



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.

The Foundation for a Wireless World.

CrownCastle.com

- 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.

Jeffrey Barbadora

Sincerely

Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

781-729-0053

Jeff.Barbadora@crowncastle.com

Attachments:

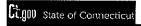
Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

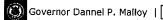
Tab 2: Exhibit-2: Structural Modification Report

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





Search



CONNECTICUT SITING COUNCIL

Home

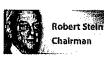
About Us

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

Frequently Asked Ouestions



Regulations of CT State Agencies









Robert Stein, Chairman

Acting Executive Director

NOTICE TO USERS

NOTICE TO USERS
The Connection Sting Council posts
filed documents to 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 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, Mariborough, 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 Springwich Cellular Limited Partnership and the Town of Mariborough, 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 discel

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.

Springwich Cellular Limited Partnership

ITS REPRESENTATIVE

Brian C. S. Freeman, Esq. Kenneth C. Baldwin, Esq. Robinson & Cole One Commercial Plaza

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

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

ITS REPRESENTATIVE

Neighbors Endorsing an Appropriate Tower Barry S. Zitser

(NEAT)

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 | Sand Feedback | Login | Register
State of Connecticut Disclaimer, Privacy Policy, and Web Site Accessibility Policy. Copyright © 2002-2017 State of Connecticut.

Gt gov

3.9 COMMERCIAL EXCESS 500 FT LF FALL DOWN ZONE = 5.74 AC # ₩ CELLULAR TOWER; GATED CELL TOWER LOCATED BEHIND MARLBORO BARN CURRENT OWNER
VILLAGE PROPERTIES LLC
CO CROWN ATLANTIC CO \vdash 4017 WASHINGTON RD MCMURRAY, PA 15317 Vision ID: 100287 1.84 COMMERCIAL SITE VILLAGE PROPERTIES LLC Additional Owners: PMB 353 Year Permit ID Use Code 17-035 15-101 1128 500 200 200 NBHD/SUB A/T000 Commercial Commercial Type Description RECORD OF OWNERSHIP 03/09/2017 05/12/2015 12/27/2012 12/13/2011 Use Description Issue Date EXEMPTIONS SSS # Zone NBHD Name zzTotal Card Land Units: Α D Commercial Commercial Commercial Description GIS ID: 6/26/65T Census **Dev. Мар** Dev. Lot Other ID: Above Street Front 181 TOPO. Total. Depth Account #2014T ASSESSING NEIGHBORHOOD BUILDING PERMIT RECORD BK-VOL/PAGE 2014TAmount Street Index Name 127/ 9 1.84 3.90 UTILITIES Amount 7,500 AC 5.74 AC NOTES SUPPLEMENTAL DATA 2017 UPDATE-TERMINATION/EXPIRATION OFONE \$201,880 PER SITE X 5 SITES = \$1,009,400CELL TOWER VALUE = \$2083/MONTH-5% VAC-CARRIER/SPRINT/NEXTEL 15% EXPENSES = \$20,184 CAPPED AT 10% = Code SALE DATE q/u ν/i
02/03/1999 U Ι Unit Price Parcel Total Land Area: 5.74 AC 76,000.00 7,000.00 Description Paved 07/27/2015 07/27/2015 07/27/2015 STRT./ROAD CB Letter Photo Retake EXEMPT CO Insp. Date ASSOC PID# ake Area 0.6150 C 1.0000 0 LAND LINE VALUATION SECTION Tracing OTHER ASSESSMENTS Comp. 2220 Bldg#: SALE PRICE 1.0000DiscAcre Number LOCATION Date Comp. C. Factor 1 of 1 1.00 29 Amount Idx REPLACE 3 RRUS TO E07/27/2015 ANTENNA UPGRADE GROUND MOUNTED C CHANGE SEVEN (7) AN Comments Þ 2015 2015 2015 Comm Land Comm Bldg Comm OB Sec#: Y_{r} Batch 0.00 Total. 2-1 2-2 2-5 CodeDescription Comm. Int. --Of Assessed Value Notes- Ad) Net Total Appraised Parcel Value Valuation Method: Special Land Value Adjustment: Total Appraised Parcel Value Appraised Land Value (Bldg) Appraised OB (L) Value (Bldg) Appraised XF (B) Value (Bldg) Appraised Bldg, Value (Card) CURRENT ASSESSMENT
Code Appraised Value 85,330 2014 56,420 2014 578,620 2014 This signature acknowledges a visit by a Data Collector or Assessor 720,370 PREVIOUS ASSESSMENTS (HISTORY) 2-1 Card Date Total Code Total: 2-5 2-5 2-5 Special Pricing Type APPRAISED VALUE SUMMARY 121,900 80,600 663,000 865,500 VISIT/ CHANGE HISTORY Assessed Value S Assessed Value 90,300,2014 25,270,2014 463,260,2014 578,830 M S Adj Fact Ö 605,850 85,330 56,420 464,100 Print Date: 10/18/2017 15:54 1.00 Total Land Value: 99 AaiTotal. 2-2-1 2-5-1 Code Vacant Land Unit Price MARLBOROUGH, CT Purpose/Result Assessed Value Land Value 865,500 121,900 865,500 121,900 90,300 25,270 463,260 578,830 94,600 27,300 663,000 80,600

Property Location: 73 NO MAIN ST

MAP ID: 6/26/65T//

Bldg Name:

State Use: 200

	92,669	840 840 840	Ttl. Gross Liv/Lease Area:	Ttl. Gros	
	······································	·			
	74,007	o t e		F 1000	į
	Unit Cost Undeprec. Value	Gross Area Eff. Area	BUILDING SUB-AREA Description Living Area 840	First Floor	Code
	60 4,300 60 3,900 100 654,400	20.00 1999 20.00 2000 3.50 2000 163,600.002011 0		Shed Fence 8' Patio Cell Tower	SHD1 FN4 PAT1 CELL
	EATURES(B) id %Cnd Apr Value	OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B) Description Sub Sub Descript L'B Units Unit Price Yr Gde Dp Rt Cnd %Cnd Ap	ILDING & YARD ITEMS(I) Sub Sub Descript L/B Units	\dashv	Code
		Misc Imp Ovr Comment Cost to Cure Ovr Cost to Cure Ovr Comment			wan rieight % Comn Wall
		Dep % Ovr Dep Ovr Comment Misc Imp Ovr	None Light	/Walls 00 /Prtns 01	Ceiling/Walls Rooms/Prtns
	87 80,600	ond	Reinforced Cnc None	90	Frame Type Baths/Plumb
	H	Cost Trend Factor Condition % Complete	HEAT/AC SPLIT		Heat/AC
	13	ō			•
	A	Dep Code Remodel Rating Year Remodeled	Commercial	se 200	Bldg Use
42	2000		None Central	g Type 01 pe 03	Heating Type AC Type
	92,669	Replace Cost	Coal or Wood	₩	Interior Floor Heating Fuel
	110.32	Adj. Base Rate:	Concrete	Interior Floor A 03	Interior
20	VALUATION	COSTIMARKET VALUATION	T&G/Rubber Minimum	Roof Cover 04 Interior Wall A 01	Roof Cover Interior Wal
	100		Flat	ire	Roof St
	Percentage	Code Description	Reinforc Concr	Occupancy 1 Exterior Wall A 24	Occupancy Exterior Wa
BAS			Commercial Average	1 03	Model Grade Stories
	Description	Element Cd. Ch.	h. Description	Element Cd. Ch.	Ele
1 of 1 Sec #: 1 of 1 Card 1 of 1 Print Date: 10/18/2017 15:54		Account #20141 Bldg #	100287 ACCONSTRUCTION DETAIL	Vision ID: 100287	Vision
Bldg Name:			Property Location: 73 NO MAIN ST	rty Location: 73	Tope

73 North Main Street 1" = 519 ft **Property Information** Property ID Location Owner 6/26/65 NO MAIN ST VILLAGE PROPERTIES LLC MAP FOR REFERENCE ONLY NOT A LEGAL DOCUMENT Town of Mariborough, 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

Sprint

PROJECT: 2.5 EQUIPMENT DEPLOYMENT

SITE NAME: MARLBOROUGH (CROWN)

SITE CASCADE: CT03XC210

SITE NUMBER: 806366

SITE ADDRESS: MARLBOROUGH, CT 06447 73 NORTH MAIN STREET

SITE TYPE: MONOPOLE TOWER

N. ENGLAND

MARKET:

SITE INFORMATION SPRINT PROPOSES TO MODIFY AN EXISTING UNHANNED TELECOMMUNICATIONS FACILITY. INSTALL (8) PANEL ANTENNAS (3 600/1800, 3 2500) REMOVE (B) PAVIEL ANTENNAS NSTALL (12) 884% ON TOWER (6 800, 3 1900, 3 2500) INSTALL 2.5 EQUIPMENT HISIDE EXISTING N.Y. NAMES CARRIET MISTALL (4) HYBRID CABLES RELICIAE (8) CONX CHIELES ALL WORK SPAIL DE PEPROMETO AND ANTERNAS MASTAL NA ACCIDIDANCE, WITH THE CLIRENT ENTINES OF THE FOLOMING CODES AS ADOPTED BY THE LOCAL CONSTRUED TO PETHAT WHEN NOT COMPONAME ATT PASS TO BE CONSTRUED TO PETHAT WHEN NOT COMPONAME TO THESE CODES. PRIVITANI, BRISING CODE (2015 BC)
222-6 OR LATEST ENTRON
W 780 — LIGHTING PROTECTION CODE
1 MATINAL BESTIRE CODE OR LATEST ENTON
' OTHER MATINAL OR LOCAL APPLICABLE CODES,
TA RECENT ENTONS
4, BUILDING CODE
4, BUILDING CODE CATION OF AN EXISTING EASED BY STRINT IN SPRINT, NUMBER HAS SEE PLANS ARE NOT G STRUCTURAL SHEET NO. ANG MOEX

LATITUDE (NADBS): 41' 37' 47-32" N 41.629811111"

LONGITUDE (NAD83): 72' 27' 59.41" W -72.46650277

CROWN PM: SCOTT WATROSIG (201) 238-9228

SPRINT CONSTRUCTION: OWER_COMPANY: CONNECTION LIGHT & POWER (860) 947-2000

ZONING DISTRICT: ZONING JURISDICTION: CONNECTICUT STENS COUNCIL



33 Waterflet Shoker &d | Albany, 67 1218 Phones III-489-5796 | Figs 313-686-6793 Water-infollings.com All Nindes 599-183





						٥	Ŀ	٥	٥	٥	٥	٥	٥	٥	0	0	0	REV.	2			
			DESCRIPTION	REVISIONS;		Division	INDIAS TO A LINE FOUND TION BUT	THESE DOCUMENTS ARE CONFIDE	-	DBAMAN NOTICE:			Continue in the	TI STONAL E	MA CENSO	\$1100 C	11/45 A-221 M		ボグベークをひろ	からの意思	アクトライング 一	
İ			DATE:	$\ $		Manual Constant of	80 104	TMLMBO					•	1	4	i	SO SEL		Ż	s) ایر	S)	Š
	П	П	땅	11		į	MAY NOT BE	ě	ı	ı							""	1(1)	lit?	.,,,	•	
			ē	1		# ē	Ē	Ā		L	_											

73 NORTH MAIN STREET MARLBOROUGH, CT 06447

CT03XC210

MARLBOROUGH (CROWN)

TITLE SHEET & PROJECT DATA

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONTRACTOR.

PART 1 - GENERAL SECTION 01 100 - SCOPE OF WORK

1.1 THE WORK. THESE STANDARD CONSTRUCTION SPECIFICATIONS IN COMMANCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR MICELESS STEES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWNESS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

SPRINT STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PRECIDENCE SHOULD CONFIDE OCCUR EUVEZH THE SHANARD CONSTRUCTION PRECIDENCES SHEET MAKEURION THE SHANARD CONSTRUCTION DEFAULT OF MIRELES SHEET AND THE CONSTRUCTION DEVAULT OF MIRELES SHEET AND THE CONSTRUCTION DEVAULT ON THE CONSTRUCTION DEVAULT OF THIS COCCURS.

NATIONALLY RECOGNIZED CODES AND STANDARDS:

THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, NICLLOED BUT NOT LIMITED TO THE FOLLOWAYS.

I. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION

OR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.

3. GR-1088 CORE, ELECTROMACNETIC COMPATIBILITY AND ELECTRICAL SAFETY —GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT. whomm, fre protection association codes and standards (nifta) sicliding NFTA: 70 (national electrical code — 'nec') and NFTA (of (upe safety code).

5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)

8. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGAGERS (IEEE)

7. AMERICAN CONCRETE INSTITUTE (ACI)

9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI) B. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)

10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

11. PORTLAND CEMENT ASSOCIATION (PCA)

12. NATIONAL CONCRETE MASONRY ASSOCIATION (NOMA)

14. AMERICAN WELDING SOCIETY (AMS) 13. BRICK BIDUSTRY ASSOCIATION (BW)

15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)

16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATEWAL ASSOCIATION (SLANCINA)

17. DOOR AND HARDWARE INSTITUTE (DHI)

TEL DOCUMENTIONAL SAFETY AND HEALTH ACT (OSHA)

19. APPLICABLE BUILDING CODES INCLUDING LINIFORM BUILDING CODE, SOUTHERN BUILD

1.5 DEFINITIONS:

work. The sum of tasks and responsibilities identified by the contract documents.

