CONNECTICUT SITING COUNCIL

PETITION OF SPRINT SPECTRUM REALTY COMPANY, LLC ("SPRINT") TO THE CONNECTICUT SITING COUNCIL FOR A DECLARATORY RULING THAT A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS NOT REQUIRED FOR A PROPOSED TEMPORARY ROOFTOP TOWER TO BE LOCATED AT 201 HIGH RIDGE ROAD, STAMFORD, CONNECTICUT

PETITION NO. _____
JANUARY 7, 2019

PETITION FOR DECLARATORY RULING PROPOSED TEMPORARY ROOFTOP TOWER 201 HIGH RIDGE ROAD, STAMFORD, CONNECTICUT

I. Introduction

Sprint Spectrum Realty Company, LLC ("Sprint"), the "Petitioner", hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling that there are no permanent environmental impacts associated with the installation of a temporary rooftop tower facility ("Temporary Facility") on an office building located at 201 High Ridge Road in Stamford, Connecticut (the "Site") and that therefore a Certificate of Environmental Compatibility and Public Need ("Certificate") is not required for installation of the Temporary Facility. Included in Attachment 1 is a Letter of Authorization from the property owners (collectively referred to as "HRC"), authorizing Sprint to file this Petition.

II. Need For The Temporary Rooftop Tower

Sprint has operated an existing rooftop wireless communications facility on a portion of one of the existing office buildings at the Site ("Existing Facility") for over 15 years and which serves commercial and residential areas in this part of Stamford. The Existing Facility was issued permits by the City of Stamford (a facility involving rooftop antenna attachments) and is identified in the Siting Council's Comprehensive List of Sites maintained on its website.

Historically, the property was owned and occupied by General Electric ("GE") as one of its office campuses in Fairfield County. GE sold the Site and no longer maintains offices in the buildings.

In December of 2018, the City of Stamford's Zoning Board approved demolition of that portion of the building that supports Sprint's Existing Facility and as part of development of a new senior housing facility by the new owners of the Site. A rendering of the redevelopment plans (before and after) and elevation of the new approved senior living facility is included in Attachment 2.

HRC and Sprint have entered into an agreement for Sprint's Existing Facility to be permanently relocated to the roof of the new senior residence building once construction of that project is complete (the "Permanent Rooftop Facility"). In the interim and to maintain continuity of Sprint's services, the parties' agreement also requires construction of a temporary facility for the duration of demolition and construction activities at the Site.

Sprint requires construction of a temporary tower facility to replicate its services along High Ridge Road and to areas north of Bull's Head and nearby residential portions of the City. Due to construction phasing during redevelopment of the Site, a temporary 40-foot-tall rooftop tower mast was designed for installation on an adjacent office building rooftop on the same Site and that is approximately 30 feet lower in height than the existing building being demolished. The overall height of the temporary rooftop tower and antennas (approximately 73' AGL), is a height needed to also clear the height of the proposed new building to be constructed on the Site.

III. Existing Sprint Rooftop Site & Location

The Site has an address of 201 High Ridge Road and is identified by the Stamford Tax Assessor as ID 003-9650 (Map/Block/Lot 103/324/A). The property is approximately 16.52 acres in size and has frontage on and access directly from High Ridge Road. The Site abuts a campus-style office development to the north and residences to the south, east and west. An aerial view of the Site is included below for reference to existing conditions.

Figure 1- Aerial photo of 201 High Ridge Road and surrounding area.

IV. Temporary Facility Specifications

A 40' tall temporary rooftop tower will be installed on the roof of an existing 29' 6.5"' AGL building. The temporary rooftop tower will be mounted to an existing elevated steel platform. The tower structure will be guyed at three locations on the roof.

Three (3) multi-band (865/1900/2500 MHz) temporary antennas, diplexers and amplifiers will be affixed to the tower at a centerline height of 69.5' AGL and support Sprint's current CDMA and LTE network services. Unmanned equipment will be located at ground level on the northwestern side of the building on a 10' x 10' concrete pad with three equipment cabinets.

Detailed drawings for the Temporary Facility prepared by Centek Engineering, last revised January 7, 2019, including a site plan, elevation and construction plan are included in Attachment 3. A Structural Report prepared by Centek Engineering, dated January 2, 2019, confirming that the building can accommodate Sprint's Temporary Facility with minor reinforcement of the existing steel rooftop platform is included in Attachment 4.

V. The Temporary Tower Facility Will Not Have Permanent Substantial Adverse Environmental Effects

The Temporary Facility will not create permanent substantial adverse environmental effects as more fully set forth herein.

a. Temporary Tower Height & Location

The height of the building rooftop to host the Temporary Facility is 29' 6.5"' AGL and the rooftop has a penthouse that extends to 39' 6" AGL. The top of the temporary rooftop tower structure will be at 69' 6.5" with antennas extending an additional 3' to a height not exceeding 73' AGL.

The overall height of the Temporary Facility is a function of: 1) ensuring communications are not interfered with during demolition and construction of the new senior living facility, a 67' AGL building as noted in the Permanent Rooftop Facility plans included in Exhibit 5; and 2) providing adequate replacement coverage of the Existing Facility until it can be relocated back to the new building.

Enclosed in Attachment 6 is confirmation that the proposed Temporary Facility will not require registration with the Federal Aviation Administration ("FAA").

b. Visibility

A comparison of the existing and proposed conditions reveals no substantial or significant environmental impacts associated with Sprint's Temporary Facility. A combination of the location of the building, topography and surrounding mature vegetation minimize the visibility of the Temporary Facility. Photosimulations, prepared by All Points Technology prepared in December 2018, are included in Attachment 7. Because the visibility is all associated with the installation of a Temporary Facility, it is limited in duration and will be reversed once the Permanent Rooftop Facility is constructed on the new building. As such there is no permanent adverse visual effect being proposed for purposes of the Council's regulatory considerations in ruling on this Petition.

c. Physical Impacts

Sprint's Temporary Facility will result in minimal disturbance to the Site. The temporary tower will be located on the rooftop of an existing building and the only ground disturbance will result from the installation of a 10' x 10' concrete slab for the three equipment cabinets and utilities at grade immediately adjacent to the building. Existing access to the site will continue to be utilized and no tree removal is necessary for the Temporary Facility. The Temporary Facility will be unmanned and require no water or wastewater connections and will not generate any waste.

d. Compliance with MPE Limits

The operation of Sprint's antennas at the Site will remain well below standards adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes. A Calculated Radio Frequency Emissions Report is included in Attachment 8. The total radio frequency power density will be 9.62% of the allowable FCC established general public limit at ground level.

VI. Notice of Petition Filing

Pursuant to R.C.S.A. Section 16-50j-40(a) of the Council's regulations, notice of Sprint's intent to file this petition was sent to each person appearing of record as an owner of property that abuts the Site, as well as municipal officials and government agencies as listed in Section 16-50e of the General Statutes. Certification of such notice, a copy of the notice and the list of property owners, municipal officials, and government agencies to whom Sprint sent notice, along with the map from the City's GIS Department used to identify abutting property owners, are included in Exhibit 9.

VII. Council Regulation of Temporary Towers and Declaratory Ruling Sought by Sprint

The Public Utility Environmental Standards Act ("PUESA") provides the Siting Council with jurisdiction over telecommunications towers and several other types of utility infrastructure defined as "facilities". See C.G.S. § 16-50i(a). Not every "facility" requires a Certificate of Environmental Compatibility and Public Need. Indeed, state law specifically provides that only a facility that "may have a substantial adverse environmental effect" requires a Certificate. C.G.S. § 16-50k.

The Siting Council's regulations contain several exemptions for certain types of tower facilities including temporary towers. For example, Section 16-50j-72(a)(2) of the Council's regulations includes an exemption for installation of a tower next to an existing tower that is damaged or inoperable and required in order to maintain continuity of services. Section 16-50j-72(d) of the Council's regulations also incorporate an exemption for temporary towers provided that the temporary use is "necessary to provide emergency or essential telecommunications services to . . . events of statewide significance". Historically, wireless carriers have filed and received acknowledgment of notices for cell on wheels, temporary distribution pole sets and other types of temporary facilities needed during construction of new wireless facilities or for special events. See e.g. EM-CING-052-131023, EM-CING-038-120816.

In cases where a tower facility is not otherwise exempt under Council regulations, the Council has discretion to determine that a proposed facility will not have a substantial adverse

environmental effect and that no Certificate is required. See Section 4-176 of the Uniform Administrative Procedure Act and Sections 16-50j-38 and 39 of the Council's regulations which specifically provide the Siting Council with the regulatory authority to render case-by-case declaratory rulings in a petition process. As relevant to this Petition, the Council has previously issued declaratory rulings that no Certificate was required for: a 85' temporary tower needed to avoid service disruption during maintenance of a water tank site (Petition 1062), a 120' ground mounted temporary monopole tower in Bridgeport (Petition 1169), a 94' ground mounted temporary monopole in Greenwich (Petition 443B) and more recently a 163' ground mounted temporary monopole tower in Westbrook (Petition 1330).

Sprint has filed this Petition with the Council to address the need for a temporary tower to be deployed at an existing communications site to avoid disruption of wireless services to the public. Sprint specifically seeks a ruling that the environmental effects associated with the construction of the Temporary Facility at 201 High Ridge Road, adjacent to the existing and future relocated rooftop site, are not permanent or substantial for purposes of Section 16-50k, reversible and temporary in duration. Of note, Sprint will construct the Temporary Facility and maintain it only until such time as the proposed senior living facility and Sprint's Permanent Rooftop Facility are constructed and operational.

VIII. Conclusion

Sprint respectfully submits that the proposed Temporary Facility is in the public interest and does not present any substantial irreversible adverse environmental effects for purposes of Section 16-50p of the General Statutes. Sprint petitions the Connecticut Siting Council for a determination that installation of the Temporary Facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving the Temporary Facility effective for that period of time that it takes for demolition and construction of the senior living facility and the Permanent Rooftop facility to be constructed and operational.

Respectfully Submitted,

Christopher B. Fisher, Esq.
On behalf of the Petitioner Sprint
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

cc: City of Stamford
Sprint Spectrum Realty Company, LLC
Steven Wise, Owner's Representative

1

LETTER OF AUTHORIZATION

This Letter of Authorization, dated this 7th day of January, 2019, provides written authorization for Sprint Spectrum Realty Company, LLC and its affiliates ("Sprint"), its agents or representatives, to apply for and execute any necessary Connecticut Siting Council petitions, permits or any other approvals, including, but not limited to, the filing of applications for building permits, which are necessary for purposes of installing, operating and maintaining a temporary wireless telecommunications facility on a portion of the real property with an address of 201 High Ridge Road, Stamford, Connecticut 06905 (Assessor's Map/Block/Lot 103/324/A) and owned by HRC 201 I LLC, HRC 201 II LLC, HRC 201 III LLC and HRC 201 IV LLC ("Owner").

A copy of this letter shall be regarded as having the same effect as the original.

Owner: HRC 201 I LLC, HRC 201 II LLC, HRC 201 III, LLC, HRC IV LLC

By: Managing Guy LLC as agent for
HRC 201 I LLC – HRC 201 IV LLC
Tenants in Common
18 E. 50th Street, 10th Floor
New York, NY 10022

By: _____

Printed Name: Scott E. Solomon

Title: Managing Member

Date: 1/7/2019

Existing

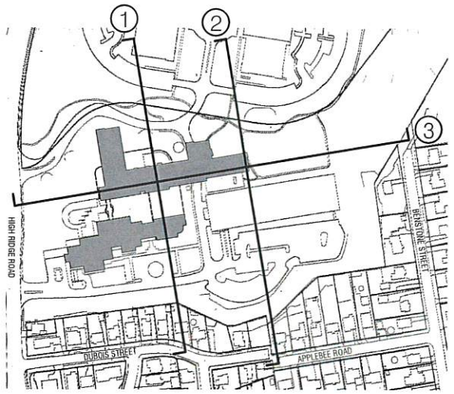
Proposed

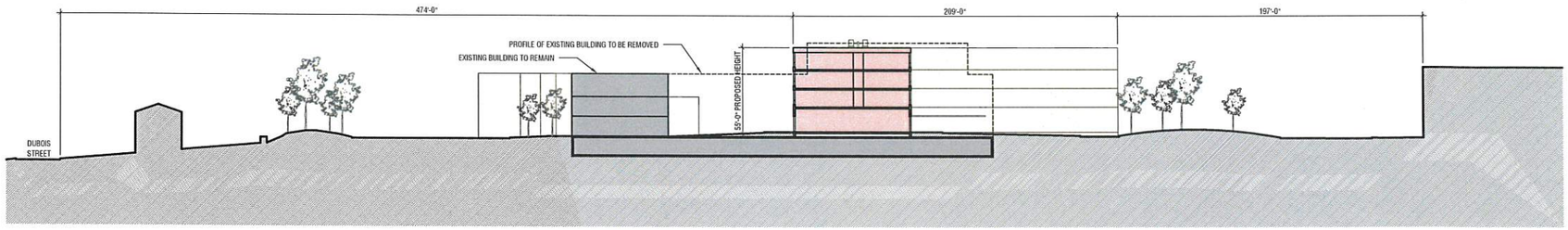
WATERSTONE STAMFORD
Stamford, Connecticut

Aerial View
December 17, 2018

NATIONAL DEVELOPMENT

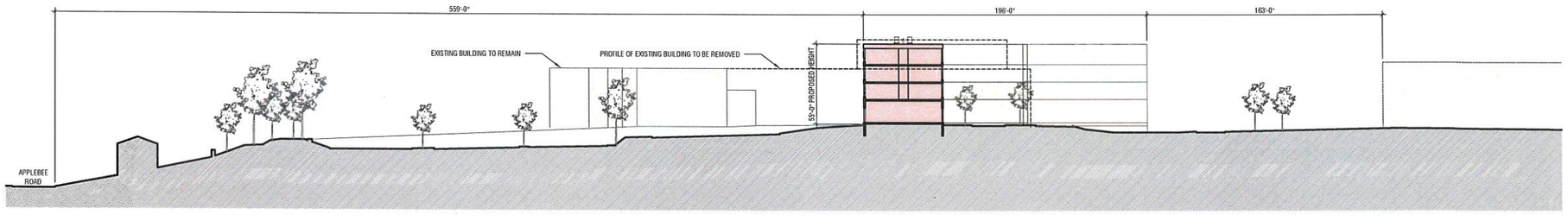
ELKUS | MANFREDI ARCHITECTS





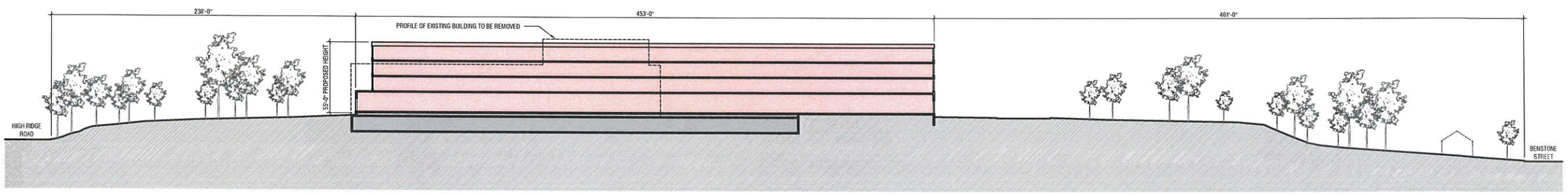
1 **SITE SECTION - NORTH/SOUTH THROUGH DUBOIS STREET AND ENTRANCE**

SCALE: 1" = 40'



2 **SITE SECTION - NORTH/SOUTH THROUGH APPLEBEE ROAD AND ASSISTED LIVING**

SCALE: 1" = 40'



3 **SITE SECTION - EAST/WEST THROUGH HIGH RIDGE ROAD AND BENSTONE STREET**

SCALE: 1" = 40'

WATERSTONE STAMFORD
Stamford, Connecticut

Site Sections
December 17, 2018

NATIONAL DEVELOPMENT

ELKUS | MANFREDI ARCHITECTS

3

Sprint

WIRELESS COMMUNICATIONS FACILITY

CT43XC862

TEMPORARY TOWER INSTALL

201 HIGH RIDGE ROAD

STAMFORD, CT 06905

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

TO: 201 HIGH RIDGE ROAD
STAMFORD, CT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.36 MI.
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI.
3.	TURN LEFT ONTO WEST ST	0.30 MI.
4.	MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN.	9.59 MI.
5.	MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST.	54.24 MI.
6.	TAKE THE CT-137/HIGH RIDGE RD EXIT, EXIT 35	0.37 MI.
7.	TURN RIGHT ONTO CT-137/HIGH RIDGE RD.T 201 HIGH RIDGE ROAD IS ON THE LEFT	2.38 MI.

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY SPRINT.

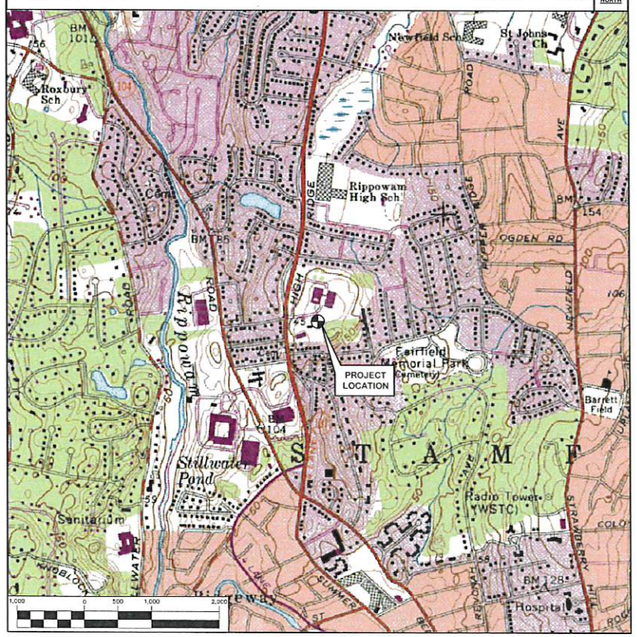
SITE INFORMATION

THE SCOPE OF WORK SHALL INCLUDE:

1. THE INSTALLATION OF A ±40' TALL TEMPORARY TOWER THAT IS LOCATED ON EXISTING STEEL FRAME LOCATED ON EXISTING SUBJECT ROOF.
2. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.
3. POWER, TELCO AND GROUND CONDUITS UTILITIES SHALL BE ROUTED FROM EXISTING UTILITY POLE TO THE PROPOSED LOCATION OF THE TEMPORARY TOWER/COW.
4. THE INSTALLATION OF PROPOSED UTILITY BACKBOARD.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

SITE NAME:	CT43XC862 (TEMPORARY TOWER INSTALL)
SITE ADDRESS:	201 HIGH RIDGE ROAD STAMFORD, CT 06905
PROPERTY OWNER:	HRC 201 II, LLC 46 WESTCHESTER AVENUE POUND RIDGE, NY 10576
LESSEE/TENANT:	SPRINT 5 WAYSIDE ROAD BURLINGTON, MA 01803
CONTACT PERSON:	DOUG TALMADGE (475) 434-4292
ENGINEER:	CENTEK ENGINEERING 63-2 NORTH BRANFORD ROAD, BRANFORD, CT 06405 (203) 488-0580
TEMPORARY TOWER COORDINATES:	LATITUDE: 41°-04'-43.08" LONGITUDE: 73°-32'-56.70" EX. GROUND ELEVATION: 164'± A.M.S.L. COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH PRO.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	2
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C-3.0	PLANS	2
C-4.0	ELEVATIONS	2
C-5.0	SITE DETAILS	2

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/07/19	CAG	TJL	REVISED OWNER INFO. AND SCHOOL/DAYCARE DISTANCES TABLE
1	10/11/18	CAG	TJL	CSC DRAWINGS - REVISED GROUND EQUIPMENT AND ELEVATIONS
0	06/05/18	KAW	CAG	CSC - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT * TIMOTHY J. LAMANNA * PROFESSIONAL ENGINEER

Sprint Transcend Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
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Branford, CT 06405
www.CentekEng.com

SPRINT
WIRELESS COMMUNICATIONS FACILITY
CT43XC862
201 HIGH RIDGE ROAD
STAMFORD, CT 06905

DATE: 06/04/18
SCALE: AS NOTED
JOB NO. 18035.00

TITLE SHEET

T-1

Sheet No. 1 of 6

1 C-1.0 **ABUTTERS MAP**
SCALE: 1" = 100'

NORTH

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

MISCELLANEOUS SITE INFORMATION

SCHOOL/DAYCARE FACILITY:	DISTANCE:
1. ACADEMY OF INFORMATION TECHNOLOGY & ENGINEERING	0.60 mi.
2. RIPPOWAM MIDDLE SCHOOL	0.70 mi.
3. APPLES EARLY CHILDHOOD EDUCATIONAL CENTER	0.50 mi.
4. CHILDREN'S ACADEMY CT	0.50 mi.
5. FIRST UNITED METHODIST NURSERY SCHOOL	0.30 mi
6. ANCHOR ACADEMY	0.70 mi
7. NEWFIELD ELEMENTARY SCHOOL	1.50 mi.
8. STAMFORD HIGH SCHOOL	2.30 mi.
9. WESTHILL HIGH SCHOOL	1.50 mi.
10. DAVENPORT RIDGE ELEMENTARY SCHOOL	3.10 mi.
11. CLOONAN MIDDLE SCHOOL	2.00 mi.
12. ROXBURY SCHOOL	1.50 mi.
13. STILLMEADOW ELEMENTARY SCHOOL	2.10 mi.
14. WESTOVER MAGNET ELEMENTARY SCHOOL	2.00 mi.

