.231	-0.105	-45.669	590.813
W 45 Ice	6845.837	-6869.681	-4.222	9698.351	34.970	34.959	590.813
W -45 Ice	-6411.589	-6857.312	41.929	9387.822	-35.051	34.914	590.813
W 90 Ice	8823.490	-259.160	-32.882	8827.295	45.636	0.010	590.813
W -90 Ice	-8368.102	-242.107	32.390	8371.604	-45.652	-0.048	590.813

EIA Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Top Width (ft)	Bottom Width (ft)	Gross Area (ft^2)	Face Af Adjust Factor	Face Ar Adjust Factor	Dead Load Factor
358.0-365.0	365.000	358.000	8	20	7.00	7.00	49.00	1.0000	1.0000	1.200
351.0-358.0	358.000	351.000	8	16	7.00	7.00	49.00	1.0000	1.0000	1.200
350.0-351.0	351.000	350.000	8	16	7.00	12.50	9.75	1.2540	1.2540	1.505
337.5-350.0	350.000	337.500	8	16	12.50	14.37	167.96	1.1140	1.1140	1.337
325.0-337.5	337.500	325.000	8	16	14.37	16.25	191.37	1.1820	1.1820	1.418
312.5-325.0	325.000	312.500	8	16	16.25	18.12	214.79	1.2060	1.2060	1.447
300.0-312.5	312.500	300.000	12	24	18.12	19.99	238.20	1.2130	1.2130	1.456
287.5-300.0	300.000	287.500	16	24	19.99	21.87	261.62	1.2170	1.2170	1.460
275.0-287.5	287.500	275.000	16	24	21.87	23.74	285.03	1.2310	1.2310	1.477
262.5-275.0	275.000	262.500	16	24	23.74	25.61	308.45	1.2380	1.2380	1.485
250.0-262.5	262.500	250.000	16	24	25.61	27.49	331.86	1.2440	1.2440	1.493
225.0-250.0	250.000	225.000	16	24	27.49	31.23	733.97	1.2640	1.2640	1.517
200.0-225.0	225.000	200.000	16	24	31.23	34.98	827.63	1.2800	1.2800	1.536
175.0-200.0	200.000	175.000	20	32	34.98	38.73	921.29	1.2880	1.2880	1.546
150.0-175.0	175.000	150.000	36	76	38.73	42.47	1014.96	1.2960	1.2960	1.555
125.0-150.0	150.000	125.000	36	76	42.47	46.22	1108.62	1.2140	1.2140	1.457
100.0-125.0	125.000	100.000	32	68	46.22	49.96	1202.28	1.3670	1.3670	1.640
75.00-100.0	100.000	75.000	24	52	49.96	53.71	1295.94	1.2280	1.2280	1.473
50.00-75.00	75.000	50.000	24	52	53.71	57.46	1389.60	1.2300	1.2300	1.476
25.00-50.00	50.000	25.000	24	52	57.46	61.20	1483.26	1.2260	1.2260	1.471
0.000-25.00	25.000	0.000	20	40	61.20	64.95	1576.92	1.2060	1.2060	1.447