BUIDMERS SYNOMYLIAUS WITH ARCHITECT & ENGINEER AND "AME. THE DESIGN PROFESSIONAL MANNIE PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

CONTRACTOR: CONSTRUCTION CONTRACTOR: CONSTRUCTION VENDOR: NOTATION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WAR.

OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

COMPANY: SPRINT CORPORATION

THEO PARTY VENDOR OR AGENCY. A VENDOR OR AUBLYC RICHGED SEPARATELY BY THE COMPANY, MAE, OR COMPANTOR TO PROVIDE MATERIALS OR TO: ACCOMPLISH SPECIFIC TASH'S RELATED TO BUT NOT APCLUDED IN THE WIRK

CONSTRUCTION MANAGER — ALL PROJECTS RELATED COMMUNICATION TO FLOW IHROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

16 STE PARMANTA, CONTROCTOR SHALL BE RESPONSIBLE FOR PARMANTANO HARCELF MITH ALL CONTROL TO CALLENIES, EDD. COMMINES AND DESERVOIS FORM TO THE PROCESSIVE WITH CONSTRUCTION, ANY DESCRIPANCES SHALL BE REPURED TO THE ATTENTION OF THE SPOINT CONSTRUCTION MANAGER FIGHT OF THE CONSUMENCE OF WORK, THE CONSUMENCE OF THE CONS

POSIT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW TRECHEN THE SHREEK SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT,

DRAMMES, SPECEPORIONE AND DETALS REQUIRED AT ARREIT: THE CONSTRUCTION CONTRACTOR SHALL WARRING A FLUIL SET OF THE CONSTRUCTION BROWNESS. STANDARD CONSTRUCTION WEIGHT FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIPOLISMS FOR WIRELESS SITES AT THE JURGITE FROM HOPELEZSTAND THROUGH CONSTRUCTION COMPLETED. ON-SITE SUPPANSION: THE CONTRICTION SHALL SUPPANSE AND DREAT THE WORK.

AND SHALL ER REPORTIVES AN ACCURATIONAL WHITH THE CHARMATIC DEVAULDES.

CONTRICTIONS AND PROCESSATE SHAPPENSEE WITH ALL CONTRICTION CONTRICTIONS. THE

CONTRICTION SHALL ENDER AT ALL THEIR DURBAN PERFORMANCE OF THE WORK.

ATTENDANCE AT THE SITE AT ALL THEIR DURBAN PERFORMANCE OF THE WORK.

THE JOSSIE DAMPING, SPECIFICATIONS AND DETAILS SHALL BE CLEARY MAYED DULY HE RED PRICIOL WITH ANY CHANGES HE ONSTRUCTION CONFILENCE, THIS JOSSIE MARCHES BY HELL DOCUMENTS, AT CONSTRUCTION CONFILENCE, THIS JOSSIE MARCHES EST SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED FRONCICTION OF "A SPAILIN" TOWNING. THE COMPANY'S ARE VEHIORE FOR PRODUCTION OF "A SPAILIN" TOWNING.

ECUALS ARE WIENDED TO SHOW DESIGN WITHIT. MODIFICATIONS MAY BE REQUIRED TO SHIT JOB BIMENSICHS OR CONTRICTOR SHALL METRY SPRINT CONSTITUALS, AND SHICK MODIFICATIONS CHAPTER TO SHIT JOB SHOWN THE WARM, CONTRICTOR SHALL METRY SPRINT CONSTITUATION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE CONSTITUATION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE

DELIBROUS SHOWN ARE TO PREST SERVICES UNLIES MOTEO DIRENNES.
SPACING ENTEND LOURNING IS THE REQUIRED LOURNAMES, SHOULD THESE BE
ARY QUESTIONS REQUIRENCE THE CONTRACT DOCUMENTS, DESTING COMMITTING SHALL FOR GITAMANG THE LOURNING THE RESPONSIBLE FOR GITAMANG A CLARRICATION SHALL THE STRENGT CONSTRUCTION MANAGER PROR TO
PROCEDURE WHICH THE WORK.

1:10 USE OF AUB SITE. THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND EXPANENT PARKINGS HALLDING STAGING AND STORAGE OF MICERALS AND EXPANENT, PARKING, TEACHWAFF FALLINES, AND WASTE REPORT TO THE LEYEE PARKIN, UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTLIES SERVEZS: WHERE MERSSAMP TO CHE EXEMIN PRES, DETERMAL WHERS, COMMUNICA COMMERCE DELL, OF UTULITY SERVEZS OR OF PRES PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE COT AND CHERCH AT SURRIGHE PLACES OR WHERE SHAWN, ALL SOM ACTIONS SHALL BE COCHEMINED WHILE THE UTILITY COMPANY INVOICES.

1/12 PERMIT / PEES: WHEN RECIMEND THAN A PERMIT OR COMMETTION FEE BE FAD TO
1. A PERMIC UTILITY PROMICES FOR MEN SENANCE TO THE CONSTRUCTION PROMECT,
PAYMENT OF SUCH FEE SHALL BE THE RESPONSEMENTY OF THE CONTRACTION.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 LETHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

note. In short-form specifications on the drammas, A/E to insert list of APPLICABLE modes including en—2012—001, en—2013—002, el—0668, and te—0183

1.15 USE OF ELECTRONIC PROJECT NAMAGEMENT SYSTEMS:

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

AL TRAPOPARY URBITES AND REQUIRES THE COMMODITIE SHALL BE RESPONSIBLE FOR METHE CONSTRUCTION DOCUMENTS. THE CONSTRUCTION DOCUMENTS. TRAPOPARY UTILITIES AND FACULTIES WELLIAR STOCK POPULATE WITH FATH, MAY, LECTIONEY, SWINGAY FACULTIES, WASTE RESPONSIBLES, AND TREATH-WENCOMMUNICATION SERVICES, PROVIDE TRAPOPARY UTILIZES, AND TREATH-WENCOMMUNICATION SERVICES, PROVIDE TRAPOPARY UTILIZES AND TREATH-WENCOMMUNICATION SERVICES, TO THE LECKARD WASTE AND RESIDENCE WITH SECURITIES AND TREATH SECURITIES AND THE CONTRACT OF THE LECKARD OF THE CONTRACT OF THE TRANSPORT OF THE CONTRACT DOCUMENTS.

ACCESS TO WORK. THE CONTINUTUR SVALL PROMUE ACCESS TO THE JOB SITE FOR AUTHORIZED CENTERAL PROMUME AND AUTHORIZED CENTERSENIATIVES OF THE MACHIECT/DOMINER DURING ALL PHASES OF THE WORK.

AN TERMIC RECURRENCING FOR TEXTING BY THIS CHARACTER SHALL BE AS INJURIENT IN RECURRENCING OF THE CHARACTER SHALL DAMBHEN AND IN THE REMOULAL SECTIONS OF THESE SPECIFICATIONS, SPOULD CHARACTER TO DAMBE ANY THEO-PHAY TO CHARACTER SHALL CHARACTER SHALL CHARACTER AND CHARACTER AND CHARACTER SHALL CHARACTER SHALL CHARACTER AND PROPERTY OF THE CHARACTER SHALL CHARACTER

3.4 DIADASIONS: VENEY DIADASIONS INDICATED ON DRAWINGS WITH FIELD DIADASIONS.
BETURE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXSTING CONDITIONS NOTE? THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONSTRUCT PROPERTIES FROM HEASE BEFORED ON THE LINEWARDING. ON OUT FRANCE OR AUTH STRUCTURAL COMPONENTS WITHOUT PROPERTIES APPROVAL FROM THE ARCHITECT AND REMEMBER.

SECTION 01 200 -- COMPANY FURNISHED MATERIAL AND EQUIPMENT PART 1 -- GENERAL

Sprint

8580 Sprint Parturay Overland Park, Kansas 86251

1.1 THE WORK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN COMMUNICATION WITH THE CHIEF CONTRACT DOCUMENTS AND THE CONSTRUCTION FRANKINGS DESCRIBE THE WORK TO SE PERFORMED BY THE CONTRACTION.

1.2 RELATED DOCUMENTS:
A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

8. SPRINT "STANDARD CONSTRUCTION DEDAILS FOR WRELESS SITES ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREINTAL

FROM ZERO TO INFIN Phane: 510-596-6790 | Pag: 513-496-6791

the solutions are a

NFINIGY

PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION

3.1 RECEIPT OF MAYERAL AND EQUIPMENTS

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RY DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED WATERIAL AND EQUIPMENT AND UPON RECEIPT SAMIL:

I ACCEPT DELIVERES AS SHIPPED AND TAKE RECEIPT.

2. VERFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

RECORD ANY DETECTS OR DAMAGES AND WITHIN THEMTY—FOUR HOURS AFTER RECEPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATING OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

8. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUENCING, DELAKTRING AND OFF-LOADING FROM COMPACTOR'S WAREHOUSE TO SITE.

3.2 DELWERWEIES: A: COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLIABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

upload documentation into sprint site management system (sms) and/or provide hard copy documentation as requested.

SECTION 01 300 - CELL SITE CONSTRUCTION CO. PART 1 - GENERAL

1.1 THE WORK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN COMMISCIPION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION POWER(GS. DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS: A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

1.3 NOTICE TO PROCEED B. SPHAIT "STANDARD CONSTRUCTION DETAILS FOR WHICLESS SITES ARE INCLUDED IN AND HAVE A PART OF THESE SPECIFICATIONS HEREINITH.

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK CROER.

REMODE NOT COMESS

V 805 84/2/99

MARLBOROUGH

(CROWN)

8. UPON RECEIVEN NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK, RECEISARY TO PROVIDE SHRIFT WITH AN OPERATIONAL WHEELESS FACILITY

DINES CHRESE MOTERATION

ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE MOTION TO PROCEED,

CHREMOTER MILL CONTACT THE CHREMO CASTLE CONSTRUCTION CONTRACTOR CONTRACTOR

CHREMOTER MILL CONTACT THE CHREMOTER CHREMOTER AND AMBINET OF RECONSTRUCTION DEVELOPMENT (APPLIANCE) TO THE ACCEPTED THE CHREMOTER CORTEX CONTRACTOR CORTEX RECONSTRUCTION CONTRACTOR CORTEX CONTRACTOR CORTEX CONTRACTOR CORTEX DECONSTRUCTION CONTRACTOR CORTEX CORTEX CONTRACTOR CORTEX CORTEX CONTRACTOR CORTEX CO

PART 2 — PRODUCTS (NOT USED) PART 3 — EXECUTION

THE ACTIVITIES DESCREED IN THE PARKAPACH REPUESING MANUAL ACTIONS AND PROCESSES RELIANCE TO SLOCKESSULY COMPILE THE WAY. HE ACTIVITIES DESCRIBED ARE NOT ENVIRONMENT, AND COMPILATION SHALL TWEE NAY AND ALL ACTIVITY AS DESCRIBENT TO SLOCKESSHULY COMPILETE. THE CONTRIVENCY ON OF A TILLY PROCESSESSESSESSESSESSESSES OF A TILLY ENVIRONMENT WITH COMPILATE THE CONTRIVENCY MITH COMPILATE THE CASE IN ACCORDANCE WITH CO

73 NORTH MAIN STREET MARLBOROUGH, CT 06447

CT03XC210

SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

SPRINT SPECIFICATIONS





THESE COCLINERYTS ARE CONFIDENTIAL AND AN THE SCUE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DESCRIMATED ON REDSTINBUTED WITHOUT THE EXPRESS WRITTEN COMERY OF SPRINT.	ремима нопес

DESCRIPT	REVISIONS:	THE SOLE PROPERT REPRODUCED, DES WITHOUT THE EX
CRIPTION DATE BY		THE SOLE PROPERTY OF SHARIN AND MAY NOT BE BEPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENTOR SPRINT,
7		¥ 6 m g

CONTINUE FROM SP-1

- 1. PERFORM ANY REGURED SITE ENVIRONMENTAL MITIGATION.
- PREPARE GROUND SITES; PROMDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
- MANGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKGRALL
- INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
- INSTALL ABOVE GROUND GROUNDING SYSTEMS,
- PROVIDE NEW HAVE DISTALLATIONS AND MODIFICATIONS.
- INSTALL "H-FRAMES", CARMETS AND SHELTERS AS INDICATED
- INSTALL ROADS, ACCESS WAYS, CLIRBS AND DRAINS AS MOICATED.
- 10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
- 11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
- 12. INSTALL COMPOUND FENCING, SIGHT SHEEDING, LANDSCAPING AND ACCESS BARRIERS.
- 14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREBUATTER 13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREMAFTER.
- NSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED. 15. INSTALL FIXED GENERATOR SETS AND OTHER STANDEY POWER SOLUTIONS
- 18. PERFORM, DOCHMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DICCUMENTS THAT MAY BE REQUIRED BY CONSTRUMENT AGENCES AND LANDLORGE. 17. NSTRIL CELL STE PADIOS, MCRAWAYE, GPS, COAVAL MANUEL, AFTENIAS, CONSS SAND COMPLES, TOMER TOP AMPLETERS, LOW NOISE AMPLETERS AND RELATED EXUPLIENT.
- 10, pedform antennal and coax sweep testing and make any and all necessary corrections.
- 20. REMAIN OM STE MUBILIZED THROUGHOUT HAND-OFF AND RITESRATION TO ASSIST AS MEEDED WITH. SITE IS DEDIED SUBSTANTIANLY COMPLETE AND PLACED "TAN ARE."