MUNICIPALITY NOTIFICATION LIMIT MAP

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2	01/07/19	CAG	TJL	REVISED OWNER INFO. AND SCHOOL/DAYCARE DISTANCES TABLE
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PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT * REGISTERED PROFESSIONAL ENGINEER *

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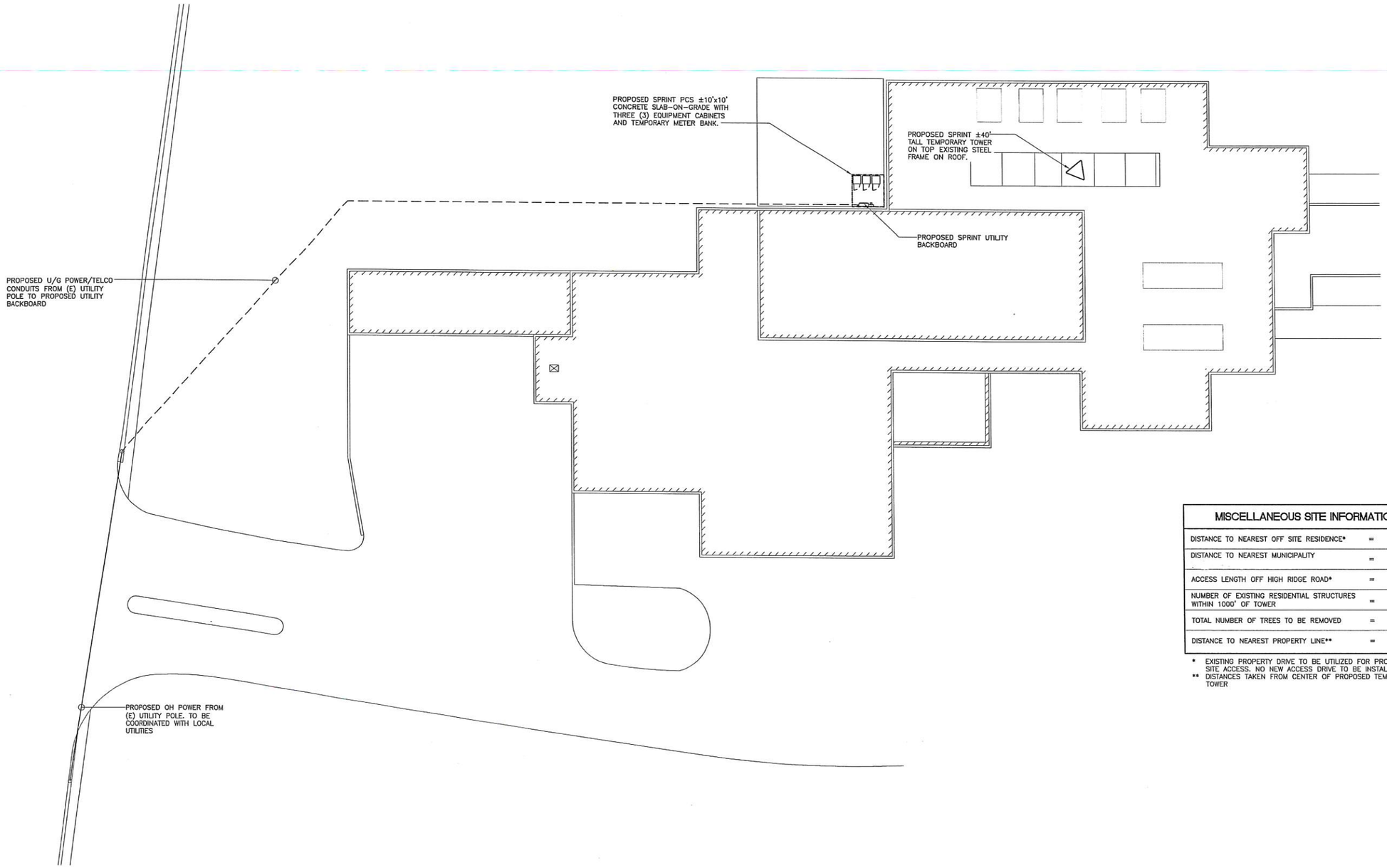
ABUTTERS MAP

C-1.0

Sheet No. 2 of 6



MISCELLANEOUS SITE INFORMATION		
DISTANCE TO NEAREST OFF SITE RESIDENCE*	=	250'±
DISTANCE TO NEAREST MUNICIPALITY	=	8,280'±
ACCESS LENGTH OFF HIGH RIDGE ROAD*	=	0'±
NUMBER OF EXISTING RESIDENTIAL STRUCTURES WITHIN 1000' OF TOWER	=	145±
TOTAL NUMBER OF TREES TO BE REMOVED	=	0±
DISTANCE TO NEAREST PROPERTY LINE**	=	250'±

* EXISTING PROPERTY DRIVE TO BE UTILIZED FOR PROPOSED TEMP SITE ACCESS. NO NEW ACCESS DRIVE TO BE INSTALLED.
** DISTANCES TAKEN FROM CENTER OF PROPOSED TEMP GUYED TOWER

1 C-2.0 **PARTIAL SITE PLAN**
SCALE: 1" = 15'

NORTH

GRAPHIC SCALE
15 0 7.5 15 30 60
(IN FEET)
1 inch = 15 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/07/19	CAG	TJL	REVISED OWNER INFO. AND SCHOOL/DAYCARE DISTANCES TABLE
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PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT * CRAIG A. GAUDIO * 27867 * PROFESSIONAL ENGINEER

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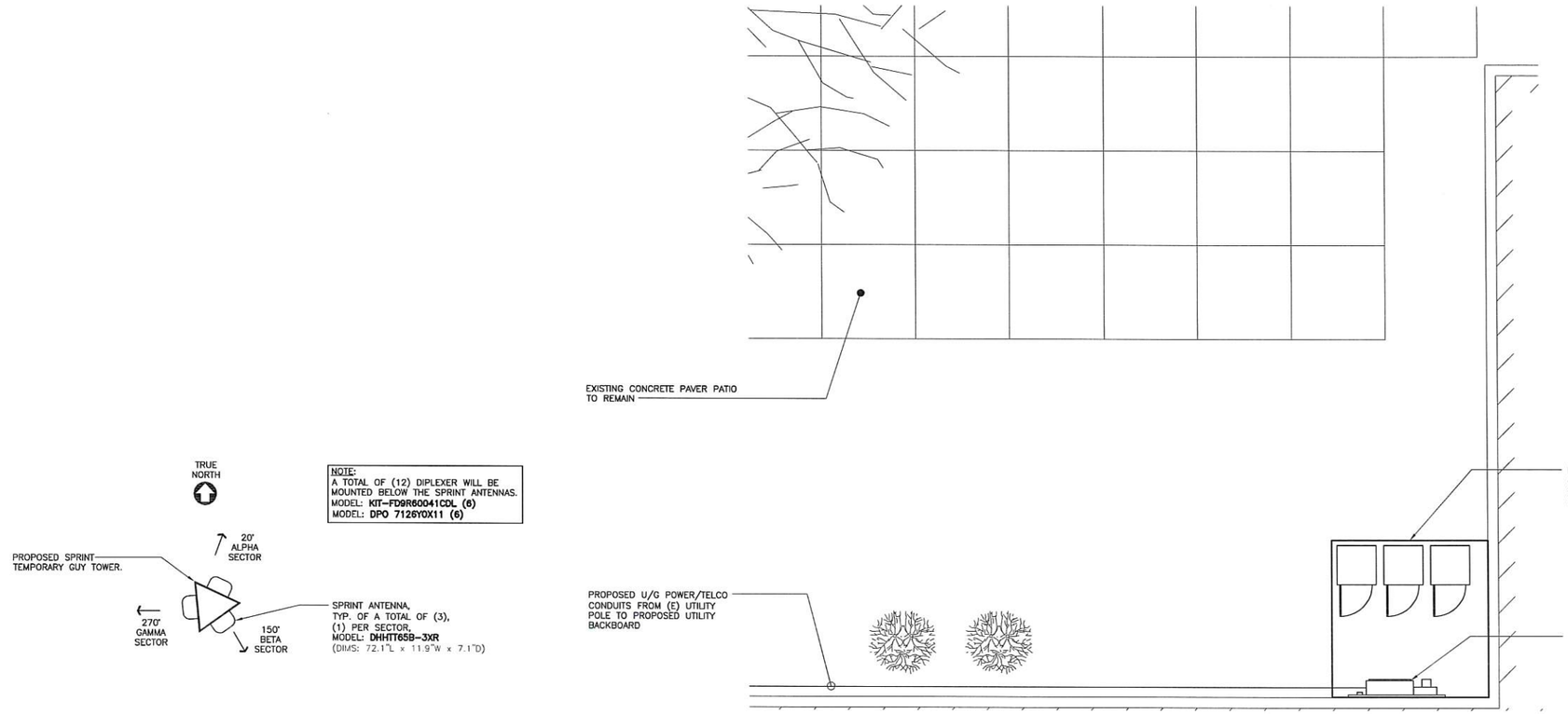
PARTIAL SITE PLAN

C-2.0
Sheet No. 3 of 6



2 C-3.0 **PROPOSED EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'-0"

NOTE:
A TOTAL OF (12) DIPLEXER WILL BE MOUNTED BELOW THE SPRINT ANTENNAS.
MODEL: **KIT-FD9R6004/1CDL (6)**
MODEL: **DPO 7126Y0X11 (6)**

ANTENNA ℄ EL.: ±69'-6 1/2" AGL

1 C-3.0 **SPRINT ANTENNA MOUNTING CONFIGURATION**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/07/19	CAG	TJL	REVISED OWNER INFO. AND SCHOOL/DAYCARE DISTANCES TABLE
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PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT * LICENSED PROFESSIONAL ENGINEER * TIMOTHY J. LAVIOLA

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CT43XC862

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DATE:	06/04/18
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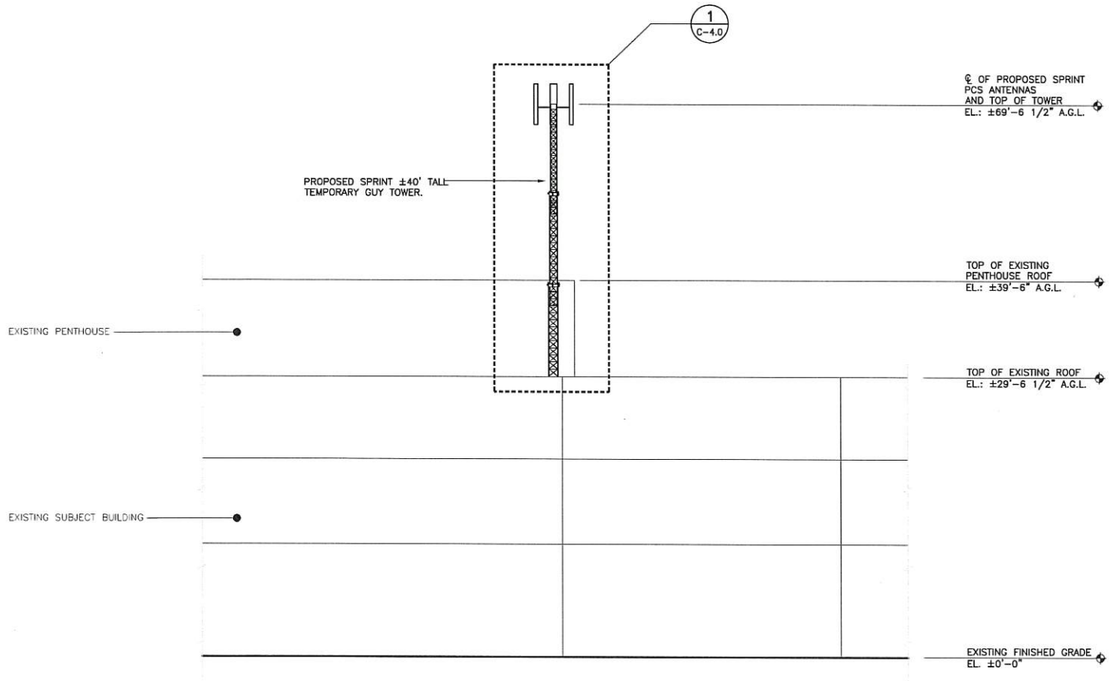
PLANS

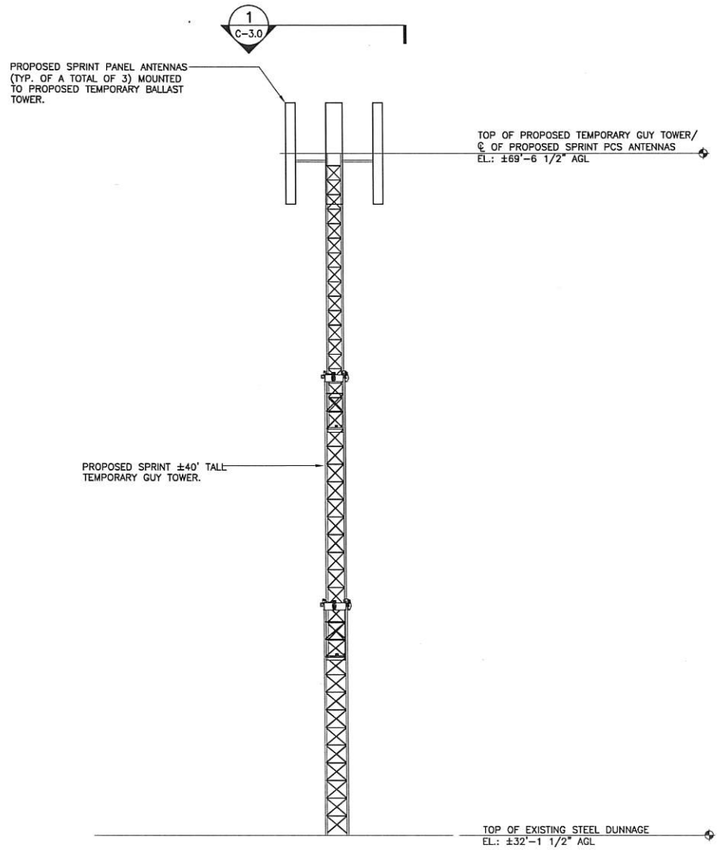
C-3.0

Sheet No. 4 of 6



2 C-4.0 **PARTIAL BUILDING ELEVATION**
SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.



1 C-4.0 **SOUTH TOWER ELEVATION**
SCALE: 1/4" = 1'

GRAPHIC SCALE
4 0 2 4 8 16
(IN FEET)
1 inch = 4 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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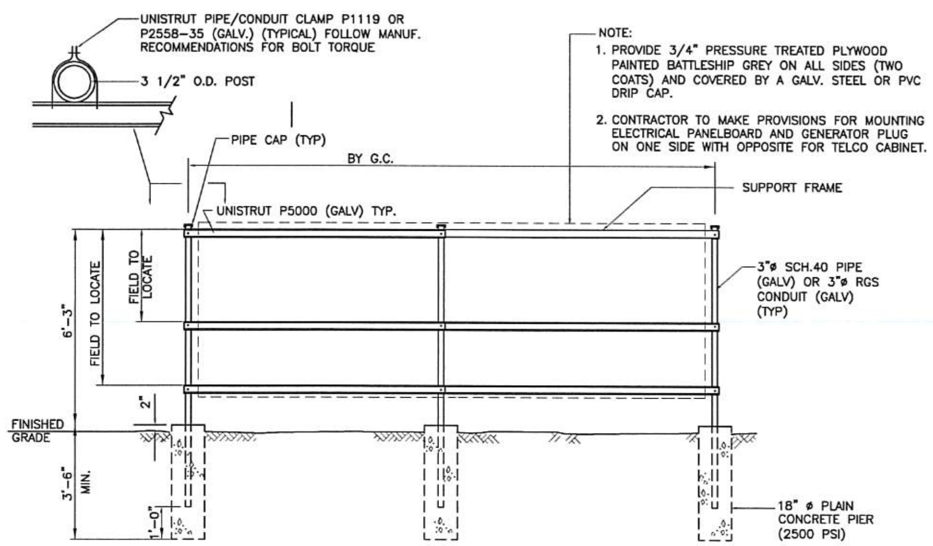
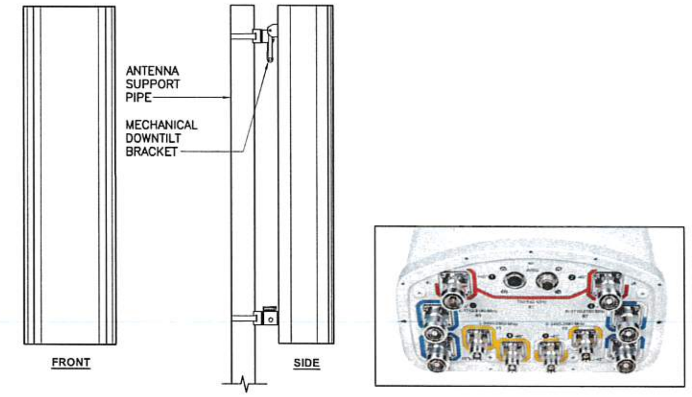
ELEVATIONS

C-4.0
Sheet No. 5 of 6



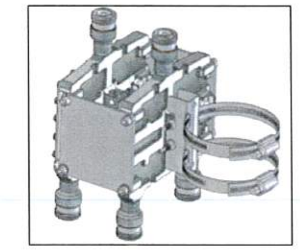
NOTE:
1. PROVIDE 3/4" PRESSURE TREATED PLYWOOD PAINTED BATTLESHIP GREY ON ALL SIDES (TWO COATS) AND COVERED BY A GALV. STEEL OR PVC DRIP CAP.
2. CONTRACTOR TO MAKE PROVISIONS FOR MOUNTING ELECTRICAL PANELBOARD AND GENERATOR PLUG ON ONE SIDE WITH OPPOSITE FOR TELCO CABINET.

