



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: 876366

Sprint Site ID: CT33XC010

101 Pierce Road, Preston, CT 06365

Latitude: 41° 32' 17.46"/ Longitude: -71° 57 6.0"

Dear Ms. Bachman:

Sprint currently maintains Six (6) antennas at the 150-foot level of the existing 155-foot monopole tower at 101 Pierce Road, Preston CT. The tower is owned by Crown Castle. The property is owned by Panus Farm LLC. Sprint now intends to replace six (6) antennas with six (6) new antennas. These antennas would be installed at the 150-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 on August 3, 1999 by the Town of Preston, CT, site plan#2-99 and Special Exception 4-99 for the installation of a monopole.

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 The Honorable Robert Congdon, First-Selectman, Town of Preston, Board of Selectman, as well as the property owner, and Crown Castle is the tower owner.

- 1. The proposed modifications will not result in an increase in the height of the existing tower.
- 2. The proposed modifications will not require the extension of the site boundary.
- 3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
- 4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

The Foundation for a Wireless World.

CrownCastle.com

- 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.

Sincerel

Jeffrey Barbadora Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

781-729-0053

Jeff.Barbadora@crowncastle.com

Attachments:

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

Tab 2: Exhibit-2: Structural Modification Report

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

cc: The Honorable Robert Congdon, First-Selectman Town of Preston 389 Route 2 Preston, CT 06365 (860) 887-5581 ext.105

> Panus Farm LLC 60 Pierce Road Preston, CT 06365



TOWN OF PRESTON

TOWN OFFICES

589 ROUTE 2

PRESTON, CONNECTICUT 06365-8830

Po Don for 51912ture 0 9/1/99

FILE COPY

Date: August 10, 1999

Certified Mail

Sprint Spectrum, L.P.
One International Blvd
Suite 800 Mahwah New, Jersey 07495

Dear Attorney Regan:

At the regular meeting of the Preston Planning and Zoning Commission held on
August 3, 1999, the Commission reviewed application Site Plan # 2-99 and Special Exception 4-99
for the installation of a monopole and other associated work at 101 Peirce Road
The Commission voted unanimously to approve the subject application with the following
modifications:

1. Note sight distance for the driveway on the plan.

2. Gravel drive shall have 6" of gravel rather than 4". The driveway shall have a paved apron. A driveway permit is required for its installation.

3. An As-built plan must be provided for the project after the construction is completed. The as-built must be provided prior to the release of the bond.

4. A bond for the site work in the amount of \$28,000.00 must be submitted on forms as provided by the town with the final format to be approved by the town attorney.

5. A bond in the amount \$29,500.00 must be posted for the tower dismantling. This bond is to be renewed every two years and must be renewed by August 3, 2001. In the event the bond is not renewed it will be a violation of this permit.

6. The Commission requested that a company representative contact the First Selectmen to afford the town due consideration to address the town's emergency communication needs.

Please provide one mylar copy of the plan revised in accordance with the above noted and produced or reproduced in compliance with section 7-31 of the Connecticut General Statues regarding requirements for the filing of a map. In addition, provide two (2) paper copies. After endorsement of the plan by the Chairman, the mylar copy of the plan must be filed with the Town Clerk's office.

BONDING: Prior to the endorsement of the plan the two bonds in the amount of \$28,000 and 29,500 must be filed with the Commission using the format as approved by the Commission (see attached forms). The Town will hold the bonds until such time the Commission approves their reduction or

OΤ

release. Any plan filed without the appropriate bond will be considered to be in violation with the approved plan and zoning regulations. In order for the Commission to consider a bond release or reduction, a letter requesting a release or reduction must be submitted to the Planning and Zoning Office two (2) weeks prior to the regularly scheduled meeting. This will allow adequate time to conduct a site inspection of the completed work. Unauthorized work could result in delays with the bond release or reduction by the Commission.

OTHER PERMITS REQUIRED: Prior to the commencement of any work, a zoning permit and other subsequent town and state permits must be obtained.

SITE INSPECTIONS: During the construction of the project, inspections will be conducted of the progress by the town staff. A forty-eight hour notice is required for the inspections. In the event that there is concern with the location of the structure, parking etc, the Zoning Enforcement Officer may require that a land surveyor licensed in the State of Connecticut locate the structure prior to construction. Failure to provide notice to the town of the work and failure to construct the project as shown on the plan without prior approval of the changes could result in problems with the issuance of Certificate of Occupancy and the release or reduction of the bond. Please contact the Planning and Zoning Office at 889-2529 to schedule an appointment to inspect the project at the following times:

- 1. After the installation of the erosion and sediment control.
- After the structure has been staked out and the footings are to be placed.
- 3. After the parking and sidewalks have been staked out.
- 4. Completion of the project.

If there are any questions regarding this application or if the staff can be of any assistance at any time during the project construction, please do not hesitate to contact the office.

Congratulations on the success completion of the application.

Dane / Kuleszayew)

Town Planner

cc: ZEO

First Selectman Inland Wetland Officer **Building Inspector** Walter and Ruth Panus

Town of Preston, CT



Property Listing Report

Map Block Lot

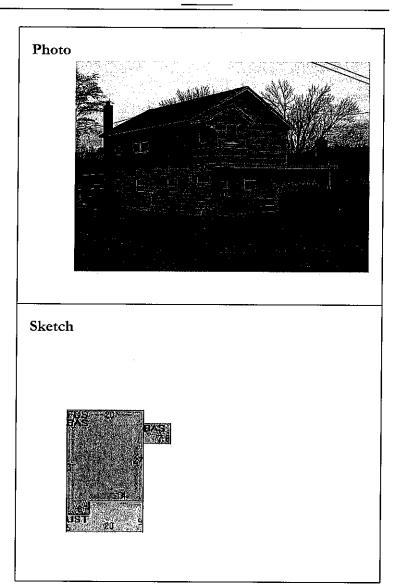
8-0-PIE1-101

Account

00059300

Property Information

	101 PIERCE I	KD	
Owner	PANUS FARM	VI LLC	
Co-Owner			
Mailing Address	60 PIERCE RI	СТ	06365
Land Use	1010 8	Single Fam MD)L-01
Land Class	R		
Zoning Code	R-80		
Census Tract	7001		-
Sub Lot			
Neighborhood	0050		
Acreage	198.43		
Utilities	Well,Septic		
Lot Setting/Desc	Rural	Low	-
Survey Map			
Foundation	8-0-PIE1-10	1	



Primary Construction Details

Year Built	1950
Stories	2
Building Style	Conventional
Building Use	Residential
Building Condition	Below Average
Floors	Carpet
Total Rooms	6

Bedrooms	4 Bedrooms
Full Bathrooms	1
Half Bathrooms	1
Bath Style	Average
Kitchen Style	Average
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp

Wood Shingle
Plastered
Hot Water
Gas
None
1326
1170

Town of Preston, CT

Property Listing Report

Map Block Lot

8-0-PIE1-101

Account

00059300

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	58000	40600
Extras	0	0
Outbuildings	34400	24100
Land	955000	97600
Total	1047400	162300

Sub Areas

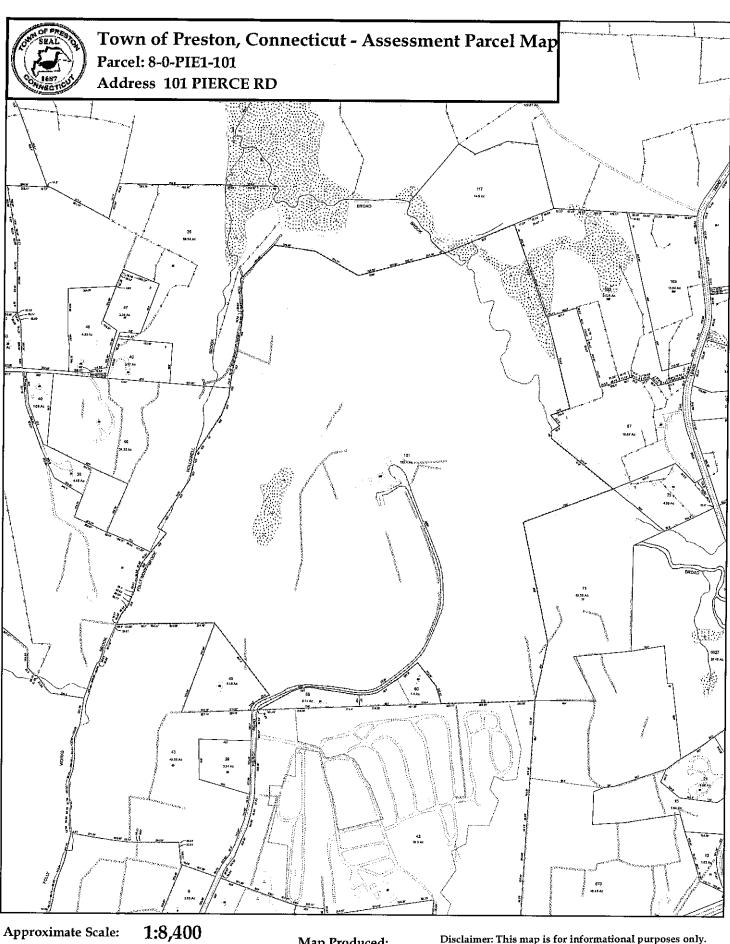
Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	606	606
Upper Story, Finished	564	564
Utility, Storage, Unfinished	156	0
		<u> </u>
		
	1	
Total Area	1326	1170

Outbuilding and Extra Items

Туре	Description
GARAGE-AVE	2088.00 S.F.
SILO-WD OR CNC	3432.00 DIAxHT
1 STORY W/LOFT	1744.00 S.F.
POLE BARN	5124.00 S.F.
SHED FRAME	270.00 S.F.
LEAN-TO	930.00 S.F.
W/LIGHTS ETC	4090.00 S.F.
GARAGE-AVE	492.00 S.F.
	1

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price	
PANUS FARM LLC	196/ 38	12/3/2015		
SHEA JOAN	193/ 185	11/19/2014		
SHEA JOAN - TRUSTEE	193/ 180	11/19/2014		
PANUS RUTH L ESTATE OF	190/ 842	11/26/2013		
PANUS RUTH L TRUSTEE	188/ 206	3/26/2013		
PANUS RUTH L	153/ 96	12/16/2004		
PANUS WALTER C SR + RUTH L	0055/0353	3/9/1973	0	



0 150300

600

900

1,200

Map Produced:
June 2018

Disclaimer: This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Preston and its mapping contractors assume no legal responsibility for the information contained herein.

print



PROJECT:

SITE NAME:

DO MACRO UPGRADE

Sprint

6580 Sprint Pertoway Overland Park, Kansass 66251

WAPPINGERS FALLS / PRESTON CITY

SITE CASCADE: CT33XC010

SITE NUMBER:

876366

the solutions are endiess 23 Waterster States Rd Albert, NY 1220 Phase: 10-400-0274 J FXX: 510-510-0793 BYW.Infrigs.co. 25 Masch 152-45 FROM ZERO TO INFIN NFINIGY®

PRESTON, CT 06365

101 PIERCE ROAD

SITE ADDRESS:

SITE TYPE:

MARKET:

CAST

CRO/

MONOPOLE TOWER

NORTHERN CONNECTICUT

SPINI PROPOSES TO LICOTY AN EXISTING UNLAWNED TELECOLUMUNICATIONS FACULTY. REMOVE (8) PANEL ANTENNAS INSTALL 2.5 EQUIPMENT HISDE EXISTING N.V. MABIS CABINET NSTALL (12) ARH» ON TOMER (8 800, 3 1900, 3 2500) NSTALL (6) PANEL ANTENNAS (3 800/1900, 3 2500) Walmy (4) Habber Cybres SETIBIO XMOS (8) ZMOTER PECAND OF AN EXSTRACT HIS TO STRAIN IN STRAINS ARE NOT STRAIN AND HOTELS. THE AND HOLLER. THE AND HOLLER. THE AND HOLLER. THE AND HOLLER. DRAWING INDEX DESCRIPTION THESE DOCUMENTS ARE CONFIDENTIAL AND ARE
THE SOLE PROPERTY OF SPRINT AND MAY NOT BE
REPRODUCED, DESCEMBANTED OR REDEFFIRIBUTED
WITHOUT THE EMPRESS WRITTEN CONSENT OF

LATITUDE (NAD83): 41' 32' 17.46" N 41.538163

NOW LONDON

ONGITUDE (NAD83); -71' 57' 6.0" W -71.951867

CONNECTION STITNE COUNCIL

ZONING DISTRICT:

TOWER OWNER:
CROWN ATLAWTE COMPANY LLC
ZODO COMPONATE DRIVE
CANONESURO, PA 15317
(704) 405-8565

SITE INFORMATION

9







	_		L
CT33XC010	- BITE CASCADE	PRESTON CITY	WAPPINGERS FALLS /

1. HITERWITCHAM, BRILDING CODE (2015 BC)
2. IN-722-C OK MIETS TEITING (2015 BC)
3. HEFN 790 - LUSHINGS PROTEITING (2025
4. 2011 NATURAL BLETTING CODE GE LOTEST ERITING
4. ANY OTHER WITCHAM, OR LOCAL APPLICABLE CODES,
40.523 RECENT ERITINGS

ALL WERK, SHALL DE FERFORADD AND MATDRAIS NETHLE N ACCHRONACE WITH THE CURRENT DETUNGS OF THE TULLINGS COLDES AS ADDITED BY THE LOCAL CONCERNAG MYNORIDE NO MOTHERS HE TELS PLANES IS TO BE CONSTRUED TO FENANT WORK HOT CONTIDUANG TO THESE COLDES.

APPLICABLE CODES

POWER COMPANY: CONNECTICUT LINE & POWER (800) 286-2000

SPRINT CONSTRUCTION:

CROWN PM: SCOTT WATROSKI (201) 236-9228

101 PIERCE ROAD PRESTON, CT 06365

TITLE SHEET & PROJECT DATA

T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION OF 100 - SCOPE OF WORK

PART 1 - GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN COMMUNITION WITH THE SPERIF COMPRISCION STANDARDS FOR WISELESS STES, CONFRONT DUCLIENTS AND THE COMPRISCION SEAMINES DESCRIBE THE WORK TO BE PERFORMED BY THE COMPRISCION.

1.2 RELATED DOCUMENTS:

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

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

I HATIONALLY RECOGNIZED CODES AND STANDARDS:

THE WORK SHALL COMENY WITH APPLICABLE WITHOUGH AND LOCAL CODES AND STANDARDS, LATEST BUTCH, AND PORTICALS THEREOF, INCLUDED SUF HOT LIMITED TO THE FOLLDWARD.

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

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

3. GR-1089 CORE, ELECTROMARETIC COMPATIBLITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.

MATIONAL, FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NEPA).
 INCLIDING NEPA 70 (NATIONAL ELECTRICAL CODE — "HEC") AND NEPA 101 (LIFE SAFETY CODE).

S. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTIN)

6. MISSITUTE OF ELECTRONIC AND ELECTROOM. BASIMEDRS (IEEE)

7. AMERICAN CONCRETE INSTITUTE (ACI)

B. AMERICAN WITE PRODUCERS ASSOCIATION (AMPA)

10. American association of state hormay and transportation officials (aasmto) 9. CONCRETE REINFORCING STEEL INSTITUTE (CRS)

11. PORTLAND CEMENT ASSOCIATION (PCA)

13. BRICK INDUSTRY ASSOCIATION (BIA) 12 NATIONAL CONCRETE MASCHRY ASSOCIATION (NCMA)

15. NATIONAL ROOFING CONTRUCTORS ASSOCIATION (NRCA) 14. AMERICAN WELDING SOCIETY (AWS)

16. SHEET METAL AND AR CONDITIONING CONTRACTORS' (SMACNA) HATTONIAL ASSOCIATION

17. DOOR AND HARDWARE INSTITUTE (DH)

18. OCCUPATIONAL SAFETY AND HEALTH ACT (DSHA)

19. APPLICABLE BUILDING CODES WICLIUMO UNFORM BUILDING CODE, SOUTHERN BUILDING CODE, SOCK, AND THE INTERNATIONAL BUILDING CODE.

WORK: THE SUM OF TASKS AND RESPONSBILITIES IDENTIFIED BY THE CONTRACT DOCUMENTS.

COMPANY: SPRINT CORPORATION

PROJECT.

HE DESIGN BY AND PROPERSIONAL RESPONSIBILITY FOR DESIGN OF THE PROPERSIONAL HANNE PROPESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VEHICLE INFORMATION OF A CONTRACT IS BOUND TO ACCOUNTISH THE

HAID PARTY VEHICAS OR ACENTY, A KENDOR OR ACENTY WHITEMAS OR THE HOOK.

ACCOUNTIES SPECIFIC TASKS RELATED TO BUT NOT MELLUDED IN THE HOOK.

OFCI: OWNER FLYNNISHED, CONTRACTOR INSTALLED EGUIPMENT,

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

16 STE FAMILHAITY, CONTRICTING SWALL BE RESPONSIBLE FOR PARLILETING HARBOIT SHELL ALL CONTRICTION AND RESPONSIBLE FOR PARLICULAR WITH CONSTRUCTION. AND DESCRIPTIONS SHALL BE REQUEST TO THE ATTRIBUTAL OF THE STABLE CONSTRUCTION MACKET PRIOR TO THE CONSERVATION OF THE

Poynt of Capacy: Communication between syrint and the Contractor Shall Rion Through the Single Syrint Construction Manager Appointed to Manager The Project for Syrint.

OF-STE SUPPARSON THE CONTRICTOR SHALL SUPPARSE AND DIRECT HE WORK
AND SHALL BE REPORTED FOR CONTRICTOR SHALL BEIGHT DECORPRISED FOR CONTRICTOR SHALL BEIGHT OF COMPRETED SUPPARSON MY DECORPTING SHALL BEIGHT BEIGHT SHALL BEIGHT BEIGHT SHALL BEIGHT SHALL BEIGHT SHALL BEIGHT SHALL BEIGHT SHALL

Sommens, specifications, and define sequence at locate; the construction companion shall immediate a companion shall immediate a companion companion shall shall shall be the state of the companion companion companion shall shall shall shall also sheen at simulation sheet shall shal

THE LIBERT CHANNESS, SPECTPOLINES AND DETAILS SHALL BE CLEARY MARKED DALY MER DESALE, AND METAILS SHALL BE CLEARLY MARKED DALY OF THE DESALE AND SPECTED METAILS AT CONSTRUCTION COMPLETION, THIS LIBERT MARKED SET SHALL BE CREATED TO THE COMPANY OF CHANNESS TESTIMATED FOR SPECIAL TRANSPORT OF THE COMPANY'S ARE VEHICLE FOR PRODUCTION OF THE CHALL TRANSPORT

RETALS ARE INTENDED TO SHOW DESIGN WITERT. MODIFICIATIONS MAY RE REQUIRED TO SHIF LOB DIMENSIONS OR COMMITTIONS, AND SHALL MOTHER YEARN CONSTRUCTION MANAGER OF ARY VARIATIONS PRIOR TO PROCEEDING WITH THE MODIFICATION MANAGER OF ARY VARIATIONS PRIOR TO PROCEEDING WITH THE

DUDISIONS SHOWN ARE TO PRINS SERVICES WILESS WITTO DIFFERENCE.
SPANIO BRINGET GENERAL TO FREE REQUIRED CLEARING. SHOULD HERE RE
AND CRESSIONS REQUIRED THE CONTINUED COLUMNISTS, DOSTING CONTINUES
AND/OR DESIGN HEIGHT, THE CONTINUED SHALL BE RESPONSELE FOR GENERALS
A CLAREDICUM FROM THE SPRINT CINSTRUCTION MANAGER FROM TO
RECUESTION HITM THE SPRINT CINSTRUCTION MANAGER FROM TO

1.10 USE OF JOB SITE. THE CONTRACTOR SWALL CONFINE ALL CONSTRUCTION AND RELATED OFENHANDS INCLUSING SWADES AND STORAGE OF WITERALS AND ECHARANT, PROMONEY TRACTIONS, AND WITH STROMAGE TO THE LEASE PRACT, UNLESS CHIERWISE PERMITTED BY THE CONTRACT LOCKMENTS.

111 UILINES SERVEZS: WHERE RECESSION TO DUE DORMO PRES, ELECTRONAL WRES, DOWNING, CALES, ETC., OF UILINEY SERVES, OF OF REFER POLICIENTIAN OF COMMUNICATIONS SYSTEMS, THEY SHALL BE COMMUNICATION STREET, THEY SHALL BE COMMUNICATION THEY THE UTILITY COMPANY MODIFIES.

1.12 PERMITS / FETS: WHEN RECAINED THAT A PERMIT OR CONNECTION FET EF PAID TO 1.70 PERMITS / FETS WHEN RECAINED TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCK) FETS SWALL SET THE RESPONSEMENT OF THE CONTRIBUTION.

1.14 JETHODS OF PROCEDURE (NOPS) FOR CONSTRUCTION CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE POLLAMBIG HERMLEATON AND COMMISSIONIBIO PERFORM. 1.13 CONTRACTOR SHALL TAKE ALL MASSIRES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

NOTE: IN SHORT-PURM SPECIFICATIONS ON THE DRIMANCS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EN-568, AND TS-0163

1.15 USE OF ELECTRONIC PROJECT IMMUNERABILITY SYSTEMS:

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

AL TRAPORAY ULUTES AND RECUITES IN COMPANION SHALL BE RESPONDED FOR THE CONSTRUCTION OF COLUMN THE CONSTRUCTION OF COLUMN THE STATE OF COLUMN THE CONSTRUCTION OF COLUMN THE STATE OF THE CONSTRUCTION OF COLUMN THE STATE OF THE COLUMN THE STATE OF THE COLUMN THE STATE OF THE COLUMN THE C

ACCESS ID WORK. THE CHARMACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED CONTROL PROPERTY PERSONNEL AND AUTHORIZED POPURESDICTINESS OF THE WORK.
ACCHIECT/ENGINEER DURNING ALL PHISES OF THE WORK.

A TESTINE, RECURRENDING FOR TESTING OF THE CONTRIBUTION SHALL BE 48 INDEXENTED HERCHTH, OUT THE CONSTRICTION DRIVENING, AND IN THE HERDRIGHT SHALL CONTRIBUTION OF THESE SPECIFICATIONS, SHALL CONTRIBUTION CONTRIBUTION CONTRIBUTION CONTRIBUTION CONTRIBUTION CONTRIBUTION CONTRIBUTION SHALL COOPEDATE WITH JAD PROMISE A WORK AREA FOR COMPANY'S TEST AGENCY.

DMENSONS; VENETY DIMENSIONS INDICATED ON DIPMENSIONS WITH FIELD DIMENSIONS REPORTE FARMINGS WITH FIELD DIMENSIONS.

3.5 EXEMINA CHARACTER HOTELY THE SPENT CONSTRUCTION MANAGER OF EXSTRAC CONSIDERAL SPENDING FROM THOSE INCLUSED ON THE SPANNINGS. ON INT REMOVE OR ALTER STRUCTIONAL COMPONENTS WITHOUT PROOF WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

<u> Section 01.206 — Company furnished material and equipment</u> Part 1 — General

Sprint

6580 Spatra Parkway Overfand Park, Kenses 56251

1.1 HE WORK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONTINUETRON WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWNASS INSCRIBE THE WORK TO BE PERFURILID AT THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

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

SPRAY "STANDARD CONSTRUCTION DETAILS FOR WHELESS SITES ARE INCLIDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

the sciulizas are gradiens an Watervillet Shaher Id | Albest, NY 1220 Phanet Fib-1904791 | Frat Fid-89-0791 FROM ZERO TO

ZFIZIGY

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

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

1 ACCEPT DELIVERIES AS SHEPPED AND THRE RECEIPT.

2. VEXETY COMPLETENESS AND CONDITION OF ALL DELIVERIES. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE DISURANCE PROTECTION AS REQUIRED IN AGREEMENT.

4. RECURD ARY DEPECTS OR CHANGES AND WITHIN THENTY—FOUR HOURS AFTEN RECEPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF

E. PROVIDE SECURE AND HEISESARY WEATHER PROTECTED WHEHOUSING.

3.2 DELIVERABLES: 6. COORDWATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELINEUM AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SIZE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS ARECESSARY IN ACCORDANCE WITH COMPLAY PRACTICE, AND AS DIRECTED BY COMPLAY. comparies shappens and receipt documentation in accordance with company practice.

SECTION 01 300 - CELL SITE CONSTRUCTION CO. PART 1 - GENERAL UPLOW DOCUMENTATION AND SPRANT SITE MANAGEMENT SYSTEM (SLES) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

1.1 THE WORK THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE CONTROL CONTINUED OF THE CONSTRUCTION DRAWNES DESCRIBE THE WORK TO BE PERFORMED BY THE CONTROL CONTROL DRAWNESS DESCRIBE.

1.2 RELATED DOCUMENTS

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

1.3 NOTICE TO PROCEED IL SPRINT "STANDARD CONSTRUCTION DETAILS FOR WRITELSS SITES ARE INCLUDED IN AND MALE A PART OF THESE SPECIFICATIONS HEREINTH.

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

CHI. 1—800—188—7011 10 NOTEY THE CROWN CASTLE NOT WINN HAS BETAIN. B. UPON RECEIVANG MOTIOS TO PROVISED, CONTRACTOR SUALL PULLY PERFORM ALL

ART 3 — PRODUCTS (NOT USED) ART 3 — EXECUTION 3.1 FUNCTIONAL REGURENCES:

A THE AUTHORIES DESCRIED IN THIS PROPORTION REPORTS INFORMATION AND PROCESSES REQUESTED TO SELECTION THE THE WAY, THE AUTHORIS OF SELECTIONS THAT WAS THE AUTHORIS FOR THE SECRETARY TO SELECTIONS FOR THE SECRETARY TO SELECTION FOR AUTHORIS FOR THE SECRETARY FOR THE SECRETARY FOR SECRETARY FOR THE SECRETARY PROCESSES.

SUBJECT SPECIFIC DOCUMENTATION AS BEDICATED FEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. WANGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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





HESE DOCUMENTS ARE CONTIDENTAL AND ASE IT SOLE FROMERTY OF SPINIT AND HAY NOT BE PRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPIRES WRITTEN CONSENT OF SPRINT.

REVISIONS:	l	ı	ı
DESCRIPTION	DATE	BY	REV
SSUED FOR CONSIDER, ROK	07/15/18	2	2
ALED REDESICH	07/01/11	8	-
ESSES FOR CONSPRICTION	01/66/16	Ħ	۰
ESSED FOR REACH	11/11/17	7	-
			Ì

WAPPINGERS FALLS / PRESTON CITY

CT33XC010

101 PIERCE ROAD PRESTON, CT 06365

SPRINT SPECIFICATIONS

SP-1

CONTINUE FROM SP-1

- 1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITRAGICS
- PREPARE GROUND SITES: PROVIDE DE-GRUBBING, AND ROUGH AND FINA GRADING, AND COMPOUND SUBFACE TREATMENTS.
- NAMAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKGARI.
- INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
- INSTALL ABOVE GROUND GROUNDING SYSTEMS.
- PROVIDE NEW HAAC INSTALLATIONS AND MODERCATIONS.
- 7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS MORCATED.
- B. INSTALL ROUGE, ACCESS WAYS, CLIEBS AND DRAWS AS INDICATED.
- 9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
- 10. PROVIDE AMERIKA SUPPORT STRUCTURE FOUNDATIONS.
- 11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
- 12. INSTALL COMPOUND FENCING, SIGHT SHEEDING, LANDSCAPING AND ACCESS BARBIERS.
- 16. INSTALL TOWERS, ANTENIA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED. 15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLLTIONS 14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HERETHAFTER 13. PERCON INSPECTION AND MATERIAL TESTING AS REQUIRED MERENATION.
- 17. HESTALL CELL SIE PADOS, MICROWAE, GPS, COMMA MANAUE, ANTONNAS, COROSS BANG COURPLES, TONER NO MAPLHERS, LIW MOSE MAPLHERS, AND RELATED EQUIPMENT.
- PERPANAL, DOCUMENT, AND GLOSE OUT ANY CONSTRUCTION CONTROL: DOCUMENTS THAT MAY BE REQUIRED BY CONSTRUMENT AGENCIES AND LANGUARDS.
- 20. RELIAM ON STE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSET AS NEEDED URTL. SITE IS DEDIED SUBSTITUTINELY COMPLIES, AND PLACED "ON ARE." 19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
- 3.2 CENERAL RECURRENENTS FOR CHAI, CONSTITUTION
- COMPACTOR SMALL KEEP THE SITE FREE FROM ACCUMULATING WHITE MATERIAL DEBMIS, AND TRUSH, AT THE COMPACTION OF THE WORK, COMPROCIOR SMALL COMPACTOR FROM THE SITE ALL REMAYING RUBBESH, MUPLICATINE, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAR AND CLEAR OF DEBRES.
- COMPACTOR SHALL TAKE ALL REASONABLE PREDUPIONS TO DISCOVER AND LOCKIE ANY HAZARDOUS CONDITION.
- 2. CONTRACTOR AGRESS TO USE CHRE WHE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR LAY RESULT IN OR CAUSE THE HAZAGOOLS CONDITION TO BE TURNETHE RELEASED IN THE EMPROPHIEMT, OR TO FLIKTHER EXPOSE WIDMINUMS TO THE HAZAGO.
- CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LAITE, SHOULD AREAS CUSTREE THE FROLETT UNITE BE APPECTED BY CONTRACTIONS ACTIVITIES, CONTRACTOR SHALL MATERIARD. TREND TO ORIGINAL CONSTITUTION OF THE PROJECT CONTRACTOR SHALL MATERIARD.
- E COMPLICT TESTING AS REQUIRED MEREIN.

