



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

July 27, 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: 876402**
Sprint Site ID: CT54XC726
175 Stafford Street, Stafford, CT 06419
Latitude: 41° 59' 13.38"/ Longitude: -72° 15' 40.78"

Dear Ms. Bachman:

Sprint currently maintains six (6) antennas at the 150-foot level of the existing 150-foot monopole tower at 175 Stafford Street, Stafford, CT. The tower is owned by Crown Castle. The property is owned by Harry & Nancy Pragl, 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 and four (4) hybrid cables.

This facility was approved by the Connecticut Siting Council, Docket NO 212 on June 3, 2002. This approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to First-Selectwoman Mary Mitta, Town of Stafford Springs, property owners Harry & Nancy Pragl of Staffordville, CT, 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.

Melanie A. Bachman

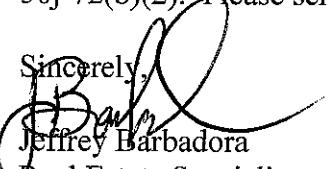
July 27, 2018

Page 2

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,



Jeffrey Barbadora

Real Estate Specialist

12 Gill Street, Suite 5800, Woburn, MA 01801

781-729-0053

Jeff.Barbadora@crowncastle.com

Attachments:

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

Tab 2: Exhibit-2: Structural Modification Report

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

cc: First-Selectwomen Mary Mitta
Town of Stafford Springs
1 Main Street
Stafford Springs, CT 06076

Harry & Nancy Pragl
175 Stafford St Box 154
Staffordville, CT 06077

175 STAFFORD ST

Location 175 STAFFORD ST

Mblu 30/ / 12/ /

Acct# 00142200

Owner PRAGL HARRY J+NANCY C

Assessment \$182,420

Appraisal \$260,600

PID 1596

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$198,700	\$61,900	\$260,600
Assessment			
Valuation Year	Improvements	Land	Total
2015	\$139,090	\$43,330	\$182,420

Owner of Record

Owner PRAGL HARRY J+NANCY C
Co-Owner
Address 175 STAFFORD ST BOX 154
STAFFORDVILLE, CT 06077

Sale Price \$0
Certificate 1
Book & Page 340/ 409
Sale Date 09/03/1998
Instrument

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
PRAGL HARRY J+NANCY C	\$0	1	340/ 409		09/03/1998

Building Information

Building 1 : Section 1

Year Built: 1972
Living Area: 2,295
Replacement Cost: \$221,292
Building Percent 83
Good:
Replacement Cost
Less Depreciation: \$183,700

Building Attributes	
Field	Description

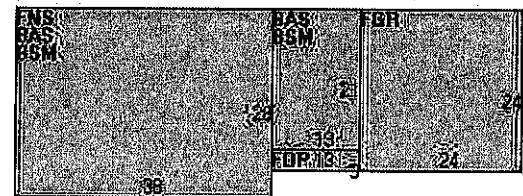
Style	Colonial
Model	Residential
Grade:	C+
Occupancy	1
Exterior Wall 1	Aluminum Sidng
Exterior Wall 2	Brick
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Drywall
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	4
Full Bthrms:	1
Half Baths:	1
Extra Fixtures	0
Total Rooms:	8
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	1
Fireplaces	1
Extra Openings	
Prefab Fpl(s)	
Attic Type	None
Bsmt Type	Full
Bsmt Garage(s)	0
Fin Bsmtnt	0
Fn. Bmt. Qual.	
Unfin Area	0

Building Photo



(<http://images.vgsi.com/photos2/StaffordCTPhotos//\00\00\94\8>)

Building Layout



(<http://images.vgsi.com/photos2/StaffordCTPhotos//Sketches/15>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,337	1,337
FNS	Finished 90% Story	1,064	958
BSM	Basement	1,337	0
FGR	Garage	576	0
FOP	Open Porch	39	0
		4,353	2,295

Extra Features

Extra Features	<u>Legend</u>
No Data for Extra Features	

Land

Land Use

Use Code 101
Description Res Dwelling
Zone AA
Neighborhood 240
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 3.98
Frontage
Depth
Assessed Value \$43,330
Appraised Value \$61,900

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
BRN6	2S Barn w/ Bsmt			748 S.F.	\$15,000	1

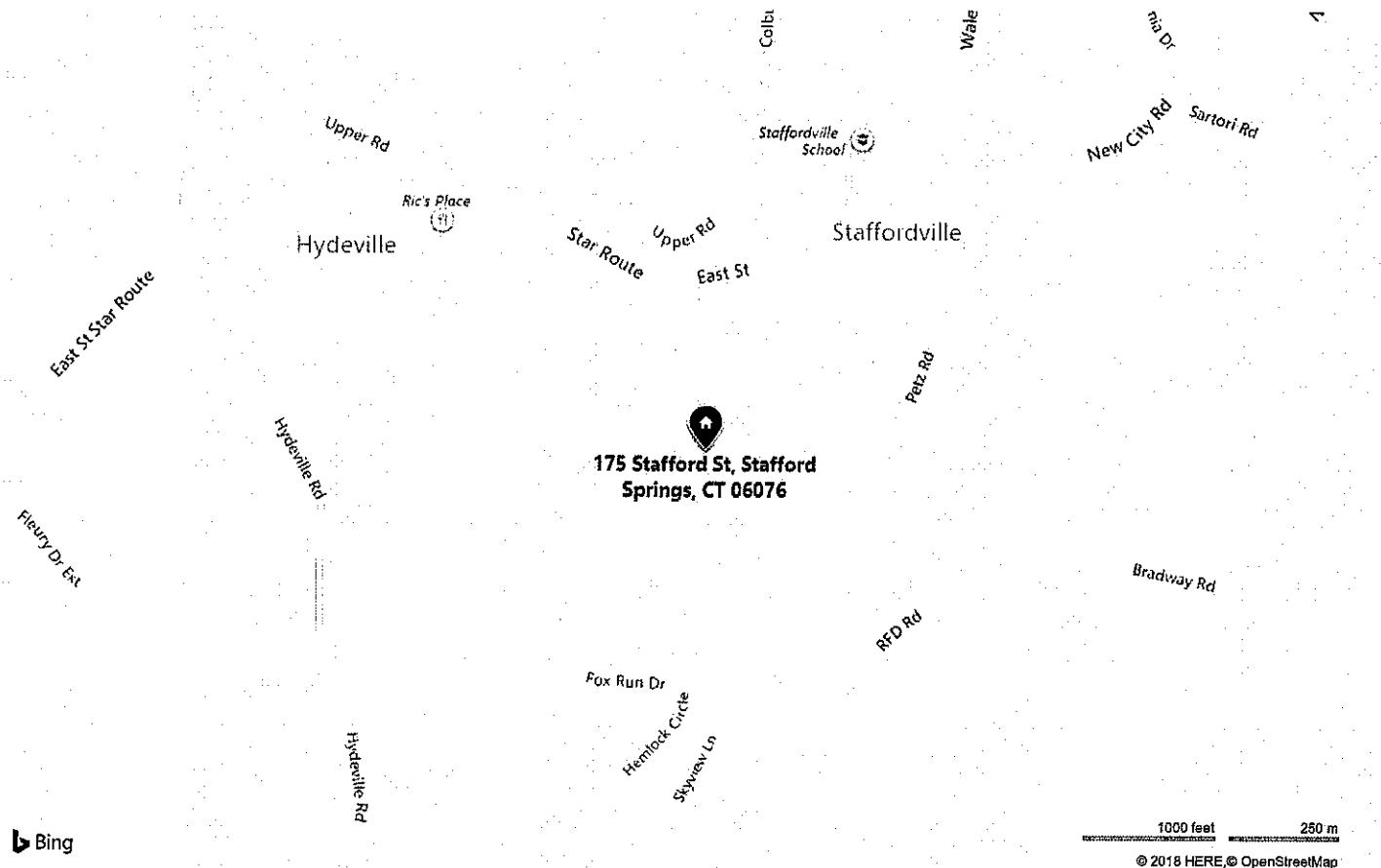
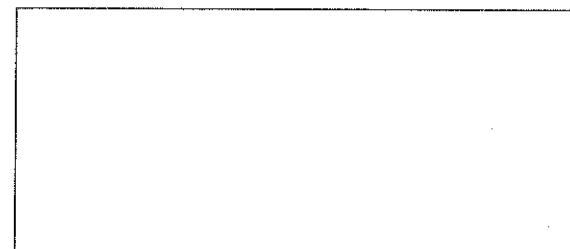
Valuation History**Appraisal**

Valuation Year	Improvements	Land	Total
2017	\$198,700	\$61,900	\$260,600
2016	\$198,700	\$61,900	\$260,600
2014	\$186,900	\$61,900	\$248,800

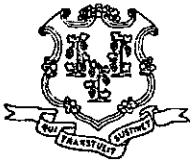
Assessment

Valuation Year	Improvements	Land	Total
2017	\$139,090	\$43,330	\$182,420
2016	\$139,090	\$43,330	\$182,420
2014	\$130,830	\$43,330	\$174,160

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 bing maps**175 Stafford St, Stafford Springs, CT 06076****Address:** 175 Stafford St, Stafford, Stafford Springs, CT 06076**Bing**

Data from: Zillow · Realtor · GreatSchools



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

Web Site: www.state.ct.us/csc/index.htm

June 5, 2002

TO: Parties and Intervenors

FROM: S. Derek Phelps, Executive Director

RE: **DOCKET NO. 212** - Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a wireless telecommunications facility adjacent to 156 Stafford Street or 159 Stafford Street, Stafford, Connecticut.

