



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

August 7, 2018

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

RE: Notice of Exempt Modification for Sprint DO Macro: 806366
Sprint Site ID: CT03XC210
73 North Main Street, Marlborough, CT 06447
Latitude: 41° 37' 47.32"/ Longitude: -71° 57' 59.41"

Dear Ms. Bachman:

Sprint currently maintains six (6) antennas at the 130-foot level of the existing 155.5-foot monopole tower at 73 North Main Street, Marlborough, CT. The tower is owned by Crown Castle. The property is owned by Village Properties LLC, C/O Crown Atlantic CO. Sprint now intends to replace six (6) antennas with six (6) new antennas. These antennas would be installed at the 130-foot level of the tower. Sprint also intends to install twelve (12) RRH's, four (4) Hybrid cables and remove six (6) coax cables.

The facility was approved by the Connecticut Siting Council in Docket No. 169 on October 25, 1995. This approval included the condition that:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed communication service, sufficient to accommodate the antennas of Springwich Cellular Limited Partnership and the Town of Marlborough, and not to exceed the total height of 160 feet above ground level (AGL).

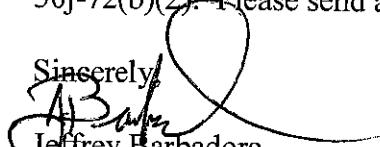
Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to First Selectman- Ms. Amy Traversa & The Planning Commission, Town of Marlborough, CT. Crown Castle is the tower owner and is stated on the property card as Crown Atlantic CO.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,



Jeffrey Barbadora

Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

781-729-0053

Jeff.Barbadora@crowncastle.com

Attachments:

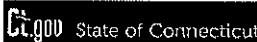
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Amy J. Traversa, First-Selectman
Town of Marlborough
26 North Main Street
Marlborough, CT 06447
(860) 295-6204

Town of Marlborough Planning Commission
26 North Main Street
Marlborough, CT 06447
(860) 295-6200

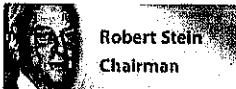


Governor Dannel P. Malloy |



CONNECTICUT SITING COUNCIL

[Home](#) [About Us](#) [Pending Matters](#) [Decisions](#) [Forms](#) [Contact Us](#)



[Filing Guides](#)
[Meetings & Minutes](#)
[Public Participation](#)
[Audio Link to New Britain Hearing Rooms](#)
[Programs & Services](#)
[Telecommunications Database](#)
[Publications](#)
[Other Resources](#)
[Statutes & Regulations](#)
[Electric Transmission Upgrade Projects](#)
[Frequently Asked Questions](#)

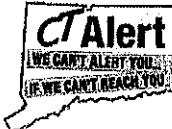
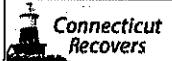


[Receive Updates by E-mail](#)
[Sign-Up for E-alerts](#)



[Regulations of CT State Agencies](#)

[access health CT.w](#)



Robert Stein,
Chairman

Melanie Bachman,
Acting Executive Director

NOTICE TO USERS

The Connecticut Siting Council posts filed documents on this site as a public service. The Council disclaims any liability for the content of submissions made by parties, intervenors, public officials, and the general public. Further, while the Council seeks to be complete in its postings, the Council urges users of this site to confirm with the submitter the completeness of the postings made. The posting of any document does not constitute or imply endorsement by the Connecticut Siting Council. Finally, the

DOCKET NO. 169 - An application of Bell Atlantic NYNEX Mobile, for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications tower and associated equipment located within a 56+/- acre parcel at 56 East Hampton Road, in Marlborough, Connecticut. The proposed alternatives are located within a 21.7+/- acre parcel at North Main Street and within a 2.5+/- acre parcel at 9-11 South Main Street, in Marlborough, Connecticut.

Connecticut Siting Council

October 25, 1995

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications tower and equipment building at the proposed first alternate site in Marlborough, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Bell Atlantic NYNEX Mobile, Inc. (BANM) for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed first alternate site, located within a 21.7+/- acre parcel at North Main Street, Marlborough, Connecticut. We find the effects on scenic resources and adjacent land uses of the prime site and second alternate site to be significant, and therefore deny certification of these sites.

The facility shall be constructed, operated, and maintained as a monopole substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed communications service, sufficient to accommodate the antennas of Greenwich Cellular Limited Partnership and the Town of Marlborough, and not to exceed a total height of 160 feet above ground level (AGL).
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include placement of utilities underground, relocation of the tower within the leased parcel to provide the maximum practicable buffer of the tower from adjacent land owners; plans for the tower foundation; specifications for the placement of all antennas to be attached to this tower; plans for the equipment building and security fence; plans for the access road and utility line installation from North Main Street; plans for site clearing and tree trimming; and plans for water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.
7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.
8. The Certificate Holder shall notify the Council upon completion of construction and provide the final cost to construct the facility.

Connecticut Siting Council assumes no responsibility for the use of documents posted on this site. For further information about the proper use of material posted on this site, please see the State of Connecticut [Disclaimer](#).

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and the Middletown Press.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

APPLICANT

Bell Atlantic NYNEX Mobile, Inc.

ITS REPRESENTATIVE

Brian C. S. Freeman, Esq.
Kenneth C. Baldwin, Esq.
Robinson & Cole
One Commercial Plaza
Hartford, CT 06103-3597

David S. Malko
General Manager - Engineering
Sandy M. Ranciato
Regulatory Services
Bell Atlantic NYNEX Mobile, Inc.
20 Alexander Drive
Wallingford, CT 06492

INTERVENOR

Springwich Cellular Limited Partnership

ITS REPRESENTATIVE

Peter J. Tyrrell, Esq.
Springwich Cellular Limited Partnership
227 Church Street
New Haven, CT 06510

PARTY

Town of Marlborough

ITS REPRESENTATIVE

William S. Fish, Jr.
Tyler, Cooper & Alcorn
CityPlace, 35th Floor
Hartford, CT 06103-3488

PARTY

Neighbors Endorsing an Appropriate Tower
(NEAT)

ITS REPRESENTATIVE

Barry S. Zitser
Perakos, Kindl & Zitser
207 Main Street
Hartford, CT 06106

Content Last Modified on 8/9/2002 11:28:31 AM

Ten Franklin Square New Britain, CT 06051 / 860- 827-2935

[Home](#) | [CT.gov Home](#) | [Send Feedback](#) | [Login](#) | [Register](#)
State of Connecticut [Disclaimer](#), [Privacy Policy](#), and [Web Site Accessibility Policy](#). Copyright © 2002-2017 State of Connecticut.



VISION ID: 100287		Account #2014T		Bldg #:		1 of 1		Sec #:		1 of 1		Card 1		1 of 1	
CURRENT OWNER		TOPO.		UTILITIES		STRT/ROAD		LOCATION		CURRENT ASSESSMENT		PREVIOUS ASSESSMENTS (HISTORY)		VISION	
VILLAGE PROPERTIES LLC C/O CROWN ATLANTIC CO PMB 353 4017 WASHINGTON RD MCMURRAY, PA 15317		2 Above Street		1 Paved		Description		Code		Appraised Value		Assessed Value		Assessed Value	
Additional Owners:										Comm Land		121,900		85,330	
										Comm Bldg		80,500		56,420	
										Comm OB		663,000		464,100	
OTHER ID:		2014T		EXEMPT CO											
Census		Lake Area		Photo Retake											
Dev. Lot		CB Letter													
Dev. Map															
GIS ID: 6/26/65T															

RECORD OF OWNERSHIP

Bk./Vol/Page

127/ 9

SALE DATE

02/03/1999

q/u

v/u

SALE PRICE

V.C.

29

Yr.

Code

Assessed Value

Yr.

Code

Assessed Value

Yr.

Code

Assessed Value

Yr.

Code

Assessed Value

VILLAGE PROPERTIES LLC

NBHD/SUB

NBHD Name

Street Index Name

Tracing

Batch

Total:

720,370

Total:

578,830

Total:

578,830

80,600

0

663,000

121,900

0

865,500

C

0

0

0

EXEMPTIONS

Year

Type

Description

Amount

Code

Description

Number

Amount

Comm. Int.

Total:

865,500

605,850

0

578,830

0

0

0

0

0

0

0

OTHER ASSESSMENTS

Year

Type

Description

Number

Amount

Comm. Int.

Total:

865,500

605,850

0

578,830

0

0

0

0

0

0

0

0

0

0

PREVIOUS ASSESSMENTS (HISTORY)

Year

Code

Assessed Value

Yr.

Code

Assessed Value

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)

Appraised XF (B) Value (Bldg)

Appraised OB (L) Value (Bldg)

Appraised Land Value (Bldg)

Special Land Value

Total Appraised Parcel Value

Valuation Method:

Adjustment:

Net Total Appraised Parcel Value

865,500

C

0

0

0

0

0

0

0

0

0

0

BUILDING PERMIT RECORD

Permit ID

Issue Date

Type

Description

Amount

Bsp

0

7,500

0

0

0

0

0

0

0

0

0

0

0

0

0

LAND LINE VALUATION SECTION

B#

Use Code

Description

Zone

D

Front

Depth

Units

Unit Price

I. Factor

S.A.

Disc

C. Factor

St. Iidx

Adj.

Notes-Adj

Special Pricing

SAdj Fact

Adj. Unit Price

Land Value

94,600

REPLACE 3 RRUS TO 6/7/2015

17-035

03/09/2017

BP

0

76,000.00

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

ANTENNA UPGRADE

15-101

05/12/2015

CM

0

56,420

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

GROUND MOUNTED C

1128

12/27/2012

CM

0

578,620

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

CHANGE SEVEN (7) AN

500

12/13/2011

CM

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

0

Total Card Land Units:

5.74

AC

Parcel Total Land Area:

5.74

AC

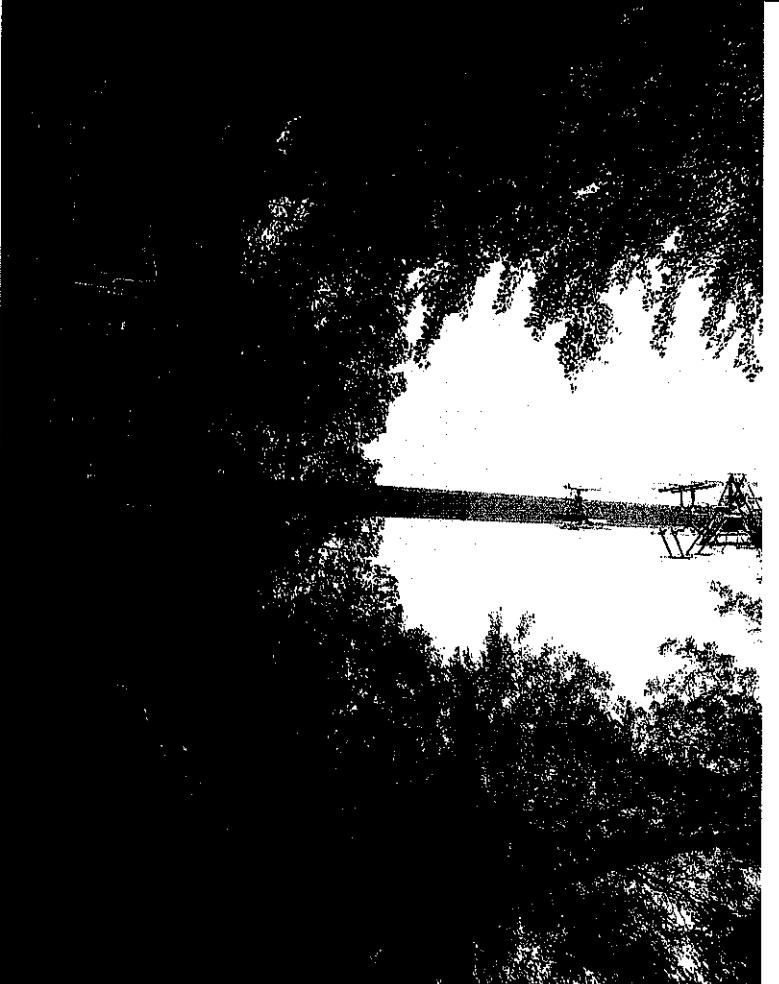
Total Land Value

CONSTRUCTION DETAILS

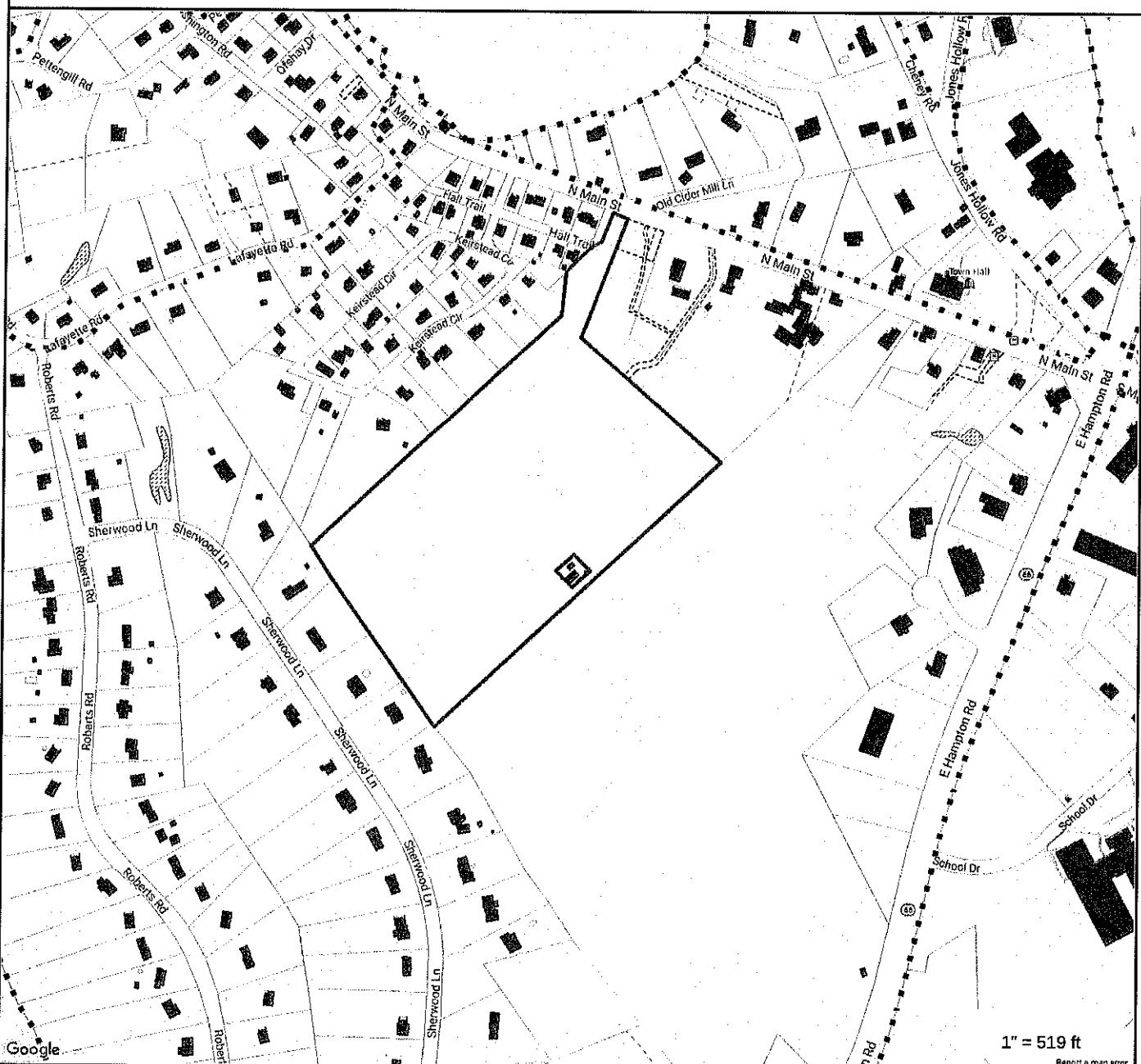
CONST

卷之三

100



73 North Main Street



Property Information

Property ID 6/26/65
Location NO MAIN ST
Owner VILLAGE PROPERTIES LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Marlborough, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 10/1/2017
Properties updated 08/06/2018

Address 73 NO MAIN ST

ID 6/26/65T

Ownership

Name VILLAGE
PROPERTIES LLC

Address PMB 353

Valuation

Total \$865500

Assessment

Land \$121900

Last Sale \$0.00 on 1999-02-
03

Land

Area 5.74 acres

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES, PROVIDE DE-GRUBING, AND ROUGH AND FINAL GROUNDS, AND COMPACT GROUND SURFACE TREATMENTS.
3. MARK AND CONDUIT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES, INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES, INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HNG RESTORATIONS AND MODIFICATIONS.
7. INSTALL "T-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CARS, AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SHEET SHELLING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER.
15. INSTALL FIXED GENERATION SITES AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, CRANIAL, MMWAVE, ANTENNAS, AND RELATED EQUIPMENT.
18. INSTALL FREED GENERATION SITES AND OTHER STANDBY POWER SOLUTIONS, DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDORDS.
19. PERFORM ANTENNA AND COAX SLEEVING TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMOVE OR SITE MARBLIZED TROWEL/HAND OFF AND INTERACTION TO REQUEST AS NEEDED UNTIL SITE IS DEBEDDED SUBSTANTIALLY COMPLETE AND PLACED ON ARE.

3.2 GENERAL REQUIREMENTS FOR CHL CONSTRUCTION:

- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE ALL ACCUMULATING TRASH, DEBRIS, AND SHREWD MATERIALS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED BROOM CLEAN AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION. IF CONTRACTOR DISCOVERS ANY HAZARDOUS CONDITION, OR OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
- D. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL, OR MAY RESULT IN, OR CAUSE THE HAZARD, OR TO FURTHER EXPOSE HUMANOIDS TO THE HAZARD.

1.4 TESTS AND INSPECTIONS:

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COAX SLEEVING AND FIBER TESTS PER CURRENT VERSION OF SPRINTS TS-2000 ANTENNA LINE ACCEPTANCE STANDARDS.
 2. IMAGE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
- C. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

1.5 REQUIRED INSPECTIONS:

- A. SPRINTS INSPECTIONS WITH COMPANY REPRESENTATIVE.
- B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COMMUTING SYSTEM INSTALLATION PHOTOS TO EARTH CONCEALMENT.
 2. COMMUTING SYSTEM INSTALLATION PHOTOS BY CONTRACTOR, APPROVED BY ARE ASK.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLASSIFIED DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 1. ACTHATIC, DOMINATE, AND - UNLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SPRINTS AND ASK, INSTALLED LENGTH, DOMINATE, AND ASK, MOST WORD SIZES.
 2. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
 3. PROJECT PROGRESS REPORTS.
 4. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
 5. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).

5. LINES AND ANTENNA, INSTALL DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
6. POWER INSTLL. DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
7. TOWER CONSTRUCTION, SHUT DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
8. TOWER RELOC. DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION, COMPLETE DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION, FORWARD NOTIFICATION.
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (DOC WALK) COMPLETE (UPLOAD FORM IN SIS)
13. CHL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SIS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS, UNLOADED INTO SIS.

SECTION 01.400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

PART 2 - RELATED DOCUMENTS

- 1.2 RELATED DOCUMENTS:
 - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
 - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

PART 3 - EXECUTION

- 1.3 SUBMITTALS:
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS, PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPRINT FRASHERS FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN.

PART 4 - PRODUCTS (NOT USED)

- 1.4 REQUIREMENTS FOR TESTING:

PART 5 - THIRD PARTY TESTING AGENCY:

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS, THROUGH UNDERTAKING OF LOCAL, MARSHAL, AND SPECIALTY MATERIALS, INCLUDING THE ASSOCIATED TESTS AND TEST ISSUES.

PART 6 - INTERIM:

- 1.6 INTERIM: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE TESTS.

PART 7 - COMMISSIONING:

- 1.7 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE TESTS.

PART 8 - FINAL PAYMENT APPLICATION:

- 1.8 FINAL PAYMENT APPLICATION:

PART 9 - CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFECTS:

- 1.9 CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFECTS.

PART 10 - DOCUMENTS:

- 1.10 ALL POST SITE TESTS INCLUDING DOCUMENT UPLOADS COMPLETED IN SPRINTS (SPRINTS DOCUMENT REPRESENTATION OF RECORD).

PART 11 - FORWARD NOTIFICATION:

- 1.11 FORWARD NOTIFICATION.

PART 12 - FORWARD NOTIFICATION:

- 1.12 FORWARD NOTIFICATION.

PART 13 - FORWARD NOTIFICATION:

- 1.13 FORWARD NOTIFICATION.

PART 14 - FORWARD NOTIFICATION:

- 1.14 FORWARD NOTIFICATION.

PART 15 - FORWARD NOTIFICATION:

- 1.15 FORWARD NOTIFICATION.

PART 16 - FORWARD NOTIFICATION:

- 1.16 FORWARD NOTIFICATION.

PART 17 - FORWARD NOTIFICATION:

- 1.17 FORWARD NOTIFICATION.

PART 18 - FORWARD NOTIFICATION:

- 1.18 FORWARD NOTIFICATION.

PART 19 - FORWARD NOTIFICATION:

- 1.19 FORWARD NOTIFICATION.

PART 20 - FORWARD NOTIFICATION:

- 1.20 FORWARD NOTIFICATION.

PART 21 - FORWARD NOTIFICATION:

- 1.21 FORWARD NOTIFICATION.

PART 22 - FORWARD NOTIFICATION:

- 1.22 FORWARD NOTIFICATION.

PART 23 - FORWARD NOTIFICATION:

- 1.23 FORWARD NOTIFICATION.

PART 24 - FORWARD NOTIFICATION:

- 1.24 FORWARD NOTIFICATION.

PART 25 - FORWARD NOTIFICATION:

- 1.25 FORWARD NOTIFICATION.

PART 26 - FORWARD NOTIFICATION:

- 1.26 FORWARD NOTIFICATION.

PART 27 - FORWARD NOTIFICATION:

- 1.27 FORWARD NOTIFICATION.

PART 28 - FORWARD NOTIFICATION:

- 1.28 FORWARD NOTIFICATION.

PART 29 - FORWARD NOTIFICATION:

- 1.29 FORWARD NOTIFICATION.

PART 30 - FORWARD NOTIFICATION:

- 1.30 FORWARD NOTIFICATION.

PART 31 - FORWARD NOTIFICATION:

- 1.31 FORWARD NOTIFICATION.

PART 32 - FORWARD NOTIFICATION:

- 1.32 FORWARD NOTIFICATION.

PART 33 - FORWARD NOTIFICATION:

- 1.33 FORWARD NOTIFICATION.

PART 34 - FORWARD NOTIFICATION:

- 1.34 FORWARD NOTIFICATION.

PART 35 - FORWARD NOTIFICATION:

- 1.35 FORWARD NOTIFICATION.

PART 36 - FORWARD NOTIFICATION:

- 1.36 FORWARD NOTIFICATION.

PART 37 - FORWARD NOTIFICATION:

- 1.37 FORWARD NOTIFICATION.

PART 38 - FORWARD NOTIFICATION:

- 1.38 FORWARD NOTIFICATION.

PART 39 - FORWARD NOTIFICATION:

- 1.39 FORWARD NOTIFICATION.

PART 40 - FORWARD NOTIFICATION:

- 1.40 FORWARD NOTIFICATION.

PART 41 - FORWARD NOTIFICATION:

- 1.41 FORWARD NOTIFICATION.

PART 42 - FORWARD NOTIFICATION:

- 1.42 FORWARD NOTIFICATION.

PART 43 - FORWARD NOTIFICATION:

- 1.43 FORWARD NOTIFICATION.

PART 44 - FORWARD NOTIFICATION:

- 1.44 FORWARD NOTIFICATION.

PART 45 - FORWARD NOTIFICATION:

- 1.45 FORWARD NOTIFICATION.

PART 46 - FORWARD NOTIFICATION:

- 1.46 FORWARD NOTIFICATION.

PART 47 - FORWARD NOTIFICATION:

- 1.47 FORWARD NOTIFICATION.

PART 48 - FORWARD NOTIFICATION:

- 1.48 FORWARD NOTIFICATION.

PART 49 - FORWARD NOTIFICATION:

- 1.49 FORWARD NOTIFICATION.

PART 50 - FORWARD NOTIFICATION:

- 1.50 FORWARD NOTIFICATION.

PART 51 - FORWARD NOTIFICATION:

- 1.51 FORWARD NOTIFICATION.

PART 52 - FORWARD NOTIFICATION:

- 1.52 FORWARD NOTIFICATION.

PART 53 - FORWARD NOTIFICATION:

- 1.53 FORWARD NOTIFICATION.

PART 54 - FORWARD NOTIFICATION:

- 1.54 FORWARD NOTIFICATION.

PART 55 - FORWARD NOTIFICATION:

- 1.55 FORWARD NOTIFICATION.

PART 56 - FORWARD NOTIFICATION:

- 1.56 FORWARD NOTIFICATION.

PART 57 - FORWARD NOTIFICATION:

- 1.57 FORWARD NOTIFICATION.

PART 58 - FORWARD NOTIFICATION:

- 1.58 FORWARD NOTIFICATION.

PART 59 - FORWARD NOTIFICATION:

- 1.59 FORWARD NOTIFICATION.

PART 60 - FORWARD NOTIFICATION:

- 1.60 FORWARD NOTIFICATION.

PART 61 - FORWARD NOTIFICATION:

- 1.61 FORWARD NOTIFICATION.

PART 62 - FORWARD NOTIFICATION:

- 1.62 FORWARD NOTIFICATION.

PART 63 - FORWARD NOTIFICATION:

- 1.63 FORWARD NOTIFICATION.

PART 64 - FORWARD NOTIFICATION:

- 1.64 FORWARD NOTIFICATION.

PART 65 - FORWARD NOTIFICATION:

- 1.65 FORWARD NOTIFICATION.

PART 66 - FORWARD NOTIFICATION:

- 1.66 FORWARD NOTIFICATION.

PART 67 - FORWARD NOTIFICATION:

- 1.67 FORWARD NOTIFICATION.

PART 68 - FORWARD NOTIFICATION:

- 1.68 FORWARD NOTIFICATION.