3.3 DELIVERWALES

- A COMPACTUR SHALL REVIEW, APPROVE, AND SUBJET TO SPRINT SHOP DEMONACE PRODUCT DATA, SAUPLES, AND SMILLAR SUBJETULS AS RECUSED HEREMAFTER.
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING.
 DOCUMENTATION SHALL BE FORBUADED IN ORIGINAL FORMAT AND/OR (PLONGED INTO SAIS.
- 1. ALL CORRESPONDENCE AND PRELIMBURY CONSTRUCTION REPORTS.
- PROJECT PROGRESS REPORTS.
- CVL CONSTRUCTION STATE DATE (POPULATE FIELD IN SMS AND/OR FORMAL NOTIFICATION).
- ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORMARD MOTIFICATION).

- LINES AND ANTENNA HISTOLL DATE (FORWARD FIELD BI SMS AND/OR FORWARD MOTERCATION).

- Tower construction start date (populate field in SMS and/or formard notifications).

- 14. STE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SAS.

- 1.2 RELATED DOCUMENTS:

- 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.

- 1.4 TESTS AND INSPECTIONS:
- A. THE CONTRACTOR SHALL BE RESPONSERE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROLECT DOCUMENDATION.
- 1. COAX SWEEPS AND FIBER HESTS PER CURRENT VERSION OF SPRINT'S TS-0200 ARTERNA LINE ACCEPTANCE STANDARDS.

- REQUIRED CLOSEOUT DOCUMENTATION SACTICES, BUT IS NOT LIMITED TO THE FOLLOWING:

- Power distall date (populate field in Sus and/or forward) notification).
- TELCO READY DATE (POPULATE FIELD BY SMS AND/OR FORWARD MOTHSCATION).
- $\ensuremath{\mathsf{PPC}}$ (or sylver) distall date (populate field in sais and/or formats autholition).

- 10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FEED IN SMS AND/OR FORWARD NOTIFICATION).
- BTS AND HADIO ECUIPMENT DELIVERED AT SITE DATE (POPULATE RELD IN SILS AND/OR FORWARD NOTERCHYDNI).
- 12. NETWORK OPERATIONS HANDOFF CHICAGUST (HOC WILK) CONFLETE (UPLDAD FORM IN SMIS)
- CHIL CONSTRUCTION: CONFLETE DATE (POPULATE FEED IN SAIS AND/OR FORMARD HOTERCATION).

- SECTION 01.400 -- SUBMITIALS & TESTS
 PART 1 -- CHURNAL
 1.3 THE WARK THESE SYMBOOD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH
 1.5 THE WARK THESE SYMBOOD CONSTRUCTION SPECIFICATION DRAWNESS DESCRIBES
 WARK TO BE PERSONALED BY THE CONFIDENCE THE
- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- BIT SPREMITYSTANDAND CONSTRUCTION DELPACE TORTWIRELESS SHESTARE INCLUDED THE
- THE MORK IN ALL ASSECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWWAS AND THESE SPECIFICATIONS.
- SUBJUST THE FOLLOWING TO COMPANY REPRESENDATIVE FOR APPROVAL
- CONCRETE MIX-DESIGNS FOR TOWER FOURMATIONS, ANCHORS PERS, AND CONCRETE PAYING.
- 3. SPECIAL PHISHES FOR INTERIOR SPACES, IF ANY.
- 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWFINGS.
- 5. CHEMICAL GROUNDING DESIGN
- ALTERNATS AN THE COMENT'S REQUEST, ANY ALTERNATION THE MEDIANS OR METHOUS SPECIFICAL SMALL AS MANIFESTED TO SERVE SPECIFICATION MANAGEST FOR APPROVA FROM TO BERNO SEPTED TO SERVE, STREM THAL READY AND APPROVE CHAIN THOSE RELIESTS MAKE IN MERIOL AN OUTBALL APPROVALS BELL DE COMEDISED. SHAFFIN, AND APPROVAL THE MESTED AND SERVE A MEDISHER PRODUCT, OF CONDESSION OF CONTROLLING MEMOREMENT MESTED.
- CONTRACTOR SHALL ACCOUNTSH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- AGI, AZHAJIH AND DOMHTIJI USING ELECTRONIC COMMERCIAL MACE-FOR-THE-PERFOXE ANTENNA ALKRIMENT TOOL
- COMPAGNOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK DESIFIED AS UNOCCEPTABLE IN SIZE DESPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- COMPUNA DOMNIET, ACL UPLOMO REPORT PROMA AMERIMA ALCHAESHI TOOL. TO STEEDEN, TOOK, 465. MISTRALEDI AZBAUTHI, DOMNIETET, AMD ACL AUSTI COMPUNAL TO THE RF DATA SMEETS. SMEET AND HEBER TEXTS
- SCANABLE BARCODE PHOTOCRAPHS OF TUNER TOP AND HACCESSBLE SERALIZED EQUIPMENT
- 3. ALL AWAYABLE JUBISTIETONAL INFORMATION
- PDF SCAN OF REDUBES PRODUCED IN FILE

- LIEDY MANUERS
- 9 CONSTRUCTION AND COMPSSIONING CHECKLIST COMPLETE WITH NO DEFICIENT TIPLES

FROM ZERO TO INFI

NFINIGY®

- PART 2 PRODUCTS (NOT USED)
- PART 3 EXECUTION
- 2.5 REQUIREMENTS FOR TESTANCE
- A. THEO PARTY TESTING AGENCY:
- WERN THE USE OF A THRO PARTY MID-PRICORY TESTING APPLY IN ROUMERS, THE ACADY THAT IS SECTION MAD PERFORMAL SIZE WORK ON A RECEIVER SESS IN THE STATE WHORE THE PROJECT IS COUNTED AND HAVE A THROMOSI HUDDESTANDING OF LOCAL MANUBLE, MITERIALS, MICLIONIC THE SOIL, ROCK, AND GROUNDERSORES COMBINIONS.
- EXPERIENCE IN SOLLS, CONCRETE, WASONRY, ACCRECATE, AND ASPINATIONS IN NEEDED. THE THEO PARTY TESTING ACRESY IS TO BE FAMILIAR WITH THE APPLICABLE PRODUNCING TORN THE TESTING ACRESY IS TO BE FAMILIAR WITH THE LISTIN, AND SAFETY ISSUES.
- 3.2 RECHARGO TESTS: 4. EXPERIENCE IN SOLS, CONCRETE, MISCHRY, AGGREGATE, AND ASPINIT TESTING USING ASTM, AMSJID, AND OTHER METHODS IS NEEDED.
- CONCRETE CYLANDER BREW TESTS FOR THE TUNER AND ANCHOR FOUNDATIONS AS SPECIFED IN SECTION: PORTLAND CEMENT CONCRETE PANNO

CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FULLDWING:

- ASPHALTE DENSITY IDSIRNA AS SPECIFIED IN SECTION: HOT MAX ASPHALTE PARKE.
- FIRST QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PARISIC.
- Testing registed under section, agregate base for access roads, pads and archor locations
- STE RESSIANCE TO EARTH TESTING PER EXHIBIT: CELL STE GROUNDING SYSTEM DESIGN. STRUCTURAL BACKRILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
- ANTENNA AND COAX SWEEP TESTS PER ECHEM: ANTENNA TRANSACSION LINE ACCEPTANCE STANDARDS.
- 9. ALL OTHER TESTS REGULARD BY COMPANY OR JURISDICTION. B. GROWINGHO AT ANTENNA WASTS FOR GPS AND ANTENNAS

SHOKEBASIN CERTICIES ET

- B. CONDUCT INSPECTIONS SHELLDING BUT NOT LIMITED TO THE FOLLOWING: A SCHEDULE HISPECTIONS WITH COMPANY REPRESENTATIVE.
- GROUNDING SISTEM RESIGNATION PRICE TO EARTH CONFEMILIER DOCUMENTED WITH DIGITAL PHOTOCOUPHS BY CONTRACTION, APPROVED BY AGE OR SPRINT REPRESENTATIVE.
- 2. FORMAL FOR COMPARE AND RESAR PLACEMENT PAIGN TO FOUR
 DOCUMENTS WITH DISTAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY AME
 OR SPANIT REPRESENTATIONS.
- COMPANION OF BACKEL MATERIALS, AGREGATE BASE FOR ROADS, FAIS, AND ANCHORS, ASTHALT PARINE, AND SHAFT BACKEL FOR CONCRETE AND WOODD PALES, BY INDEPENDENT THROU PARTY AGRECY.
- PRE— AND POST—CONSTRUCTION ROOFTOP AND STRUCTURAL MISPECTIONS ON EXISTING PACIFIES.
- TOWER EXECUTION SECTION SEACHING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THISD PARTY ACCION.
- ahtema azmath , dorn til and per sunlight togi, sursight Historients antemalish aligndent togi. (aat)

DESTRIANDE (A-PRILI DENNINGS IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGE MENTINGS IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGE MENTING INDEPENDENCE AND SERVICE OF MENTING INDEPENDENCE ANY PELD CHANGES IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING INDEPENDENCE ANY PELD CHANGES IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, ANY PELD CHANGES MENTING IN AUTOCHO AND POT FITBANTS, AND POT FITBANTS MENTING IN AUTOCHO AND POT FITBANTS MENTING FITBANTS MENTING IN AUTOCHO AND POT FITBANTS MENTI

Sprint

6580 Sprint Parkway Overland Park, Kensen 667.51

- FRUIL PAYMENT APPLICATION
- REQUIRED FINAL CONSTRUCTION PHOTOS
- ALL POST HTP TASKS SYCHARING DOCUMENT LIPLONDS COMPLETED BY SITERRA (SEPRINTS DOCUMENT REPOSITIONY OF RECORD).
- 1.5 COMMUSSIONENC: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPA
- 1.8 HIEDRATION: PERFORM ALL INTEGRATION ACTIVITIES AS RECURRED BY APPLICABLE MAPS.
 - the solutions one engless
 oss wearwise there is a labor, NY 1310
 these Standard From \$1-495-0993
 and scheme 125-48

CROWN



THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPHINT AREA MAY NOT BE REPRODUCED, DISSEMINATED ON REDISTRIBUTED WITHOUT THE EXPRENTS.

SPRINT.

KISIN DID TAKEBARAN	The latest	Ш	
ISSIED FOR CONSTRUCTION	07/19/18	용됨	- 2
ISSUED FOR CONSIGNORDIA	91/90/10	313	Б
ASSUED FREE REMEDIT	11/21/17	a	Т
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		I	IГ

PRESTON CITY

WAPPINGERS FALLS /

CT33XC010

101 PIERCE ROAD PRESTON, CT 06365

SPRINT SPECIFICATIONS

SP-2

CONTINUE FROM SP-2

- VERHICATION DOCUMENTED WITH THE AMENIA CHECKLIST REPORT, BY AME SITE DEVELOPMENT REP. OR RE REP.
- FIVAL INSPECTION CHECKLIST AND HANDOFF WAX (HOC.). SIGNED FORM SHOWING ACCEPTINCE BY FIELD OPS IS TO BE UPLOADED WITD SIKE.
- 10. SCAN-ABLE BANCODE PHOTOGRAPHS OF TOWER TOP AND BACCESSBLE SERVALIZED EQUIPMENT COAK SWEED AND FREER TESTING DOCUMENTS SUBMITTED VA. SMS FOR RF APPROVAL.
- 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
- 12. POF SCAN OF REDUNES PRODUCED IN FIELD
- THE COMPACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CURRECTIONS TO ANY WORK DEHINED AS LIMUSEPPABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- Omeracidan arectansa and corectans apacaress shall be documenta by the compactors with weight apparts and protocopase, entoquaries unst be doesn, and of sufficient outling to layer some he stockholomase construction, froncopares suits of layer sometime the protocopase that and be labeled with the ste coscade named, site name, descriptor, and date.
- delyarales: Test and inspection reports and closediit docimentation stall be liplanded to the sais and/or formasced to sprint for inclusion into the primarent site files,
- The following-test and inspection reports shall be provided as applicable.
- 1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
- 3. SITE RESISTANCE TO EARTH TEST. 2. STRUCTURAL BACKFILL COMPACTION REPORTS.
- ANTENNA AZBIUTH AND DOWN TILT VERIFICATION
- 5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS
- 6. COAX CUBLE SMEET TESTS PER COLUMNITS "ANTENNA LINE ACCEPTINGE STANDARDS".

B. REQUIRED CLOSECUT DOCUMENTATION INCLUDES THE FOLLOWING,

- 1. TEST WELLS, AND TREMENESS. PHOTOGRAPHS OF ALL TEST WELLS, PHOTOGRAPHS SHOWNED ALL OPEN ECCHANICIONS AND TREMENING PRIOR TO BACKFILLING SHOWNED A TAPE MEASURE VISIBLE BY THE EXCHANTIONS INDICATING DEPTH.
- 2. CANCATES, CARLACTIONS AND STRUMES, PHOTOGRAPIS SCHWING THYCOL.

 INSTILLATION OF CONSULTIONS AND CONNECTIONS: PHOTOGRAPIS SHOWNED
 TYPICAL BEND FACHUS OF INSTILLED GROUND WIRES AND GROUND ROD
 SYNCHOL.
- A. COMPORTE FORMS AND REMPORTANCE COMMODITE FORMING AT TOWERS AND DAY INVESTIGATION PROJECTION FOR THE COMMODITE SHOULD BE ANALYSIS WITH AND COMMONI STILES ONES, PROTOCOMPRIS SHOWNING COMMONISTE COURS OF SHOULD BE ANALYSIS WITH MEMORIAN WISE, PROTOCOMPRIS SHOWNING EXCHANGE WITH MEMORIAN WISE, PROTOCOMPRIS SHOWNING EACH ANGLES WITH TOWNING WITH STATE COMPONING SHOWNING EACH ANGLES AND WITH THE COMPONING SHOWNING SH
- ROUT TORS PRE-CONSTINUTION AND POST-CONSTINUTION YOUR INSPECTION AND PROTOCOMPACT OF THE ROOF AND INTERNAL TO DETERMINE AND COLMENT CONSTINUTION, ROOF TOP CONSTRUCTION RESPECTIONS AS RECURRED BY THE AMERICATION PROTOCOMPOST OF CHAIR THAN PLOTE.

 PHOTOGRAPHS OF COCHMISS/CHAIR EMT FROM ROOF;
- SITE LAYOUT PHOTOGRAPHS OF THE OVERALL COMPOSIND, INCLUDED ECHEWHERT PLATFORM FROM ALL FOUR CORNERS.
- PASSED INTERES, CLOSS—UP PHOTOGRAPHS OF THE PPC BECKED RIVED, CLOSS—UP PHOTOGRAPH OF THE PRICE OF THE TLOD PANEL, AND HE CLOSS—UP PHOTOGRAPH OF THE PANEL METER AND INSCRIBENT PHOTOS OF PANEL AND THEOD PRIVALET IN COLUMNAY PHOCOSJARS PHOTOGRAPH'S AT METER BOX AND/OR PACALTY INSTRUMENTS PANEL.
- PROUBED BAIDRAIS CEPTRICATIONS: COMPRETE MOY DESIGNS; MAI. CERTIFICATION FOR ALL REMFCINCIANS AND STRUCTURAL STEEL; AND ASSIGN. PANNO MOY DESIGN.
- ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION OF 400 — SUBMITTALS & TESTS PART 1 — GENERAL

- 1.1 THE MIRK: THESE STANDARD CONSTRUCTION SECRETATIONS IN CONJUNCTION WITH THE OTHER CONTINUES NO CONSTRUCTION DIAMENS DESCRIBE THE WIRK TO BE PERFORMED BY THE CONTINUEDRI.
- A. THE RECURBINATION OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- AND MADE A PART OF THESE SPECIFICATIONS HERDERS SITES ARE EVALUATED BY
- PART 2 PRODUCTS (NOT USED)

- A COMPACTOR SWILL PROMDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.
- 34 ADDITIONAL REPORTING:
- 3.5 PROJECT PHOTOGRAPHS:

A ADDITIONAL OR ALTERIANTE REPORTING REPURIENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY INCRESSARY BY COMPANY.

- 1. ISHELIER AND TOKER OVERVEW.

- 6. CONCRETE TESTING / SAMPLES,
- 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
- 8. SHELTER FOUNDATION—FORMS AND STEEL BEFORE POURING.
- 11, COME CASTE ENTRY MOTO SHELTER.
- 12. PLATFORM MECHANICAL CONNECTIONS TO TOMER/MONOPOLE
- ROOFIGE PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CELLING.
- 18. PHOTOS OF EQUIPMENT BOLT DOWN SISTE SHELTER,

- 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUST BEFORE BACKFUL
- 20. TELCO TREMCH WITH TELEPHONE / CONJUST BEFORE BACKFILL
- 21. TELCO TRENCH WITH FOIL—BACKED TAPE BEFORE FURTHER BACKFILL

- TOMER GROUND—MAYS TRENCH WITH GROUND—MREE ENERGY ENCHORE (SHOW ALL OND WELDS AND BEND RADIN).

- PART 3 EXECUTION
- 3.1 METALY REPORTS:
- A CAMBACING SHALL PROJECT SPORT WITH MEDITAL REPORTS SAYMAN PROJECT STUDIES. THE STATUS REPORT SHALL WITH A PROPERTY OF THE COMPACTOR FOR SPORT INC REPORT WILL CHARM STE DI MAJEST, THE MEDITALIST PAR EACH STE, NACLANG THE BASILINE DAY. EXTRACTED CHARLETON DATE AND ACTIVAL CHARLETON DATE AND ACTIVAL CHARLETON DATE AND ACTIVAL CHARLETON DATE AND ACTIVAL
- 3.2 PROJECT CONFERENCE CALLS: REPORT HYCHANTON WILL BE TRANSMITED TO SPIRM VA DIECTRONIC MEANS AS RECURED, THIS BYTORMATION WILL PROMICE A BIGUS FOR PROCRESS MENTIORING AND PAYMENT.
- Syrbit May Hold Weerly project comerciane calls, compaction will be recomen to communicate site status, before completions and decomes because projections, and answer any other site status questions as recommendation.
- 3.3 PROJECT TRACKONG IN SUS;

- A FILE DISTRAL PHOTOCRAPHES OF COMPLETED STITE IN JPEC FORMAT SH THE SUB-PROTOL LIBRARY FOR THE RESPICTING STIE, PHOTOCRAPHES SHALL BE CLERKLY LIBRALDS WITH STER MALKER, MANKE AND DESCRIPTION, AND SHALL INCLUDE AT A MENUTUM THE POLICIPANO AS APPLICABLE.
- TOWER POWERINGS = forms and steel before pour (each anchor on outed towers).
- TOWER FOUNDATION(S) POUR WITH WEIGHTOR IN USE (EACH ANCHOR ON GUYED TOWERS).
- 4. TOWER STEEL AS BEING BISTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
- 5. PHOTOS OF TOWER SECTION STACKING.

- 8. BUILDING/PAXIER TANK FROM ROAD FOR TENSIT IMPROVEMENTS OR COMMENTS
- 10. SHELTER FOUNDATION POUR WITH VERWICK IN USE.

- 14. PHOTOS OF TOMER TOP COAX LINE COLOR COORNS AND COLOR COORNS AT GROUND LEVEL.
- 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REBULATORY SIGNACE.
- 17. POWER AND TELOO EMPANCE TO COMPANY ENCLOSURE AND FOWER AND TELOO SUPPLY LOCKTIONS INCLUDING METER/DISCONNECT.
- 19. ELECTRICAL, TRENCH(S) WITH FOR.-BACKED TAPE BEFORE FURTHER BACKFILL

- 22. SHELTER GROUND-RING TREMCH WITH GROUND-WISE BEFORE BACKFEL (SHOW ALL CAD WELDS AND BEND RADIS).

24. FENCE GROUND-SHIG TRENCH WITH CROUND-HIRE BEFORE SACKFILL (SHOW ALL CAD WELDS AND BEND RACK).

Sprint

- 25. ALL BIS GROUND CONNECTIONS.
- 24. ALL GROUND TEST WELLS.
- 28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200" 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
- 29. HAVO UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
- 30. GPS ANTENNAS.
- 32. DOGMOUSE/CABLE EXIT FROM ROOF. 31. CABLE TRAY AND/OR WAVEGUEDE BRODGE
- 33, EACH SECTOR OF ANTICHANS, ONE PHOTOGRAPH LOUGHG AT THE SECTOR AND ONE THOM BETWEN SHOWING THE PROJECTED CONFINES AREA.
- 34, MASTER BISS BAR.
- 35. TELCO BOARD AND NO.
- 36. ELECTRICAL DISTRIBUTION WALL.
- 37. CHBLE ENTRY WITH SURGE SUPPRESSION 38. ENTRANCE TO EDUTMENT ROOM,
- 40. COAX GROUNDING --TOP AND BOTTOM OF TOWER.

39. COAK WEATHERFROOFING-TOP AND BOTTOM OF TOWER.

- 41. ANTENNA AND MAST GROUNDING.
- 3.6 FAM. PROJECT ACCEPTANCE: COMPLETE ALL REQUERD REPORTING TASKS PER COMPRESS. COMPRESS OF THE SPRING RECOMPRESS OF THE SPRING RECOMPLICATION STANDARDS FOR WINCLESS STREET AND SPLOAD BITS STREET. 42 LANDSCAPING - WHERE APPLICABLE





THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE SPRINT AND MAY NOT BE SPRINT ON REDISTRIBUTED ON REDISTRIBUTED WITHOUT THE CONSENT OF SPRINT.

	ISSUED FOR REDUCTS 11/45/17 ETC	INSTRUCTION CONCERNACION DE/DE/DE ETC	07/A4/18 E30	ESSUED FOR COMMITTION 97/19/10 FIX			DESCRIPTION DATE BY	
1	Ħ	200	2	23	П	Ī	₹	1
	Ā	1	Ξ	2			Į	Ì

CT33XC010

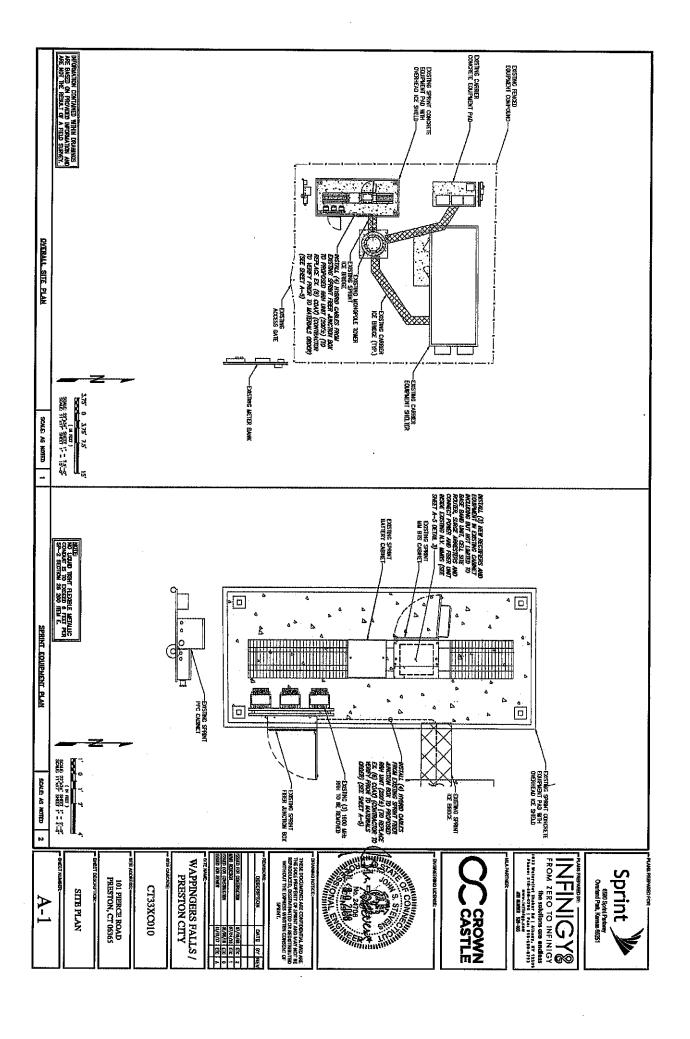
WAPPINGERS FALLS /

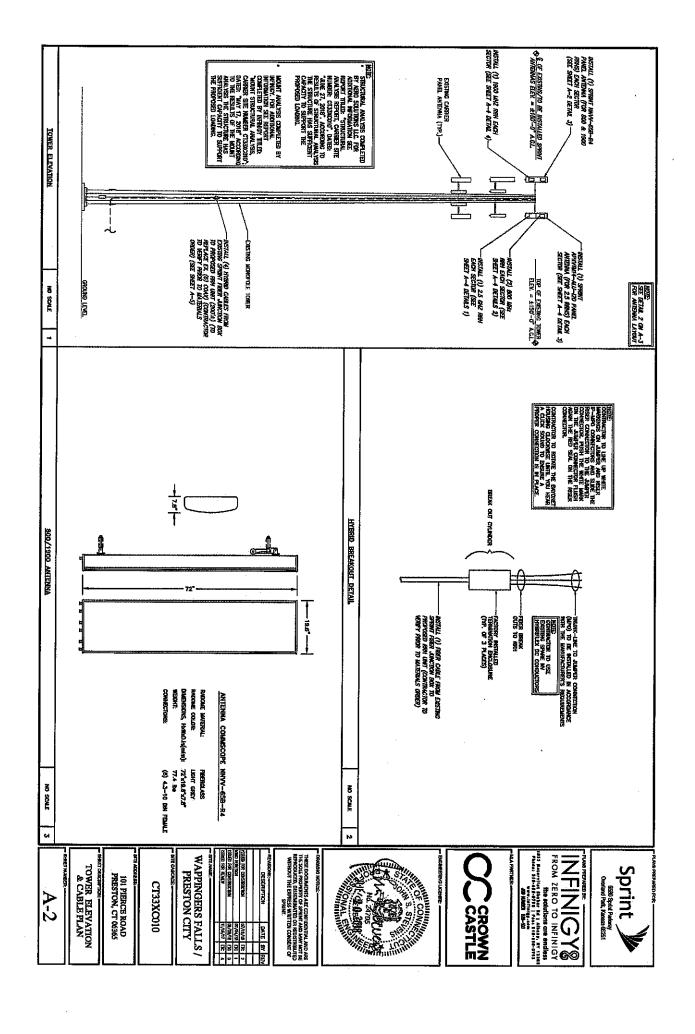
PRESTON CITY

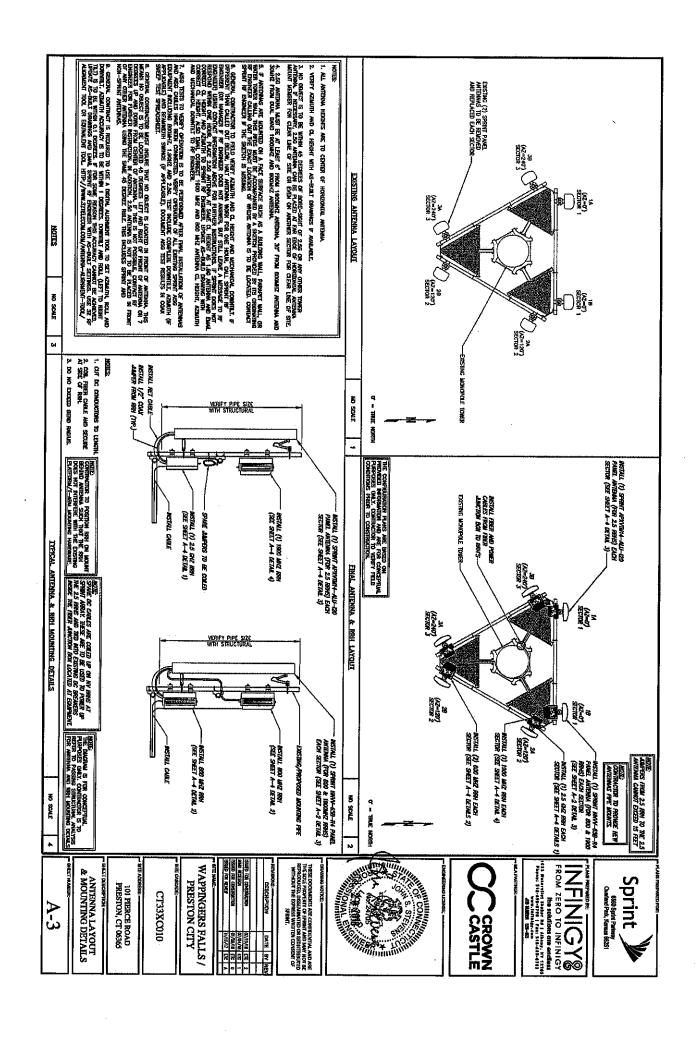
101 PIERCE ROAD PRESTON, CT 06365

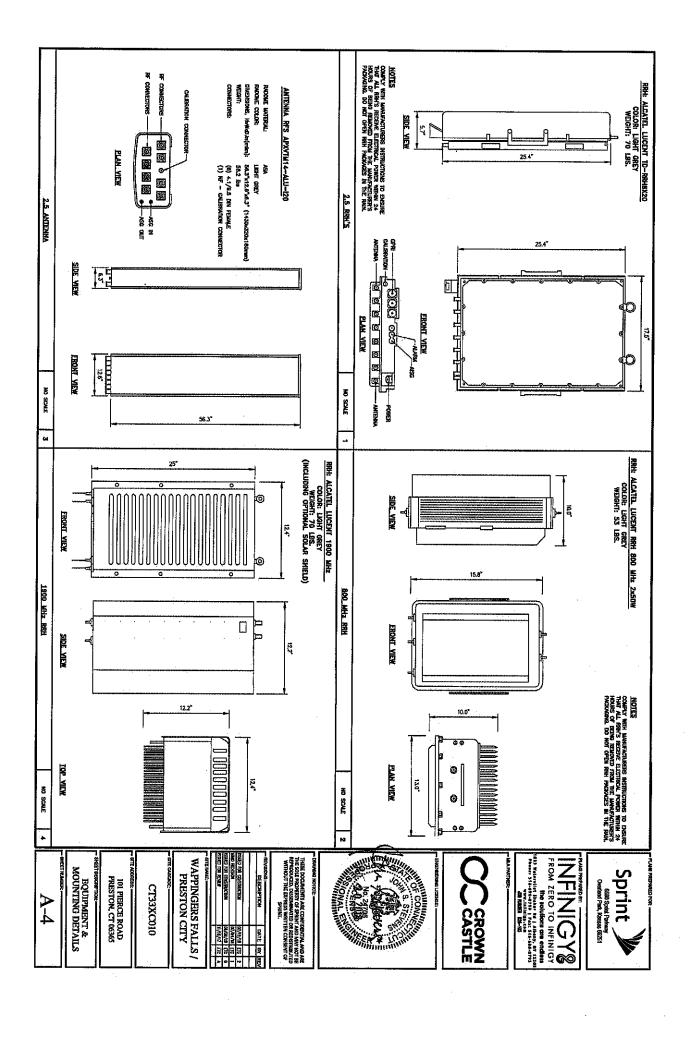
SPRINT SPECIFICATIONS

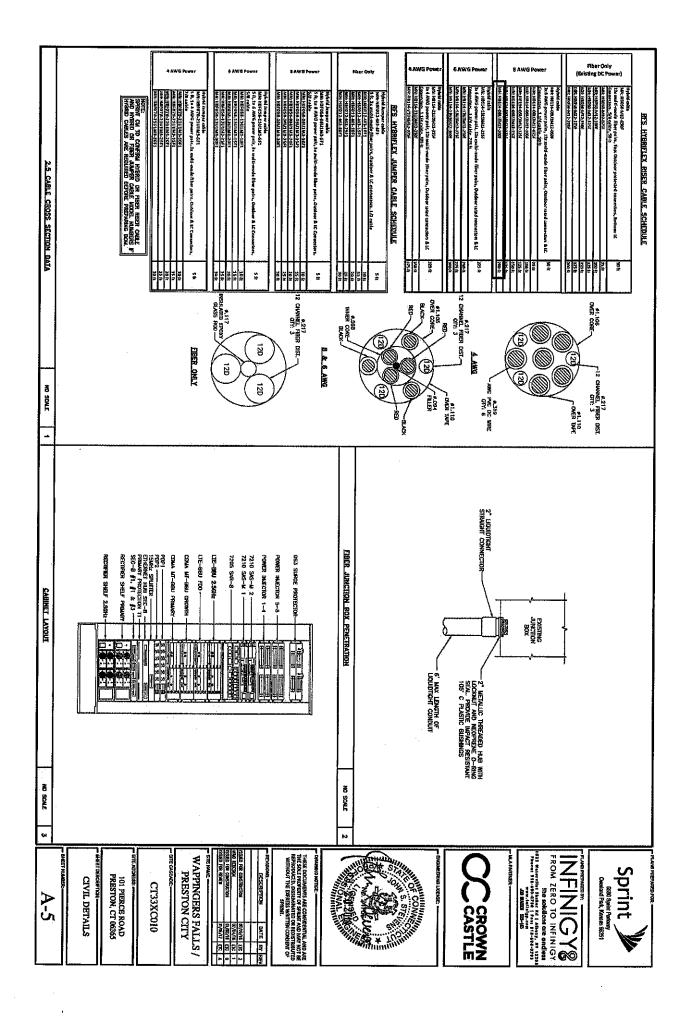
SP-3

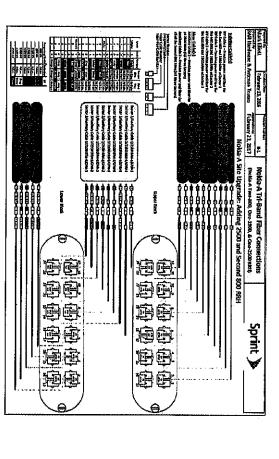


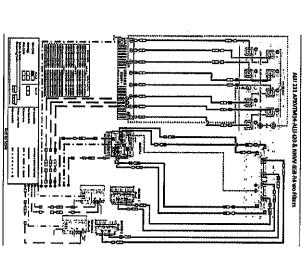














FROM ZERO TO INFINIGY.
The soldison ore entilest less reserves 1 them, my ston Phane History (Fran History). The soldison the soldison or entilest plan the soldison of the so NFINIGY 8