Printed capacities do not include the strength factor entered for each load case.
The Group Summary reports on the member and load case that resulted in maximum usage which may not necessarily be the same as that which produces maximum force.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Use In Comp. %	Comp. Control Member	Comp. Force (kips)	Comp. Control Load Case	L/r Capacity (kips)	Comp. Connect. Shear Capacity (kips)	Comp. Connect. Bearing Capacity (kips)	RLX	RLY	RLZ	L/r	KL/r	Length Comp. Member (ft)	Curve No.	No. Of Bolts Comp.
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	61.84	Comp	61.84	L 1P	-475.055	W 45	768.230	0.000	0.000	0.333	0.333	0.333	64.47	64.47	25.140	1	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	72.40	Comp	72.40	L 2P	-433.649	W 45	598.960	0.000	0.000	0.333	0.333	0.333	64.47	64.47	25.140	1	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	70.57	Comp	70.57	L 3P	-393.350	W 45	557.370	0.000	0.000	0.333	0.333	0.333	64.47	64.47	25.140	1	0
Leg S4	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	74.43	Comp	74.43	L 4P	-353.613	W 45	475.110	0.000	0.000	0.333	0.333	0.333	64.47	64.47	25.140	1	0
Leg S5	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	70.56	Comp	70.56	L 5P	-320.704	W 45	454.485	0.000	0.000	0.222	0.222	0.222	42.99	42.99	25.140	1	0
Leg S6	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	68.91	Comp	68.91	L 6P	-280.216	W 45	406.664	0.000	0.000	0.333	0.333	0.333	64.44	64.44	25.140	1	0
Leg S7	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	59.33	Comp	59.33	L 7P	-241.288	W 45	406.664	0.000	0.000	0.333	0.333	0.333	64.44	64.44	25.140	1	0
Leg S8	L 8" x 8" x 1"	SAE	8X8X1	33.0	56.70	Comp	56.70	L 8P	-206.712	W 45	364.568	0.000	0.000	0.333	0.333	0.333	64.46	64.46	25.140	1	0
Leg S9	L 8" x 8" x 0.875"	SAE	8X8X0.88	33.0	53.08	Comp	53.08	L 9P	-171.116	W 45	322.369	0.000	0.000	0.333	0.333	0.333	64.04	64.04	25.140	1	0
Leg S10	L 8" x 8" x 0.75"	SAE	8X8X0.75	33.0	49.01	Comp	49.01	L 10P	-136.968	W 45	279.450	0.000	0.000	0.333	0.333	0.333	63.64	63.64	25.140	1	0
Leg S11	L 6" x 6" x 0.875"	SAE	6X6X0.88	33.0	49.84	Comp	49.84	L 11P	-117.847	W 45	236.474	0.000	0.000	0.500	0.500	0.500	64.46	64.46	12.570	1	0
Leg S12	L 6" x 6" x 0.875"	SAE	6X6X0.88	33.0	42.66	Comp	42.66	L 12P	-100.886	W 45	236.474	0.000	0.000	0.500	0.500	0.500	64.46	64.46	12.570	1	0
Leg S13	L 6" x 6" x 0.75"	SAE	6X6X0.75	33.0	41.15	Comp	41.15	L 13P	-84.410	W 45	205.122	0.000	0.000	0.500	0.500	0.500	64.46	64.46	12.570	1	0
Leg S14	L 6" x 6" x 0.75"	SAE	6X6X0.75	33.0	32.91	Comp	32.91	L 14X	-67.496	W -45	205.122	0.000	0.000	0.500	0.500	0.500	64.46	64.46	12.570	1	0
Leg S15	L 6" x 6" x 0.625"	SAE	6X6X0.63	33.0	38.45	Comp	38.45	L 15X	-66.667	W -45	173.384	0.000	0.000	0.500	0.500	0.500	63.92	63.92	12.570	1	0
Leg S16	L 6" x 6" x 0.625"	SAE	6X6X0.63	33.0	30.33	Comp	30.33	L 16X	-52.583	W -45	173.384	0.000	0.000	0.500	0.500	0.500	63.92	63.92	12.570	1	0
Leg S17	L 6" x 6" x 0.5"	SAE	6X6X0.5	33.0	25.77	Comp	25.77	L 17X	-36.135	W -45	140.219	0.000	0.000	0.500	0.500	0.500	63.92	63.92	12.570	1	0
Leg S18	L 6" x 6" x 0.5"	SAE	6X6X0.5	33.0	17.28	Comp	17.28	L 18X	-24.233	W -45	140.219	0.000	0.000	0.500	0.500	0.500	63.92	63.92	12.570	1	0
Leg S19	**L 6" x 6" x 0.5"**	**SAE**	**6X6X0.5**	**33.0**	**27.55**	**Comp**	**27.55**	**L 19P**	**-46.117**	**W 45**	**167.373**	**0.000**	**0.000**	**0.500**	**0.500**	**0.500**	**20.42**	**20.42**	**4.016**	**1**	**0**
Leg S20	**L 6" x 6" x 0.5"**	**SAE**	**6X6X0.5**	**33.0**	**11.43**	**Comp**	**11.43**	**L 20P**	**-15.287**	**W 45**	**133.727**	**0.000**	**0.000**	**1.000**	**1.000**	**1.000**	**71.19**	**71.19**	**7.000**	**1**	**0**
Leg S21	L 6" x 6" x 0.5"	SAE	6X6X0.5	33.0	7.11	Comp	7.11	L 21P	-9.511	W 45	133.727	0.000	0.000	1.000	1.000	1.000	71.19	71.19	7.000	1	0
Diag S1	B/B L3.5"x5"x0.4375"	DAS	5X3.5X0.44	33.0	52.10	Comp	52.10	D 2X	-46.004	W -90	88.301	0.000	0.000	0.500	1.000	0.500	142.38	133.76	23.967	6	0
Diag S2	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	85.03	Comp	85.03	D 4X	-44.691	W -90	52.562	0.000	0.000	0.450	0.900	0.450	141.88	133.45	23.305	6	0
Diag S3	B/B L3"x3.5"x0.3125"	DAS	3.5X3X0.31	33.0	93.14	Comp	93.14	D 6X	-43.348	W -90	46.540	0.000	0.000	0.450	0.900	0.450	147.44	136.88	22.662	6	0
Diag S4	B/B L3"x3.5"x0.3125"	DAS	3.5X3X0.31	33.0	86.09	Comp	86.09	D 8X	-42.449	W -90	49.308	0.000	0.000	0.450	0.880	0.450	140.21	132.43	22.040	6	0
Diag S5	B/B L3"x3"x0.375"	DAE	3X3X0.38	36.0	47.95	Comp	47.95	D 10X	-32.601	W -90	67.990	0.000	0.000	0.333	0.667	0.333	115.20	115.20	20.303	1	0
Diag S6	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	66.76	Comp	66.76	D 12X	-30.433	W -90	45.583	0.000	0.000	0.333	0.667	0.333	114.20	114.20	19.842	1	0
Diag S7	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	85.94	Comp	85.94	D 14X	-29.767	W -90	34.637	0.000	0.000	0.300	0.880	0.300	147.43	136.87	19.406	6	0
Diag S8	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	33.0	80.70	Comp	80.70	D 15X	-28.840	W -90	35.740	0.000	0.000	0.333	0.667	0.333	153.59	140.66	31.677	6	0
Diag S9	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	33.0	75.19	Comp	75.19	D 17X	-28.124	W -90	37.404	0.000	0.000	0.333	0.667	0.333	148.21	137.35	30.568	6	0
Diag S10	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	33.0	66.72	Comp	66.72	D 19X	-25.985	W -90	38.943	0.000	0.000	0.333	0.667	0.333	143.21	134.28	29.536	6	0
Diag S11	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	33.0	53.02	Comp	53.02	D 21X	-15.874	W -90	29.940	0.000	0.000	0.500	1.000	0.500	153.94	140.87	18.601	6	0
Diag S12	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	33.0	48.26	Comp	48.26	D 23X	-15.157	W -90	31.406	0.000	0.000	0.500	1.000	0.500	148.30	137.41	17.920	6	0
Diag S13	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	33.0	45.89	Comp	45.89	D 25X	-15.057	W -90	32.812	0.000	0.000	0.500	1.000	0.500	142.87	134.06	17.263	6	0
Diag S14	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	57.89	Comp	57.89	D 27X	-13.953	W -90	24.104	0.000	0.000	0.500	1.000	0.500	167.73	149.35	16.633	6	0
Diag S15	L 3" x 4" x 0.25"	SAU	4X3X0.25	33.0	31.00	Tens	0.00	D 30Y	0.000		0.000	0.000	0.000	100.000	100.000	100.000	42044.94	32066.85	22.809	5	0
Diag S16	L 3" x 4" x 0.25"	SAU	4X3X0.25	33.0	28.86	Tens	0.00	D 32Y	0.000		0.000	0.000	0.000	100.000	100.000	100.000	39206.12	29903.66	21.269	5	0
Diag S17	L 3.5" x 3" x 0.25"	SAU	3.5X3X0.25	33.0	24.80	Tens	0.00	D 34Y	0.000		0.000	0.000	0.000	100.000	100.000	100.000	37629.43	28702.23	19.787	5	0
Diag S18	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	33.0	18.59	Tens	0.00	D 36Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	31773.70	24240.16	18.376	5	0
Diag S19	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	33.0	13.76	Comp	13.76	D 38X	-11.723	W 90	85.211	0.000	0.000	0.520	0.520	0.520	58.28	58.28	10.180	1	0
Diag S20	L 3" x 2" x 0.25"	SAU	3X2X0.25	33.0	15.84	Tens	0.00	D 40Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	27308.95	20838.02	9.899	5	0
Diag S21	L 3" x 2" x 0.25"	SAU	3X2X0.25	33.0	16.97	Tens	0.00	D 42Y	0.000		0.001	0.000	0.000	100.000	100.000	100.000	27308.95	20838.02	9.899	5	0
Horiz 1	B/B L5"x3.5"x0.375"	DAL	5X3.5X0.38	33.0	44.12	Comp	44.12	H 1P	-38.202	W -90	86.596	0.000	0.000	0.500	0.500	0.500	125.76	123.54	30.602	6	0
Horiz 2	B/B L4"x3"x0.3125"	DAL	4X3X0.31	33.0	66.40	Comp	66.40	H 3P	-36.621	W -90	55.148	0.000	0.000	0.500	0.500	0.500	135.73	129.67	28.729	6	0
Horiz 3	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	73.89	Comp	73.89	H 5P	-34.654	W -90	46.902	0.000	0.000	0.500	0.500	0.500	146.48	136.29	26.855	6	0
Horiz 4	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	79.31	Comp	79.31	H 7P	-40.328	W -90	50.846	0.000	0.000	0.500	0.500	0.500	136.27	130.00	24.982	6	0
Horiz 5	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	99.31	Comp	99.31	H 9P	-56.769	W -90	57.161	0.000	0.000	0.450	0.880	0.450	120.51	120.31	15.406	6	0
Horiz 6	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	99.74	Comp	99.74	H 11P	-50.855	W -90	50.986	0.000	0.000	0.880	0.880	0.880	135.91	129.78	14.157	6	0
Horiz 7	B/B L3"x3"x0.3125"	DAE	3X3X0.31	33.0	69.56	Comp	69.56	H 13P	-40.623	W -90	58.401	0.000	0.000	0.500	1.000	0.500	110.64	110.64	12.908	1	0
Horiz 8	B/B L3.5"x2.5"x0.3125"	DAL	3.5X2.5X0.31	33.0	51.74	Comp	51.74	H 15P	-15.517	W -90	29.987	0.000	0.000	1.000	1.000	1.000	190.79	163.54	17.489	6	0
Horiz 9	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	51.55	Comp	51.55	H 17P	-13.947	W -90	27.056	0.000	0.000	0.500	1.000	0.500	165.83	148.19	15.616	6	0
Horiz 10	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	49.68	Comp	49.68	H 19P	-12.523	W -90	25.208	0.000	0.000	1.000	1.000	1.000	174.51	153.53	13.743	6	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	32.45	Comp	32.45	H 21P	-10.712	W -90	33.007	0.000	0.000	0.500	1.000	0.500	129.14	125.62	12.806	6	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	45.97	Comp	45.97	H 23P	-9.641	W -90	20.974	0.000	0.000	1.000	1.000	1.000	185.22	160.11	11.870	6	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	43.11	Comp	43.11	H 25P	-10.150	W -90	23.543	0.000	0.000	1.000	1.000	1.000	170.61	151.12	10.933	6	0
Horiz 14	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	42.25	Comp	42.25	H 27P	-15.662	W -90	37.074	0.000	0.000	1.000	1.000	1.000	126.94	124.27	9.996	6	0
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	65.05	Comp	65.05	H 29P	-12.589	W -90	19.351	0.000	0.000	0.500	1.000	0.500	192.42	175.22	18.120	5	0
Horiz 16	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	24.88	Comp	24.88	H 32X	-10.656	W 180	42.835	0.000	0.000	0.500	0.500	0.500	103.15	111.58	16.246	3	0
Horiz 17	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	14.64	Comp	14.64	H 34X	-7.828	W 0	53.454	0.000	0.000	0.500	1.000	0.500	127.76	125.95	14.373	5	0
Horiz 18	L 6" x 3.5" x 0.5"	SAU	6X3.5X0.5	33.0	18.65	Tens	0.00	H 36X	0.000		31.660	0.000	0.000	1.000	1.000	1.000	197.63	179.19	12.500	5	0
Horiz 19	B/B L3.5"x3.5"x0.3125"	DAE	3.5X3.5X0.31	33.0	25.63	Comp	25.63	H 37P	-23.765	W 0	92.715	0.000	0.000	1.000	1.000	1.000	77.78	77.78	7.000	1	0
Horiz 20	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	13.19	Comp	13.19	H 39P	-4.478	W -90	33.948	0.000	0.000	1.000	1.000	1.000	107.14	113.57	7.000	3	0
Horiz 21	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	8.59	Comp	8.59	H 41P	-2.917	W -90	33.948	0.000	0.000	1.000	1.000	1.000	107.14	113.57	7.000	3	0
LD 1	B/B L3.5"x3"x0.25"	DAL	3.5X3X0.25	33.0	49.78	Comp	49.78	LD 1X	-13.396	W -90	26.909	0.000	0.000	1.000	1.000	1.000	188.46	162.10	17.433	6	0
LD 2	B/B L5"x3.5"x0.4375"	DAL	5X3.5X0.44	33.0	50.69	Comp	50.69	LD 3X	-49.950	W -90	98.549	0.000	0.000	0.900	0.900	0.900	128.08	124.97	17.433	6	0
LD 4	B/B L3.5"x3"x0.25"	DAL	3.5X3X0.25	33.0	44.84	Comp	44.84	LD 7X	-12.916	W -90	28.805	0.000	0.000	1.000	1.000	1.000	179.64	156.68	16.617	6	0
LD 5	B/B L4"x3"x0.375"	DAL	4X3X0.38	33.0	87.73	Comp	87.73	LD 9X	-47.818	W -90	54.505	0.000	0.000	1.000	1.000	1.000	158.25	143.53	16.617	6	0
LD 7	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	33.0	44.92	Comp	44.92	LD 13X	-12.442	W -90	27.696	0.000	0.000	1.000	1.000	1.000	174.10	153.27	15.814	6	0
LD 8	B/B L4"x3"x0.3125"	DAL	4X3X0.31	33.0	82.15	Comp	82.15	LD 15X	-45.737	W -90	55.678	0.000	0.000	0.900	0.900	0.900	134.48	128.91	15.814	6	0
LD 10	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	33.0	34.68	Comp	34.68	LD 19X	-11.870	W -90	34.227	0.000	0.000	0.900	0.900	0.900	148.89	137.77	15.027	6	0
LD 11	B/B L4"x3"x0.3125"	DAL	4X3X0.31	33.0	83.64	Comp	83.64	LD 21X	-43.924	W -90	52.517	0.000	0.000	1.000	1.000	1.000	141.99	133.52	15.027	6	0
LD 13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	58.97	Tens	1.32	LD 25XY	-0.348	W -90	26.306	0.000	0.000	0.460	0.880	0.460	144.14	134.84	12.762	6	0

LD 14	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	33.0	66.66	Comp	66.66	LD 27X	-31.229	W -90	46.849	0.000	0.000	1.000	1.000	1.000	111.69	111.69	10.145	1	0
LD 15	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	55.86	Comp	55.86	LD 29P	-31.147	W -90	55.758	0.000	0.000	1.000	1.000	1.000	123.96	122.43	11.363	6	0
LD 16	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	54.30	Tens	1.89	LD 31XY	-5.429	W -90	22.680	0.000	0.000	0.870	0.870	0.870	161.72	145.66	12.145	6	0
LD 17	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	78.47	Comp	78.47	LD 33X	-29.314	W -90	37.357	0.000	0.000	1.000	1.000	1.000	125.91	123.63	9.915	6	0
LD 18	B/B L3"x3"x0.3125"	DAE	3X3X0.31	33.0	66.16	Comp	66.16	LD 35P	-29.386	W -90	44.418	0.000	0.000	1.000	1.000	1.000	142.51	133.84	10.949	6	0
LD 19	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	51.35	Tens	2.35	LD 37XY	-7.521	W -90	22.162	0.000	0.000	0.930	0.930	0.930	164.48	147.35	11.555	6	0
LD 20	B/B L3"x2"x0.25"	DAL	3X2X0.25	33.0	87.59	Comp	87.59	LD 39X	-28.597	W -90	32.648	0.000	0.000	1.000	1.000	1.000	130.60	126.52	9.697	6	0
LD 21	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	73.79	Comp	73.79	LD 41P	-27.934	W -90	37.855	0.000	0.000	1.000	1.000	1.000	136.21	129.97	10.556	6	0
LH 1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	9.39	Tens	0.00	LH 2X	0.000		0.001	0.000	0.000	100.000	100.000	100.000	41400.39	25507.44	30.602	6	0
LH 2	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	5.76	Tens	0.00	LH 4X	0.000		0.002	0.000	0.000	100.000	100.000	100.000	38866.16	23948.89	28.729	6	0
LH 3	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	5.45	Tens	0.00	LH 6X	0.000		0.002	0.000	0.000	100.000	100.000	100.000	36331.94	22390.34	26.855	6	0
LH 4	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	5.50	Tens	0.00	LH 8X	0.000		0.002	0.000	0.000	100.000	100.000	100.000	33797.71	20831.79	24.982	6	0
LH 5	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	35.34	Tens	0.00	LH 10Y	0.000		0.007	0.000	0.000	100.000	100.000	100.000	18210.23	11245.49	13.460	6	0
LH 6	B/B L3"x3.5"x0.3125"	DAS	3.5X3X0.31	33.0	34.13	Tens	0.00	LH 12Y	0.000		0.008	0.000	0.000	100.000	100.000	100.000	16468.36	10174.24	12.420	6	0
LH 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	41.43	Tens	0.00	LH 14Y	0.000		0.008	0.000	0.000	100.000	100.000	100.000	14683.07	9076.29	11.379	6	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 17XY	-1.207	W 45	0.324	0.000	0.000	1.000	1.000	1.000	2.65	2.65	22.084	1	0