1 (C-5.0) UTILITY SUPPORT FRAME (TYP)
NOT TO SCALE



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: DHHTT65B-3XR	72.1"L x 11.9"W x 7.1"D	45.4 LBS.

2 (C-5.0) PROPOSED ANTENNA DETAIL
NOT TO SCALE

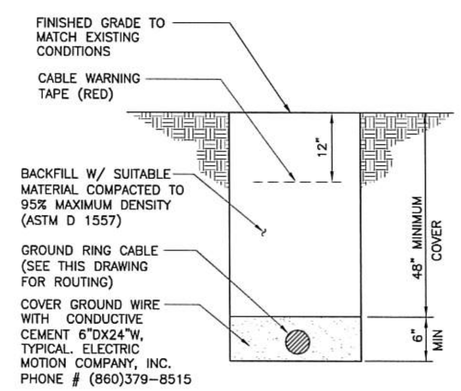


ALPHA/BETA/GAMMA DIPLEXER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: KIT-FD9R6004/1C-DL	5.8"L x 6.5"W x 4.6"D	24.2 LBS.

3 (C-5.0) PROPOSED DIPLEXER DETAIL
NOT TO SCALE

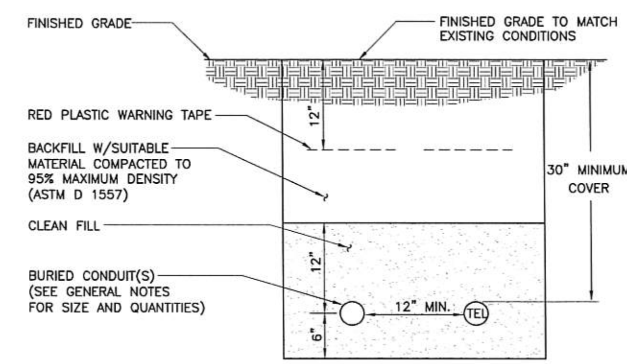
ALPHA/BETA/GAMMA DIPLEXER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: DPO 7126Y0X11	6.26"L x 7.42"W x 4.07"D	7.3 LBS.

4 (C-5.0) PROPOSED DIPLEXER DETAIL
NOT TO SCALE



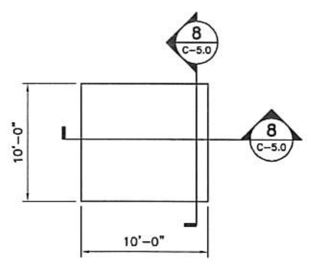
NOTES:
1. BACK FILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

5 (C-5.0) TYPICAL BURIAL GROUND CABLE DETAIL
NOT TO SCALE

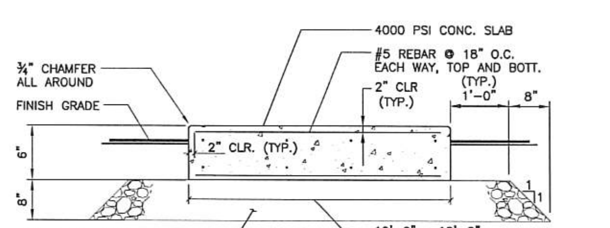


NOTES:
1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

6 (C-5.0) TYPICAL ELECTRICAL/TEL TRENCH DETAIL
NOT TO SCALE



7 (C-5.0) FOUNDATION PLAN
SCALE: 1/4" = 1'
NORTH



NOTE:
REFER TO EQUIPMENT CABINET MANUFACTURER FOR RECOMMENDED HOLD-DOWN HARDWARE.

8 (C-5.0) CONCRETE SLAB-ON-GRADE DETAIL
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	01/07/19	CAG	TJL	REVISED OWNER INFO. AND SCHOOL/DAYCARE DISTANCES TABLE
1	10/11/18	CAG	TJL	CSC DRAWINGS - REVISED GROUND EQUIPMENT AND ELEVATIONS
0	06/05/18	KAW	CAG	CSC - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Sprint
Transcend Wireless

CENTEK engineering
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(203) 488-0580
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63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

SPRINT
WIRELESS COMMUNICATIONS FACILITY
CT43XC862
201 HIGH RIDGE ROAD
STAMFORD, CT 06905

DATE: 06/04/18
SCALE: AS NOTED
JOB NO. 18035.00

SITE DETAILS

C-5.0

Sheet No. 6 of 6

4

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

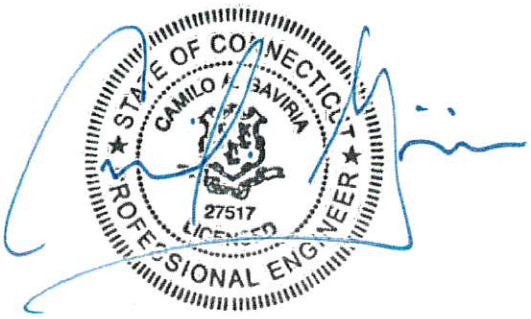
±40-ft Proposed TEMP Guyed Tower

Site Ref: CT43XC862 Stamford

201 High Ridge Road
Stamford, CT

Centek Project No. 18035.00

Date: January 2, 2019



Prepared for:

Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the proposed TEMP guyed tower located in Stamford, Connecticut.

The proposed tower is a ±40-ft tall, TEMP crank up guyed tower mounted on the roof of the existing host building and connected to an existing elevated steel rooftop platform. The guy locations will be fastened to the existing roof beams at three (3) locations. The proposed TEMP tower geometry and structure member sizes were obtained from ALUMA Tower Company standard tower design drawings and correspondence provided to Centek by Sprint/Transcend Wireless.

Antenna and appurtenance information was obtained from information provided by Sprint.

Antenna and Appurtenance Summary

- SPRINT (Proposed):
  Antenna: Three (3) Commscope DHHTT65B-3XR panel antennas, six (6) RFS Kit-FD9R6004/1C-DL diplexers, six (6) CCI DPO 7126Y0X11 diplexers mounted at a centerline elevation of ±69'-6 ½" AGL.
  Coax Cable: Eighteen (18) 1/2" ∅ coax cables running on a leg/face of the proposed tower.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

Analysis

The proposed tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled "Structural Standard for Antenna Support Structures and Antennas", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-G-2005 Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 0.75" radial ice on the tower structure and its components.

Basic Wind Speed:	Fairfield County; v = 90-110 mph	*[Annex B of TIA-222-G-2005]*
	Stamford; v = 93 mph	*[Appendix N of the 2016 CT Building Code]*
Load Cases:	Load Case 1; 93 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2016 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 0.75" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*

[1] The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses **with the removal of the top 9-ft section of the tower were found** to be within allowable limits. In Load Case 1, per tnxTower "Section Capacity Table", this tower was found to be at **76.5%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T3)	45'-2"- 55'-2"	72.1%	**PASS**
Diagonal (T3)	45'-2"- 55'-2"	76.5%	**PASS**

Existing Platform/Roof Steel

The tower is supported via existing steel platform which is supported by the existing roof steel at four (4) locations.

-

Section	Stress Ratio (percentage of capacity)	Result
(E) Post: Pipe 3.5 STD	131.7%	**FAIL**
(N) Post: HSS4x4x5/16	90.2%	**PASS (MODS)**
(E) W14x22 (Roof)	73.2%	**PASS**
(E) W10x22 (Platform)	85.7%	**PASS**

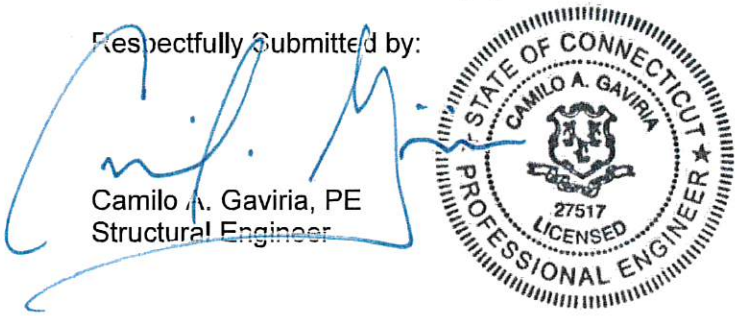
Conclusion

This analysis shows that the subject tower **is adequate** to support the existing antenna configuration, but the existing steel platform ***requires modifications of two existing posts prior to the installation of the proposed TEMP tower.***

The analysis is based, in part, on the information provided to this office by Sprint/Transcend Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully submitted by:



Camilo A. Gaviria, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

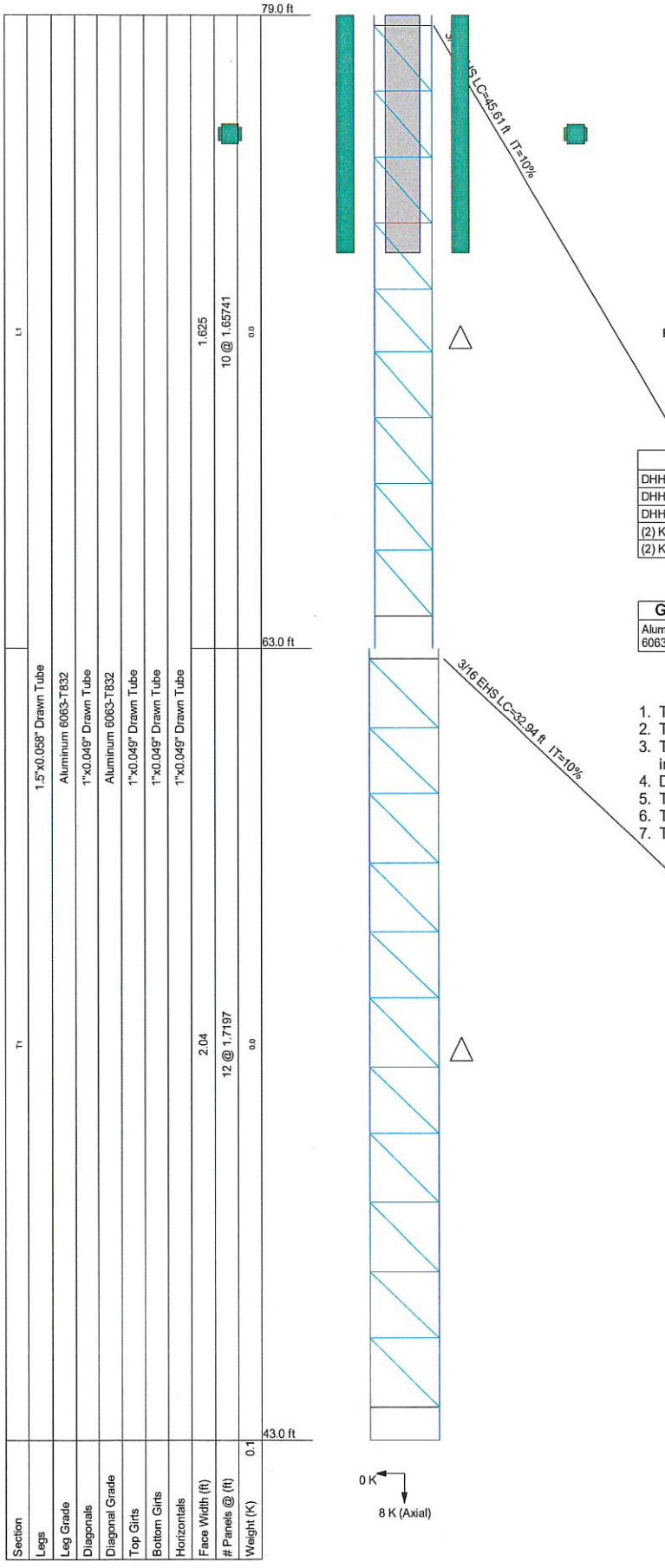
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

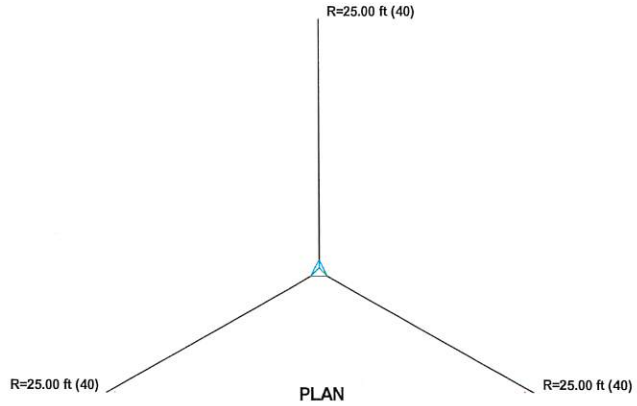
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

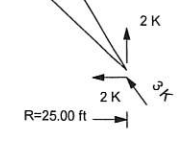
tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISA Tower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.







DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DHHTT65B-3XR (Sprint)	76	(2) KIT-FD9R6004/1C-DL (Sprint)	76
DHHTT65B-3XR (Sprint)	76	(2) DPO-7126Y-0-T1 (Sprint)	76
DHHTT65B-3XR (Sprint)	76	(2) DPO-7126Y-0-T1 (Sprint)	76
(2) KIT-FD9R6004/1C-DL (Sprint)	76	(2) DPO-7126Y-0-T1 (Sprint)	76
(2) KIT-FD9R6004/1C-DL (Sprint)	76		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
Aluminum 6063-T832	39 ksi	42 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 63.1%

ALL REACTIONS ARE FACTORED

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: ***18035.00 - CT43XC862***		
Project: ***40' Lattice Tower - Stamford, CT***		
Client: Sprint	Drawn by: TJL	App'd:
Code: TIA-222-G	Date: 01/02/19	Scale: NTS
Path: J:\Jobs\1803500.WI04 Structural\Backup Documentation\ERI Files\40' ALUMA T-40X00+D Tower Stamford, CT.eri		Dwg No. E-1

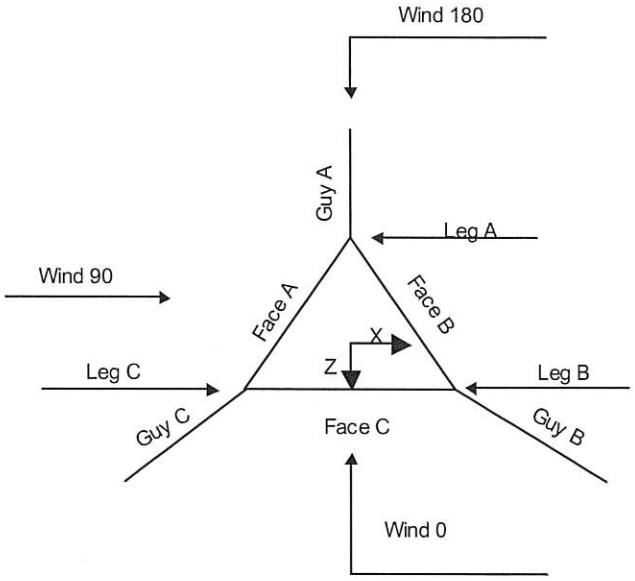
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 79.00 ft above the ground line.
The base of the tower is set at an elevation of 43.00 ft above the ground line.
The face width of the tower is 2.04 ft at the top and 2.04 ft at the base.
An index plate is provided at the 3 sided -tower connection.
There is a 3 sided latticed pole with a face width of 1.63 ft.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in latticed pole member design is 1.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower

3 Sided Latticed Pole Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
L1	79.00-63.00			1.63	1	16.00

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
L1	79.00-63.00	1.66	Diag Down	No	Yes	3.0000	10.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 79.00-63.00	Pipe	1.5"x0.058" Drawn Tube	Aluminum 6063-T832 (39 ksi)	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
L1 79.00-63.00	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
L1 79.00-63.00	None	Flat Bar		A36 (36 ksi)	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 79.00-63.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
L1 79.00-63.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 79.00-63.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	63.00-43.00			2.04	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	63.00-43.00	1.72	Diag Down	No	Yes	3.0000	10.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 63.00-43.00	Pipe	1.5"x0.058" Drawn Tube	Aluminum 6063-T832 (39 ksi)	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 63.00-43.00	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 63.00-43.00	None	Flat Bar		A36 (36 ksi)	Pipe	1"x0.049" Drawn Tube	Aluminum 6063-T832 (39 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 63.00-43.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 63.00-43.00	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 63.00-43.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
78.75	EHS	A	3/16	0.40	10%	21000	0.073	45.57	25.00	0.0000	40.00	100%
		B	3/16	0.40	10%	21000	0.073	45.57	25.00	0.0000	40.00	100%
		C	3/16	0.40	10%	21000	0.073	45.57	25.00	0.0000	40.00	100%
62.75	EHS	A	3/16	0.40	10%	21000	0.073	32.91	25.00	0.0000	40.00	100%
		B	3/16	0.40	10%	21000	0.073	32.91	25.00	0.0000	40.00	100%
		C	3/16	0.40	10%	21000	0.073	32.91	25.00	0.0000	40.00	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
78.75	Corner						
62.75	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
78.75	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
62.75	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
78.75	0.00	0.00	0.00		0.19 0.8 sec/pulse	0.19 0.8 sec/pulse	0.19 0.8 sec/pulse	
62.75	0.00	0.00	0.00		0.10 0.5 sec/pulse	0.10 0.5 sec/pulse	0.10 0.5 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
78.75	No	No			1	1	1	1
62.75	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
78.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
62.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
78.75	A	59.38	16	5	1.5907
	B	59.38	16	5	1.5907
	C	59.38	16	5	1.5907
62.75	A	51.38	15	4	1.5679
	B	51.38	15	4	1.5679
	C	51.38	15	4	1.5679

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension K	0 F Intercept ft	20 F Initial Tension K	20 F Intercept ft	40 F Initial Tension K	40 F Intercept ft	60 F Initial Tension K	60 F Intercept ft	80 F Initial Tension K	80 F Intercept ft	100 F Initial Tension K	100 F Intercept ft	120 F Initial Tension K	120 F Intercept ft
78.75	A	24.06	38.75	0.444	0.17	0.429	0.18	0.414	0.18	0.399	0.19	0.384	0.20	0.369	0.20	0.354	0.21
	B	24.06	38.75	0.444	0.17	0.429	0.18	0.414	0.18	0.399	0.19	0.384	0.20	0.369	0.20	0.354	0.21

				Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
Guy Elevation		H	V	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft
	C	24.06	38.75	0.444	0.17	0.429	0.18	0.414	0.18	0.399	0.19	0.384	0.20	0.369	0.20	0.354	0.21
62.75	A	23.82	22.75	0.483	0.08	0.455	0.09	0.427	0.09	0.399	0.10	0.371	0.11	0.343	0.12	0.315	0.13
	B	23.82	22.75	0.483	0.08	0.455	0.09	0.427	0.09	0.399	0.10	0.371	0.11	0.343	0.12	0.315	0.13
	C	23.82	22.75	0.483	0.08	0.455	0.09	0.427	0.09	0.399	0.10	0.371	0.11	0.343	0.12	0.315	0.13

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HJ4-50 (1/2 AIR)	A	No	Ar (CaAa)	73.00 - 43.00	6	3	0.5800	0.5800		0.25
HJ4-50 (1/2 AIR)	B	No	Ar (CaAa)	73.00 - 43.00	6	3	0.5800	0.5800		0.25
HJ4-50 (1/2 AIR)	C	No	Ar (CaAa)	73.00 - 43.00	6	3	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	79.00-63.00	A	0.000	0.000	3.480	0.000	0.01
		B	0.000	0.000	3.480	0.000	0.01
		C	0.000	0.000	3.480	0.000	0.01
T1	63.00-43.00	A	0.000	0.000	6.960	0.000	0.03
		B	0.000	0.000	6.960	0.000	0.03
		C	0.000	0.000	6.960	0.000	0.03