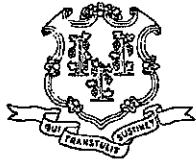
By its Decision and Order dated June 3, 2002, the Connecticut Siting Council granted a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a wireless telecommunications facility at the alternate D (deer stand) site at 159 Stafford Street, Stafford, Connecticut.

Enclosed are the Council's Findings of Fact, Opinion, and Decision and Order.

SDP/FOC/grg

Enclosures (4)

c: Albert Palko, State Documents Librarian
Council Members



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Web Site: www.state.ct.us/csc/index.htm

June 5, 2002

Thomas J. Regan, Esquire
Brown, Rudnick, Freed & Gesmer, P.C.
CityPlace 1, 38th Floor
185 Asylum Street
Hartford, CT 06103-3402

RE: **DOCKET NO. 212** - Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a wireless telecommunications facility adjacent to 156 Stafford Street or 159 Stafford Street, Stafford, Connecticut.

Dear Attorney Regan:

By its Decision and Order dated June 3, 2002, the Connecticut Siting Council (Council) granted a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a wireless telecommunications facility at the alternate D (deer stand) site at 159 Stafford Street, Stafford, Connecticut.

Enclosed are the Council's Certificate, Findings of Fact, Opinion, and Decision and Order.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/FOC/grg

Enclosures (4)



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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Web Site: www.state.ct.us/csc/index.htm

CERTIFICATE

OF

ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

DOCKET NO. 212

Pursuant to General Statutes § 16-50k, as amended, the Connecticut Siting Council hereby issues a Certificate of Environmental Compatibility and Public Need to Sprint Spectrum, L.P. d/b/a Sprint PCS application for the construction, maintenance, and operation of a wireless telecommunications facility at the alternate D (deer stand) site at 159 Stafford Street, Stafford, Connecticut. This Certificate is issued in accordance with and subject to the terms and conditions set forth in the Decision and Order of the Council on June 3, 2002.

By order of the Council,



Mortimer A. Gelston
Mortimer A. Gelston, Chairman

June 3, 2002

DOCKET NO. 212 - Sprint Spectrum, L.P. d/b/a Sprint PCS } Connecticut
application for a Certificate of Environmental Compatibility and }
Public Need for the construction, maintenance, and operation of a }
cellular telecommunications facility adjacent to 156 Stafford }
Street or 159 Stafford Street, Stafford, Connecticut. }
} Siting
} Council

June 3, 2002

Findings of Fact

Introduction

1. Sprint Spectrum L.P., d/b/a Sprint PCS (Sprint) in accordance with provisions of General Statutes §§ 16-50g through 16-50aa applied to the Connecticut Siting Council (Council) on September 28, 2001, for the construction, operation, and maintenance of a wireless telecommunications facility located off Stafford Street in Stafford, Connecticut. (Sprint 1, p. 1)
2. Sprint, a wholly owned subsidiary of WirelessCo L.P., is licensed by the Federal Communications Commission (FCC) to provide wireless personal communication service (PCS) in 32 major trading areas within the United States, including Connecticut. (Sprint 1, pp. 1-2)
3. The parties in this proceeding are the applicant and the Town of Stafford. The intervenor in this proceeding is Citizens for Neighborhood Preservation. (Transcript, December 12, 2001, 2:00 p.m. (Tr. 1), Transcript, December 12, 2001, 7:00 p.m. (Tr. 2), Transcript, April 10, 2002, 3:45 p.m. (Tr. 3) Transcript, April 10, 2002, 7:00 p.m. (Tr. 4))
4. Pursuant to General Statutes § 16-50m, the Council, after giving due notice thereof, held a public hearing on December 12, 2001, beginning at 2:00 p.m. and continuing at 7:00 p.m. in the Veterans Room of the Warren Memorial Town Hall, 1 Main Street, Stafford Springs, Connecticut. The Council also held a hearing on April 10, 2002, beginning at 3:45 p.m. and continued at 7:00 p.m. in the Stafford Town Library, 10 Levinthal Run, Stafford. (Tr. 1, p. 3; Tr. 3, p. 3)
5. The Council and its staff made inspections of the proposed prime and alternate sites on December 12, 2001. The proposed prime site is located approximately 350 feet west of Stafford Street on the Sevick property and the proposed alternate sites are located between 900 feet and 1,500 feet east of Stafford Street on the Pragl property. During the field inspection, the applicant flew a balloon at the proposed prime and alternate sites. On April 10, 2002, the Council and its staff made inspections of the proposed prime site access road, proposed alternate site A, and the deer stand site. The applicant flew balloons to simulate the heights of the towers proposed at these locations. (Tr. 1, pp. 44-45; Tr. 3 p. 17)
6. Pursuant to CGS § 16-50l(e), Sprint provided technical materials to John Julian, First Selectman and Wendell Avery, Zoning Enforcement Officer for the Town of Stafford via a letter dated June 29, 2001. On July 23, 2001, Sprint met with Mr. Avery to discuss plans and proposed locations for telecommunications facilities in the Town of Stafford. The Town held a public informational meeting on August 14, 2001. Town of Stafford Planning and Zoning Commission's letter to the Council dated August 17, 2001, recommends the Pragl property (alternate site) because the Sevick property (prime site) is too close to residential homes and Stafford Street, the tower radius would be closer to residences than the Pragl property, and the proposed tower would be more visible at the Sevcik property. The Planning and Zoning Commission requests that the Council consider requiring utilities to be placed underground, and that in the event the tower is not used for a period of three months the tower should be removed at the owner's expense. (Sprint 1, pp. 21-22, Tabs 14 and 15; Tr. 1, pp. 21-22)

7. Subsequent to the Council's December 12, 2001 hearing, Gordon Frassinelli, First Selectman of the Town of Stafford, Dino Pelligrini representing the Citizens for Neighborhood Preservation, Harry Pragi property owner of the proposed alternate site, and Sprint collectively agreed to pursue a site located approximately 500' north of the proposed alternate site A identified as the alternate D (deer stand) site. (Tr. 3, p. 8)

PCS Service Design

8. Sprint operates a digital personal communications service (PCS) network using a 1900-megahertz (MHz) frequency signal allocated by the FCC. The frequency of this signal is at least twice that of traditional cellular service in the 800 MHz range and degrades quickly in areas of hilly terrain and dense foliage. This system design provides for frequency reuse and handoff between other cell sites, and is capable of orderly expansion. (Sprint 1, p. 10, Tab 14; Sprint 3, Anthony Wells Testimony; Sprint 6, Q. 7)
9. Adjacent Sprint facilities that would hand off traffic with the proposed facility are as follows:

Location	Distance and Direction from proposed facility	Status
290 South Road, Stafford Springs Furnace Avenue, Stafford Springs Stony Lane, Stafford Springs	2.10 mi./southeast 2.50 mi./southwest 3.00 mi./northwest	Operating Operating Proposed facility in Council Docket No. 213
South Wales, Massachusetts	3.75 mi./north	Approved via court settlement, expected construction to start February 2002.

(Sprint 1, Tab 9 and Tab 13; Sprint 2, Q. 18)

Need and Coverage

10. In 1996, the United States Congress recognized a nationwide need for high quality wireless telecommunications services, including cellular telephone service. The Federal Telecommunications Act of 1996 seeks to promote competition, encourage technical innovations, and foster lower prices for telecommunications services. Furthermore, the Federal government has preempted the determination of public need for wireless service by the states, and has established design standards to ensure technical integrity and nationwide compatibility among all systems. (Telecommunications Act of 1996, Definition of Act, Sections 256, and 704)
11. Sprint identified the minimum signal level threshold for an area in Stafford to be -94 dbm. Presently, a gap in coverage exists along Route 19 in Staffordville and surrounding areas. The primary purpose of this facility is to provide service to these gaps in coverage and provide hand-off capability to adjacent sites. (Sprint 1, Tab 5 and Tab 9; Sprint 3, Anthony Wells Testimony)

12. Coverage from existing and proposed facilities located at 290 South Road, Stafford Springs; Furnace Avenue, Stafford Springs; Stony Lane, Stafford Springs; South Wales, Massachusetts within a two-mile radius of the Route 19 and Stafford Road intersection indicates the following coverage gaps. Gaps are defined as areas receiving less than -94 dbm coverage.

Existing Coverage
(See Appendix A)

<u>Route</u>	<u>Gaps (miles)</u> <u>< -94 dbm</u>	<u>Total Road</u> <u>Miles</u>
19	2.0	4.6

(Sprint 4, Q. 17, coverage models)

13. Existing and proposed coverage combined with Sprint antennas on the proposed prime site tower at 150 feet above ground level (AGL) would have no coverage gaps within a two-mile radius of the Route 19 and Stafford Road intersection as follows:

Proposed Prime Site Tower at a height of 150 feet AGL
(See Appendix B)

<u>Route</u>	<u>Gaps (miles)</u> <u>< -94 dbm</u>	<u>Total Road</u> <u>Miles</u>
19	0.0	4.6

As usage increases in the Route 19 area in Stafford, the coverage area would shrink at the fringe of each cell site. A tower less than 150 feet in height would create coverage gaps and makes handoff to adjacent sites more difficult.