3.2 GENERAL REQUIREMENTS FOR CALL CONSTRUCTION

- A CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WHITE MATERIAL BEHRS, AND TRASH, AT THE COLUMNIA BLEHRS, LIFELDING FROM THE SITE ALL BEJANNO BLEHRSH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- Equipment rodus simil at all times be limitared throon clear and clear of debris.
- CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
- IN THE EMERY CONTRACTOR ENCOMMENS ANY HIGHBOANS COMMENTAL WHICH HIS WIT BEEN MENTED OR DISCONDENS MERCHEN CONTRACTOR AND ALL OTHER PRECORDS SHALL MENDANCELY STORN WHOSE, IN THE APPEXED MENTAL HIGHBOANS AND MENDAL HIGHBOANS IN THE APPEXED MENTAL HIGHBOANS AND ME
- CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR HAY RESIALT IN OR CAUSE THE HAZACOUS CONDITION TO BE PRIFTER RELAKED IN THE ENFRONMENT, OR TO FURTHER EXPONSE HOMODULAS TO THE HAZARD.
- D. CONTRACTION'S ACTIVATICS SHALL BE RESTRICTED TO THE PROJECT LATES, SHALLD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTIONS ACTIVATIES, CONTRACTION SHALL IMPEDIATELY RETAINS THEM TO DIRECTION CONTINUE.

STIEVEANTO E'C E. CONDUCT TESTING AS REQUIRED HEREIN.

B. PROMDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING, DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORWAY AND/OR UPLOADED INTO SAS.

A COMPRACTOR SHALL REVIEW, APPROVE, AND SUBJUIT TO SPRINT SHOP DRAWINGS PRODUCT DATA, SAMPLES, AND SUBJUR SUBJURITALS AS REQUIRED HEREMAFTER

- PROJECT PROGRESS REPORTS. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
- CML CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD MOTERCATION).
- ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

- LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
- POWER INSTALL DATE (POPULATE FELD IN SMS AND/OR FORWARD NOTIFICATION).

- 14. SHE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS PART 1 - GENERAL

1.2 RELATED DOCUMENTS:

1.3 SUBMITALS:

- 8. SUBJUT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL
- 3. SPECIAL FRIGHES FOR INTERIOR SPACES, IF ANY.
- ALL EQUIPMENT AND MATERIALS SO EDENTIFIED ON THE CONSTRUCTION DRAWNES.

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, DISPECTIONS AND PROJECT BOOLINENTATION.

- REGURED: CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
- ACHAINI, DOMNITI, AGI. LEIGAD REPORT FROM ANTENNA ALCOMEDIT TOOL. TO STEERN TOOK, 465. MEXIALED AZUTUR, DOWNITE, AND AG, MAST CONFORM TO THE RF DATA SPEETS. SWEEP AND FIBER TESTS

- RELCO READY DATE (POPULATE FIELD IN SAS AND/OR FORWARD NOTIFICATION).
- PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SIAS AND/OR FORWARD MODIFICATION).
- TOWER CONSTRUCTION START DATE (POPULATE FIELD 8) SMS AND/OR FORWARD NOTEFICATION).
- Tower construction complete date (populate field in SMS and/or formard notification).
- BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FELD IN SMS AND/OR FORWARD NOTIFICATION).
- 12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
- 13. CPM. CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD HOTERCATION).

- 1.1 THE WORK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONLUNCTION WITH THE OTHER CONTINUED DOCUMENTS AND THE CONSTRUCTION DRAWNESS DESCRIBE THE WORK TO BE THEFORMADED OF THE CONTINUEDOR.

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- SPRINT "STANDARD CONSTRUCTION DETAILS FOR WHELESS SITES ARE INCLUDED IN AND BADE A PART OF THESE SPECIFICATIONS HEREINITH.
- THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
- CONCRETE NIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAYMO.
- 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
- 5. CHEMICAL GROUNDING DESIGN
- ALTERNIES: AT THE COLEMAN'S REDUEST, ANY ALTERNATIOS TO THE MATERIAL OR METHODS SPEEDED SHALL BE SHABITED TO SPEED SPEEDED SHALL BE SHABITED TO SPEED SPEED, SERBAL APPROVED HAVE SPEEDED SHALL BE SHABITED TO SPEED SPEED, SERBAL APPROVED HAVE SPEEDED SHALL BE SHABITED AS STREAMED FROM STEED SHABITED AS STREAMED FROM SPEEDED SHABITED AS STREAMED FROM SPEEDED SHABITED SHABI

1.4 TESTS AND INSPECTIONS;

- CONTRACTOR SHALL ACCOMPLISH TESTING PROLITIONS BUT NOT LIMITED TO THE FOLLOWING:
- COAX SWEEPS AND FIBER TESTS PER CURRENT VERSION OF SPRINT'S TS-0200 AMERIKA LINE ACCEPTANCE STANDARDS.
- AGL, AZDAUTH AND DOWNTRIT USING ELECTRONIC COMMERCIAL MADE-FOR—THE-PURPOSE ANTENNA ALKINATERT TOOL.
- Contractor syali be responsible for any and all corrections to any work identified as imancephable in site instruction activities and/or as a result of testing.

- SCANDLE BARCODE PHOTOGRAPHS OF TOWER TOP AND HACCESSIBLE SERVALIZED EQUIPMENT
- 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
- POF SCAN OF REDUNES PRODUCED IN FIELD

- B. LIEN MAYERS
- 7. FINAL PAYMENT APPLICATION
- B. REQUIRED FINAL CONSTRUCTION PHOTOS
- 9 CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEPICIENT RELIES.
- 10, ALL POST NTP TASKS EXCLUDING DOCUMENT UPLOADS COMPLETED IN STEERA (SPRINTS DOCUMENT REPOSITIONY OF RECORD).
- 1.5 COMMISSIONENC: PERFURM ALL COMMISSIONING AS REQUERED BY APPLICABLE MOPH
- 1.6 MTEGRATICAL PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPH.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION
- 3.1 REQUIREMENTS FOR TESTING
- A. THERD PARTY TESTING AGENCY
- WERN THE USE OF A THIRD PARTY MADERNINGAT TEXTING ACCION, TO REQUERED, THE GARDY THATE IS SECTED MIST PERFORMS LIST, WIGHT ON A REGILAR DASSE IN THE STATE PRESENT HE PROJECT IS LOCATED AND HAVE A THORNACH UNDERSTANDING OF LOCAL ANALYSEE MATERIALS, MELLIDING THE SOIL, ROCK, AND GROWNING COMMITTING.
- The 1980 PHOTY TESTING ACENCY IS TO BE PAREMY WITH THE APPLICABLE PEDIMERALANIS FOR THE TESTS TO BE DOME, DOMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFERY ISSUES.
- 3. ECPERENCE IN SOILS, CONCRETE, IMSCHRY, AGGREGATE, AND ASPINAT TESTING USING ASTA, ANSARO, AND OTHER METHODS IS NEEDED.

- 4. EXPENSIVE IN SOUS, CONCRETE, MASONITY, AGGREGATE, AND ASPHALT TEXTON USING ASTN, ASSITO, AND OTHER METHODS IS REEDED.
- 3.2 REQUIRED TESTS: A. CONTRACTOR SHALL ACCOMPLISH TESTING ENGLIDING BUT NOT LIMITED TO THE POLLOWING:
- 1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR
- ASPHAT ROADWAY COMPACTED THEMSESS, SURFACE SMOOTHARDS, AND COMPACTED DENSITY TESTING AS SPECIFED IN SECTION: HOT MIX ASPHALT PARISO.
- FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PURILAND CEMENT CONCRETE PANNAC.
- TESTING REQUIRED UNDER SECTION: AGBREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
- 6. SITE RESISTANCE TO EARTH TESTING PER EXHBIT: CELL SITE GROUNUNG SYSTEM DESIGN. S. STRUCTURAL BACKFILL COMPACISON TESTS FOR THE TOWER FOUNDATION.
- ANTENNA AND COAX SMEEP TESTS PER EXHERT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
- 8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
- 9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION

3.3 REQUIRED INSPECTIONS

- A SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE
- B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE POLICIPING.
- GROUNDING SISTEM NISTALLATION PRIOR TO EARTH CONCENTENT DOCUMENTED WITH CHRIST PROTOGRAPHS BY COMPRACTOR, APPROXED BY AME OR SPRINT FORFESSMANTED.
- FORMAR FOR CONCRETE AND RESIDE PLACEMENT PRIOR TO PRIME DOCUMENTED WITH DRIVEL PHOTOGRAPHS OF CONTINUETOR, APPROVED BY ARE OR SPRINT REPRESENTATION.
- COMPANION OF BLOFFIL MATERIALS, AGREGATE BASE FOR ROADS, PASS, AND MACHANES, ESPHALT PANNE, AND SHAPT BASHET FOR CONCRETE AND WOOD POLES, BY MADEPAIDERT THEIR PARTY MACHANY. FRE— AND POST—CONSTRUCTION ROOFTOP AND STRUCTURAL EXSPECTIONS ON EXISTING FACULTIES.
- TOWER EXCITON SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THRO PARTY AGENCY.
- antenna azmuth , donn tilt and per sunlight tool sunsight bistruments antennaligh alighbent tool (ant)

DECRIMAND AS-PRIM TORNINAS IN AUTOCAD AND FOR FORMATS, ANY FIELD CHANGE MASS IN AUTOCAD AND FOR FORMATS, ANY FIELD CHANGE AND THE FORMANS STS. CHARGE SHALL BY THE ROMATING MODIFICATIONS FILL NOT BE ANGED CHANGES SHALL BE HACHZHIED AS "CLOURS DEATHFRED AS "THE "AS-PAIL" COMMITTAN.

Sprint

6580 Speht Parkway Overland Park, Kenses 66251

the solutions are endices to a solution the solution of the so FROM ZERO TO INFIN NFINIGY:





ISSUED FOR REVEN REVISIONS: DESCRIPTION THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY ACT BE REPRODUCED, DESSEMINATED OR REDSTRIBUTED OF WITHOUT THE EXPRESS WRITEN CONSENT OF DATE BY 88

MARLBOROUGH (CROWN)

CT03XC210

73 NORTH MAIN STREET MARLBOROUGH, CT 06447

SPRINT SPECIFICATIONS

SP-2

CONTINUE FROM SP-2

- VERBICATION COCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY AME SITE DEVELOPMENT REP. OR RF REP.
- 8. FRAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD GPS IS TO BE UPLIABLED INTO SMS.
- can sweep and fiber testing documents submitted va sais for RF approval.
- SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED. EQUIPMENT
- 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
- 12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- THE COMPRACTION SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK DEMINISTED AS UNACCEPTABLE IN SITE WISPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- Christicitan inspections and corectine texases sall ee docalented by the controller with weiter departs and prodoener fruitgener en last be digital and of supplem guilt to clear seath fruitgener en carstruction, prodoeners une cardue injueer, ste naue, description, and and be labeled with the site cardue injueer, ste naue, description, and
- delmprales: test and inspection reports and closeout documentation stall be uploaded to the sas and/or formacided to sprint for inclusion into the proametat site rues. The following test and inspection reports shall be provided as applicable.
- CONCRETE MIX AND CYLINDER BIREAK HEPORTS.
- STRUCTURAL BACKFILL COMPACTION REPORTS.
- 3. SITE RESISTANCE TO EARTH TEST.
- ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
- Tower erection resections and measurements documenting tower installed per suppliers: requirements and the applicable sections heading.
- REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING: donx orble sweep tests per company's "antenna line acceptance standards".
- TEST WELLS AND TREMCHES: PROTOCOMENS OF ALL TEST WELLS, PROTOCOMENS AND TREMCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCANATIONS SOCIALING DEPTH.
- CANDATS, CONDUCTORS AND GROUNDING PHOTOGRAPHS SHAMING THRICK INSTALLATION OF CONDUCTORS AND COMPETTORS, PHOTOGRAPHS SHOWING THRICK, BERTO FAUNUS OF INSTALLED GROUND MERCS AND GROUND ROD
- ONCRETE PORIS AND REPURCIONIS CONCRETE PORUMS AT TOWER AND DAMPHONT/SELTER PRA/PONNAMIONIS PROTOGEPIS SCHWING ALL BEHTWEIN STEEL, VIII.TY AND CONDUIT STUG DUTS, PANTIGRAPHS SCHWING CONCRETE POUR OF SEELERS SLAP/FOUNDATION, TOWER POUNDATION AND GUY MACHOIS WITH VIBRANCE IN USE, PANTIGRAPHS SHOWARD EXCH MACHON PAY OLIVED TRANSIS, BETTOEL CONCRETE POUR.
- 4. TORIS, ANTENIO, AND JUNIUME INSTITUTU MAD PHOTOGRAPHS OF SECTION METHOD AND THE SECTION AND THE
- ROS TORS PRE-CONSTRUCTION AND POST-CONSTRUCTION (SIAM, MENCINA AND PHYDITIORAMS OF THE ROOM FAULD NETWORK IN DETERMINE AND TOCUMENT CONSTRUCTION MERCATIONS AS REQUIRED BY THE LANGUAGE PHYDITIORAMS OF CHARL THAN ARBOAN GE ROUSE; PHYDITIORAMS OF CHARL THAN ARBOAN GE PHYDITIORAMS OF CHARLES THAN ARBOAN GENERAL PHYDIORAMS OF CHARLES THAN ARBOAN GENERAL PHYDIORAMS OF CHARLES AND ARBOAN ARBOAN A
- SITE LAYOUT PHOTOGRAPHS OF THE OVERALL COMPOUND, RICLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
- PRESHED INTERIES CLOSE-UP PROTEGNINS OF THE PIPE BEGINGS HAND.
 CLOSE-UP PROTEGNING OF THE CHARGE OF THE TICLED CHARLE AND MILL.
 CLOSE-UP PROTEGNING OF THE CHARGE METER AND DESCRIPTION PROTECTS OF
 POWERS AND TRADE DETRIBUTED TO CHARGE METER AND DESCRIPTION PROTECTS. OF
 WEETER BOX AND/OR FACILITY DISTRIBUTION PANCE.
- RECUIRDO MATERIAIS CEMPRICATIONS: CONCRETE MX DESIGNS; HELL CERTRIFACTION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASSHALT PAINTG MIX DESIGN.
- ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY

SECTION OI 400 — SUBMITTAIS & TESTS

PART 1 — GENERAL

1.1 THE WARK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH

1.1 THE WERK CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWNANCE DESCRIBE THE
WORK TO BE PERSONALD BY THE CONFIDENCION.