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	79.00-63.00	A	1.619	0.000	0.000	9.880	0.000	0.12
		B		0.000	0.000	9.880	0.000	0.12
		C		0.000	0.000	9.880	0.000	0.12
T1	63.00-43.00	A	1.573	0.000	0.000	19.432	0.000	0.22
		B		0.000	0.000	19.432	0.000	0.22
		C		0.000	0.000	19.432	0.000	0.22

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	79.00-63.00	0.0000	0.0000	0.0000	0.0000
T1	63.00-43.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	HJ4-50 (1/2 AIR)	63.00 - 73.00	0.6000	0.2343
L1	2	HJ4-50 (1/2 AIR)	63.00 - 73.00	0.6000	0.2343
L1	3	HJ4-50 (1/2 AIR)	63.00 - 73.00	0.6000	0.2343
T1	1	HJ4-50 (1/2 AIR)	43.00 - 63.00	0.6000	0.3214
T1	2	HJ4-50 (1/2 AIR)	43.00 - 63.00	0.6000	0.3214
T1	3	HJ4-50 (1/2 AIR)	43.00 - 63.00	0.6000	0.3214

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DHHTT65B-3XR	A	From Leg	1.00	0.0000	76.00	No Ice	8.13	5.34	0.05
(Sprint)			0.00			1/2" Ice	8.59	5.79	0.10
			0.00			1" Ice	9.05	6.26	0.15
DHHTT65B-3XR	B	From Leg	1.00	0.0000	76.00	No Ice	8.13	5.34	0.05
(Sprint)			0.00			1/2" Ice	8.59	5.79	0.10
			0.00			1" Ice	9.05	6.26	0.15
DHHTT65B-3XR	C	From Leg	1.00	0.0000	76.00	No Ice	8.13	5.34	0.05
(Sprint)			0.00			1/2" Ice	8.59	5.79	0.10
			0.00			1" Ice	9.05	6.26	0.15
(2) KIT-FD9R6004/1C-DL	A	None		0.0000	76.00	No Ice	0.31	0.22	0.01
(Sprint)						1/2" Ice	0.39	0.28	0.01
						1" Ice	0.47	0.35	0.01
(2) KIT-FD9R6004/1C-DL	B	None		0.0000	76.00	No Ice	0.31	0.22	0.01
(Sprint)						1/2" Ice	0.39	0.28	0.01
						1" Ice	0.47	0.35	0.01
(2) KIT-FD9R6004/1C-DL	C	None		0.0000	76.00	No Ice	0.31	0.22	0.01
(Sprint)						1/2" Ice	0.39	0.28	0.01
						1" Ice	0.47	0.35	0.01
(2) DPO-7126Y-0-T1	A	None		0.0000	76.00	No Ice	0.25	0.21	0.01
(Sprint)						1/2" Ice	0.32	0.27	0.01
						1" Ice	0.39	0.34	0.02
(2) DPO-7126Y-0-T1	B	None		0.0000	76.00	No Ice	0.25	0.21	0.01
(Sprint)						1/2" Ice	0.32	0.27	0.01
						1" Ice	0.39	0.34	0.02
(2) DPO-7126Y-0-T1	C	None		0.0000	76.00	No Ice	0.25	0.21	0.01
(Sprint)						1/2" Ice	0.32	0.27	0.01
						1" Ice	0.39	0.34	0.02

Tower Pressures - No Ice

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 79.00-63.00	71.00	0.896	17	28.000	A	0.000	6.857	4.000	58.34	3.480	0.000
					B	0.000	6.857		58.34	3.480	0.000
					C	0.000	6.857		58.34	3.480	0.000
T1 63.00-43.00	53.00	0.824	16	43.300	A	0.000	9.211	5.000	54.28	6.960	0.000
					B	0.000	9.211		54.28	6.960	0.000
					C	0.000	9.211		54.28	6.960	0.000

Tower Pressure - With Ice

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 79.00-63.00	71.00	0.896	5	1.6194	32.319	A	0.000	24.747	12.637	51.06	9.880	0.000
						B	0.000	24.747		51.06	9.880	0.000
						C	0.000	24.747		51.06	9.880	0.000
T1 63.00-43.00	53.00	0.824	4	1.5728	48.543	A	0.000	32.942	15.485	47.01	19.432	0.000
						B	0.000	32.942		47.01	19.432	0.000
						C	0.000	32.942		47.01	19.432	0.000

Tower Pressure - Service

G_H = 0.850 (base tower), 1.100 (upper structure)

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 79.00-63.00	71.00	0.896	7	28.000	A	0.000	6.857	4.000	58.34	3.480	0.000
					B	0.000	6.857		58.34	3.480	0.000
					C	0.000	6.857		58.34	3.480	0.000
T1 63.00-43.00	53.00	0.824	6	43.300	A	0.000	9.211	5.000	54.28	6.960	0.000
					B	0.000	9.211		54.28	6.960	0.000
					C	0.000	9.211		54.28	6.960	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.04	0.03	A	0.245	2.453	17	1	1	4.003	0.30	18.65	C
79.00-63.00			B	0.245	2.453		1	1	4.003			
			C	0.245	2.453		1	1	4.003			
T1	0.09	0.05	A	0.213	2.554	16	1	1	5.313	0.34	17.21	C
63.00-43.00			B	0.213	2.554		1	1	5.313			
			C	0.213	2.554		1	1	5.313			
Sum Weight:	0.14	0.08								0.64		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.04	0.03	A	0.245	2.453	17	0.8	1	4.003	0.30	18.65	C
79.00-63.00			B	0.245	2.453		0.8	1	4.003			
			C	0.245	2.453		0.8	1	4.003			
T1	0.09	0.05	A	0.213	2.554	16	0.8	1	5.313	0.34	17.21	C
63.00-43.00			B	0.213	2.554		0.8	1	5.313			
			C	0.213	2.554		0.8	1	5.313			
Sum Weight:	0.14	0.08								0.64		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.04	0.03	A	0.245	2.453	17	0.85	1	4.003	0.30	18.65	C
79.00-63.00			B	0.245	2.453		0.85	1	4.003			
			C	0.245	2.453		0.85	1	4.003			
T1	0.09	0.05	A	0.213	2.554	16	0.85	1	5.313	0.34	17.21	C
63.00-43.00			B	0.213	2.554		0.85	1	5.313			
			C	0.213	2.554		0.85	1	5.313			
Sum Weight:	0.14	0.08								0.64		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	0.91	A	0.766	1.795	5	1	1	21.265	0.24	15.12	C
79.00-63.00			B	0.766	1.795		1	1	21.265			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.766	1.795		1	1	21.265			
T1	0.67	1.20	A	0.679	1.776	4	1	1	26.223	0.25	12.45	C
63.00-43.00			B	0.679	1.776		1	1	26.223			
			C	0.679	1.776		1	1	26.223			
Sum Weight:	1.02	2.11								0.49		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	0.91	A	0.766	1.795	5	0.8	1	21.265	0.24	15.12	C
79.00-63.00			B	0.766	1.795		0.8	1	21.265			
			C	0.766	1.795		0.8	1	21.265			
T1	0.67	1.20	A	0.679	1.776	4	0.8	1	26.223	0.25	12.45	C
63.00-43.00			B	0.679	1.776		0.8	1	26.223			
			C	0.679	1.776		0.8	1	26.223			
Sum Weight:	1.02	2.11								0.49		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.35	0.91	A	0.766	1.795	5	0.85	1	21.265	0.24	15.12	C
79.00-63.00			B	0.766	1.795		0.85	1	21.265			
			C	0.766	1.795		0.85	1	21.265			
T1	0.67	1.20	A	0.679	1.776	4	0.85	1	26.223	0.25	12.45	C
63.00-43.00			B	0.679	1.776		0.85	1	26.223			
			C	0.679	1.776		0.85	1	26.223			
Sum Weight:	1.02	2.11								0.49		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.04	0.03	A	0.245	2.453	7	1	1	4.003	0.12	7.76	C
79.00-63.00			B	0.245	2.453		1	1	4.003			
			C	0.245	2.453		1	1	4.003			
T1	0.09	0.05	A	0.213	2.554	6	1	1	5.313	0.14	7.16	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
63.00-43.00			B	0.213	2.554		1	1	5.313			
			C	0.213	2.554		1	1	5.313			
Sum Weight:	0.14	0.08								0.27		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.04	0.03	A	0.245	2.453	7	0.8	1	4.003	0.12	7.76	C
79.00-63.00			B	0.245	2.453		0.8	1	4.003			
			C	0.245	2.453		0.8	1	4.003			
T1	0.09	0.05	A	0.213	2.554	6	0.8	1	5.313	0.14	7.16	C
63.00-43.00			B	0.213	2.554		0.8	1	5.313			
			C	0.213	2.554		0.8	1	5.313			
Sum Weight:	0.14	0.08								0.27		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.04	0.03	A	0.245	2.453	7	0.85	1	4.003	0.12	7.76	C
79.00-63.00			B	0.245	2.453		0.85	1	4.003			
			C	0.245	2.453		0.85	1	4.003			
T1	0.09	0.05	A	0.213	2.554	6	0.85	1	5.313	0.14	7.16	C
63.00-43.00			B	0.213	2.554		0.85	1	5.313			
			C	0.213	2.554		0.85	1	5.313			
Sum Weight:	0.14	0.08								0.27		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Leg Weight	0.03			
Bracing Weight	0.05			
Total Member Self-Weight	0.08			
Guy Weight	0.02			
Total Weight	0.46			
Wind 0 deg - No Ice		0.00	-1.09	0.00

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Wind 30 deg - No Ice		0.54	-0.94	0.00
Wind 60 deg - No Ice		0.94	-0.54	0.00
Wind 90 deg - No Ice		1.09	0.00	0.00
Wind 120 deg - No Ice		0.94	0.54	0.00
Wind 150 deg - No Ice		0.54	0.94	0.00
Wind 180 deg - No Ice		0.00	1.09	0.00
Wind 210 deg - No Ice		-0.54	0.94	0.00
Wind 240 deg - No Ice		-0.94	0.54	0.00
Wind 270 deg - No Ice		-1.09	0.00	0.00
Wind 300 deg - No Ice		-0.94	-0.54	0.00
Wind 330 deg - No Ice		-0.54	-0.94	0.00
Member Ice	2.03			
Guy Ice	0.80			
Total Weight Ice	4.95			
Wind 0 deg - Ice		0.00	-0.66	0.00
Wind 30 deg - Ice		0.33	-0.57	0.00
Wind 60 deg - Ice		0.57	-0.33	0.00
Wind 90 deg - Ice		0.66	0.00	0.00
Wind 120 deg - Ice		0.57	0.33	0.00
Wind 150 deg - Ice		0.33	0.57	0.00
Wind 180 deg - Ice		0.00	0.66	0.00
Wind 210 deg - Ice		-0.33	0.57	0.00
Wind 240 deg - Ice		-0.57	0.33	0.00
Wind 270 deg - Ice		-0.66	0.00	0.00
Wind 300 deg - Ice		-0.57	-0.33	0.00
Wind 330 deg - Ice		-0.33	-0.57	0.00
Total Weight	0.46			
Wind 0 deg - Service		0.00	-0.45	0.00
Wind 30 deg - Service		0.23	-0.39	0.00
Wind 60 deg - Service		0.39	-0.23	0.00
Wind 90 deg - Service		0.45	0.00	0.00
Wind 120 deg - Service		0.39	0.23	0.00
Wind 150 deg - Service		0.23	0.39	0.00
Wind 180 deg - Service		0.00	0.45	0.00
Wind 210 deg - Service		-0.23	0.39	0.00
Wind 240 deg - Service		-0.39	0.23	0.00
Wind 270 deg - Service		-0.45	0.00	0.00
Wind 300 deg - Service		-0.39	-0.23	0.00
Wind 330 deg - Service		-0.23	-0.39	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy

Comb. No.	Description
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	79 - 63	Latticed Pole Leg	Max Tension	12	0.99	-0.14	-0.09
			Max. Compression	6	-2.51	0.00	0.00
			Max. Mx	5	-2.20	0.18	-0.00
			Max. My	2	-0.02	0.00	-0.18
			Max. Vy	5	0.22	0.00	0.00
			Max. Vx	2	-0.22	0.00	0.00
		Latticed Pole Diagonal	Max Tension	7	0.85	0.00	0.00
			Max. Compression	9	-0.91	0.00	0.00
			Max. Mx	16	0.29	0.00	0.00
			Max. My	22	0.18	0.00	0.00
			Max. Vy	16	-0.00	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Latticed Pole Horizontal	Max Tension	13	0.45	0.00	0.00
			Max. Compression	3	-0.42	0.00	0.00
			Max. Mx	14	0.02	0.00	0.00
			Max. My	22	0.11	0.00	-0.00
			Max. Vy	14	-0.00	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Latticed Pole Top Girt	Max Tension	5	0.47	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	0.18	0.00	0.00
			Max. My	17	0.30	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	14	-0.00	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Latticed Pole Bottom Girt	Max Tension	10	0.40	0.00	0.00
			Max. Compression	12	-0.32	0.00	0.00
			Max. Mx	14	0.02	0.00	0.00
			Max. My	22	0.14	0.00	-0.00
			Max. Vy	14	-0.00	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Guy A	Bottom Tension	9	1.49		
			Top Tension	9	1.50		
			Top Cable Vert	9	1.27		
			Top Cable Norm	9	0.79		
			Top Cable Tan	9	0.00		
			Bot Cable Vert	9	-1.26		
			Bot Cable Norm	9	0.80		
			Bot Cable Tan	9	0.01		
		Guy B	Bottom Tension	13	1.49		
			Top Tension	13	1.50		
			Top Cable Vert	13	1.27		
			Top Cable Norm	13	0.79		
			Top Cable Tan	13	0.00		
			Bot Cable Vert	13	-1.26		
			Bot Cable Norm	13	0.80		
			Bot Cable Tan	13	0.01		
		Guy C	Bottom Tension	5	1.49		
			Top Tension	5	1.50		
			Top Cable Vert	5	1.27		
			Top Cable Norm	5	0.79		
			Top Cable Tan	5	0.00		
			Bot Cable Vert	5	-1.26		
			Bot Cable Norm	5	0.80		
			Bot Cable Tan	5	0.01		
T1	63 - 43	Leg	Max Tension	12	0.72	-0.08	-0.04
			Max. Compression	21	-2.61	-0.00	0.00
			Max. Mx	19	-1.58	0.10	0.05
			Max. My	26	-1.60	-0.00	-0.11
			Max. Vy	11	-0.47	0.02	0.01
			Max. Vx	15	-0.53	0.00	0.02
		Diagonal	Max Tension	9	0.23	0.00	0.00
			Max. Compression	7	-0.31	0.00	0.00
			Max. Mx	16	0.05	0.00	0.00
			Max. My	22	-0.10	0.00	0.00
			Max. Vy	16	-0.01	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Horizontal	Max Tension	7	0.23	0.00	0.00
			Max. Compression	9	-0.17	0.00	0.00
			Max. Mx	14	0.03	0.00	0.00
			Max. My	22	-0.05	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Top Girt	Max Tension	26	0.59	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	0.52	0.00	0.00
			Max. My	22	0.51	0.00	-0.00
			Max. Vy	14	-0.01	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	6	0.10	0.00	0.00
			Max. Compression	8	-0.07	0.00	0.00
			Max. Mx	14	0.03	0.00	0.00
			Max. Vy	14	-0.01	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Guy A	Bottom Tension	7	1.51		
			Top Tension	7	1.51		
			Top Cable Vert	7	1.04		
			Top Cable Norm	7	1.09		
			Top Cable Tan	7	0.00		
			Bot Cable Vert	7	-1.04		
			Bot Cable Norm	7	1.10		
			Bot Cable Tan	7	0.01		
		Guy B	Bottom Tension	11	1.51		
			Top Tension	11	1.51		
			Top Cable Vert	11	1.04		
			Top Cable Norm	11	1.09		
			Top Cable Tan	11	0.00		
			Bot Cable Vert	11	-1.04		
			Bot Cable Norm	11	1.10		
			Bot Cable Tan	11	0.01		
		Guy C	Bottom Tension	3	1.51		
			Top Tension	3	1.51		
			Top Cable Vert	3	1.04		
			Top Cable Norm	3	1.09		
			Top Cable Tan	3	0.00		
			Bot Cable Vert	3	-1.04		
			Bot Cable Norm	3	1.10		
			Bot Cable Tan	3	0.01		
		Base Beam	Max Tension	2	0.07	-1.75	-0.02
			Max. Compression	8	-0.07	0.04	0.00
			Max. Mx	21	-2.57	-2.99	-0.02
			Max. My	11	-1.36	-1.60	-0.09
			Max. Vy	21	-2.57	-2.99	-0.02
			Max. Vx	7	-0.08	-1.60	-0.09

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Guy C @ 25 ft Elev 40 ft Azimuth 240 deg	Max. Vert	10	-0.04	-0.02	0.01
	Max. H_x	10	-0.04	-0.02	0.01
	Max. H_z	3	-2.29	-1.63	0.97
	Min. Vert	3	-2.29	-1.63	0.97
	Min. H_x	5	-2.29	-1.65	0.93
	Min. H_z	10	-0.04	-0.02	0.01
Guy B @ 25 ft Elev 40 ft Azimuth 120 deg	Max. Vert	6	-0.04	0.02	0.01
	Max. H_x	11	-2.29	1.65	0.93
	Max. H_z	13	-2.29	1.63	0.96
	Min. Vert	11	-2.29	1.65	0.93
	Min. H_x	6	-0.04	0.02	0.01
	Min. H_z	6	-0.04	0.02	0.01
Guy A @ 25 ft Elev 40 ft Azimuth 0 deg	Max. Vert	2	-0.04	-0.00	-0.02
	Max. H_x	24	-0.85	0.05	-0.80
	Max. H_z	2	-0.04	-0.00	-0.02

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Min. Vert	7	-2.29	-0.02	-1.89
	Min. H_x	18	-0.85	-0.05	-0.80
	Min. H_z	7	-2.29	-0.02	-1.89
	Max. Vert	19	7.58	-0.09	-0.05
	Max. H_x	11	4.08	0.16	0.01
	Max. H_z	2	4.56	0.00	0.15
	Max. M_x	1	0.00	0.00	0.00
	Max. M_z	1	0.00	0.00	0.00
	Max. Torsion	38	-0.01	0.03	0.04
	Min. Vert	1	2.07	0.00	0.00
	Min. H_x	5	4.08	-0.16	0.02
	Min. H_z	8	2.97	-0.00	-0.18
	Min. M_x	1	0.00	0.00	0.00
	Min. M_z	1	0.00	0.00	0.00
	Min. Torsion	16	-0.07	-0.04	0.08

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	2.07	0.00	0.00	0.00	0.00	0.01
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	4.56	-0.00	-0.15	0.00	0.00	0.05
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	4.08	0.09	-0.13	0.00	0.00	0.05
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	2.97	0.16	-0.09	0.00	0.00	0.02
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	4.08	0.16	-0.02	0.00	0.00	0.04
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	4.56	0.13	0.07	0.00	0.00	0.05
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	4.08	0.07	0.15	0.00	0.00	0.05
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	2.97	0.00	0.18	0.00	0.00	0.02
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	4.08	-0.07	0.15	0.00	0.00	0.04
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	4.56	-0.12	0.08	0.00	0.00	0.05
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	4.08	-0.16	-0.01	0.00	0.00	0.05
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	2.97	-0.16	-0.09	0.00	0.00	0.02
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	4.08	-0.10	-0.13	0.00	0.00	0.04
1.2 Dead+1.0 Ice+1.0 Temp+Guy	7.34	0.00	0.00	0.00	0.00	0.06
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	7.58	-0.00	-0.10	0.00	0.00	0.06
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	7.58	0.04	-0.08	0.00	0.00	0.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	7.58	0.08	-0.04	0.00	0.00	0.06
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	7.58	0.09	0.01	0.00	0.00	0.05
1.2 Dead+1.0 Wind 120	7.58	0.09	0.05	0.00	0.00	0.06