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Usage Cont-rol	Max Tension Use In Tens. %	Tension Control Member	Tension Force (kips)	Tension Control Load Case	Net Section Capacity (kips)	Tension Connect. Shear Capacity (kips)	Tension Connect. Bearing Capacity (kips)	Tension Connect. Rupture Capacity (kips)	Length Tens. Member (ft)	No. Of Bolts	No. Of Holes Tens.	Hole Diameter (in)
Leg S1	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	61.84	Comp	61.06	L 1XY	303.399	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S2	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	72.40	Comp	56.70	L 2XY	281.721	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S3	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	70.57	Comp	51.53	L 3XY	256.065	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S4	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	74.43	Comp	46.39	L 4XY	230.490	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S5	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	70.56	Comp	36.72	L 5XY	182.442	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S6	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	68.91	Comp	31.72	L 6XY	157.632	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S7	L 8" x 8" x 1.125"	SAE	8X8X1.13	33.0	59.33	Comp	26.83	L 7XY	133.321	W 45	496.880	0.000	0.000	0.000	25.140	0	0.000	0
Leg S8	L 8" x 8" x 1"	SAE	8X8X1	33.0	56.70	Comp	31.58	L 8XY	140.701	W 45	445.499	0.000	0.000	0.000	25.140	0	0.000	0
Leg S9	L 8" x 8" x 0.875"	SAE	8X8X0.88	33.0	53.08	Comp	29.23	L 9XY	114.841	W 45	392.930	0.000	0.000	0.000	25.140	0	0.000	0
Leg S10	L 8" x 8" x 0.75"	SAE	8X8X0.75	33.0	49.01	Comp	26.21	L 10XY	89.047	W 45	339.767	0.000	0.000	0.000	25.140	0	0.000	0
Leg S11	L 6" x 6" x 0.875"	SAE	6X6X0.88	33.0	49.84	Comp	26.70	L 11XY	77.144	W 45	288.981	0.000	0.000	0.000	12.570	0	0.000	0
Leg S12	L 6" x 6" x 0.875"	SAE	6X6X0.88	33.0	42.66	Comp	22.43	L 12XY	64.832	W 45	288.981	0.000	0.000	0.000	12.570	0	0.000	0
Leg S13	L 6" x 6" x 0.75"	SAE	6X6X0.75	33.0	41.15	Comp	20.95	L 13XY	52.514	W 45	250.668	0.000	0.000	0.000	12.570	0	0.000	0
Leg S14	L 6" x 6" x 0.75"	SAE	6X6X0.75	33.0	32.91	Comp	16.01	L 14XY	40.144	W 45	250.668	0.000	0.000	0.000	12.570	0	0.000	0
Leg S15	L 6" x 6" x 0.625"	SAE	6X6X0.63	33.0	38.45	Comp	13.21	L 15XY	27.895	W 45	211.167	0.000	0.000	0.000	12.570	0	0.000	0
Leg S16	L 6" x 6" x 0.625"	SAE	6X6X0.63	33.0	30.33	Comp	7.40	L 16XY	15.627	W 45	211.167	0.000	0.000	0.000	12.570	0	0.000	0
Leg S17	L 6" x 6" x 0.5"	SAE	6X6X0.5	33.0	25.77	Comp	4.51	L 17XY	7.706	W 45	170.775	0.000	0.000	0.000	12.570	0	0.000	0
Leg S18	L 6" x 6" x 0.5"	SAE	6X6X0.5	33.0	17.28	Comp	0.00	L 18Y	0.000		170.775	0.000	0.000	0.000	12.570	0	0.000	0
Leg S19	**L 6" x 6" x 0.5"**	**SAE**	**6X6X0.5**	**33.0**	**27.55**	**Comp**	**1.60**	**L 19Y**	**2.738**	**W -45**	**170.775**	**0.000**	**0.000**	**0.000**	**4.016**	**0**	**0.000**	**0**
Leg S20	**L 6" x 6" x 0.5"**	**SAE**	**6X6X0.5**	**33.0**	**11.43**	**Comp**	**0.89**	**L 20Y**	**1.518**	**W -45**	**170.775**	**0.000**	**0.000**	**0.000**	**7.000**	**0**	**0.000**	**0**
Leg S21	L 6" x 6" x 0.5"	SAE	6X6X0.5	33.0	7.11	Comp	0.00	L 21Y	0.000		170.775	0.000	0.000	0.000	7.000	0	0.000	0
Diag S1	B/B L3.5"x5"x0.4375"	DAS	5X3.5X0.44	33.0	52.10	Comp	17.62	D 2P	36.886	W -90	209.385	0.000	0.000	0.000	23.967	0	0.000	0
Diag S2	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	85.03	Comp	29.86	D 4P	37.072	W -90	124.146	0.000	0.000	0.000	23.305	0	0.000	0
Diag S3	B/B L3"x3.5"x0.3125"	DAS	3.5X3X0.31	33.0	93.14	Comp	32.24	D 6P	37.052	W -90	114.939	0.000	0.000	0.000	22.662	0	0.000	0
Diag S4	B/B L3"x3.5"x0.3125"	DAS	3.5X3X0.31	33.0	86.09	Comp	32.08	D 8P	36.876	W -90	114.939	0.000	0.000	0.000	22.040	0	0.000	0
Diag S5	B/B L3"x3"x0.375"	DAE	3X3X0.38	36.0	67.95	Comp	39.92	D 10P	54.585	W -90	136.728	0.000	0.000	0.000	20.303	0	0.000	0
Diag S6	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	66.78	Comp	61.31	D 12P	52.445	W -90	85.536	0.000	0.000	0.000	19.842	0	0.000	0
Diag S7	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	85.94	Comp	58.98	D 14P	50.451	W -90	85.536	0.000	0.000	0.000	19.406	0	0.000	0
Diag S8	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	33.0	80.70	Comp	28.25	D 15P	25.258	W -90	92.961	0.000	0.000	0.000	31.677	0	0.000	0
Diag S9	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	33.0	75.19	Comp	27.63	D 17P	25.690	W -90	92.961	0.000	0.000	0.000	30.568	0	0.000	0
Diag S10	B/B L3"x3.5"x0.25"	DAS	3.5X3X0.25	33.0	66.72	Comp	26.19	D 19P	24.345	W -90	92.961	0.000	0.000	0.000	29.536	0	0.000	0
Diag S11	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	33.0	53.02	Comp	18.57	D 21P	14.506	W -90	78.111	0.000	0.000	0.000	18.601	0	0.000	0
Diag S12	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	33.0	48.26	Comp	17.83	D 23P	13.931	W -90	78.111	0.000	0.000	0.000	17.920	0	0.000	0
Diag S13	B/B L2.5"x3"x0.25"	DAS	3X2.5X0.25	33.0	45.89	Comp	17.88	D 25P	13.967	W -90	78.111	0.000	0.000	0.000	17.263	0	0.000	0
Diag S14	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	57.89	Comp	18.13	D 27P	12.918	W -90	70.686	0.000	0.000	0.000	16.633	0	0.000	0
Diag S15	L 3" x 3" x 0.25"	SAU	3X3X0.25	33.0	31.00	Tens	31.00	D 30P	15.558	W -90	50.193	0.000	0.000	0.000	22.809	0	0.000	0
Diag S16	L 3" x 3" x 0.25"	SAU	3X3X0.25	33.0	28.86	Tens	28.86	D 31X	14.484	W 180	50.193	0.000	0.000	0.000	21.269	0	0.000	0
Diag S17	L 3.5" x 3" x 0.25"	SAU	3.5X3X0.25	33.0	24.80	Tens	24.80	D 33X	11.492	W 180	46.332	0.000	0.000	0.000	19.787	0	0.000	0
Diag S18	L 3.5" x 3.5" x 0.25"	SAE	3.5X3.5X0.25	33.0	18.59	Tens	18.59	D 36XY	9.330	W 90	50.193	0.000	0.000	0.000	18.376	0	0.000	0
Diag S19	B/B L3.5"x3.5"x0.25"	DAE	3.5X3.5X0.25	33.0	13.76	Comp	6.53	D 38P	6.553	W 90	100.386	0.000	0.000	0.000	10.180	0	0.000	0
Diag S20	L 3" x 2" x 0.25"	SAU	3X2X0.25	33.0	15.84	Tens	15.84	D 40P	5.997	W -90	35.343	0.000	0.000	0.000	9.899	0	0.000	0
Diag S21	L 3" x 2" x 0.25"	SAU	3X2X0.25	33.0	16.97	Tens	16.97	D 42P	5.997	W -90	35.343	0.000	0.000	0.000	9.899	0	0.000	0
Horiz 1	B/B L5"x3.5"x0.375"	DAL	5X3.5X0.38	33.0	44.12	Comp	23.02	H 1X	41.642	W -90	180.873	0.000	0.000	0.000	30.602	0	0.000	0
Horiz 2	B/B L4"x3"x0.3125"	DAL	4X3X0.31	33.0	66.40	Comp	31.72	H 3X	39.375	W -90	124.146	0.000	0.000	0.000	28.729	0	0.000	0
Horiz 3	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	73.89	Comp	32.37	H 5X	37.203	W -90	114.939	0.000	0.000	0.000	26.855	0	0.000	0
Horiz 4	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	79.31	Comp	24.19	H 7P	27.808	W 90	114.939	0.000	0.000	0.000	24.982	0	0.000	0
Horiz 5	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	99.31	Comp	13.70	H 9X	15.748	W -90	114.939	0.000	0.000	0.000	15.406	0	0.000	0
Horiz 6	B/B L2.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	99.74	Comp	12.72	H 11P	14.620	W 90	114.939	0.000	0.000	0.000	14.253	0	0.000	0
Horiz 7	B/B L3"x3"x0.3125"	DAE	3X3X0.31	33.0	69.56	Comp	16.90	H 13P	17.820	W 90	105.435	0.000	0.000	0.000	12.908	0	0.000	0
Horiz 8	B/B L3.5"x2.5"x0.3125"	DAL	3.5X2.5X0.31	33.0	51.74	Comp	15.20	H 15P	16.030	W 90	105.435	0.000	0.000	0.000	17.489	0	0.000	0
Horiz 9	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	51.55	Comp	18.28	H 17X	14.276	W -90	78.111	0.000	0.000	0.000	15.616	0	0.000	0
Horiz 10	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	49.68	Comp	16.12	H 19P	12.592	W 90	78.111	0.000	0.000	0.000	13.743	0	0.000	0
Horiz 11	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	32.45	Comp	15.55	H 21P	10.991	W 90	70.686	0.000	0.000	0.000	12.806	0	0.000	0
Horiz 12	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	45.97	Comp	14.40	H 23X	10.182	W -90	70.686	0.000	0.000	0.000	11.870	0	0.000	0
Horiz 13	B/B L2.5"x2.5"x0.25"	DAE	2.5X2.5X0.25	33.0	43.11	Comp	14.47	H 25P	10.228	W 90	70.686	0.000	0.000	0.000	10.933	0	0.000	0
Horiz 14	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	42.25	Comp	3.41	H 27P	2.664	W 90	78.111	0.000	0.000	0.000	9.996	0	0.000	0
Horiz 15	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	65.05	Comp	0.00	H 30X	0.000		78.111	0.000	0.000	0.000	18.120	0	0.000	0
Horiz 16	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	24.88	Comp	0.00	H 32X	0.000		78.111	0.000	0.000	0.000	16.246	0	0.000	0
Horiz 17	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	14.64	Comp	0.00	H 34X	0.000		114.939	0.000	0.000	0.000	14.373	0	0.000	0
Horiz 18	L 6" x 3.5" x 0.5"	SAU	6X3.5X0.5	33.0	18.65	Tens	18.65	H 35P	24.922	W 0	133.650	0.000	0.000	0.000	12.500	0	0.000	0
Horiz 19	B/B L3.5"x3.5"x0.3125"	DAE	3.5X3.5X0.31	33.0	25.63	Comp	0.00	H 38X	0.000		124.146	0.000	0.000	0.000	7.000	0	0.000	0
Horiz 20	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	13.19	Comp	0.00	H 40X	0.000		63.261	0.000	0.000	0.000	7.000	0	0.000	0
Horiz 21	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	8.59	Comp	0.17	H 42X	0.109	N -90 Ic	63.261	0.000	0.000	0.000	7.000	0	0.000	0
LD 1	B/B L3.5"x3"x0.25"	DAL	3.5X3X0.25	33.0	49.78	Comp	18.25	LD 2Y	16.962	W -45	92.961	0.000	0.000	0.000	17.433	0	0.000	0
LD 2	B/B L5"x3.5"x0.4375"	DAL	5X3.5X0.44	33.0	50.69	Comp	20.57	LD 3P	43.061	W -90	209.385	0.000	0.000	0.000	17.433	0	0.000	0
LD 4	B/B L3.5"x3"x0.25"	DAL	3.5X3X0.25	33.0	44.84	Comp	15.06	LD 8Y	13.999	W -45	92.961	0.000	0.000	0.000	16.617	0	0.000	0
LD 5	B/B L4"x3"x0.375"	DAL	4X3X0.38	33.0	87.73	Comp	28.60	LD 9P	42.215	W -90	147.609	0.000	0.000	0.000	16.617	0	0.000	0
LD 7	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	33.0	44.92	Comp	15.76	LD 14Y	13.479	W -45	85.536	0.000	0.000	0.000	15.814	0	0.000	0
LD 8	B/B L4"x3"x0.3125"	DAL	4X3X0.31	33.0	82.15	Comp	33.09	LD 15P	41.076	W -90	124.146	0.000	0.000	0.000	15.814	0	0.000	0
LD 10	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	33.0	34.68	Comp	14.26	LD 19P	12.199	W -90	85.536	0.000	0.000	0.000	15.027	0	0.000	0
LD 11	B/B L4"x3"x0.3125"	DAL	4X3X0.31	33.0	83.64	Comp	32.20	LD 21P	39.969	W -90	124.146	0.000	0.000	0.000	15.027	0	0.000	0
LD 13	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	58.97	Comp	58.97	LD 25P	37.305	W -90	63.261	0.000	0.000	0.000	12.762	0	0.000	0
LD 14	B/B L3.5"x2.5"x0.25"	DAL	3.5X2.5X0.25	33.0	66.66	Comp	30.17	LD 27P	25.806	W -90	85.536	0.000	0.000	0.000	10.145	0	0.000	0
LD 15	B/B L3.5"x3"x0.3125"	DAL	3.5X3X0.31	33.0	55.86	Comp	28.19	LD 29X	32.407	W -90	114.939	0.000	0.000	0.000	11.363	0	0.000	0
LD 16	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	54.30	Tens	54.30	LD 31P	34.349	W -90	63.261	0.000	0.000	0.000	12.145	0	0.000	0
LD 17	B/B L3"x2.5"x0.25"	DAL	3X2.5X0.25	33.0	78.47	Comp	32.00	LD 33P	24.995	W -90	78.111	0.000	0.000	0.000	9.915	0	0.000	0
LD 18	B/B L3"x3"x0.3125"	DAE	3X3X0.31	33.0	66.16	Comp	28.72	LD 35X	30.278	W -90	105.435	0.000	0.000	0.000	10.949	0	0.000	0
LD 19	B/B L2.5"x2"x0.25"	DAL	2.5X2X0.25	33.0	51.35	Tens	51.35	LD 37P	32.482	W -90	63.261	0.000	0.000	0.000	11.555	0	0.000	0
LD 20	B/B L3"x2"x0.25"	DAL	3X2X0.25	33.0	87.59	Comp	33.66	LD 39P	23.791	W -90	70.688	0.000	0.000	0.000	9.697	0	0.000	0
LD 21	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	73.79	Comp	33.67	LD 41X	28.801	W -90	85.536	0.000	0.000	0.000	10.556	0	0.000	0
LH 1	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	9.39	Tens	9.39	LH 1Y	11.663	W 0	124.146	0.000	0.000	0.000	30.602	0	0.000	0
LH 2	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	5.76	Tens	5.76	LH 3Y	7.155	W 0	124.148	0.000	0.000	0.000	28.729	0	0.000	0
LH 3	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	5.45	Tens	5.45	LH 5Y	6.764	W 0	124.146	0.000	0.000	0.000	26.855	0	0.000	0
LH 4	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	5.50	Tens	5.50	LH 7Y	6.822	W 0	124.146	0.000	0.000	0.000	24.982	0	0.000	0
LH 5	B/B L3"x4"x0.3125"	DAS	4X3X0.31	33.0	35.34	Tens	35.34	LH 9P	43.867	W -90	124.148	0.000	0.000	0.000	13.460	0	0.000	0
LH 6	B/B L3"x3.5"x0.3125"	DAS	3.5X3X0.31	33.0	34.13	Tens	34.13	LH 11P	39.223	W -90	114.939	0.000	0.000	0.000	12.420	0	0.000	0
LH 7	B/B L3"x3"x0.25"	DAE	3X3X0.25	33.0	41.43	Tens	41.43	LH 13P	35.439	W -90	85.536	0.000	0.000	0.000	11.379	0	0.000	0
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.00		0.00	BR 17X	0.877	W -45	0.324	0.000	0.000	0.000	22.084	0	0.000	0