1.2 RELATED DOCUMENTS:

- The requirements of this section apply to all sections in this specification.
- sprint standard construction details for wheless sites are included in and hade a part of these speceptations herewith.
- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION

TI MEERLY KEPOKIS:

- Contractor Syall project spoint with Weday Reports Syonia Project Syans, This Saniar Report Reports that will be project to the Contractor Syans, This Saniar Report that will be project to the Contractor Syans, The Report will contain see to haver the Medican Syans for each step who were the Report that contain see to have the Medican Syans for each conference with the Medican Syans for each conference with the Medican Syans for each conference with the Medican Syans for the Medi
- REPORT MYOGUATION WILL BE TRANSATTED TO SPRONT VA ELECTRONIC MEANS AS REQUIRED, THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

- SPANT MAY HOLD WEDALY PROJECT COMPENSIVE CALLS, COMPINATION WILL BE RECURED TO COMMUNICATE STATES, MESSIONE COMPLETIONS AND UPCOUND MESSIONE PROJECTIONS, AND ANSWER MAY OTHER SITE STATUS QUESTIONS AS NECESSARY.
- 3.3 PROJECT TRACKING IN SMS:
- contractor shall proade schedule updates and projections in the sais system on a wedgy basis.
- 3.4 ADDITIONAL REPORTING:
- 3.5 PROJECT PHOTOGRAPHS: ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETICALINED TO BE REASONABLY NECESSARY BY COMPANY.
- A FILE DISTAL PHOTOGRAPHS OF COMPLETED STE IN JPES FORMAT IN THE SMS PHOTO LEBRAY FOR THE RESPECTIVE STIL, PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH STILL INJURY, WAVE AND DESCRIPTION, AND SHALL INCLUDE AT A UNHIFINITY THE FOLLOWING AS APPLICIABLE:
- 1. ISHELTER AND TOWER OVERVIEW.
- TOWER FOUNDATION(S) FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
- TOWER POUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
- TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
- 6. PHOTOS OF TOWER SECTION STACKING.
- CONCRETE TESTING / SAMPLES.
- 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
- B. BUBLING/NATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
- 8. SHELTER FOUNDATION -- FORMS AND STEEL BEFORE POURING.
- 10. SHELTER FOUNDATION POUR WITH VEHICURE IN USE.
- 11. CONX CHELE ENTRY INTO SHELTER.
- 12. FLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
- ${f 13.}$ rooftop fre and post construction photos to incline penetrations and interior celling.
- 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
- 15. PHOTOS OF ALL APPROPRIATE COMPANY OR RESULATORY SIGNAGE.
- 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
- 17. POWER AND TELCO EVITAMICE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS NOLLDING METER/DISCONNECT.
- 10. ELECTRICAL TREMCH(S) WITH FOUL-BACKED TAPE BEFORE FURTHER BACKFUL 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUST BEFORE BACKTILL
- 20. TELCO TREMCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL
- 21. TELCO TRENCH WITH FOR-BACKED TARE BEFORE FURTHER BACKFILL
- 22. SHELTER GROUND—RING TRENCH WITH GROUND—WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII). TOWER GROUND—RING TRENCH WITH GROUND—WIFE BEFORE BACKELL (SHOW ALL CAD WELDS AND BEAD RADB).

- 24. FEACE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADB).
- 25. ALL BITS GROWND CONNECTIONS,
- 26. ALL CROUND TEST WELLS.
- 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
- 29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS 28. ADDITIONAL GROUNDING POINTS ON TOMERS ABOVE 200'
- 30, GPS ANTENNAS.
- 31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE
- 32. DOGHOUSE/CABLE EXIT FROM ROOF.
- 33. EACH SECTION OF ANTICHIAS; ONE PHOTOGRAPH LODGING AT THE SECTION AND ONE FROM BEHIND SHOWING THE PROJECTED CONFINGE AREA.
- 34. MASTER BUS BAR.
- 35. TELCO BOARD AND NU.
- 36. ELECTRICAL DISTRIBUTION WALL
- 37. CABLE EXTRY WITH SURGE SUPPRESSION

- 38. COAX WEATHERPROOFING—TOP AND BOTTOM OF TOWER 38. ENTRANCE TO EQUIPMENT ROOM.
- 40. COMX GROUNDING -TOP AND BOTTOM OF TOMER.
- 41. ANTENNA AND MAST GROWNERS
- 42 LANDSCAPING WHERE APPLICABLE,
- 1.4 FAVIL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER SYMMENT, CONTRACT DOCUMENTS OR THE SPIRAR RECERATED CONSTRUCTION STANDARDS FOR WIRELESS STIES AND UPCLAND WITO SITEMA.

9	3 2
Mariana CSBQ	ĭ
Page	₹
Perkur	(
95 95 95	
	12

33 Wittervillet Studer Rd | Albany, NY 12: Phone: 514-590-0710 | Faz; 514-616-1179 FROM ZERO TO INFIN **NENIGY** the solutions are en

()
	7
S	S
STI	₹
m	Ž

THESE DOCUMENTS ARE CONFIDENTIAL AND THESE DOCUMENTS ARE CONFIDENTIAL AND THE SOLE PROPERTY OF SPRINT AND RECESTED.	OF PARTY OF THE PA

유급교육

REVISIONS:	P.	₹	ã
ISSUED FOR CONSTRUCTION	87/04/1B	98	o
ISSUED FOR ACTION	06,17/18	922	٨

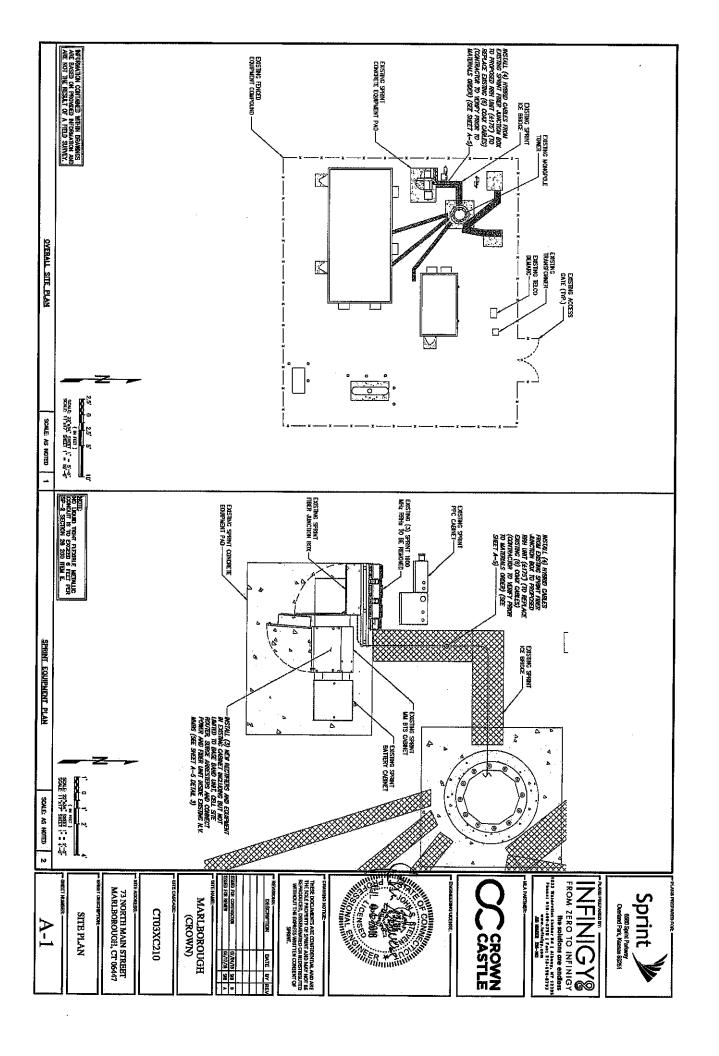
MARLBOROUGH (CROWN)

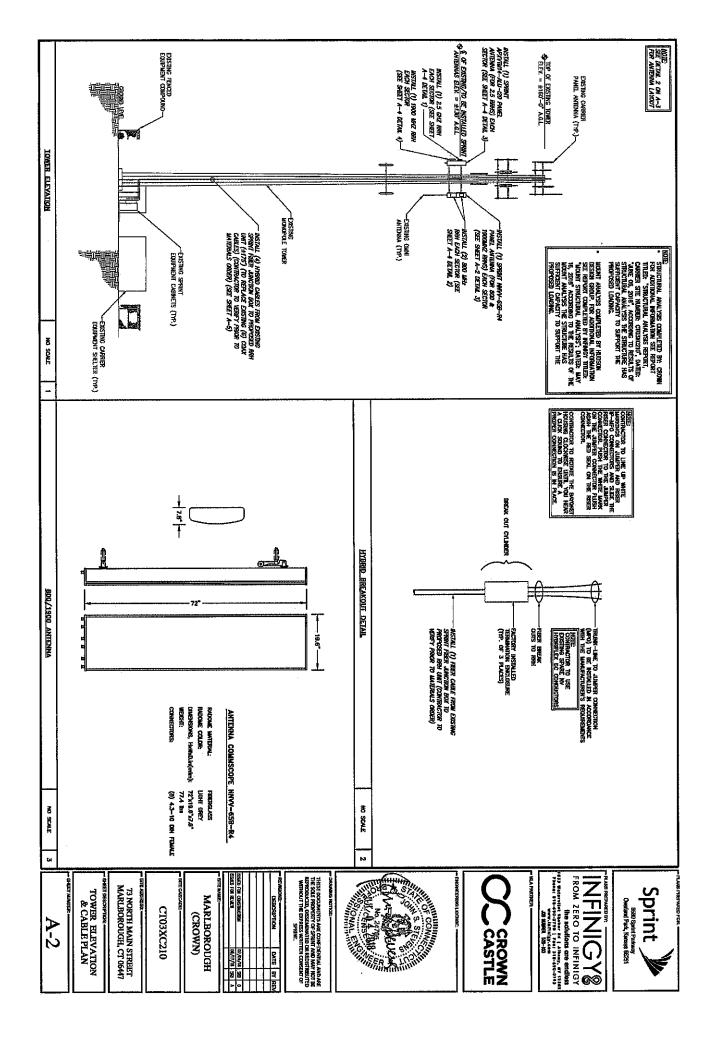
CT03XC210

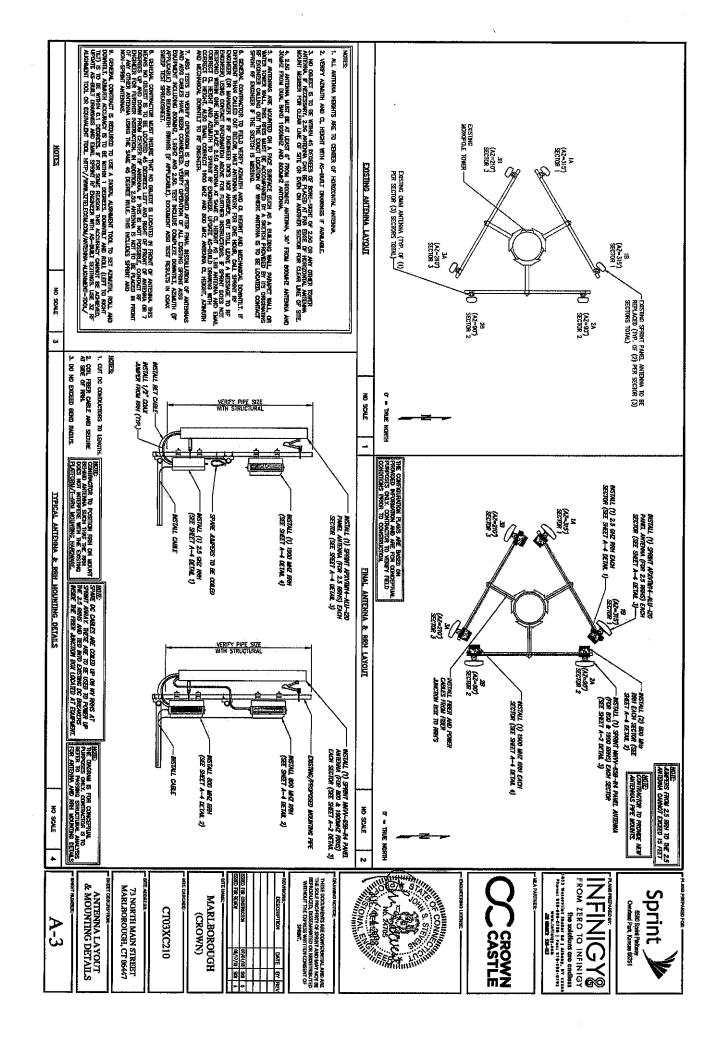
73 NORTH MAIN STREET MARLBOROUGH, CT 06447