(Sprint 4, Q. 17, coverage models; Tr. 1, pp. 40-44; Tr. 2, p. 33; Tr. 3, pp. 55-57)

14. Existing and proposed coverage combined with Sprint antennas on the proposed alternate site tower at 150 feet AGL would have a 500-foot gap in coverage within a two-mile radius of the Route 19 and Stafford Road intersection as follows:

Proposed Alternate Site A Tower at a height of 150 feet AGL
(See Appendix B)

<u>Route</u>	<u>Gaps (feet)</u> <u>< -94 dbm</u>	<u>Total Road</u> <u>Miles</u>
19	500 feet	4.6

A 165-foot tower could provide continuous coverage to Route 19. As usage increases the coverage area would shrink at the fringe of each cell site. A tower less than 150 feet in height would increase gaps to coverage and make handoff to adjacent sites more difficult.

(Sprint 4, Q. 17, coverage models; Tr. 1, pp. 40-44; Tr. 2, P. 33; Tr. 3, pp. 55-57)

15. Coverage from the proposed alternate D (deer stand) site would be equivalent to that from the proposed alternate site A. (Sprint 9, Q. 22)

Site Search

16. The search area is an approximate 0.5-mile long by 0.4-mile wide polygon with the center located approximately 1-mile north-northeast of the intersection of Stafford Street and Hydeville Road. No existing structures are located within or near this search area. (Sprint 1, Tab 16; Sprint 3, Timothy Keator Testimony)
17. Sprint identified and investigated 20 potential sites, including the proposed prime and alternate sites in Stafford. Ten town-owned properties were identified, but initially not given consideration because the Town indicated that they did not want a tower on their properties. Except for the proposed prime and alternate sites, the remaining sites were rejected due to topography, low ground elevation, unacceptable coverage, and/or the landowner reluctance to sell or lease property. (Sprint 1, p. 24 and Tab 17; Sprint 3, Timothy Keator Testimony; Sprint 7)
18. Due to a change in Town administration, the Town is now willing to consider having a tower on town-owned property; however, Sprint rejected the ten town-owned properties because they are located between 0.5 mile and 1.9 miles from the center of the search area, have low ground elevation, or are in or near historic districts or archaeological sites. (Sprint 1, Tabs 12, 16, 21 and 22; Sprint 2, Q. 15; Sprint 7; Tr. 1, pp. 122-123)

Proposed Prime and Alternate Site

19. The proposed prime site, owned by William J. and Viola F. Sevcik, would be located on a 9.7-acre parcel west of Stafford Road. The parcel is wooded and undeveloped. The owner's residence is located on an adjacent parcel. Land uses in the area include undeveloped wooded land to the west and north, and residential development south and east along Stafford Street and Fox Run Drive. The property slopes gently down to the north from an elevation of 900 feet above main sea level (amsl) at Stafford Street, to approximately 870 feet amsl at the north property boundary. The elevation of the proposed tower base is 894 feet amsl. (Sprint 1, p. 4, Tab; Department of Environmental Protection (DEP) Comments dated December 7 and 13, 2001)
20. The proposed alternate site, owned by Harry Pragl, would be located on a 31-acre parcel east of Stafford Road. The parcel is wooded and undeveloped. Land uses in the area include undeveloped wooded land to the east and north, and residential development south and west along Stafford Street and Fox Run Drive. The property slopes gently up to the east and north from an elevation of 900 feet amsl at Stafford Street, to approximately 960 feet amsl at the east property boundary. The elevation of the proposed tower base is 950 feet amsl. The landowner has no plans to develop the property other than a home along Stafford Street. (Sprint 1, p. 4, 5, Sections 3 and 4, p. 6; Sprint 4, Q. 4; DEP Comments dated January 19, 2001; Tr. 1, p.10)
21. Four variations of the alternate site are as follows:
 - Site A is the proposed location in the application located approximately 1,500 feet east of Stafford Street;
 - Site B would be located approximately 175 feet south-southeast of Site A. Site B has a ground elevation of 950 feet amsl, and would be greater than 100 feet from wetland two (vernal pool) and wetland one;
 - Site C would be located approximately 600 west-southwest of Site A. Site C has a ground elevation of 930 feet amsl, would have no impact to inland wetlands and intermittent water courses, and would result in a shorter access road; and

- Site D (deer stand) would be located 500 feet north of site A. The alternate D (deer stand) site has a ground elevation of 955 feet amsl, and would be farther away from residences located to the south on Fox Run Drive.

(Sprint 1, Tab 8; Sprint 4, Qs. 5 and 6; Sprint 9, Q. 19)

22. The number of homes within 1,000 feet of the proposed sites are as follows:

<u>Site</u>	<u>No. of homes within 1,000 feet</u>	<u>Nearest home in distance and direction</u>
Prime	10	230 feet east
alternate A	14	380 feet south
alternate B	15	205 feet south
alternate C	27	250 feet south
alternate D (deer stand)	8	640 feet west

The nearest home to the prime site belongs to Richard and Wendy Tambirini. The nearest home to the alternate sites A, B, and C are located on Fox Run Drive. The nearest home to the alternate D (deer stand) site belongs to the lessor. (Sprint 1, p. 15, and Tab 7 and Tab 8, Sprint 9, Qs. 19 and 20)

23. At the proposed prime site, a twelve-foot wide by 340-foot long gravel access drive would be constructed along an existing woods road from Stafford Street. The proposed access road would be located approximately 25 feet north of the nearest property boundary. Sprint could also construct a new 440-foot long by 12-foot wide access road closer to the lessor's driveway and 410 feet north of the Tambirini property boundary. Electric and telephone utilities would be installed underground within the access easement from an existing utility pole on Stafford Street to the proposed compound. (Sprint 1, p. 9; Sprint 9, Q. 25)

24. Sprint proposes to construct a 12-foot wide gravel access road from Stafford Street to the proposed alternate site compound as follows:

<u>Alternate Site</u>	<u>Access road</u>
A	1,500 feet long
B	1,300 feet long
C	900 feet long
D (deer stand)	2,000 feet long

Electric and telephone utilities would be installed above ground within the access easement from an existing utility pole on Stafford Street to the proposed compound. Underground utilities could be installed but would cost twice as much as overhead utilities. (Sprint 1, p. 9 and Tab 8)

25. The proposed prime and alternate sites are zoned single-family district (AA). According to the Town's Zoning Regulations, public and private telecommunications facilities, communications towers, antenna and accessory equipment are a permitted use in all zones except open space districts, by Special Use Permit. The towers are limited to 180 feet in height, with a setback equal to the proposed structure height. (Sprint 1, p. 18.)

26. The proposed facility compound would consist of a 100-foot by 100-foot leased parcel. On the proposed prime site, a 90-foot by 60-foot facility compound would be developed. On the proposed alternate site, a 70-foot by 70-foot facility compound would be developed. Either facility compound would be enclosed by a 7-foot high security fence and gate. A crushed stone surface would be established within the facility compound. A 8.5-foot by 20-foot concrete pad would be constructed to

support Sprint's telecommunications equipment cabinets. Sprint could reduce the dimension of the facility compound. (Sprint 1, pp. 4,5, and 8, Tab 7; Tr. 1, p. 32)

27. Sprint would construct a 150-foot monopole at the proposed prime or alternate site in accordance with Electronic Industries Association Standard EIA/TIA 222-E, Structural Standards for Steel Antenna Towers and Support Structures. (Sprint 1, p. 8)
28. Sprint would attach as many as 12 panel antennas, configured in a three-sector array on a triangular platform, to the monopole at approximately 150 feet AGL. Two antennas per sector would be installed initially with additional antennas to be installed as demand for service grows. A global positioning system (GPS) antenna would be attached at approximately 75 feet AGL. (Sprint 1c, Tr. 1, p. 33)
29. No other wireless telecommunications carriers have notified Sprint of their intention to share the proposed tower. The Town of Stafford's Fire Department has expressed an interest to use the proposed tower, but has not identified the height needed for its antennas. Sprint would provide space for the Town's antennas at no expense. (Sprint 1, pp. 6 and 7; Tr. 1, pp. 31 and 36)
30. In the event of a power outage Sprint would rely on a dry-cell battery system for back-up power. This battery system is designed to provide up to two to three hours of service. Sprint could use a portable generator at the facility if additional power were needed beyond the battery's capability. (Sprint 1, pp. 14 and 15, Tr. 1, pp. 33 and 34)
31. The tower radius at either the proposed prime or alternate site would not extend beyond the property boundaries. No structures other than the telecommunications equipment would be located within the tower radius. (Sprint 1 Tab 7; Sprint 9, Q. 19 and 25)
32. The approximate costs of construction to Sprint for the proposed prime and alternate facilities are estimated as follows:

	<u>Prime site</u>	<u>Alternate A site</u>	<u>Alternate D (deer stand) site</u>
Radio equipment	\$ 113,500	\$ 113,500	\$ 113,500
Tower, cabling, and antennas	49,500	49,500	49,500
Utility installation	10,000	23,000	23,000
Site and road installation	<u>148,000</u>	<u>220,000</u>	<u>225,000</u>
Total Costs	\$321,000	\$406,000	\$411,000