A-6

NO SOME

ELUMBING DIAGRAM

PLUMBING DIAGRAM

101 PIERCE ROAD PRESTON, CT 06365

CT33XC010

WAPPINGERS FALLS /
PRESTON CITY

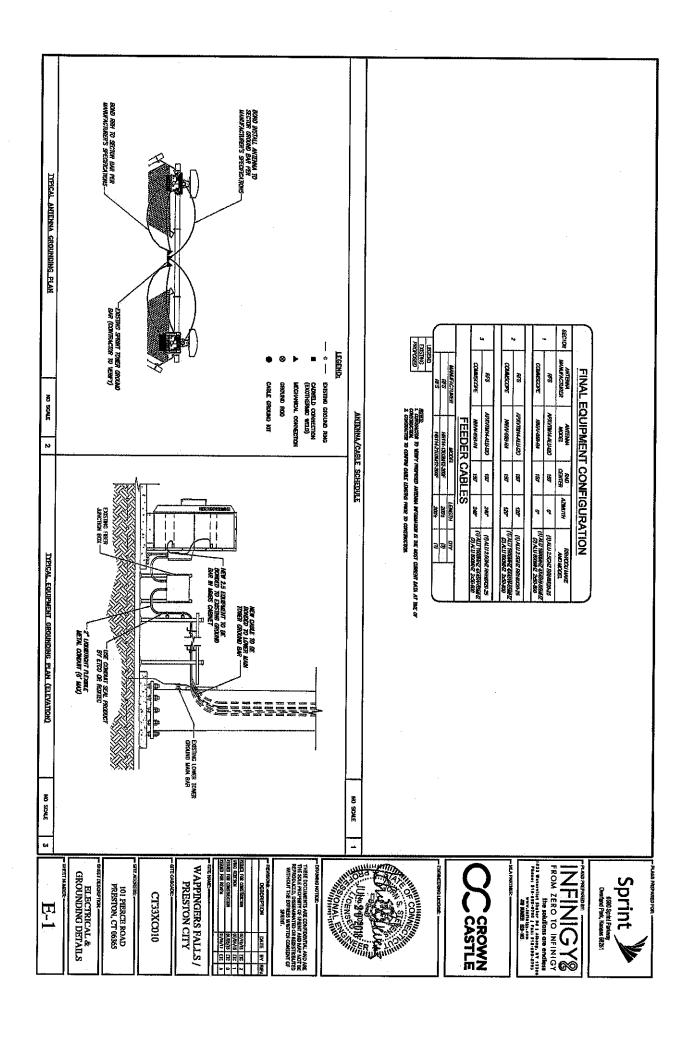
DATE BY REV

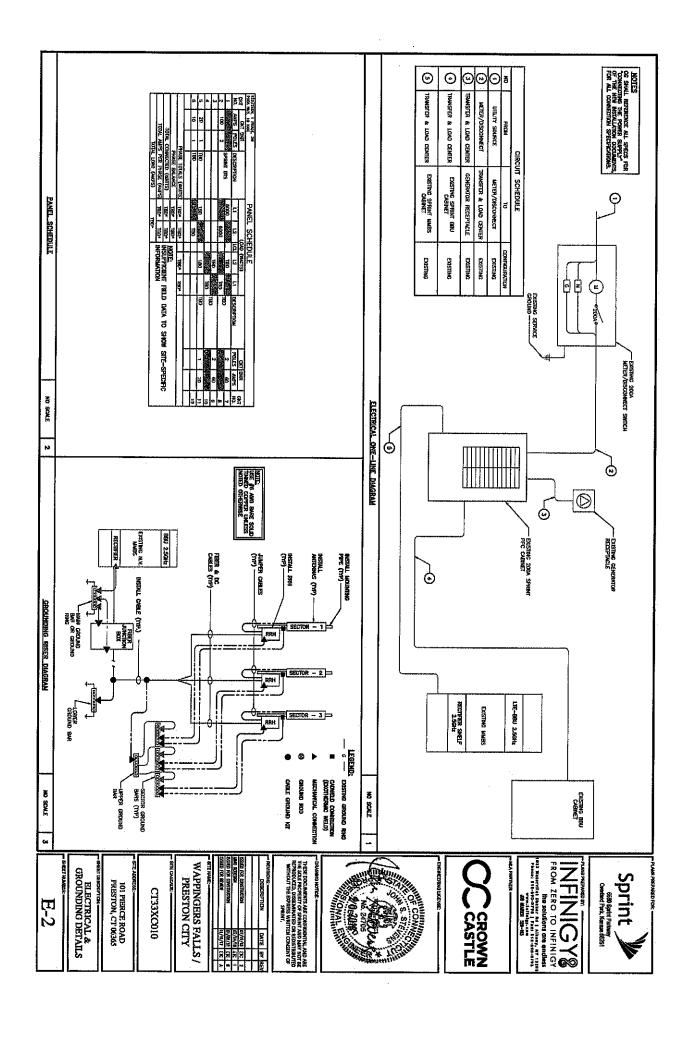
DV/19/8 CC 2

GV/AV/N CC 2

GV/AV/N CC 0

11/16/77 CC A





Date: June 27, 2018

Timothy Howell Crown Castle 3530 Toringdon Way, Suite 300 Clifton Park, NY 12065 AeroSolutions LLC
Optimizing Your Wireless Infrastructure

Aero Solutions 5555 Central Ave., Suite 100 Boulder, CO 80301 (720) 304-6882

Subject:

Structural Analysis Report

Carrier Designation:

Sprint PCS Co-Locate

Carrier Site Number: Carrier Site Name: CT33XC010 CT33XC010

Crown Castle Designation:

Crown Castle BU Number:

876366

Crown Castle Site Name:

Wappingers Falls / Preston Cit 505915

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

1593865 441415 Rev. 0

Engineering Firm Designation:

Aero Solutions Project Number:

003-18-0094

Site Data:

101 Pierce Road, Preston, New London County, CT 06365

Latitude 41° 32′ 17.46″, Longitude -71° 57′ 6″

155 Foot - Monopole Tower

Dear Denice Nicholson.

Aero Solutions 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 1209078, in accordance with application 441415, revision 0.

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 + Reserved + Proposed Equipment

Sufficient Capacity

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 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 Risk Category II was/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 *Aero Solutions* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Josh Rozina, P.E.

Respectfully submitted by:

Ryan Spalding, P.E. Structural Engineer PE#: 30849

Expires: 10/31/2019



tnxTower Report - version 8.0.2.1

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved 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 Components vs. Capacity

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 ft Monopole tower designed by Engineered Endeavors, Inc. and mapped by TEP in December of 2007. The tower was originally designed for a wind speed of 89 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-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 105 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antonna I		Number of Feed Lines	Feed Line Size (in)	Note			
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz						
	150.0	150.0	150.0	6 Alcatel Lucent RRH2X50-800						
155.0				150.0	3	Alcatel Lucent	TD-RRH8x20-25	4	4 1-1/4	_
100.0				3 Commscope NNVV-65B-	NNVV-65B-R4 w/ Mount Pipe		1-1/-			
		3	RFS Celwave	APXVTM14-ALU-I20 w/ Mount Pipe						

Notes:

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				
155.0	157.0	6	Decibel	DB980H90E-M w/ Mount Pipe	6	7/8	3				
	155.0	1	Tower Mounts	Platform Mount [LP 712-1]	-	-	1				
	2	3	Ericsson	RRUS 11							
142.0	142.0	142.0	1	Tower Mounts	Side Arm Mount [SO 102-3]	-	-	1			
		6	Powerwave Technologies	7770.00 w/ Mount Pipe	12 2	1-1/4 3/8	1				
						3	CCI Antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	Ericsson	RRUS 32 B2							
						3	Ericsson	RRUS 4478 B14			
140.0	140.0	3	Kathrein	80010966 w/ Mount Pipe	4	7/16	2				
				The state of the s	6	Powerwave Technologies	LGP21401	7	7710		
College and the college and th			6	Powerwave Technologies	LGP21901						
		2	Raycap	DC6-48-60-18-8F							
		1	Tower Mounts	Platform Mount [LP 303-1]	-	-	1				

¹⁾ See Appendix B for proposed coax configuration

Mounting Level (ft)	Center Line Elevation (ft)	of Manufacturer Antenna Model Antennas		Number of Feed Lines	Feed Line Size (in)	Note			
		3	Alcatel Lucent	B66A RRH4X45-4R					
		3	Alcatel Lucent	RRH2x60-700		1-5/8			
	134.0	3	Nokia	B5 4T4R RRH4X40 AIRSCALE	2		2		
128.0		1	Raycap	RVZDC-6627-PF-48			ĺ		
120.0	131.0	6	Commscope	JAHH-65B-R3B w/ Mount Pipe					
		131.0	131.0	131.0	6	Antel	LPA-80063/6CF w/ Mount Pipe	12	1-5/8
	128.0	1	Tower Mounts	T-Arm Mount [TA 602-3]					
		1	Lucent	KS24019-L112A					
74.0	74.0	1	Tower Mounts	Side Arm Mount [SO 701-1]	1	1/2	1		

Notes:

- 1) Existing equipment
- 2) Reserved equipment3) Existing equipment, to
- 3) Existing equipment, to be removed; not considered in this analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)			Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	150.0	12	Decibel	DB980H90E-M	-	-
140.0	140.0	12	Antel	ALP9212	_	_
130.0	130.0	12	Antel	ALP9212	-	_

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Reports	Dr. Clarence Welti	5568	-
Tower Foundation Drawing	Engineered Endeavors	5568	<u> -</u>
Tower Manufacture Drawing	Engineered Endeavors	5568	_
Post-Modification Inspection	PSG Engineering, Ltd.	2391519	CCISites
Post-Modification Inspection	Sinnott Gering and Schmitt Towers, Inc.	6133027	CCISites
Tower Reinforcement Design	PSG Engineering, Ltd.	2271037	CCISites
Tower Reinforcement Design	Black & Veatch Corp.	5971889	CCISites

3.1) Analysis Method

tnxTower (version 8.0.2.1), 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. Aero Solutions should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)1

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
155 - 150	Pole	TP19.036x18x0.1875	Pole	6.7%	Pass
150 - 145	Pole	TP20.073x19.036x0.1875	Pole	15.3%	Pass
145 - 140	Pole	TP21.109x20.073x0.1875	Pole	23.1%	Pass
140 - 135	Pole	TP22.146x21.109x0.1875	Pole	38.3%	Pass
135 - 130	Pole	TP23.182x22.146x0.1875	Pole	51.4%	Pass
130 - 126.79	Pole	TP24.59x23.182x0.1875	Pole	64.6%	Pass
126.79 - 121.79	Pole	TP24.671x23.473x0.25	Pole	57.3%	Pass
121.79 - 116.79	Pole	TP25.87x24.671x0.25	Pole	66.0%	Pass
116.79 - 111.79	Pole	TP27.068x25.87x0.25	Pole	73.8%	Pass
111.79 - 106.79	Pole	TP28.267x27.068x0.25	Pole	80.6%	Pass
106.79 - 101.79	Pole	TP29.465x28.267x0.25	Pole	86.5%	Pass
101.79 - 97.5	Pole	TP30.494x29.465x0.25	Pole	90.9%	Pass
97.5 - 97.25	Pole	TP30.554x30.494x0.25	Pole	91.2%	Pass
97.25 - 92.25	Pole	TP31.752x30.554x0.25	Pole	95.8%	Pass
92.25 - 87.41	Pole	TP34.07x31.752x0.25	Pole	99.8%	Pass
87.41 - 81.58	Pole	TP33.825x32.412x0.3125	Pole	79.9%	Pass
81.58 - 76.58	Pole	TP35.037x33.825x0.3125	Pole	82.0%	Pass
76.58 - 71.58	Pole	TP36.249x35.037x0.3125	Pole	84.0%	Pass
71.58 - 68	Pole	TP37.117x36.249x0.3125	Pole	85.3%	Pass
68 - 67.75	Pole + Reinf.	TP37.178x37.117x0.4875	Reinf. 1 Tension Rupture	84.3%	Pass
67.75 - 62.75	Pole + Reinf.	TP38.39x37.178x0.475	Reinf. 1 Tension Rupture	86.0%	Pass
62.75 - 57.75	Pole + Reinf.	TP39.602x38.39x0.475	Reinf. 1 Tension Rupture	87.6%	Pass
57.75 - 52.75	Pole + Reinf.	TP40.814x39.602x0.4625	Reinf. 1 Tension Rupture	89.0%	Pass
52.75 - 48.96	Pole + Reinf.	TP43.17x40.814x0.4625	Reinf. 1 Tension Rupture	90.0%	Pass
48.96 - 42.03	Pole	TP42.791x41.108x0.375	Pole	75.0%	Pass
42.03 - 37.03	Pole	TP44.005x42.791x0.375	Pole	75.7%	Pass
37.03 - 32.03	Pole	TP45.22x44.005x0.375	Pole	76.4%	Pass
32.03 - 27.03	Pole	TP46.434x45.22x0.375	Pole	77.0%	Pass
27.03 - 22.03	Pole	TP47.649x46.434x0.375	Pole	77.6%	Pass
22.03 - 17.03	Pole	TP48.863x47.649x0.375	Pole	78.1%	Pass
17.03 - 12.03	Pole	TP50.078x48.863x0.375	Pole	78.6%	Pass
12.03 - 7.03	Pole	TP51.292x50.078x0.375	Pole	79.1%	Pass
7.03 - 2.03	Pole	TP52.507x51.292x0.375	Pole	79.6%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
2.03 - 0	Pole	TP53x52.507x0.375	Pole	79.8%	Pass
				Summary	
			Pole	99.8%	Pass
The state of the s			Reinforcement	90.0%	Pass
			Overall	99.8%	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	93.5	Pass
1	Base Plate	0	68.4	Pass
1	Base Foundation	0	92.8	Pass
1	Base Foundation Soil Interaction	0	82.5	Pass

Structure Rating (max from all components) =	99.8%
--	-------

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 listed.

APPENDIX A TNXTOWER OUTPUT

Ę	8	185 185	0.1875		8	365		0.2	155.0 ft	_	_
<u> </u>	, 4Ó	ļ		-	30.5500000075628.266927.068425.869224.67244.7283.1824 22.146021.109520.073019.036518.0000	23.182422.146021.109520.073019.0365			150.0 ft		
7	2.00	82	5 0.1875		018.03	520.07		0.2	145.0 ft		
ო	2.00	22	0.1875		20.073	21.109		0,2	140.0 ft		
4	5.00	20	0.1875		1,1095	2.1460		0.2	405.0.7		
ю	5.00	<u>~</u>	0.1875		14602	18242		0.2	135.0 ft	1	11
					24 22.				130.0 ft		
9	5.006.79	<u>ھ</u>	0.2500.25000.1875	3.58	283.18	124.59		0.3	<u>123.2 ft</u>		
7		18 18	000 250		73347	GB40 67		0.3 0.3	<u>//=-/= 11</u>		
80	9:00		0.25		954.6	8425.8	-	Н	116.8 ft		
<u>о</u>	5.00	18	0.2500 0.2500		25.86	27.06		0.4	111.8 ft		
5	5.00	18	0.2500		7.0684	8.266		0.4	106.8 ft		
11	5.00	18	2500		26987	46542		0.4			
12	58		0.2502 102500 0.2500		165.28	31.73 <u>0.055</u> 993229.465428.266927.068425.863967124.5900		Н	101.8 ft		
. 5	5.000.254.	-	0.02500		30.08	- 65 - 64		4 000.3	97.5 ft		
14	5.0	8	0.25		88	31.7		0.4	92.3 ft		
15	29	2 2	0.2500	4.83	7521	0020		6:0			
	5.889.67		125 0.2	4	23 31.7521	54 34.0			82.6 ft		
17 16	2.00	81	0.31235312			40.813909.601908.388987701786.249585.03XXB2254 34.0700	_	9.6	52.0 10		
					37583.	19535.1	A572-65		76.6 ft		
18	9 5.00	₩	ZBI 250.3125		20'986	786.2	`	9:0	71.6 ft		1
20 19	0.29.58	13 18	8		87.58.57	1977B		000.4	68.0 ft		
21	5.000.	18	0.4750		₹1.13	828.38		0.9	62.8 ft		
22	5.00	€	0.4750		39.601938.389937.137885Z8985.037583.82884	39.601		0.7	57.8 ft		
23	5.00	85	0.4625		9.6019	3.8139		5			
								 -	52.8 ft		
24	6.940.72	8	0.4625	5.93	10.8139	13.1700		2.0			
25);;	•		_	3/0/6	247909 43.1700		-84-	43.0 ft		
26	5.00	8	0.37502750		52 5059.292450.077948.863447.648946.434445.219944.005442.79091076.40.8139			6.0	37.0 ft_		ALL DEACTIONS
27	5.00	<u>@</u>	0,3750		1,0054	2199		6.0			ALL REACTIONS ARE FACTORED
28	5.00	e	0.3750 0.		219944	53.00502.506951.292450.077948.863447.648946.434445.219944.00		6:0	32.0 ft		AXIAL
					34445.	18946.		\vdash	27.0 ft		70 K
29	5.00	8	0.3750		3946,4;	3447.6		0.9	22.0 ft		SHEAR MOM
30	5.00	\$2	0,3750		47.64	348.86		1,0	17.0 ft		TORQUE 0 kip-ft
듄	5,00	\$	0.3750		18.8634	30.0778		1.0	12.0 ft		50 mph WIND - 0.7500 in ICI AXIAL
32	5.00	18	0.3750	1	20779	2824		1.0			39 K
33	5.00	18	750 0.		292450	506951		1.0	7.0 ft		SHEAR MOM
8	03 2	18 1	0.3750.3750		5053	0092.		1 1	2.0 ft 0.0 ft		30 K / 3569
				jų.	53	53		21.20.4			TORQUE 2 kip-ft REACTIONS - 105 mph WIN
_	(E)	Number of Sides	Thickness (in)	Socket Length (fl)	Top Dia (in)	Bot Dia (in)		Weight (K)			•
Section	Length (ft)	g g	Fic A	8	[유	ğ	Grade	eg l			

DESIGNED APPURTENANCE LOADING

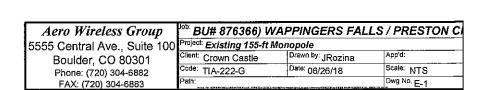
TYPE	ELEVATION	TYPE	ELEVATION
NNVV-65B-R4 w/ Mount Pipe	155	RRUS 32 B2	140
NNVV-65B-R4 w/ Mount Pipe	155	RRUS 32 B2	140
NNVV-65B-R4 w/ Mount Pipe	155	RRUS 32 B2	140
APXVTM14-ALU-I20 w/ Mount Pipe	155	RRUS 4478 B14	140
APXVTM14-ALU-I20 w/ Mount Pipe	155	RRUS 4478 B14	140
APXVTM14-ALU-(20 w/ Mount Pipe.	155	RRUS 4478 B14	140
TD-RRH8x20-25	155	(2) LGP21401	140
TD-RRH8x20-25	155	(2) LGP21401	140
TD-RRH8x20-25	155	(2) LGP21401	140
(2) RRH2X50-800	155	(2) LGP21901	140
(2) RRH2X50-800	155	(2) LGP21901	140
(2) RRH2X50-800	155	(2) LGP21901	140
PCS 1900MHz 4x45W-65MHz	155	DC6-48-60-18-8F	140
PCS 1900MHz 4x45W-65MHz	155	DC6-48-60-18-8F	140
PCS 1900MHz 4x45W-65MHz	155	LPA-80063/6CF w/ Mount Pipe	. 128
(2) 6' x 2" Mount Pipe	155	LPA-80063/6CF w/ Mount Pipe	128
(2) 6' x 2" Mount Pipe	155	(2) LPA-80063/6CF w/ Mount Pipe	128
(2) 6' x 2" Mount Pipe	155	(2) LPA-80063/6CF w/ Mount Pipe	128
Platform Mount [LP 712-1]	155	JAHH-65B-R3B w/ Mount Pipe	128
Transition Ladder	155	JAHH-65B-R3B w/ Mount Pipe	128
8' x 3" Mount Pipe	155	JAHH-65B-R3B w/ Mount Pipe	128
RRUS 11	142	JAHH-65B-R3B w/ Mount Pipe	128
RRUS 11	142	JAHH-65B-R3B w/ Mount Pipe	128
RRUS 11	142	JAHH-65B-R3B w/ Mount Pipe	128
Side Arm Mount (SO 102-3)	142	RRH2x60-700	128
Platform Mount [LP 303-1]	140	RRH2x60-700	128
(2) 7770.00 w/ Mount Pipe	140	RRH2x60-700	128
(2) 7770.00 w/ Mount Pipe	140	B66A RRH4X45-4R	128
(2) 7770.00 w/ Mount Pipe	140	(2) B66A RRH4X45-4R	128
HPA-65R-BUU-H8 w/ Mount Pipe	140	B5 4T4R RRH4X40 AIRSCALE	128
HPA-65R-BUU-H8 w/ Mount Pipe	140	(2) B5 4T4R RRH4X40 AIRSCALE	128
HPA-65R-BUU-H8 w/ Mount Pipe	140	RVZDC-6627-PF-48	128
80010966 w/ Mount Pipe	140	T-Arm Mount [TA 602-3]	128
30010966 w/ Mount Pipe	140,	KS24019-L112A	74
80010966 w/ Mount Pipe	140	Side Arm Mount [SO 701-1]	74

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A 270 CE	65 ksi	80 ksi			

TOWER DESIGN NOTES

- Tower is located in New London County, Connecticut.
 Tower designed for Exposure B to the TIA-222-G Standard.
- Tower designed for a 105 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.
- Deflections are based upon a 60 mph wind.
- Tower Structure Class II.
- Topographic Category 1 with Crest Height of 0.00 ft



Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job	Page		
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	1 of 31		
Project	Date		
Existing 155-ft Monopole	14:44:25 06/26/18		
Client	Designed by		
Crown Castle	JRozina		

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in New London County, Connecticut.