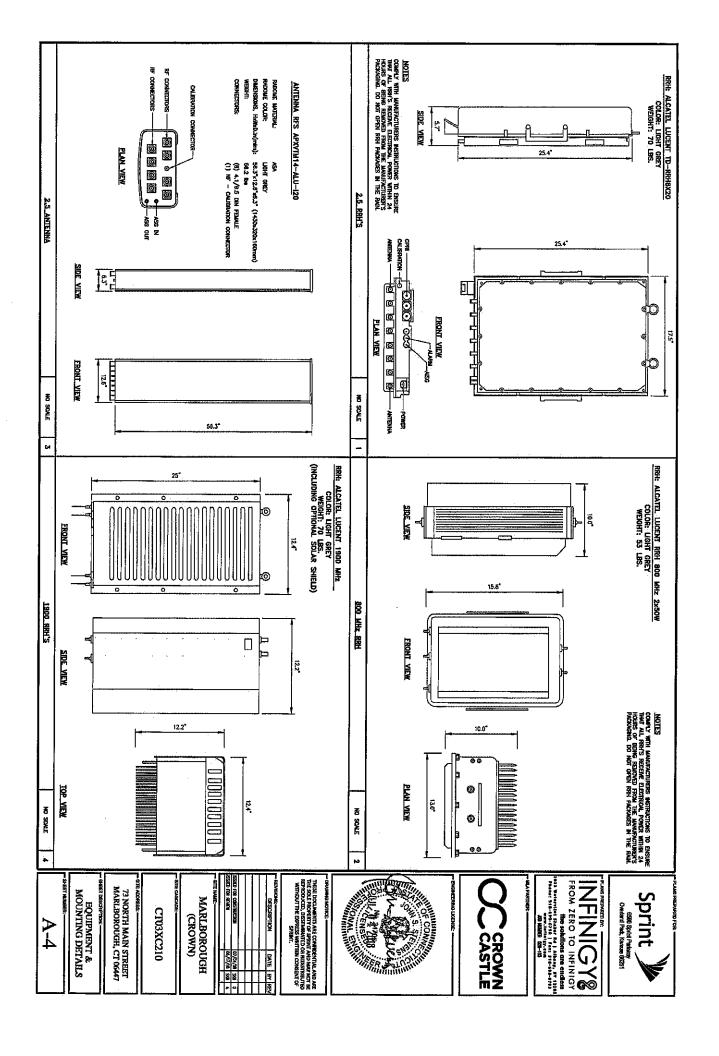
SPRINT SPECIFICATIONS

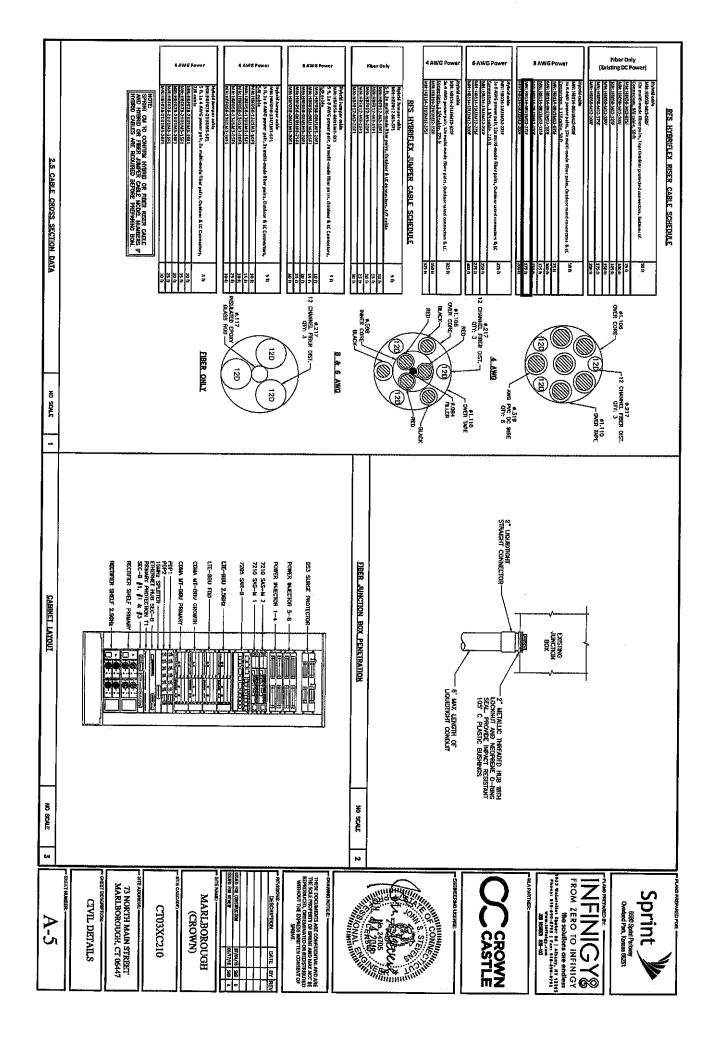
SP-3



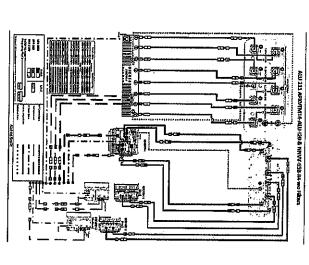








Model Comment Upper black Sprint



THESE DOCUMENTS ARE COMPIDENTIAL AND ARE THE SOLE PROFERRY OF SMIRE AND MAY NOT BE REPRODUCED, DISSEMBLAND ON REDISTRIBUTED WITHOUT THE EMPRESS WRITEN CONSENT OF SPRINE.

CROWN

NFINIGY®

FROM ZERO TO INFINIGY
the solutions are entitless
fits severite have at 1 sharp, at 1 stars
phases the start at 1 sharp, at 1 sharp
phases the start at 1 sharp at 1 sharp
to Handle Sa-65



A-6

NO SCHE

PLUMBING DIAGRAM

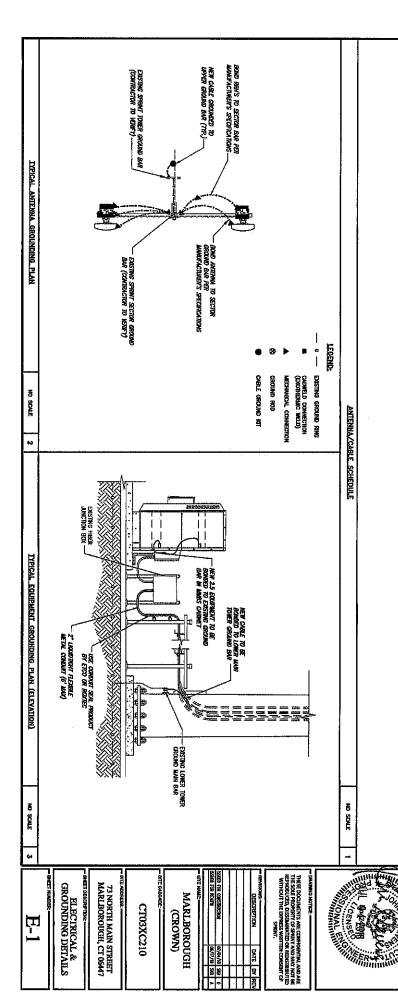
73 NORTH MAIN STREET MARLBOROUGH, CT 06447

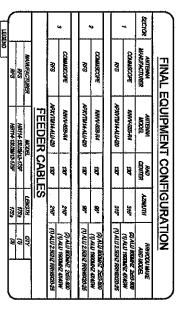
CI03XC210

MARLBOROUGH (CROWN)

DATE BY REV

PLUMBING DIAGRAM







LEGIZA.

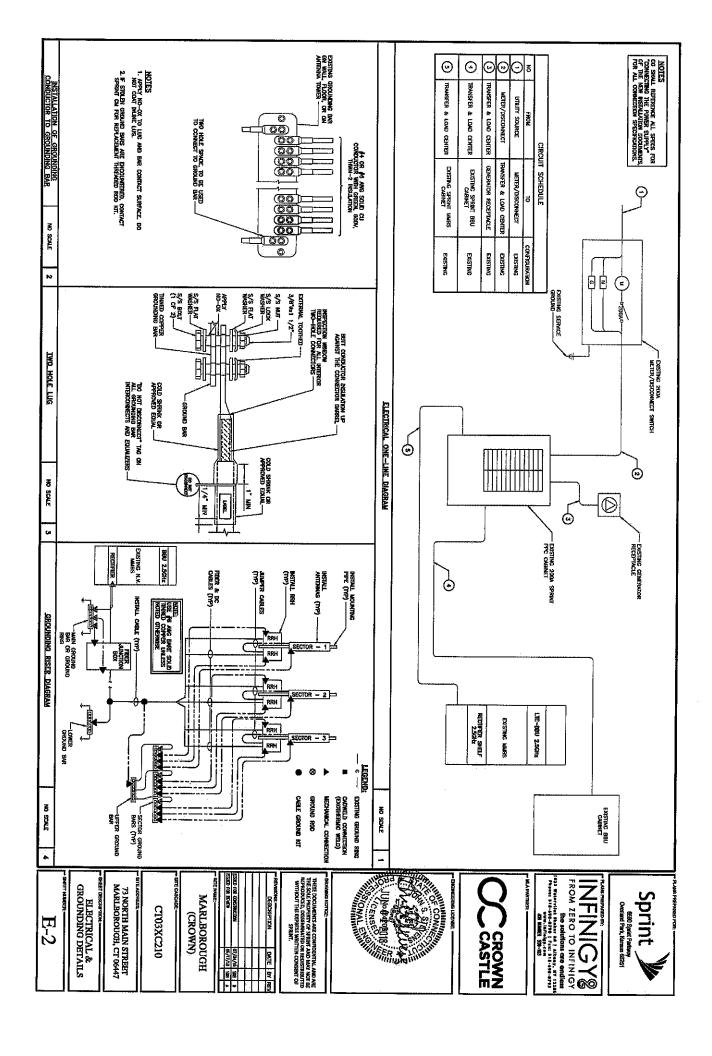
1. COMPANIONE TO NOBEL PROPOSSO ANTERNA ANTERNATION & THE MOST COMPANION AND AT THE OF CONSTRUCTION.

2. COMPANIONE TO COMPANY CHEE LENGTH FROM TO CONSTRUCTION.



FROM ZERO TO INFINIGY
the subtlens are endless
the subtlens are welless
the subtlens at I done, at 1 see
the subtlens at I done at 1 see
an water see-as





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: Carrier Site Name:

CT03XC210 HRT 107

Crown Castle Designation:

Crown Castle BU Number: Crown Castle Site Name:

806366 HRT 107(C) 943204

Crown Castle JDE Job Number: Crown Castle Work Order Number:

465318 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

Note: See Table I and Table II for the proposed and existing loading, respectively.