(Sprint 8; Sprint 9, Q. 21)

Environmental Considerations

33. Neither the proposed prime or alternate site contains known existing populations of Federal or State Endangered, Threatened or Special Concern Species. However, a reported location of whip-poor-wills (*Caprimulgus vociferus*), a State Species of Special Concern is approximately 2,000 feet south-southwest of the proposed prime and alternate sites. The DEP recommends that no construction take place during the months of May June and July to avoid disruption of whip-poor-wills forage activities. (Sprint 1, pp. 26-27; Tab 21 and Tab 22; Sprint 6, Q. 8; DEP letters dated December 7 and 13, 2001)

34. No inland wetlands or watercourses were identified in proximity of the proposed prime access drive(s) or site. However, the alternative access drive for the proposed prime site, located north of the lessor's driveway, crosses a drainage swale. (Sprint 1, p. 12; Tr. 3, p. 18)

35. Four inland wetlands are located proximate to the proposed alternate site(s) and access road.

- Wetland one is located approximately 250 feet south of site A and would be within 20 feet of the proposed access road at elevation 948 feet. This wetland is small in size and may be a vernal pool because of its depressional formation, no permanent outlet, and the presence of Wood frogs;
- Wetland two is a vernal pool located approximately 55 feet west of site A and ten feet north of the proposed access road at elevation 940 feet;
- Wetland three is approximately 50 feet south of the access road at elevation 900 feet;
- Wetland four is similar to wetland 2, is located approximately 300 west of the proposed alternate D (deer stand) site, and has characteristics that may consider wetland four as a vernal pool.

The proposed access road to the alternate sites would cross two intermittent watercourses at elevation 936 feet and 900 feet. (Sprint 1, pp. 13 and 14, Tab 8; Sprint 9, Q. 19)

36. Wetland two is classified as a forested groundwater/surface water depressional wetland (vernal pool) and is dominated by red maple, highbush blueberry, and winterberry. Several obligate species, including egg masses and adult Wood frogs, Spotted salamander egg masses, and Fairy shrimp were observed in this vernal pool on April 22, 2000. Dean Gustafson, a professional soil scientist, recommends a minimum 100-foot buffer to wetland two and two lines of erosion and sediment control structures be added for the protection of wetland two. (Sprint 1, pp. 13-14; Tab 22)

37. The State Historic Preservation Office (SHPO) has determined that construction of the proposed prime or alternate facility would have no effect on historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places. Furthermore, the proposed facilities would have no effect upon properties of traditional cultural importance to Connecticut's Native American community. (Sprint 1, p. 26, and Tabs 21 and 22)

38. Clearing of trees and grading would be necessary for the construction of the access road and facility compound. The following table identifies the number of trees, having a diameters of six inches or greater at breast height, that would need to be removed.

Site	Approximate number of trees to be removed		
<u>Prime</u>	<u>Access road</u>	<u>Site compound</u>	<u>Total</u>
with proposed access road	5	12	17
with alternate access road	28	12	40
<u>Alternate site</u>			
A	21	10	31
B	21	5	26
C	9	15	24
D (deer stand)	25	20	45

(Sprint 5; Sprint 9, Qs. 19 and 25

39. Sprint would install erosion and sediment control structures prior to commencement of construction in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control. Culverts

would be installed at the intermittent watercourses or drainage swale. After construction all disturbed areas would be graded, seeded and mulched. (Sprint 1, p. 12; Sprint 2, Q. 7; Sprint 9, Q. 19; Tr. 3, pp. 39-42)

40. Neither the prime or alternate tower would require Federal Aviation Administration marking or lighting. (Tr. 1, p. 35)
41. The electromagnetic radiofrequency power density, calculated using the FCC Office of Engineering and Technology Bulletin 65, August 1997, using conservative worst-case approximation of radiofrequency power density levels at the base of the proposed prime or alternate tower, with all Sprint antennas transmitting simultaneously on all channels at full power would be 5.2 percent of the American National Standards Institute (ANSI) Standard. (Sprint 1, p. 25; Tab 18; Sprint 2, Q. 4)

Visibility

42. The visibility analysis within a two-mile radius of the proposed prime site assumed trees were a uniform height of 75 feet and the forest cover would be 78 percent of the 8,042-acre study area. A 150-foot monopole tower would be visible from approximately 225 acres or three percent of the study area. Sprint conducted a balloon test at various locations with the following results.

Visibility of Proposed 150-foot Prime Tower

<u>Location</u>	<u>Visible</u>	<u>Distance and Direction to Tower</u>
Route 19 adjacent to Staffordville Reservoir	yes	1.4 miles south
Dunay Road	yes	1.6 miles south-southeast
Hydeville Road south of Upper Road	no	0.8 miles southeast
Upper Road	yes	1.0 mile southeast
Upper Road north of Leonard Road	yes	1.1 miles east
Sunset Ridge Road west of Monson Road	yes	1.5 miles east
Leonard Road adjacent to Riverside Pond	no	1.4 miles east
Stafford Street and Hydeville Road	no	1.0 mile northeast
Fox Run Drive	yes	0.2 mile northwest
Stafford Street south of Staffordville	yes	0.5 mile south-southwest
New City Road east of Route 19	no	1.0 mile southwest

(Sprint 1, Tab 11)

43. The visibility analysis within a two-mile radius of the proposed alternate site assumed trees were a uniform height of 75 feet and the forest cover would be 79 percent of the 8,042-acre study area. A 150-foot monopole tower would be visible from approximately 140 acres or 1.7 percent of the study area. Sprint conducted a balloon test at various locations with the following results.

Visibility of Proposed Alternate site "A" 150-foot Tower

<u>Location</u>	<u>Visible</u>	<u>Distance and Direction to Tower</u>
Route 19 adjacent to Staffordville Reservoir	yes	1.4 miles south
Dunay Road	yes	1.7 miles south-southeast
Hydeville Road south of Upper Road	no	1.0 miles southeast
Upper Road	no	1.3 mile southeast
Upper Road north of Leonard Road	no	1.4 miles east
Sunset Ridge Road west of Monson Road	yes	1.5 miles east
Colburn Road north of Staffordville	yes	0.7 miles southeast
Stafford Street and Hydeville Road	no	1.0 mile northeast
Fox Run Drive	yes	0.2 mile northwest
Stafford Street south of Staffordville	yes	0.5 mile south-southwest
Route 19 north of New City Road	no	0.8 mile southwest
RFD Road	Partially obscured	0.2 miles east

(Sprint 1, Tab 12)

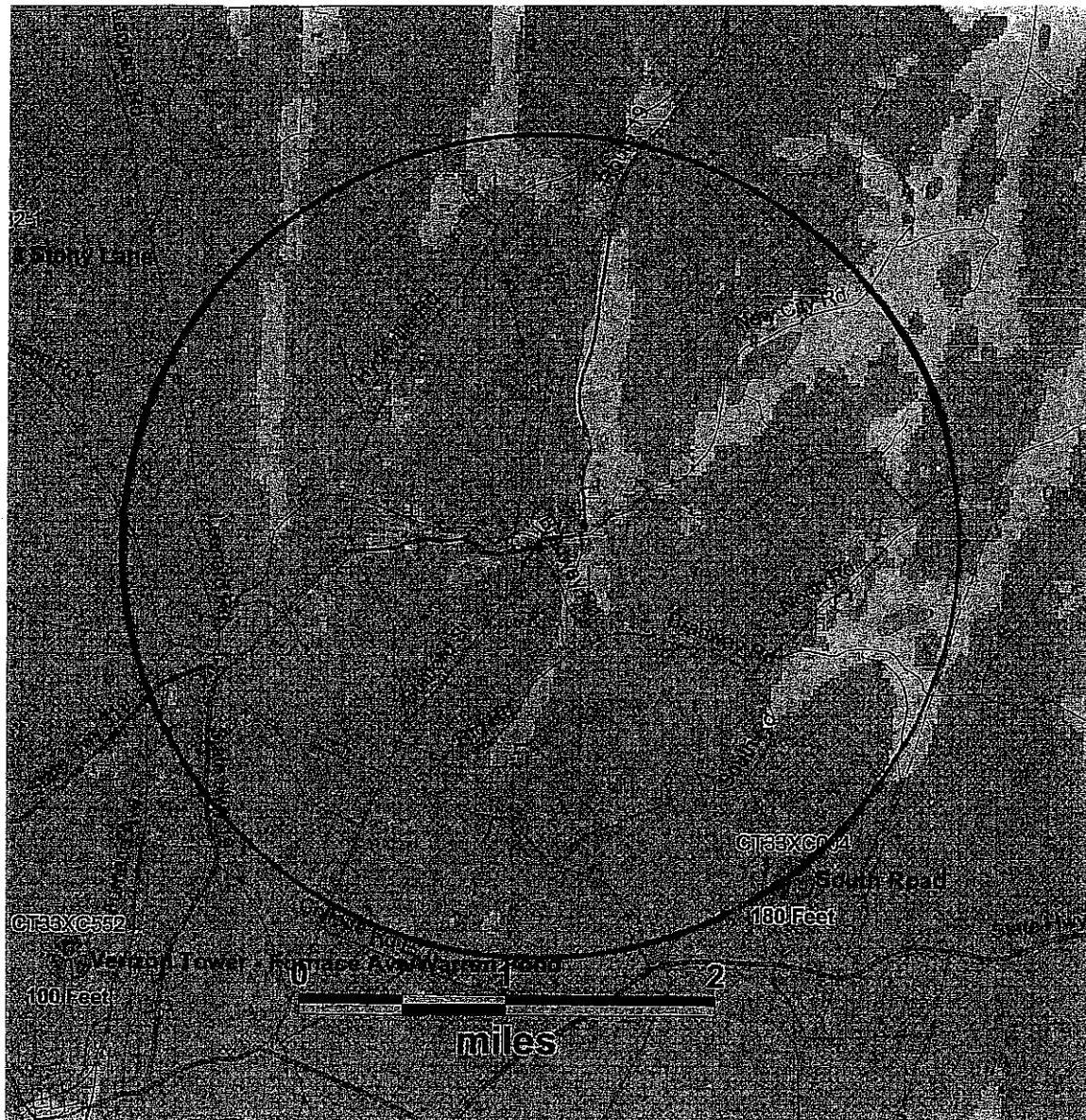
44. The visibility analysis within a two-mile radius of the proposed alternate site assumed trees were a uniform height of 75 feet and the forest cover represents 79 percent of the 8,042-acre study area. A 150-foot monopole tower would be visible from approximately 278 acres or 3.4 percent of the study area. Sprint conducted a balloon test at various locations with the following results.