PART 69 - FORWARD NOTIFICATION:

- 1.69 FORWARD NOTIFICATION.

PART 70 - FORWARD NOTIFICATION:

- 1.70 FORWARD NOTIFICATION.

PART 71 - FORWARD NOTIFICATION:

- 1.71 FORWARD NOTIFICATION.

PART 72 - FORWARD NOTIFICATION:

- 1.72 FORWARD NOTIFICATION.

PART 73 - FORWARD NOTIFICATION:

- 1.73 FORWARD NOTIFICATION.

PART 74 - FORWARD NOTIFICATION:

- 1.74 FORWARD NOTIFICATION.

PART 75 - FORWARD NOTIFICATION:

- 1.75 FORWARD NOTIFICATION.

PART 76 - FORWARD NOTIFICATION:

- 1.76 FORWARD NOTIFICATION.

PART 77 - FORWARD NOTIFICATION:

- 1.77 FORWARD NOTIFICATION.

PART 78 - FORWARD NOTIFICATION:

- 1.78 FORWARD NOTIFICATION.

PART 79 - FORWARD NOTIFICATION:

- 1.79 FORWARD NOTIFICATION.

PART 80 - FORWARD NOTIFICATION:

- 1.80 FORWARD NOTIFICATION.

PART 81 - FORWARD NOTIFICATION:

- 1.81 FORWARD NOTIFICATION.

PART 82 - FORWARD NOTIFICATION:

- 1.82 FORWARD NOTIFICATION.

PART 83 - FORWARD NOTIFICATION:

- 1.83 FORWARD NOTIFICATION.

PART 84 - FORWARD NOTIFICATION:

- 1.84 FORWARD NOTIFICATION.

PART 85 - FORWARD NOTIFICATION:

- 1.85 FORWARD NOTIFICATION.

PART 86 - FORWARD NOTIFICATION:

- 1.86 FORWARD NOTIFICATION.

PART 87 - FORWARD NOTIFICATION:

- 1.87 FORWARD NOTIFICATION.

PART 88 - FORWARD NOTIFICATION:

- 1.88 FORWARD NOTIFICATION.

PART 89 - FORWARD NOTIFICATION:

- 1.89 FORWARD NOTIFICATION.

PART 90 - FORWARD NOTIFICATION:

- 1.90 FORWARD NOTIFICATION.

PART 91 - FORWARD NOTIFICATION:

- 1.91 FORWARD NOTIFICATION.

PART 92 - FORWARD NOTIFICATION:

- 1.92 FORWARD NOTIFICATION.

PART 93 - FORWARD NOTIFICATION:

- 1.93 FORWARD NOTIFICATION.

PART 94 - FORWARD NOTIFICATION:

- 1.94 FORWARD NOTIFICATION.

PART 95 - FORWARD NOTIFICATION:

- 1.95 FORWARD NOTIFICATION.

PART 96 - FORWARD NOTIFICATION:

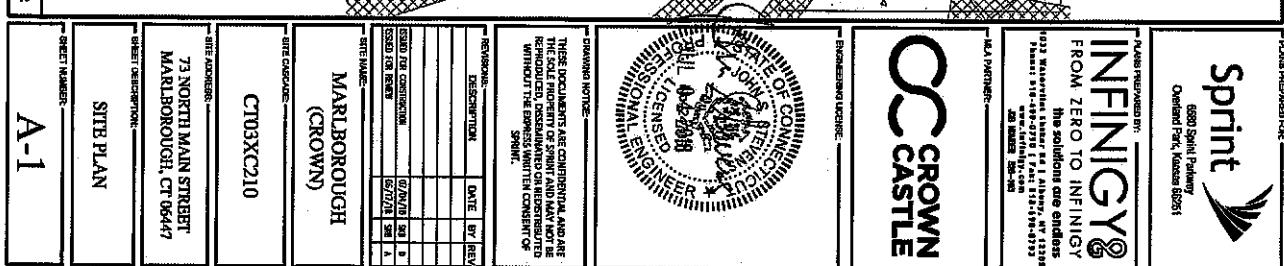
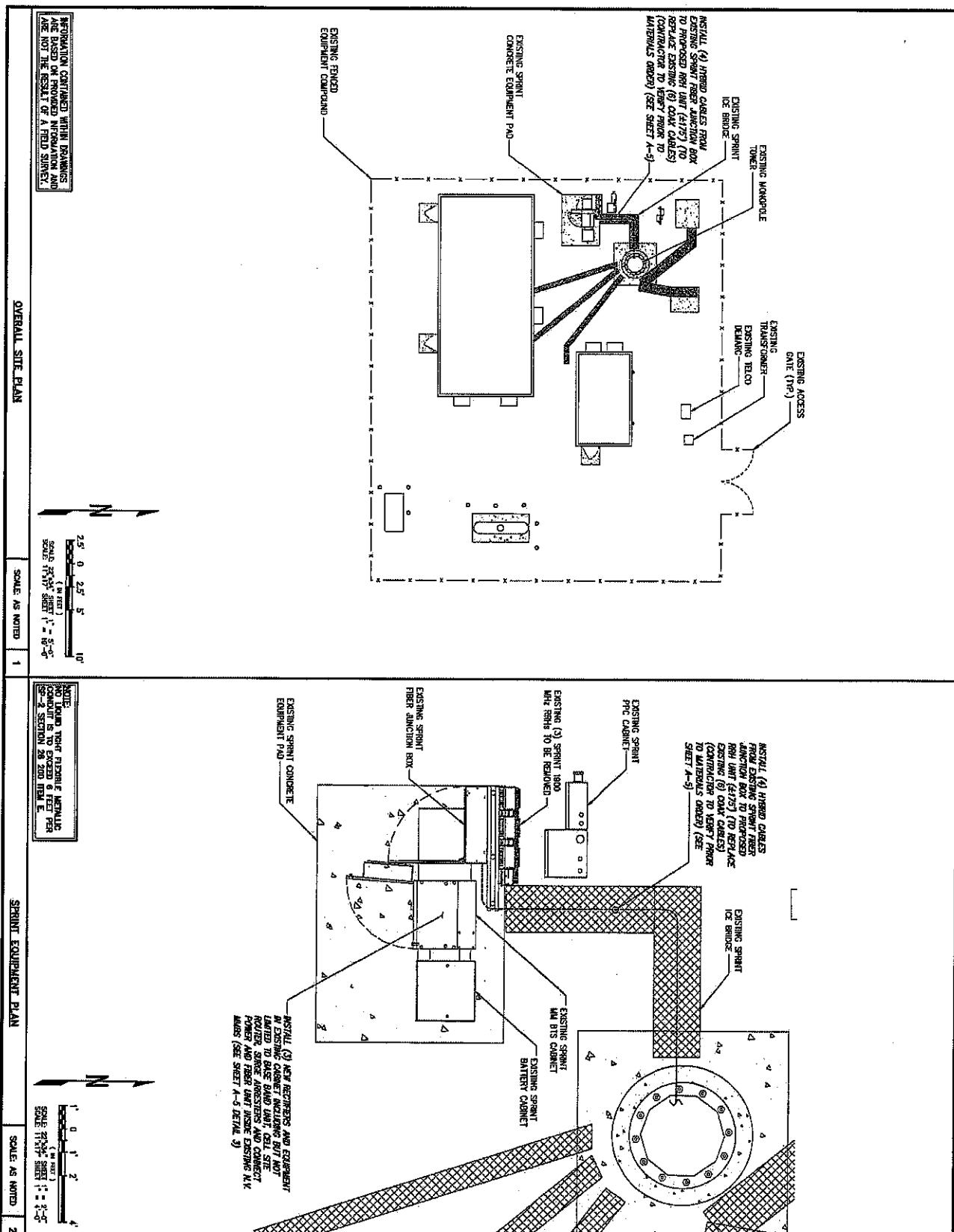
- 1.96 FORWARD NOTIFICATION.

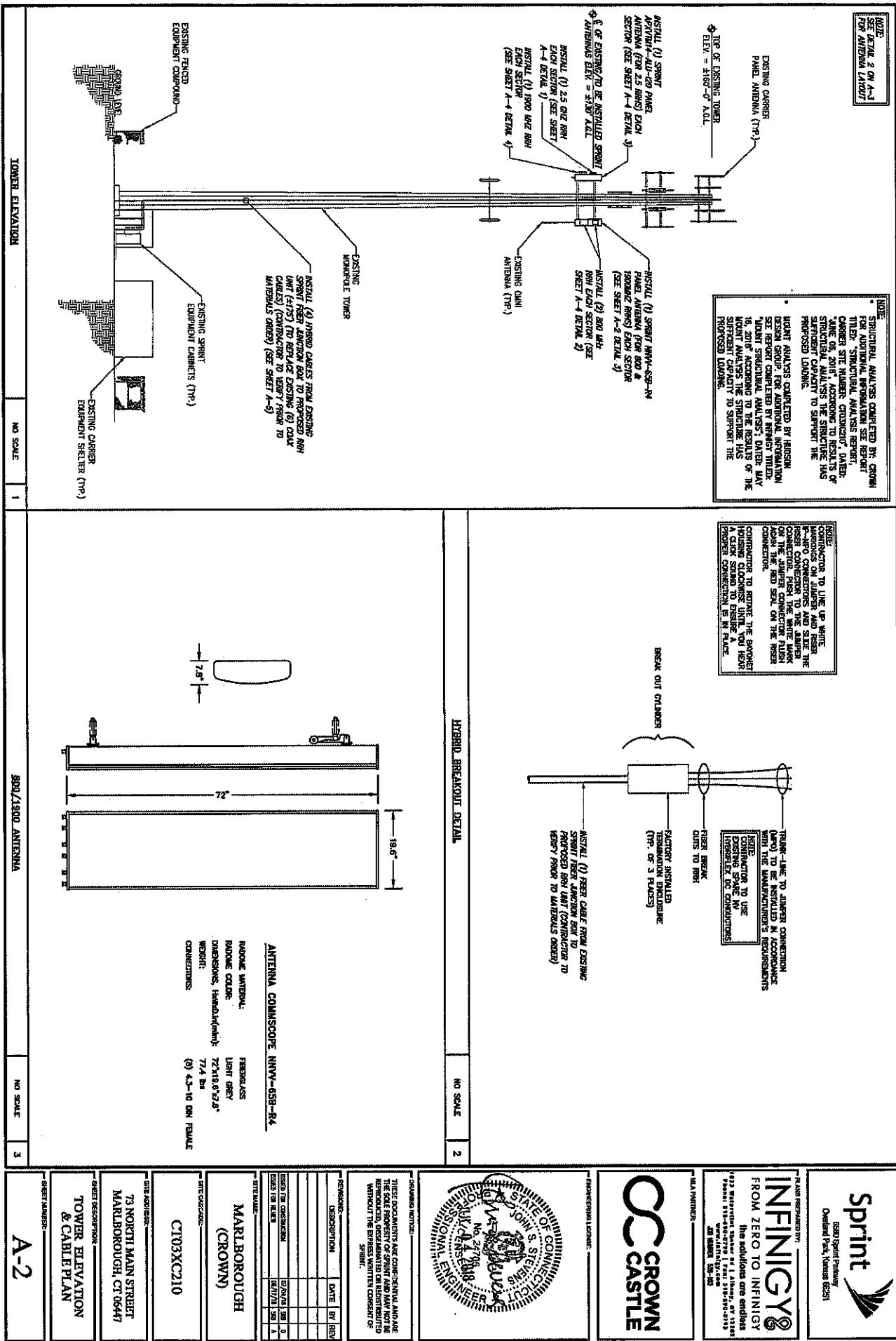
PART 97 - FORWARD NOTIFICATION:

- 1.97 FORWARD NOTIFICATION.

PART 98 - FORWARD NOTIFICATION:

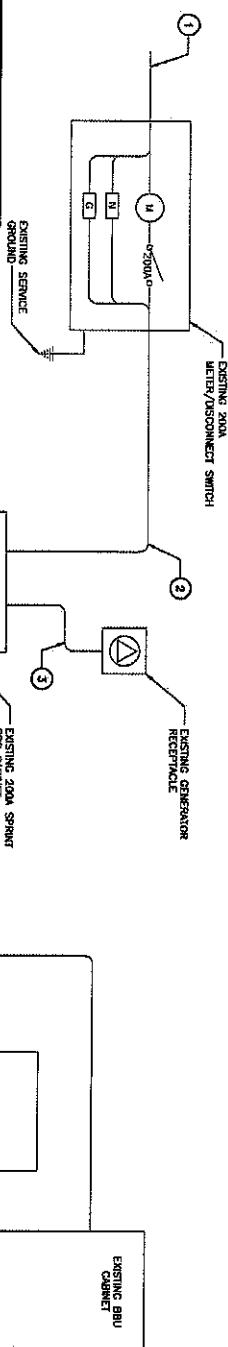
- 1.98 FORWARD NOTIFICATION.