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 150	7.58	0.05	0.08	0.00	0.00	0.07
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 180	7.58	-0.00	0.09	0.00	0.00	0.06
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 210	7.58	-0.05	0.08	0.00	0.00	0.05
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 240	7.58	-0.09	0.05	0.00	0.00	0.06
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 270	7.58	-0.09	0.01	0.00	0.00	0.07
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 300	7.58	-0.08	-0.04	0.00	0.00	0.06
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 330	7.58	-0.04	-0.08	0.00	0.00	0.05
deg+1.0 Ice+1.0 Temp+1.0 Guy Dead+Wind 0 deg - Service+Guy	2.07	-0.00	-0.05	0.00	0.00	0.01
Dead+Wind 30 deg - Service+Guy	2.08	0.03	-0.04	0.00	0.00	0.01
Dead+Wind 60 deg - Service+Guy	2.08	0.04	-0.03	0.00	0.00	0.01
Dead+Wind 90 deg - Service+Guy	2.08	0.05	-0.00	0.00	0.00	0.01
Dead+Wind 120 deg - Service+Guy	2.07	0.04	0.03	0.00	0.00	0.01
Dead+Wind 150 deg - Service+Guy	2.08	0.03	0.04	0.00	0.00	0.01
Dead+Wind 180 deg - Service+Guy	2.08	0.00	0.05	0.00	0.00	0.01
Dead+Wind 210 deg - Service+Guy	2.08	-0.02	0.04	0.00	0.00	0.01
Dead+Wind 240 deg - Service+Guy	2.07	-0.04	0.03	0.00	0.00	0.01
Dead+Wind 270 deg - Service+Guy	2.08	-0.05	0.00	0.00	0.00	0.01
Dead+Wind 300 deg - Service+Guy	2.08	-0.04	-0.02	0.00	0.00	0.01
Dead+Wind 330 deg - Service+Guy	2.08	-0.03	-0.04	0.00	0.00	0.01

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-0.46	0.00	0.00	0.46	0.00	0.000%
2	0.00	-0.55	-1.81	0.00	0.55	1.81	0.053%
3	0.91	-0.55	-1.57	-0.91	0.55	1.57	0.014%
4	1.57	-0.55	-0.91	-1.57	0.55	0.91	0.020%
5	1.81	-0.55	0.00	-1.81	0.55	0.00	0.017%
6	1.57	-0.55	0.91	-1.57	0.55	-0.91	0.053%
7	0.91	-0.55	1.57	-0.91	0.55	-1.57	0.014%
8	0.00	-0.55	1.81	-0.00	0.55	-1.81	0.020%
9	-0.91	-0.55	1.57	0.91	0.55	-1.57	0.018%
10	-1.57	-0.55	0.91	1.57	0.55	-0.91	0.053%
11	-1.81	-0.55	0.00	1.81	0.55	0.00	0.014%
12	-1.57	-0.55	-0.91	1.57	0.55	0.91	0.020%
13	-0.91	-0.55	-1.57	0.91	0.55	1.57	0.018%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
14	0.00	-5.04	0.00	0.00	5.04	0.00	0.000%
15	0.00	-5.05	-0.89	0.00	5.05	0.89	0.002%
16	0.44	-5.04	-0.77	-0.44	5.04	0.77	0.002%
17	0.77	-5.03	-0.44	-0.77	5.03	0.44	0.011%
18	0.89	-5.04	0.00	-0.89	5.04	-0.00	0.001%
19	0.77	-5.05	0.44	-0.77	5.05	-0.44	0.002%
20	0.44	-5.04	0.77	-0.44	5.04	-0.77	0.002%
21	0.00	-5.03	0.89	0.00	5.03	-0.89	0.011%
22	-0.44	-5.04	0.77	0.44	5.04	-0.77	0.001%
23	-0.77	-5.05	0.44	0.77	5.05	-0.44	0.002%
24	-0.89	-5.04	0.00	0.89	5.04	-0.00	0.002%
25	-0.77	-5.03	-0.44	0.77	5.03	0.44	0.011%
26	-0.44	-5.04	-0.77	0.44	5.04	0.77	0.001%
27	0.00	-0.46	-0.47	-0.00	0.46	0.47	0.003%
28	0.24	-0.46	-0.41	-0.24	0.46	0.41	0.004%
29	0.41	-0.46	-0.24	-0.41	0.46	0.24	0.004%
30	0.47	-0.46	0.00	-0.47	0.46	-0.00	0.003%
31	0.41	-0.46	0.24	-0.41	0.46	-0.24	0.003%
32	0.24	-0.46	0.41	-0.24	0.46	-0.41	0.004%
33	0.00	-0.46	0.47	-0.00	0.46	-0.47	0.004%
34	-0.24	-0.46	0.41	0.24	0.46	-0.41	0.003%
35	-0.41	-0.46	0.24	0.41	0.46	-0.24	0.003%
36	-0.47	-0.46	0.00	0.47	0.46	-0.00	0.004%
37	-0.41	-0.46	-0.24	0.41	0.46	0.24	0.004%
38	-0.24	-0.46	-0.41	0.24	0.46	0.41	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	5	0.00000001	0.00018748
2	Yes	7	0.00000001	0.00036951
3	Yes	7	0.00000001	0.00008381
4	Yes	6	0.00000001	0.00055103
5	Yes	7	0.00000001	0.00022966
6	Yes	7	0.00000001	0.00036714
7	Yes	7	0.00000001	0.00008313
8	Yes	6	0.00000001	0.00055324
9	Yes	7	0.00000001	0.00023033
10	Yes	7	0.00000001	0.00037076
11	Yes	7	0.00000001	0.00008419
12	Yes	6	0.00000001	0.00055585
13	Yes	7	0.00000001	0.00023002
14	Yes	5	0.00000001	0.00055641
15	Yes	7	0.00000001	0.00011766
16	Yes	7	0.00000001	0.00012901
17	Yes	6	0.00000001	0.00018535
18	Yes	7	0.00000001	0.00008267
19	Yes	7	0.00000001	0.00011770
20	Yes	7	0.00000001	0.00012909
21	Yes	6	0.00000001	0.00018542
22	Yes	7	0.00000001	0.00008271
23	Yes	7	0.00000001	0.00011766
24	Yes	7	0.00000001	0.00012902
25	Yes	6	0.00000001	0.00018544
26	Yes	7	0.00000001	0.00008266

27	Yes	5	0.00000001	0.00018509
28	Yes	5	0.00000001	0.00017471
29	Yes	5	0.00000001	0.00018469
30	Yes	5	0.00000001	0.00019679
31	Yes	5	0.00000001	0.00018507
32	Yes	5	0.00000001	0.00017469
33	Yes	5	0.00000001	0.00018469
34	Yes	5	0.00000001	0.00019681
35	Yes	5	0.00000001	0.00018509
36	Yes	5	0.00000001	0.00017469
37	Yes	5	0.00000001	0.00018467
38	Yes	5	0.00000001	0.00019680

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	79 - 63	0.556	33	0.0024	0.5878
T1	63 - 43	0.278	37	0.0642	0.3491

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
78.75	Guy	33	0.552	0.0034	0.5841	130870
76.00	DHHTT65B-3XR	33	0.502	0.0140	0.5431	130870
62.75	Guy	37	0.274	0.0651	0.3454	45084

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	79 - 63	4.956	2	0.4082	1.7553
T1	63 - 43	2.546	10	0.6164	1.0979

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
78.75	Guy	2	4.917	0.4114	1.7450	19761
76.00	DHHTT65B-3XR	2	4.489	0.4472	1.6320	19761
62.75	Guy	10	2.511	0.6197	1.0877	6807

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
L1	78.75 (A) (135)	3/16 EHS	0.40	3.99	1.50	2.39	1.000	1.599 ✓
	78.75 (B) (134)	3/16 EHS	0.40	3.99	1.50	2.39	1.000	1.599 ✓
	78.75 (C) (133)	3/16 EHS	0.40	3.99	1.50	2.39	1.000	1.599 ✓
T1	62.75 (A) (138)	3/16 EHS	0.40	3.99	1.51	2.39	1.000	1.585 ✓
	62.75 (B) (137)	3/16 EHS	0.40	3.99	1.51	2.39	1.000	1.585 ✓
	62.75 (C) (136)	3/16 EHS	0.40	3.99	1.51	2.39	1.000	1.585 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1.5"x0.058" Drawn Tube	16.00	0.83	19.6 K=1.00	0.2627	1.00	-2.51	9.00	0.279 [1] ✓
T1	63 - 43	1.5"x0.058" Drawn Tube	20.00	1.72	40.4 K=1.00	0.2627	1.00	-2.61	8.40	0.311 [1] ✓

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	2.32	2.14	76.4 K=1.00	0.1464	-0.91	3.68	0.248 [1] ✓
T1	63 - 43	1"x0.049" Drawn Tube	2.67	2.50	89.3 K=1.00	0.1464	-0.31	3.26	0.095 [1] ✓

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	1.63	1.50	53.5 K=1.00	0.1464	-0.42	4.37	0.096 [1] ✓
T1	63 - 43	1"x0.049" Drawn Tube	2.04	1.91	68.3 K=1.00	0.1464	-0.17	3.94	0.042 [1] ✓

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	1.63	1.50	53.5 K=1.00	0.1464	-0.32	4.37	0.072 [1] ✓
T1	63 - 43	1"x0.049" Drawn Tube	2.04	1.91	68.3 K=1.00	0.1464	-0.07	3.94	0.017 [1] ✓

[1] $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1.5"x0.058" Drawn Tube	16.00	0.83	19.6	0.2627	0.99	8.28	0.120 [1] ✓
T1	63 - 43	1.5"x0.058" Drawn Tube	20.00	0.25	5.9	0.2627	0.72	8.28	0.087 [1] ✓

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	2.32	2.14	76.4	0.1464	0.85	4.61	0.184 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	63 - 43	1"x0.049" Drawn Tube	2.67	2.50	89.3	0.1464	0.23	4.61	0.049 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	1.63	1.50	53.5	0.1464	0.45	4.61	0.098 [1]
T1	63 - 43	1"x0.049" Drawn Tube	2.04	1.91	68.3	0.1464	0.23	4.61	0.051 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	1.63	1.50	53.5	0.1464	0.47	4.61	0.102 [1]
T1	63 - 43	1"x0.049" Drawn Tube	2.04	1.91	68.3	0.1464	0.59	4.61	0.129 [1]

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

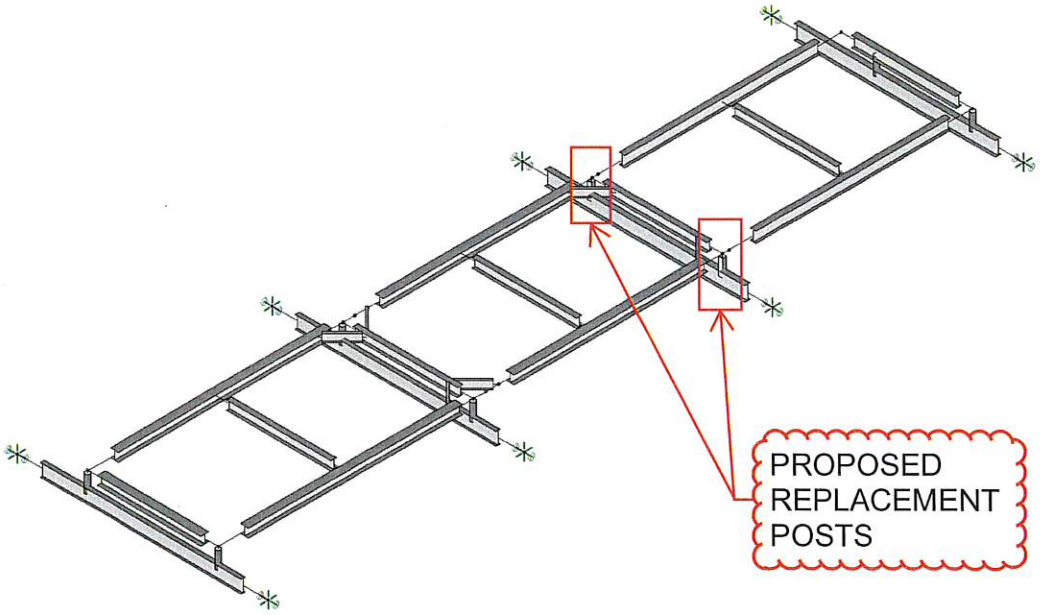
Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	79 - 63	1"x0.049" Drawn Tube	1.63	1.50	53.5	0.1464	0.40	4.61	0.087 [1]
T1	63 - 43	1"x0.049" Drawn Tube	2.04	1.91	68.3	0.1464	0.10	4.61	0.021 [1]

[1] $P_u / \phi P_n$ controls

Section Capacity Table

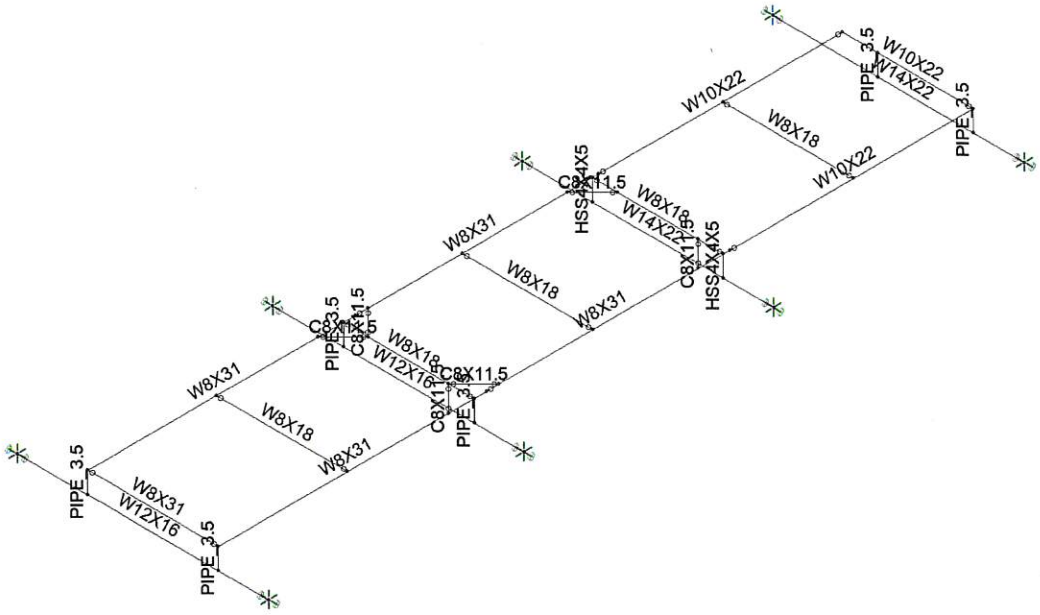
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	79 - 63	Latticed Pole Leg	1.5"x0.058" Drawn Tube	2	-2.51	9.00	27.9	Pass
L1	79 - 63	Latticed Pole Diagonal	1"x0.049" Drawn Tube	12	-0.91	3.68	24.8	Pass
L1	79 - 63	Latticed Pole Horizontal	1"x0.049" Drawn Tube	14	0.45	4.61	9.8	Pass
L1	79 - 63	Latticed Pole Top Girt	1"x0.049" Drawn Tube	6	0.47	4.61	10.2	Pass
L1	79 - 63	Latticed Pole Bottom Girt	1"x0.049" Drawn Tube	9	0.40	4.61	8.7	Pass
T1	63 - 43	Leg	1.5"x0.058" Drawn Tube	61	-2.61	8.40	31.1	Pass
T1	63 - 43	Diagonal	1"x0.049" Drawn Tube	131	-0.31	3.26	9.5	Pass
T1	63 - 43	Horizontal	1"x0.049" Drawn Tube	128	0.23	4.61	5.1	Pass
T1	63 - 43	Top Girt	1"x0.049" Drawn Tube	64	0.59	4.61	12.9	Pass
T1	63 - 43	Bottom Girt	1"x0.049" Drawn Tube	67	0.10	4.61	2.1	Pass
L1	79 - 63	Guy A@78.75	3/16	135	1.50	2.39	62.5	Pass
T1	63 - 43	Guy A@62.75	3/16	138	1.51	2.39	63.1	Pass
L1	79 - 63	Guy B@78.75	3/16	134	1.50	2.39	62.5	Pass
T1	63 - 43	Guy B@62.75	3/16	137	1.51	2.39	63.1	Pass
L1	79 - 63	Guy C@78.75	3/16	133	1.50	2.39	62.5	Pass
T1	63 - 43	Guy C@62.75	3/16	136	1.51	2.39	63.1	Pass
							Summary	
						Latticed Pole Leg (L1)	27.9	Pass
						Latticed Pole Diagonal (L1)	24.8	Pass
						Latticed Pole Horizontal (L1)	9.8	Pass
						Latticed Pole Top Girt (L1)	10.2	Pass
						Latticed Pole Bottom Girt (L1)	8.7	Pass
						Leg (T1)	31.1	Pass
						Diagonal (T1)	9.5	Pass
						Horizontal (T1)	5.1	Pass
						Top Girt (T1)	12.9	Pass
						Bottom Girt (T1)	2.1	Pass
						Guy A (T1)	63.1	Pass
						Guy B (T1)	63.1	Pass
						Guy C (T1)	63.1	Pass
						RATING =	**63.1**	**Pass**

tnxTower	Job	Page
	18035.00 - CT43XC862	26 of 26
Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Project 40' Lattice Tower - Stamford, CT	Date 08:49:36 01/02/19
	Client Sprint	Designed by TJL



Envelope Only Solution

Centek		SK - 1
CAG	CT43XC862 - Stamford	Jan 2, 2019 at 9:32 AM
	Isometric View	18035.00 Existing RTP.r3d