*** Maximum Stress Summary for Each Load Case

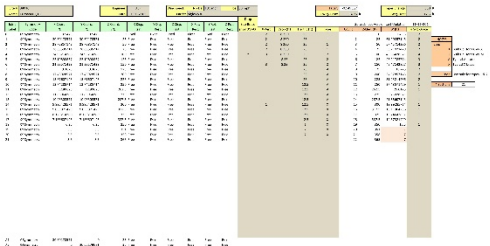
Summary of Maximum Usages by Load Case:

Load Case	Maximum Usage %	Element Label	Element Type
W 0	97.15	H 10Y	Angle
W 180	98.62	H 12P	Angle
W 45	74.43	L 4P	Angle
W -45	75.62	H 10Y	Angle
W 90	98.20	H 9X	Angle
W -90	99.74	H 11P	Angle
W 0 Ice	31.59	L 4P	Angle
W 180 Ice	32.41	D 13Y	Angle
W 45 Ice	36.52	L 4P	Angle
W -45 Ice	35.57	L 4X	Angle
W 90 Ice	31.61	L 4P	Angle
W -90 Ice	32.53	D 14X	Angle

*** Weight of structure (lbs):

Weight of Angles*Section DLF:	245241.2
Weight of Equipment:	492.0
Total:	245733.2

*** End of Report



Legs

Site No.:	88010
Engineer:	ASP
Date:	09/27/2019
Carrier:	Sigfox S.A.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter or Length *(in)*	Thickness [2] *(in)*	F_Y *(ksi)*
1	0.000-25.00	L	8	1.125	33
2	25.00-50.00	L	8	1.125	33
3	50.00-75.00	L	8	1.125	33
4	75.00-100.0	L	8	1.125	33
5	100.0-125.0	L	8	1.125	33
6	125.0-150.0	L	8	1.125	33
7	150.0-175.0	L	8	1.125	33
8	175.0-200.0	L	8	1	33
9	200.0-225.0	L	8	0.875	33
10	225.0-250.0	L	8	0.75	33
11	250.0-262.5	L	6	0.875	33
12	262.5-275.0	L	6	0.875	33
13	275.0-287.5	L	6	0.75	33
14	287.5-300.0	L	6	0.75	33
15	300.0-312.5	L	6	0.625	33
16	312.5-325.0	L	6	0.625	33
17	325.0-337.5	L	6	0.5	33
18	337.5-350.0	L	6	0.5	33
19	350.0-351.0	L	6	0.5	33
20	351.0-358.0	L	6	0.5	33
21	358.0-365.0	L	6	0.5	33

Notes:

[1] Type of Leg Shape: **R** = Round or **P** = Bent Plate or **S** = Schifflerized Angle. **L** = Even Leg

[2] For Solid Round Leg Shapes Thickness Equals Zero.