Visibility of Proposed Alternate D (deer stand) 150-foot Tower

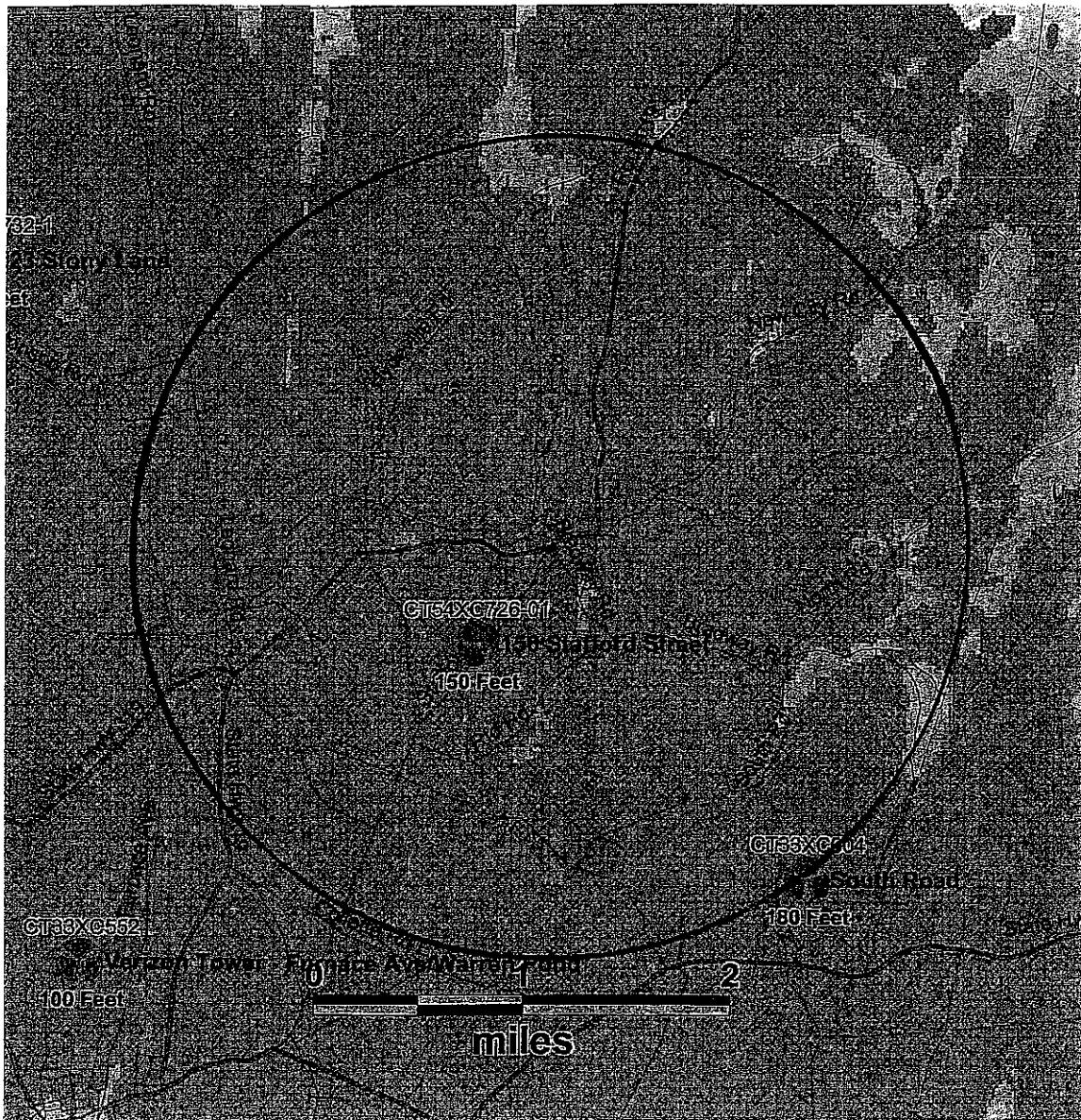
<u>Location</u>	<u>Visible</u>	<u>Distance and Direction to Tower</u>
Route 19 adjacent to Staffordville Reservoir	yes	1.4 miles south
Dunay Road	yes	1.7 miles south-southeast
Hydeville Road south of Upper Road	yes	1.0 miles southeast
Upper Road	yes	1.1 mile southeast
Upper Road north of Leonard Road	yes	1.4 miles east
Sunset Ridge Road west of Monson Road	yes	1.5 miles east
Colburn Road north of Staffordville	yes	0.7 miles southeast
Stafford Street and Hydeville Road	no	1.0 mile northeast
Fox Run Drive	yes	0.2 mile northwest
Stafford Street south of Staffordville	no	0.5 mile south-southwest
Route 19 north of New City Road	yes	0.8 mile southwest
RFD Road	Partially obscured	0.2 miles east

(Sprint 9, Q. 24)

Appendix A
(Sprint existing coverage)

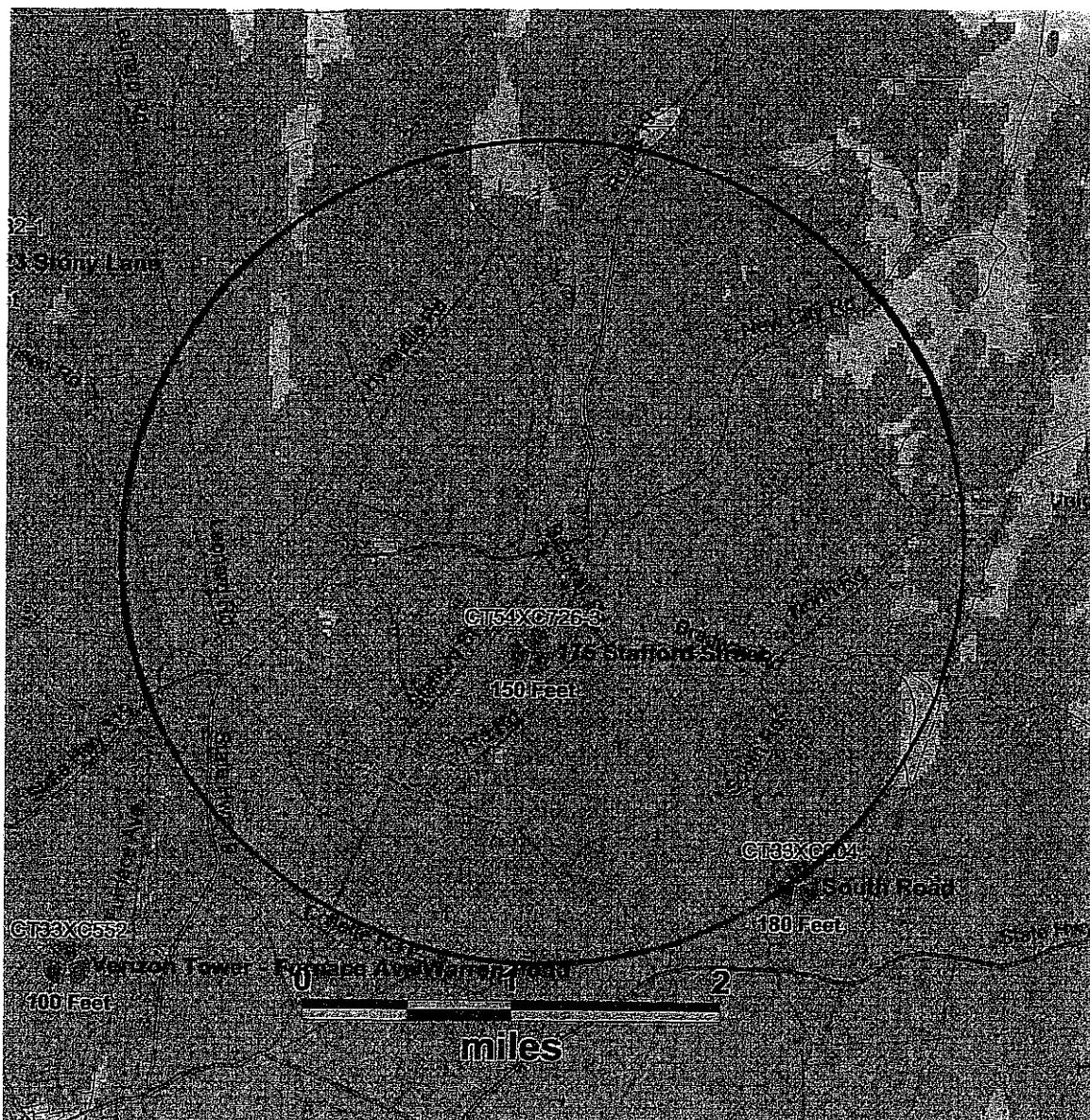


Appendix B
(Sprint existing coverage with prime tower coverage at 150 feet AGL – 1,044 feet amsl)