Basic wind speed of 105 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

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

✓ Consider Feed Line Torque
Includes Torque
Includes Tide Tide Tide
Includes Tide
Includes

✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation	Section	Splice	Number	Тор	Bottom	Wall	Bend	Pole Grade
Sconon	Dictation	Length		of	Diameter	Diameter	Thickness	Radius	1 Oic Grade
		Lengin	Length	-,	Diameter	Diameter	1 monness		
	ft	ft	ft	Sides	in	in	in	in	
L1	155.00-150.00	5.00	0.00	18	18.0000	19.0365	0.1875	0.7500	A572-65

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job	Page		
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	2 of 31		
Project	Date		
Existing 155-ft Monopole	14:44:25 06/26/18		
Client	Designed by		
Crown Castle	JRozina		

Section	Elevation	Section Length	Splice Length	Number of	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grad
	ft	fi	ft	Sides	in	in	in	in	
									(65 ksi)
L2	150.00-145.00	5.00	0.00	18	19.0365	20.0730	0.1875	0.7500	A572-65
L3	145.00-140.00	5.00	0.00	18	20.0730	21.1095	0.1875	0.7500	(65 ksi) A572-65
ъэ	143.00-140.00	3.00	0.00	10	20.0730	21.1093	0.1673	0.7300	(65 ksi)
L4	140.00-135.00	5.00	0.00	18	21.1095	22.1460	0.1875	0.7500	A572-65
	- 10100 - 100100								(65 ksi)
L5	135.00-130.00	5.00	0.00	18	22.1460	23.1824	0.1875	0.7500	A572-65
		- - -				04.5000	0.1055	0.5500	(65 ksi)
L6	130.00-123.21	6.79	3.58	18	23.1824	24.5900	0.1875	0.7500	A572-65 (65 ksi)
L7	123.21-121.79	5.00	0.00	18	23,4729	24.6714	0.2500	1.0000	A572-65
L,	125.21-121.77	5.00	0.00	10	23.4727	2-7.0711	0.2500	1.0000	(65 ksi)
L8	121.79-116.79	5.00	0.00	18	24.6714	25.8699	0.2500	1.0000	À572-65
									(65 ksi)
L9	116.79-111.79	5.00	0.00	18	25.8699	27.0684	0.2500	1.0000	A572-65
T 10	111 70 106 70	5.00	0.00	18	27.0684	28.2669	0.2500	1.0000	(65 ksi) A572-65
L10	111.79-106.79	3.00	0.00	10	27.0084	26.2009	0.2300	1.0000	(65 ksi)
L11	106.79-101.79	5.00	0.00	18	28.2669	29.4654	0.2500	1.0000	À572-65
									(65 ksi)
L12	101.79-97.50	4.29	0.00	18	29.4654	30.4937	0.2500	1.0000	A572-65
T 12	97.50-97.25	0.25	0.00	18	30.4937	30.5536	0.2500	1.0000	(65 ksi) A572-65
L13	91.30-91.23	0.23	0.00	10	30.4731	30.3330	0.2300	1.0000	(65 ksi)
L14	97.25-92.25	5.00	0.00	18	30.5536	31.7521	0.2500	1.0000	À572-65
									(65 ksi)
L15	92.25-82.58	9.67	4.83	18	31.7521	34.0700	0.2500	1.0000	A572-65
L16	82,58-81.58	5.83	0.00	18	32.4123	33.8254	0.3125	1.2500	(65 ksi) A572-65
LIO	02,20-01.36	3.03	0.00	10	J2.412J	33.0234	0.3123	1.2300	(65 ksi)
L17	81.58-76.58	5.00	0.00	18	33.8254	35.0375	0.3125	1.2500	À572-65
									(65 ksi)
L18	76.58-71.58	5.00	0.00	18	35.0375	36.2495	0.3125	1.2500	A572-65
L19	71.58-68.00	3.58	0.00	18	36.2495	37.1173	0.3125	1.2500	(65 ksi) A572 - 65
L19	71.30*00.00	3.30	0.00	10	30.2493	31.1113	0,3123	1.2300	(65 ksi)
L20	68.00-67.75	0.25	0.00	18	37.1173	37.1779	0.4875	1.9500	A572-65
									(65 ksi)
L21	67.75-62.75	5.00	0.00	18	37.1779	38.3899	0.4750	1.9000	A572-65
L22	(2.75.57.75	5.00	0.00	18	38.3899	39.6019	0.4750	1.9000	(65 ksi) A572-65
LZZ	62.75-57.75	3.00	0.00	10	30.3033	39.0019	0.4750	1.9000	(65 ksi)
L23	57.75-52.75	5.00	0.00	18	39.6019	40.8139	0.4625	1.8500	A572-65
									(65 ksi)
L24	52.75-43.03	9.72	5.93	18	40.8139	43.1700	0.4625	1.8500	A572-65
1.25	42 02 42 02	6.93	0.00	18	41.1076	42.7909	0.3750	1.5000	(65 ksı) A572-65
L25	43.03-42.03	0.93	0.00	10	41.1070	42.1303	0.3730	1.5000	(65 ksi)
L26	42.03-37.03	5.00	0.00	18	42.7909	44.0054	0.3750	1.5000	A572-65
									(65 ksi)
L27	37.03-32.03	5.00	0.00	18	44.0054	45.2199	0.3750	1.5000	A572-65
1 20	22 02 27 02	5.00	0.00	18	45.2199	46.4344	0.3750	1.5000	(65 ksi) A572-65
L28	32.03-27.03	5.00	0.00	10	43.2177	7U.7344	0.7750	1.5000	(65 ksi)
L29	27.03-22.03	5.00	0.00	18	46.4344	47.6489	0.3750	1.5000	A572-65
									(65 ksi)
L30	22.03-17.03	5.00	0.00	18	47.6489	48.8634	0.3750	1.5000	A572-65
L31	17.03-12.03	5.00	0.00	18	48.8634	50.0779	0.3750	1.5000	(65 ksi) A572-65
1.31	17.03-12.03	D.UU	WARD	1.0	40.00.34	JU U1179	0.17.10	1 10 3 3 7	mJ/Z-03

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job		Page
	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	3 of 31
Proj	ject	Date
	Existing 155-ft Monopole	14:44:25 06/26/18
Clie	··· ·	Designed by
	Crown Castle	JRozina

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
L32	12.03-7.03	5.00	0.00	18	50.0779	51.2924	0.3750	1.5000	A572-65 (65 ksi)
L33	7.03-2.03	5.00	0.00	18	51.2924	52.5069	0.3750	1.5000	Å572-65 (65 ksi)
L34	2.03-0.00	2.03		18	52.5069	53.0000	0.3750	1.5000	À572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	It/Q in²	w	w/t
	in	in ²	in⁴	in	in	in³	in⁴	in ²	in	
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850,4248	5.3013	2.8380	15.136
	19.3012	11.2175	503.5120	6.6914	9.6705	52.0666	1007.6866	5.6098	3.0204	16.109
L2	19.3012	11.2175	503.5120	6.6914	9.6705	52.0666	1007.6866	5.6098	3.0204	16.109
	20.3537	11.8343	591.2264	7.0593	10.1971	57.9800	1183.2307	5.9183	3.2028	17.082
L3	20.3537	11.8343	591.2264	7.0593	10.1971	57.9800	1183.2307	5.9183	3.2028	17.082
	21.4062	12.4512	688.5782	7.4273	10.7236	64.2114	1378.0624	6.2268	3.3853	18.055
L4	21.4062	12.4512	688.5782	7.4273	10.7236	64.2114	1378.0624	6.2268	3.3853	18.055
	22.4587	13.0680	796.0698	7.7953	11.2501	70.7608	1593.1871	6.5353	3.5677	19.028
L5	22.4587	13.0680	796.0698	7.7953	11.2501	70.7608	1593.1871	6.5353	3.5677	19.028
	23.5111	13.6849	914.2035	8.1632	11.7767	77.6283	1829.6100	6.8437	3.7501	20.001
L6	23.5111	13.6849	914.2035	8.1632	11.7767	77.6283	1829.6100	6.8437	3.7501	20.001
	24.9404	14.5225	1092.5683	8.6629	12.4917	87.4634	2186.5743	7.2626	3.9978	21.322
L7	24.6678	18.4274	1255.5449	8.2441	11.9242	105.2937	2512.7419	9.2154	3.6912	14.765
	25.0134	19.3784	1460.1403	8.6696	12.5331	116.5031	2922.2018	9.6910	3.9022	15.609
L8	25.0134	19.3784	1460.1403	8.6696	12.5331	116.5031	2922.2018	9.6910	3.9022	15.609
	26.2304	20.3294	1685.8355	9.0951	13.1419	128.2795	3373.8893	10.1666	4.1131	16.452
L9	26.2304	20.3294	1685.8355	9.0951	13.1419	128.2795	3373.8893	10.1666	4.1131	16.452
	27.4474	21.2804	1933.6662	9.5205	13.7507	140.6228	3869.8768	10.6422	4.3240	17.296
L10	27.4474	21.2804	1933.6662	9.5205	13.7507	140.6228	3869.8768	10.6422	4.3240	17.296
	28.6644	22.2314	2204.6679	9.9460	14.3596	153.5330	4412.2367	11.1178	4.5350	18.14
L11	28.6644	22.2314	2204.6679	9.9460	14.3596	153.5330	4412.2367	11.1178	4.5350	18.14
	29.8814	23.1824	2499.8759	10.3715	14.9684	167.0102	5003.0412	11.5934	4.7459	18.984
L12	29.8814	23.1824	2499.8759	10.3715	14.9684	167.0102	5003.0412	11.5934	4.7459	18.984
	30.9255	23.9984	2773.2452	10.7365	15.4908	179.0254	5550.1394	12.0015	4.9269	19.708
L13	30.9255	23.9984	2773.2452	10.7365	15.4908	179.0254	5550.1394	12.0015	4.9269	19.708
	30.9864	24.0459	2789.7626	10.7578	15.5212	179.7385	5583.1961	12.0252	4.9374	19.75
L14	30.9864	24.0459	2789.7626	10.7578	15.5212	179.7385	5583.1961	12.0252	4.9374	19.75
	32.2034	24.9969	3134.0292	11.1832	16.1301	194.2973	6272.1822	12.5008	5.1484	20.593
L15	32.2034	24.9969	3134.0292	11.1832	16.1301	194.2973	6272.1822	12.5008	5.1484	20.593
	34.5570	26.8362	3877.9767	12.0061	17.3076	224.0626	77 61.0561	13.4206	5.5563	22.225
L16	34.0529	31.8389	4144.7596	11.3954	16.4654	251.7251	8294.9731	15.9225	5.1546	16.495
	34.2991	33.2407	4716.6349	11.8971	17.1833	274.4890	9439.4760	16.6235	5.4033	17.29
L17	34.2991	33.2407	4716.6349	11.8971	17.1833	274.4890	9439.4760	16.6235	5.4033	17.29
	35.5298	34.4428	5247.0999	12.3274	17.7990	294.7970	10501.1041	17.2247	5.6166	17.973
L18	35.5298	34.4428	5247.0999	12.3274	17.7990	294.7970	10501.1041	17.2247	5.6166	17.973
	36.7605	35.6450	5815.9176	12.7576	18.4147	315.8298	11639.4879	17.8259	5.8299	18.656
L19	36.7605	35.6450	5815.9176	12.7576	18.4147	315.8298	11639.4879	17.8259	5.8299	18.656
	37.6416	36.5057	6247.4967	13.0657	18.8556	331.3344	12503.2140	18.2563	5.9826	19.144
L20	37.6146	56.6781	9607.7320	13.0036	18.8556	509.5436	19228.1062	28.3444	5.6746	11.64
	37.6762	56.7719	9655.4960	13.0251	18.8863	511.2421	19323.6970	28.3913	5.6853	11.662
L21	37.6781	55.3351	9417.5380	13.0295	18.8863	498.6426	18847.4678	27.6728	5.7073	12.015
7.00	38.9088	57.1623	10381.6453	13.4598	19.5020	532.3362	20776.9510	28.5866	5.9206	12.464
L22	38.9088	57.1623	10381.6453	13.4598	19.5020	532.3362	20776.9510	28.5866	5.9206	12.464
7.00	40.1395	58.9896	11409.4039	13.8900	20.1177	567.1314	22833.8205	29.5004	6.1339	12.914
L23	40.1414	57.4556	11119.8070	13.8945	20.1177	552.7363	22254.2458	28.7333	6.1559	13.31

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Jol	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 4 of 31
Pr	oject Existing 155-ft Monopole	Date 14:44:25 06/26/18
CI	ient Crown Castle	Designed by JRozina

Section	Tip Dia.	Area	I	r	С	I/C	J	It/Q	w	w/t
	in	in ²	in ⁴	in	in	in³	in ⁴	in ²	in	
	41.3721	59.2348	12185.1466	14.3247	20.7334	587.7049	24386.3268	29.6230	6.3692	13.771
L24	41.3721	59.2348	12185.1466	14.3247	20.7334	587.7049	24386.3268	29.6230	6.3692	13.771
	43.7646	62.6935	14446.6968	15.1612	21.9304	658.7533	28912.4030	31.3527	6.7839	14.668
L25	43.1465	48.4819	10162.5069	14.4601	20.8826	486.6485	20338.3858	24.2456	6.5749	17.533
	43.3931	50.4855	11475.2115	15.0576	21.7378	527.8930	22965.5224	25.2475	6.8712	18.323
L26	43.3931	50.4855	11475.2115	15.0576	21.7378	527.8930	22965.5224	25.2475	6.8712	18.323
	44.6264	51.9311	12489.4241	15.4888	22.3547	558.6927	24995.2822	25.9705	7.0849	18.893
L27	44.6264	51.9311	12489.4241	15.4888	22.3547	558.6927	24995.2822	25.9705	7.0849	18.893
	45.8596	53.3766	13561.7018	15.9199	22.9717	590.3657	27141.2484	26.6934	7.2987	19.463
L28	45.8596	53.3766	13561.7018	15.9199	22.9717	590.3657	27141.2484	26.6934	7.2987	19.463
	47.0929	54.8222	14693.6607	16.3511	23.5887	622.9119	29406.6558	27.4163	7.5125	20.033
L29	47.0929	54.8222	14693.6607	16.3511	23.5887	622.9119	29406.6558	27.4163	7.5125	20.033
	48.3261	56.2677	15886.9174	16.7822	24.2056	656.3313	31794.7392	28.1392	7.7262	20.603
L30	48.3261	56.2677	15886.9174	16.7822	24.2056	656.3313	31794.7392	28.1392	7.7262	20.603
	49.5593	57.7133	17143.0880	17.2134	24.8226	690.6241	34308.7333	28.8621	7.9400	21.173
L31	49.5593	57.7133	17143.0880	17.2134	24.8226	690.6241	34308.7333	28.8621	7.9400	21.173
	50.7926	59.158 9	18463.7889	17.6445	25.4396	725.7900	36951.8730	29.5851	8.1537	21.743
L32	50.7926	59.1589	18463.7889	17.6445	25.4396	725.7900	36951.8730	29.5851	8.1537	21.743
	52.0258	60.6044	19850.6364	18.0757	26.0565	761.8293	39727.3929	30.3080	8.3675	22.313
L33	52.0258	60.6044	19850.6364	18.0757	26.0565	761.8293	39727.3929	30.3080	8.3675	22.313
	53.2591	62.0500	21305.2469	18.5068	26.6735	798.7418	42638.5277	31.0309	8.5812	22.883
L34	53.2591	62.0500	21305.2469	18.5068	26.6735	798.7418	42638.5277	31.0309	8.5812	22.883
	53.7598	62.6369	21915.5294	18.6819	26.9240	813.9775	43859.8959	31.3244	8.6680	23.115

Tower Elevation	Gusset Areal (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A,	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft²	in					in	in	in
L1				1	1	1			
155.00-150.00									
L2				1	1	1			
150.00-145.00									
L3				1	1	1			
145.00-140.00									
L4				1	1	1			
140.00-135.00									
L5				1	1	1			
135.00-130.00									
L6				1	1	1			
130.00-123.21									
L7				1	1	1			
123.21-121.79									
L8				1	1	1			
121.79-116.79									
L9				I	1	1			
116.79-111.79									
L10				ì	1	1			
111.79-106.79									
L11				I	1	1			
106.79-101.79				_					
L12				I	1	1			
101.79-97.50									
L13				I	1	1			
97.50-97.25									
L14				1	1	1			
97.25-92.25									
L15				1	1	1			
92.25-82.58				1		,			
L16				1	1	1			
82.58-81.58									

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job	Page
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	5 of 31
Project	Date
Existing 155-ft Monopole	14:44:25 06/26/18
Client	Designed by
Crown Castle	JRozina

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
		tit		1	1	1	171	171	iri
81.58-76.58				1	1	1			
L18				1	1	1			
76.58-71.58				•		•			
L19				1	1	1			
71.58-68.00				-	-	•			
L20				1	1	0.961153			
68.00-67.75									
L21				1	1	0.975618			
67.75-62.75									
L22				1	1	0.965777			
62.75-57.75									
L23				1	1	0.982074			
57.75-52.75									
L24				1	1	0.975253			
52.75-43.03									
L25				I	1	1			
43.03-42.03									
L26				1	1	1			
42.03-37.03									
L27				1	1	1			
37.03-32.03									
L28				1	1	1			
32.03-27.03					_				
L29				1	1	1			
27.03-22.03					_	_			
L30				1	1	I			
22.03-17.03									
L31				1	1	1			
17.03-12.03									
L32 12.03-7.03				1	1	1			
L33 7.03-2.03				1	1	1			
L34 2.03-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	plf
Safety Line 3/8	В	Surface Ar (CaAa)	155.00 - 10.00	1	1	0.490 0.500	0.3750		0.22
5/8" Step Pegs	C	Surface Ar (CaAa)	155.00 - 0.00	1	1	0.000	0.3500		0.49
***		` ,							
SFP-060100 (No Weight)	A	Surface Ar (CaAa)	70.00 - 45.00	1	1	0.000	6.0000		0.00
SFP-060100 (No Weight)	В	Surface Ar (CaAa)	70.00 - 45.00	1	1	0.000 0.000	6.0000		0.00
SFP-060100 (No Weight)	C	Surface Ar (CaAa)	70.00 - 45.00	1	1	0.000 0.000	6.0000		0.00
SFP-045100 (No Weight)	Α	Surface Ar (CaAa)	99.00 - 84.00	1	1	0.000 0.000	4.5000		0.00
SFP-045100 (No Weight)	В	Surface Ar (CaAa)	99.00 - 84.00	1	1	0.000 0.000	4.5000		0.00
SFP-045100 (No Weight)	C	Surface Ar	99.00 - 84.00	1	1	0.000	4.5000		0.00

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

 Job	Page
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	6 of 31
Project	Date
Existing 155-ft Monopole	14:44:25 06/26/18
Client	Designed by
Crown Castle	JRozina

Description	Sector	Component Type	Placement	Total Number	Number Per Row		Width or Diameter	Perimeter	Weight
			ft				in	in	plf
		(CaAa)				0.000			
**									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or	Allow Shield	Component Type	Placement	Total Number	The state of the s	$C_A A_A$	Weight
	Leg	Sinosa	2,720	fi	11001		ft²/ft	plf
*								
IB114-1-0813U4-M5J(1	A	No	Inside Pole	155.00 - 8.00	3	No Ice	0.00	1.20
-1/4)						1/2" Ice	0.00	1.20
						l" Ice	0.00	1.20
HB114-13U3M12-XXX	Α	No	Inside Pole	155.00 - 8.00	1	No Ice	0.00	0.99
F(I-1/4)						1/2" Ice	0.00	0.99
						1" Ice	0.00	0.99
*** LDF6-50A(1-1/4)	В	No	Inside Pole	140.00 - 2.00	12	No Ice	0.00	0.60
LDF0-30A(1-1/4)	Б	NO	Histor Pole	140.00 - 2.00	12	1/2" Ice	0.00	0.60
						1/2 ICE	0.00	0.60
ED 1 00D 000 75000(2/0	ъ	NT-	Inside Pole	140.00 2.00	2			0.00
FB-L98B-002-75000(3/8	В	No	inside Pole	140.00 - 2.00	2	No Ice	0.00	
)						1/2" Ice	0.00	0.06
ID MOTORE DDD 1/6/	-	3.7	7 11 D 1	140.00 0.00		1" Ice	0.00	0.06
WR-VG122ST-BRDA(7/	В	No	Inside Pole	140.00 - 2.00	4	No Ice	0.00	0.14
16)						1/2" Ice	0.00	0.14
	-				_	1" Ice	0.00	0.14
2" Flex Conduit	В	No	Inside Pole	140.00 - 2.00	2	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
***						1" Ice	0.00	0.32
AVA7-50(1-5/8)	В	No	Inside Pole	128.00 - 9.00	12	No Ice	0.00	0.70
121127 00(2 070)		- 10	1110140 1 010	120.00 7.00		1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
IB158-1-08U8-S8J18(1-	В	No	Inside Pole	128.00 - 9.00	2	No Ice	0.00	1.30
5/8)	2	110	111111111111111111111111111111111111111	120.00 2.00	-	1/2" Ice	0.00	1.30
2.07						1" Ice	0.00	1.30
***						- 100	0.00	1.50
LDF4-50A(1/2)	Α	No	Inside Pole	74.00 - 8.00	1	No Ice	0.00	0.15
/		_			_	1/2" Ice	0.00	0.15
**						1" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A_R	A_F	C₄A₄ In Face	C_AA_A Out Face	Weight
	ft		ft^2	ft ²	ft^2	ft^2	K
L1	155.00-150.00	A	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.175	0.000	0.00
L2	150.00-145.00	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.175	0.000	0.00
L3	145.00-140.00	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.175	0.000	0.00

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job		Page
	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	7 of 31
Proje	ct	Date
	Existing 155-ft Monopole	14:44:25 06/26/18
Clien		Designed by
	Crown Castle	JRozina

Tower	Tower	Face	A_R	A_F	C_AA_A	C_AA_A	Weight
Section	Elevation ft		ft²	ft²	In Face ft²	Out Face ft²	K
L4	140.00-135.00	A	0.000	0.000	0.000	0.000	0.02
2.	110.00 100.00	В	0.000	0.000	0.188	0.000	0.04
		C	0.000	0.000	0.175	0.000	0.00
L5	135.00-130.00	A	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.04
		C	0.000	0.000	0.175	0.000	0.00
L6	130.00-123.21	Α	0.000	0.000	0.000	0.000	0.03
		В	0.000	0.000	0.255	0.000	0.11
		C	0.000	0.000	0.238	0.000	0.00
L7	123.21-121.79	A	0.000	0.000	0.000	0.000	0.01
		В	0.000	0.000	0.053	0.000	0.03
τ ο	101 70 117 70	C	0.000	0.000	0.050	0.000	0.00
L8	121.79-116.79	A B	0.000 0.000	0.000 0.000	0.000 0.188	0.000 0.000	0.02 0.10
		Č	0.000	0.000	0.188	0.000	0.10
L9	116.79-111.79	A	0.000	0.000	0.000	0.000	0.02
L,	110.77-111.77	В	0.000	0.000	0.188	0.000	0.10
		č	0.000	0.000	0.175	0.000	0.00
L10	111.79-106.79	Ă	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0,175	0.000	0.00
L11	106.79-101.79	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0.175	0.000	0.00
L12	101.79-97.50	Α	0.000	0.000	0.553	0.000	0.02
		В	0.000	0.000	0.714	0.000	0.08
		C	0.000	0.000	0.703	0.000	0.00
L13	97.50-97.25	A	0.000	0.000	0.092	0.000	0.00
		В	0.000	0.000	0.102	0.000	0.00
L14	97.25-92.25	C	0.000 0.000	0.000 0.000	0.101 1.854	0.000 0.000	0.00 0.02
LI4	97.23-92.23	A B	0.000	0.000	2.041	0.000	0.02
		C	0.000	0.000	2.041	0.000	0.10
L15	92.25-82.58	A	0.000	0.000	3.090	0.000	0.04
DIS	72.23-02.30	В	0.000	0.000	3.453	0.000	0.19
		Č	0.000	0.000	3.429	0.000	0.00
L16	82.58-81.58	Ā	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.037	0.000	0.02
		С	0.000	0.000	0.035	0.000	0.00
L17	81.58-76.58	A	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0.175	0.000	0.00
L18	76.58-71.58	A	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
T 10	71 CD CD OO	C	0.000	0.000	0.175	0.000	0.00
L19	71.58-68.00	A	0.000	0.000	0.776	0.000	0.02
		B C	0.000	0.000	0.910 0.901	0.000	0.07 0.00
L20	68.00-67.75	A	0.000	0.000	0.901	0.000 0.000	0.00
L20	08.00-07.73	В	0.000	0.000	0.107	0.000	0.00
		Č	0.000	0.000	0.106	0.000	0.00
L21	67.75-62.75	A	0.000	0.000	1.955	0.000	0.02
		В	0.000	0.000	2.143	0.000	0.10
		č	0.000	0.000	2.130	0.000	0.00
L22	62.75-57.75	Ā	0.000	0.000	1.978	0.000	0.02
		В	0.000	0.000	2.165	0.000	0.10
		С	0.000	0.000	2,153	0.000	0.00
L23	57.75-52.75	Α	0.000	0.000	2.002	0.000	0.02
		В	0.000	0.000	2.190	0.000	0.10
L24	52.75-43.03	C A	0.000 0.000	0.000 0.000	2.177 3.158	0.000 0.000	0.00 0.05

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job)	Page
	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	8 of 31
Pro	oject	Date
	Existing 155-ft Monopole	14:44:25 06/26/18
Cli	ient	Designed by
	Crown Castle	JRozina

Tower Section	Tower Elevation	Face	A_R	A_F	C_AA_A In Face	C_AA_A Out Face	Weight
	ft		ft²	ft²	ft²	ft ²	K
		В	0.000	0.000	3.523	0.000	0.19
		C	0.000	0.000	3.498	0.000	0.00
L25	43.03-42.03	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.037	0.000	0.02
		C	0.000	0.000	0.035	0.000	0.00
L26	42.03-37.03	A	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0.175	0.000	0.00
L27	37.03-32.03	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0.175	0.000	0.00
L28	32.03-27.03	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		С	0.000	0.000	0.175	0.000	0.00
L29	27.03-22.03	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0.175	0.000	0.00
L30	22.03-17.03	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
		C	0.000	0.000	0.175	0.000	0.00
L31	17.03-12.03	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.188	0.000	0.10
	ì	C	0.000	0.000	0.175	0.000	0.00
L32	12.03-7.03	Α	0.000	0.000	0.000	0.000	0.02
		В	0.000	0.000	0.076	0.000	0.08
		C	0.000	0.000	0.175	0.000	0.00
L33	7.03-2.03	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.175	0.000	0.00
L34	2.03-0.00	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	0.071	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower	Tower	Face	Ice	A_R	A_F	C_AA_A	C_AA_A	Weight
Section	Elevation fi	or Leg	Thickness in	ft²	ft²	In Face fi²	Out Face ft²	K
L1	155.00-150.00	A	1.748	0.000	0.000	0.000	0.000	0.02
ъ.	155.00-150.00	В	1.740	0.000	0.000	1.936	0.000	0.02
		Č		0.000	0.000	1.923	0.000	0.02
L2	150.00-145.00	A	1.742	0.000	0.000	0.000	0.000	0.02
LZ	130,00-143,00	В	1.742	0.000	0.000	1.930	0.000	0.02
		Č		0.000	0.000	1.917	0.000	0.02
т о	145.00 140.00		1.706					
L3	145.00-140.00	A	1.736	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.924	0.000	0.02
		C		0.000	0.000	1.911	0.000	0.02
L4	140.00-135.00	A	1.730	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.918	0.000	0.07
		C		0.000	0.000	1.905	0.000	0.02
L5	135.00-130.00	A	1.724	0.000	0.000	0.000	0.000	0.02
	100,000 100,000	В	••••	0.000	0.000	1.911	0.000	0.07
		Ĉ		0.000	0.000	1.899	0.000	0.02
L6	130.00-123.21	Ā	1.716	0.000	0.000	0.000	0.000	0.03
LO	150.00-125.21	B	1.710	0.000	0.000	2.585	0.000	0.14
* **		C	4	0.000	0.000	2.568	0.000	0.03
L7	123.21-121.79	Α	1.710	0.000	0.000	0.000	0.000	0.01
		В		0.000	0.000	0.541	0.000	0.03

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Jol	d	Page
	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	9 of 31
Pı	roject	Date
	Existing 155-ft Monopole	14:44:25 06/26/18
CI	lient	Designed by
i	Crown Castle	JRozina

Tower Section	Tower Elevation	Face or	Ice Thickness	A_R	A_F	$C_A A_A$ In Face	$C_A A_A$ Out Face	Weight
	ft	Leg	in	ft²	ft²	ft²	ft²	K
		С		0.000	0.000	0.537	0.000	10.0
L8	121.79-116.79	A	1.706	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.893	0.000	0.12
		C		0.000	0.000	1.881	0.000	0.02
L9	116.79-111.79	Α	1.698	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.886	0.000	0.12
		C		0.000	0.000	1.873	0.000	0.02
L10	111.79-106.79	A	1.691	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.878	0.000	0.12
		C		0.000	0.000	1.866	0.000	0.02
L11	106.79-101.79	Α	1.683	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.870	0.000	0.12
		C		0.000	0.000	1.858	0.000	0.02
L12	101.79-97.50	Α	1.675	0.000	0.000	1.142	0.000	0.04
		В		0.000	0.000	2.740	0.000	0.12
		C		0.000	0.000	2.729	0.000	0.04
L13	97.50-97.25	A	1.671	0.000	0.000	0.190	0.000	0.00
		В		0.000	0.000	0.283	0.000	0.01
		Ç		0.000	0.000	0.282	0.000	0.00
L14	97.25-92.25	A	1.667	0.000	0.000	3.801	0.000	0.09
		В		0.000	0.000	5.655	0.000	0.18
		C		0.000	0.000	5.643	0.000	0.09
L15	92.25-82.58	A	1.653	0.000	0.000	6.259	0.000	0.15
		В		0.000	0.000	9.820	0.000	0.33
		C		0.000	0.000	9.795	0.000	0.15
L16	82.58-81.58	A	1.643	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.368	0.000	0.02
		C		0.000	0.000	0.366	0.000	0.00
L17	81.58-76.58	A	1.637	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.824	0.000	0.12
T 10	76 60 71 70	C		0.000	0.000	1.812	0.000	0.02
L18	76.58-71.58	A	1.626	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.814	0.000	0.12
T 10	#1 FR CO OO	C	1 (17	0.000	0.000	1.801	0.000	0.02
L19	71.58-68.00	A	1.617	0.000	0.000	1.847	0.000	0.05
		В С		0.000	0.000	3.138	0.000	0.11
T 20	(0.00.67.75		1 (10	0.000	0.000	3.129	0.000	0.05
L20	68.00-67.75	A	1.612	0.000	0.000	0.231	0.000	0.00
		В		0.000	0.000	0.321	0.000	10.0
T 2 1	(77 75 (0 75	C	1.606	0.000	0.000	0.320	0.000	0.00
L21	67.75-62.75	A	1.606	0.000	0.000	4.606	0.000	0.10
		B C		0.000	0.000	6.399	0.000	0.19
L22	62.75-57,75	A	1.593	0.000 0.000	0.000 0.000	6.387	0.000	0.10
LZZ	02.13-31.13	В	1.393	0.000		4.593	0.000	0.10
		C		0.000	0.000 0.000	6.374	0.000	0.19
L23	57.75-52.75	A	1.579	0.000	0.000	6.361 4.579	0.000 0.000	0.10
1.43	31.13-32.13		1.379	0.000				0.10
		B C		0.000	0.000 0.000	6.346 6.334	0.000 0.000	0.19
L24	52,75-43.03	A	1.557	0.000	0.000	7.063	0.000	0.09 0.16
LL	32.73-43.03	В	1.557	0.000	0.000			
		C		0.000	0.000	10.454	0.000	0.34
L25	43.03-42.03	A	1.539	0.000	0.000	10.430 0.000	0.000 0.000	0.15 0.00
ركند	4J.VJ-42.VJ	В	1.237	0.000	0.000			
		C		0.000	0.000	0.349 0.346	0.000	0,02 0.00
L26	42.03-37.03	A	1.527	0.000	0.000		0.000	0.00
1120	44.03-37.03	В	1.521	0.000		0.000	0.000	
		C C		0.000	0.000	1.715	0.000	0.12
L27	37.03-32.03	A	1.507	0.000	0.000	1.702	0.000	0.02
<u></u>	31.03-34.03	В	1.50/	0.000	0.000	0.000	0.000	0.02
		C C		0.000	0.000	1.694	0.000	0.12
				0.000	0.000	1.682	0.000	0.02

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job	Page
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	10 of 31
Project	Date
Existing 155-ft Monopole	14:44:25 06/26/18
Client	Designed by
Crown Castle	JRozina

Tower Section	Tower Elevation	Face or	Ice Thickness	A_R	A_F	C₄A₄ In Face	$C_A A_A$ Out Face	Weight
	ft	Leg	in	ft²	ft²	fî²	ft²	K
L28	32.03-27.03	A	1.483	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.671	0.000	0.12
		C		0.000	0.000	1.658	0.000	0.02
L29	27.03-22.03	A	1.456	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.644	0.000	0.12
		C		0.000	0.000	1.631	0.000	0.02
L30	22.03-17.03	Α	1.423	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.611	0.000	0.11
		C		0.000	0.000	1.598	0.000	0.02
L31	17.03-12.03	A	1.382	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	1.569	0.000	0.11
		С		0.000	0.000	1.557	0.000	0.02
L32	12.03-7.03	A	1.325	0.000	0.000	0.000	0.000	0.02
		В		0.000	0.000	0.614	0.000	0.08
		C		0.000	0.000	1.500	0.000	0.02
L33	7.03-2.03	Α	1.230	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.000	0.000	0.04
		C		0.000	0.000	1.405	0.000	0.01
L34	2.03-0.00	A	1.059	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	0.501	0.000	0.00