Sufficient Capacity

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, P. E. Senior Project Engineer

OF CONNECTION OF

tnxTower Report - version 7.0,5,1

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) 1-1/4 7/8	Note
		3	alcatel lucent	PCS 1900MHZ 4X45W- 65MHZ			
		6	alcatel lucent	RRH2X50-800		1	
128.0	130.0	3	alcatel lucent	TD-RRH8X20-25	3		-
		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
		3	decibel	DB809K-Y	3	1-5/8	3
		3	alcatel lucent	RRH2x60-700			
		3	alcatel lucent	RRH2x60-AWS	_		
		3	alcatel lucent	RRH2x60-PCS			l i
156.0	159.0	6	andrew	SBNHH-1D65B w/ Mount Pipe			1
100.0		5	commscope	LNX-6514DS-A1M w/ Mount Pipe	14	1-5/8	1
		1	commscope	LNX-8513DS-VTM w/ Mount Pipe			
		2	rfs celwave	DB-T1-6Z-8AB-0Z	-		
	156.0	1	tower mounts	Platform Mount [LP 1001-1]			
		6	ericsson	RRUS-11		3/8 3/4 1-1/4 conduit	
		3	kmw comm	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
Transmission II		3	powerwave tech	1001940	1		Ì
144.0	144.0	6	powerwave tech	7770.00 w/ Mount Pipe	2 12 1		1
		6	powerwave tech	LGP 17201			
		6 powerwave tech LGP21903	LGP21903	ı	conduit		
		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
		6	andrew	ETM19V2S12UB			
		3	commscope	ATBT-BOTTOM-24V]		
100.0	100.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	12	1-1/4	1
	,	3	ems wireless	RV90-17-00DP w/ Mount Pipe			
		1	tower mounts	Side Arm Mount [SO 701-3]	1		

Notes:

1) Existing Equipment

2) Equipment To Be Removed; Not Considered In This Analysis Abandoned Equipment; Considered in Analysis

3)

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	_	_
		2	Celwave	PD1142		
132.00	132.00	1	Celwave	PD201		
132,00	132.00	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

- 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	ponent Elevation (ft)		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

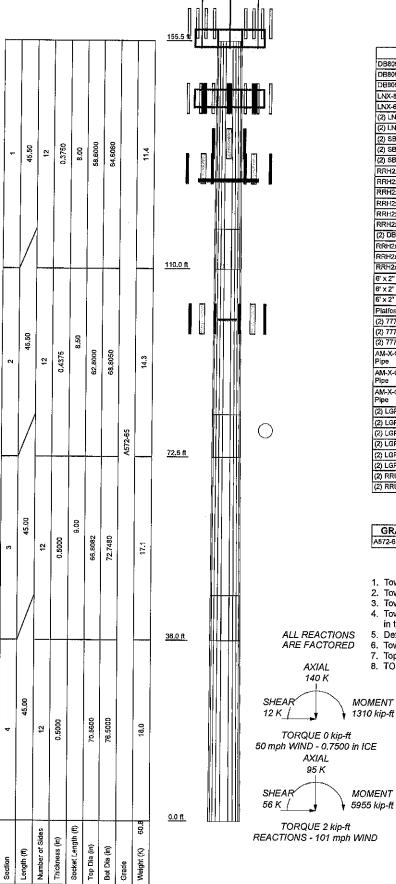
Structure Rating (max from all components) =	57.4%
Notes:	

^{4.1)} Recommendations

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

See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity

APPENDIX A TNXTOWER OUTPUT



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-5514DS-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	158	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-J20 w/ Mount Pipe	128
(2) DB-T1-6Z-8AB-0Z	156	APXVTM14-ALU-I20 w/ Mount Pipe	128
RRH2x60-700	156	APXVTM14-ALU-I20 w/ Mount Pipe	128
RRH2x60-700	156	RRH2X50-800	128
RRH2x60-700	156	(4) RRH2X50-800	128
5' 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	144	8' x 2" Mount Pipe	128
Pipe		LNX-6515DS-VTM w/ Mount Pipe	100
AM-X-CD-16-65-00T-RET w/ Mount	144	LNX-6515DS-VTM w/ Mount Pipe	100
Pipe		LNX-6515DS-VTM w/ Mount Pipe	100
AM-X-CD-16-65-00T-RET w/ Mount Pipe	144	RV90-17-00DP w/ Mount Pipe	100
2) LGP 17201		RV90-17-00DP w/ Mount Pipe	100
	144	RV90-17-00DP w/ Mount Pipe	100
2) LGP 17201	144	ATBT-BOTTOM-24V	100
2) LGP 17201	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

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

TOWER DESIGN NOTES

- Tower is located in Hartford County, Connecticut.
 Tower designed for Exposure B to the TIA-222-G Standard.
 Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
 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%

COOM	Crown Castle	^{Јов:} В <i>U</i> # 806366		
CROWN	2000 Corporate Drive	Project:		
CASILE	Canonsburg PA 153171		Drawn by: Steven Hu	App'd:
The Pathway to Possible	Phone: (724) 416-2000	Code: TIA-222-G	Date: 06/06/18	Scate: NTS
	FAX: (724) 416-4623	Path; R:ISA Models - Lalters\Work Are	e\SHu\1, W.P\806368 WO 1582419\808366.er	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.
- 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 Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification

 √ Use Code Stress Ratios
 √ Use Code Safety Factors - Guys Escalate Ice
 Always Use Max Kz

Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform Assume Legs Pinned

- √ Assume Rigid Index Plate
- ✓ Use Clear Spans For Wind Area
 Use Clear Spans For KL/r
 Retension Guys To Initial Tension

 ✓ Bypass Mast Stability Checks
- √ Use Azimuth Dish Coefficients
- √ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination

√ Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing
Treat Feed Line Bundles As Cylinder

Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation

√ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption

Poles

✓ Include Shear-Torsion Interaction
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	TOTAL TOTAL STREET, ST	12	70.5600	76.5000	0.5000	2.0000	A572-65 (65 ksi)

		_	_	erties
	noron		Uran	APTIAC
I CI	vereu	L OIC	FIUU	CILICO

Section	Tip Dia. in	Area in²	l in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	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	Gusset	Gusset	Gusset Grade Adjust. Factor	Adjust.	Weight Mult.			Double Angle
Elevation	Area (per face)	Thickness	A _f	Factor A _r		Stitch Bolt Spacing	Stitch Bolt Spacing	Stitch Bolt Spacing
ft	ft²	in				Diagonals in	Horizontals in	Redundants in
L1 155.50-			1	1	1			
110.00								
L2 110.00-			1	1	1			
72.50								
L3 72.50-			1	1	1			
36.00				•	·			
L4 36.00-0.00			1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or	Allow Shield	Component Type	Placement	Total Number		C_AA_A	Weight
	Leg		. 71	ft			ft²/ft	plf
LDF7-50A(1-5/8)	С	No	Inside Pole	155.50 - 0.00	3	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
561(1-5/8)	С	No	Inside Pole	155.50 - 0.00	12	No Ice	0.00	1.35
						1/2" Ice	0.00	1,35
						1" Ice	0.00	1.35
HB158-1-08U8 -	С	No	Inside Pole	155,50 - 0.00	2	No Ice	0.00	1.30
S8J18(1-5/8)						1/2" Ice	0.00	1.30
**			*			1" Ice	0.00	1.30
UCF114-50JA(1-1/4)	С	No	Inside Pole	144.00 - 0.00	12	No Ice	0.00	0.55
	J	110	Indiae Fole	144.00 - 0.00	12	1/2" Ice	0.00	0.55
						1" Ice	0.00	0.55
FB-L98B-002-	С	No	Inside Pole	144.00 - 0.00	1	No Ice	0.00	0.06
75000(3/8)	•	.,,		144.00 0.00	•	1/2" Ice	0.00	0.06
						1" ice	0.00	0.06
/R-VG86ST-BRD(3/4)	С	No	Inside Pole	144.00 - 0.00	2	No Ice	0.00	0.58
` '	_				_	1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
2" Rigid Conduit	С	No	Inside Pole	144.00 - 0.00	1	No Ice	0.00	2.80
-					•	1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
**								2.00
AVA6-50(1-1/4)	С	No	Inside Pole	135.00 - 0.00	6	No Ice	0.00	0.46
						1/2" Ice	0.00	0.46
						1" Ice	0.00	0.46
**								

Description	Face or	Allow Shield	Component Type	Placement	Total Number		C _A A _A	Weight
	Leg			ft			ft²/ft	plf
HB114-08U3M12-	С	No	Inside Pole	128.00 - 0.00	1	No Ice	0.00	0.68
XXXF(7/8)						1/2" Ice	0.00	0.68
						1" Ice	0.00	0.68
HB114-1-08U4-M5F(1-	C	No	Inside Pole	128.00 - 0.00	3	No Ice	0.00	1.30
1/4)						1/2" Ice	0.00	1.30
**						1" Ice	0.00	1.30
AVA6-50(1-1/4)	С	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.46
, ,						1/2" Ice	0.00	0.46
						1" Ice	0.00	0.46
LDF6-50A(1-1/4)	С	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.60
, ,						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60

Feed Line/Linear Appurtenances Section Areas

Tower Sectio	Tower Elevation	Face	A_R	A F	C _A A _A In Face	C₄A₄ Out Face	Weight
n	ft		ft²	ft ²	ft ²	ft ²	K
L1	155.50-110.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.000	0.000	0.00
		С	0.000	0.000	0.000	0.000	1.48
L2	110.00-72.50	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.000	0.000	0.00
		С	0.000	0.000	0.000	0.000	1.65
L3	72.50-36.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.000	0.000	0.00
		С	0.000	0.000	0.000	0.000	1.66
L4	36.00-0.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.000	0.000	0.00
		С	0.000	0.000	0.000	0.000	1.64

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio	Tower Elevation	Face or	lce Thickness	A _R	A_{F}	C _A A _A In Face	C₄A₄ Out Face	Weight
n	ft	Leg	in	ft ²	ft ²	ft ²	ft ²	K
L1	155.50-110.00	Α	1.724	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.000	0.000	0,00
		С		0.000	0.000	0.000	0.000	1.48
L2	110.00-72,50	Α	1.661	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.000	0.000	0.00
		С		0.000	0.000	0.000	0.000	1.65
L3	72.50-36.00	Α	1.577	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.000	0.000	0.00
		С		0.000	0.000	0.000	0.000	1.66
L4	36.00-0.00	Α	1.410	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.000	0.000	0.00
		Ç		0.000	0.000	0.000	0.000	1.64

Feed Line Center of Pressure

Section	Elevation	CP _X	CPz	CP _X Ice	CPz Ice
	ft	in	in	in	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 Feed Line Section Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K₃ Ice
---------------------------------------	-------------	-------------------------------	--------------------------	-----------

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C₄A₄ Side	Weight
			ft ft ft	Ď	ft		ft²	ft²	К
DB809K-Y	Α	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	В	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	С	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
***						1 100			
LNX-8513DS-VTM w/ Mount Pipe	Α	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" 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	Α	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" 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	В	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" 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	С	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" 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	Α	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" 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	В	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" 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	С	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
RRH2x60-AWS	Α	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-AWS	В	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice 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	Offset	Offsets:	Azimuth	Placement		CAAA	CaAa	Weight
	or Leg	Туре	Horz Lateral Vert	Adjustmen t			Front	Side	Ū
			ft ft ft	Ġ	ft		ft²	ft²	κ
DDUO-60 AME		Г Г		0.0000	450.00	1" Ice	0.50	4.00	
RRH2x60-AWS	С	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-PCS	Α	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2x60-PCS	В	From Face	4.00 0.00 3.00	0.0000	156.00	No Ice 1/2" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2x60-PCS	С	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
(2) DB-T1-6Z-8AB-0Z	Α	From Face	4.00 0.00 3.00	0.0000	156.00	1" Ice No Ice 1/2" Ice 1" Ice	4.80 5.07 5.35	2.00 2.19 2.39	0.04 0.08 0.12
RRH2x60-700	Α	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
RRH2x60-700	В	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
RRH2x60-700	С	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
6' x 2" Mount Pipe	Α	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	В	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	С	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
Platform Mount [LP 1001- 1]	С	None		0.0000	156.00	No Ice 1/2" Ice 1" Ice	47.70 59.50 71.30	47.70 59.50 71.30	3.02 3.62 4.22
(2) 7770.00 w/ Mount Pipe	Α	From Face	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	В	From Face	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	С	From Face	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
AM-X-CD-16-65-00T-RET w/ Mount Pipe	Α	From Face	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	8.26 8.82 9.35	6.30 7.48 8.37	0.07 0.14 0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustmen t	Placement		C _A A _A Front	С _А А _А Side	Weight
			Vert ft ft ft	o	ft		ft²	ft²	К
AM V CD 46 65 00T DET	P					1" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	В	From Face	4.00 0.00	0.0000	144.00	No Ice	8.26	6.30	0.07
m moditer ipo			0.00			1/2" Ice	8.82 9.35	7.48 8.37	0.14 0.21
						1" Ice	5.00	0.07	0.21
AM-X-CD-16-65-00T-RET	С	From Face	4.00	0.0000	144.00	No Ice	8.26	6.30	0.07
w/ Mount Pipe			0.00			1/2"	8.82	7.48	0.14
			0.00			Ice 1" Ice	9.35	8.37	0.21
(2) LGP 17201	Α	From Face	4.00	0.0000	144.00	No Ice	1.67	0.47	0.03
			0.00	3,0000	711.00	1/2"	1.83	0.57	0.03
•			0.00			Ice	2.00	0.68	0.06
(2) I CD 47204	В	F	4.00	0.0000		1" Ice			
(2) LGP 17201	В	From Face	4.00	0.0000	144.00	No Ice	1.67	0.47	0.03
			0.00 0.00			1/2" Ice	1.83 2.00	0.57	0.04
			0.00			1" Ice	2.00	0.68	0.06
(2) LGP 17201	С	From Face	4.00	0.0000	144.00	No Ice	1.67	0.47	0.03
			0.00			1/2"	1.83	0.57	0.04
			0.00			Ice	2.00	0.68	0.06
(2) LGP21903	Α	From Face	4.00	0.0000	144.00	1" Ice No Ice	0.23	0.46	0.04
(2) 201 2 1000		1 Tom Lace	0.00	0.0000	144.00	1/2"	0.23	0.16 0.21	0.01 0.01
			0.00			lce	0.36	0.28	0.02
/#! ! #						1" Ice		5.25	0.02
(2) LGP21903	В	From Face	4.00	0.0000	144.00	No Ice	0.23	0.16	0.01
			0.00 0.00			1/2"	0.29	0.21	0.01
			0.00			ice 1" ice	0.36	0.28	0.02
(2) LGP21903	С	From Face	4.00	0.0000	144.00	No Ice	0.23	0.16	0.01
			0.00			1/2"	0.29	0.21	0.01
			0.00			Ice	0.36	0.28	0.02
(2) RRUS-11	Α	From Face	4.00	0.0000	444.00	1" Ice	. =.		
(2) 1(100-11	А	FIOIII Face	0.00	0.0000	144.00	No Ice 1/2"	2.78 2.99	1.19 1.33	0.05
			0.00			ice	3.21	1.49	0.07 0.09
						1" Ice	0.22	1.70	0.00
(2) RRUS-11	В	From Face	4.00	0.0000	144.00	No Ice	2.78	1.19	0.05
			0.00			1/2"	2.99	1.33	0.07
			0.00			lce 1" lce	3.21	1.49	0.09
(2) RRUS-11	С	From Face	4.00	0.0000	144.00	No Ice	2.78	1.19	0.05
, ,			0.00			1/2"	2.99	1.33	0.07
			0.00			Ice	3.21	1.49	0.09
1001940	^	Г I	4.00	0.0000	444.00	1" lce			
1001940	Α	From Leg	4.00 0.00	0.0000	144.00	No Ice 1/2"	0.18 0.23	0.08	0.00
			0.00			lce	0.23	0.13 0.18	0.00 0.01
						1" Ice	0.00	0.10	0.01
1001940	В	From Leg	4.00	0.0000	144.00	No Ice	0.18	0.08	0.00
			0.00			1/2"	0.23	0.13	0.00
			0.00			lce	0.30	0.18	0.01
1001940	С	From Leg	4.00	0.0000	144.00	1" Ice No Ice	0.18	0.08	0.00
			0.00	0.000		1/2"	0.13	0.13	0.00
			0.00			Ice	0.30	0.18	0.01
DC6 40 60 40 0E	ь	From F	4.00	0.0000	444.55	1" Ice			
DC6-48-60-18-8F	В	From Face	4.00 0.00	0.0000	144.00	No Ice	0.79	0.79	0.02
			0.00			1/2" Ice	1.27 1.45	1.27 1.45	0.04 0.05
						1" Ice	1.70	1.TŲ	บ.บอ
(2) 6' x 2" Mount Pipe	Α	From Leg	4.00	0.0000	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			