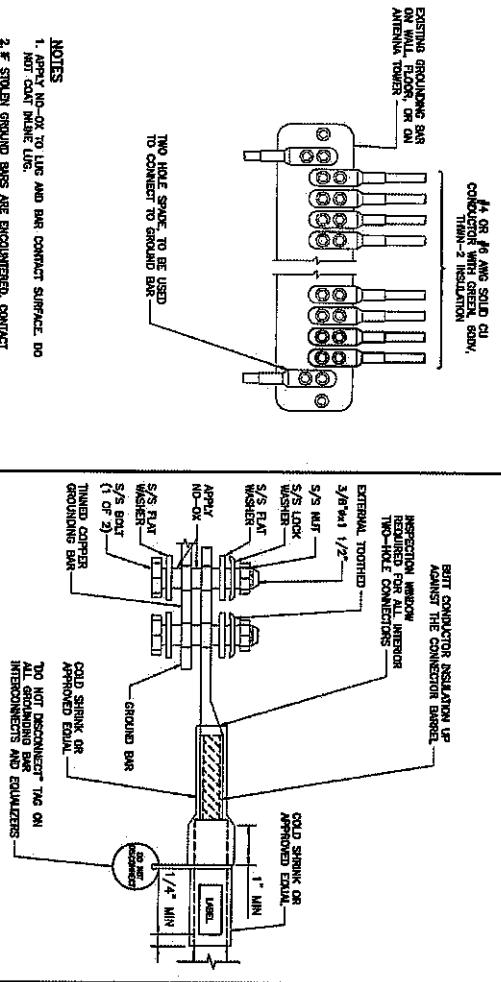
NOTES
CO-SITE RESPONSES ALL SPEC'S FOR
CONNECTING THE POWER SUPPLY
OF THE NEW INSTALLATION DOCUMENTS.
FOR ALL CONNECTION SPECIFICATIONS.

NOTES
CO-SITE RESPONSES ALL SPEC'S FOR
CONNECTING THE POWER SUPPLY
OF THE NEW INSTALLATION DOCUMENTS.
FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTIL. SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BRU	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING CABINET MARS	EXISTING

ELECTRICAL ONE-LINE DIAGRAM



NOTES

1. APPLY NO-OK TO LUG AND BAR CONTACT SURFACE. DO NOT COAT WITH LUBE.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT OR FOR REPLACEMENT THREADED ROD KIT.

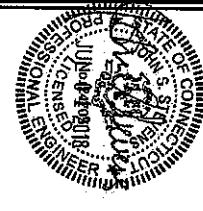
NO SCALE

1

LEGEND:
— EASTING GROUND RING
— CABLE CONNECTION
(EUTHERMIC WELD)
— MECHANICAL CONNECTION
— GROUND ROD
— CABLE GROUND RING

RECOMMENDATION:
THESE COPIES ARE FOR CONFIRMATION AND ARE
THE SOLE PROPERTY OF SPRINT. THEY MAY NOT BE
REPRODUCED, DISSEMINATED OR RE-DISTRIBUTED
WITHOUT THE EXPRESS WRITTEN CONSENT OF
SPRINT.

RECOMMENDATION:
THESE COPIES ARE FOR CONFIRMATION AND ARE
THE SOLE PROPERTY OF SPRINT. THEY MAY NOT BE
REPRODUCED, DISSEMINATED OR RE-DISTRIBUTED
WITHOUT THE EXPRESS WRITTEN CONSENT OF
SPRINT.



CROWN CASTLE
73 NORTH MAIN STREET
MARBOROUGH, CT 06447
SHEET NUMBER:
ELECTRICAL &
GROUNDING DETAILS
SHEET NUMBER:

PLANS PREPARED FOR:
FROM ZERO TO INFINIGY
The solutions are endless
1022 Waterbury Road, #100, Suite 1100
P.O. Box 12770, Farmington Hills, MI 48336-2770
www.infinigy.com
E-mail: 200-400

Sprint
650 Sprint Parkway
Orlando Park, Illinois 60461

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR	NO SCALE	2	IMD. HOLE LUG	NO SCALE	3
--	----------	---	---------------	----------	---

GROUNDING RISER DIAGRAM	NO SCALE	4
-------------------------	----------	---

Date: June 06, 2018

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



2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation: Sprint PCS Co-Locate
Carrier Site Number: CT03XC210
Carrier Site Name: HRT 107

Crown Castle Designation: Crown Castle BU Number: 806366
Crown Castle Site Name: HRT 107(C) 943204
Crown Castle JDE Job Number: 465318
Crown Castle Work Order Number: 1582419
Crown Castle Order Number: 410917 Rev. 2

Engineering Firm Designation: Crown Castle Project Number: 1582419

Site Data: 73 North Main Street, MARLBOROUGH, Hartford County, CT
Latitude 41° 37' 47.3", Longitude -72° 27' 59.4"
155.5 Foot - Monopole Tower

Dear Denice Nicholson,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1582419, in accordance with order 410917, revision 2.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category II were used in this analysis.

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

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

Structural analysis prepared by: Steven Hu / Shan

Respectfully submitted by:

Maribel Dentinger

Maribel Dentinger, P. E.
Senior Project Engineer

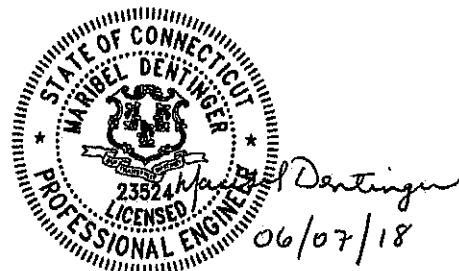


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

- Table 1 - Proposed Antenna and Cable Information
- Table 2 - Existing Antenna and Cable Information
- Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

- Table 4 - Documents Provided
- 3.1) Analysis Method
- 3.2) Assumptions

4) ANALYSIS RESULTS

- Table 5 - Section Capacity (Summary)
- Table 6 – Tower Component Stresses vs. Capacity – LC5
- 4.1) Recommendations

5) APPENDIX A

- tnxTower Output

6) APPENDIX B

- Base Level Drawing

7) APPENDIX C

- Additional Calculations

1) INTRODUCTION

This tower is a 155.5 ft. Monopole tower designed by FWT INC. in December of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 101 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
128.0	130.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ	3 1	1-1/4 7/8	-
		6	alcatel lucent	RRH2X50-800			
		3	alcatel lucent	TD-RRH8X20-25			
		3	commscope	NNVV-65B-R4 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
156.0	159.0	3	decibel	DB809K-Y	3	1-5/8	3
		3	alcatel lucent	RRH2x60-700	14	1-5/8	1
		3	alcatel lucent	RRH2x60-AWS			
		3	alcatel lucent	RRH2x60-PCS			
		6	andrew	SBNHH-1D65B w/ Mount Pipe			
		5	commscope	LNX-6514DS-A1M w/ Mount Pipe			
		1	commscope	LNX-8513DS-VM w/ Mount Pipe			
		2	rfs celwave	DB-T1-6Z-8AB-0Z			
	156.0	1	tower mounts	Platform Mount [LP 1001-1]			
144.0	144.0	6	ericsson	RRUS-11	1 2 12 1	3/8 3/4 1-1/4 conduit	1
		3	kmw comm	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	powerwave tech	1001940			
		6	powerwave tech	7770.00 w/ Mount Pipe			
		6	powerwave tech	LGP 17201			
		6	powerwave tech	LGP21903			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 1001-1]			
135.0	135.0	3	kathrein	742 213 w/ Mount Pipe	6	1-1/4	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
128.0	130.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-1/4	2
	128.0	2	tower mounts	T-Arm Mount [TA 602-3]	-	-	1
100.0	100.0	6	andrew	ETM19V2S12UB	12	1-1/4	1
		3	commscope	ATBT-BOTTOM-24V			
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	ems wireless	RV90-17-00DP w/ Mount Pipe			
		1	tower mounts	Side Arm Mount [SO 701-3]			

Notes:

- 1) Existing Equipment
- 2) Equipment To Be Removed; Not Considered In This Analysis
- 3) Abandoned Equipment; Considered in Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
157.75	157.75	12	Swedcom	ALP-9212-N	-	-
144.25	144.25	9	Swedcom	ALP-9212-N	-	-
132.00	132.00	2	Celwave	PD1142	-	-
		1	Celwave	PD201		
		2	Celwave	PD220		
		9	Decibel	DB980		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering	2208816	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FWT, Inc.	823125	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FWT, Inc.	823126	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	155.5 - 110	Pole	TP64.606x58.6x0.375	1	-26.32	3989.11	15.2	Pass
L2	110 - 72.5	Pole	TP68.805x62.8x0.4375	2	-45.14	5321.74	28.6	Pass
L3	72.5 - 36	Pole	TP72.748x66.8082x0.5	3	-66.83	6775.62	37.8	Pass
L4	36 - 0	Pole	TP76.5x70.56x0.5	4	-95.70	6928.62	56.8	Pass
							Summary	
						Pole (L4)	56.8	Pass
						Rating =	56.8	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	57.4	Pass
1	Base Plate	0	25.9	Pass
1	Base Foundation Structure	0	33.2	Pass
1	Base Foundation Soil Interaction	0	34.3	Pass

Structure Rating (max from all components) =

57.4%

Notes:

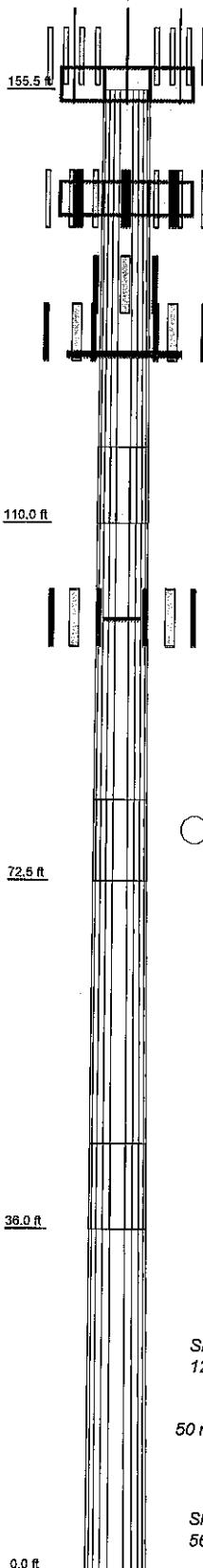
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

**APPENDIX A
TNXTOWER OUTPUT**

Section	4	3	2	1
Length (ft)	45.00	45.00	45.50	45.50
Number of Sides	12	12	12	12
Thickness (in)	0.5600	0.5630	0.4375	0.3750
Spiral Length (ft)		9.00	8.50	8.00
Top Dia (in)	70.5600	66.8082	62.8000	58.6000
Bot Dia (in)	76.5600	72.7480	68.8050	64.6060
Grade				A572-65
Weight (K)	60.8	18.0	17.1	14.3
				11.4



DESIGNED APPURTENANCE LOADING

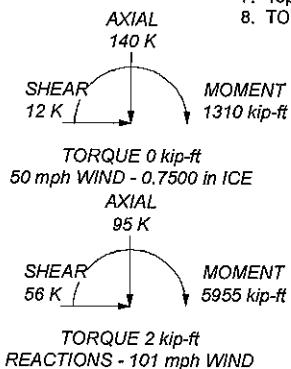
TYPE	ELEVATION	TYPE	ELEVATION
DB809K-Y	156	(2) RRUS-11	144
DB809K-Y	156	1001940	144
DB809K-Y	156	1001940	144
LNX-8513DS-VTM w/ Mount Pipe	156	1001940	144
LNX-6514DS-A1M w/ Mount Pipe	156	DC6-48-60-18-8F	144
(2) LNX-6514DS-A1M w/ Mount Pipe	156	(2) 6' x 2" Mount Pipe	144
(2) LNX-6514DS-A1M w/ Mount Pipe	156	(2) 6' x 2" Mount Pipe	144
(2) SBNHH-1D65B w/ Mount Pipe	156	(2) 6' x 2" Mount Pipe	144
(2) SBNHH-1D65B w/ Mount Pipe	156	Platform Mount [LP 1001-1]	144
(2) SBNHH-1D65B w/ Mount Pipe	156	742 213 w/ Mount Pipe	135
RRH2x60-AWS	156	742 213 w/ Mount Pipe	135
RRH2x60-AWS	156	742 213 w/ Mount Pipe	135
RRH2x60-AWS	156	NNVV-65B-R4 w/ Mount Pipe	128
RRH2x60-PCS	156	NNVV-65B-R4 w/ Mount Pipe	128
RRH2x60-PCS	156	NNVV-65B-R4 w/ Mount Pipe	128
RRH2x60-PCS	156	APXVTM14-ALU-120 w/ Mount Pipe	128
(2) DB-T1-6Z-8AB-0Z	156	APXVTM14-ALU-120 w/ Mount Pipe	128
RRH2x60-700	156	APXVTM14-ALU-120 w/ Mount Pipe	128
RRH2x60-700	156	RRH2X60-800	128
RRH2x60-700	156	(4) RRH2X50-800	128
6' x 2" Mount Pipe	156	RRH2X50-800	128
6' x 2" Mount Pipe	156	(3) PCS 1900MHZ 4X45W-65MHZ	128
6' x 2" Mount Pipe	156	(3) TD-RRH8X20-25	128
Platform Mount [LP 1001-1]	156	T-Arm Mount [TA 602-3]	128
(2) 7770.00 w/ Mount Pipe	144	T-Arm Mount [TA 602-3]	128
(2) 7770.00 w/ Mount Pipe	144	8' x 2" Mount Pipe	128
(2) 7770.00 w/ Mount Pipe	144	8' x 2" Mount Pipe	128
AM-X-CD-16-65-00T-RET w/ Mount Pipe	144	8' x 2" Mount Pipe	128
AM-X-CD-16-65-00T-RET w/ Mount Pipe	144	LNX-8515DS-VTM w/ Mount Pipe	100
AM-X-CD-16-65-00T-RET w/ Mount Pipe	144	LNX-8515DS-VTM w/ Mount Pipe	100
AM-X-CD-16-65-00T-RET w/ Mount Pipe	144	LNX-8515DS-VTM w/ Mount Pipe	100
(2) LGP 17201	144	RV90-17-00DP w/ Mount Pipe	100
(2) LGP 17201	144	RV90-17-00DP w/ Mount Pipe	100
(2) LGP 17201	144	ATBT-BOTTOM-24V	100
(2) LGP21903	144	ATBT-BOTTOM-24V	100
(2) LGP21903	144	ATBT-BOTTOM-24V	100
(2) LGP21903	144	(2) ETM19V2S12UB	100
(2) LGP21903	144	(2) ETM19V2S12UB	100
(2) RRUS-11	144	(2) ETM19V2S12UB	100
(2) RRUS-11	144	Side Arm Mount [SO 701-3]	100