[3] Adjust for Bent Plate Leg Shapes.

Diagonals

Site No.:	88010
Engineer:	ASP
Date:	09/27/2019
Carrier:	Sigfox S.A.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)	Is Diag. Tension Only? (Y/N)
1	0.000-25.00	2L		3.5	5	0.4375	33	
2	25.00-50.00	2L		3	4	0.3125	33	
3	50.00-75.00	2L		3	3.5	0.3125	33	
4	75.00-100.0	2L		3	3.5	0.3125	33	
5	100.0-125.0	2L		3	3	0.375	36	
6	125.0-150.0	2L		3	3	0.25	33	
7	150.0-175.0	2L		3	3	0.25	33	
8	175.0-200.0	2L		3	3.5	0.25	33	
9	200.0-225.0	2L		3	3.5	0.25	33	
10	225.0-250.0	2L		3	3.5	0.25	33	
11	250.0-262.5	2L		2.5	3	0.25	33	
12	262.5-275.0	2L		2.5	3	0.25	33	
13	275.0-287.5	2L		2.5	3	0.25	33	
14	287.5-300.0	2L		2.5	2.5	0.25	33	
15	300.0-312.5	L		3	4	0.25	33	Y
16	312.5-325.0	L		3	4	0.25	33	Y
17	325.0-337.5	L		3.5	3	0.25	33	Y
18	337.5-350.0	L		3.5	3.5	0.25	33	Y
19	350.0-351.0	2L		3.5	3.5	0.25	33	
20	351.0-358.0	L		3	2	0.25	33	Y
21	358.0-365.0	L		3	2	0.25	33	Y

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Horizontals

Site No.:	88010
Engineer:	ASP
Date:	09/27/2019
Carrier:	Sigfox S.A.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape [1]	Diameter [2] (in)	Web Length [3] (in)	Flange Length [3] (in)	Thickness (in)	F_y (ksi)	
1	0.000-25.00	2L		5	3.5	0.375	33	
2	25.00-50.00	2L		4	3	0.3125	33	
3	50.00-75.00	2L		3.5	3	0.3125	33	
4	75.00-100.0	2L		3.5	3	0.3125	33	
5	100.0-125.0	2L		3.5	3	0.3125	33	
6	125.0-150.0	2L		3.5	3	0.3125	33	
7	150.0-175.0	2L		3	3	0.3125	33	
8	175.0-200.0	2L		3.5	2.5	0.3125	33	
9	200.0-225.0	2L		3	2.5	0.25	33	
10	225.0-250.0	2L		3	2.5	0.25	33	
11	250.0-262.5	2L		2.5	2.5	0.25	33	
12	262.5-275.0	2L		2.5	2.5	0.25	33	
13	275.0-287.5	2L		2.5	2.5	0.25	33	
14	287.5-300.0	2L		3	2.5	0.25	33	
15	300.0-312.5	2L		3	2.5	0.25	33	
16	312.5-325.0	2L		3	2.5	0.25	33	
17	325.0-337.5	2L		3.5	3	0.3125	33	
18	337.5-350.0	L		6	3.5	0.5	33	
19	350.0-351.0	2L		3.5	3.5	0.3125	33	
20	351.0-358.0	2L		2.5	2	0.25	33	
21	358.0-365.0	2L		2.5	2	0.25	33	

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle, **2L** = Double-Angle, **C** = Channel, **W** = W Shape

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Diagonals

Site No.:	88010
Engineer:	ASP
Date:	09/27/2019
Carrier:	Sigfox S.A.

When inputting thickness values, include all decimal places.
Input diags. from left to center & from base section upward.

Tower Built-up Diag. #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*
1	0.000-25.00	2L		3.5	3	0.25	33
2	0.000-25.00	2L		5	3.5	0.4375	33
3	25.00-50.00	2L		3.5	3	0.25	33
4	25.00-50.00	2L		4	3	0.375	33
5	50.00-75.00	2L		3.5	2.5	0.25	33
6	50.00-75.00	2L		4	3	0.3125	33
7	75.00-100.0	2L		3.5	2.5	0.25	33
8	75.00-100.0	2L		4	3	0.3125	33
9	100.0-125.0	2L		2.5	2	0.25	33
10	100.0-125.0	2L		3.5	2.5	0.25	33
11	100.0-125.0	2L		3.5	3	0.3125	33
12	125.0-150.0	2L		2.5	2	0.25	33
13	125.0-150.0	2L		3	2.5	0.25	33
14	125.0-150.0	2L		3	3	0.3125	33
15	150.0-175.0	2L		2.5	2	0.25	33
16	150.0-175.0	2L		3	2	0.25	33
17	150.0-175.0	2L		3	3	0.25	33

Notes:

[1] Type of Diagonal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Built-up Horizontals

Site No.:	88010
Engineer:	ASP
Date:	09/27/2019
Carrier:	Sigfox S.A.

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations *(ft)*	Type of Shape [1]	Diameter [2] *(in)*	Web Length [3] *(in)*	Flange Length [3] *(in)*	Thickness *(in)*	F_y *(ksi)*	Is Horiz. Tension Only? *(Y/N)*
1	0.000-25.00	2L		3	4	0.3125	33	Y
2	25.00-50.00	2L		3	4	0.3125	33	Y
3	50.00-75.00	2L		3	4	0.3125	33	Y
4	75.00-100.0	2L		3	4	0.3125	33	Y
5	100.0-125.0	2L		3	4	0.3125	33	Y
6	125.0-150.0	2L		3	3.5	0.3125	33	Y
7	150.0-175.0	2L		3	3	0.25	33	Y

Notes:

[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

[3] Applies to Single-Angle and Double-Angle Shapes only.

[4] Applies to Double-Angle Shapes only.

[5] Applies to Single-Angle Shapes only.

Coax (p. 1 of 2)

Orig by MED, Improved by ABL. Last update 6/25/13 MED

Site No.:	88010
Engineer:	ASP
Date:	09/27/19
Carrier:	Sigfox S.A.

Description	From (ft)	To (ft)	Quantity	Shape	Width or Diameter (in)	Perimeter (in)	Unit Weight (lb/ft)	Part of Face Solidity Ratio (Yes/No)	Include in Wind Load (Yes/No)
1 Ladder	0	365	1	Flat	1.5	6.0	6	Yes	Yes
2 Coax Cage	8.33	33.33	3	Round	12	37.7	25	Yes	Yes
3 Coax Cage	8.33	33.33	3	Round	12	37.7	25	Yes	Yes
4 Coax Cage	8.33	33.33	1	Round	12	37.7	25	Yes	Yes
5 Coax Cage	8.33	33.33	1	Round	12	37.7	25	Yes	Yes
7 WG	5	365	2	Flat	1.5	6.0	6	Yes	Yes
8 Eversource Energy	5	365	1	Round	1.09	3.4	0.33	Yes	Yes
9 Eversource Energy	5	365	2	Round	1.98	6.2	0.82	Yes	Yes
10 Marcus Communications LLC	5	365	5	Round	1.55	4.9	0.63	Yes	Yes
11 US Dept Of Homeland Security	5	365	2	Round	1.09	3.4	0.33	Yes	Yes
12 Eversource Energy	5	365	1	Round	0.63	2.0	0.15	No	No
13 Marcus Communications LLC	5	339	1	Round	0.945	3.2	0.3	No	No
14 Marcus Communications LLC	5	329	1	Round	1.09	3.4	0.33	Yes	Yes
15 Sigfox S.A.	5	315	1	Round	1.09	3.4	0.33	Yes	Yes
16 Eversource Energy	5	301	2	Round	2.2	6.9	0.68	Yes	Yes
17 US Dept Of Homeland Security	5	289	1	Round	1.09	3.4	0.33	Yes	Yes
18 Sprint Nextel	5	288	2	Round	1.98	6.2	0.82	Yes	Yes
19 US Dept Of Homeland Security	5	260	1	Round	1.09	3.4	0.33	Yes	Yes
20 US Dept Of Homeland Security	5	247	1	Round	1.09	3.4	0.33	Yes	Yes
21 Sprint Nextel	5	235	4	Round	1.98	6.2	0.82	Yes	Yes
22 Eversource Energy	5	181	1	Round	1.09	3.4	0.33	Yes	Yes
23 Eversource Energy	5	180	1	Round	1.09	3.4	0.33	Yes	Yes
24 Eversource Energy	5	176	1	Round	1.09	3.4	0.33	Yes	Yes

Coax (p. 2 of 2)

Site No.:	88010
Engineer:	ASP
Date:	09/27/19
Carrier:	Sigfox S.A.