Feed Line Center of Pressure

,					
Section	Elevation	CP_X	CP_Z	CP_X	CP_Z
				Ice	Ice
	ft	in	in	in	in
L1	155.00-150.00	0.2833	0.4627	1.0624	1.8086
L2	150.00-145.00	0.2840	0.4638	1.0806	1.8397
L3	145.00-140.00	0.2846	0.4649	1.0973	1.8682
L4	140.00-135.00	0.2851	0.4658	1.1126	1.8942
L5	135.00-130.00	0.2857	0.4666	1.1265	1.9180
L6	130.00-123.21	0.2862	0.4676	1.1414	1.9434
L7	123.21-121.79	0.2866	0.4682	1.1503	1.9585
L8	121.79-116.79	0.2869	0.4687	1.1563	1.9687
L9	116.79-111.79	0.2873	0.4694	1.1682	1.9890
L10	111.79-106.79	0.2877	0.4701	1.1789	2.0072
L11	106.79-101.79	0.2881	0.4707	1.1884	2.0234
L12	101.79-97.50	0.2354	0.3847	1.0020	1.7060
L13	97.50-97.25	0.1725	0.2819	0.7755	1.3203
L14	97.25-92.25	0.1743	0.2849	0.7821	1.3316
L15	92.25-82.58	0.1915	0.3129	0.8414	1.4327
L16	82.58-81.58	0.2894	0.4729	1.2194	2.0763
L17	81.58-76.58	0.2895	0.4731	1.2170	2.0720
L18	76.58-71.58	0.2898	0.4735	1.2207	2.0783
L19	71.58-68.00	0.2211	0.3613	0.9231	1.5716
L20	68.00-67.75	0.1755	0.2869	0.7770	1.3229
L21	67.75-62.75	0.1769	0.2891	0.7815	1.3305
L22	62.75-57.75	0.1795	0.2933	0.7894	1.3440
L23	57.75-52.75	0.1819	0.2973	0.7964	1.3559
L24	52.75-43.03	0.2064	0.3373	0.8650	1.4725
L25	43.03-42.03	0.2910	0.4755	1.2264	2.0879
L26	42.03-37.03	0.2911	0.4757	1.2133	2.0654
L27	37.03-32.03	0.2913	0.4760	1.2072	2.0548
L28	32.03-27.03	0.2914	0.4762	1.1988	2.0405
L29	27.03-22.03	0.2915	0.4764	1.1876	2.0213
L30	22.03-17.03	0.2917	0.4767	1.1725	1.9953

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Јоь BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 11 of 31
Project Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client Crown Castle	Designed by JRozina

Section	Elevation	CP_X	CP_Z	CP _X Ice	CP _Z Ice
	ft	in	in	in	in
L31	17.03-12.03	0.2918	0.4769	1.1513	1.9590
L32	12.03-7.03	0.1186	0.3819	0.4653	1.5753
L33	7.03-2.03	0.0000	0.3168	0.0000	1.2673
L34	2.03-0.00	0.0000	0.3168	0.0000	1.1278

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower	Feed Line	Description	Feed Line	K_a	Ka
Section	Record No.	-	Segment Elev.	No Ice	Ice
L1	1	Safety Line 3/8	150.00 -	1.0000	1.0000
		· ·	155.00		
L1	2	5/8" Step Pegs	150.00 -	1.0000	1.0000
		. •	155.00		
L2	1	Safety Line 3/8	145.00 -	1.0000	1.0000
	ŀ	Ť	150.00		
L2	2	5/8" Step Pegs	145.00 -	1.0000	1.0000
		• -	150.00		
L3	1	Safety Line 3/8	140.00 -	1.0000	1.0000
		,	145.00		
L3	2	5/8" Step Pegs	140.00 -	1.0000	1.0000
		1 0	145.00		
L4	1	Safety Line 3/8	135.00 -	1.0000	1.0000
		,	140.00		
L4	2	5/8" Step Pegs	135.00 -	1.0000	1.0000
	_	₩ = F = - 8	140.00	-	
L5	1	Safety Line 3/8	130.00 -	1.0000	1,0000
	_	- ,	135.00		
L5	2	5/8" Step Pegs	130.00 -	1.0000	1.0000
22	-		135.00		
L6	1	Safety Line 3/8	123.21 -	1.0000	1.0000
20		2012009 22222	130.00		
L6	2	5/8" Step Pegs	123.21 -	1.0000	1.0000
1.50	2	5.0 Stop 1 050	130.00	******	
L8	1	Safety Line 3/8	116.79 -	1.0000	1.0000
	1	24.23, 4.11	121.79		
L8	2	5/8" Step Pegs	116.79 -	1.0000	1.0000
	-	***FB-	121.79		
L9	1	Safety Line 3/8		1.0000	1.0000
	_		116.79		
L9	2	5/8" Step Pegs	111.79 -	1.0000	1.0000
		1 5	116.79		1
L10	1	Safety Line 3/8	106.79 -	1.0000	1.0000
	_		111.79		1
L10	2	5/8" Step Pegs	106.79 -	1.0000	1.0000
	_		111.79		
L11	1	Safety Line 3/8		1.0000	1.0000
1	<u> </u>	,	106.79		
L11	1 2	5/8" Step Pegs		1.0000	1.0000
1]	- - 8-	106.79	l]
L12	1	Safety Line 3/8		1.0000	1.0000
L12	2	5/8" Step Pegs	97.50 - 101.79	1.0000	1.0000
L12		SFP-045100 (No Weight)	97.50 - 99.00	1.0000	1.0000

Job	Page	
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	12 of 31	
Project	Date	
Existing 155-ft Monopole	14:44:25 06/26/18	
Client	Designed by	
Crown Castle	JRozina	

Tower	Feed Line	Description	Feed Line	K _a No Ice	K _a Ice	
Section	Record No.	SFP-045100 (No Weight)	Segment Elev. 97.50 - 99.00	1.0000	1.0000	
L12 L12	23 24	SFP-045100 (No Weight)	97.50 - 99.00	1.0000	1.0000	
L12 L13	1	Safety Line 3/8	97.25 - 97.50	1.0000	1.0000	
L13	2	5/8" Step Pegs	97.25 - 97.50	1.0000	1.0000	
L13	22	SFP-045100 (No Weight)	97.25 - 97.50	1.0000	1.0000	
L13	23	SFP-045100 (No Weight)	97.25 - 97.50	1.0000	1.0000	
L13	24	SFP-045100 (No Weight)	97.25 - 97.50	1,0000	1.0000	
L14	1	Safety Line 3/8	92.25 - 97.25	1.0000	1.0000	
L14	2	5/8" Step Pegs	92.25 - 97.25	1.0000	1.0000	
L14	22	SFP-045100 (No Weight)	92.25 - 97.25	1.0000	1.0000	
L14	23	SFP-045100 (No Weight)	92.25 - 97.25	1.0000	1.0000	
L14	24	SFP-045100 (No Weight)	92.25 - 97.25	1.0000	1.0000	
L15	1	Safety Line 3/8	82.58 - 92.25	1.0000	1.0000	
L15	2	5/8" Step Pegs	82.58 - 92.25	1.0000 1.0000	1.0000 1.0000	
L15	22	SFP-045100 (No Weight) SFP-045100 (No Weight)	84.00 - 92.25 84.00 - 92.25	1.0000	1.0000	
L15	23 24	SFP-045100 (No Weight)	84.00 - 92.25	1.0000	1.0000	
L15 L17	1	Safety Line 3/8	76.58 - 81.58	1.0000	1.0000	
L17	2	5/8" Step Pegs	76.58 - 81.58	1.0000	1.0000	
L17	1	Safety Line 3/8	71.58 - 76.58	1.0000	1.0000	
L18	2	5/8" Step Pegs	71.58 - 76.58	1.0000	1.0000	
L19	1	Safety Line 3/8	68.00 - 71.58	1.0000	1.0000	
L19	2	5/8" Step Pegs	68.00 - 71.58	1.0000	1.0000	
L19	19	SFP-060100 (No Weight)	68.00 - 70.00	1.0000	1.0000	
L19	20	SFP-060100 (No Weight)	68.00 - 70.00	1.0000	1.0000	
L19	21	SFP-060100 (No Weight)	68.00 - 70.00	1.0000	1.0000	
L20	1	Safety Line 3/8	67.75 - 68.00	1.0000	1.0000	
L20	2	5/8" Step Pegs	67.75 - 68.00	1.0000	1.0000	
L20	19	SFP-060100 (No Weight)	67.75 - 68.00	1.0000	1.0000	
L20	20	SFP-060100 (No Weight)		1.0000 1.0000	1.0000 1.0000	
L20	21	SFP-060100 (No Weight) Safety Line 3/8		1.0000	1.0000	
L21 L21	1) 2	5/8" Step Pegs	I .	1.0000	1.0000	
L21	19	SFP-060100 (No Weight)	1	1.0000	1.0000	
L21	20	SFP-060100 (No Weight)		1.0000	1.0000	
L21	21	SFP-060100 (No Weight)	1	1.0000	1.0000	
L22	1	Safety Line 3/8		1.0000	1.0000	
L22	2	5/8" Step Pegs	57.75 - 62.75	1.0000	1.0000	
L22	19	SFP-060100 (No Weight)		1.0000	1.0000	
L22	20	SFP-060100 (No Weight)		1.0000	1.0000	
L22	21	SFP-060100 (No Weight)		1.0000	1.0000	
L23	1	Safety Line 3/8		1.0000	1.0000	
L23	2	5/8" Step Pegs		1.0000	1.0000 1.0000	
L23	19	SFP-060100 (No Weight)		1.0000 1.0000	i i	
L23	20 21	SFP-060100 (No Weight) SFP-060100 (No Weight)		1.0000		
L23 L24	1	Srr-000100 (No Weight) Safety Line 3/8	1	1,0000		
L24 L24		5/8" Step Pegs		1.0000		
L24 L24		SFP-060100 (No Weight)		1,0000	1.0000	
L24		SFP-060100 (No Weight)	1	1.0000	1.0000	
L24		SFP-060100 (No Weight)	1		1.0000	
L26	1	Safety Line 3/8		1.0000	1.0000	
L26	2	5/8" Step Pegs				
L27	1	Safety Line 3/8				
L27	2	5/8" Step Pegs				
L28	1	Safety Line 3/8				
L28	2	5/8" Step Pegs				
L29		Safety Line 3/8				
L29	2	5/8" Step Pegs Safety Line 3/8				
L30 L30		5/8" Step Pegs			1	
L30		Safety Line 3/8				
1 121	1 1	I Dancey Enile 3/6	1 12.05 17.05	1.0000	1.0000	

Job		Page
E	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	13 of 31
Projec	ct	Date
	Existing 155-ft Monopole	14:44:25 06/26/18
Client		Designed by
	Crown Castle	JRozina

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L31	2	5/8" Step Pegs	12.03 - 17.03	1.0000	1.0000
L32	1	Safety Line 3/8	10.00 - 12.03	1.0000	1.0000
L32	2	5/8" Step Pegs	7.03 - 12.03	1.0000	
L33	2	5/8" Step Pegs	2.03 - 7.03	1.0000	1.0000
L34	2	5/8" Step Pegs	0.00 - 2.03	1.0000	1.0000

Dis	crete	Tower	l oads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement		C_AA_A Front	C _A A _A Side	Weight
			Vert ft ft ft	o	ft		ft²	ft²	K
NNVV-65B-R4 w/ Mount	A	From Leg	4.00	0.0000	155.00	No Ice	12,51	7.41	0.10
Pipe			0.00			1/2" Ice	13.11	8.60	0.19
			-5.00			1" Ice	13.67	9.50	0.29
NNVV-65B-R4 w/ Mount	В	From Leg	4.00	0.0000	155.00	No Ice	12.51	7.41	0.10
Pipe		J	0.00			1/2" Ice	13.11	8.60	0.19
1			-5.00			1" Ice	13.67	9.50	0.29
NNVV-65B-R4 w/ Mount	C	From Leg	4.00	0.0000	155.00	No Ice	12.51	7.41	0.10
Pipe		Ū	0.00			1/2" Ice	13.11	8.60	0.19
•			-5.00			1" Ice	13.67	9.50	0.29
APXVTM14-ALU-I20 w/	Α	From Leg	4.00	0.0000	155.00	No Ice	6.58	4.96	0.08
Mount Pipe		Ū	0.00			1/2" Ice	7.03	5.75	0.13
			-5.00			t" Ice	7.47	6.47	0.19
APXVTM14-ALU-I20 w/	В	From Leg	4.00	0.0000	155.00	No Ice	6.58	4.96	0.08
Mount Pipe		Ũ	0.00			1/2" Ice	7.03	5.75	0.13
1			-5.00			1" Ice	7.47	6.47	0.19
APXVTM14-ALU-I20 w/	C	From Leg	4.00	0.0000	155.00	No Ice	6.58	4.96	0.08
Mount Pipe		Ü	0.00			1/2" Ice	7.03	5.75	0.13
1			-5.00			1" Ice	7.47	6.47	0.19
TD-RRH8x20-25	A	From Leg	4.00	0.0000	155.00	No Ice	4.05	1.53	0.07
		J	0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	В	From Leg	4.00	0.0000	155.00	No Ice	4.05	1.53	0.07
		•	0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	С	From Leg	4.00	0.0000	155.00	No Ice	4.05	1.53	0.07
		-	0.00			1/2" Ice	4.30	1.71	0.10
			0.00			1" Ice	4.56	1.90	0.13
(2) RRH2X50-800	Α	From Leg	4.00	0.0000	155.00	No Ice	1.70	1.28	0.05
()		_	0.00			1/2" Ice	1.86	1.43	0.07
			0.00			1" Ice	2.03	1.58	0.09
(2) RRH2X50-800	В	From Leg	4.00	0.0000	155.00	No Ice	1.70	1.28	0.05
` ,		_	0.00			1/2" Ice	1.86	1.43	0.07
			0.00			1" Ice	2.03	1.58	0.09
(2) RRH2X50-800	C	From Leg	4.00	0.0000	155.00	No Ice	1.70	1.28	0.05
7 /		-	0.00			1/2" Ice	1.86	1.43	0.07
			0.00			1" Ice	2.03	1.58	0.09
PCS 1900MHz	Α	From Leg	4.00	0.0000	155.00	No Ice	2.32	2.24	0.06
4x45W-65MHz		•	0.00			1/2" Ice	2.53	2.44	0.08
			0.00			1" Ice	2.74	2.65	0.11
PCS 1900MHz	В	From Leg	4.00	0.0000	155.00	No Ice	2.32	2.24	0.06

Job	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 14 of 31
Pro	Dject Existing 155-ft Monopole	Date 14:44:25 06/26/18
Clie	ent Crown Castle	Designed by JRozina

Description	Face or	Offset Type	Offsets: Horz	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
	Leg		Lateral						
			Vert ft	o	ft		ft²	ft^2	K
			ft ft		<i>)</i> -		J*	,,,	
4x45W-65MHz			0.00			1/2" Ice	2.53	2.44	0.08
			0.00			1" Ice	2.74	2.65	0.11
PCS 1900MHz	C	From Leg	4.00	0.0000	155.00	No Ice	2.32	2.24	0.06
4x45W-65MHz			0.00			1/2" Ice	2.53	2.44	0.08
			0.00			1" Ice	2.74	2.65	0.11
(2) 6' x 2" Mount Pipe	Α	From Leg	4.00	0.0000	155.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
(0) (1 0113 f . 75)	-	T T	0.00	0.0000	155.00	1" Ice	2.29	2.29	0.05
(2) 6' x 2" Mount Pipe	В	From Leg	4.00	0.0000	155.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	0.02 0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) () 2 M		Eugas I ag	0.00	0.0000	155.00	No Ice	1.43	1.43	0.03
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00	0.0000	133.00	1/2" Ice	1.43	1.92	0.02
			0.00			1" Ice	2.29	2.29	0.05
Platform Mount [LP 712-1]	С	None	0.00	0.0000	155.00	No Ice	24.53	24.53	1.34
Platform Would [LF /12-1]	C	None		0.0000	133.00	1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96
Transition Ladder	C	From Leg	2.00	0.0000	155.00	No Ice	6.00	6.00	0.16
Transition Laudei	C	110m Log	0.00	0.0000	155.60	1/2" Ice	8.00	8.00	0.24
			-2.00			1" Ice	10.00	10.00	0.32
8' x 3" Mount Pipe	С	From Face	4.00	0.0000	155.00	No Ice	2.40	2.40	0.04
o a o mount ipo	·	110111111100	0.00	0.000	200.00	1/2" Ice	3.19	3.19	0.06
			4.00			1" Ice	3.67	3.67	0.08
***								_	
RRUS 11	Α	From Leg	1.00	25.0000	142.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
	_		0.00	4 - 4004		l" Ice	3.21	1.49	0.10
RRUS 11	В	From Leg	1.00	15.0000	142.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
DD710 11			0.00	05.0000	1.40.00	1" Ice	3.21	1.49	0.10 0.05
RRUS 11	С	From Leg	1.00	25.0000	142.00	No Ice 1/2" Ice	2.78	1.19	0.03
			0.00			1/2 Ice 1" Ice	2.99 3.21	1.33 1.49	0.07
0:4- A M+ (CO 102 2)	C	Mana	0.00	0.0000	142.00	No Ice	3.00	3.00	0.10
Side Arm Mount [SO 102-3]	С	None		0.0000	142.00	1/2" Ice	3.48	3.48	0.11
						1" Ice	3.46	3.96	0.11
***						1 100	3.50	3.90	0.17
Platform Mount [LP 303-1]	C	None		0.0000	140.00	No Ice	14.66	14.66	1.25
Transfer to the second [E1 303 1]	•	110110		***************************************		1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
(2) 7770.00 w/ Mount Pipe	Α	From Face	4.00	30.0000	140.00	No Ice	5.75	4.25	0.06
(-) · · · · · · · · · · · · · · · · · · ·			2.00			1/2" Ice	6.18	5.01	0.10
			0.00			I" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	В	From Face	4.00	-25.0000	140.00	No Ice	5.75	4.25	0.06
			2.00			1/2" Ice	6.18	5.01	0.10
			0.00			l" Ice	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	С	From Face	4.00	65.0000	140.00	No Ice	5.75	4.25	0.06
•			2.00			1/2" Ice	6.18	5.01	0.10
			0.00			1" Ice	6.61	5.71	0.16
HPA-65R-BUU-H8 w/	Α	From Face	4.00	-35.0000	140.00	No Ice	13.21	9.58	0.10
Mount Pipe			-6.00			1/2" Ice	13.90	11.05	0.20
-			0.00			1" Ice	14.59	12.50	0.30
HPA-65R-BUU-H8 w/	В	From Face	4.00	-35.0000	140.00	No Ice	13.21	9.58	0.10
Mount Pipe			- 6.00			1/2" Ice	13.90	11.05	0.20
			0.00			1" Ice	14.59	12.50	0.30
HPA-65R-BUU-H8 w/	C	From Face	4.00	-45.0000	140.00	No Ice	13.21	9.58	0.10
Mount Pipe	•		-6.00			1/2" Ice	13.90	11.05	0.20

Job	·	Page
BU#	876366) WAPPINGERS FALLS / PRESTON CIT	15 of 31
Project		Date
	Existing 155-ft Monopole	14:44:25 06/26/18
Client		Designed by
	Crown Castle	JRozina

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement		C _A A _A Front	C _A A _A Side	Weight
			Vert ft ft ft	o	ft		ft²	ft²	K
		Amor	0.00			1" Ice	14.59	12.50	0.30
80010966 w/ Mount Pipe	Α	From Face	4.00	-35.0000	140.00	No Ice	17.60	9.64	0.15
			-2.00			1/2" Ice	18.33	11.15	0.26
			0.00			1" Ice	19.07	12,70	0.39
80010966 w/ Mount Pipe	В	From Face	4.00	-35.0000	140.00	No Ice	17.60	9.64	0.15
			-2.00			1/2" Ice	18.33	11.15	0.26
			0.00		440.00	1" Ice	19.07	12.70	0.39
80010966 w/ Mount Pipe	C	From Face	4.00	-45.0000	140.00	No Ice	17.60	9.64	0.15
			-2.00			1/2" Ice	18.33	11.15	0.26 0.39
			0.00	25,0000	140.00	1" Ice	19.07	12.70	0.39
RRUS 32 B2	Α	From Face	4.00	-35.0000	140.00	No Ice 1/2" Ice	2.73 2.95	1.67 1.86	0.03
			0.00			1/2 1ce	3.18	2.05	0.10
	-	n 10	0.00	25 0000	140.00	No Ice	2.73	1.67	0.10
RRUS 32 B2	В	From Face	4.00	-35.0000	140.00	1/2" Ice	2.75	1.86	0.03
			0.00			I" Ice	3.18	2.05	0.10
DD114 20 D0	_	F F	4.00	-45.0000	140.00	No Ice	2.73	1.67	0.05
RRUS 32 B2	C	From Face	0.00	-43.0000	140.00	1/2" Ice	2.75	1.86	0.07
			0.00			1" Ice	3.18	2.05	01.0
DDIIC 4470 D14	Α	From Face	4.00	-35.0000	140.00	No Ice	1.84	1.06	0.06
RRUS 4478 B14	A	Prom Pace	0.00	-35.0000	140.00	1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
RRUS 4478 B14	В	From Face	4.00	-35.0000	140.00	No Ice	1.84	1.06	0.06
KK05 4478 B14	ъ	1 Tom 1 acc	0.00	35.0000	110.00	1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
RRUS 4478 B14	C	From Face	4.00	-45.0000	140.00	No Ice	1.84	1.06	0.06
1000 4470 014	·	11011111400	0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
(2) LGP21401	Α	From Face	4.00	30.0000	140.00	No Ice	1.10	0.21	0.01
(-)			0.00			1/2" Ice	1.24	0.27	0.02
			0.00			1" Ice	1.38	0.35	0.03
(2) LGP21401	В	From Face	4.00	-25.0000	140.00	No Ice	1.10	0.21	0.01
` '			0.00			1/2" Ice	1.24	0.27	0.02
			0.00			1" Ice	1.38	0.35	0.03
(2) LGP21401	C	From Face	4.00	65.0000	140.00	No Ice	1.10	0.21	10.0
			0.00			1/2" Ice	1.24	0.27	0.02
			0.00		4.40.00	1" Ice	1.38	0.35	0.03
(2) LGP21901	Α	From Face	4.00	30.0000	140.00	No Ice	0.23	0.16	0.01
			0.00			1/2" Ice	0.29	0.21	0.01 0.01
= ===	_		0.00	05.0000	140.00	I" Ice	0.36	0.28	0.01
(2) LGP21901	В	From Face	4.00	-25.0000	140.00	No Ice 1/2" Ice	0.23 0.29	0.16 0.21	0.01
			0.00			1/2" Ice 1" Ice	0.29	0.21	0.01
(a) I CD31001	-	n F	0.00	65.0000	140.00	No Ice	0.30	0.16	0.01
(2) LGP21901	C	From Face	4.00 0.00	03.0000	140.00	1/2" Ice	0.29	0.10	0.01
			0.00			1" Ice	0.36	0.28	0.01
DCC 49 60 19 9E	В	From Face	1.00	-35,0000	140.00	No Ice	2.20	2.20	0.02
DC6-48-60-18-8F	ь	FIOIII Face	0.00	-55,0000	140.00	1/2" Ice	2.40	2.40	0.04
			0.00			1" Ice	2.60	2.60	0.07
DC6-48-60-18-8F	С	From Face	1.00	-45.0000	140.00	No Ice	2.20	2.20	0.02
DC0-40-00-10-0L	C	riom race	0.00	-45.0000	1-10.00	1/2" Ice	2.40	2.40	0.04
			0.00			1" Ice	2.60	2.60	0.07
*** LPA-80063/6CF w/ Mount	Α	From Leg	4.00	-20.0000	128.00	No Ice	9.59	9.98	0.05
Pipe	11	110111 1108	0.00			1/2" Ice	10.06	10.94	0.14
1 ipo			3.00			1" Ice	10.54	11.77	0.24
LPA-80063/6CF w/ Mount	Α	From Leg	4.00	0.0000	128.00	No Ice	9.59	9.98	0.05

Job	Page
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	16 of 31
Project	Date
Existing 155-ft Monopole	14:44:25 06/26/18
Client	Designed by
Crown Castle	JRozina

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement		$C_A A_A$ Front	C_AA_A Side	Weight
	0		Vert ft ft ft	a	ft		ft²	ft²	K
Pipe			0.00			1/2" Ice	10.06	10.94	0.14
(2) LPA-80063/6CF w/	В	From Leg	3.00 4.00	-20.0000	128.00	1" Ice No Ice	10.54 9.59	11.77 9.98	0.24 0.05
Mount Pipe	ь	Tioni reg	0.00	-20.0000	120.00	1/2" Ice	10.06	10.94	0.14
			3.00			1" Ice	10.54	11.77	0.24
(2) LPA-80063/6CF w/	C	From Leg	4.00	-10.0000	128.00	No Ice	9.59	9.98	0.05
Mount Pipe			0.00			1/2" Ice	10.06	10.94	0.14
IAIRI 66D D2D/ Mount	٨	From Log	3.00 4.00	40.0000	128.00	1" Ice No Ice	10.54 9.35	11.77 7.65	0.24 0.09
JAHH-65B-R3B w/ Mount Pipe	Α	From Leg	0.00	40.0000	128.00	1/2" Ice	9.92	8.83	0.17
ripe			3.00			1" Ice	10.46	9.73	0.25
JAHH-65B-R3B w/ Mount	Α	From Leg	4.00	40.0000	128.00	No Ice	9.35	7.65	0.09
Pipe		_	0.00			1/2" Ice	9.92	8.83	0.17
			3.00			1" Ice	10.46	9.73	0.25
JAHH-65B-R3B w/ Mount	В	From Leg	4.00	20.0000	128.00	No Ice	9.35	7.65	0.09 0.17
Pîpe			0.00 3.00			1/2" Ice 1" Ice	9.92 10.46	8.83 9.73	0.17
JAHH-65B-R3B w/ Mount	В	From Leg	4.00	20.0000	128.00	No Ice	9.35	7.65	0.09
Pipe		110111208	0.00	20.0000	1-0,00	1/2" Ice	9.92	8.83	0.17
			3.00			I" Ice	10.46	9.73	0.25
JAHH-65B-R3B w/ Mount	C	From Leg	4.00	20.0000	128.00	No Ice	9.35	7.65	0.09
Pipe			0.00			1/2" Ice	9.92	8.83	0.17
11111 (CD DOD (A)	•	F I	3.00	20.0000	120.00	1" Ice	10.46 9.35	9.73 7.65	0.25 0.09
JAHH-65B-R3B w/ Mount	С	From Leg	4.00 0.00	20.0000	128.00	No Ice 1/2" Ice	9.33 9.92	8.83	0.09
Pipe			3.00			1" Ice	10.46	9.73	0.25
RRH2x60-700	Α	From Leg	4.00	40.0000	128.00	No Ice	3.50	1.82	0.06
1442			0.00			1/2" Ice	3.76	2.05	0.08
			6.00			1" Ice	4.03	2.29	0.11
RRH2x60-700	В	From Leg	4.00	20.0000	128.00	No Ice	3.50	1.82	0.06
			0.00 6.00			1/2" Ice 1" Ice	3.76 4.03	2.05 2.29	0.08 0.11
RRH2x60-700	С	From Leg	4.00	20.0000	128.00	No Ice	3.50	1.82	0.06
KK112x00-700	C	Hom Leg	0.00	20.0000	120.00	1/2" Ice	3.76	2.05	0.08
			6.00			1" Ice	4.03	2.29	0.11
B66A RRH4X45-4R	Α	From Leg	4.00	40.0000	128.00	No Ice	2.54	1.61	0.06
			0.00			1/2" Ice	2.75	1.79	0.08
(n) n (() nnviiti(in	-		6.00	20.0000	100.00	I" Ice	2.97	1.98	0.10 0.06
(2) B66A RRH4X45-4R	В	From Leg	4.00 0.00	20.0000	128.00	No Ice 1/2" Ice	2.54 2.75	1.61 1.79	0.08
			6.00			l" Ice	2.97	1.98	0.10
B5 4T4R RRH4X40	Α	From Leg	4.00	40.0000	128.00	No Ice	1.32	0.75	0.05
AIRSCALE		· ·	0.00			1/2" Ice	1.47	0.86	0.06
			6.00			1" Ice	1.62	0.98	0.07
(2) B5 4T4R RRH4X40	C	From Leg	4.00	20.0000	128.00	No Ice	1.32	0.75	0.05
AIRSCALE			0.00			1/2" Ice 1" Ice	1.47 1.62	0.86 0.98	0.06 0.07
RVZDC-6627-PF-48	A	From Leg	6.00 4.00	40.0000	128.00	No Ice	3.79	2.51	0.07
X 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	А	1.10m reg	0.00	TO.0000	120.00	1/2" Ice	4.04	2.73	0.06
			6.00			1" Ice	4.30	2.95	0.10
T-Arm Mount [TA 602-3]	C	None		0.0000	128.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						l" Ice	19.29	19.29	1.21
***		Enom: Los	2 00	15 0000	74.00	No Iss	0.14	0.14	0.01
KS24019-L112A	С	From Leg	3.00 0.00	-15.0000	74.00	No Ice 1/2" Ice	0.14	0.14	0.01
			0.00			1/2 100	0.26	0.26	0.01

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job		Page		
В	U# 876366) WAPPINGERS FALLS / PRESTON CIT	17 of 31		
Projec	t	Date		
	Existing 155-ft Monopole	14:44:25 06/26/18		
Client		Designed by		
	Crown Castle	JRozina		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement		C_AA_A Front	C _A A _A Side	Weight
			Vert ft ft ft	o	ft		ft²	fî²	K
Side Arm Mount [SO 701-1]	С	From Leg	0.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09