Appendix C

(Sprint existing coverage with alternate tower coverage at 150 feet AGL – 1,200 feet amsl)



DOCKET NO. 212 - Sprint Spectrum, L.P. d/b/a Sprint PCS } application for a Certificate of Environmental Compatibility and Public } Need for the construction, maintenance, and operation of a cellular } telecommunications facility adjacent to 156 Stafford Street or 159 } Stafford Street, Stafford, Connecticut. }

Connecticut

Siting

Council

June 3, 2002

Opinion

On September 28, 2001, Sprint Spectrum L.P., d/b/a Sprint PCS (Sprint) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, operation, and maintenance of a wireless telecommunications facility off Stafford Street in Stafford, Connecticut. The applicant, Citizens for Neighborhood Preservation, and Town of Stafford are parties and intervenors in this proceeding.

The primary purpose of the proposed facility is to provide wireless telecommunications coverage to existing gaps in the area, and additional call handling capacity along Route 19 and local roads in the northeast Stafford area.

The Council has carefully analyzed the record in this proceeding including a proposed site located off Stony Lane in the Town of Stafford (Council Docket No. 213) and a future site to be developed in South Wales, Massachusetts located less than four miles north of the proposed Stafford Road site. While the Stony Lane or South Wales, Massachusetts sites would not provide coverage to Route 19 in the north Stafford area they will provide call handoff capability with the proposed Stafford Road site. Therefore, the proposed Stafford Road facility would be an integral component of Sprint's network to provide seamless wireless coverage to those portions of Route 19 that would not otherwise be served by existing and proposed facilities in the area. Consequently, based on a detailed analysis of propagation, capacity, signal strength, and no existing structures the Council finds a technical need for a new tower. Because the proposed alternate tower base elevation is about 60 feet higher than the proposed prime site tower base elevation the Council has explored the opportunity to lower the height of the proposed alternate tower; however given the significant tree cover in the area wireless coverage would be diminished at a lower height.

The applicant seeks to develop a 150-foot tower on either the proposed prime or alternate sites. The purpose of a 150-foot tower would be to accommodate Sprint, two future carriers and public safety entities. The Town of Stafford Fire Department expressed an interest to share the proposed facility. Furthermore, the tower radius for both sites would remain on the lessor's property, and neither site would require air navigation lighting or marking.

The proposed sites are on separate properties bisected by Stafford Street and are approximately 1,800 feet apart. The proposed prime site is located on a 10 acre parcel, is over three hundred feet west of Stafford Street, and proximate to the lessor's house and an adjacent neighbor's home. The proposed alternate site is located on a 31 acre parcel which the Council investigated four sites located between 900 feet and 1,500 east of Stafford Street and vary in distance to adjacent neighbors on Fox Run Drive. Alternate sites B and C would be near the lessor's south property boundary and would be as close as three hundred feet to homes on Fox Run Drive. The alternate A site, and the alternate D (deer stand) site located 500 feet north of the proposed alternate A site would be further from homes on Fox Run Drive. Both the proposed prime and alternate sites are in a wooded residential area. Based on location, the alternate D (deer stand) site is more remote and distant to adjacent residential land uses.

Sprint proposed access roads along existing woods roads, which minimizes tree clearing and grading. Development of the proposed prime site would require clearing of approximately 17 to 40 trees with diameters of 6-inches or greater at breast height for construction of the access road and site compound. At the proposed prime site the existing woods road was on the lessor's south property boundary adjacent to a neighbor. During the proceeding another access road was proposed north of the lessor's driveway and away from the neighbor. This access road would approach the proposed prime site from Stafford Street a distance of 440 feet and would require 40 trees to be removed. Clearing of trees to construct the access road and site compound at the proposed alternate sites range from 31 to 45 trees with diameters of 6-inches or greater at breast height. The proposed alternate access road would also be from Stafford Street requiring clearing of up to 45 trees and grading of an existing woods road of up to 2,000 feet. Comparison of tree clearing and use of existing woods roads, development of the alternate D (deer stand) site would be further from inland wetlands and residences than the proposed prime site or alternate A, B or C sites.

Sprint proposes to construct an approximate 5,000 square foot facility compound to accommodate Sprint and two other carriers; however, since Sprint is the only carrier to use the tower, we believe that the compound could be reduced to minimize tree clearing. Electric and telephone utilities would be installed underground at the proposed prime site and overhead at the proposed alternate site. The Town recommends that the utilities be installed underground.

The access road to the alternate sites would cross two intermittent watercourses and would be proximate to four inland wetlands. Two of these inland wetlands are east of the alternate A and alternate D (deer stand) sites and have been identified as vernal pool habitats. While the access road comes as close as 10 feet to inland wetlands and the alternate A site lease area would be 55 feet from inland wetlands, the Council will order that Sprint maintain a 25 foot buffer to all inland wetlands and install erosion and sediment controls to protect these resources prior to construction consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, prior to construction.

The Council is concerned with the visibility of the tower and must balance the need for the tower and the environmental effects of the tower on its adjacent land uses. In this case the proposed prime site is close to residents and would be more visible than the proposed alternate site and offers no substantial savings in tree clearing. The alternate A site would be further removed from adjacent residences but not nearly so as the proposed alternate D (deer stand) site. Although the alternate D (deer stand) site has the highest elevation of the proposed sites and its visibility would be slightly greater, it would be reduced by distance. Moreover the alternate D (deer stand) site compound would be farther away from inland wetlands than the proposed alternate A site. Therefore, we will direct the applicant to construct a tower at the proposed alternate D (deer stand) site.

Neither the proposed prime or alternate sites contain known extant populations of Federal or State Endangered, Threatened or Special Concern Species; however a State species of special concern, the whip-poor-will, has been identified within 2,000 feet of the proposed prime and alternate sites. To protect the foraging activities of this species, the Council will order the Certificate holder to not construct during the months of May, June and July. Furthermore, there are no sites listed on the National Register of Historic Places or any National Historic districts in the vicinity of the proposed prime or alternate site nor would the proposed construction of either site affect the state's archaeological heritage.

Electromagnetic radio frequency power density levels are a concern of the Council. However, the radio frequency power density at the base of the proposed tower would be well below federal and State standards for the frequency used by Sprint. If new carriers are added or federal or state standards change, we will require that all carriers comply with such standards.

We appreciate the Town of Stafford's First Selectman, Mr. Gordon Frassinelli, Jr., Citizens for Neighborhood Preservation, the owners' of the site parcels, and Sprint in working on a consensus for a site. In this case, the alternate A, B, and C sites were located along a property boundary and appeared to infringe on an adjacent neighborhood. Subsequent to the Council's December 2001 hearing the parties and intervenors proposed the alternate D (deer stand) site. Following a Council hearing in April 2002 and based on the agreement of the parties and intervenors in this proceeding the Council will approve the alternate site known as the alternate D (deer stand) site. The Council will approve the alternate D (deer stand) site, order that the utilities be installed underground, that no construction will take place during the months of May, June and July, maintain a 25-foot buffer to inland wetlands, and if the tower ceases to provide wireless services the applicant shall dismantle the tower and remove the associated equipment within sixty days or reapply for any continued or new use to the Council.

Based on the record in this proceeding, we find that the effects associated with the construction, operation, and maintenance of the telecommunications facility at the proposed alternate site, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with policies of the State concerning such effects, and are not sufficient reason to deny this application. Therefore, we will issue a Certificate for the construction, operation, and maintenance of a telecommunications facility at the proposed alternate D (deer stand) site located at 159 Stafford Street, Connecticut. The Council will deny the proposed prime site and alternate sites A, B, and C.

Our decision will be conditioned upon the Certificate Holder submitting a Development and Management Plan for approval by the Council prior to commencement of any construction at the facility site.