Exposure B α 7 $k_{z\ max}$ 2.01

Tia Code: TIA-222-G **Topo Cat:** 1 z_g 1200 $k_{z\ min}$ 0.7

f K_e 0.9 K_t

Description	From (ft)	To (ft)	Quantity	Face # (1-4, A-D)	Coax Width (in)	Coax Shape (Block / Flat / Ind)	% Exposed	Spacing (in)	Shape (Round/Flat)	Block Width (# coax)	Block Depth (# coax)	Perimeter (in)	Unit Weight (lb/ft)	In Face Zone (Yes/No)	Include in Wind Load (Yes/No)
Ladder	0	365	1	B	1.50	**Flat**	100	1	**Flat**	**1**	1	**6.0**	**6**	Yes	Yes
Coax Cage	8.33	33.33	3	1	12.00	**Ind**	100	1	**Round**	**3**	1	**37.7**	**25**	Yes	Yes
Coax Cage	8.33	33.33	3	3	12.00	**Ind**	100	1	**Round**	**3**	1	**37.7**	**25**	Yes	Yes
Coax Cage	8.33	33.33	1	2	12.00	**Ind**	100	1	**Round**	**1**	1	**37.7**	**25**	Yes	Yes
Coax Cage	8.33	33.33	1	4	12.00	**Ind**	100	1	**Round**	**1**	1	**37.7**	**25**	Yes	Yes
								1						No	No
WG	5	365	2	3	1.50	**Flat**	100	1	**Flat**	**2**	1	**6.0**	**6**	Yes	Yes
Eversource Energy	5	365	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Eversource Energy	5	365	2	4	1.98	**Ind**	100	1	**Round**	**2**	1	**6.2**	**0.82**	Yes	Yes
Marcus Communications LLC	5	365	5	3	1.55	**Ind**	100	1	**Round**	**5**	1	**4.9**	**0.63**	Yes	Yes
US Dept Of Homeland Security	5	365	2	4	1.09	**Ind**	100	1	**Round**	**2**	1	**3.4**	**0.33**	Yes	Yes
Eversource Energy	5	365	1	4	0.63	**Ind**	0	1	**Round**	**1**	1	**2.0**	**0.15**	No	No
Marcus Communications LLC	5	339	2	3	0.63	**Ind**	0	1	**Round**	**1**	**2**	**3.2**	**0.3**	No	No
Marcus Communications LLC	5	329	1	3	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Sigfox S.A.	5	315	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Eversource Energy	5	301	2	4	2.20	**Ind**	100	1	**Round**	**2**	1	**6.9**	**0.68**	Yes	Yes
US Dept Of Homeland Security	5	289	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Sprint Nextel	5	288	2	2	1.98	**Ind**	100	1	**Round**	**2**	1	**6.2**	**0.82**	Yes	Yes
US Dept Of Homeland Security	5	260	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
US Dept Of Homeland Security	5	247	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Sprint Nextel	5	235	4	2	1.98	**Ind**	100	1	**Round**	**4**	1	**6.2**	**0.82**	Yes	Yes
Eversource Energy	5	181	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Eversource Energy	5	180	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
Eversource Energy	5	176	1	4	1.09	**Ind**	100	1	**Round**	**1**	1	**3.4**	**0.33**	Yes	Yes
								1						No	No
								1						No	No
								1						No	No
								1						No	No
								1						No	No
								1						No	No
								1						No	No
								1						No	No
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								1						No	No
								1						No	No
								1						No	No
								1						No	No

Site #:	88010
Name:	Sigfox S.A.

Engineer:	ASP
Date:	09/27/19

Section Label	Section Color	Joint Defining Bottom Section	Dead Load Adj. Factor					Adj. Factor Flat	Adj. Factor Round	Area Multiplier	Weight Multiplier
0.000-25.00		0P	1.447037864					1.205864886	1.205864886	1	1.2
25.00-50.00		1P	1.470944003					1.225786669	1.225786669	1	1.2
50.00-75.00		2P	1.475696973					1.229747478	1.229747478	1	1.2
75.00-100.0		3P	1.473050022					1.227541685	1.227541685	1	1.2
100.0-125.0		4P	1.640066381					1.366721984	1.366721984	1	1.2
125.0-150.0		5P	1.457072329					1.21422694	1.21422694	1	1.2
150.0-175.0		6P	1.555423965					1.296186638	1.296186638	1	1.2
175.0-200.0		7P	1.54609089					1.288409075	1.288409075	1	1.2
200.0-225.0		8P	1.536158721					1.280132267	1.280132267	1	1.2
225.0-250.0		9P	1.517045511					1.264204593	1.264204593	1	1.2
250.0-262.5		10P	1.493266015					1.244388346	1.244388346	1	1.2
262.5-275.0		11P	1.485480234					1.237900195	1.237900195	1	1.2
275.0-287.5		12P	1.477456268					1.231213557	1.231213557	1	1.2
287.5-300.0		13P	1.460036552					1.216697127	1.216697127	1	1.2
300.0-312.5		14P	1.455775444					1.213146203	1.213146203	1	1.2
312.5-325.0		15P	1.446773187					1.205644322	1.205644322	1	1.2
325.0-337.5		16P	1.417841048					1.181534207	1.181534207	1	1.2
337.5-350.0		17P	1.336688324					1.113906937	1.113906937	1	1.2
350.0-351.0		18P	1.505142392					1.254285327	1.254285327	1	1.2
351.0-358.0		19P	1.2					1	1	1	1.2
358.0-365.0		20P	1.2					1	1	1	1.2

Task:	Determine Point Loads	
Tower Height:	365	ft
Gh:	0.85	
Wind Speed:	101	mph, Vasd
Ice Wind Speed:	50	
Ice Density:	56	
Tower Type:	S	

Ice Thick:	0.75	in
Topographic Category (1-4):	1	
Exposure Category (B-D):	B	
Structure Class (1-3):	2	
Height of Crest (H) if Topo Cat. >1:	0	ft
Load Factor; Wind:	1.6	
Load Factor; Dead:	1.2	

Site No.:	88010
Engineer:	ASP
Date:	09/27/2019
Carrier:	Sigfox S.A.

No.	Carrier	Elevation (ft)	Quantity	# of Azimuths	Manufacturer	Model	Height (in)	Width (in)	Depth (in)	Weight (lbs/ea)	Flat/Round (F/R)	Reduction	C_AA_C (ft^2)	Weight (k)	Ka
1		365	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		365	1	4		Platform w/ HR						1.000	70.00	8.50	1
2		350	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		350	1	4		Platform w/ HR						1.000	70.00	9.00	1
3		325	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		325	1	4		Catwalk						1.000	65.00	8.00	1
4		315	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		315	1	1		Horn Mount						1.000	10.00	0.50	1
5		300	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		300	1	1		Rest Platform						1.000	15.00	0.50	1
6		250	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		250	1	3		Access Platform						1.000	35.00	4.00	1
7		200	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		200	1	1		Rest Platform						1.000	15.00	0.50	1
8		150	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		150	1	1		Rest Platform						1.000	15.00	0.50	1
9		125	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		125	1	3		Access Platform						1.000	45.00	5.00	1
10		100	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
		100	1	1		Rest Platform						1.000	15.00	0.50	1
11															1
															1
12	Eversource Energy	376	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Eversource Energy	376	1	1	Kreco	CO-41A						1.000	4.20	0.01	1
13	Other	374	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Other	374	1	1		20' Dipole						1.000	7.52	0.06	1
14	Eversource Energy	373	1	1	dbSpectra	DS9A09F36D-N	230.4	3.2	3.2	47	R	1.000			1
	Marcus Communications LLC	373	3	3	TX RX Systems	101-68-10-X-03N						1.000	5.53	0.07	1
15	US Dept Of Homeland Security	372	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	US Dept Of Homeland Security	372	1	1	Rohde & Schwarz	ADD090						1.000	20.76	0.09	1
16	Eversource Energy	366	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Eversource Energy	366	1	1	Bird	429-83H-01-T						1.000	0.92	0.02	1
17	Marcus Communications LLC	329	1	1		10' Omni	120	3	3	25	R	1.000			1
	Marcus Communications LLC	329	1	1		Round Side Arm						1.000	5.20	0.15	1
18	Sigfox S.A.	315	1	1	Procom	CXL 900-3LW	27.6	0.6	0.6	1.5	R	1.000			1
	Sigfox S.A.	315	1	1		5" x 3" x 2" Cavity Filter						1.000	0.17	0.00	1
19	Sigfox S.A.	315	1	1		Low Noise Amplifier	5	4	2	2	F	1.000			1
	Sigfox S.A.	315	1	1		Flat Side Arm						1.000	6.30	0.15	1
20	Other	296	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Other	296	1	1		20' FM						1.000	21.12	0.60	1
21	US Dept Of Homeland Security	289	1	1	Sinclair	SC281-L	251	5	5	79	R	1.000			1
	US Dept Of Homeland Security	289	1	1		Round Side Arm						1.000	5.20	0.15	1
22	Sprint Nextel	288	2	1	Andrew	DB844H90E-XY	48	6.5	8	14	F	1.000			0.9
	Sprint Nextel	288	1	1		Flat Sector Frame						1.000	17.90	0.40	1
23	US Dept Of Homeland Security	260	1	1	Sinclair	SC281-L	251	5	5	79	R	1.000			1
	US Dept Of Homeland Security	260	1	1		Round Side Arm						1.000	5.20	0.15	1
24	US Dept Of Homeland Security	247	1	1	Sinclair	SC281-L	251	5	5	79	R	1.000			1
	US Dept Of Homeland Security	247	1	1		Round Side Arm						1.000	5.20	0.15	1
25	Sprint Nextel	235	2	2	Decibel	DB844H90F-XY	48	6.5	8	14	F	0.610			0.9
	Sprint Nextel	235	2	2	Andrew	B44G65V7ZA5X						1.000	5.31	0.02	0.9
26	Sprint Nextel	235	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Sprint Nextel	235	2	2		Flat Sector Frame						0.900	17.90	0.40	0.9
27	Eversource Energy	181	1	1		-	0.0001	0.0001	0.0001	0.0001	F	0.000			1
	Eversource Energy	181	1	1	Comprod	531-70HD						1.000	5.98	0.04	1
28	Eversource Energy	180	1	1	Telewave	ANT450F6	94	2.3	2.3	21	R	1.000			1
	Eversource Energy	180	1	1		Round Side Arm						1.000	5.20	0.15	1
29	Eversource Energy	176	1	1	Kreco	CO-41A	168	3	3	14	R	1.000			1
	Eversource Energy	176	1	1		Round Side Arm						1.000	5.20	0.15	1
30															1
															1
31															1
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50															1
															1