Paradatta		0.66(055						
Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A S ide	Weight
			ft ft	0	ft		ft²	ft²	К
(2) 6' x 2" Mount Pipe	В	From Leg	# 4.00	0.0000	144,00	No Ice	1,43	1.43	0.02
``		v	0.00 0.00			1/2" Ice 1" Ice	1.92 2.29	1.92 2.29	0.03 0.05
(2) 6' x 2" Mount Pipe	С	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	1.43 1.92 2.29	1. 4 3 1.92 2.29	0.02 0.03 0.05
Platform Mount [LP 1001- 1]	С	None		0.0000	144.00	1" Ice No Ice 1/2" Ice 1" Ice	47.70 59.50 71.30	47.70 59.50 71.30	3.02 3.62 4.22
742 213 w/ Mount Pipe	Α	From Leg	1.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	5.37 5.95 6.50	4.62 6.00 6.98	0.05 0.09 0.15
742 213 w/ Mount Pipe	В	From Leg	1.00 0.00 0.00	0.0000	135.00	1" Ice No Ice 1/2" Ice 1" Ice	5.37 5.95 6.50	4.62 6.00 6.98	0.05 0.09 0.15
742 213 w/ Mount Pipe	С	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	0.05 0.09 0.15
***						i ice			
NNVV-65B-R4 w/ Mount Pipe	Α	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. 4 1 8.60 9.50	0.10 0.19 0.29
NNVV-65B-R4 w/ Mount Pipe	В	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice	12.51 13.11 13.67	7.41 8.60 9.50	0.10 0.19 0.29
NNVV-65B-R4 w/ Mount Pipe	С	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	12.51 13.11 13.67	7.41 8.60 9.50	0,10 0,19 0,29
APXVTM14-ALU-I20 w/ Mount Pipe	Α	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-ALU-l20 w/ Mount Pipe	В	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
APXVTM14-ALU-I20 w/ Mount Pipe	С	From Leg	4.00 0.00 2.00	0.0000	128,00	1" Ice No Ice 1/2" Ice	6.58 7.03 7.47	4.96 5.75 6.47	0.08 0.13 0.19
RRH2X50-800	Α	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
(4) RRH2X50-800	В	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
RRH2X50-800	С	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
(3) PCS 1900MHZ 4X45W- 65MHZ	Α	From Leg	4.00 0.00 2.00	0.0000	128.00	1" Ice No Ice 1/2" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11

Description	Face or	Offset Type	Offsets: Horz	Azimuth Adjustmen	Placement		C _A A _A Front	C₄A₄ Side	Weight
	Leg		Lateral Vert	ť					
			ft ft ft	٥	ft		ft²	ft²	K
(3) TD-RRH8X20-25	С	From Leg	4.00	0.0000	128.00	1" Ice	4.05	4.50	0.07
(0) 10-11110/20-23	O	i ioni Leg	0.00	0.0000	128.00	No Ice 1/2"	4.05 4.30	1.53 1.71	0.07 0.10
			2.00			Ice 1" Ice	4.56	1.90	0.13
T-Arm Mount [TA 602-3]	С	None		0.0000	128.00	No Ice	11.59	11.59	0.77
						1/2" Ice 1" Ice	15.44 19.29	15.44 19.29	0.99 1.21
T-Arm Mount [TA 602-3]	С	None		0.0000	128.00	No Ice	11.59	11.59	0.77
				0.0000	120.00	1/2"	15.44	15.44	0.99
						Ice 1" Ice	19.29	19.29	1.21
8' x 2" Mount Pipe	Α	From Leg	4.00	0.0000	128.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice 1" Ice	3.40	3.40	0.06
8' x 2" Mount Pipe	В	From Leg	4.00	0.0000	128.00	No Ice	1.90	1.90	0.03
			0.00 0.00			1/2" Ice 1" Ice	2.73 3.40	2.73 3.40	0.04 0.06
8' x 2" Mount Pipe	С	From Leg	4.00	0.0000	128.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
***			0.00			lce 1" Ice	3.40	3.40	0.06
L.NX-6515DS-VTM w/	Α	From Leg	3.00	0.0000	100.00	No Ice	11.68	9.84	0.08
Mount Pipe		_	0.00			1/2"	12.40	11.37	0.17
			0.00			Ice 1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/	В	From Leg	3.00	0.0000	100.00	No Ice	11.68	9.84	0.08
Mount Pipe			0.00			1/2"	12.40	11.37	0.17
			0.00			lce 1" lce	13.14	12.91	0.27
LNX-6515DS-VTM w/	С	From Leg	3.00	0.0000	100.00	No Ice	11.68	9.84	0.08
Mount Pipe			0.00			1/2"	12.40	11.37	0.17
5) (5)			0.00			Ice 1" Ice	13.14	12.91	0.27
RV90-17-00DP w/ Mount	Α	From Leg	3.00	0.0000	100.00	No Ice	4.59	3.32	0.04
Pipe			0.00 0.00			1/2"	5.02	4.09	0.08
			0.00			Ice 1" Ice	5.44	4.78	0.12
RV90-17-00DP w/ Mount	В	From Leg	3.00	0.0000	100.00	No Ice	4.59	3.32	0.04
Pipe			0.00			1/2"	5.02	4.09	0.08
			0.00			Ice 1" Ice	5.44	4.78	0.12
RV90-17-00DP w/ Mount	C	From Leg	3.00	0.0000	100.00	No Ice	4.59	3.32	0.04
Pipe			0.00			1/2"	5.02	4.09	0.08
			0.00			Ice 1" Ice	5.44	4.78	0.12
ATBT-BOTTOM-24V	Α	From Leg	3.00	0.0000	100.00	No Ice	0.10	0.06	0.00
			0.00 0.00			1/2"	0.15	0.10	0.00
			0.00			Ice 1" Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	В	From Leg	3.00	0.0000	100.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
		_	0.00			lce 1" Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	С	From Leg	3.00	0.0000	100,00	No Ice	0.10	0.06	0.00
			0.00 0.00			1/2"	0.15	0.10	0.00
(2) ETMAN/0040115		Fuer: 1		0.0000	400.00	Ice 1" Ice	0.20	0.15	0.01
(2) ETM19V2S12UB	Α	From Leg	3.00 0.00	0.0000	100.00	No Ice	0.67	0.20	0.01
			0.00			1/2" Ice	0.77 0.88	0.27 0.34	0.02 0.02
			5.50			100	0.00	0.54	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		CAAA Front	C _A A _A Side	Weight
			ft ft ft	۰	ft		ft²	ft²	К
						1" Ice			
(2) ETM19V2S12UB	В	From Leg	3.00	0.0000	100.00	No Ice	0.67	0.20	0.01
			0.00			1/2"	0.77	0.27	0.02
			0.00			Ice 1" Ice	0.88	0.34	0.02
(2) ETM19V2S12UB	С	From Leg	3.00	0.0000	100.00	No Ice	0.67	0.20	0.01
		ŭ	0.00			1/2"	0.77	0.27	0.02
			0.00			ice 1" ice	0.88	0.34	0.02
Side Arm Mount [SO 701-	С	None		0.0000	100.00	No Ice	2.83	2,83	0.20
3]						1/2"	3.92	3.92	0.24
•						Ice 1" Ice	5.01	5.01	0.28

Load Combinations

Comb.	Description
No.	
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 33	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
	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 36	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 38	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38 39	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39 40	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service

Comb. No.		Description	
41	Dead+Wind 60 deg - Service	The state of the s	
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. Vý	20	-28.91	746.79	4.08
			Max. Vx	2	-28.61	4.51	738,74
			Max. Torque	18.			-1.73
L2	110 - 72.5	Pole	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	-4 5.15	5.25	2003.91
			Max. Vy	20	-39.87	2023.00	4.82
			Max. Vx	2	-39.57	5.25	2003.91
			Max. Torque	18			-1.73
L3	72.5 - 36	Pole	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
			Max. Vy	20	-4 7.93	3608.51	5.53
			Max. Vx	2	-47.64	5.96	3578.65
			Max. Torque	18			-1.73
L4	36 - 0	Pole	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
			Max. My	2	-95.70	6.82	5912.42
			Max. Vý	20	-56.10	5955.60	6.38
			Max. Vx	2	-55.81	6.82	5912.42
			Max. Torque	18			-1.73

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, 2 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. H₂	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

P. C.						
Load Combination	Vertical	Shear _x	Shear₂	Overturning Moment, M _x	Overturning Moment, Mz	Torque
Dead Only	<u>K</u>	<u> </u>	<u> </u>	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 0 deg - No Ice	79.76 95.71	0.00 -0.02	0.00 -55.78	-0.32 -5912.42	0.68 6.82	0.00 -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 1.2 Dead+1.6 Wind 150 deg	71.78	48.57	27.90	2948.18	-5137.20	-0.62
- No Ice 0.9 Dead+1.6 Wind 150 deg	95.71 71.78	28.05 28.05	48.31	5122.55	-2981.74	0.28
- No Ice 1.2 Dead+1.6 Wind 180 deg	95.71	0.02	48.31 55.78	5100.67 5911.62	-2969.14	0.27
- No Ice 0.9 Dead+1.6 Wind 180 deg	71.78	0.02	55.78	5886.37	-5.15 -5.33	1.10 1.10
- No Ice 1.2 Dead+1.6 Wind 210 deg	95.71	-28.02	48,29	5116,57	2973,04	1,64
- No Ice 0.9 Dead+1.6 Wind 210 deg	71.78	-28.02	48.29	5094.73	2960.08	1.63
- No Ice 1.2 Dead+1.6 Wind 240 deg	95.71	-48.55	27.87	2950.43	5154.83	1.73
- No Ice 0.9 Dead+1.6 Wind 240 deg	71.78	-48.55	27.87	2937.88	5132.50	1.73
- No Ice 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	7 1.78	-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 1.2 Dead+1.0 Wind 0	140.21 140.21	0.00 -0.00	0.00 -11.73	-1.62 -1301.24	2.7 4 3.91	0,00 -0.22
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 30	140,21	5.89	-10.16	-1126.61	-649.66	-0.33
deg+1.0 Ice+1.0 Temp 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