Envelope Only Solution

Centek	CT43XC862 - Stamford	SK - 2
CAG	Member Shapes	Jan 2, 2019 at 9:33 AM
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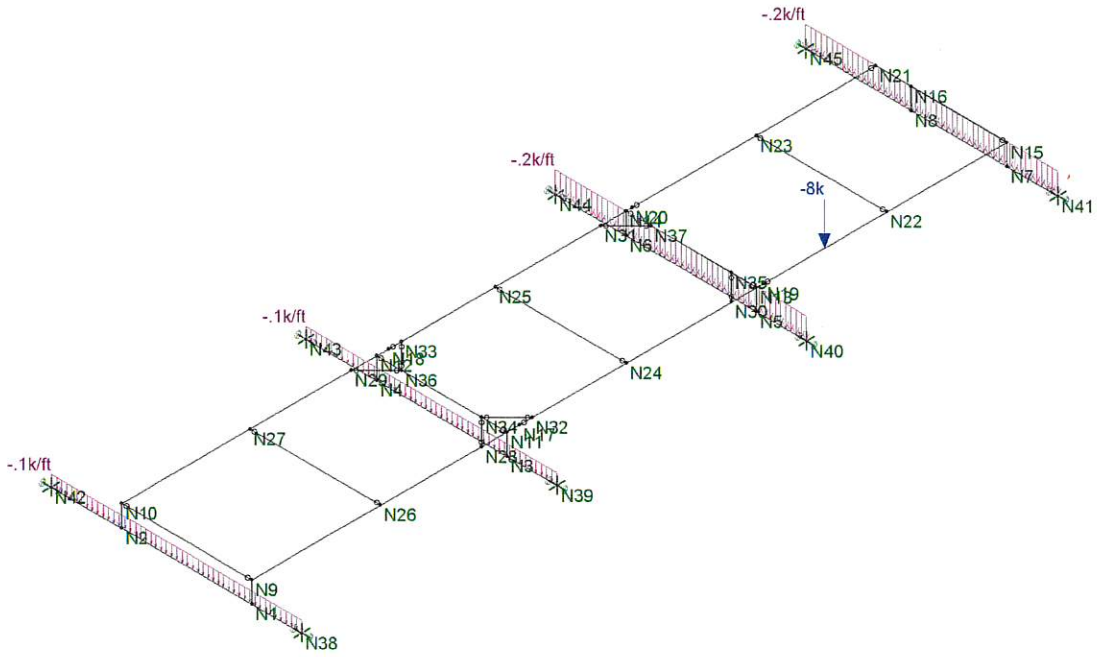
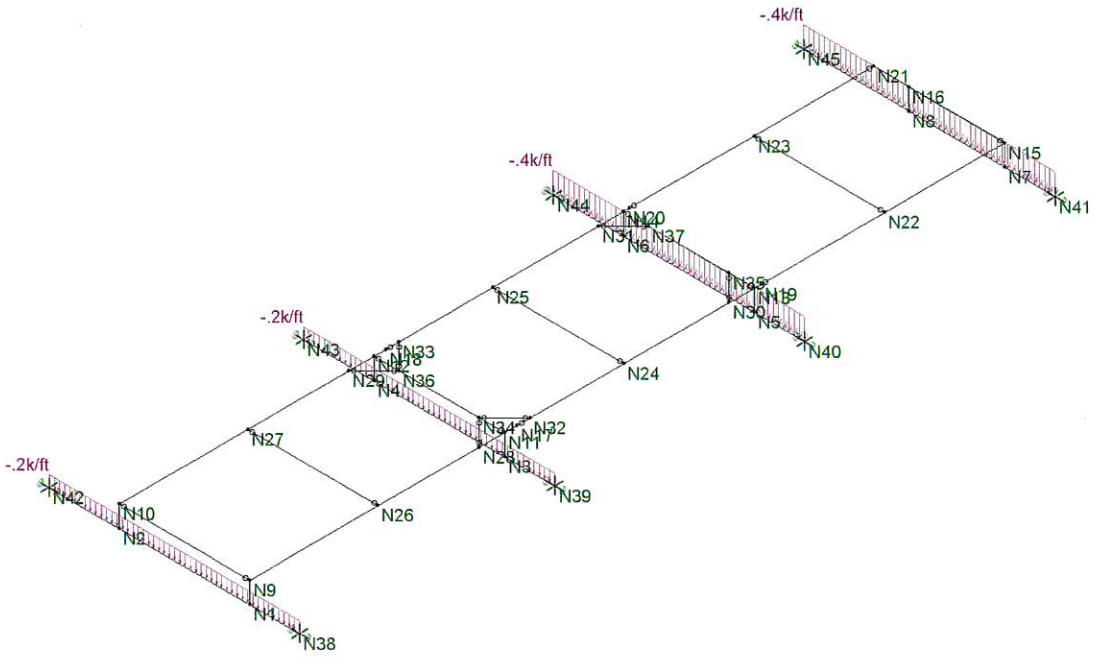


Loads: BLC 2, DEAD LOAD
Envelope Only Solution

Centek	CT43XC862 - Stamford Dead Load	SK - 3
CAG		Jan 2, 2019 at 9:33 AM
		18035.00 Existing RTP.r3d



Loads: BLC 3, Roof Snow Load
Envelope Only Solution

Centek	CT43XC862 - Stamford Roof Snow Load	SK - 4
CAG		Jan 2, 2019 at 9:33 AM
		18035.00 Existing RTP.r3d

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	(E) Posts	PIPE_3.5	Column	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
2	(E) Beam B1	W10X22	Beam	Wide Flange	A36 Gr....	Typical	6.49	11.4	118	.239
3	(E) Beam B2	W8X18	Beam	Wide Flange	A36 Gr....	Typical	5.26	7.97	61.9	.172
4	(E) Beam B3	C8X11.5	Beam	Channel	A36 Gr....	Typical	3.37	1.31	32.5	.13
5	(E) Beam B4	W8X31	Beam	Wide Flange	A36 Gr....	Typical	9.13	37.1	110	.536
6	(E) W12	W12X16	Beam	Wide Flange	A36 Gr....	Typical	4.71	2.82	103	.103
7	(E) W14	W14X22	Beam	Wide Flange	A36 Gr....	Typical	6.49	7	199	.208
8	(P) HSS 4x4	HSS4X4X5	Column	Tube	A500 Gr...	Typical	4.1	9.14	9.14	15.3

Load Combinations

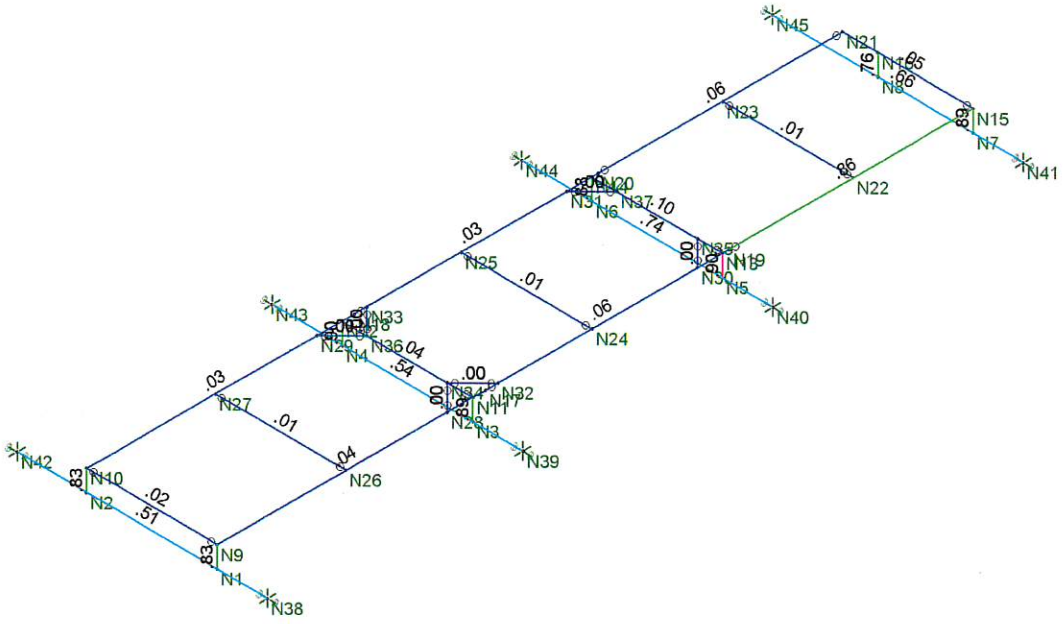
	Description	S...	P...	S...	B...	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	Deflection 1	Yes	Y		DL	1																		
2	Deflection 2	Yes	Y		LL	1																		
3	Deflection 3	Yes	Y		DL	1	LL	1																
4	IBC 16-1	Yes	Y		DL	1.4																		
5	IBC 16-2 (a)	Yes	Y		DL	1.2	LL	1.6	L...	1.6	R...	.5												
6	IBC 16-2 (b)	Yes	Y		DL	1.2	LL	1.6	L...	1.6	SL	.5	S...	.5										
7	IBC 16-2 (c)	Yes	Y		DL	1.2	LL	1.6	L...	1.6	RL	.5												
8	IBC 16-3 (a)	Yes	Y		DL	1.2	RLL	1.6	LL	.5	L...	1												
9	IBC 16-3 (c)	Yes	Y		DL	1.2	SL	1.6	S...	1.6	LL	.5	L...	1										
10	IBC 16-3 (e)	Yes	Y		DL	1.2	RL	1.6	LL	.5	L...	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-...	LC
1	N42	max	2.058	9	5.173	9	0	2	.003	4	0	10	0	10
2		min	0	2	0	2	-.027	4	0	2	0	1	0	1
3	N43	max	2.21	9	5.57	9	0	2	0	2	0	10	0	10
4		min	0	2	0	2	-.012	4	-.002	4	0	1	0	1
5	N44	max	5.31	9	11.381	9	0	2	0	2	0	10	0	10
6		min	0	2	0	2	-.018	4	-.002	4	0	1	0	1
7	N45	max	1.579	9	9.988	9	.043	4	0	2	0	10	0	10
8		min	0	2	0	2	0	2	-.04	4	0	1	0	1
9	N41	max	0	2	11.547	9	.249	4	0	2	0	10	0	10
10		min	-1.596	9	0	2	0	2	-.074	4	0	1	0	1
11	N40	max	0	2	15.908	9	0	2	.008	4	0	10	0	10
12		min	-5.291	9	0	2	-.15	4	0	2	0	1	0	1
13	N39	max	0	2	5.633	9	0	2	0	2	0	10	0	10
14		min	-2.206	9	0	2	-.024	4	-.003	4	0	1	0	1
15	N38	max	0	2	5.28	9	0	2	.003	4	0	10	0	10
16		min	-2.063	9	0	2	-.062	4	0	2	0	1	0	1
17	Totals:	max	0	10	70.48	9	0	10						
18		min	0	1	0	2	0	1						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Che..	Lo...	...	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	M1	PIPE_3.5	.832	0	9	.183	0		9	77.864	78.75	7.954	7.954	...	H1-...
2	M2	PIPE_3.5	.833	0	9	.191	0		9	77.864	78.75	7.954	7.954	...	H1-...
3	M3	PIPE_3.5	.892	0	9	.188	0		9	77.864	78.75	7.954	7.954	...	H1-...
4	M4	PIPE_3.5	.895	0	9	.186	0		9	77.864	78.75	7.954	7.954	...	H1-...
5	M5	HSS4X4X5	.883	0	9	.236	0	y	9	167....	169.74	19.285	19.285	...	H1-...
6	M6	HSS4X4X5	.902	0	9	.240	0	y	9	167....	169.74	19.285	19.285	...	H1-...
7	M7	PIPE_3.5	.894	0	9	.225	0		9	77.864	78.75	7.954	7.954	...	H1-...
8	M8	PIPE_3.5	.756	0	9	.203	0		9	77.864	78.75	7.954	7.954	...	H1-...
9	M9	W8X31	.016	0	9	.005	10...	y	4	241....	295....	38.07	82.08	...	H1-...
10	M10	W8X31	.034	10.222	4	.012	20...	y	4	126....	295....	38.07	80.705	...	H1-...
11	M11	W8X31	.035	10.222	4	.012	20...	y	4	126....	295....	38.07	80.032	...	H1-...
12	M12	W8X31	.031	8.495	4	.012	18...	y	4	146....	295....	38.07	82.08	...	H1-...
13	M13	W8X31	.056	18.81	4	.177	19...	y	4	146....	295....	38.07	82.08	...	H1-...
14	M14	W10X22	.857	5.078	4	.165	0	y	4	47.034	210....	16.47	49.717	...	H1-...
15	M15	W10X22	.054	7.487	9	.009	7....	y	4	131....	210....	16.47	70.2	...	H1-...
16	M16	W10X22	.057	9.953	4	.007	19.5	y	4	47.034	210....	16.47	43.931	...	H1-...
17	M17	W8X18	.103	8.463	9	.008	0	y	9	99.036	170....	12.582	42.945	...	H1-...
18	M18	W8X18	.043	2.062	9	.006	10...	y	4	99.036	170....	12.582	42.455	...	H1-...
19	M19	W8X18	.008	5.208	4	.007	10...	y	9	99.036	170....	12.582	43.624	...	H1-...
20	M20	W8X18	.008	5.208	4	.003	10...	y	4	99.036	170....	12.582	43.624	...	H1-...
21	M21	W8X18	.008	5.208	4	.003	10...	y	4	99.036	170....	12.582	43.624	...	H1-...
22	M22	C8X11.5	.001	1.414	4	.009	0	y	9	93.415	109....	3.353	26.001	...	H1-...
23	M23	C8X11.5	.001	1.414	4	.008	0	y	9	93.415	109....	3.353	26.001	...	H1-...
24	M24	C8X11.5	.001	1.414	9	.011	0	y	9	93.415	109....	3.353	26.001	...	H1-...
25	M25	C8X11.5	.001	1.414	9	.007	0	y	9	93.415	109....	3.353	26.001	...	H1-...
26	M26	C8X11.5	.001	1.414	9	.008	0	y	9	93.415	109....	3.353	26.001	...	H1-...
27	M27	C8X11.5	.001	1.414	9	.003	0	y	9	93.415	109....	3.353	26.001	...	H1-...
28	M28	W12X16	.508	5.417	9	.093	20	y	9	96.74	152....	6.102	44.992	1	H1-...
29	M29	W12X16	.544	5.417	9	.099	20	y	9	96.74	152....	6.102	44.992	1	H1-...
30	M30	W14X22	.742	16.042	9	.235	20	y	9	156....	210....	11.853	82.687	1	H1-...
31	M31	W14X22	.661	8.333	9	.170	20	y	9	156....	210....	11.853	82.687	1	H1-...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek	CT43XC862 - Stamford Unity Check	SK - 5
CAG		Jan 2, 2019 at 9:33 AM
		18035.00 Existing RTP.r3d

5

NOTES:

1. PROPOSED SPRINT INSTALLATION SHALL CONSIST OF NINE (9) PANEL ANTENNAS MOUNTED WITH A TOP OF ANTENNA ELEVATION OF ±67' AGL (SUBJECT TO THE NOTE ON SHEET L–2) WITHIN PROPOSED MECHANICAL SCREEN ENCLOSURE. IN ADDITION THE INSTALLATION OF TWELVE (12) RRH'S BEHIND ANTENNA SECTORS.
2. UTILITIES FOR THE PROPOSED FACILITY TO BE ROUTED FROM DEMARCS LOCATED WITHIN THE PROPOSED BUILDING. FINAL CONDUIT ROUTING TO BE DETERMINED/COORDINATED DURING THE CONSTRUCTION DOCUMENT PHASE OF THE PROJECT.

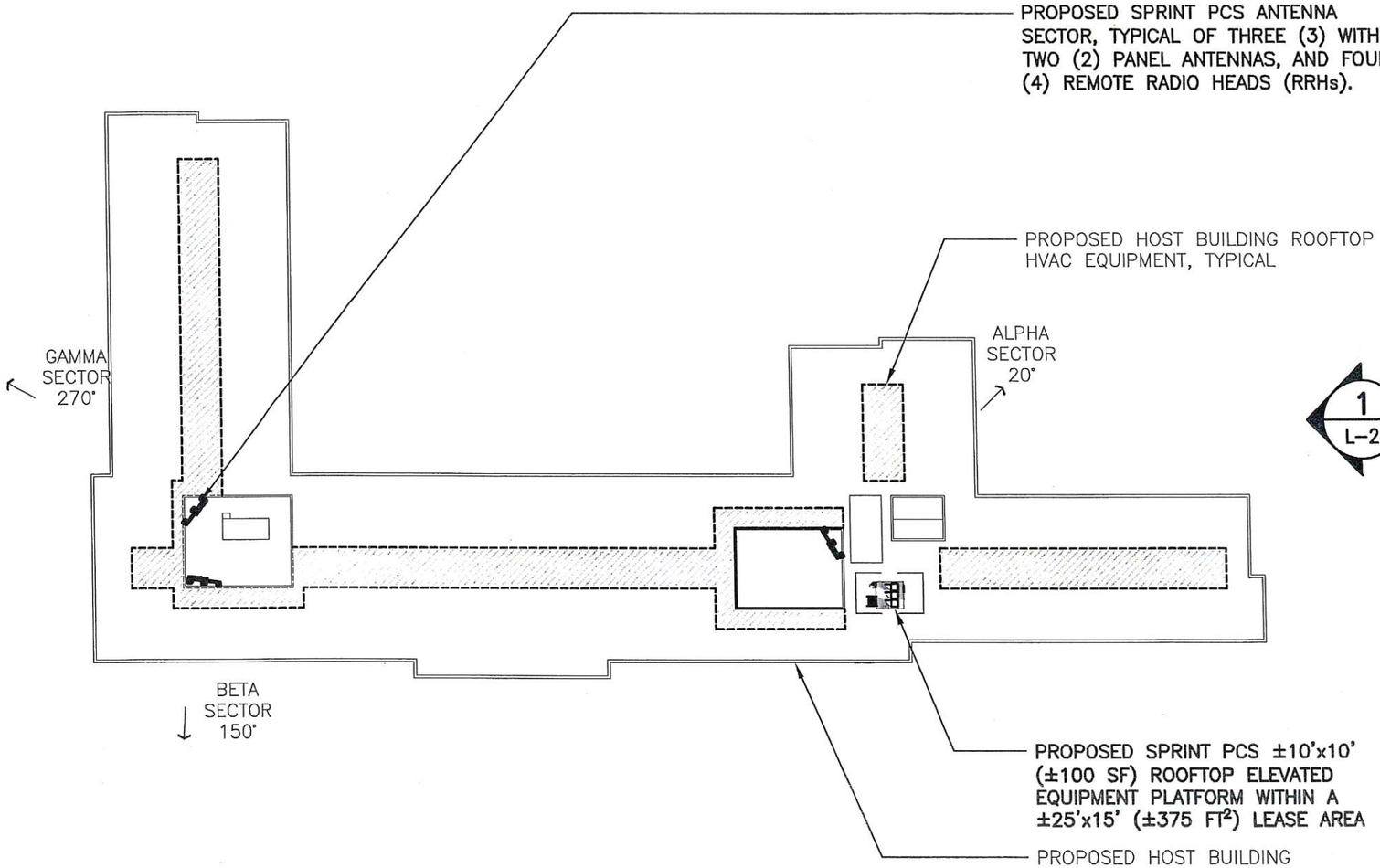
LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.

BUILDING COORDINATES: LAT.: 41°–04'–44.73"
LNG.: 73°–32'–55.94"

GROUND ELEVATION: 164'± A.M.S.L.

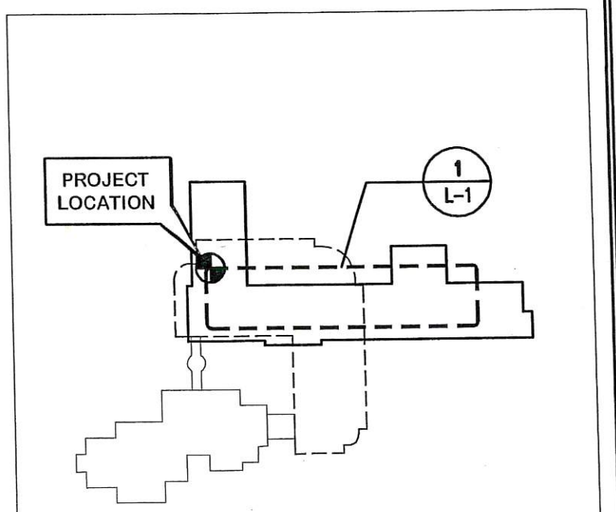
COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH PRO.



1 / L–1 **PARTIAL SITE PLAN**
SCALE: 1" =50'

APPROXIMATE NORTH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.