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
 2. Tower designed for Exposure B to the TIA-222-G Standard.
 3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
 4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
 5. Deflections are based upon a 60 mph wind.
 6. Tower Structure Class II.
 7. Topographic Category 1 with Crest Height of 0.00 ft
 8. TOWER RATING: 56.8%



 **CROWN
CASTLE** 2000 Corporate Drive
The Pathway to Possible Canonsburg, PA 15317
Phone: (724) 416-2000
Fax: (724) 416-4232

Job: **BU# 806366**
Project:
Client: Crown Castle Drawn by: Steven Hu App'd:
Code: TIA-222-G Date: 06/06/18 Scale: NTS
Path: **RUSA Models - Letters/Work Areas/Sheet 1 WPR06366.VWD 152741.D08366.E1**
Dwg No. E-1

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 4) Tower is located in Hartford County, Connecticut.
- 5) Basic wind speed of 101 mph.
- 6) Structure Class II.
- 7) Exposure Category B.
- 8) Topographic Category 1.
- 9) Crest Height 0.00 ft.
- 10) Nominal ice thickness of 0.7500 in.
- 11) Ice thickness is considered to increase with height.
- 12) Ice density of 56 pcf.
- 13) A wind speed of 50 mph is used in combination with ice.
- 14) Temperature drop of 50 °F.
- 15) Deflections calculated using a wind speed of 60 mph.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.
- 19) 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.
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Use TIA-222-G Tension Splice
Secondary Horizontal Braces Leg	✓ Sort Capacity Reports By Component	Exemption
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Poles
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	✓ Include Shear-Torsion Interaction
SR Members Are Concentric		Always Use Sub-Critical Flow
		Use Top Mounted Sockets

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	155.50-110.00	45.50	8.00	12	58.6000	64.6060	0.3750	1.5000	A572-65 (65 ksi)
L2	110.00-72.50	45.50	8.50	12	62.8000	68.8050	0.4375	1.7500	A572-65 (65 ksi)
L3	72.50-36.00	45.00	9.00	12	66.8082	72.7480	0.5000	2.0000	A572-65 (65 ksi)
L4	36.00-0.00	45.00		12	70.5600	76.5000	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	II/Q in ²	w in	w/t
L1	60.6672	70.3067	30422.968 0	20.8446	30.3548	1002.2457	61645.181 3	34.6028	14.6998	39.199
	66.8851	77.5589	40842.013 1	22.9947	33.4659	1220.4065	82756.991 3	38.1721	16.3094	43.492
L2	66.1084	87.8532	43610.436 1	22.3258	32.5304	1340.6056	88366.567 0	43.2387	15.6579	35.789
	71.2322	96.3127	57460.444 0	24.4756	35.6410	1612.2011	116430.43 78	47.4022	17.2672	39.468
L3	70.3265	106.7562	59911.926 3	23.7383	34.6066	1731.2263	121397.80 56	52.5421	16.5646	33.129
	75.3143	116.3193	77497.789 3	25.8648	37.6835	2056.5463	157031.53 18	57.2488	18.1565	36.313
L4	74.2790	112.7967	70668.019 5	25.0815	36.5501	1933.4563	143192.56 65	55.5151	17.5701	35.14
	79.1986	122.3600	90209.568 0	27.2080	39.6270	2276.4673	182789.04 18	60.2219	19.1620	38.324

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	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 155.50- 110.00				1	1	1			
L2 110.00- 72.50				1	1	1			
L3 72.50- 36.00				1	1	1			
L4 36.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CA/A	Weight
						ft ² /ft	plf
LDF7-50A(1-5/8)	C	No	Inside Pole	155.50 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
561(1-5/8)	C	No	Inside Pole	155.50 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	155.50 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
**							
UCF114-50JA(1-1/4)	C	No	Inside Pole	144.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
FB-L98B-002-75000(3/8)	C	No	Inside Pole	144.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	144.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
2" Rigid Conduit	C	No	Inside Pole	144.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
**							
AVA6-50(1-1/4)	C	No	Inside Pole	135.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
**							

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A	Weight plf
							ft ² /ft
HB114-08U3M12-XXXF(7/8)	C	No	Inside Pole	128.00 - 0.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.68 0.68 0.68
HB114-1-08U4-M5F(1-1/4)	C	No	Inside Pole	128.00 - 0.00	3	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	1.30 1.30 1.30
**							
AVA6-50(1-1/4)	C	No	Inside Pole	100.00 - 0.00	6	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.46 0.46 0.46
LDF6-50A(1-1/4)	C	No	Inside Pole	100.00 - 0.00	6	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.60 0.60 0.60

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	155.50-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.48
L2	110.00-72.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.65
L3	72.50-36.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.66
L4	36.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.64

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	155.50-110.00	A	1.724	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.48
L2	110.00-72.50	A	1.661	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.65
L3	72.50-36.00	A	1.577	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.66
L4	36.00-0.00	A	1.410	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.64

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	155.50-110.00	0.0000	0.0000	0.0000	0.0000
L2	110.00-72.50	0.0000	0.0000	0.0000	0.0000
L3	72.50-36.00	0.0000	0.0000	0.0000	0.0000
L4	36.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
---------------	----------------------	-------------	-------------------------	--------------------------	-----------------------

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	CaA _A		Weight K	
						Front	Side		

DB809K-Y	A	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	2.85 4.03 5.21	2.85 4.03 5.21	0.03 0.05 0.08
DB809K-Y	B	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	2.85 4.03 5.21	2.85 4.03 5.21	0.03 0.05 0.08
DB809K-Y	C	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	2.85 4.03 5.21	2.85 4.03 5.21	0.03 0.05 0.08

LNX-8513DS-VM w/ Mount Pipe	A	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
LNX-6514DS-A1M w/ Mount Pipe	A	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
(2) LNX-6514DS-A1M w/ Mount Pipe	B	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
(2) LNX-6514DS-A1M w/ Mount Pipe	C	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.41 8.97 9.50	7.08 8.27 9.18	0.06 0.13 0.21
(2) SBNHH-1D65B w/ Mount Pipe	A	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) SBNHH-1D65B w/ Mount Pipe	B	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
RRH2x60-AWS	A	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-AWS	B	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz ft	Azimuth Adjustment °	Placement	C _A A _{Front}	C _A A _{Side}	Weight
			ft					
RRH2x60-AWS	C	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	3.50 1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-PCS	A	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	2.20 1.72 2.39 1.90	0.06 0.08 0.10
RRH2x60-PCS	B	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	2.20 1.72 2.39 1.90	0.06 0.08 0.10
RRH2x60-PCS	C	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	2.20 1.72 2.39 1.90	0.06 0.08 0.10
(2) DB-T1-6Z-8AB-0Z	A	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	4.80 2.00 5.07 2.19	0.04 0.08 0.12
RRH2x60-700	A	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	3.50 1.82 3.76 2.05	0.06 0.08 0.11
RRH2x60-700	B	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	3.50 1.82 3.76 2.05	0.06 0.08 0.11
RRH2x60-700	C	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	3.50 1.82 3.76 2.05	0.06 0.08 0.11
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	1.43 1.43 1.92 1.92	0.02 0.02 0.03 0.03
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	1.43 1.43 1.92 1.92	0.02 0.02 0.03 0.03
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	1.43 1.43 1.92 1.92	0.02 0.02 0.03 0.03
Platform Mount [LP 1001-1]	C	None		0.0000	156.00	1" Ice No Ice 1/2" Ice	47.70 47.70 59.50 59.50 71.30 71.30	3.02 3.02 3.62 3.62 4.22

(2) 7770.00 w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	5.75 5.75 6.18 6.18 6.61 6.61	0.06 0.06 0.10 0.10 0.16 0.16
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	5.75 5.75 6.18 6.18 6.61 6.61	0.06 0.06 0.10 0.10 0.16 0.16
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	5.75 5.75 6.18 6.18 6.61 6.61	0.06 0.06 0.10 0.10 0.16 0.16
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	8.26 8.26 8.82 8.82 9.35 9.35	0.07 0.07 0.14 0.14 0.21

Description	Face or Leg	Offset Type	Offsets: Horz ft	Azimuth Adjustmen t °	Placement ft	CAA Front ft ²	CAA Side ft ²	Weight K
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	8.26 7.48 9.35 8.37	6.30 0.14 0.21
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	8.26 8.82 9.35	6.30 7.48 8.37
(2) LGP 17201	A	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	1.67 1.83 2.00	0.47 0.57 0.68
(2) LGP 17201	B	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	1.67 1.83 2.00	0.47 0.57 0.68
(2) LGP 17201	C	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	1.67 1.83 2.00	0.47 0.57 0.68
(2) LGP21903	A	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.23 0.29 0.36	0.16 0.21 0.28
(2) LGP21903	B	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.23 0.29 0.36	0.16 0.21 0.28
(2) LGP21903	C	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.23 0.29 0.36	0.16 0.21 0.28
(2) RRUS-11	A	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	2.78 2.99 3.21	1.19 1.33 1.49
(2) RRUS-11	B	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	2.78 2.99 3.21	1.19 1.33 1.49
(2) RRUS-11	C	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	2.78 2.99 3.21	1.19 1.33 1.49
1001940	A	From Leg	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.18 0.23 0.30	0.08 0.13 0.18
1001940	B	From Leg	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.18 0.23 0.30	0.08 0.13 0.18
1001940	C	From Leg	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.18 0.23 0.30	0.08 0.13 0.18
DC6-48-60-18-8F	B	From Face	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	0.79 1.27 1.45	0.02 0.04 0.05
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	144.00	1" Ice No Ice 1/2" Ice	1.43 1.92 2.29	0.02 0.03 0.05
						1" Ice		

Description	Face or Leg	Offset Type	Offsets: Horz ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29
Platform Mount [LP 1001-1]	C	None		0.0000	144.00	No Ice 1/2" Ice 1" Ice	47.70 59.50 71.30	47.70 59.50 71.30

742 213 w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	5.37 5.95 6.50	4.62 6.00 6.98
742 213 w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	5.37 5.95 6.50	4.62 6.00 6.98
742 213 w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice 1" Ice	5.37 5.95 6.50	4.62 6.00 6.98

NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	12.51 13.11 13.67	7.41 8.60 9.50
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	12.51 13.11 13.67	7.41 8.60 9.50
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	12.51 13.11 13.67	7.41 8.60 9.50
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	6.58 7.03 7.47	4.96 5.75 6.47
RRH2X50-800	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58
(4) RRH2X50-800	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58
RRH2X50-800	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58
(3) PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65

Description	Face or Leg	Offset Type	Offsets: Horz ft	Azimuth Adjustment °	Placement ft	CAA		Weight K
						Front	Side	
			Vert ft					
(3) TD-RRH8X20-25	C	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	4.05 1.53 1.71 1.90	0.07 0.10 0.13
T-Arm Mount [TA 602-3]	C	None		0.0000	128.00	1" Ice No Ice 1/2" Ice	11.59 15.44 19.29	0.77 0.99 1.21
T-Arm Mount [TA 602-3]	C	None		0.0000	128.00	1" Ice No Ice 1/2" Ice	11.59 15.44 19.29	0.77 0.99 1.21
8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice	1.90 2.73 3.40	0.03 0.04 0.06

LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	11.68 12.40 13.14	9.84 11.37 12.91
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	11.68 12.40 13.14	9.84 11.37 12.91
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	11.68 12.40 13.14	9.84 11.37 12.91
RV90-17-00DP w/ Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	4.59 5.02 5.44	3.32 4.09 4.78
RV90-17-00DP w/ Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	4.59 5.02 5.44	3.32 4.09 4.78
RV90-17-00DP w/ Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	4.59 5.02 5.44	3.32 4.09 4.78
ATBT-BOTTOM-24V	A	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	0.10 0.15 0.20	0.00 0.00 0.01
ATBT-BOTTOM-24V	B	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	0.10 0.15 0.20	0.00 0.00 0.01
ATBT-BOTTOM-24V	C	From Leg	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	0.10 0.15 0.20	0.00 0.00 0.01
(2) ETM19V2S12UB	A	From Leg	3.00 0.00 0.00	0.0000	100.00	1" Ice No Ice 1/2" Ice	0.67 0.20 0.77 0.34	0.01 0.02 0.02 0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A Front	C _A A Side	Weight
(2) ETM19V2S12UB	B	From Leg	3.00	0.0000	100.00	No Ice	0.67	0.20
			0.00			1/2"	0.77	0.27
			0.00			Ice	0.88	0.34
(2) ETM19V2S12UB	C	From Leg	3.00	0.0000	100.00	1" Ice	0.67	0.20
			0.00			No Ice	0.77	0.27
			0.00			1/2"	0.88	0.34
Side Arm Mount [SO 701-3]	C	None		0.0000	100.00	Ice	2.83	0.20
						1/2"	3.92	0.24
						Ice	5.01	0.28

Load Combinations

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

Comb. No.	Description
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	155.5 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.75	2.74	1.62
			Max. Mx	20	-26.32	746.79	4.08
			Max. My	2	-26.33	4.51	738.74
			Max. Vy	20	-28.91	746.79	4.08
			Max. Vx	2	-28.61	4.51	738.74
L2	110 - 72.5	Pole	Max. Torque	18			-1.73
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.78	2.74	1.62
			Max. Mx	20	-45.14	2023.00	4.82
			Max. My	2	-45.15	5.25	2003.91
			Max. Vy	20	-39.87	2023.00	4.82
L3	72.5 - 36	Pole	Max. Vx	2	-39.57	5.25	2003.91
			Max. Torque	18			-1.73
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.62	2.74	1.62
			Max. Mx	20	-66.83	3608.51	5.53
			Max. My	2	-66.84	5.96	3578.65
L4	36 - 0	Pole	Max. Vy	20	-47.93	3608.51	5.53
			Max. Vx	2	-47.64	5.96	3578.65
			Max. Torque	18			-1.73
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-140.21	2.74	1.62
			Max. Mx	20	-95.70	5955.60	6.38

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	140.21	0.00	0.00
	Max. H _x	20	95.71	56.07	0.02
	Max. H _z	2	95.71	0.02	55.78
	Max. M _x	2	5912.42	0.02	55.78
	Max. M _z	8	5953.94	-56.07	-0.02
	Max. Torsion	6	1.72	-48.55	27.87
	Min. Vert	5	71.78	-28.02	48.29
	Min. H _x	8	95.71	-56.07	-0.02
	Min. H _z	14	95.71	-0.02	-55.78
	Min. M _x	14	-5911.62	-0.02	-55.78
	Min. M _z	20	-5955.60	56.07	0.02
	Min. Torsion	18	-1.73	48.55	-27.87

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	79.76	0.00	0.00	-0.32	0.68	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	95.71	-0.02	-55.78	-5912.42	6.82	-1.11
0.9 Dead+1.6 Wind 0 deg - No Ice	71.78	-0.02	-55.78	-5886.96	6.57	-1.11
1.2 Dead+1.6 Wind 30 deg - No Ice	95.71	28.02	-48.29	-5117.36	-2971.37	-1.63
0.9 Dead+1.6 Wind 30 deg - No Ice	71.78	28.02	-48.29	-5095.32	-2958.84	-1.63
1.2 Dead+1.6 Wind 60 deg - No Ice	95.71	48.55	-27.87	-2951.22	-5153.16	-1.72
0.9 Dead+1.6 Wind 60 deg - No Ice	71.78	48.55	-27.87	-2938.47	-5131.26	-1.71
1.2 Dead+1.6 Wind 90 deg - No Ice	95.71	56.07	0.02	5.59	-5953.94	-1.34
0.9 Dead+1.6 Wind 90 deg - No Ice	71.78	56.07	0.02	5.65	-5928.59	-1.34
1.2 Dead+1.6 Wind 120 deg - No Ice	95.71	48.57	27.90	2960.79	-5159.14	-0.62
0.9 Dead+1.6 Wind 120 deg - No Ice	71.78	48.57	27.90	2948.18	-5137.20	-0.62
1.2 Dead+1.6 Wind 150 deg - No Ice	95.71	28.05	48.31	5122.55	-2981.74	0.28
0.9 Dead+1.6 Wind 150 deg - No Ice	71.78	28.05	48.31	5100.67	-2969.14	0.27
1.2 Dead+1.6 Wind 180 deg - No Ice	95.71	0.02	55.78	5911.62	-5.15	1.10
0.9 Dead+1.6 Wind 180 deg - No Ice	71.78	0.02	55.78	5886.37	-5.33	1.10
1.2 Dead+1.6 Wind 210 deg - No Ice	95.71	-28.02	48.29	5116.57	2973.04	1.64
0.9 Dead+1.6 Wind 210 deg - No Ice	71.78	-28.02	48.29	5094.73	2960.08	1.63
1.2 Dead+1.6 Wind 240 deg - No Ice	95.71	-48.55	27.87	2950.43	5154.83	1.73
0.9 Dead+1.6 Wind 240 deg - No Ice	71.78	-48.55	27.87	2937.88	5132.50	1.73
1.2 Dead+1.6 Wind 270 deg - No Ice	95.71	-56.07	-0.02	-6.38	5955.60	1.36
0.9 Dead+1.6 Wind 270 deg - No Ice	71.78	-56.07	-0.02	-6.25	5929.83	1.35
1.2 Dead+1.6 Wind 300 deg - No Ice	95.71	-48.57	-27.90	-2961.58	5160.81	0.61
0.9 Dead+1.6 Wind 300 deg - No Ice	71.78	-48.57	-27.90	-2948.77	5138.45	0.61
1.2 Dead+1.6 Wind 330 deg - No Ice	95.71	-28.05	-48.31	-5123.34	2983.41	-0.29
0.9 Dead+1.6 Wind 330 deg - No Ice	71.78	-28.05	-48.31	-5101.27	2970.38	-0.29
1.2 Dead+1.0 Ice+1.0 Temp	140.21	0.00	0.00	-1.62	2.74	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	140.21	-0.00	-11.73	-1301.24	3.91	-0.22
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	140.21	5.89	-10.16	-1126.61	-649.66	-0.33
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	140.21	10.20	-5.86	-650.57	-1128.38	-0.35
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	140.21	11.78	0.00	-0.66	-1303.98	-0.28
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	140.21	10.20	5.87	648.97	-1129.42	-0.13
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	140.21	5.89	10.16	1124.26	-651.45	0.05
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	140.21	0.00	11.73	1297.85	1.83	0.22

Load Combination	Vertical	Shear _x	Shear _z	Overshielding Moment, M_x kip-ft	Overshielding Moment, M_z kip-ft	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	140.21	-5.89	10.16	1123.22	655.40	0.33
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	140.21	-10.20	5.86	647.18	1134.12	0.35
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	140.21	-11.78	-0.00	-2.73	1309.73	0.28
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	140.21	-10.20	-5.87	-652.36	1135.16	0.13
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	140.21	-5.89	-10.16	-1127.65	657.20	-0.05
Dead+Wind 0 deg - Service	79.76	-0.00	-11.01	-1163.85	1.87	-0.22
Dead+Wind 30 deg - Service	79.76	5.53	-9.53	-1007.38	-584.26	-0.32
Dead+Wind 60 deg - Service	79.76	9.58	-5.50	-581.07	-1013.65	-0.34
Dead+Wind 90 deg - Service	79.76	11.07	0.00	0.85	-1171.24	-0.27
Dead+Wind 120 deg - Service	79.76	9.58	5.51	582.45	-1014.82	-0.12
Dead+Wind 150 deg - Service	79.76	5.54	9.53	1007.90	-586.30	0.06
Dead+Wind 180 deg - Service	79.76	0.00	11.01	1163.19	-0.49	0.22
Dead+Wind 210 deg - Service	79.76	-5.53	9.53	1006.72	585.64	0.32
Dead+Wind 240 deg - Service	79.76	-9.58	5.50	580.41	1015.03	0.34
Dead+Wind 270 deg - Service	79.76	-11.07	-0.00	-1.51	1172.63	0.27
Dead+Wind 300 deg - Service	79.76	-9.58	-5.51	-583.11	1016.21	0.12
Dead+Wind 330 deg - Service	79.76	-5.54	-9.53	-1008.56	587.68	-0.06

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-79.76	0.00	0.00	79.76	0.00	0.000%
2	-0.02	-95.71	-55.78	0.02	95.71	55.78	0.000%
3	-0.02	-71.78	-55.78	0.02	71.78	55.78	0.000%
4	28.02	-95.71	-48.29	-28.02	95.71	48.29	0.000%
5	28.02	-71.78	-48.29	-28.02	71.78	48.29	0.000%
6	48.55	-95.71	-27.87	-48.55	95.71	27.87	0.000%
7	48.55	-71.78	-27.87	-48.55	71.78	27.87	0.000%
8	56.07	-95.71	0.02	-56.07	95.71	-0.02	0.000%
9	56.07	-71.78	0.02	-56.07	71.78	-0.02	0.000%
10	48.57	-95.71	27.90	-48.57	95.71	-27.90	0.000%
11	48.57	-71.78	27.90	-48.57	71.78	-27.90	0.000%
12	28.05	-95.71	48.31	-28.05	95.71	-48.31	0.000%
13	28.05	-71.78	48.31	-28.05	71.78	-48.31	0.000%
14	0.02	-95.71	55.78	-0.02	95.71	-55.78	0.000%
15	0.02	-71.78	55.78	-0.02	71.78	-55.78	0.000%
16	-28.02	-95.71	48.29	28.02	95.71	-48.29	0.000%
17	-28.02	-71.78	48.29	28.02	71.78	-48.29	0.000%
18	-48.55	-95.71	27.87	48.55	95.71	-27.87	0.000%
19	-48.55	-71.78	27.87	48.55	71.78	-27.87	0.000%
20	-56.07	-95.71	-0.02	56.07	95.71	0.02	0.000%
21	-56.07	-71.78	-0.02	56.07	71.78	0.02	0.000%
22	-48.57	-95.71	-27.90	48.57	95.71	27.90	0.000%
23	-48.57	-71.78	-27.90	48.57	71.78	27.90	0.000%
24	-28.05	-95.71	-48.31	28.05	95.71	48.31	0.000%
25	-28.05	-71.78	-48.31	28.05	71.78	48.31	0.000%
26	0.00	-140.21	0.00	0.00	140.21	0.00	0.000%
27	-0.00	-140.21	-11.73	0.00	140.21	11.73	0.000%
28	5.89	-140.21	-10.16	-5.89	140.21	10.16	0.000%
29	10.20	-140.21	-5.86	-10.20	140.21	5.86	0.000%
30	11.78	-140.21	0.00	-11.78	140.21	-0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
31	10.20	-140.21	5.87	-10.20	140.21	-5.87	0.000%
32	5.89	-140.21	10.16	-5.89	140.21	-10.16	0.000%
33	0.00	-140.21	11.73	-0.00	140.21	-11.73	0.000%
34	-5.89	-140.21	10.16	5.89	140.21	-10.16	0.000%
35	-10.20	-140.21	5.86	10.20	140.21	-5.86	0.000%
36	-11.78	-140.21	-0.00	11.78	140.21	0.00	0.000%
37	-10.20	-140.21	-5.87	10.20	140.21	5.87	0.000%
38	-5.89	-140.21	-10.16	5.89	140.21	10.16	0.000%
39	-0.00	-79.76	-11.01	0.00	79.76	11.01	0.000%
40	5.53	-79.76	-9.53	-5.53	79.76	9.53	0.000%
41	9.58	-79.76	-5.50	-9.58	79.76	5.50	0.000%
42	11.07	-79.76	0.00	-11.07	79.76	-0.00	0.000%
43	9.58	-79.76	5.51	-9.58	79.76	-5.51	0.000%
44	5.54	-79.76	9.53	-5.54	79.76	-9.53	0.000%
45	0.00	-79.76	11.01	-0.00	79.76	-11.01	0.000%
46	-5.53	-79.76	9.53	5.53	79.76	-9.53	0.000%
47	-9.58	-79.76	5.50	9.58	79.76	-5.50	0.000%
48	-11.07	-79.76	-0.00	11.07	79.76	0.00	0.000%
49	-9.58	-79.76	-5.51	9.58	79.76	5.51	0.000%
50	-5.54	-79.76	-9.53	5.54	79.76	9.53	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00007403
3	Yes	4	0.00000001	0.00004049
4	Yes	4	0.00000001	0.00070112
5	Yes	4	0.00000001	0.00045463
6	Yes	4	0.00000001	0.00075257
7	Yes	4	0.00000001	0.00048937
8	Yes	4	0.00000001	0.00007566
9	Yes	4	0.00000001	0.00004174
10	Yes	4	0.00000001	0.00072243
11	Yes	4	0.00000001	0.00046866
12	Yes	4	0.00000001	0.00072512
13	Yes	4	0.00000001	0.00047077
14	Yes	4	0.00000001	0.00007192
15	Yes	4	0.00000001	0.00003879
16	Yes	4	0.00000001	0.00074910
17	Yes	4	0.00000001	0.00048717
18	Yes	4	0.00000001	0.00070159
19	Yes	4	0.00000001	0.00045464
20	Yes	4	0.00000001	0.00007811
21	Yes	4	0.00000001	0.00004368
22	Yes	4	0.00000001	0.00074159
23	Yes	4	0.00000001	0.00048151
24	Yes	4	0.00000001	0.00073488
25	Yes	4	0.00000001	0.00047713
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00072221
28	Yes	4	0.00000001	0.00073437
29	Yes	4	0.00000001	0.00073521
30	Yes	4	0.00000001	0.00072221
31	Yes	4	0.00000001	0.00073480
32	Yes	4	0.00000001	0.00073300
33	Yes	4	0.00000001	0.00071889
34	Yes	4	0.00000001	0.00073468
35	Yes	4	0.00000001	0.00073820
36	Yes	4	0.00000001	0.00072777
37	Yes	4	0.00000001	0.00074169
38	Yes	4	0.00000001	0.00073914
39	Yes	4	0.00000001	0.00001098
40	Yes	4	0.00000001	0.00001489
41	Yes	4	0.00000001	0.00001568
42	Yes	4	0.00000001	0.00001108
43	Yes	4	0.00000001	0.00001509
44	Yes	4	0.00000001	0.00001511
45	Yes	4	0.00000001	0.00001096
46	Yes	4	0.00000001	0.00001562
47	Yes	4	0.00000001	0.00001493
48	Yes	4	0.00000001	0.00001111
49	Yes	4	0.00000001	0.00001542
50	Yes	4	0.00000001	0.00001529