^{&#}x27; tnxTower Report - version 7.0.5.1

Load	Vertical	Shear _x	Shear₂	Overturning	Overtuming	Torque
Combination	.,	4-		Moment, M _×	Moment, Mz	
405	K	<u> </u>	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 210	140.21	-5.89	10.16	1123.22	655.40	0.33
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	140.21	-10.20	5.86	647.18	1134.12	0.35
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	140.21	-11.78	-0.00	-2,73	1309.73	0.28
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	140.21	-10.20	-5.87	-652.36	1135.16	0.13
deg+1.0 Ice+1.0 Temp						0.70
1.2 Dead+1.0 Wind 330	140.21	-5.89	-10.16	-1127.65	657.20	-0.05
deg+1.0 ice+1.0 Temp					001,20	-0.00
Dead+Wind 0 deg - Service	7 9.76	-0.00	-11.01	-1163.85	1.87	-0.22
Dead+Wind 30 deg - Service	79. 7 6	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	-0.34
Dead+Wind 120 deg -	79.76	9.58	5.51	582.45	-1014.82	-0.27 -0.12
Service		0.00	0.01	002.40	-1014.02	-0.12
Dead+Wind 150 deg -	79.76	5.54	9.53	1007.90	-586.30	0.06
Service		0.01	0.00	1007.50	-360,30	0.00
Dead+Wind 180 deg -	79.76	0.00	11.01	1163.19	-0.49	0.22
Service		0.00	11.01	1100.19	-0.49	0.22
Dead+Wind 210 deg -	79. 7 6	-5.53	9.53	1006.72	585.64	0.00
Service	70.70	0.00	0.00	1000.72	505.04	0.32
Dead+Wind 240 deg -	79.76	-9.58	5.50	580.41	4045.00	2.24
Service	70.10	-5.50	5.50	30U. 4 I	1015.03	0.34
Dead+Wind 270 deg -	79.76	-11.07	-0.00	-1,51	4470.00	2.07
Service	73.70	-11.07	-0.00	-1,51	1172.63	0.27
Dead+Wind 300 deg -	7 9.76	-9.58	-5.51	500.44	1010.01	
Service	73.70	-9.56	-0.01	-583.11	1016.21	0.12
Dead+Wind 330 deg -	79.76	-5.54	0.50	4000 50		
Service	75.70	-3.54	-9.53	-1008.56	587.68	-0.06

Solution Summary

	Sui	m of Applied Force			Sum of Reaction	ns	
Load	PX	PY	PZ	PX	PY	PZ	% Error
Comb.	K	K	K	K	K	K	75
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	<i>-</i> 71.78	-48.29	-28.02	71. 7 8	48.29	0.000%
6	48.55	-95.71	-27.87	-48.55	95.71	27.8 7	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	7 1.78	-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	7 1.78	-27.90	0.000%
12	28.05	-95.71	48.31	- 28.05	95.71	-4 8.31	0.000%
13	28.05	-71.78	48.31	-28.05	71. 7 8	-48.31	0.000%
14	0.02	- 9 5.71	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%

tnxTower Report - version 7.0.5.1

		n of Applied Force	es		Sum of Reactio	ns	
Load	PX	PY	PZ	PX	PY	PZ	% Erro
Comb.	K	K	K	K	K	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	7 9.76	5.50	0.000%
42	11.07	-79. 7 6	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	-9.55 -11.01	0.000%
46	-5.53	-79.76	9.53	5.53	79.76	-9.53	0.000%
47	-9.58	- 79. 7 6	5.50	9.58	79.76	-5.50	
48	-11.07	- 7 9.76	-0.00	11,07	79.76	-5.50 0.00	0.000%
49	-9.58	-79.76	-5.51	9.58	79.76 79.76		0.000%
50	-5.54	-79.76	-9.53	9.56 5.54	79.76 79.76	5.51 9.53	0.000% 0.000%

Non-Linear Convergence Results

Load	Converged?	Number	Displacement	Force
Combination		of Cycles	Tolerance	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	0.0000001	0.00072777
37	Yes	4	0.0000001	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	0.00001168
42	Yes	4	0.00000001	0.00001108
43	Yes	4	0.00000001	0.00001100
44	Yes	4	0.00000001	0.00001509
45	Yes	4	0.00000001	0.00001011
46	Yes	4	0.00000001	0.00001030
47	Yes	4	0.00000001	0.00001362
48	Yes	4	0.00000001	0.00001493
49	Yes	4	0.00000001	0.00001111
50	Yes	4	0.00000001	0.00001542

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	0	٥
L1	155.5 - 110	6.103	48	0.2815	0.0003
l.2	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	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	۰	o	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-VTM w/ Mount	48	2.982	0.2416	0.0002	46366
	Pipe				2.2002	.0000

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	0	٥
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	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
fţ		Comb.	in	. •	•	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-VTM w/ Mount	20	15.148	1,2274	0.0008	9153
	Pipe					

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	Lu	Kl/r	А	P_u	φ <i>P</i> _n	Ratio Pu
	ft		fŧ	ft		in²	K	K	Φ_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	Size	M _{ux}	ф М лх	Ratio M _{ux}	M_{uy}	ϕM_{ny}	Ratio _{Muy}
	ft		kip-ft	kip-ft	ϕM_{0x}	kip-ft	kip-ft	ϕM_{nv}
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	Size	Actual Vu	φVn	Ratio Vu	Actual Tu	φ <i>Τ</i> _n	Ratio Tu
	ft		K	K	ϕV_n	kip-ft	kip-ft	${\phi T_n}$
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	Ratio Pu	Ratio M _{ux}	Ratio M _{uy}	Ratio Vu	Ratio T₀	Comb. Stress	Allow. Stress	Criteria
	ft	φ <i>P</i> _n	ф <i>M</i> _{nx}	ϕM_{n_V}	ψVn	ΦT_n	Ratio	Ratio	
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)	800.0	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	øP _{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

	0 , , , , , , , <u>_</u>	
Pole Manufa	cturer:	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	Stiffener Data (Welding at both sides)						
Config:	0	*					
Weld Type:]					
Groove Depth:	1979	< Disregard					
Groove Angle:	87.	< Disregard					
Fillet H. Weld:	4,111]in					
<u>Fillet</u> V. Weld:	100	in					
Width:		in					
Height:		in					
Thick:	100	in					
Notch:		in					
Grade:	17.	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/ń): Allowable Axial, Φ*Fu*Anet:

260.0 Kips Anchor Rod Stress Ratio: 57.4% Pass

Base Plate Results Flexural Check Rigid Base Plate Stress: 14.0 ksi AISC LRFD Allowable Plate Stress: 54.0 ksi φ*Fy Base Plate Stress Ratio: 25.9% Pass Y.L. Length: 36.47

<u>n/a</u>

Stiffener Results

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

Pole Results

Pole Punching Shear Check:

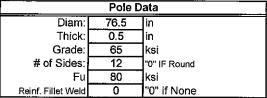
n/a

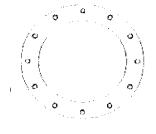
149.2 Kips

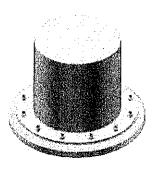
Rigid

AISC LRFD

φ*Tn





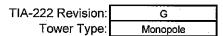


^{* 0 =} none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

^{**} 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





Block Foundation?:	Γ

Superstructure Analysis Reactions			
Compression, P _{comp} :	95	kips	
Base Shear, Vu_comp:	56	kips	
Moment, M _u :	5955	ft-kips	
Tower Height, H:	155.5	ft	
BP Dist. Above Fdn, bp _{dist} :	3.875	in	

Pier Properties				
Pier Shape:	Square			
Pier Diameter, dpier:	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 _{pler} :	3	in		

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

Material Properties		
Rebar Grade, Fy :	60000	psi
Concrete Compressive Strength, F'c:	4000	psi .
Dry Concrete Density, δc:	150	pcf

Soil Properties				
Total Soil Unit Weight, γ:	130	pcf		
Ultimate Gross Bearing, Qult:	21.000	ksf		
Cohesion, Cu:	0.000	ksf		
Friction Angle, $arphi$:	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		

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	
Overturning (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%

<--Toggle between Gross and Net

CCISeismic - Design Category

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



Analysis Date: 6/6/2018

	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			<u> </u>
Structure Class =		II		(Table 2-1)	
Site Class =	I) - Stiff So	iI	(Table 2-11)	
Spectral response acceleration short periods, $S_s =$		0.177	•	USGS Spiemic	rool
Spectral response acceleration 1 s period, $S_1 =$		0.062		<u>USGS Seismic Tool</u>	
				•	
Importance Factor, I =	1.0		(Table 2-3)		
Acceleration-based site coefficient, F_a =	1.6		(Table 2-12)		
Velocity-based site coefficient, F_v =	2.4		(Table 2-13)		
				•	
Design spectral response acceleration short period, S_{DS} =		0.189		(2.7.6)	
Design spectral response acceleration 1 s period, S_{D1} =	0.099		(2.7.6)		
Seismic Design Category - Short Period Response =		В		ASCE 7-05 Table 11.	6-1
Seismic Design Category - 1s Period Response =			ASCE 7-05 Table 11.		
				•	
Worst Case Seismic Design Category =		В		ASCE 7-05 Tables 11	1.6-1 and 6

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

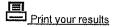
ASCE 7-05 Windspeed: 105 (3-sec peak gust in mph) ASCE 7-93 Windspeed: 82 (fastest mile in mph)

:3 Dinastr NESOTA MATRICE. Chigago IDWA (LL Mois **OPhiladelphia** $mn_{01}\,n_{3}$ MISSOURE RENTHORY VIRGIDIA HEREH OAROLINA TUBNESHEL. ARKANSA'S អាននាននាមា GAROUNIA ALAHAMA OFORGIA POUPHANA ^{ရီ}၆၀၀gle Map data @2018 Google, INEGI Crobib?

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

*Mifes per hour **Mean Recurrence Interval

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



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.

Sponsored by the ATC Endowment Fund • Applied Technology Council • 201 Redwood Shores Parkway, Suite 240 • Redwood City, California 94065 • (650) 595-1542



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 Complian	ce Summary
Compliance Status:	COMPLIANT
Site total MPE% of	
FCC general	19.91 %
population	13.31 %
allowable limit:	



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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μ W/cm2). The number of μ W/cm² 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 (μ W/cm²). The general population exposure limits for the 850 MHz Band is approximately 567 μ W/cm². The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 μ W/cm². 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 manufactures 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.

21 B Street Burlington, MA 01803 Tel: (781) 273.2500 Fax: (781) 273.3311

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector	В	Sector:	
Antenna #		Antenna#	1	Antenna #:	1
* + Make / Model: 1	Commscope NNVV-65B-R4	Make/iModel	Commscope NNVV-65B-R4	Make / Model	Commscope NNVV-65B-R4
Gain	12.75 / 15.05 dBd	Cain	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
A. Se (ERP.(W):	7,378.61	ERP (W)	7,378.61	ERP (W):	7,378.61
Antenna A I MPE%	2.12 %	Antenna B I MPE%	2.12 %	Antenna C1	2.12 %
Antenna #:	2	Antenna#	2	Antenna #:	2
	RFS		RFS	4.0	RFS
Make/Model	APXVTM14-ALU-	Make / Model:	APXVTM14-ALU-	Make / Model:	APXVTM14-ALU-
	I20		I20		I20
.s. x (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	88	Channel Count	8
Total TX Power(W):	160 Watts	Total IX 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 w	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 (μW/cm²)	Frequency (MHz)	Allowable MPE (µW/cm²)	Calculated / % MPÉ
Sprint 850 MHz CDMA	11	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%
	100 mg/s (100 mg/s)					Total:	3.58%

21 B Street Burlington, MA 01803 Tel: (781) 273.2500 Fax: (781) 273.3311



Summary

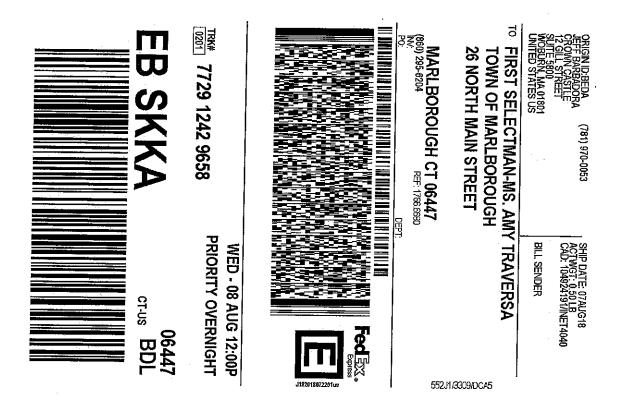
All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

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.



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.

2. Fold the printed page along the horizontal line.

3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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

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



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

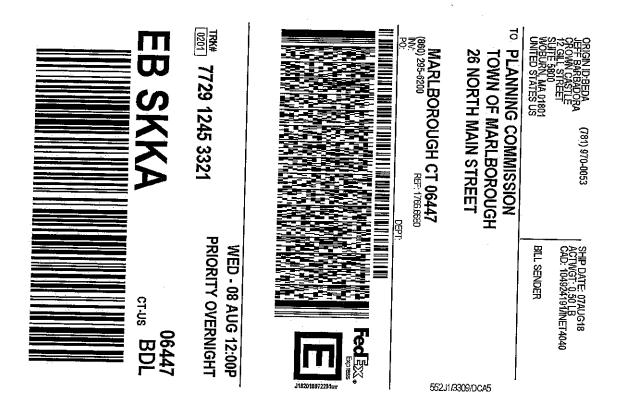
Standard transit:

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.





After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.

2. Fold the printed page along the horizontal line.

3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-

delivery misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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



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

All weights are estimated.

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



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.