SITE KEY PLAN
SCALE: 1" = 500'

APPROXIMATE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/13/18	CAG	TJL	LEASE EXHIBIT – ISSUED FOR LEASING

Sprint

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405
www.CentekEng.com

SPRINT PCS
CT43XC862
PERMANENT FACILITY INSTALL
201 HIGH RIDGE ROAD
STAMFORD, CT 06905

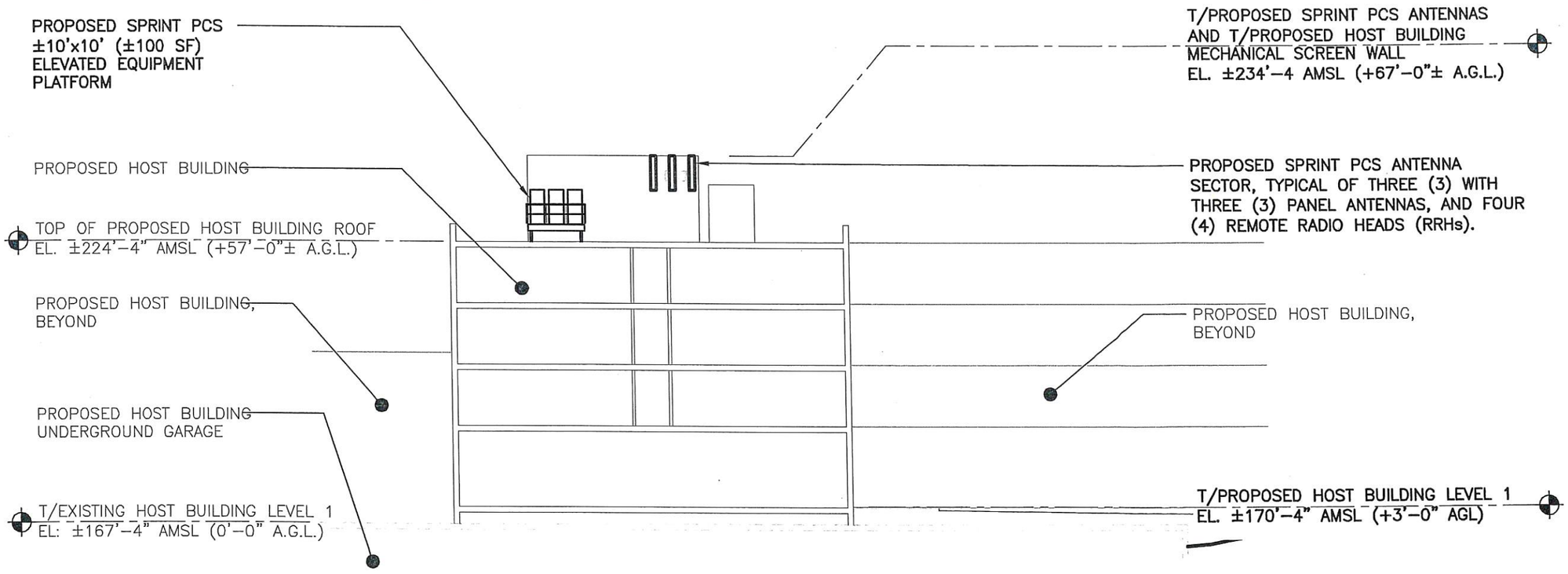
DATE: 08/16/18
SCALE: AS SHOWN
JOB NO. 18035.00

SHEET NO.
L-1

LEASE EXHIBIT

THIS LEASE PLAN IS DIAGRAMMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF SITE SURVEY AND FACILITY DESIGN.

NOTE: THE HOST BUILDING IS CURRENTLY BEING DESIGNED AND ACTUAL ROOF, SCREEN WALL AND ANTENNA ELEVATIONS BOTH AMSL AND AGL MAY CHANGE. THE GROUND ELEVATION AND ANTENNA HEIGHTS SHOWN IN THESE LEASE EXHIBITS L-1 AND L-2 ARE THEREFORE SUBJECT TO CHANGE. IN NO EVENT, HOWEVER, SHALL THE FINAL ANTENNA RAD CENTER ELEVATION BE LESS THAN THE RELATIVE AMSL AND AGL HEIGHT IDENTIFIED AS 56'-8" ON THE BUILDING AS SHOWN IN DRAWING L-1 OF A LEASE EXHIBIT ATTACHED TO THE 2001 LEASE.



1 / L-2 **ELEVATION**
SCALE: 1" = 20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/13/18	CAG	TJL	LEASE EXHIBIT - ISSUED FOR LEASING

Sprint

CENTEK engineering
Centered on Solutions℠
www.CentekEng.com
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405

SPRINT PCS
CT43XC862
PERMANENT FACILITY INSTALL
201 HIGH RIDGE ROAD
STAMFORD, CT 06905

DATE: 09/18/18
SCALE: AS SHOWN
JOB NO. 18035.00

SHEET NO.
L-2

6

TOWAIR Determination Results

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	41-04-43.0 north
Longitude	073-32-56.7 west

Measurements (Meters)

Overall Structure Height (AGL)	12.2
Support Structure Height (AGL)	9
Site Elevation (AMSL)	50

Structure Type

GTOWER - Guyed Structure Used for Communication Purposes

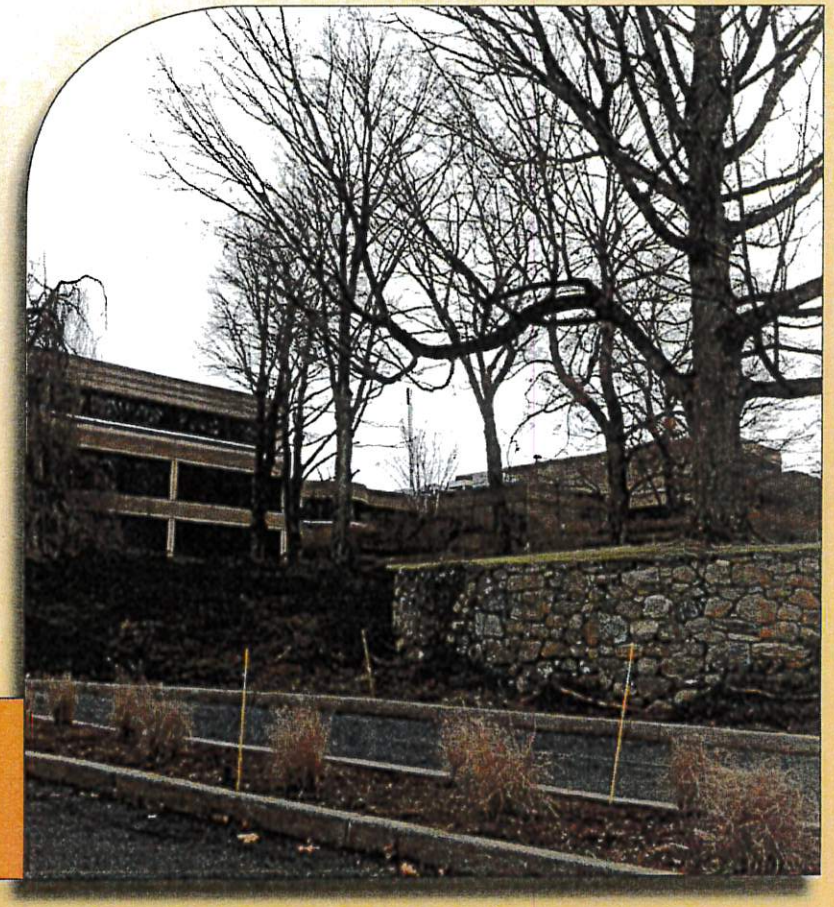
Tower Construction Notifications
Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

7

Photo-Simulations

CT43XCC862
TEMPORARY TOWER INSTALL
201 HIGH RIDGE ROAD
STAMFORD, CT 06905



Prepared in December 2018 by:
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

Prepared for Sprint

ALL-POINTS
TECHNOLOGY CORPORATION

PHOTO LOG

Legend

Site Visible

1 inch = 300 feet

300 150 0 300 Feet

ALL-POINTS TECHNOLOGY CORPORATION

Sprint

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**HOST PROPERTY**	**SOUTHEAST**	**+/- 313 FEET**

ALL-POINTS TECHNOLOGY CORPORATION

Sprint

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**HOST PROPERTY**	**SOUTHEAST**	**+/- 313 FEET**

ALL-POINTS TECHNOLOGY CORPORATION

Sprint

PHOTOGRAPHED ON 11/26/2018

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**HIGH RIDGE ROAD**	**SOUTHEAST**	**+/- 0.18 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

Sprint

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**HIGH RIDGE ROAD**	**SOUTHEAST**	**+/- 0.18 MILE**

ALL-POINTS TECHNOLOGY CORPORATION

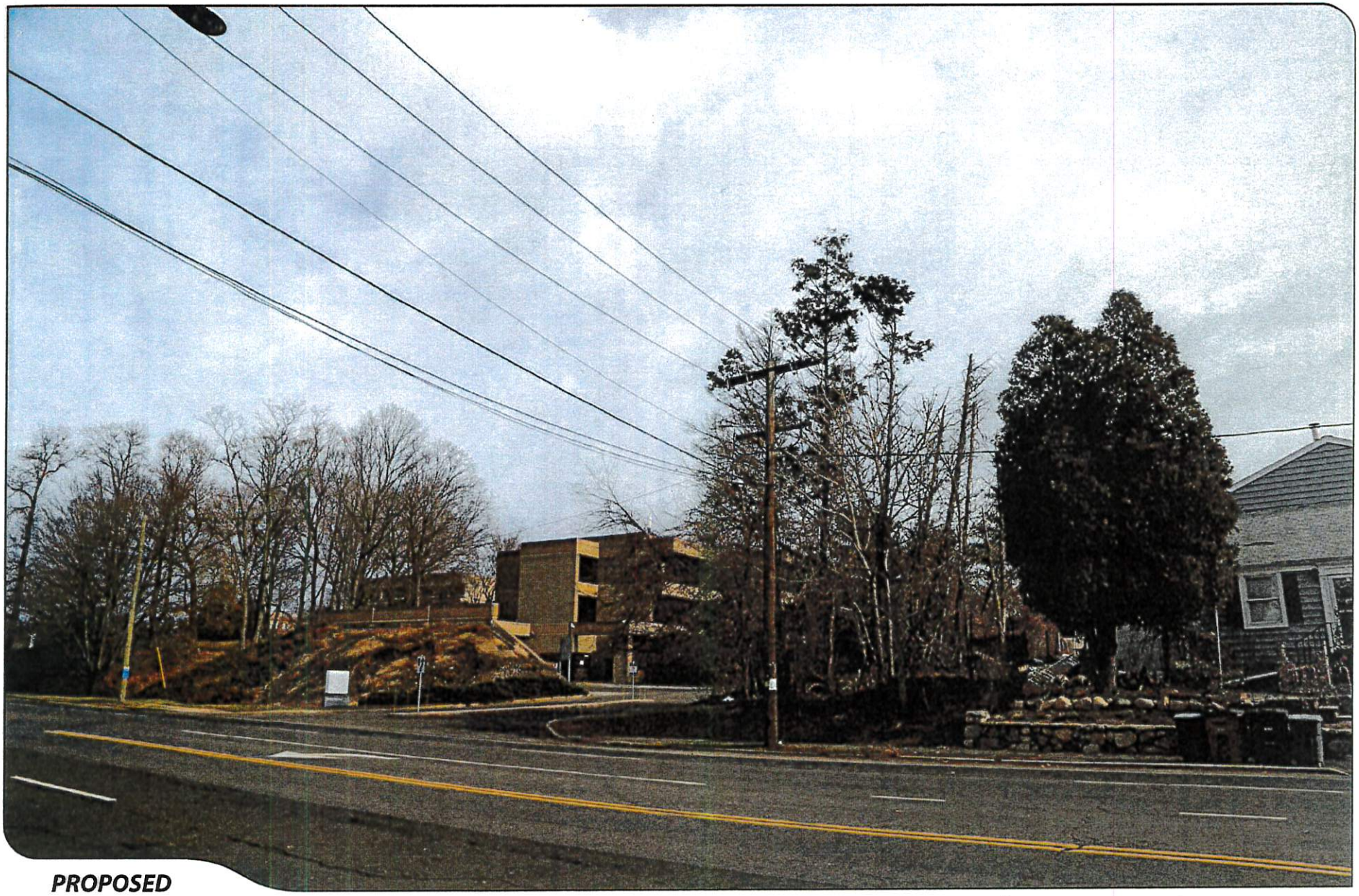
Sprint

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**HIGH RIDGE ROAD**	**NORTHEAST**	**+/- 448 FEET**

ALL-POINTS TECHNOLOGY CORPORATION

Sprint



PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**HIGH RIDGE ROAD**	**NORTHEAST**	**+/- 448 FEET**

ALL-POINTS TECHNOLOGY CORPORATION

Sprint

8

C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report

CT43XC862 – Stamford

201 High Ridge Road, Stamford, CT 06905

December 7, 2018

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Sprint antennas on a temporary guy tower to be located on the building rooftop at 201 High Ridge Road in Stamford, CT. The coordinates of the proposed temporary tower are 41° 04' 43.08" N, 73° 32' 56.70" W. Based on the site drawings provided[1], Sprint will be the only operator installed on the temporary tower.

Sprint is proposing to install the following:

1) Install a 40' temporary guy tower on top of the existing 29.5' AGL building rooftop;
2) Install three multi-band (865/1900/2500 MHz) antennas (one per sector), at an antenna centerline height of 69.5' AGL, to support their CDMA and LTE network;
3) Install a 10' x 10' concrete pad with three equipment cabinets at ground level, on the northwestern side of the building.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

[1] Centek Engineering site drawings, dated 10/11/2018.

3. RF Exposure Prediction Methods

The calculation results displayed in the following table were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \times OffBeamLoss$$

Where:

EIRP = Effective Isotropic Radiated Power

EIRP = 1.64 x ERP

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss of 10 dB, where applicable

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final site configuration.

4. Calculation Results

Table 1 below outlines the power density information for the proposed site at ground level. Due to the directional nature of the proposed Sprint antennas, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical patterns of Sprint's proposed antennas. The calculated results for Sprint shown in Table 1 below include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet AGL)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
Sprint - CDMA	69.5	865	1	433	0.0039	0.5767	0.67%
Sprint - CDMA	69.5	1900	1	670	0.0060	1.0000	0.60%
Sprint - LTE	69.5	865	1	865	0.0077	0.5767	1.34%
Sprint - LTE	69.5	1900	1	1340	0.0120	1.0000	1.20%
Sprint - LTE	69.5	1900	1	2680	0.0239	1.0000	2.39%
Sprint - LTE	69.5	2500	3	1280	0.0343	1.0000	3.43%
						Total:	**9.62%**

Table 1: Maximum Permissible Exposure – Ground Level [2] [3]

[2] Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[3] Antenna heights listed for Sprint are in reference to the Centek Engineering site drawings, dated 10/11/2018.

5. Conclusion

The above analysis verifies that RF exposure levels from Sprint's proposed antenna installations at ground level will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. The highest, cumulative expected percent of Maximum Permissible Exposure at ground level is calculated to be **9.62% of the FCC Uncontrolled/General Population limit.**

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Report Prepared By: Sokol Andoni
RF Engineer
C Squared Systems, LLC

December 7, 2018
Date

Reviewed/Approved By: Daniel Brown
RF Engineer
C Squared Systems, LLC

December 12, 2018
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE Std C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Expsoure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[5]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[4] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[5] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

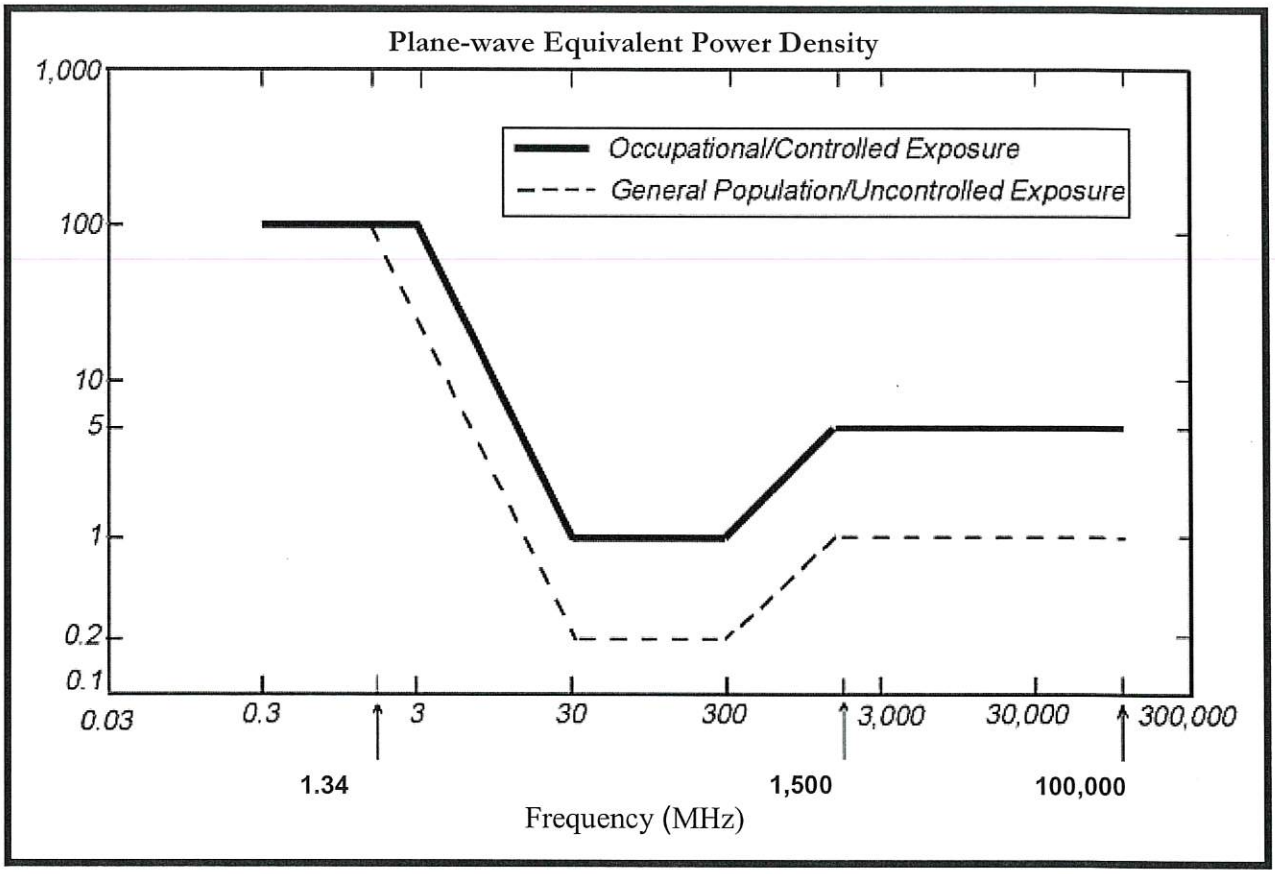
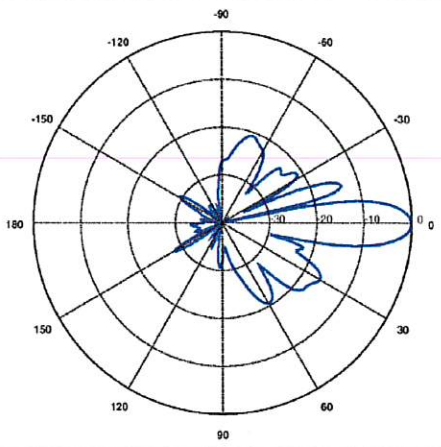


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Sprint's Antenna Model Data Sheets and Electrical Patterns

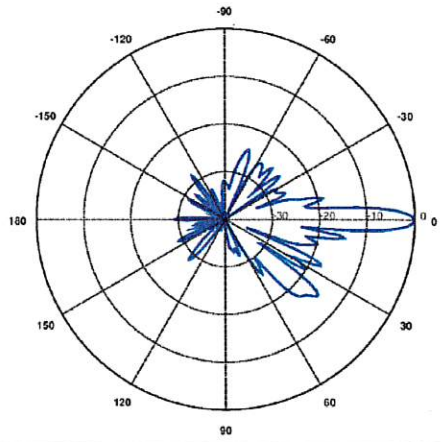
865 MHz CDMA/LTE

Manufacturer:	Commscope
Model #:	DHHTT65B-3XR
Frequency Band:	790-896 MHz
Gain:	15.5 dBi
Vertical Beamwidth:	11.2°
Horizontal Beamwidth:	64°
Polarization:	± 45°
Size L x W x D:	72.1" x 11.9" x 7.1"



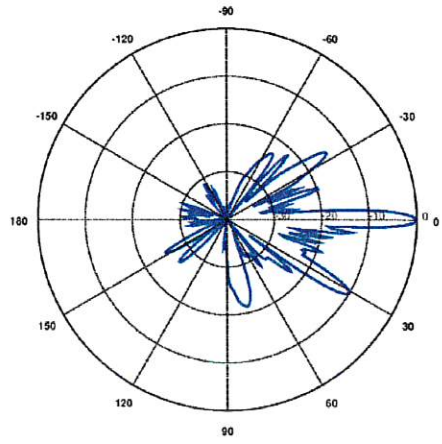
1900 MHz CDMA/LTE

Manufacturer:	Commscope
Model #:	DHHTT65B-3XR
Frequency Band:	1850-1990 MHz
Gain:	17.4 dBi
Vertical Beamwidth:	5.4°
Horizontal Beamwidth:	69°
Polarization:	± 45°
Size L x W x D:	72.1" x 11.9" x 7.1"



2500 MHz LTE

Manufacturer:	Commscope
Model #:	DHHTT65B-3XR
Frequency Band:	2490-2690 MHz
Gain:	17.2 dBi
Vertical Beamwidth:	4.3°
Horizontal Beamwidth:	60°
Polarization:	± 45°
Size L x W x D:	72.1" x 11.9" x 7.1"



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STATE SITING COUNCIL NOTICE

Notice is hereby given, pursuant to Section 16-50j-40(a) of the Regulations of Connecticut State Agencies of a Petition to be filed with the Connecticut Siting Council ("Siting Council") on or after January 8, 2019 by Sprint Spectrum Realty Company, LLC ("Sprint" or the "Petitioner") for construction of a temporary wireless facility.