DOCKET NO. 212 - Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility adjacent to 156 Stafford Street or 159 Stafford Street, Stafford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	June 3, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed alternate D (deer stand) site located at 159 Stafford Street, in Stafford, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Sprint Spectrum d/b/a Sprint PCS for the construction, maintenance, and operation of a wireless telecommunications facility at the proposed alternate D (deer stand) site located at 159 Stafford Street Stafford, Connecticut. We deny certification of the proposed prime site and alternate A, B, and C sites located off Stafford Street, Stafford, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas for Sprint PCS, and other telecommunications entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level including all appurtenances.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for development of the proposed alternate site including a compound reduced in size, the location and specifications for the tower foundation, antennas, equipment and foundation for equipment, security fence, access road to be no closer than 25 feet to any inland wetlands, and utility line that shall be underground; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; landscaping; and provisions for the prevention and containment of spills and/or other discharge into adjacent inland wetlands.
3. The Certificate Holder shall not construct during the months of May, June, and July for the protection of a State species of special concern, the whip-poor-wills (*Caprimulgus vociferus*).
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall provide electromagnetic radio frequency power density measurements within sixty days following commencement of commercial operation.
6. The Certificate Holder shall provide the Council with a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

7. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
8. Following completion of construction, if the facility does not initially provide or permanently ceases to provide wireless services this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment within sixty days, or reapply for any continued or new use to the Council before any such use is made.
9. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
10. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

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

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

The parties and intervenors to this proceeding are:

Applicant

Sprint Spectrum, d/b/a Sprint PCS

Thomas J. Regan, Esq.
Brown, Rudnick, Freed & Gesmer, P.C.
CityPlace 1, 38th Floor
185 Asylum Street
Hartford, CT 06103-3402

Intervenor

Citizens for Neighborhood Preservation

Glen E. Coe, Esq.
Lewis B. Rome, Esq.
Rome McGuigan Sabanosh, P.C.
Attorneys At Law
One State Street
Hartford, CT 06103-3101

Party

Town of Stafford

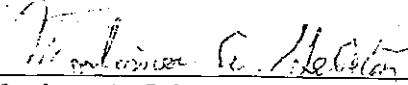
Gordon J. Frassinelli, Jr.
First Selectman
Town of Stafford
Warren Memorial Town
1 Main Street, P.O. Box 11
Stafford Springs, CT 06076

CERTIFICATION

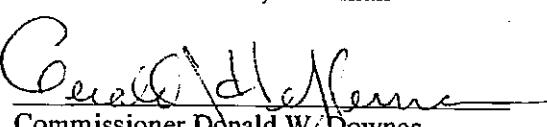
The undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in Docket No. 212 – Sprint Spectrum, L.P. d/b/a Sprint PCS application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a wireless telecommunications facility adjacent to 156 Stafford Street or 159 Stafford Street, Stafford, Connecticut, and voted as follows to approve the alternate D (deer stand) site at 159 Stafford Street, and deny the prime site (156 Stafford Street), and alternate sites A, B and C:

Council Members

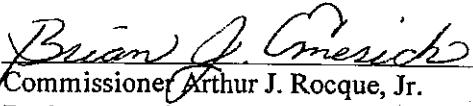
Vote Cast


Mortimer A. Gelston
Mortimer A. Gelston, Chairman

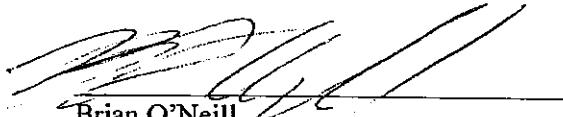
Yes


Commissioner Donald W. Downes
Designee: Gerald J. Heffernan

Yes


Commissioner Arthur J. Rocque, Jr.
Designee: Brian J. Emerick

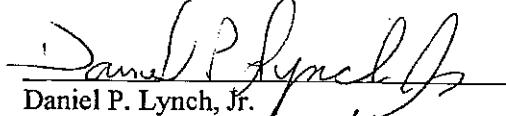
Yes


Brian O'Neill

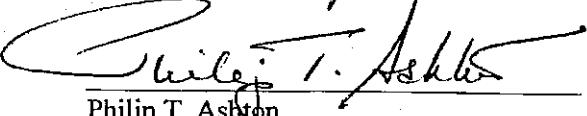
Yes


Pamela B. Katz

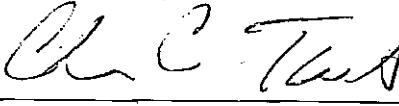
Yes


Daniel P. Lynch, Jr.

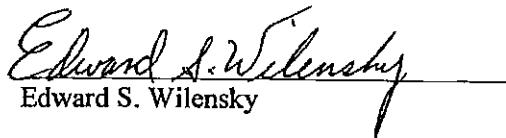
Yes


Philip T. Ashton

Yes


Colin C. Tait

Yes


Edward S. Wilensky

Yes

Dated at New Britain, Connecticut, June 3, 2002.

STATE OF CONNECTICUT)
ss. New Britain, Connecticut :
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

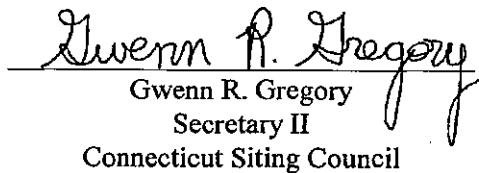
ATTEST:



S. Derek Phelps
Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 212 has been forwarded by Certified First Class Return Receipt Requested mail on June 5, 2002, to all parties and intervenors of record as listed on the attached service list, dated January 18, 2002.

ATTEST:



Gwenn R. Gregory
Secretary II
Connecticut Siting Council

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Applicant	Sprint Spectrum, L.P. d/b/a Sprint PCS	Thomas J. Regan, Esquire Brown, Rudnick, Freed & Gesmer, P.C. CityPlace 1, 38 th Floor 185 Asylum Street Hartford, CT 06103-3402 w: - (860) 509-6500 f: - (860) 509-6501
Intervenor	Citizens for Neighborhood Preservation	Glen E. Coe, Esq. Lewis B. Rome Rome McGuigan Sabanosh, P.C. Attorneys At Law One State Street Hartford, CT 06103-3101 w: - (860) 549-1000 f: - (860) 724-3921
Party	Town of Stafford	Gordon J. Frassinelli, Jr. First Selectman Town of Stafford Warren Memorial Town 1 Main Street, P.O. Box 11 Stafford Springs, CT 06076 w: (860) 684-2532 f: (860) 684-9845



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

Web Site: www.state.ct.us/csc/index.htm

Docket No. 212

Sprint Spectrum L.P.

Stafford, CT

Development and Management Plan

October 23, 2002

On March 21, 2002, the Connecticut Siting Council approved the construction, operation, and maintenance of a telecommunications facility by Sprint Spectrum L.P. d/b/a Sprint PCS at 159 Stafford Road, Stafford, Connecticut. As required in the Council's Decision and Order, Sprint submitted a Development and Management (D&M) Plan for this tower on September 12, 2002 and a revision on October 18, 2002.

Sprint would construct a 150-foot monopole at this site. Access to the site compound would be via a 2,000-foot long by 12-foot wide access road extending from Stafford Road. The proposed access road would cross two intermittent watercourses and be in proximity to four inland wetlands. Sprint would install culverts to cross the intermittent watercourses and be no closer than 30 feet to any inland wetland consistent with the Council's order to be no closer than 25 feet to any inland wetland. Silt fence would be installed down-gradient of all disturbed areas prior to commencement of construction.

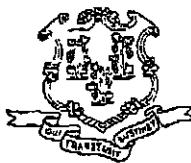
In compliance with the Council's Decision and Order to provide a spill containment and countermeasure plan, Sprint proposes to install two vehicle/equipment fueling stations, one at the entrance of Stafford Road and the other at the site compound. Two double walled storage tanks surrounded by earth berms would be installed to contain spills and to protect adjacent wetland resources. The contractor is required to report all spills to Sprint within 24 hours.

Sprint originally proposed a 75-foot by 75-foot fenced compound inconsistent with the Council's Decision and Order, but has amended its site plan to construct a 50-foot by 50-foot compound and install a 6-foot high chain link fence with security wire around the site compound.

Electrical and telecommunication lines were originally proposed overhead; however, Sprint will install utilities underground within the 25-foot wide access easement consistent with the Council's decision and order. No landscaping is proposed since the site is located in a wooded area and not near any residence or road.

Sprint would mount antennas at 150 feet above ground level (AGL) and future antennas could be installed at 140 feet AGL and 130 feet AGL. A global positioning system (GPS) will be attached at 75 feet AGL. Also, Sprint will place its telecommunications equipment on a 10-foot by 20-foot concrete pad at the base of the tower within the fenced compound.

Sprint has not provided details for the tower foundation as specified in the Council's Decision and Order. Therefore, Council staff recommends approval of the D&M plan with the conditions that the Council be provided notice of any spills associated with the vehicle/equipment fueling stations and that the tower foundation specifications be provided to the Council prior to constructing the foundation.



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
 Ten Franklin Square, New Britain, CT 06051
 Phone: (860) 827-2935 Fax: (860) 827-2950
 E-Mail: siting.council@po.state.ct.us
 Web Site: www.state.ct.us/csc/index.htm

October 28, 2002

Thomas J. Regan, Esq.
 Brown Rudnick Berlack Israels LLP
 185 Asylum Street, CityPlace I
 Hartford, CT 06103-3402

RE: **DOCKET NO. 212 - Sprint Spectrum, L.P. d/b/a Sprint PCS Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility adjacent to 156 Stafford Street or 159 Stafford Street, Stafford, Connecticut.**

Dear Attorney Regan:

At a public meeting of the Connecticut Siting Council held on October 23, 2002, the Connecticut Siting Council (Council) considered and approved with conditions the Development and Management (D&M) Plan submitted for this project on October 18, 2002.