No.	Elevation	C_AA_r	C_AA_r (Ice)	Force	Force (Ice)	Weight	Weight (Ice)	60 Azi	Force	F (Ice)	Height	Sum of Forces (No I	
	(ft)	(ft^2)	(ft^2)	(lb)	(lb)	(lb)	(lb)	Mult.	mean	mean	Flag	60 Azi.	180 Azi.
1	365	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00			
	365	70.00	94.50	3023.098	625.120	10200	13260	1.00	1662.70	343.82	1.5027397	3023.098165	
2	350	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5027407		
	350	70.00	94.50	2987.068	617.670	10800	14040	1.00	1642.89	339.72	1.5028571	2987.068336	
3	325	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5028581		
	325	65.00	87.75	2715.594	561.534	9600	12480	1.00	1493.58	308.84	1.5030769	2715.594066	
4	315	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5030779		
	315	10.00	13.50	414.070	85.622	600	780	1.00	227.74	47.09	1.5031746	414.0697932	
5	300	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5031756		
	300	15.00	20.25	612.507	126.655	600	780	1.00	336.88	69.66	1.5033333	612.5065299	
6	250	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5033343		
	250	35.00	47.25	1356.639	280.527	4800	6240	1.00	746.15	154.29	1.5040000	1356.638992	
7	200	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5040010		
	200	15.00	20.25	545.505	112.800	600	780	1.00	300.03	62.04	1.5050000	545.5052501	
8	150	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5050010		
	150	15.00	20.25	502.461	103.899	600	780	1.00	276.35	57.14	1.5066667	502.4607623	
9	125	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5066677		
	125	45.00	60.75	1430.870	295.877	6000	7800	1.00	786.98	162.73	1.5080000	1430.870053	
10	100	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5080010		
	100	15.00	20.25	447.497	92.534	600	780	1.00	246.12	50.89	1.5100000	447.4972436	
11								1.00			1.5100010		
								1.00					
12	376	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00			
	376	4.20	5.67	182.931	37.827	17	22	1.00	100.61	20.80	1.5026596	182.9311987	
13	374	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5026606		
	374	7.52	10.15	327.035	67.625	72	94	1.00	179.87	37.19	1.5026738	327.0352353	
14	373	6.14	9.08	266.990	60.456	56	414	1.00	146.84	33.25	1.5026748		
	373	16.59	22.40	720.926	149.074	252	328	1.00	396.51	81.99	1.5026810	987.9167336	
15	372	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5026820		
	372	20.76	28.03	901.444	186.402	106	138	1.00	495.79	102.52	1.5026882	901.4439394	
16	366	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5026892		
	366	0.92	1.24	39.763	8.222	24	31	1.00	21.87	4.52	1.5027322	39.76321841	
17	329	3.00	4.56	125.774	29.259	30	206	1.00	69.18	16.09	1.5027332		
	329	5.20	7.02	218.008	45.080	180	234	1.00	119.90	24.79	1.5030395	343.7820638	
18	315	0.14	0.40	5.714	2.563	2	19	1.00	3.14	1.41	1.5030405		
	315	0.17	0.23	7.039	1.456	2	2	1.00	3.87	0.80	1.5031746	12.75334963	
19	315	0.17	0.35	6.901	2.204	2	10	1.00	3.80	1.21	1.5031756		
	315	6.30	8.51	260.864	53.942	180	234	1.00	143.48	29.67	1.5031746	280.5184826	
20	296	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5031756		
	296	21.12	28.51	859.108	177.647	720	936	1.00	472.51	97.71	1.5033784	859.1080609	
21	289	10.46	13.68	422.519	84.636	95	624	1.00	232.39	46.55	1.5033794		
	289	5.20	7.02	210.081	43.441	180	234	1.00	115.54	23.89	1.5034602	632.600801	
22	288	6.72	8.23	271.221	50.874	34	173	1.00	149.17	27.98	1.5034612		
	288	17.90	24.17	722.449	149.389	480	624	1.00	397.35	82.16	1.5034722	993.6699369	
23	260	10.46	13.68	409.945	82.117	95	618	1.00	225.47	45.16	1.5034732		
	260	5.20	7.02	203.829	42.148	180	234	1.00	112.11	23.18	1.5038462	613.7739518	
24	247	10.46	13.68	403.981	80.922	95	615	1.00	222.19	44.51	1.5038472		
	247	5.20	7.02	200.864	41.535	180	234	1.00	110.48	22.84	1.5040486	604.8445463	
25	235	4.10	5.02	156.105	29.281	34	170	1.00	85.86	16.10	1.5040496		
	235	10.62	14.34	363.987	75.266	38	50	1.00	200.19	41.40	1.5042553	520.0919887	
26	235	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5042563		
	235	32.22	43.50	1104.299	228.348	960	1248	1.00	607.36	125.59	1.5042553	1624.390636	
27	181	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5042563		
	181	5.98	8.07	211.360	43.705	52	67	1.00	116.25	24.04	1.5055249	211.3599704	
28	180	1.80	3.02	63.578	16.346	25	133	1.00	34.97	8.99	1.5055259		
	180	5.20	7.02	183.501	37.944	180	234	1.00	100.93	20.87	1.5055556	247.0788311	
29	176	4.20	6.36	147.263	34.137	17	239	1.00	80.99	18.78	1.5055566		
	176	5.20	7.02	182.326	37.702	180	234	1.00	100.28	20.74	1.5056818	329.5895516	
30					#VALUE!			1.00	#VALUE!	#VALUE!	1.5056828		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
31					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
32					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
33					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
34					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
35					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
36					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
37					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
38					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
39					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
40					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
41					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
42					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
43					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
44					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
45					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
46					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
47					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
48					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
49					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	
50					#VALUE!			1.00	#VALUE!	#VALUE!	#DIV/0!		
								1.00	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	

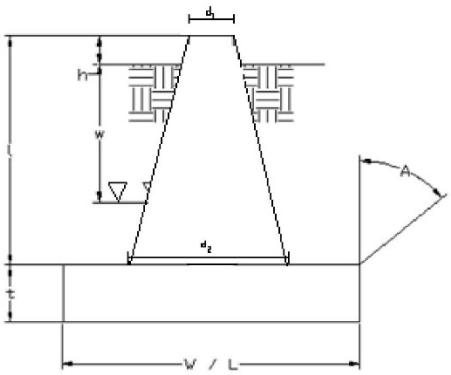
Foundation

Site No.:	88010
Engineer:	ASP
Date:	09/27/19
Carrier:	Sigfox S.A.

Design Loads (Factored)

Compression/Leg:	521.66	k
Uplift/Leg:	341.81	k
Shear/Leg	87.53	k

Face Width @ Top of Pier (d_1):	4.00	ft
Face Width @ Bottom of Pier (d_2):	8.00	ft
Total Length of Pier (l):	8.50	ft
Height of Pedestal Above Ground (h):	0.50	ft
Width of Pad (W):	18.50	ft
Length of Pad (L):	18.50	ft
Thickness of Pad (t):	4.08	ft
Water Table Depth (w):	3.50	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil (Above Water Table):	100.0	pcf
Unit Weight of Soil (Below Water Table):	37.6	pcf
Friction Angle of Uplift (A):	30	°
Ultimate Compressive Bearing Pressure:	20000	psf
Ultimate Skin Friction:	155	psf



Volume Pier (Total):	317.33	ft³
Volume Pad (Total):	1396.38	ft³
Volume Soil (Total):	3975.03	ft³
Volume Pier (Buoyant):	218.49	ft³
Volume Pad (Buoyant):	1396.38	ft³
Volume Soil (Buoyant):	1786.02	ft³
Weight Pier:	33.97	k
Weight Pad:	122.32	k
Weight Soil:	286.06	k
Uplift Skin Friction:	35.10	k

Uplift Check

ϕs Uplift Resistance (k)	Ratio	Result
358.08	0.95	**OK**

Axial Check

ϕs Axial Resistance (k)	Ratio	Result
5133.75	0.10	**OK**

Anchor Bolt Check

Bolt Diameter (in)	2.25
# of Bolts	6
Steel Grade	A36
Steel Fy	36
Steel Fu	58
Detail Type	C

Usage Ratio	Result
0.55	**OK**

EXHIBIT 3:

General Power Density Table report (RF Emissions Analysis Report)

T-SQUARED SITE SERVICES
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

RF EMISSIONS COMPLIANCE REPORT

T-Squared Site Services on behalf of Sigfox S.A.

Site Name: Durham CT
Sixfox S.A. Site ID: CT9184
373 Chamberlain Hill Road
Higganum, CT
7/2/2019

Report Status:

Sigfox S.A. Is Compliant

Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Pennsylvania License Number PE076436
Expires September 30, 2019

Signed 02 July 2019

Prepared By:

Site safe, LLC

8618 Westwood Center Drive
Suite 315

Vienna, VA 22182

Voice: 703-276-1100
Fax: 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
T-Squared Site Services
Higganum, CT

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 Site Safe, LLC in Vienna, 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 Radio Frequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by T-Squared Site Services (see attached Site Summary and Carrier documents) and that Sigfox S.A.'s installation involves communications equipment, antennas and associated technical equipment at a location referred to as "Durham CT" ("the site"); and

That Sigfox S.A. 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 S.A. and shown on the worksheet and that worst-case 100% duty cycle has been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure, and the antennas used are highly directional and oriented at angles at or just below the horizontal and the energy present at ground level is typically so low as to be considered insignificant and has not been included in this analysis (a list of microwave antennas is included); 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 energy 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," defined as 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 limits set forth in the FCC rules for licensees of Sigfox S.A.'s operating frequencies 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 S.A. operation is 0% of the maximum permissible exposure (MPE) limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% 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 2.501% 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(s) and frequency range(s) 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; and

In summary, it is stated here that the proposed operation at the site will 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(b), and that Sigfox S.A.'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 this 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.

T-Squared Site Services
Durham CT
Site Summary

Carrier	Area Maximum Percentage MPE
Eversource Energy	0.13 %
Eversource Energy	0.026 %
Eversource Energy	0.058 %
Eversource Energy	0.027 %
Marcus Communications	0.024 %
Marcus Communications	0.002 %
Sigfox S.A. (Proposed)	0 %
Sprint (Decommissioned)	0 %
US Department of Homeland Security	0.04 %
US Department of Homeland Security	0.034 %
Unknown Carrier	2.142 %
Unknown Carrier	0.019 %
Composite Site MPE:	2.501 %

Eversource Energy
Durham CT
Carrier Summary

Frequency:	49.3	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.25921	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.12961	%

					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**
Kreco	CO41-A	176	0	100	0.259211	0.129606	0.259211	0.129606

Eversource Energy
Durham CT
Carrier Summary

Frequency:	450	MHz
Maximum Permissible Exposure (MPE):	300	µW/cm^2
Maximum power density at ground level:	0.07824	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.02608	%

					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**
TELEWAVE	ANT450F6	180	0	100	0.072554	0.024185	0.078239	0.02608

Eversource Energy
Durham CT
Carrier Summary

Frequency:	30	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.11624	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.05812	%

					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**
Comprod	531-70HD	181	0	100	0.116242	0.058121	0.116242	0.058121

Eversource Energy
Durham CT
Carrier Summary

Frequency:	47.9	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.05476	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.02738	%

					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**
Kreco	CO41-A	376	0	100	0.054756	0.027378	0.054756	0.027378