Sprint has a rooftop wireless communications facility on an existing 60 foot tall building located at 201 High Ridge Road in the City of Stamford, Connecticut ("Site") which has been in existence for over 15 years ("Existing Facility").

The Site is proposed for redevelopment necessitating temporary relocation of the Existing Facility on the Site and construction of a temporary facility to maintain continuity of Sprint's services.

Sprint will seek a declaratory ruling that construction of a 40 foot tall temporary tower mast on a lower portion of the roof of the existing building not being demolished, together with other equipment at grade along the northerly portion of the Site, does not have adverse environment effects (the "Temporary Facility").

The overall height of the Temporary Facility is needed to replicate the existing height of the antennas on the existing building together with clearance over the new building to be constructed.

The Temporary Facility will be removed and a new Sprint rooftop facility constructed and relocated back to the current location once a new building proposed for development on the Site is constructed ("Permanent Relocation Facility")

The Petition will provide additional details of the Temporary Facility, the location, height and other features of which are subject to review and potential change under provisions of the Connecticut General Statutes Sections 16-50g et. seq.

Copies of the Petition will be available for review during normal business hours on or after January 8, 2019 at the following:

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

City of Stamford
City/Town Clerk
888 Washington Blvd.
Stamford, CT 06901

or the offices of the undersigned. All inquiries should be addressed to the Connecticut Siting Council or to the undersigned.

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
445 Hamilton Ave, 14th Floor
White Plains, New York 10601
(914) 761-1300
Attorneys for the Petitioner

CERTIFICATION OF SERVICE

I hereby certify that on the 4th day of January 2019, a copy of the following letter and notice of the intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested, to the attached list of abutting property owners:

Dated: 1/4/19

Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
Sprint Spectrum Realty Company, LLC (Sprint)

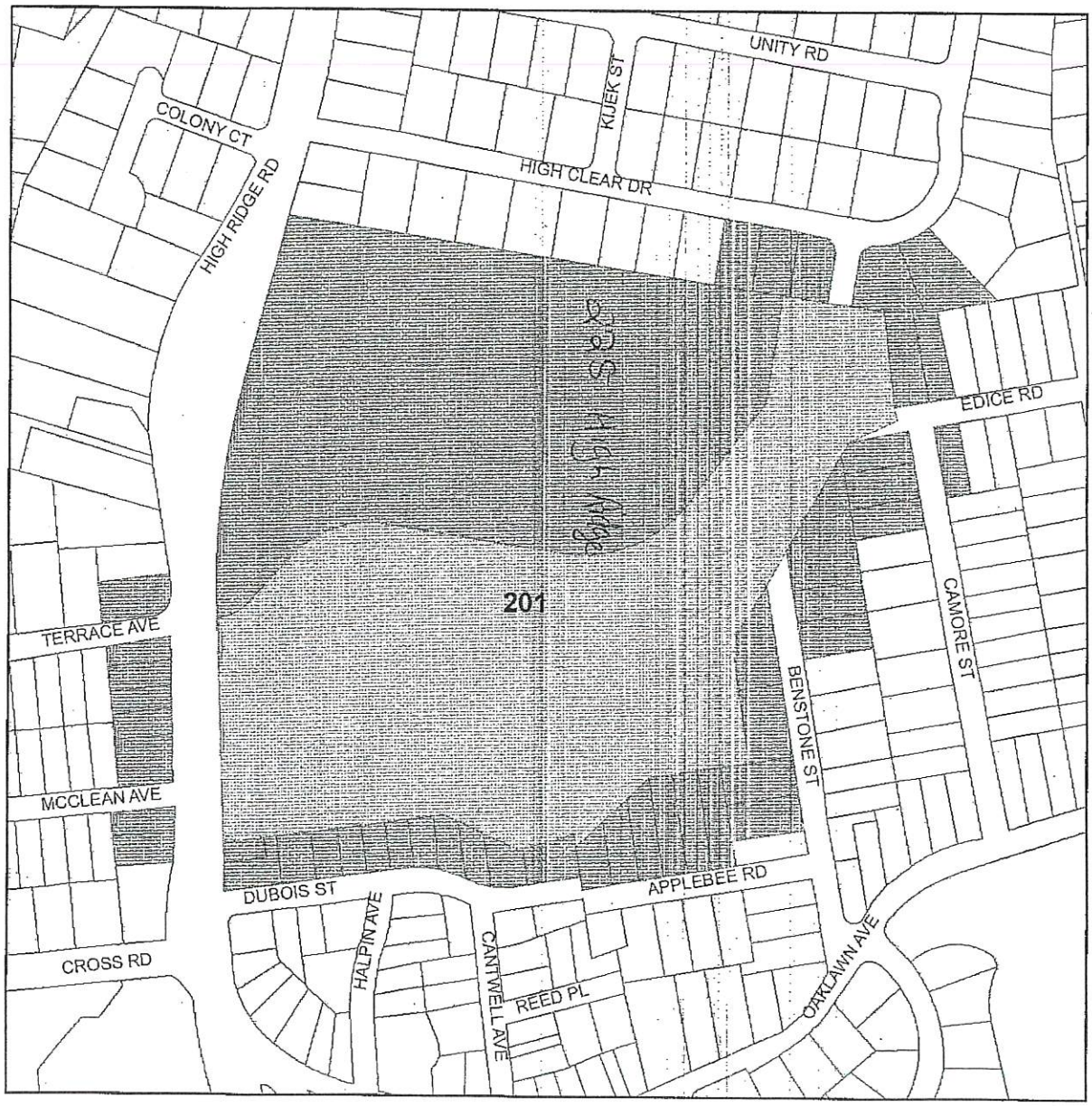
C&F: 3501381.1

Date:	12/18/2018
Inspector:	M. Bello

201 HIGH RIDGE ROAD
100' ABUTTERS LIST

	Account Number	Street #	Street Name	Unit	MAP BLOCK LOT UNIT	Grantee	Mailing Address	City	State	Zip
1	001-8506	13	APPLEBEE ROAD		104 324 108	PROCACCINI FRANK JR ET AL	13 APPLEBEE ROAD	STAMFORD	CT	06905-3513
2	000-3684	17	APPLEBEE ROAD		104 324 109	MANGANIELLO MICHAEL A ET AL	17 APPLEBEE ROAD	STAMFORD	CT	06905-3513
3	001-6276	21	APPLEBEE ROAD		104 324 110	DISALVO GERARDO ET AL	21 APPLEBEE ROAD	STAMFORD	CT	6905
4	000-0980	25	APPLEBEE ROAD		104 324 111	ENGLE TIMOTHY W ET AL	25 APPLEBEE ROAD	STAMFORD	CT	06905-3513
5	001-9639	31	APPLEBEE ROAD		104 324 B	ILIADIS AVIANIA ET AL	31 APPLEBEE ROAD	STAMFORD	CT	06905-3513
6	000-4484	35	APPLEBEE ROAD		104 324 A	FRANK DANIELE ET AL	35 APPLEBEE ROAD	STAMFORD	CT	06905-3513
7	001-2184	24	BENSTONE STREET		104 324 106PT105	KOWALESKI SALLY SOPHIE	24 BENSTONE ST	STAMFORD	CT	06905-3516
8	000-0950	32	BENSTONE STREET		104 324 104PT105	VACCARO JOHN T REVOCABLE TRUST	32 BENSTONE STREET	STAMFORD	CT	6905
9	000-2596	38	BENSTONE STREET		104 324 103	MAGRATH FILIPPE S ET AL	38 BENSTONE STREET	STAMFORD	CT	06905-3516
10	001-9426	53	BENSTONE STREET		104 324 98&PT97	TERENZIO LISA	53 BENSTONE STREET	STAMFORD	CT	06905-3515
11	000-7707	54	BENSTONE STREET		104 324 102	FRAGASSO MICHAEL	7 LINDENWOODS	NORWALK	CT	06851-1507
12	002-4473	59	BENSTONE STREET		104 324 G	MASIARZ JAN ET AL	59 BENSTONE ST	STAMFORD	CT	06906-0000
13	001-4665	64	BENSTONE STREET		104 324 F	CHAMPANIER LINDA H ET AL	64 BENSTONE STREET	STAMFORD	CT	06905-3516
14	000-3002	54	CAMORE STREET		104 324 C	VACCARO PAUL J ET AL	54 CAMORE STREET	STAMFORD	CT	6905
15	001-3985	60	CAMORE STREET		104 324 D	MACARI RICHARD ET AL	9 LEDGEWOOD COURT	NORWALK	CT	6850
16	000-3119	64	CAMORE STREET		104 324 E	CLARKE-FABRICATORE NADINE ET AL	64 CAMORE STREET	STAMFORD	CT	6905
17	000-8961	16	DUBOIS STREET		103 324 A	BROUGHTON THERESA	16 DUBOIS STREET	STAMFORD	CT	6905
18	002-2277	20	DUBOIS STREET		103 324 74T075	FARBER DENNIS A	20 DUBOIS ST	STAMFORD	CT	06905-3404
19	000-1532	24	DUBOIS STREET		103 324 72TO073	DEMAIO DANIEL	24 DUBOIS STREET	STAMFORD	CT	06905-3404
20	001-4367	28	DUBOIS STREET		103 324 70TO071	MANJUCK MARTHA D	28 DUBOIS ST	STAMFORD	CT	06905-3404
21	002-4105	32	DUBOIS STREET		103 324 68TO69	GARLAND GREGORY G	32 DUBOIS STREET	STAMFORD	CT	06905-3406
22	001-4569	36	DUBOIS STREET		103 324 A	URBINA RONALDO ET AL	36 DUBOIS ST	STAMFORD	CT	06905-3406
23	001-4570	40	DUBOIS STREET		103 324 B	KUMAR ABHISHEK ET AL	40 DUBOIS STREET	STAMFORD	CT	06905-3406
24	000-4576	42	DUBOIS STREET		103 324 62TO63	COUCH WALTER J ET AL	42 DUBOIS STREET	STAMFORD	CT	06905-3406
25	000-3086	50	DUBOIS STREET		103 324 1	CHATURVEDI MANISH ET AL	50 DUBOIS STREET	STAMFORD	CT	6905
26	000-3087	54	DUBOIS STREET		104 324 2	CALICCHIO MARY	54 DUBOIS STREET	STAMFORD	CT	06905-3406
27	001-8733	25	EDICE ROAD		98 324 49	PUK TOMASZ ET AL	25 EDICE ROAD	STAMFORD	CT	06905-3512
28	000-0167	26	EDICE ROAD		104 324 51	DELUCA JOSEPH A JR ET AL	26 EDICE ROAD	STAMFORD	CT	06905-3511
29	001-1964	29	EDICE ROAD		98 324 50	SCHLEGEL NANCY CARELLA ET AL	29 EDICE ROAD	STAMFORD	CT	06905-3512
30	000-3350	73	HIGH CLEAR DRIVE		98 324 27	CARUSO JOSEPH A	73 HIGH CLEAR DRIVE	STAMFORD	CT	06905-3103
31	001-8946	81	HIGH CLEAR DRIVE		98 324 28	LINDSAY HEATHER	81 HIGH CLEAR DRIVE	STAMFORD	CT	06905-3103
32	002-1420	87	HIGH CLEAR DRIVE		98 324 29	PANAPADA DONALD ET AL	87 HIGH CLEAR DRIVE	STAMFORD	CT	6905
33	000-2400	97	HIGH CLEAR DRIVE		98 324 37	BURDEN DANIEL ET AL	97 HIGH CLEAR DRIVE	STAMFORD	CT	6905
34	002-3167	101	HIGH CLEAR DRIVE		98 324 36	PONTICELLO MARC S	33 CLIFFORD AVENUE	STAMFORD	CT	6905
35	001-4614	179	HIGH RIDGE ROAD		103 324 34&79	KHAN MOHAMMED N ET AL	179 HIGH RIDGE ROAD	STAMFORD	CT	6905
36	000-4698	181	HIGH RIDGE ROAD		103 324 1TO002	CUBUR JUAN EMILIO ET AL	181 HIGH RIDGE ROAD	STAMFORD	CT	6905
37	000-6812	184	HIGH RIDGE ROAD		103 356 68PT023	MALAGISI ANTONIO ET AL	184 HIGH RIDGE ROAD	STAMFORD	CT	6905
38	000-6813	188	HIGH RIDGE ROAD		103 356 24PT023	MALAGISI CARLA	184 HIGH RIDGE ROAD	STAMFORD	CT	6905
39	000-2768	200	HIGH RIDGE ROAD		103 357 30TO031	TEHRANI NORMAN MARITAL TRUST	9 DRUM HILL LANE	STAMFORD	CT	06902-1406
40	003-9650	201	HIGH RIDGE ROAD		103 324 A	HRC 201 II LLC (27.166%) ET AL	18 E. 50TH STREET, 10TH FL.	NEW YORK	NY	10022
41	001-5396	206	HIGH RIDGE ROAD		103 357 32	SAMANIEGO ANGEL ET AL	206 HIGH RIDGE ROAD	STAMFORD	CT	6905
42	001-9142	210	HIGH RIDGE ROAD		103 357 33	INES ANASTACIA V	210 HIGH RIDGE ROAD	STAMFORD	CT	06905-3418
43	000-0644	214	HIGH RIDGE ROAD		103 357 34	SPARROW JAMES A ET AL	214 HIGH RIDGE ROAD	STAMFORD	CT	06905-3418
44	000-0645	216	HIGH RIDGE ROAD		103 357 35	GONZALEZ GERARDO	216 HIGH RIDGE ROAD	STAMFORD	CT	06905-3418
45	002-9650	224	HIGH RIDGE ROAD		103 359 B1	SCANLON HELEN J	224 HIGH RIDGE ROAD	STAMFORD	CT	06905-3013
46	003-9651	225	HIGH RIDGE ROAD		103 324 B	TNREF III HIGH RIDGE LLC	1019 BOSTON POST ROAD	DARIEN	CT	6820

201 HIGH RIDGE ROAD



Stamford Assessor's Office

Mapping Division

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CERTIFICATION OF SERVICE

I hereby certify that on the 4th day of January 2019, a copy of the foregoing notice of the intended filing of a Petition with the Connecticut Siting Council for a declaratory ruling was sent by certified mail, return receipt requested, to the list below:

Dated: 1/4/19

Cuddy & Feder LLP
45 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Attorneys for:
Sprint Spectrum Realty Company, LLC
(Sprint)

State and Regional

The Honorable George Jepsen Attorney General Office of the Attorney General 55 Elm Street Hartford, CT 06106	Department of Economic and Community Development Catherine Smith, Commissioner 505 Hudson Street Hartford, CT 06106
Department of Public Health Dr. Raul Pino, Commissioner 410 Capitol Avenue P.O. Box 340308 Hartford, CT 06134	Department of Energy and Environmental Protection Public Utilities Regulatory Authority Chair Katie Dykes Ten Franklin Square New Britain, CT 06051
Council on Environmental Quality Peter Hearn, Executive Director 79 Elm Street Hartford, CT 06106	Department of Transportation James P. Redeker, Commissioner 2800 Berlin Turnpike Newington, CT 06111

Department of Energy & Environmental Protection Rob Klee, Commissioner 79 Elm Street Hartford, CT 06106	Department of Agriculture Steven K. Reviczky, Commissioner 450 Columbus Boulevard, Suite 701 Hartford, CT 06103
Office of Policy and Management Benjamin Barnes, Secretary 450 Capitol Avenue Hartford, CT 06106	State House Representative-District 144 Caroline Simmons State Capitol, Room C110 210 Capitol Avenue Hartford, CT 06106
Department of Emergency Services & Public Protection Division of Emergency Management and Homeland Security William J. Hackett, Deputy Commissioner 1111 Country Club Road, 3rd Floor Middletown, CT 06457	State Senator -District S27 Carlo Leone Legislative Office Building 300 Capitol Avenue Room 3300 Hartford, CT 06106
Department of Economic and Community Development-Offices of Culture and Tourism Todd Levine, State Historic Preservation Officer, Historian/Environmental Reviewer 450 Columbus Blvd., Suite 5 Hartford, CT 06103	Western Connecticut Council of Governments Francis Pickering, Executive Director 1 Riverside Road Sandy Hook, CT 06482

Federal

Federal Communications Commission 445 12th Street SW Washington, D.C. 20554	Federal Aviation Administration 800 Independence Avenue, SW Washington, DC 20591
U.S. Congressman Jim Himes 211 State Street, 2nd Floor Bridgeport, CT 06604	U.S. Senator Richard Blumenthal 90 State House Square, 10th Floor Hartford, CT 06103
U.S. Senator Christopher Murphy Colt Gateway 120 Huyshope Avenue Suite 401 Hartford, CT 06106	

City of Stamford

David Martin, Mayor Stamford Government Center 888 Washington Boulevard Stamford, CT 06901	Planning Board Stamford Government Center 888 Washington Boulevard, 7th Floor Stamford, CT 06901
Zoning Board Stamford Government Center 888 Washington Boulevard, 7th Floor Stamford, CT 06901	Environmental Protection Bureau Stamford Government Center 888 Washington Boulevard, 7th Floor Stamford, CT 06901
Ralph Blessing Land Use Bureau Chief/ Director of Planning & Zoning Stamford Government Center 888 Washington Boulevard Stamford, CT 06901	James Lunney, III Zoning Enforcement Officer Stamford Government Center 888 Washington Boulevard Stamford, CT 06901