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155.5 - 110	6.103	48	0.2815	0.0003
L2	118 - 72.5	3.938	48	0.2631	0.0002
L3	81 - 36	2.063	48	0.2108	0.0001
L4	45 - 0	0.717	48	0.1350	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.00	DB809K-Y	48	6.103	0.2815	0.0003	437406
144.00	(2) 7770.00 w/ Mount Pipe	48	5.426	0.2781	0.0003	190176
135.00	742 213 w/ Mount Pipe	48	4.901	0.2745	0.0002	106684
128.00	NNVV-65B-R4 w/ Mount Pipe	48	4.499	0.2707	0.0002	79528
100.00	LNX-6515DS-VM w/ Mount Pipe	48	2.982	0.2416	0.0002	46366

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155.5 - 110	30.995	20	1.4292	0.0015
L2	118 - 72.5	20.006	20	1.3361	0.0010
L3	81 - 36	10.482	20	1.0710	0.0006
L4	45 - 0	3.643	20	0.6860	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.00	DB809K-Y	20	30.995	1.4292	0.0015	86551
144.00	(2) 7770.00 w/ Mount Pipe	20	27.557	1.4119	0.0014	37631
135.00	742 213 w/ Mount Pipe	20	24.894	1.3938	0.0013	21109
128.00	NNVV-65B-R4 w/ Mount Pipe	20	22.854	1.3746	0.0012	15736
100.00	LNX-6515DS-VM w/ Mount Pipe	20	15.148	1.2274	0.0008	9153

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r in ²	A in ²	P _u K	ϕP _n K	Ratio P _u ϕP _n
L1	155.5 - 110 (1)	TP64.606x58.6x0.375	45.50	0.00	0.0	76.283 8	-26.32	3989.11	0.007
L2	110 - 72.5 (2)	TP68.805x62.8x0.4375	45.50	0.00	0.0	94.732 4	-45.14	5321.74	0.008
L3	72.5 - 36 (3)	TP72.748x66.8082x0.5	45.00	0.00	0.0	114.40 70	-66.83	6775.62	0.010
L4	36 - 0 (4)	TP76.5x70.56x0.5	45.00	0.00	0.0	122.36 00	-95.70	6928.62	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	ϕM _{nx} kip-ft	Ratio M _{ux} ϕM _{nx}	M _{uy} kip-ft	ϕM _{ny} kip-ft	Ratio M _{uy} ϕM _{ny}
L1	155.5 - 110 (1)	TP64.606x58.6x0.375	748.19	5144.30	0.145	0.00	5144.30	0.000
L2	110 - 72.5 (2)	TP68.805x62.8x0.4375	2023.01	7300.90	0.277	0.00	7300.90	0.000
L3	72.5 - 36 (3)	TP72.748x66.8082x0.5	3608.52	9817.58	0.368	0.00	9817.58	0.000
L4	36 - 0 (4)	TP76.5x70.56x0.5	5955.61	10742.08	0.554	0.00	10742.08	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u / ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u / ϕT_n
L1	155.5 - 110 (1)	TP64.606x58.6x0.375	28.85	1994.56	0.014	0.61	10431.00	0.000
L2	110 - 72.5 (2)	TP68.805x62.8x0.4375	39.87	2660.87	0.015	1.36	14803.92	0.000
L3	72.5 - 36 (3)	TP72.748x66.8082x0.5	47.93	3387.81	0.014	1.36	19907.00	0.000
L4	36 - 0 (4)	TP76.5x70.56x0.5	56.10	3464.31	0.016	1.36	21781.58	0.000

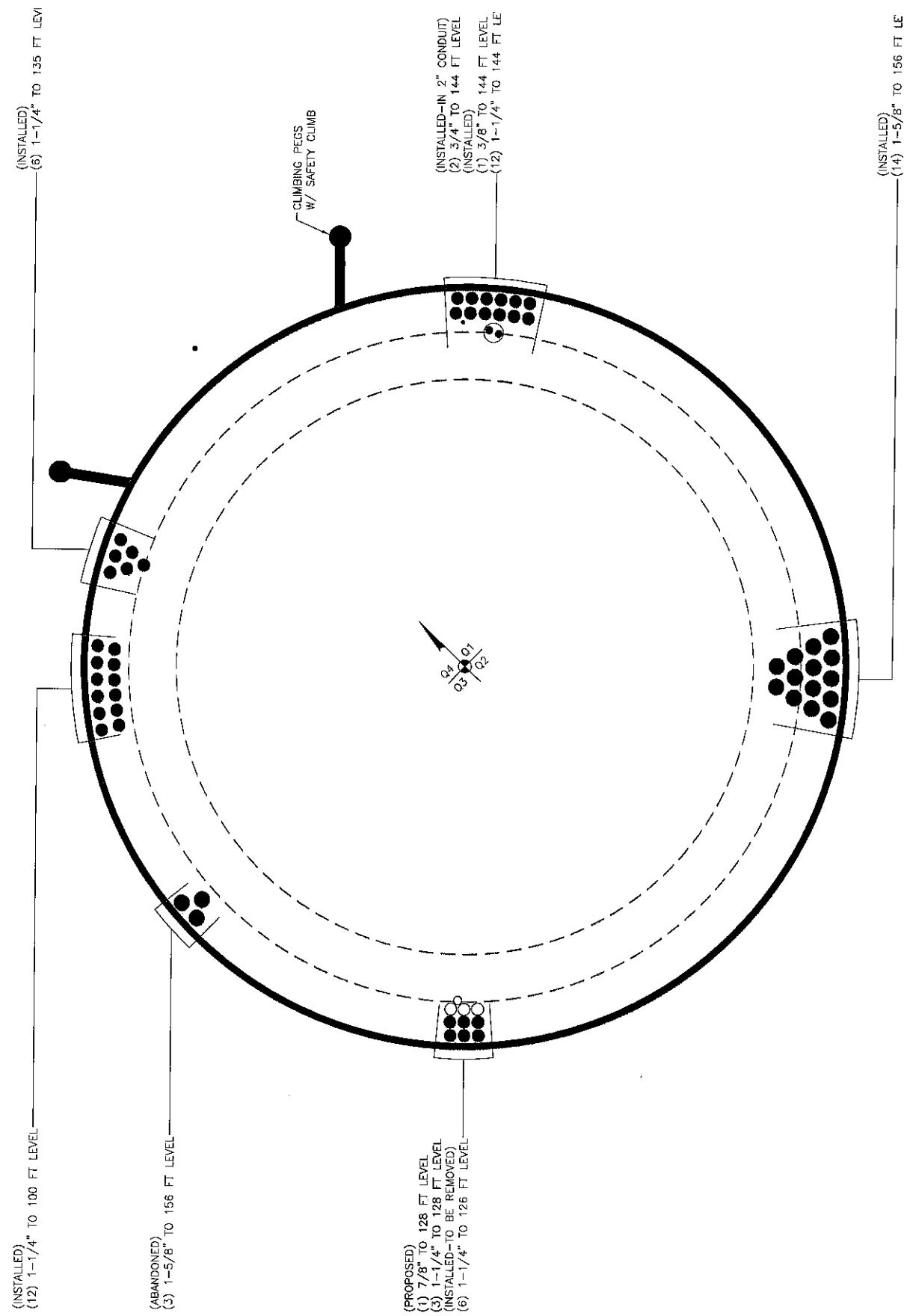
Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	155.5 - 110 (1)	0.007	0.145	0.000	0.014	0.000	0.152	1.000	4.8.2
L2	110 - 72.5 (2)	0.008	0.277	0.000	0.015	0.000	0.286	1.000	4.8.2
L3	72.5 - 36 (3)	0.010	0.368	0.000	0.014	0.000	0.378	1.000	4.8.2
L4	36 - 0 (4)	0.014	0.554	0.000	0.016	0.000	0.568	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	155.5 - 110	Pole	TP64.606x58.6x0.375	1	-26.32	3989.11	15.2	Pass
L2	110 - 72.5	Pole	TP68.805x62.8x0.4375	2	-45.14	5321.74	28.6	Pass
L3	72.5 - 36	Pole	TP72.748x66.8082x0.5	3	-66.83	6775.62	37.8	Pass
L4	36 - 0	Pole	TP76.5x70.56x0.5	4	-95.70	6928.62	56.8	Pass
						Summary		
						Pole (L4)	56.8	Pass
						RATING =	56.8	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev G

Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)*(Rod Diameter)

Site Data

BU#: 806366
Site Name: HRT 107(C) 943204
App #: 410917 Rev. 2

Pole Manufacturer: Other

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	84.75	in

Plate Data		
Diam:	91	in
Thick:	3.25	in
Grade:	60	ksi
Single-Rod B-eff:	10.25	in

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

Pole Data		
Diam:	76.5	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	5955	ft-kips
Axial, Pu:	95	kips
Shear, Vu:	56	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: AISC LRFD <Only Applicable to Unstiffened Cases

Anchor Rod Results

Max Rod ($Cu + Vu/\eta$): 149.2 Kips
Allowable Axial, ϕ^*Fu^*Anet : 260.0 Kips
Anchor Rod Stress Ratio: 57.4% Pass

Rigid
AISC LRFD
ϕ^*Fy

Base Plate Results

Base Plate Stress: 14.0 ksi
Allowable Plate Stress: 54.0 ksi
Base Plate Stress Ratio: 25.9% Pass

Rigid
AISC LRFD
ϕ^*Fy
Y.L. Length: 36.47

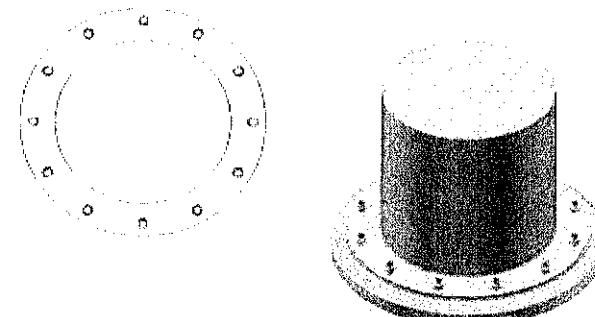
n/a

Stiffener Results

Horizontal Weld : n/a
Vertical Weld: n/a
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: n/a
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: n/a
Plate Comp. (AISC Bracket): n/a

Pole Results

Pole Punching Shear Check: n/a



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

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

Pier and Pad Foundation



BU #:	806366
Site Name:	HRT 107(C) 94320
App. Number:	410917 Rev. 2

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	95	kips
Base Shear, V_{u_comp} :	56	kips
Moment, M_u :	5955	ft-kips
Tower Height, H :	155.5	ft
BP Dist. Above Fdn, bp_{dist} :	3.875	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	680.37	56.00	8.2%	Pass
Bearing Pressure (ksf)	15.75	2.11	13.4%	Pass
Overspinning (kip*ft)	18740.54	6421.08	34.3%	Pass
Pier Flexure (Comp.) (kip*ft)	18525.47	6151.00	33.2%	Pass
Pier Compression (kip)	51554.88	146.03	0.3%	Pass
Pad Flexure (kip*ft)	8427.96	2177.88	25.8%	Pass
Pad Shear - 1-way (kips)	1850.42	238.81	12.9%	Pass
Pad Shear - 2-way (ksi)	0.19	0.02	11.7%	Pass

Soil Rating:	34.3%
Structural Rating:	33.2%

Pier Properties		
Pier Shape:	Square	
Pier Diameter, d_{pier} :	9.0	ft
Ext. Above Grade, E :	0.50	ft
Pier Rebar Size, Sc :	11	
Pier Rebar Quantity, mc :	59	
Pier Tie/Spiral Size, St :	5	
Pier Tie/Spiral Quantity, mt :	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	7.5	ft
Pad Width, W :	33.3	ft
Pad Thickness, T :	4.5	ft
Pad Rebar Size, Sp :	11	
Pad Rebar Quantity, mp :	25	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60000	psi
Concrete Compressive Strength, F'_c :	4000	psi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	130	pcf
Ultimate Gross Bearing, $Quilt$:	21.000	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, φ :	40	degrees
SPT Blow Count, N_{blows} :	100	
Base Friction, μ :	0.4	
Neglected Depth, N :	3.30	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	14.5	ft