Marcus Communications
Durham CT
Carrier Summary

Frequency:	450	MHz
Maximum Permissible Exposure (MPE):	300	µW/cm^2
Maximum power density at ground level:	0.07148	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.02383	%

					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**
TX RX	101-68-10-6-03N	373	0	100	0.013875	0.004625	0.013875	0.004625
TX RX	101-68-10-6-03N	373	0	100	0.013875	0.004625	0.013875	0.004625
TX RX	101-68-10-6-03N	373	0	100	0.013875	0.004625	0.013875	0.004625
Generic	10' Omni	329	0	100	0.063363	0.021121	0.063363	0.021121

Marcus Communications
Durham CT
Carrier Summary

Frequency:	900	MHz
Maximum Permissible Exposure (MPE):	600	µW/cm^2
Maximum power density at ground level:	0.01071	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.00179	%

					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**
dBSpectra	DS9A09F36D-N	373	0	100	0.010714	0.001786	0.010714	0.001786

Sigfox S.A. (Proposed)
Durham CT
Carrier Summary

Frequency:	905.2	MHz
Maximum Permissible Exposure (MPE):	603.33	µW/cm^2
Maximum power density at ground level:	0.00053	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.00009	%

					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**
Procom	CXL 900-3LW	315	0	1.22	0.000532	0.000088	0.000532	0.000088

Sprint (Decommissioned)
Durham CT
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	µW/cm^2
Maximum power density at ground level:	0	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0	%

					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	DB844H90E-XY	288	0	0	0	0	0	0
ANDREW	DB844H90E-XY	235	120	0	0	0	0	0
ANDREW	844G65VTZASX	235	240	0	0	0	0	0

US Department of Homeland Security
Durham CT
Carrier Summary

Frequency:	138	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.07923	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.03962	%

					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**
SINCLAIR	SC281-L	289	0	100	0.02175	0.010875	0.022098	0.011049
SINCLAIR	SC281-L	260	0	100	0.026932	0.013466	0.02737	0.013685
SINCLAIR	SC281-L	247	0	100	0.030063	0.015032	0.030547	0.015273

US Department of Homeland Security
Durham CT
Carrier Summary

Frequency:	160	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.0671	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.03355	%

					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**
Rohde & Schwarz	ADD090	372	0	100	0.067096	0.033548	0.067096	0.033548

Unknown Carrier
Durham CT
Carrier Summary

Frequency:	90	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	4.28432	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	2.14216	%

					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**
Generic	20' FM	296	0	1000	4.284321	2.14216	4.284321	2.14216

Unknown Carrier
Durham CT
Carrier Summary

Frequency:	150	MHz
Maximum Permissible Exposure (MPE):	200	µW/cm^2
Maximum power density at ground level:	0.03718	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.01859	%

					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**
Generic	20' Omni	374	0	100	0.037175	0.018588	0.037175	0.018588

Durham CT
Composite Microwave Antenna Summary

Carrier	Antenna Make/Model	Height (feet)
Marcus Communications	Generic 4' Dish	339
Eversource Energy	RFS SB4-W60AC	301

EXHIBIT 4:

Letter of Authorization

T-SQUARED SITE SERVICES
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

AMERICAN TOWER®
CORPORATION

LETTER OF AUTHORIZATION

SITE NO: See Site List Below **SITE NAME: See Site List Below**

ADDRESS: See Site List Below

I, Margaret Robinson, Senior Counsel, US Tower Division on behalf of American Tower*, owner of the tower facility located at the address identified below (the "Tower Facilities"), do hereby authorize SIGFOX NIP LLC dba SIGFOX S.A., its successors and assigns, to act as American Tower's non-exclusive agent for the purpose of filing and securing any zoning, land-use, building permit and/or electrical permit application(s) and approvals of the applicable jurisdiction for and to conduct the construction of the installation of antennas and related telecommunications equipment on the Tower Facility located at the above address. This installation shall not affect adjoining lands and will occur only within the area leased by American Tower.

American Tower understands that the application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by American Tower of conditions related to American Tower's installation. Any such conditions of approval or modifications will not be effective unless approved in writing by American Tower.

The above authorization does not permit SIGFOX NIP LLC dba SIGFOX S.A to modify or alter any existing permit(s) and/or zoning or land-use conditions or impose any additional conditions unrelated to American Tower's installation of telecommunications equipment without the prior written approval of American Tower.

Sites Authorized (continued on the next page):

CT9000	ATC 302469
CT9001	ATC 88018
CT9081	ATC 88017
CT9122	ATC 88008
CT9123	ATC 88011
CT9184	ATC 88010

AMERICAN TOWER®
CORPORATION

Asset Number	Site Name	Site Address	Site City	Site State	Site Zip
302469	Bridgeport CT 2	1069 Connecticut Avenue	Bridgeport	Connecticut	06607-1226
88018	STAMFORD (KATOONA)	168 Catoona Lane	Stamford	Connecticut	06902-4573
88017	SHELTON-TRUMBULL	14 OXFORD DRIVE/BOOTH HILL RD	SHELTON	Connecticut	06484-3455
88008	BETHANY CT	93 Old Amity Road	Bethany	Connecticut	06524-3400
88011	EAST KILLINGLY NORTH	1375 North Road	Killingly	Connecticut	06241-1404
88010	DURHAM CT	373 CHAMBERLAIN HILL RD	Higganum	Connecticut	06441-4062

Signature: _____

Margaret Robinson, Senior Counsel
US Tower Division

NOTARY BLOCK

COMMONWEALTH OF MASSACHUSETTS
County of Middlesex

This instrument was acknowledged before me by Margaret Robinson, Senior Counsel of American Tower (Tower Facility owner), personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same.

WITNESS my hand and official seal, this 18th day of June, 2019.

NOTARY SEAL: MELISSA ANN METZLER
Notary Public
Commonwealth of Massachusetts
My Commission Expires March 14, 2025

Notary Public _____
My Commission Expires: March 14, 2025

* American Tower as used herein is defined as American Tower Corporations and any of its affiliates or subsidiaries.

EXHIBIT 5:

Proof of Mailing to Local Municipality Chief Elected Official

T-SQUARED SITE SERVICES
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Ms. Lizz Milardo, First Selectman	T-Squared Site Services, LLC
Town of Haddam	
Town Office Building	2500 Highland Rd
30 Field Park Drive	Suite 201
HADDAM, CT	Hermitage, PA
06438	16148
US	US
860-345-8531	7243087855

Shipment Information:
Tracking no.: 776877542544
Ship date: 11/01/2019
Estimated shipping charges: 8.65 USD

Package Information
Pricing option: FedEx One Rate
Service type: FedEx Express Saver
Package type: FedEx Envelope
Number of packages: 1
Total weight:
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Drop off package at FedEx location

Billing Information:
Bill transportation to: My Account - 350-350
Your reference:
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

EXHIBIT 6:

Proof of Mailing to Tower Owner/Property Owner

T-SQUARED SITE SERVICES
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Mr. Jason Hastie	T-Squared Site Services, LLC
American Tower Corp.	
10 Presidential Way	2500 Highland Rd
	Suite 201
WOBURN, MA	Hermitage, PA
01801	16148
US	US
7819267485	7243087855

Shipment Information:
Tracking no.: 776877649910
Ship date: 11/01/2019
Estimated shipping charges: 8.65 USD

Package Information
Pricing option: FedEx One Rate
Service type: FedEx Express Saver
Package type: FedEx Envelope
Number of packages: 1
Total weight:
Declared Value: 0.00 USD
Special Services:
Pickup/Drop-off: Drop off package at FedEx location

Billing Information:
Bill transportation to: My Account - 350-350
Your reference:
P.O. no.:
Invoice no.:
Department no.:

Thank you for shipping online with FedEx ShipManager at fedex.com.

Please Note

EXHIBIT 7:

Additional Information

T-SQUARED SITE SERVICES
2500 Highland Road | Suite 201
Hermitage, PA 16148 | 724.308.7855
www.t-sqrd.com

Craig A. Russo, P.E.

From: Max Houston <max.houston.external@sigfox.com>
Sent: Tuesday, August 13, 2019 8:57 AM
To: Craig A. Russo, P.E.
Cc: mark.t@t-sqrd.com; 'Kevin Exley'; Natalie Kenady
Subject: RE: CT9081

Hi Craig,

SIGFOX does not have a backup power option for any of the sites – no battery back up.

Max Houston
Construction Manager
SIGFOX, Inc.
850-543-8341
max.houston.external@sigfox.com

From: Craig A. Russo, P.E. <craig.r@t-sqrd.com>
Sent: Tuesday, August 13, 2019 7:52 AM
To: Max Houston <max.houston.external@sigfox.com>
Cc: mark.t@t-sqrd.com; 'Kevin Exley' <kevin.e@t-sqrd.com>
Subject: RE: CT9081

Good Morning Max,

One more question about this site. The Siting Council is asking if SIGFOX's equipment cabinet will include a battery back-up and if not, what are the back-up options for the facility?

Thanks, Max!

Craig A. Russo, P.E. | Engineer
T-Squared Site Services
724.308.7855 (o) | 724.333.0517 (m)

From: Max Houston <max.houston.external@sigfox.com>
Sent: Wednesday, August 7, 2019 10:40 AM
To: Craig A. Russo, P.E. <craig.r@t-sqrd.com>
Cc: mark.t@t-sqrd.com; 'Kevin Exley' <kevin.e@t-sqrd.com>
Subject: Re: CT9081

Craig,

Receive only!

Max Houston
Construction Manager
SIGFOX, Inc.
max.houston.external@sigfox.com
850-543-8341

-------- Original message --------
From: "Craig A. Russo, P.E." <craig.r@t-sqrd.com>
Date: 8/7/19 9:28 AM (GMT-06:00)
To: Max Houston <max.houston.external@sigfox.com>
Cc: mark.t@t-sqrd.com, 'Kevin Exley' <kevin.e@t-sqrd.com>
Subject: CT9081

Good Moring Max,

We received review comments back from the Connecticut State Siting Council regarding the above referenced site. One comment states:

- *It is unclear if the proposed satellite dish to be mounted on the H-Frame at grade is a receive only antenna or both transmit and receive. If the antenna transmits signal, the RF Emissions Compliance Report would require updating.*

Can you provide any clarification on this? Is the dish set to receive only or set to receive and transmit?

Thanks!

Craig A. Russo, P.E. | Engineer
T-Squared Site Services
2500 Highland Road, Suite 201
Hermitage, PA 16148
724.308.7855 (o) | 724.333.0517 (m)