Load Combinations

Comb.	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	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
4 <u>1</u> 42	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 18 of 31
Project Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client Crown Castle	Designed by JRozina

Comb. No.	A SOCIAL PROPERTY OF THE PROPE	Description	
43	Dead+Wind 120 deg - Service		
44	Dead+Wind 150 deg - Service		
45	Dead+Wind 180 deg - Service		
46	Dead+Wind 210 deg - Service		
47	Dead+Wind 240 deg - Service		
48	Dead+Wind 270 deg - Service		
49	Dead+Wind 300 deg - Service		
50	Dead+Wind 330 deg - Service		

Maximum Member Forces

Section	Elevation	Component	Condition	Gov.	Axial	Major Axis	Minor Axis Moment
No.	ft	Туре		Load Comb.	K	Moment kip-ft	kip-ft
	1.5.5 1.50	T. 1	N f T '	26	0.00	-0.00	0.00
L1	155 - 150	Pole	Max Tension Max. Compression	26 26	-8.63	1.12	-1.34
			Max. Mx	20	-8.03 -2.74	20.11	-0.35
			Max. My	20 14	-2.74 -2.76	0.36	-20.12
			Max. Vy	20	-6.32	20.11	-0.35
				14	6.31	0.36	-2 0.12
			Max. Vx	22	0.51	0.30	1.31
	.50 .15	D. I.	Max. Torque	1	0.00	0.00	0.00
L2	150 - 145	Pole	Max Tension	26	-9.17	1.11	-1.39
			Max. Compression	20	-9.17 -2.97	52.49	-0.39
			Max. Mx	20 14	-2.99	0.38	-52.47
			Max, My	20	-2.99 -6.63	52.49	-0.39
			Max. Vy	14	6.63	0.38	-52.47
			Max. Vx	22	0.05	0.56	1.31
* 2	145 140	D-1-	Max. Torque	1	0.00	0.00	0.00
L3	145 - 140	Pole	Max Tension	26	-10.38	1.10	-1,44
			Max. Compression	20	-3.43	87.36	-0.42
			Max. Mx	20 14	-3.45	0.39	-87.27
			Max. My	20	-3.43 -7.41	87.36	-0.42
			Max. Vy	14	7.38	0.39	-87.27
			Max. Vx	22	7.50	0.37	1.32
Ŧ.,	105	D. 1	Max. Torque	1	0.00	0.00	0.00
L4	140 - 135	Pole	Max Tension	26	-19.84	0.90	-1.61
			Max. Compression	20	-6.19	157.35	-0.57
			Max. Mx Max. My	14	-6.25	0.78	-156.42
				20	-14.17	157.35	-0.57
			Max. Vy Max. Vx	14	13.99	0.78	-156.42
			Max. Torque	20	13.99	0.76	2.78
v ~	125 120	D-1-	Max. Torque Max Tension	1	0.00	0.00	0.00
L5	135 - 130	Pole	Max. Compression	26	-20.50	0.89	-1.66
			Max. Mx	20	-6.58	229.02	-0.96
				14	-6.63	1.15	-227.17
			Max. My Max. Vy	20	-14.50	229.02	-0.96
			Max. Vy Max. Vx	i4	14.32	1.15	-227.17
			Max. Torque	20	14.52	1.13	2.78
	100 100 01	n.t.	Max Tension	1	0.00	0.00	0.00
L6	130 - 123.21	Pole	Max. Compression	26	-29.01	0.51	-0.88
				20	-8.59	301.68	-1.54
			Max. Mx	14	-8.68	1.63	-298.50
			Max. My	20	-20.92	301.68	-1.54
			Max. Vy	14	20.61	1.63	-298.50
			Max. Vx	20	20.01	1.03	2.78
т 👨	102.01	Dala	Max. Torque Max Tension	1	0.00	0.00	0.00
L7	123.21 - 121.79	Pole	May religion	1			
			Max. Compression	26	-30.26	0.50	-0.94

Job	Page
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	19 of 31
Project	Date
Existing 155-ft Monopole	14:44:25 06/26/18
Client Crown Castle	Designed by JRozina

Section No.	Elevation ft	Component Type	Condition	Gov. Load	Axial	Major Axis Moment	Minor Axis Moment
	•	,		Comb.	K	kip-ft	kip-ft
		,	Max. Mx	20	-9.36	407.25	-2.22
			Max. My	14	- 9.44	2.29	-402.51
			Max, Vy	20	-21.31	407.25	-2.22
			Max. Vx	14	21.00	2.29	-402.51
			Max. Torque	20			1.72
L8	121.79 - 116.79	Pole	Max Tension	1	0.00	0.00	0.00
	110.75		Max. Compression	26	-31.14	0.48	-1.00
			Max. Mx	20	-10.02	514.60	-2.90
			Max. My	14	-10.10	2.95	-508.30
			Max. Vy	20	-21.65	514.60	-2.90
			Max. Vx	14	21.34	2.95	-508.30
			Max. Torque	20			1.72
L9	116.79 - 111.79	Pole	Max Tension	1	0.00	0.00	0.00
	111.77		Max. Compression	26	-32.05	0.47	-1.06
			Max. Mx	20	-10.72	623.66	-3.57
			Max. My	14	-10.79	3.60	-615.79
			Max. Vy	20	-21.99	623.66	-3.57
			Max. Vx	14	21.68	3.60	-615.79
			Max. Torque	20			1.72
L10	111.79 -	Pole	Max Tension	ī	0.00	0.00	0.00
	106.79		Max. Compression	26	-32.99	0.45	-1.12
			Max. Mx	20	-32.99 -11.44	734.42	-1.12 -4.25
						4.26	-4.23 -724.99
			Max. My	14	-11.51		
			Max. Vy	20	-22.33	734.42 4.26	-4.25 -724.99
			Max. Vx	14	22.02	4,20	
L11	106.79 -	Pole	Max. Torque Max Tension	20 1	0.00	0.00	1.71 0.00
	101.79		M Oin	26	22.06	0.42	1 10
			Max. Compression	26	-33.96	0.43	-1.18
			Max. Mx	20	-12.20	846.88	-4.92
			Max. My	14	-12.27	4.91	-835.88
			Max. Vy	20	-22.67	846.88	-4.92
			Max. Vx	14	22.36	4.91	-835.88
7.10	101.50 05.5	D 1	Max. Torque	20	0.00	0.00	1.71
L12	101.79 - 97.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.88	0.41	-1.22
			Max. Mx	20	-12.87	944.73	-5.49
			Max. My	14	-12.93	5.47	-932.38
			Max. Vy	20	-22.97	944.73	-5.49
			Max. Vx	14	22.65	5.47	-932.38
7.10	07.5 07.05	D 1	Max. Torque	20	0.00	0.00	1.71
L13	97.5 - 97.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.94	0.41	-1.22
			Max, Mx	20	-12.92	950.47	-5.52
			Max. My	14	-12.98	5.51	-938.05
			Max. Vy	8	22.98	-949.82	4.86
			Max. Vx	14	22.66	5.51	-938.05
			Max. Torque	20			1.71
L14	97.25 - 92.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.15	0.38	-1.27
			Max. Mx	20	-13.71	1066.34	-6.19
			Max. My	14	-13.77	6.16	-1052.22
			Max. Vy	20	-23.39	1066.34	-6.19
			Max. Vx	14	23.02	6.16	-1052.22
			Max. Torque	20			1.71
L15	92.25 - 82.58	Pole	Max Tension	1	0.00	0.00	0.00
			More Commencedian	26	-37.34	0.36	-1.31
			Max. Compression Max. Mx	20	-14.50	1180.34	-6.83

Job BU# 87	'6366) WAPPINGERS FALLS / PRESTON CIT	Page 20 of 31
Project	Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client	Crown Castle	Designed by JRozina

Section	Elevation	Component	Condition	Gov.	Axial	Major Axis	Minor Axis
No.	ft	Туре		Load		Moment	Moment
	•	, , , , , , , , , , , , , , , , , , ,		Comb.	K	kip-ft	kip-ft
			Max. My	14	-14.56	6.79	-1164.38
			Max. Vy	20	-23.75	1180.34	-6.83
			Max. Vx	14	23.35	6.79	-1164.38
		w. 1	Max. Torque	20	0.00	0.00	1.70
L16	82.58 - 81.58	Pole	Max Tension	1	0.00	0.00	0.00 -1.37
			Max. Compression	26	-39.76 -16.06	0.32 1320.35	-1.37 -7.60
			Max. Mx	20 14	-16.12	7.54	-1301.98
			Max. My Max. Vy	20	-24.29	1320.35	-7.60
			Max. Vx	14	23.86	7.54	-1301.98
			Max. Torque	20	25.00	7.51	1.70
L17	81.58 - 76.58	Pole	Max Tension	1	0.00	0.00	0.00
Lii	01.50 - 70.50	1010	Max. Compression	26	-41.01	0.30	-1.42
			Max. Mx	20	-17.03	1442.64	-8.25
			Max. My	14	-17.09	8.19	-1422.14
			Max. Vy	20	-24.65	1442.64	-8.25
			Max. Vx	14	24.22	8.19	-1422.14
			Max. Torque	20			1.70
L18	76.58 - 71.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.43	0.49	-1.59
			Max. Mx	20	-18.12	1566.97	-8.94
			Max. My	14	-18.17	8.92	-1544.33 -8.94
			Max. Vy	20	-25.06 24.65	1566.97 8.92	-8.94 -1544.33
			Max. Vx Max. Torque	14 22	24.63	6.92	1.78
T 10	71 50 60	Pole	Max Tension	1	0.00	0.00	0.00
L19	71.58 - 68	Pole	Max. Compression	26	-43.45	0.47	-1.63
			Max. Mx	20	-18.85	1657.10	-9.35
			Max. My	14	-18.89	9.32	-1633.01
			Max. Vy	20	-25.32	1657.10	-9.35
			Max. Vx	14	24.91	9.32	-1633.01
			Max. Torque	22			1.78
L20	68 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.55	0.47	-1.63
			Max. Mx	20	-18.93	1663.43	-9.38
			Max. My	14	-18.98	9.35	-1639.23
			Max. Vy	8	25.33	-1662.55	8.44
			Max. Vx	14	24.92	9.35	-1639.23 1.78
~ ~ .	(0.05 (0.05	TO 1	Max. Torque	22	0.00	0.00	0.00
L21	67.75 - 62.75	Pole	Max Tension Max. Compression	1 26	-45.47	0.44	-1.68
			Max. Mx	20	-20.27	1791.31	-9.96
			Max. My	14	-20.32	9.92	-1764.96
			Max. Vy	20	-25.83	1791.31	-9.96
			Max. Vx	14	25.38	9.92	-1764.96
			Max. Torque	22			1.78
L22	62.75 - 57.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.42	0.41	-1.73
			Max. Mx	20	-21.65	1921.66	-10.54
			Max. My	14	-21.70	10.48	-1892.94
			Max. Vy	20	-26.32	1921.66	-10.54
			Max. Vx	14	25.83	10.48	-1892.94
		D 1	Max. Torque	22	0.00	0.00	1.77
L23	57.75 - 52.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26 20	-49.41 -23.06	0.38 2054.41	-1.79 -11.11
			Max. Mx	20 14	-23.06 -23.10	11.05	-2023.12
			Max. My Max. Vy	20	-25.10 -26.80	2054.41	-11.11
			Max. Vx	14	26.26	11.05	-2023.12
			Max. Torque	22	20.20	22.00	1.77
L24	52.75 - 43.03	Pole	Max Tension	1	0.00	0.00	0.00

Jo		Page 21 of 31
L	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	
P	Project	Date
	Existing 155-ft Monopole	14:44:25 06/26/18
C	Client	Designed by
	Crown Castle	JRozina

Section	Elevation	Component	Condition	Gov.	Axial	Major Axis	Minor Axis
No.	ft	Туре		Load		Moment	Moment
	•	- 2		Comb.	K	kip-ft	kip-ft
			Max. Compression	26	-50.90	0.36	-1.83
			Max. Mx	20	-24.14	2156.52	-11.55
			Max. My	14	-24.18	11.48	-2123.18
			Max. Vy	20	-27.11	2156.52	-11.55
			Max. Vx	14	26.56	11.48	-2123.18
			Max. Torque	22	0.00	0.00	1.77
L25	43.03 - 42.03	Pole	Max Tension	1	0.00	0.00 0.32	0.00 -1.90
			Max. Compression	26	-55.30		-1.90 -12.34
			Max. Mx	20	-27.28	2346.75 12.26	-12.34
			Max. My	14 20	-27.32 -27.78	2346.75	-12.34
			Max. Vy	14	27.19	12.26	-2309.44
			Max. Vx Max. Torque	22	27.17	12.20	1.77
T 2/	40.02.27.02	Pole	Max Tension	1	0.00	0.00	0.00
L26	42.03 - 37.03	ruic	Max. Compression	26	-56.95	0.29	-1.96
			Max. Mx	20	-28.60	2486.41	-12.91
			Max. My	14	-28.63	12.82	-2446.18
			Max. Vy	20	-28.11	2486.41	-12.91
			Max. Vx	14	27.52	12.82	-2446.18
			Max. Torque	22			1.77
L27	37.03 - 32.03	Pole	Max Tension	1	0.00	0.00	0.00
LIL,	37.03 32.03	1 510	Max. Compression	26	-58.64	0.25	-2.01
			Max. Mx	20	-29.95	2627.69	-13.48
			Max. My	14	-29.98	13.38	-2584.53
			Max. Vy	20	-28.43	2627.69	-13.48
			Max. Vx	14	27.84	13.38	-2584.53
			Max. Torque	22			1.77
L28	32.03 - 27.03	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.36	0.22	-2.07
			Max. Mx	20	-31.33	2770.51	-14.05
			Max. My	14	-31.35	13.93	-2724.44
			Max. Vy	20	-28.73	2770.51	-14.05
			Max. Vx	14	28.15	13.93	-2724.44
			Max. Torque	22	0.00	0.00	1.77
L29	27.03 - 22.03	Pole	Max Tension	1	0.00	0.00	0.00 -2.12
			Max. Compression	26	-62.11	0.19 2914.85	-2.12 -14.61
			Max. Mx	20	-32.73 22.76	14.49	-2865.88
			Max. My	14 20	-32.76 -29.04	2914.85	-14.61
			Max. Vy Max. Vx	14	28.46	14.49	-2865.88
			Max. Torque	22	20.40	14.15	1.77
L30	22.03 - 17.03	Pole	Max Tension	1	0.00	0.00	0.00
L30	22.03 - 17.03	TOIC	Max. Compression	26	-63.89	0.16	-2.18
			Max. Mx	20	-34.17	3060.73	-15.17
			Max. My	14	-34.19	15.04	-3008.87
			Max. Vy	20	-29.35	3060.73	-15.17
			Max. Vx	14	28.77	15.04	-3008.87
			Max. Torque	22			1.77
L31	17.03 - 12.03	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.70	0.13	-2.23
			Max. Mx	20	-35.64	3208.17	-15.72
			Max. My	14	-35.65	15.58	-3153.42
			Max. Vy	20	-29.66	3208.17	-15.72
			Max. Vx	14	29.08	15.58	-3153.42
			Max. Torque	22			1.77
L32	12.03 - 7.03	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.48	0.12	-2.27
			Max. Mx	20	-37.10	3357.18	-16.27
			Max. My	14	-37.11	16.13	-3299,56
			Max. Vy Max. Vx	20 14	-29.98 29.40	3357.18 16.13	-16.27 -3299.56

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job	Page
BU# 876366) WAPPINGERS FALLS / PRESTON CIT	22 of 31
Project	Date
Existing 155-ft Monopole	14:44:25 06/26/18
Client Crown Castle	Designed by JRozina

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	22			1.77
L33	7.03 - 2.03	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.21	0.12	-2.30
			Max. Mx	20	-38.53	3507.77	-16.82
			Max. My	14	-38.53	16.67	-3447.29
			Max. Vy	20	-30.29	3507.77	-16.82
			Max. Vx	14	29.72	16.67	-3447.29
			Max. Torque	22			1. 7 7
L34	2.03 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.87	0.12	-2.31
			Max. Mx	20	-39.10	3569.37	-17.04
			Max. My	14	-39.10	16.89	-3507.73
			Max. Vy	20	-30.43	3569.37	-17.04
			Max. Vx	14	29.85	16.89	-3507.73
			Max. Torque	22			1.77

Maximum Reactions

Location	Condition	Gov.	Vertical	Horizontal, X	Horizontal, 2
		Load	K	K	K
		Comb.			
Pole	Max. Vert	36	69.87	7.25	-0.00
	Max. H _x	21	29.33	30.41	-0.11
	Max. Hz	2	39.11	-0.11	29.84
	Max. M _x	2	3506.51	-0.11	29.84
	Max. M _z	8	3568.52	-30.41	0.11
	Max. Torsion	22	1.77	26.03	14.83
	Min. Vert	7	29.33	-26.14	15.01
	$Min. H_x$	8	39.11	-30.41	0.11
	Min. Hz	14	39.11	0.11	-29.84
	Min. M _x	14	-3507.73	0.11	-29.84
	Min. M _z	20	-3569.37	30.41	-0.11
	Min. Torsion	10	-1.72	-26.03	-14.83

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_{\mathbf{x}}$	Shear _z	Overturning Moment, M,	Overturning Moment, M _z	Torque
Combination	K	K	. K	kip-ft	kip-ft	kip-ft
Dead Only	32.59	0.00	0.00	0.48	0.33	0.00
1.2 Dead+1.6 Wind 0 deg - No	39.11	0.11	-29.84	-3506.51	-16.04	-0.46
Ice 0.9 Dead+1.6 Wind 0 deg - No Ice	29.33	0.11	-29.84	-3464.12	-15.93	-0.45
1.2 Dead+1.6 Wind 30 deg - No	39.11	15.30	-26.15	-3063.23	-1798.60	0.48
0.9 Dead+1.6 Wind 30 deg - No	29.33	15.30	-26.15	-3026.31	-1776.92	0.48
1.2 Dead+1.6 Wind 60 deg - No Ice	39.11	26.14	-15.01	-1767.07	-3080.50	1.27
0.9 Dead+1.6 Wind 60 deg - No Ice	29.33	26.14	-15.01	-1745.77	-3043.21	1.26
1.2 Dead+1.6 Wind 90 deg - No	39.11	30.41	-0.11	-15.88	-3568.52	1.72

Јо в ВU# 876	366) WAPPINGERS FALLS / PRESTON CIT	Page 23 of 31
Project	Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client	Crown Castle	Designed by JRozina

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, Mz	Torque
	<u>K</u>	K	K	kip-ft	kip-fi	kip-ft
Ice 0.9 Dead+1.6 Wind 90 deg - No Ice	29.33	30.41	-0.11	-15.82	-3525.43	1.70
1.2 Dead+1.6 Wind 120 deg - No Ice	39.11	26.03	14.83	1739.84	-3064.24	1.72
0.9 Dead+1.6 Wind 120 deg - No Ice	29.33	26.03	14.83	1718.59	-3027.15	1.70
1.2 Dead+1.6 Wind 150 deg - No Ice	39.11	15.06	25.96	3041.90	-1766.61	1.28
0.9 Dead+1.6 Wind 150 deg - No Ice	29.33	15.06	25.96	3004.92	-1745.31	1.26
1.2 Dead+1.6 Wind 180 deg - No Ice	39.11	-0.11	29.84	3507.73	16.88	0.50
0.9 Dead+1.6 Wind 180 deg - No Ice	29.33	-0.11	29.84	3465.02	16.55	0.48
1.2 Dead+1.6 Wind 210 deg - No Ice	39.11	-15.30	26.15	3064.44	1799.47	-0.43
0.9 Dead+1.6 Wind 210 deg - No Ice	29.33	-15.30	26.15	3027.20	1777.55	-0.43
1.2 Dead+1.6 Wind 240 deg - No Ice	39.11	-26.14	15.01	1768.24	3081.37	-1.26
0.9 Dead+1.6 Wind 240 deg - No Ice	29.33	-26.14	15.01	1746.63	3043.85	-1.25
1.2 Dead+1.6 Wind 270 deg - No Ice	39.11	-30.41	0.11	17.04	3569.37	-1.75
0.9 Dead+1.6 Wind 270 deg - No Ice	29.33	-30.41	0.11	16.67	3526.05	-1.74
1.2 Dead+1.6 Wind 300 deg - No Ice	39.11	-26.03	-14.83	-1738.66	3065.06	-1.77
0.9 Dead+1.6 Wind 300 deg - No Ice	29.33	-26.03	-14.83	-1717.73	3027.75	-1.75
1.2 Dead+1.6 Wind 330 deg - No Ice	39.11	-15.06	-25.96	-3040.70	1767.43	-1.29
0.9 Dead+1.6 Wind 330 deg - No Ice	29.33	-15.06	-25.96	-3004.03	1745.91	-1.27
1.2 Dead+1.0 Ice+1.0 Temp	69.87	-0.00	0.00	2.31	0.12	0.00
1.2 Dead+1.0 Wind 0 deg+1.0	69.87	0.00	-7.09	-851.12	-0.94	-0.22
Ice+1.0 Temp 1.2 Dead+1.0 Wind 30 deg+1.0	69.87	3.63	-6.26	-746.15	-434.25	-0.01
Ice+1.0 Temp 1.2 Dead+1.0 Wind 60 deg+1.0	69.87	6.16	-3.55	-425.26	-742.32	0.21
Ice+1.0 Temp 1.2 Dead+1.0 Wind 90 deg+1.0	69.87	7.25	-0.00	1.40	-866.75	0.37
Ice+1.0 Temp 1.2 Dead+1.0 Wind 120	69.87	6.15	3.54	428.36	-741,24	0.43
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 150	69.87	3.55	6.14	741.20	-427.27	0.37
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 180	69.87	-0.00	7.09	856.11	1.23	0.22
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 210	69.87	-3.63	6.26	751.14	434.56	0.01
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 240	69.87	-6.16	3.55	430.24	742.63	-0.21
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 270	69.87	-7.25	0.00	3.58	867.05	-0.37
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 300	69.87	-6.15	-3.54	-423.38	741.54	-0.43
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 330	69.87	-3.55	-6.14	-736.22	427.56	-0.37
deg+1.0 Ice+1.0 Temp Dead+Wind 0 deg - Service	32.59	0.02	-5.45	-636.63	-2.64	-0.09

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 24 of 31
Pr	oject Existing 155-ft Monopole	Date 14:44:25 06/26/18
CI	ient Crown Castle	Designed by JRozina

Load Combination	Vertical	$Shear_x$	Shearz	Overturning Moment, M _z	Overturning Moment, Mz	Torque
Comemano	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 30 deg - Service	32.59	2.79	-4.78	-556.14	-326.50	0.09
Dead+Wind 60 deg - Service	32.59	4.77	-2.74	-320.65	-559.41	0.24
Dead+Wind 90 deg - Service	32.59	5.55	-0.02	-2.48	-648.08	0.32
Dead+Wind 120 deg - Service	32.59	4.75	2.71	316.49	-556.42	0.33
Dead+Wind 150 deg - Service	32.59	2.75	4.74	553.03	-320.66	0.24
Dead+Wind 180 deg - Service	32.59	-0.02	5.45	637.65	3,34	0.09
Dead+Wind 210 deg - Service	32.59	-2.79	4.78	557.16	327.21	-0.09
Dead+Wind 240 deg - Service	32.59	-4.77	2.74	321.67	560.12	-0.24
Dead+Wind 270 deg - Service	32.59	-5.55	0.02	3.50	648.79	-0.33
Dead+Wind 300 deg - Service	32.59	-4,75	-2.71	-315.47	557.13	-0.33
Dead+Wind 330 deg - Service	32.59	-2.75	-4.74	-552.01	321.37	-0.24

Solution Summary

	Sum of Applied Forces						
Load	PX	PY	PZ	PX	PY	PZ	% Error
Comb.	K	K	K	K	K	K	
I	0.00	-32.59	0.00	0.00	32.59	0.00	0.000%
2	0.11	-39.11	-29.84	-0.11	39.11	29.84	0.000%
3	0.11	-29.33	-29.84	-0.11	29.33	29.84	0.000%
4	15.30	-39.11	-26.15	-15.30	39.11	26.15	0.000%
5	15.30	-29.33	-26.15	-15.30	29.33	26.15	0.000%
5 6	26.14	-39.11	-15.01	-26.14	39.11	15.01	0.000%
7	26.14	-29.33	-15.01	-26.14	29.33	15.01	0.000%
8	30.41	-39.11	-0.11	-30.41	39.11	0.11	0.000%
9	30.41	-29.33	-0.11	-30.41	29.33	0.11	0.000%
10	26.03	-39.11	14.83	-26.03	39.11	-14.83	0.000%
11	26.03	-29.33	14.83	-26.03	29.33	-14.83	0.000%
12	15.06	-39.11	25.96	-15.06	39.11	-25.96	0.000%
13	15.06	-29.33	25.96	-15.06	29.33	-25.96	0.000%
14	-0.11	-39.11	29.84	0.11	39.11	-29.84	0.000%
15	-0.11	-29.33	29.84	0.11	29.33	-29.84	0.000%
16	-15.30	-39.11	26.15	15.30	39.11	-26.15	0.000%
17	-15.30	-29.33	26.15	15.30	29.33	-26.15	0.000%
18	-26.14	-39.11	15.01	26.14	39.11	-15.01	0.000%
19	-26.14	-29.33	15.01	26.14	29.33	-15.01	0.000%
20	-30.41	-39.11	0.11	30.41	39.11	-0.11	0.000%
21	-30.41	-29.33	0.11	30.41	29.33	-0.11	0.000%
22	-26.03	-39.11	-14.83	26.03	39.11	14.83	0.000%
23	-26.03	-29.33	-14.83	26.03	29.33	14.83	0.000%
24	-15.06	-39.11	-25.96	15.06	39.11	25.96	0.000%
25	-15.06	-29.33	-25.96	15.06	29.33	25.96	0.000%
26	0.00	-69.87	0.00	0.00	69.87	-0.00	0.000%
27	0.00	-69.87	-7.09	-0.00	69.87	7.09	0.000%
28	3.63	- 69.87	-6.26	-3.63	69.87	6.26	0.000%
29	6.16	-69.87	-3.55	-6.16	69.87	3.55	0.000%
30	7.25	-69.87	-0.00	-7.25	69.87	0.00	0.000%
31	6.15	-69.87	3.54	-6.15	69.87	-3.54	0.000%
32	3.55	-69.87	6.14	-3.55	69.87	-6.14	0.000%
33	-0.00	-69.87	7.09	0.00	69.87	-7.09	0.000%
34	-3.63	-69.87	6.26	3.63	69.87	-6.26	0.000%
35	-6.16	-69.87	3.55	6.16	69.87	-3.55	0.000%
36	-7.25	-69.87	0.00	7.25	69.87	-0.00	0.000%
37	-6.15	-69.87	-3.54	6.15	69.87	3.54	0.000%
38	-3.55	-69.87	-6.14	3.55	69.87	6.14	0.000%
39	0.02	-32.59	-5.45	-0.02	32.59	5.45	0.000%
40	2.79	-32.59	-4.78	-2.79	32.59	4.78	0.000%
41	4.77	-32.59	-2.74	-4.77	32.59	2.74	0.000%

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 25 of 31
Project Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client Crown Castle	Designed by JRozina

		n of Applied Forces	7		Sum of Reaction		
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
42	5.55	-32.59	-0.02	-5.55	32.59	0.02	0.000%
43	4.75	-32.59	2.71	-4.75	32.59	-2.71	0.000%
44	2.75	-32.59	4.74	-2.75	32.59	-4.74	0.000%
45	-0.02	-32.59	5.45	0.02	32.59	-5.45	0.000%
46	-2.79	-32.59	4.78	2.79	32.59	-4.78	0.000%
47	-4.77	-32.59	2.74	4.77	32.59	-2.74	0.000%
48	-5.55	-32.59	0.02	5.55	32.59	-0.02	0.000%
49	-4.75	-32.59	-2.71	4.75	32.59	2,71	0.000%
50	-2.75	-32.59	-4.74	2.75	32.59	4.74	0.000%

Non-Linear Convergence Results

Load	d Converged? Number		Displacement	Force
Combination	J	of Cycles	Tolerance	Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5 5	0.00000001	0.00016172
3	Yes	5	0.00000001	0.00005576
4	Yes	7	0.00000001	0.00005312
5	Yes	6	0.00000001	0.00028016
6	Yes	7	0.00000001	0.00005122
7	Yes	6	0.00000001	0.00026948
8	Yes	5	0.00000001	0.00056009
9	Yes	5	0.00000001	0.00023030
10	Yes	7	0.00000001	0.00005422
11	Yes	6	0.00000001	0.00028681
12	Yes	7	0.00000001	0.00005124
13	Yes	6	0.00000001	0.00027030
14	Yes	5	0.00000001	0.00052195
15	Yes	5	0.00000001	0.00020886
16	Yes	7	0.00000001	0.00005218
17	Yes	6	0.00000001	0.00027468
18	Yes	7	0.00000001	0.00005394
19	Yes	6	0.00000001	0.00028463
20	Yes	6	0.0000001	0.00006006
21	Yes	5	0.0000001	0.00045929
22	Yes	7	0.00000001	0.00005064
23	Yes	6	0.00000001	0.00026689
24	Yes	7	0.00000001	0.00005375
25	Yes	6	0.00000001	0.00028424
26	Yes	4	0.00000001	0.00025938
27	Yes	7	0.0000001	0.00021491
28	Yes	7	0.0000001	0.00029027
29	Yes	7	0.00000001	0.00028723
30	Yes	7	0.00000001	0.00021784
31	Yes	7	0.00000001	0.00029189
32	Yes	7	0.00000001	0.00028786
33	Yes	7	0.0000001	0.00021714
34	Yes	7	0.0000001	0.00029417
35	Yes	7	0.00000001	0.00029322
36	Yes	7	0.0000001	0.00021863
37	Yes	7	0.00000001	0.00028588
38	Yes	7	0.00000001	0.00028896
39	Yes	4	0.0000001	0.00060253
40	Yes	5 5	0.0000001	0.00024315
41	Yes	5	0.00000001	0.00022564
42	Yes	4	0.00000001	0.00092016