<--Toggle between Gross and Net

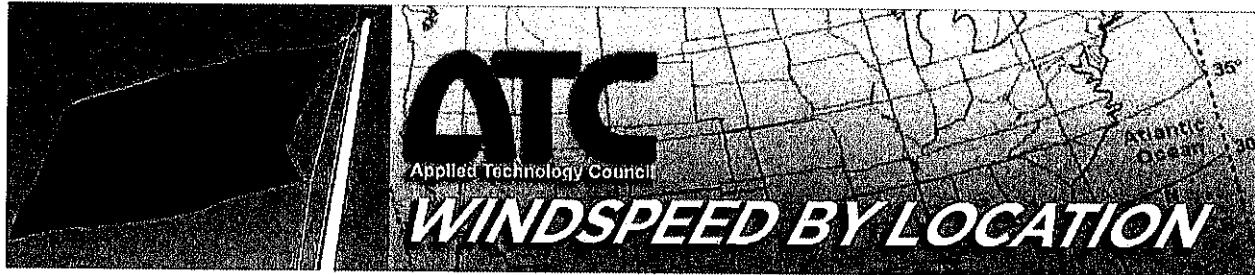
CCISeismic - Design Category

Per 2012/2015 IBC

Site BU: 806366
 Work Order: 1582419
 Application: 410917 Rev. 2



	Degrees	Minutes	Seconds	
Site Latitude =	41	37	47.30	41.6298 degrees
Site Longitude =	-72	27	59.39	-72.4665 degrees
Ground Supported Structure =	Yes			
Structure Class =	II			(Table 2-1)
Site Class =	D - Stiff Soil			(Table 2-11)
Spectral response acceleration short periods, S_s =	0.177			USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.062			
Importance Factor, I =	1.0			(Table 2-3)
Acceleration-based site coefficient, F_a =	1.6			(Table 2-12)
Velocity-based site coefficient, F_v =	2.4			(Table 2-13)
Design spectral response acceleration short period, S_{ps} =	0.189			(2.7.6)
Design spectral response acceleration 1 s period, S_{p1} =	0.099			(2.7.6)
Seismic Design Category - Short Period Response =	B			ASCE 7-05 Table 11.6-1
Seismic Design Category - 1s Period Response =	B			ASCE 7-05 Table 11.6-2
Worst Case Seismic Design Category =	B			ASCE 7-05 Tables 11.6-1 and 6-2



ASCE 7 Windspeed ASCE 7 Ground Snow Load Related Resources Sponsors About ATC Contact

This site will be taken offline on June 30th 2018. Please start using the new site at <https://hazards.atcouncil.org>.

Search Results

Query Date: Mon Jun 04 2018
Latitude: 41.6298
Longitude: -72.4665

ASCE 7-10 Windspeeds (3-sec peak gust in mph*):

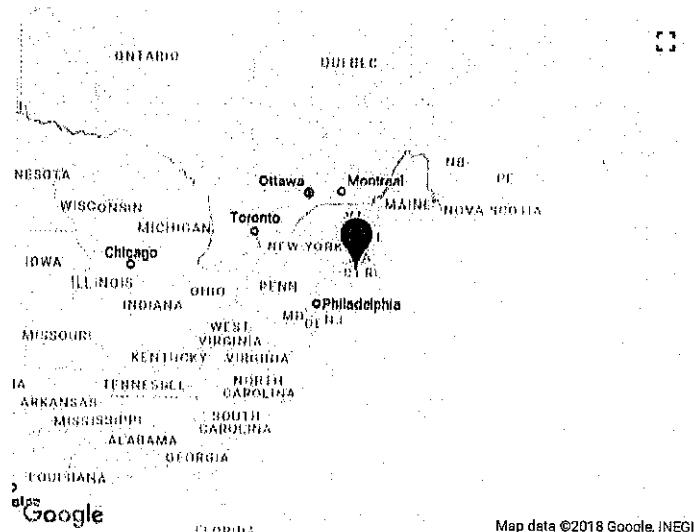
Risk Category I: 116
Risk Category II: 127
Risk Category III-IV: 136
MRI** 10-Year: 77
MRI** 25-Year: 88
MRI** 50-Year: 95
MRI** 100-Year: 102

ASCE 7-05 Windspeed:

105 (3-sec peak gust in mph)

ASCE 7-93 Windspeed:

82 (fastest mile in mph)



Map data ©2018 Google, INEGI

Marlborough Municipality , V Ult. 130 mph = 101 mph V Nom

*Miles per hour

**Mean Recurrence Interval

Users should consult with local building officials
to determine if there are community-specific wind speed
requirements that govern.



[Print your results](#)

WINDSPEED WEBSITE DISCLAIMER

While the information presented on this website is believed to be correct, ATC and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in the windspeed report should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the windspeed report provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the windspeed load report.



EBI Consulting

environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT03XC210

Marlborough (Crown)
73 North Main Street
Marlborough, CT 06447

July 31, 2018

EBI Project Number: 6218005228

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	19.91 %



July 31, 2018

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT03XC210 – Marlborough (Crown)**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **73 North Main Street, Marlborough, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **73 North Main Street, Marlborough, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



-
- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
 - 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
 - 8) The antennas used in this modeling are the **Commscope NNVV-65B-R4** and the **RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
 - 9) The antenna mounting height centerlines of the proposed panel antennas are **130 feet** above ground level (AGL) for **Sector A**, **130 feet** above ground level (AGL) for **Sector B** and **130 feet** above ground level (AGL) for Sector C.
 - 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Frequency Bands:	850 MHz / 1900 MHz (PCS)	Frequency Bands:	850 MHz / 1900 MHz (PCS)	Frequency Bands:	850 MHz / 1900 MHz (PCS)
Channel Count:	10	Channel Count:	10	Channel Count:	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%:	2.12 %	Antenna B1 MPE%:	2.12 %	Antenna C1 MPE%:	2.12 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	130 feet	Height (AGL):	130 feet	Height (AGL):	130 feet
Frequency Bands:	2500 MHz (BRS)	Frequency Bands:	2500 MHz (BRS)	Frequency Bands:	2500 MHz (BRS)
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%:	1.46 %	Antenna B2 MPE%:	1.46 %	Antenna C2 MPE%:	1.46 %

Site Composite MPE %	
Carrier	MPE%
SPRINT – Max per sector	3.58 %
AT&T	2.86 %
MetroPCS	0.41 %
Verizon Wireless	3.59 %
T-Mobile	3.44 %
Town	6.03 %
Site Total MPE %:	19.91 %

SPRINT Sector A Total:	3.58 %
SPRINT Sector B Total:	3.58 %
SPRINT Sector C Total:	3.58 %
Site Total:	19.91 %

SPRINT Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	130	0.88	850 MHz	567	0.14%
Sprint 850 MHz LTE	2	941.82	130	4.40	850 MHz	567	0.78%
Sprint 1900 MHz (PCS) CDMA	5	511.82	130	5.98	1900 MHz (PCS)	1000	0.60%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	130	5.98	1900 MHz (PCS)	1000	0.60%
Sprint 2500 MHz (BRS) LTE	8	778.09	130	14.55	2500 MHz (BRS)	1000	1.46%
							Total: 3.58%



Summary

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

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	3.58 %
Sector B:	3.58 %
Sector C:	3.58 %
SPRINT Maximum MPE % (per sector):	3.58 %
Site Total:	19.91 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **19.91 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

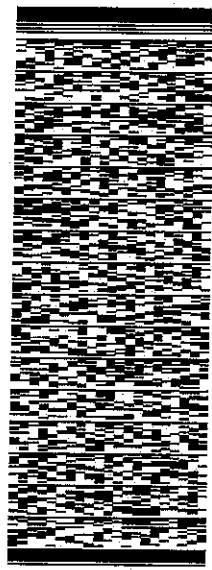
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100%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

ORIGIN ID:BEDA (781) 970-0053
 JEFF BARBACORA
 GROWNE CASTLE
 12 GILL STREET
 SUITE 5800
 WOBURN, MA 01801
 UNITED STATES US

SHIP DATE: 07 AUG 18
 ACTUAL: 05 JUN 18
 CAD: 1049-24191/NET4040
 BILL SENDER

TO: FIRST SELECTMAN-MS. AMY TRAVERSA
 TOWN OF MARLBOROUGH
 26 NORTH MAIN STREET

MARLBOROUGH CT 06447
 (860) 295-6204
 INV: 17661680
 PO: DEPT:



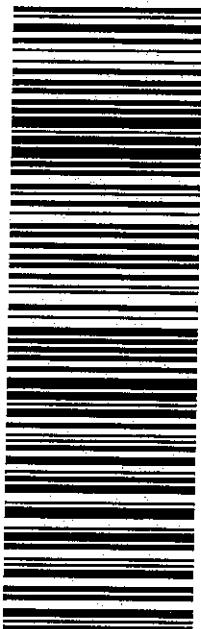
552J18309/DCA5

WED - 08 AUG 12:00P
 PRIORITY OVERNIGHT

TRK#
 0201

7729 1242 9658

EB SKKA
 06447
 CT-US
 BDL



After printing this label:

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

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

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, August 8, 2018 10:07 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 772912429658 Delivered

Your package has been delivered

Tracking # 772912429658

Ship date:

Tue, 8/7/2018

Jeff Barbadora

Crown Castle

WOBURN, MA 01801

US

Delivered

Delivery date:

Wed, 8/8/2018 10:04
am

First Selectman-Ms. Amy

Traversa

Town of Marlborough

26 North Main Street

MARLBOROUGH, CT 06447

US



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: 772912429658

Status: Delivered: 08/08/2018 10:04
AM Signed for By: L.GRIFFIN

Reference: 1766.6680

Signed for by: L.GRIFFIN

Delivery location: MARLBOROUGH, CT

Delivered to: Receptionist/Front Desk

Service type: FedEx Priority Overnight®

Packaging type: FedEx® Envelope

Number of pieces: 1

Weight: 1.00 lb.

Special handling/Services: Deliver Weekday

Standard transit: 8/8/2018 by 12:00 pm

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 9:06 AM CDT on 08/08/2018.

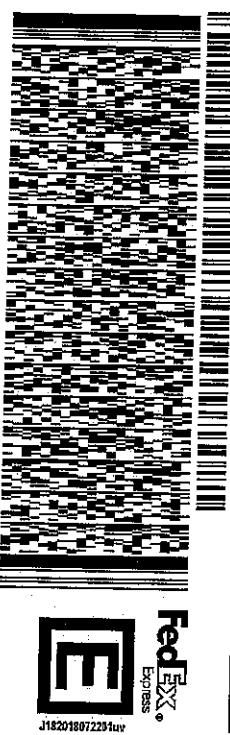
All weights are estimated.

ORIGIN/DEBDA (781) 970-4005
 JEFF BARBORA
 OROMA CASTLE
 12 GILL STREET
 SUITE 5800
 WOBURN, MA 01801
 UNITED STATES US

SHIP DATE: 07AUG18
 ACT/WT: 0.50LB
 CAD: 104.924197NET4040
 BILL SENDER

TO: PLANNING COMMISSION
 TOWN OF MARLBOROUGH
 26 NORTH MAIN STREET

MARLBOROUGH CT 06447
 (860) 295-6200
 INV: REF: 17666890
 PO: DEPT:

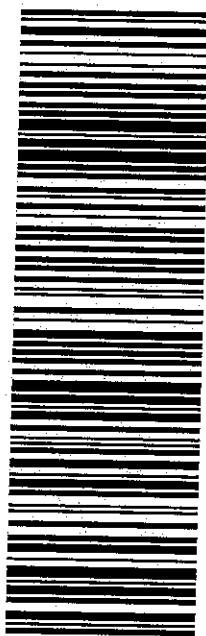


552J1J3309/DCA5

WED - 08 AUG 12:00P
 PRIORITY OVERNIGHT

TRK# 7729 1245 3321
 0201

EB SKKA
 06447
 BDL
 CT-JS



After printing this label:

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

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

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, August 8, 2018 10:07 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 772912453321 Delivered

Your package has been delivered

Tracking # 772912453321

Ship date:
Tue, 8/7/2018

Jeff Barbadora

Crown Castle
WOBURN, MA 01801
US

Delivered

Delivery date:
**Wed, 8/8/2018 10:04
am**

Planning Commission

Town of Marlborough
26 North Main Street
MARLBOROUGH, CT 06447
US



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: 772912453321

Status: Delivered: 08/08/2018 10:04
AM Signed for By: L.GRIFFIN

Reference: 1766.6680

Signed for by: L.GRIFFIN

Delivery location: MARLBOROUGH, CT

Delivered to: Receptionist/Front Desk

Service type: FedEx Priority Overnight®

Packaging type: FedEx® Envelope

Number of pieces: 1

Weight: 1.00 lb.

Special handling/Services: Deliver Weekday

Standard transit: 8/8/2018 by 12:00 pm

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 9:07 AM CDT on 08/08/2018.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.