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job BU# 876	366) WAPPINGERS FALLS / PRESTON CIT	Page 26 of 31
Project	Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client	Crown Castle	Designed by JRozina

43	Yes	5	0.0000001	0.00025204	
44	Yes	5	0.0000001	0.00022087	
45	Yes	4	0.00000001	0.00063203	
46	Yes	5	0.0000001	0.00023593	
47	Yes	5	0.00000001	0.00025466	
48	Yes	4	0.0000001	0.00099458	
49	Yes	5	0.0000001	0.00021637	
50	Yes	5	0.00000001	0.00024523	

Maximum Tower Deflections - Service Wind

Section	Elevation	Horz.	Gov.	Tilt	Twist
No.		Deflection	Load		
	ft	in	Comb.	0	٥
L1	155 - 150	26.673	48	1.6767	0.0078
L2	150 - 145	24.920	48	1.6730	0.0070
L3	145 - 140	23.178	48	1.6549	0.0064
L4	140 - 135	21.461	48	1.6259	0.0059
L5	135 - 130	19.781	48	1.5826	0.0046
L6	130 - 123.21	18.154	48	1.5236	0.0035
L7	126.79 - 121.79	17.144	48	1.4779	0.0030
L8	121.79 - 1 16.79	15.618	48	1.4310	0.0027
L9	116.79 - 111.79	14.158	48	1.3550	0.0023
L10	111.79 - 106.79	12.782	48	1.2735	0.0020
L11	106.79 - 101.79	11.493	48	1.1885	0.0018
L12	101.79 - 97.5	10.293	48	1.1015	0.0015
L13	97.5 - 97.25	9.338	48	1.0260	0.0013
L14	97.25 - 92.25	9.284	48	1.0216	0.0013
L15	92.25 - 82.58	8.260	48	0.9335	0.0011
L16	87.41 - 81.58	7.357	48	0.8486	0.0010
L17	81.58 - 76.58	6.350	48	0.7957	0.0009
L18	76.58 - 71.58	5.554	48	0.7240	0.0007
L19	71.58 - 68	4.833	48	0.6536	0.0006
L20	68 - 67.75	4.362	48	0.6041	0.0006
L21	67.75 - 62.75	4.330	48	0.6019	0.0006
L22	62.75 - 57.75	3.723	48	0.5568	0.0005
L23	57.75 - 52.75	3.164	48	0.5127	0.0004
L24	52.75 - 43.03	2.650	48	0.4686	0.0004
L25	48.96 - 42.03	2.291	48	0.4359	0.0004
L26	42.03 - 37.03	1.682	48	0.3973	0.0003
L27	37.03 - 32.03	1.294	48	0.3451	0.0003
L28	32.03 - 27.03	0.959	48	0.2944	0.0002
L29	27.03 - 22.03	0.677	48	0.2450	0.0002
L30	22.03 - 17.03	0.445	48	0.1969	0.0001
L31	17.03 - 12.03	0.264	48	0.1502	0.0001
L32	12.03 - 7.03	0.130	48	0.1046	0.0001
L33	7.03 - 2.03	0.044	48	0.0603	0.0000
L34	2.03 - 0	0.004	48	0.0172	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov.	Deflection	Tîlt	Twist	Radius of
	**	Load				Curvature
ft		Comb.	in	0	٥	ft
155.00	NNVV-65B-R4 w/ Mount Pipe	48	26.673	1.6767	0.0079	25458
142.00	RRUS 11	48	22.144	1.6389	0.0062	9384

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

	Job BU# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 27 of 31
İ	Project Existing 155-ft Monopole	Date 14:44:25 06/26/18
	Client Crown Castle	Designed by JRozina

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
fŧ		Comb.	in	0	0	ft
140.00	Platform Mount [LP 303-1]	48	21.461	1.6259	0.0059	8101
128.00	LPA-80063/6CF w/ Mount Pipe	48	17.522	1.4940	0.0032	4993
74.00	KS24019-L112A	48	5.173	0.6879	0.0007	4014

Maximum Tower Deflections - Design Wind

Section	Elevation	Horz.	Gov.	Tilt	Twist
No.		Deflection	Load		
	ft	in	Comb.	0	٥
L1	155 - 150	146.356	20	9.1902	0.0417
L2	150 - 145	136.772	20	9.1774	0.0374
L3	145 - 140	127.245	20	9.0841	0.0341
L4	140 - 135	117.847	20	8.9300	0.0313
L5	135 - 130	108.645	20	8.6968	0.0246
L6	130 - 123.21	99.732	20	8.3761	0.0189
L7	126.79 - 121.79	94.201	20	8.1271	0.0160
L8	121.79 - 116.79	85.830	20	7.8706	0.0145
L9	116.79 - 111.79	77.827	20	7.4539	0.0126
L10	111.79 - 106.79	70.273	20	7.0064	0.0109
L11	106.79 - 101.79	63.196	20	6.5394	0.0094
L12	101.79 - 97.5	56.611	20	6.0611	0.0081
L13	97.5 - 97.25	51.360	20	5.6462	0.0071
L14	97.25 - 92.25	51.066	20	5.6220	0.0070
L15	92.25 - 82.58	45.440	20	5.1374	0.0060
L16	87.41 - 81.58	40.475	20	4.6704	0.0051
L17	81.58 - 76.58	34.936	20	4.3797	0.0046
L18	76.58 - 71.58	30.561	20	3.9849	0.0040
L19	71.58 - 68	26.594	20	3.5977	0.0034
L20	68 - 67.75	24.000	20	3.3254	0.0030
L21	67.75 - 62.75	23.827	20	3.3132	0.0030
L22	62.75 - 57.75	20.489	20	3.0648	0.0027
L23	57.75 - 52.75	17.409	20	2.8223	0.0024
L24	52.75 - 43.03	14.582	20	2.5795	0.0021
L25	48.96 - 42.03	12.607	20	2.3994	0.0019
L26	42.03 - 37.03	9.258	20	2.1867	0.0017
L27	37.03 - 32.03	7.119	20	1.8997	0.0014
L28	32.03 - 27.03	5.277	20	1.6203	0.0012
L29	27.03 - 22.03	3.724	20	1.3484	0.0010
L30	22.03 - 17.03	2.451	20	1.0838	0.0008
L31	17.03 - 12.03	1,451	20	0.8264	0.0006
L32	12.03 - 7.03	0.718	20	0.5758	0.0004
L33	7.03 - 2.03	0.243	20	0.3319	0.0002
L34	2.03 - 0	0.020	20	0.0946	1000.0

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	٥	٥	ft
155.00	NNVV-65B-R4 w/ Mount Pipe	20	146.356	9.1902	0.0437	5477
142.00	RRUS 11	20	121.586	8.9999	0.0336	1845
140.00	Platform Mount [LP 303-1]	20	117.847	8.9300	0.0320	1583

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job BU#	# 876366) WAPPINGERS FALLS / PRESTON CIT	Page 28 of 31
Project	Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client	Crown Castle	Designed by JRozina

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	0	0	ft
128.00	LPA-80063/6CF w/ Mount Pipe	20	96.270	8.2149	0.0171	953
74.00	KS24019-L112A	20	28.462	3.7863	0.0037	736

Compression Checks

Pole D	esian)	Data
--------	--------	------

Section	Elevation	Size	L	L_u	Kl/r	A	P_{u}	ϕP_n	Ratio P _u
No.	ft		ft	ft		in²	K	K	ϕP_n
L1	155 - 150 (1)	TP19.0365x18x0.1875	5.00	0.00	0.0	11.2175	-2.75	832.43	0.003
L2	150 - 145 (2)	TP20.073x19.0365x0.1875	5.00	0.00	0.0	11.8343	-2.97	866.02	0.003
L2 L3	145 - 140 (3)	TP21.1095x20.073x0.1875	5.00	0.00	0.0	12.4512	-3.43	898.33	0.004
L4	140 - 135 (4)	TP22.146x21.1095x0.1875	5.00	0.00	0.0	13.0680	-6.19	929.38	0.007
L4 L5	135 - 130 (5)	TP23.1824x22.146x0.1875	5.00	0.00	0.0	13.6849	-6.58	959.15	0.007
L5 L6	130 - 123.21	TP24.59x23.1824x0.1875	6.79	0.00	0.0	14.0809	-8.59	977.60	0.009
L6		1724.39823.162480.1673	0.15	0.00	0.0	14.0007	0.07	377.00	*****
L7	(6) 123.21 -	TP24.6714x23.4729x0.25	5.00	0.00	0.0	19.3784	-9.36	1439.72	0.006
	121.79 (7)							1501.01	0.007
L8	121.79 -	TP25.8699x24.6714x0.25	5.00	0.00	0.0	20.3294	-10.02	1501.21	0.007
	116.79 (8)								0.00
L9	116.79 -	TP27.0684x25.8699x0.25	5.00	0.00	0.0	21.2804	-10.72	1552.44	0.007
	111.79 (9)								
L10	111. 7 9 -	TP28.2669x27.0684x0.25	5.00	0.00	0.0	22.2314	-11.44	1601.96	0.007
	106.79 (10)								
L11	106.79 -	TP29.4654x28.2669x0.25	5.00	0.00	0.0	23,1824	-12.20	1649.78	0.007
211	101.79 (11)								
L12	101.79 - 97.5	TP30.4937x29.4654x0.25	4.29	0.00	0.0	23.9984	-12.87	1689.46	0.008
LIZ	(12)	1150.1557725.100 1110.20							
L13	97.5 - 97.25	TP30.5536x30.4937x0.25	0.25	0.00	0.0	24.0459	-12.92	1691.73	0.008
L13		1F30.3330X30.4337X0.23	0.23	0.00	0.0	2	12.5		
T 14	(13)	TP31.7521x30.5536x0.25	5.00	0.00	0.0	24.9969	-13.71	1736.31	0.008
L14	97.25 - 92.25	1P31.7321X30.3330X0.23	3.00	0.00	0.0	27.7707	-15.71	1150.51	0.000
	(14)	TD2407 21 7521 0 25	9.67	0.00	0.0	25,9175	-14.51	1777.85	0.008
L15	92.25 - 82.58	TP34.07x31.7521x0.25	9.07	0.00	0.0	23.7113	-17.51	1777.03	0.000
	(15)		~ 00	0.00	0.0	22.0407	-16.07	2425.15	0.007
L16	82.58 - 81.58	TP33.8254x32.4123x0.3125	5.83	0.00	0.0	33.2407	-10.07	2423.13	0.007
	(16)						1 7 0 4	0.407.07	0.007
L17	81.58 - 76.58	TP35.0375x33.8254x0.3125	5.00	0.00	0.0	34,4428	-17.04	2487.97	Ų.007
	(17)						40.40	2512.06	0.007
L18	76.58 - 71.58	TP36.2495x35.0375x0.3125	5.00	0.00	0.0	35.6450	-18.12	2549.06	0.007
	(18)								
L19	71.58 - 68 (19)	TP37.1173x36.2495x0.3125	3.58	0.00	0.0	36.5057	-18.85	2591.72	0.007
L20	68 - 67.75 (20)	TP37.1779x37.1173x0.4875	0.25	0.00	0.0	56.7719	-18.93	4217.87	0.004
L21	67.75 - 62.75 [°]	TP38.3899x37.1779x0.475	5.00	0.00	0.0	57.1623	-20.27	4246.88	0.005
	(21)								
L22	62.75 - 57.75	TP39.6019x38.3899x0.475	5.00	0.00	0.0	58.9896	-21.65	4382.63	0.005
1322	(22)	X107.001312010477							
L23	57.75 - 52.75	TP40.8139x39.6019x0.4625	5.00	0.00	0.0	59,2348	-23.06	4400.85	0.005
1.23	(23)	1140.01337.00137.0.4023	5.00	0.00	• • •				
T 24	52.75 - 43.03	TP43.17x40.8139x0.4625	9.72	0.00	0.0	60.5834	-24.14	4501.05	0.005
L24		1173.17840.013380.4023	9.12	0.00	0.0	00.005			
100	(24)	TP42.7909x41.1076x0.375	6.93	0.00	0.0	50.4855	-27.28	3628.11	0.008
L25	43.03 - 42.03	1144. /909X41.10/0X0.3/3	0.33	00,0	0.0	50.4055	-27.20	JOHO. 1.1	0.000
	(25)	TTD44 0054 40 7000 0 375	E 00	Λ ΛΛ	0.0	51.9311	-28.60	3700.66	0.008
L26	42.03 - 37.03	TP44,0054x42.7909x0.375	5.00	0.00	0.0	31.7311	-20.00	3700.00	0.000

Aero Wireless Group 5555 Central Ave., Suite 100 Boulder, CO 80301 Phone: (720) 304-6882 FAX: (720) 304-6883

Job BU# 876	366) WAPPINGERS FALLS / PRESTON CIT	Page 29 of 31
Project	Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client	Crown Castle	Designed by JRozina

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in²	K	K	ϕP_n
	(26)								
L27	37.03 - 32.03 (27)	TP45.2199x44.0054x0.375	5.00	0.00	0.0	53.3766	-29.95	3771.46	0.008
L28	32.03 - 27.03 (28)	TP46.4344x45.2199x0.375	5.00	0.00	0.0	54.8222	-31.33	3840.52	0.008
L29	27.03 - 22.03 (29)	TP47.6489x46.4344x0.375	5.00	0.00	0.0	56.2677	-32.73	3907.84	0.008
L30	22.03 - 17.03 (30)	TP48.8634x47.6489x0.375	5.00	0.00	0.0	57.7133	-34.17	3973.41	0.009
L31	17.03 - 12.03	TP50.0779x48.8634x0.375	5.00	0.00	0.0	59.1589	-35.64	4037.24	0.009
L32	12.03 - 7.03 (32)	TP51.2924x50.0779x0.375	5.00	0.00	0.0	60.6044	-37.10	4099.33	0.009
L33	7.03 - 2.03 (33)	TP52.5069x51.2924x0.375	5.00	0.00	0.0	62.0500	-38.53	4159.67	0.009
L34	2.03 - 0 (34)	TP53x52.5069x0.375	2.03	0.00	0.0	62.6369	-39.10	4183.67	0.009

Pole Bending Design Data

Section	Elevation	Size	$M_{\nu x}$	$\phi M_{ m rec}$	Ratio	M_{uy}	ϕM_{ny}	Ratio
No.	ft		kip-ft	kip-ft	Mux	kip-ft	kip-ft	M_{uy}
		TTD10.0065.10.0.1075			φ <i>M</i> _{res}			ϕM_{ny}
L1	155 - 150 (1)	TP19.0365x18x0.1875	20.30	321.98	0.063	0.00	321.98	0.000
L2	150 - 145 (2)	TP20.073x19.0365x0.1875	52.68	353.57	0.149	0.00	353.57	0.000
L3	145 - 140 (3)	TP21.1095x20.073x0.1875	87.53	386.06	0.227	0.00	386.06	0.000
L4	140 - 135 (4)	TP22.146x21.1095x0.1875	157.61	419.37	0.376	0.00	419.37	0.000
L5	135 - 130 (5)	TP23.1824x22.146x0.1875	229.35	453.41	0.506	0.00	453.41	0.000
L6	130 - 123.21	TP24.59x23.1824x0.1875	302.12	475.61	0.635	0.00	475.61	0.000
v	(6)	EPO 4 6514 02 4500 0.05	107.01	701.70	0.565	0.00	721.20	0.000
L7	123.21 -	TP24.6714x23.4729x0.25	407.84	721.30	0.565	0.00	721.30	0.000
• 0	121.79 (7)	TTP05.0500.04.6714.0.05	616.06	700.40	0.653	0.00	789.40	0.000
L8	121.79 -	TP25.8699x24.6714x0.25	515.36	789.40	0.003	0.00	789.4U	0.000
r.0	116.79 (8)	TD07.068425.86000.35	624.57	854.88	0.731	0.00	854.88	0.000
L9	116.79 -	TP27.0684x25.8699x0.25	024.37	834.88	0.731	0.00	634.66	0.000
7.10	111.79 (9)	TD29 2660-27 0684-0 25	725.40	921.94	0.798	0.00	921.94	0.000
L10	111.79 -	TP28.2669x27.0684x0.25	735.49	921.94	0.798	0.00	921.94	0.000
	106.79 (10)	TED20 4654-08 2660-0 25	040 11	000.44	0.856	0.00	990.44	0.000
L11	106.79 -	TP29.4654x28.2669x0.25	848.11	990.44	0.830	0.00	990.44	0.000
T 10	101.79 (11)	TP30.4937x29.4654x0.25	946.09	1050.27	0.901	0.00	1050.27	0.000
L12	101.79 - 97.5	1P30.493/x29.4654x0.25	946.09	1030.27	0.901	0.00	1030.27	0.000
. 10	(12)	EED20 5536-20 4027-0 25	0.51.02	1053.78	0.002	0.00	1053.78	0.000
L13	97.5 - 97.25	TP30.5536x30.4937x0.25	951.83	1055.78	0.903	0.00	1033.78	0.000
T 1.4	(13)	TP31.7521x30.5536x0.25	1067.73	1124.68	0.949	0.00	1124.68	0.000
L14	97.25 - 92.25	1P31.7521X30.5536X0.25	1067.73	1124.08	0.949	0.00	1124.06	0.000
T 15	(14) 92.25 - 82.58	TP34.07x31.7521x0.25	1181.56	1194.33	0.989	0.00	1194.33	0.000
L15		1P34.07X31.7321X0.23	1181.30	1194.33	0.989	0.00	1194.33	0.000
T 1.6	(15)	TP33.8254x32.4123x0.3125	1321.17	1668.83	0.792	0.00	1668.83	0.000
L16	82.58 - 81.58	1P33.8234X32.4123XU.3123	1321.17	1000.03	0.792	0.00	1006.63	0.000
LI7	(16) 81.58 - 76.58	TP35.0375x33.8254x0.3125	1443.04	1774.55	0.813	0.00	1774.55	0.000
LII		1P33.03/3X33.8234X0.3123	1445.04	1774.33	0.613	0.00	1774.55	0.000
L18	(17) 76.58 - 71.58	TP36.2495x35.0375x0.3125	1567.00	1882.14	0.833	0.00	1882.14	0.000
LIO		1P30.2493X33.0373X0.3123	1307.00	1002.14	0.633	0.00	1002.14	0.000
T 10	(18)	TETROT 1173 26 2405 0 2125	3657 13	1960.26	0.845	0.00	1960.26	0.000
L19	71.58 - 68 (19)	TP37.1173x36.2495x0.3125	1657.13 1663.46	3165.22	0.843	0.00	3165.22	0.000
L20	68 - 67.75 (20)	TP37.1779x37.1173x0.4875			0.544	0.00	3295.82	0.000
L21	67.75 - 62.75	TP38.3899x37.1779x0.475	1791.34	3295.82	U.344	0.00	3273.62	0.000
	(21)							

Job	BU# 876366) WAPPINGERS FALLS / PRESTON CIT	90 of 31
Pro	oject Existing 155-ft Monopole	Date 14:44:25 06/26/18
Cli	ent Crown Castle	Designed by JRozina

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio M _{ux}	M_{vy}	$\phi M_{n_{j'}}$	Ratio M _{uy}
110.	ft		kip-ft	kip-ft	ϕM_{nx}	kip-ft	kip-ft	ϕM_{ny}
L22	62.75 - 57.75 (22)	TP39.6019x38.3899x0.475	1921.68	3511.25	0.547	0.00	3511.25	0.000
L23 `	57.75 - 52.75 (23)	TP40.8139x39.6019x0.4625	2054.43	3638.63	0.565	0.00	3638.63	0.000
L24	52.75 - 43.03 (24)	TP43.17x40.8139x0.4625	2156.56	3807.16	0.566	0.00	3807.16	0.000
L25	43.03 - 42.03 (25)	TP42.7909x41.1076x0.375	2346.78	3161.39	0.742	0.00	3161.39	0.000
L26	42.03 - 37.03 (26)	TP44.0054x42.7909x0.375	2486.45	3317.75	0.749	0.00	3317.75	0.000
L27	37.03 - 32.03 (27)	TP45.2199x44.0054x0.375	2627.72	3476.15	0.756	0.00	3476.15	0.000
L28	32.03 - 27.03 (28)	TP46.4344x45.2199x0.375	2770.54	3636.47	0.762	0.00	3636.47	0.000
L29	27.03 - 22.03 (29)	TP47.6489x46.4344x0.375	2914.89	3798.57	0.767	0.00	3798.57	0.000
L30	22.03 - 17.03 (30)	TP48.8634x47.6489x0.375	3060.77	3962.31	0.772	0.00	3962,31	0.000
L31	17.03 - 12.03	TP50.0779x48.8634x0.375	3208.21	4127.57	0.777	0.00	4127.57	0.000
L32	(31) 12.03 - 7.03 (32)	TP51.2924x50.0779x0.375	3357.22	4294.23	0.782	0.00	4294.23	0.000
L33 L34	7.03 - 2.03 (33) 2.03 - 0 (34)	TP52.5069x51.2924x0.375 TP53x52.5069x0.375	3507.82 3569.41	4462.13 4530.63	0.786 0.788	0.00 00.0	4462.13 4530.63	0.000 0.000

Pole	Shear	Design	Data

Section	Elevation	Size	Actual	ϕV_n	Ratio	Actual	ϕT_n	Ratio
No.			V_u		V_u	T_u		T_u
	ft		K	K	ϕV_n	kip-ft	kip-ft	ϕT_n
L1	155 - 150 (1)	TP19.0365x18x0.1875	6.32	416.21	0.015	0.12	645.72	0.000
L2	150 - 145 (2)	TP20.073x19.0365x0.1875	6.63	433.01	0.015	0.55	709.02	0.001
L3	145 - 140 (3)	TP21.1095x20.073x0.1875	7.40	449.17	0.016	0.54	774.12	0.001
L4	140 - 135 (4)	TP22.146x21.1095x0.1875	14.19	464.69	0.031	2.23	840.84	0.003
L5	135 - 130 (5)	TP23.1824x22.146x0.1875	14.52	479.58	0.030	2.22	909.03	0.002
L6	130 - 123,21	TP24.59x23.1824x0.1875	20.95	488.80	0.043	1.28	953.52	0.001
	(6)							
L7	123.21 -	TP24.6714x23.4729x0.25	21.34	719.86	0.030	1.28	1446.59	0.001
	121.79 (7)							
L8	121.79 -	TP25.8699x24.6714x0.25	21.68	750.61	0.029	1.28	1583.05	0.001
	116.79 (8)							
L9	116.79 -	TP27.0684x25.8699x0.25	22.02	776.22	0.028	1.28	1714.27	0.001
	111.79 (9)							
L10	111.79 -	TP28.2669x27.0684x0.25	22.36	800.98	0.028	1.27	1848.63	0.001
	106.79 (10)							
L11	106.79 -	TP29.4654x28.2669x0.25	22.70	824.89	0.028	1.27	1985.87	0.001
	101.79 (11)							
L12	101.79 - 97.5	TP30.4937x29.4654x0.25	23.00	844.73	0.027	1.27	2105.72	0.001
	(12)							
L13	97.5 - 97.25	TP30.5536x30.4937x0.25	23.01	845.87	0.027	1.27	2112.77	0.001
	(13)							
L14	97.25 - 92.25	TP31.7521x30.5536x0.25	23.37	868.16	0.027	1.27	2254.80	0.001
	(14)							
L15	92.25 - 82.58	TP34.07x31.7521x0.25	23.69	888.93	0.027	1.27	2394.33	0.001
	(15)						****	
L16	82.58 - 81.58	TP33.8254x32.4123x0.3125	24.21	1212.58	0.020	1.27	3346.45	0.000

Job BU#	876366) WAPPINGERS FALLS / PRESTON CIT	Page 31 of 31
Project	Existing 155-ft Monopole	Date 14:44:25 06/26/18
Client	Crown Castle	Designed by JRozina

Section No.	Elevation	Size	Actual V _u	ϕV_n	Ratio V _u	Actual Tu	ϕT_n	Ratio T _v
140.	ft		K	K	$\frac{V_n}{\Phi V_n}$	kip-ft	kip-ft	ϕT_n
	(16)							
L17	81.58 - 76.58 (17)	TP35.0375x33.8254x0.3125	24.57	1243.99	0.020	1.27	3558.27	0.000
L18	76.58 - 71.58 (18)	TP36.2495x35.0375x0.3125	25.06	1274.53	0.020	1.76	3773.83	0.000
L19	71.58 - 68 (19)	TP37.1173x36.2495x0.3125	25.32	1295.86	0.020	1.76	3930.33	0.000
L20	68 - 67.75 (20)	TP37.1779x37.1173x0.4875	25.33	2108.93	0.012	1.76	6350.85	0.000
L21	67.75 - 62.75	TP38.3899x37.1779x0.475	25.84	2123.44	0.012	1.76	6612.14	0.000
	(21)				0.010	1.50	7042.02	0.000
L22	62.75 - 57.75 (22)	TP39.6019x38.3899x0.475	26.32	2191.32	0.012	1.76	7043.92	0.000
L23	57.75 - 52.75 (23)	TP40.8139x39.6019x0.4625	26.80	2200.42	0.012	1.76	7298.72	0.000
L24	52.75 - 43.03	TP43.17x40.8139x0.4625	27.11	2250.52	0.012	1.76	7636.49	0.000
L25	(24) 43.03 - 42.03	TP42.7909x41.1076x0.375	27.78	1814.05	0.015	1.76	6338.95	0.000
1.2.7	(25)	11 (2.7)0)1.11.10.011.570						
L26	42.03 - 37.03	TP44.0054x42.7909x0.375	28.11	1850.33	0.015	1.76	6652.22	0.000
L27	(26) 37.03 - 32.03	TP45.2199x44.0054x0.375	28.43	1885.73	0.015	1.76	6969.58	0.000
	(27)						5000 55	0.000
L28	32.03 - 27.03	TP46.4344x45.2199x0.375	28.73	1920.26	0.015	1.76	7290.77	0.000
L29	(28) 27.03 - 22.03	TP47.6489x46.4344x0.375	29.04	1953.92	0.015	1.76	7615.52	0.000
	(29)				0.045		7042.57	0.000
L30	22.03 - 17.03 (30)	TP48.8634x47.6489x0.375	29.35	1986.71	0.015	1.76	7943.57	0.000
L31	17.03 - 12.03	TP50.0779x48.8634x0.375	29.66	2018.62	0.015	1.76	8274.66	0.000
L32	(31) 12.03 - 7.03	TP51.2924x50.0779x0.375	29.98	2049.66	0.015	1.76	8608.50	0.000
	(32)				2.245		0044.05	0.000
L33	7.03 - 2.03 (33)	TP52.5069x51.2924x0.375	30.30	2079.83	0.015	1.75	8944.83 9082.08	0.000 0.000
L34	2.03 - 0 (34)	TP53x52.5069x0.375	30.43	2091.83	0.015	1.75	9082.08	0.000

Program Version 8.0.2.1 - 5/2/2018 File:P:/004_CCI_SITES/876366 WAPPINGERS FALLS - PRESTON CIT/003-18-0094/Engineering/Aero Calculations/Working RISA/CCIPole/876366 WAPPINGERS FALLS - PRESTON CIT.eri

APPENDIX B BASE LEVEL DRAWING

BUSINESS UNT: 876366 TOWER ID: C_BASELEVEL

APPENDIX C ADDITIONAL CALCULATIONS

CCIpole per 714-222- 6

Site BU: 876366

Work Order: 1593865

CROWN

Copyright © 2018 Crown Castle

Pole	Pole Geometry							Copyright ©	Copyright © 2018 Crown Castle
	Pole Height Above		Lap Splice Length			Bottom Diameter			
	Base (ft)	Section Length (ft)	(#)	Number of Sides	Number of Sides Top Diameter (in)	(in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
	155	31.79	3.58	18	18	24.59	0.1875	0.75	A572-65
	126.79	44.21	4.83	18	23.47	34.07	0.25	1	A572-65
	87.41	44.38	5.93	18	32.41	43.17	0.3125	1.25	A572-65
	48.96	48.96	0	18	41.11	53	0.375	1.5	A572-65

Reinforcement Configuration

		0		j.		-	-	-	-	_	_	-	-	_	-	_	_	_	_		
	Bottom Effective	Top Effective	, care		Nimbor					<u></u>		α	<u>`</u>		-	12	4,		- 2	17	, C
	1 47	68 68	plate	CCI-SFP-060100	3	×	1		┰	_	×		,			×	1 2	-		i	
	2 85.5	97.5	plate	CCI-SFP-045100	ო	×	H				×		$\mid \cdot \mid$	\dashv		×					
	3						\dashv	\dashv	\dashv	_			\dashv		\dashv	+	_	_	\perp		
	4						-	\dashv	\dashv	_		╛	\dashv	\dashv	-	-	+	4	\downarrow		
	5					\exists	\dashv	\dashv	\dashv		Ţ		\dashv	\dashv	\dashv	\dashv	4				
	9								-				\dashv	\dashv	\dashv		-				
 	7							_	\dashv	_			\dashv	-+	\dashv	+		_	4		
	8					_	\dashv	\dashv	-	4	\prod		\dashv	1	\dashv	+	\dashv	\dashv	_		
	6						\dashv	-	\dashv	_	_[+	\dashv	+	+	-	\downarrow		
	10								_	_					\dashv		_				

Reinforcement Details

	Reinforcement	Material	A572-65	A572-65
		Net Area (in²) Bolt Hole Size (in)	1.1875	1.1875
		Net Area (in²)	4.750	3.250
		L _u (in)	16.000	20.000
Тор	Termination	Length (in)	24.000	18.000
Bottom	Termination Termination	Length (in)	24.000	18.000
	Pole Face to	Centroid (in)	0.5	0.5
		Gross Area (in ²)	9	4.5
		H (in)	1	Ţ
		B (in)	9	4.5
	-		П	2

TNX Geometry Input

Increment (ft): 5

inc	rement (ft): 5			,	,				
-			Lap Splice Length		".	Bottom Diameter		Tapered Pole	Weight
\dashv	Section Height (ft)	Section Length (ft)	(ft)	Number of Sides	Top Diameter (in)	(in)	Wall Thickness (in)	Grade	Multiplier
1	155 - 150	5		18	18.000	19.035	0.1875	A572-65	1.000
2	150 - 145	5		18	19.036	20.073	0.1875	A572-65	1.000
3	145 - 140	5		18	20.073	21.109	0.1875	A572-65	1.000
4	140 - 135	5		18	21.109	22.146	0.1875	A572-65	1.000
5	135 - 130	5		18	22.146	23.182	0.1875	A572-65	1.000
6	130 - 126.79	6.79	3.58	18	23.182	24.590	0.1875	A572-65	1.000
_7	126.79 - 121.79	5	<u></u>	18	23.473	24.671	0.25	A572-65	1.000
8	121.79 - 116.79	5		18	24.671	25.870	0.25	A572-65	1.000
9	116.79 - 111.79	5		18	25.870	27.068	0.25	A572-65	1.000
10	111.79 - 106.79	5		18	27.068	28.267	0.25	A572-65	1.000
11	106.79 - 101.79	5		. 18	28.267	29.465	0.25	A572-65	1.000
12	101.79 - 97.5	4.29		18	29.465	30.494	0.25	A572-65	1.000
13	97.5 - 97.25	0.25		18	30.494	30.554	0.25	A572-65	1.000
14	97.25 - 92.25	5		18	30.554	31.752	0.25	A572-65	1.000
15	92.25 - 87.41	9.67	4.83	18	31.752	34.070	0.25	A572-65	1.000
16	87.41 - 81.58	5.83		18	32.412	33.825	0.3125	A572-65	1.000
17	81.58 - 76.58	S		18	33.825	35.037	0.3125	A572-65	1.000
18	76.58 - 71.58	S		18	35.037	36.249	0.3125	A572-65	1.000
19	71.58 - 68	3.58		18	36.249	: 37.117	0.3125	A572-65	1.000
20	68 - 67.75	0.25	·	18	37.117	37.178	0.4875	A572-65	0.961
21	67,75 - 62.75	5		18	37.178	38.390	0.475	A572-65	0.976
22	62.75 - 57.75	5		18	38.390	39.602	0.475	A572-65	0.966
23	57.75 - 52.75	5		18	39.602	40.814	0.4625	A572-65	0.982
24	52.75 - 48.96	9.72	5.93	18	40.814	43.170	0.4625	A572-65	0,975
25	48.96 - 42.03	6.93		18	41.108	42.791	0,375	A572-65	1.000
26	42.03 - 37.03	5		18	42,791	44.005	0,375	A572-65	1.000
27	37.03 - 32.03	5	,	18	44,005	45.220	0.375	AS72-65	1,000
28	32.03 - 27.03	5 .		18	45.220	46.434	0.375	A572-65	1.000
29	27.03 - 22.03	5		18	46.434	47.649	0.375	A572-65	1.000
30	22.03 - 17.03	5		18	47.649	48.863	0.375	A572-65	1.000
31	17.03 - 12.03	5		18	48.863	50.078	0.375	A572-65	1.000
32	12.03 - 7.03	5		18	50.078	51.292	0.375	A572-65	1.000
33	7.03 - 2.03	5		18	51.292	52.507	0.375	A572-65	1.000
34	2.03 - 0	2.03		18	52.507	53,000	0.375	A572-65	1.000

TNX Section Forces

lno	rement (ft):	5		Т	NX Outpu	ıt
		*			M _{ux} (kip-	
	Section Height	(ft)	Pu	(K)	ft)	V _u (K)
1	155 - 15	0		2.75	20.30	6.32
2	150 - 14	15		2.97	52.68	6.63
3	145 - 14	10		3.43	87.54	7.40
4	140 - 13	5		6.19	157.61	14.19
5	135 - 13	30		6.58	229.35	14.52
6	130 - 12	6.79		8.59	302.12	20.95
7	126.79 - 12	21.79		9.36	407.84	21.34
8	121.79 - 11	6.79		10.02	515.36	21.68
9	116.79 - 11	1.79		10.72	624.57	22.02
10	111.79 - 10	6.79		11.44	735.49	22.36
11	106.79 - 10	1.79		12.20	848.11	22.70
12	101.79 - 97	7.5		12.87	946.09	23.00
13	97.5 - 97	7.25		12.92	951.84	23.01
14	97.25 - 92	2.25		13.71	1067.73	23.37
15	92.25 - 87	7.41		14.51	1181.56	23.69
16	87.41 - 83	L.58		16.07	1321.17	24.21
17	81.58 - 76	5.58		17.04	1443.04	24.57
18	76.58 - 73	L.58		18.12	1567.00	
19	71.58 - 68	3		18.85	1657.13	25.32
20	68 - 67	7.75		18.93	1663.46	25.33
21	67.75 - 62	2.75		20.27	1791.34	25.84
22	62.75 - 5	7.75		21.65	1921.69	26.32
23	57.75 - 52	2.75		23.06	2054.44	26.80
24	52.75 - 48	3.96		24.14		ļ
25	48.96 - 42	2.03		27.28		
26	42.03 - 3	7.03		28.60		
27	37.03 - 3	2.03		29.95	2627.72	28.43
28	32.03 - 2	7.03		31.33		ļ
29	27.03 - 2	2.03		32.73		
30	22.03 - 1	7.03	<u> </u>	34.17		1
31	17.03 - 1	2.03		35.64		
32	12.03 - 7	.03		37.10	Į	
33	7.03 - 2	.03	L	38.53		
34	2.03 - 0	•	<u>L</u>	39.10	3569.41	30.43

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
155 - 150	Pole	TP19.036x18x0.1875	Pole	6.7%	Pass
150 - 145	Pole	TP20.073x19.036x0.1875	Pole	15.3%	Pass
145 - 140	Pole	TP21.109x20.073x0.1875	Pole	23.1%	Pass
140 - 135	Pole	TP22.146x21.109x0.1875	Pole	38.3%	Pass
135 - 130	Pole	TP23.182x22.146x0.1875	Pole	51.4%	Pass
130 - 126.79	Pole	TP24.59x23.182x0.1875	Pole	64.6%	Pass
126.79 - 121.79	Pole	TP24.671x23.473x0.25	Pole	57.3%	Pass
121.79 - 116.79	Pole	TP25.87x24.671x0.25	Pole	66.0%	Pass
116.79 - 111.79	Pole	TP27.068x25.87x0.25	Pole	73.8%	Pass
111.79 - 106.79	Pole	TP28.267x27.068x0.25	Pole	80.6%	Pass
106.79 - 101.79	Pole	TP29.465x28.267x0.25	Pole	86.5%	Pass
101.79 - 97.5	Pole	TP30.494x29.465x0.25	Pole	90.9%	Pass
97.5 - 97.25	Pole	TP30.554x30.494x0.25	Pole	91.2%	Pass
97.25 - 92.25	Pole 1	TP31.752x30.554x0.25	Pole	95.8%	Pass
92.25 - 87.41	Pole	TP34.07x31.752x0.25	Pole	99.8%	Pass
87.41 - 81.58	Pole	TP33.825x32.412x0.3125	Pole	79.9%	Pass
81.58 - 76.58	Pole	TP35.037x33.825x0.3125	Pole	82.0%	Pass
76.58 - 71.58	Pole	TP36.249x35.037x0.3125	Pole	84.0%	Pass
71.58 - 68	Pole	TP37.117x36.249x0.3125	Pole	85.3%	Pass
68 - 67.75	Pole + Reinf.	TP37.178x37.117x0.4875	Reinf. 1 Tension Rupture	84.3%	Pass
67.75 - 62.75	Pole + Reinf.	TP38.39x37.178x0.475	Reinf. 1 Tension Rupture	86.0%	Pass
62.75 - 57.75	Pole + Reinf.	TP39.602x38.39x0.475	Reinf. 1 Tension Rupture	87.6%	Pass
57.75 - 52.75	Pole + Reinf.	TP40.814x39.602x0.4625	Reinf. 1 Tension Rupture	89.0%	Pass
52.75 - 48.96	Pole + Reinf.	TP43.17x40.814x0.4625	Reinf. 1 Tension Rupture	90.0%	Pass
48.96 - 42.03	Pole	TP42.791x41.108x0.375	Pole	75.0%	Pass
42.03 - 37.03	Pole	TP44.005x42.791x0.375	Pole	75.7%	Pass
37.03 - 32.03	Pole	TP45.22x44.005x0.375	Pole	76.4%	Pass
32.03 - 27.03	Pole	TP46.434x45.22x0.375	Pole	77.0%	Pass
27.03 - 22.03	Pole	TP47.649x46.434x0.375	Pole	77.6%	Pass
22.03 - 17.03	Pole	TP48.863x47.649x0.375	Pole	78.1%	Pass
17.03 - 12.03	Pole	TP50.078x48.863x0.375	Pole	78.6%	Pass
12.03 - 7.03	Pole	TP51.292x50.078x0.375	Pole	79.1%	Pass
7.03 - 2.03	Pole	TP52.507x51.292x0.375	Pole	79.6%	Pass
2.03 - 0	Pole	TP53x52.507x0.375	Pole	79.8%	Pass
BOAT, N. LEED TOOK OF BETTE WATER THE POST OF BASE OF THE STORY	er fra puleus fogellum enemen enementation francis for the	COPPLETE OF THE WORLD BE A STATE OF THE STAT		Summary	STORES OF THE STORES OF THE STORES OF THE STORES
T 2 - COTT TO TO TO TO TOO COMP. (\$44,) 14, 45 TO (10° COL) 46 TO COL			Pole Access to control process of the control of t	99.8%	Pass
			Reinforcement	90.0%	Pass
	1		Overall	99.8%	Pass

Additional Calculations

Section	Mom	ent of Inerti	a (in⁴)		Area (in²)		% Ca	pacity	
Elevation (ft)	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2_
155 - 150	503	n/a	503	11.22	n/a	11.22	6.7%		
150 - 145	591	n/a	591	11.83	n/a	11.83	15.3%		
145 - 140	688	n/a	688	12.45	n/a	12.45	23.1%		
140 - 135	796	n/a	796	13.07	n/a	13.07	38.3%		
135 - 130	914	n/a	914	13.68	n/a	13.68	51.4%		
130 - 126.79	996	n/a	996	14.08	n/a	14.08	64.6%		
126.79 - 121.79	1460	n/a	1460	19.38	n/a	19.38	57.3%		
121.79 - 116.79	1685	n/a	1685	20.33	n/a	20.33	66.0%		
116.79 - 111.79	1933	n/a	1933	21.28	n/a	21.28	73.8%		
111.79 - 106.79	2204	n/a	2204	22.23	n/a	22.23	80.6%		
106.79 - 101.79	2499	n/a	2499	23.18	n/a	23.18	86.4%		
101.79 - 97.5	2772	n/a	2772	24.00	n/a	24.00	90.9%		
97.5 - 97.25	2789	n/a	2789	24.05	n/a	24.05	91.2%		
97.25 - 92.25	3133	n/a	3133	25.00	n/a	25.00	95.8%		
92.25 - 87.41	3492	n/a	3492	25.92	n/a	25.92	99.8%		
87.41 - 81.58	4715	n/a	4715	33.24	n/a	33.24	79.9%		
81.58 - 76.58	5245	n/a	5245	34.44	n/a	34.44	82.0%		
76.58 - 71.58	5814	n/a	5814	35.64	n/a	35.64	84.0%		
71.58 - 68	6245	n/a	6245	36.50	n/a	36.50	85.3%		
68 - 67.75	6276	3307	9583	36.56	18.00	54.56	55.2%	84.3%	
67.75 - 62.75	6916	3519	10435	37.77	18.00	55.77	56.9%	86.0%	
62.75 - 57.75	7597	3737	11334	38.97	18.00	56.97	58.6%	87.6%	
57.75 - 52.75	8322	3962	12284	40.17	18.00	58.17	60.2%	89.0%	
52.75 - 48.96	8902	4136	13038	41.08	18.00	59.08	61.4%	90.0%	
48.96 - 42.03	11471	n/a	11471	50.48	n/a	50.48	75.0%		
42.03 - 37.03	12485	n/a	12485	51.93	n/a	51.93	75.7%		
37.03 - 32.03	13557	n/a	13557	53.37	n/a	53.37	76.4%		
32.03 - 27.03	14688	n/a	14688	54.82	n/a	54.82	77.0%		
27.03 - 22.03	15881	n/a	15881	56.27	n/a	56.27	77.6%		
22.03 - 17.03	17137	n/a	17137	57.71	n/a	57.71	78.1%		
17.03 - 12.03	18457	n/a	18457	59.16	n/a	59.16	78.6%		
12.03 - 7.03	19843	n/a	19843	60.60	n/a	60.60	79.1%		
7.03 - 2.03	21298	n/a	21298	62.05	n/a	62.05	79.6%		
2.03 - 0	21908	n/a	21908	62.63	n/a	62.63	79.8%		

Note: Section capacity checked in 5 degree increments.

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

1.000 1.05% 0.50

TIA Code: ASIF; Failure: eta Factor:

☐ ft-kip 중 중

Base Reactions
3569
39
Circular

Moment: Shear: Axial:

Aero Solutions LLC Optimizing Your Tower Infrastructure

Base Plate Type:

Site Information	876366	WAPPINGERS FALLS - PRESTON CIT	441414 RO	
	ä	Name:	App. #:	

-1		<u>=</u>		<u>.⊑</u>	.⊑	in ²	in.	Group	kip-ft	奇	ki d	¥ا	ά	άp	Pass
Original Anchor Rod Data	12	2.25	A615 GR 75	62.0		47.71	22926	y Original AR	2977.4	39.1	30.4	Original AR Capacity Check	200.4	259.8	77.1%
Original An	Quantity:	Diameter:	Material:	Bolt Circle:	Bolt Spacing:	Bolt Group Area:	Bolt Group MOlx:	Reactions Seen by Original AR Group	Moment:	Axial:	Shear:	Original AR	Combined Load:	Allowable load:	AR Capacity:

First Added Anchor Rod Data	chor Rod D	ata
Quantity:	8	
Diameter:	1.75	Ë
Material:	A193 B7	
Bolt Circle:	71.1	. <u>=</u>
0.04	7 2 2	<u>1</u>
יייי ייייי פומה אוכם	27.7	: ·
Bolt Group MOIX:	4558	<u>u</u>
Reactions Seen by First Added AR Group	rst Added A	R Group
Moment:	592.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip
First Added AR Capacity Check	Capacity Ct	ieck A
Combined Load:	128.7	kip
Allowable load:	189.9	kip
AR Capacity:	67.8%	Pass

Second Added Anchor Rod Data	d Anchor Rod	Data	Third Added	Third Added Anchor Rod Data	Sata
Quantity:			Quantity:		
Diameter:		<u>.e</u>	Diameter:	٠,	.⊆
Material:			Material:		
Bolt Circle:		. <u>=</u>	Bolt Circle:		ٿ
Bolt Group Area:	0.00	E E	Bolt Group Area:	0.00	i,
Bolt Group MOlx:	0	_{\$} u	Bolt Group MOlx:	0	in ⁴
Reactions Seen by Second Added AR Group	Second Adder	1 AR Group	Reactions Seen by Second Added AR Group	Second Adder	I AR Group
Moment:	0.0	kip-ft	Moment:	0.0	kip-ft
Axial:	0.0	άp	Axial:	0.0	ķ
Shear:	0:0	kip	Shear:	0.0	kíp
Second Added AR Capacity Check	AR Capacity	Check	Second Added AR Capacity Check	AR Capacity	Check A
Combined Load:	0.0	kíp	Combined Load:	0.0	茚
Allowable load:	0.0	kip	Allowable load:	0.0	kj
AR Capacity:	0.0%		AR Capacity:	0.0%	
					Sev.4.1



5500 Flatiron Parkway, Suite 100

Boulder, CO 80301

720-304-6882

Anchor Rod Embedment (v1.2)

Analysis Standard TIACode TIA Code: www.AeroSolutionsLLC.com Allowable Stress Increase: **ASIF Dimensions and Properties** 84 in PierDia Pier Diameter: 3000 psi Concrete Strength: FC Clear Cover, Side: cc.side 3 in 3 in Clear Cover, Top: cc.top 60 ksi Rebar Yield Strength: BarFv Rebar Tie Size: TieSize 5 0.63 in Rebar Tie Diameter: TieDia 32 Vertical Bar Quantity: **BarOty** Vertical Bar Size: BarSize 11 1.410 in Vertical Bar Diameter: BarDia Vertical Bar Area: BarArea 1.56 in Vertical Bar Circle Diameter: BarBC 75.3 in Vertical Bar Spacing: BarSp 7.4 in Vertical Bar Radial Angle Between: BarAngle 11.3 deg Other RodType Anchor Rod Type: RodDia Anchor Rod Diameter: 1.75 in RodThreads Anchor Rod Threads per Inch: RodArea 1.90 sa in Anchor Rod Net Area Through Threads: Anchor Rod Circle Diameter: RodBC 71.09 in Anchor Rod Material: RodMati A193 B7 Anchor Rod Yield Strength: RodFy 105 ksi RodFu 125 ksi Anchor Rod Ultimate Strength: Anchor Rod Loading 189.9 kip Anchor Rod Tensile Requirement: RodP Anchor Rod Design Criteria: DesCrit Analysis **Development Length of Vertical Rebar** ACI 12.2.4 Reinforcement Location Factor⁽¹⁾: Alpha Coating Factor (1): ACI 12.2.4 Beta Lightweight Aggregate Concrete Factor⁽¹⁾: ACI 12.2.4 Lambda Reinforcement Size Factor⁽¹⁾: Gamma ACI 12.2.4 Transverse Reinforcement Ratio⁽²⁾: ACI 12.2.4 00 in Ktr Maximum Spacing or Cover Dimension: Cover 3 69 in ACI 12.2.4 ACI 12.2.3 46.3 in Ld Development Length: Reinforcment Stress Ratio (3): SR AC! 12.2.5 Used only if DesCrit = "Analysis" 46.3 in Reduced Development Length: Ld.red **Force Transfer Length** Angle to Vertical Bar: Angle 5.6 deg BarDist 4.2 in Distance to Farthest Bar: **Epoxy Bond** Epoxy Ultimate Bond Stress: EpoxyBond 1800 psi 0.5 Strength Resistance Factor: EpoxyPhi Bond Length Required: EpoxvL 38.4 in **Embedment Length** 62 in Total Required Embedment Length: Embedin **Rebar Length Controls** 5.1 ft EmbedFt ActEmbed 5.5 ft Actual Embedment length: **EmbedCap** 93.5% **Embedment Capacity**

Notes:

- (1) These factors are typically 1.0 for most tower foundations.
- (2) This factor is typically 0 inches for most tower foundations.
- (3) Stress ratio of reinforcement can be entered to reduce required development length. Only to be used in already installed desperate situations.
- (4) This is consistent with on CCI Foundations Criteria Item AC-1, dated 06/01/2010.

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Materi

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete not exceeding (1)*(F

Site Data

BU#: 876366

Site Name: WAPPINGERS FALLS - PF

App #: 441414 R0

Pole Manufacturer: Other

Reactions				
2977.4099	ft-kips			
39.0996				
30.425991	kips			
0.5	TIA G (Fig. 4-4)			
	2977.4099 39.0996 30.425991			

		i e
If No stiffeners, Criteria:	AISC LRFD	<-Only Applicable to Unstiffene

Anchor Rod Data			
Qty:	12		
Diam:	2.25]in	
Rod Material:	A615-J]	
Strength (Fu):	100	ksi	
Yield (Fy):	75	ksi	
Bolt Circle:	62	in	

	Plate Data	
Diam:	68	in
Thick:	1.75]in
Grade:	- 60	ksi
Single-Rod B-eff:	13.36	in

Stiffener Data (Welding at both sides)				
Config:	11	*		
Weld Type:	Groove			
Groove Depth:	0.3125]in **		
Groove Angle:	45	degrees		
Fillet H. Weld:		< Disregard		
Fillet V. Weld:	0.25]in		
Width:	7.5]in		
Height:	23]in		
Thick:	0.625	in		
Notch:	0.5]in		
Grade:	50	ksi		
Weld str.:	80	ksi		

Pole Data				
Diam:	50.52	in		
Thick:	0.375	in		
Grade:	65	ksi		
# of Sides:	18	"0" IF Round		
Fu	80	ksi		
Reinf. Fillet Weld	0	"0" if None		

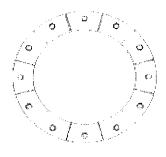
Base Plate Results	Flexural Check
Base Plate Stress:	36.9 ksi
Allowable Plate Stress:	54.0 k si
Base Plate Stress Ratio:	68.4% Pass

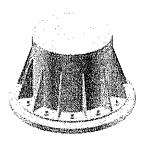
Stiffener Results

Horizontal Weld:	60.1% Pass
Vertical Weld:	43.8% Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	17.6% Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	62.8% Pass
Plate Comp. (AISC Bracket):	66.2% Pass

Pole Results

Pole Punching Shear Check: 9.6% Pass





^{*} 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 # : 876366 Site Name: WAPPINGERS FA App. Number: 441415 R0



TIA-222 Revision: G
Tower Type: Monopole

Block Foundation?:	

Superstructure Analysis Reactions		
Compression, P _{comp} :	39	kips
Base Shear, Vu_comp:	30	kips
		<u> </u>
Moment, M _u :	3569	ft-kips
Tower Height, H:	155	ft
BP Dist. Above Fdn, bp _{dist} .	3	in

Pier Propertie	S	· · · · · · · · · · · · · · · · · · ·
Pier Shape:	Square	
Pier Diameter, dpier :	7.0	ft
Ext. Above Grade, E:	1.00	ft
Pier Rebar Size, Sc :	8	
Pier Rebar Quantity, mc :	30	
Pier Tie/Spiral Size, S t:	4	
Pier Tie/Spiral Quantity, mt:	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc _{pier}	3	in

Pad Properties						
Depth, D :	6.0	ft				
Pad Width, W :	23.0	ft				
Pad Thickness, T:	2.5	ft				
Pad Rebar Size, Sp :	8					
Pad Rebar Quantity, mp:	43					
Pad Clear Cover, ccpad:	3	in				

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

Soil Properties					
Total Soil Unit Weight, γ :	125	pcf			
Ultimate Net Bearing, Qnet:	6.000	ksf			
Cohesion, Cu:		ksf			
Friction Angle, $arphi$:	34	degrees			
SPT Blow Count, N _{blows} :					
Base Friction, μ :	0.6				
Neglected Depth, N:		ft			
Foundation Bearing on Rock?	No				
Groundwater Depth, gw:	6	ft			

Foundation Analysis Checks					
	Capacity	Demand	Rating	Check	
Lateral (Sliding) (kips)	296.74	30.00	10.1%	Pass	
Bearing Pressure (ksf)	5.06	3.19	62.9%	Pass	
Overturning (kip*ft)	4589.66	3786.50	82.5%	Pass	
Pier Flexure (Comp.) (kip*ft)	3989.23	3704.00	92.8%	Pass	
	_				
Pier Compression (kip)	31187.52	78.69	0.3%	Pass	
Pad Flexure (kip*ft)	3732.05	1755.36	47.0%	Pass	
Pad Shear - 1-way (kips)	667.68	300.35	45.0%	Pass	
Pad Shear - 2-way (ksi)	0.19	0.00	0.0%	Pass	

	Soil Rating:	82.5%
Str	ructural Rating:	92.8%

<--Toggle between Gross and Net



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

SPRINT Existing Facility

Site ID: CT33XC010

Wappingers Falls / Preston City 101 Pierce Road Preston, CT 06365

July 31, 2018

EBI Project Number: 6218005229

Site Complian	ce Summary
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.37 %



July 31, 2018

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

Emissions Analysis for Site: CT33XC010 - Wappingers Falls / Preston City

EBI Consulting was directed to analyze the proposed SPRINT facility located at **101 Pierce Road**, **Preston**, **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 **101 Pierce Road**, **Preston**, **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, 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 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 KMW ETCR-654L12H6 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, 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 antennas are 150 feet above ground level (AGL) for Sector A, 150 feet above ground level (AGL) for Sector B and 150 feet above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A. (2)	Sector	B	Sector	С
Antenna#:		Antenna#	1	Antenna #	11
	KMW		KMW	Make / Model	KMW
- Make / Model	ETCR-654L12H6	Make/-Model	ETCR-654L12H6	iviake / iviouei.	ETCR-654L12H6
	13.35 / 15.25/15.05		13.35 / 15.25 / 15.05	.Gain:	13.35 / 15.25 / 15.05
Gain	dBd	Gain	dBd	э Саш.	dBd
Height (AGL)	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
	850 MHz/	of the state of the	850 MHz/		850 MHz/
Frequency Bands	1900 MHz (PCS) /	Frequency Bands	1900 MHz (PCS) /	Frequency Bands	1900 MHz (PCS) /
	2500 MHz (BRŚ)		2500 MHz (BRS)		2500 MHz (BRS)
Channel Count	18	Chännel Count	18	Channel Count	18
Total TX	440 Watts	Total TX	440 Watts	Total TX	440 Watts
Power(W):	440 Watts	Power(W):		Power(W):	
ERP(W):	13,072.94	ERP(W).	1 <u>3,072.94</u>	. ERP (W):	13,072.94
Antenna Al MPE%	2.61 %	Antenna B1 MPE%	2.61 %	Antenna C1 MPE%	2.61 %

Site Composite MPE%					
Carrier	MPE%				
SPRINT - Max per sector	2.61 %				
AT&T	3.54 %				
Verizon Wireless	6.22 %				
Site Total MPE %:	12.37 %				

SPRINT Sector A Total:	2.61 %
SPRINT Sector B Total:	2.61 %
SPRINT Sector C Total:	2.61 %
Site Total:	12.37 %

SPRINT Frequency Band / Frechnology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	150	0.75	850 MHz	567	0.14%
Sprint 850 MHz LTE	2	1,081.36	150	3.75	850 MHz	5 <u>6</u> 7	0.66%
Sprint 1900 MHz (PCS) CDMA	5	535.94	150	4.65	1900 MHz (PCS)	1000	0.46%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	150	4.65	1900 MHz (PCS)	1000	0.46%
Sprint 2500 MHz (BRS) LTE	8	639.78	150	8.87	2500 MHz (BRS)	1000	0.89%
	AGAIN CONTRACT		100			Total:	2.61%



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:	2.61 %
Sector B:	2.61 %
Sector C:	2.61 %
SPRINT Maximum MPE % (per sector):	2.61 %
Site Total:	12.37 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is 12.37 % 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.

(781) 970-0053

SHIP DATE: 07AUG18 ACTWGT: 0.50 LB CAD: 104924191/INET4040

BILL SENDER

PANUS FARM PANUS FARM LLC 60 PIERCE ROAD

PRESTON CT 06365 (860) 334-3561



TRK# 7729 1177 9702

WED - 08 AUG 12:00P **PRIORITY OVERNIGHT**

06365 BDL



Barbadora, Jeff

From:

TrackingUpdates@fedex.com

Sent:

Wednesday, August 8, 2018 11:13 AM

To:

Barbadora, Jeff

Subject:

FedEx Shipment 772911779702 Delivered

Your package has been delivered

Tracking # 772911779702

Ship date:

Tue, 8/7/2018

Jeff Barbadora

Crown Castle

WOBURN, MA 01801

US



Delivery date:

Wed, 8/8/2018 11:09

am

Panus Farm

Panus Farm LLC 60 Pierce Road

PRESTON, CT 06365

US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:

772911779702

Status:

Delivered: 08/08/2018 11:09

AM Signed for By: Signature

not required

Reference:

1766.6680

Signed for by:

Signature not required

Delivery location:

PRESTON, CT

Delivered to:

Residence

Service type:

FedEx Priority Overnight®

Packaging type:

FedEx® Envelope

Number of pieces:

1

Weight:

2.00 lb.

Special handling/Services:

Deliver Weekday

Residential Delivery

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 10:13 AM CDT on 08/08/2018.

SHIP DATE: 07AUG18 ACTWGT: 0.50 LB CAD: 104924191/INET4040

BILL SENDER

FIRST SELECTMAN-ROBERT CONGDON **TOWN F PRESTON 389 ROUTE 2**

PRESTON CT 06365 (860) 887-5581 X 105

REF: 1766.6680



7729 1176 8039

WED - 08 AUG 12:00P **PRIORITY OVERNIGHT**

06365 BDL



Barbadora, Jeff

From:

TrackingUpdates@fedex.com

Sent:

Wednesday, August 8, 2018 10:11 AM

To:

Barbadora, Jeff

Subject:

FedEx Shipment 772911768039 Delivered

Your package has been delivered

Tracking # 772911768039

Ship date:

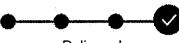
Tue, 8/7/2018

Jeff Barbadora

Crown Castle

WOBURN, MA 01801

US



Delivered

Delivery date:

Wed, 8/8/2018 10:09

am

First Selectman-Robert

Congdon

Town f Preston 389 Route 2

PRESTON, CT 06365

US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:

772911768039

Status:

Delivered: 08/08/2018 10:09

AM Signed for By: M.NANCY

Reference:

1766.6680

Signed for by:

M.NANCY

Delivery location:

PRESTON, CT

Delivered to:

Receptionist/Front Desk

Service type:

FedEx Priority Overnight®

Packaging type:

FedEx® Envelope

Number of pieces:

1

Weight:

2.00 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 9:11 AM CDT on 08/08/2018.

All weights are estimated.