This approval applies only to the D&M Plan submitted on October 18, 2002 with conditions that the Council be provided notice of any spills associated with the vehicle/equipment fueling stations and that the tower foundation specifications be provided to the Council prior to constructing the foundation. Any changes to the D&M Plan require advance Council notification and approval.

Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Enclosed is a copy of the staff report on this D&M Plan, dated October 23, 2002.

Thank you for your attention and cooperation.

Very truly yours,

 Mortimer A. Gelston
 Chairman

MAG/FOC/laf

Enclosure: Staff Report, dated October 23, 2002

c: **Parties and Intervenors**

Sprint



PROJECT:

DO MACRO UPGRADE

SITE NAME:

STAFFORD/PRAKY/SSUSA

SITE NUMBER:

876402

SITE ADDRESS:

175 STAFFORD STREET
STAFFORD, CT 06077

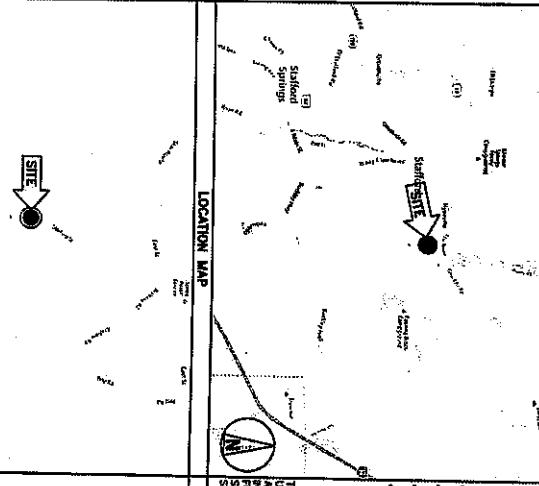
SITE TYPE:

MONPOLE

MARKET:

NEW ENGLAND/UPSTATE NY

 PLANS PREPARED FOR: Sprint 6500 S. State Parkway Oxford Park, Denver, CO			
INFINITY FROM ZERO TO INFINITY The solutions you deserve 1012 Washington Street, Suite 100 Wellesley, MA 02481-1210 Phone: 781-237-1770 Fax: 781-237-1720 www.infinty.com 20 NUMBER 500-96			
 CROWN CASTLE			

SITE INFORMATION		AREA MAP	
<p>TOWER OWNER: CROWN ATLANTIC COMPANY LLC 2000 CORPORATE DRIVE, LLC CHAMBERSBURG, PA 15317 (724) 400-8555</p> <p>LATITUDE (NAD83): 41° 50' 13.35" N 41° 50' 13.35" N</p> <p>LONGITUDE (NAD83): -72° 15' 40.75" W -72° 15' 40.75" W</p> <p>COALFIELD: TOLAND COUNTY</p> <p>ZONING JURISDICTION: TOWN OF STAFFORD ZONING DISTRICT: ST. A</p> <p>POWER COMPANY: EVERE SOURCE (609) 288-2000</p> <p>SPRING CONSTRUCTION: TBD</p> <p>CROWN PM: SCOTT WATERSKI (201) 238-0226</p>			
<p>PROJECT DESCRIPTION</p> <p>SPRINT PROPOSES TO MOVE AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY, INSTALL 25 EQUIPMENT RACKS, EXISTING NO. 1488 CARRIER REMOVE (6) PARAB. ANTENNAS INSTALL (6) PARAB. ANTENNAS (3 800/1800, 3 2500) INSTALL (12) RIGS TO TOWER (6 ABO, 3 1800, 3 2500) INSTALL (4) RIGGED CABLES REMOVE (6) COAX CABLES</p> <p>APPENDIXES</p> <p>A-1 A-2 A-3 A-4 A-5 A-6 A-7 A-8 A-9 A-10 A-11 A-12 A-13 A-14 A-15 A-16 A-17 A-18 A-19 A-20 A-21 A-22 A-23 A-24 A-25 A-26 A-27 A-28 A-29 A-30 A-31 A-32 A-33 A-34 A-35 A-36 A-37 A-38 A-39 A-40 A-41 A-42 A-43 A-44 A-45 A-46 A-47 A-48 A-49 A-50 A-51 A-52 A-53 A-54 A-55 A-56 A-57 A-58 A-59 A-60 A-61 A-62 A-63 A-64 A-65 A-66 A-67 A-68 A-69 A-70 A-71 A-72 A-73 A-74 A-75 A-76 A-77 A-78 A-79 A-80 A-81 A-82 A-83 A-84 A-85 A-86 A-87 A-88 A-89 A-90 A-91 A-92 A-93 A-94 A-95 A-96 A-97 A-98 A-99 A-100 A-101 A-102 A-103 A-104 A-105 A-106 A-107 A-108 A-109 A-110 A-111 A-112 A-113 A-114 A-115 A-116 A-117 A-118 A-119 A-120 A-121 A-122 A-123 A-124 A-125 A-126 A-127 A-128 A-129 A-130 A-131 A-132 A-133 A-134 A-135 A-136 A-137 A-138 A-139 A-140 A-141 A-142 A-143 A-144 A-145 A-146 A-147 A-148 A-149 A-150 A-151 A-152 A-153 A-154 A-155 A-156 A-157 A-158 A-159 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CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY NAME.
 8. SITE INSPECTION CHECKLIST AND HANDOFF WALK (HWC). SIGNED FORM
 9. COAX SWEEP AND FILTER TESTING DOCUMENTS SUBMITTED VIA SWS FOR RF
 10. SWINGABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE
 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
 12. PDF SCAN OF REQUIREMENTS PROVIDED IN FIELD

c. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CONSEQUENCES TO ANY PROPERTY TESTED AS UNINSPECTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING UNINSPECTABLE IN PERMANENT SITE FILES.

d. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS CONSTRUCTION PHOTOGRAPHS MUST CLEARLY IDENTIFY THE SPRINT SITE ITEM AND BE CABLED WITH THE SITE CAGECODE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DEMARKEATES TEST AND INSPECTION REPORTS AND CO-LOCATION DOCUMENTATION SHALL BE UPLOADED TO THE SWS AND FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE:

1. CONCRETE AND CABLE LAYER BREAK REPORTS.
2. STRUCTURAL BUCKLING COMPLIANCE REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA ALIGNMENT AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIERS REQUIREMENTS AND THE APPLICABLE SECTION REGUL
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
7. REDUCED CLOSER DOCUMENTATION INCLUDES THE FOLLOWING:

 1. PHOTOGRAPHS NO PUNCHES. PHOTOGRAPHS OF ALL TOWER EMBODIMENT SIZING AND TRENCHING, PRIOR TO EMBODIMENT SIZING, AT THE TOWER AND INDICATING DEPTH.
 2. CABLES, CONNECTORS, AND GROUNDING. PHOTOGRAPHS SHOWING TYPICAL INSULATION COATINGS AND COLOR CODES, COLOR CODES, SPLICING, TYPICAL BOND RADIUS OF INSULATED GROUND WIRES AND SPLICING PROC
 3. EQUIPMENT, FORMS AND REINFORCING. CONCRETE FORMING AT TOWER AND TOWER EMBODIMENT SIZING, AND TRENCHING, PRIOR TO EMBODIMENT SIZING AND TRENCHING, AT THE TOWER AND INDICATING DEPTH.
 4. TOWER FOUNDATIONS, FORMS AND STEEL, BEFORE POUR. PHOTOGRAPHS SHOWING CONCRETE POUR IN SHELTER SCAFFOLDING, TOWER FOUNDATION AND GUY ANCHORS WITH VERIFIER IN USE. PHOTOGRAPHS SHOWING EACH ANCHOR ON TOWER, BEFORE CONCRETE POUR.
 5. TOWER ANCHORS AND GUYING. INSPECTION AND PHOTOGRAPHS OF SECTION ATTACHMENT POINTS. PHOTOGRAPHS OF TOWER TOP GROUNDING. PHOTOS OF TOWER COAX LINE AND COAX CABLE DRILLING AT THE TOWER AND AT GROUND LEVEL.
 6. PICTURES OF TOWER FOUNDATION, FORMS AND STEEL, BEFORE POURING. PHOTOGRAPHS OF TOWER FOUNDATION, FORMS AND STEEL, BEFORE POURING. PICTURES OF TOWER FOUNDATION, FORMS AND STEEL, BEFORE POURING. PICTURES OF TOWER FOUNDATION, FORMS AND STEEL, BEFORE POURING.
 7. TOWER FOUNDATION(S) POUR WITH VERIFIER IN USE (EACH ANCHOR ON COVERED TOWER).
 8. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON TOWER).
 9. SHELTER AND TOWER OWNERSHIP.
 10. PHOTOS OF TOWER SHELTER STACKING.
 11. CONCRETE TESTING / SPLITTER.
 12. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
 13. BUILDING/WATER TANK FROM ROAD TO TENANT IMPROVEMENTS OR CONCRETE.
 14. SHELTER FOUNDATION-FORMS AND STEEL BEFORE POURING.
 15. COAX CABLE ENTRY INTO SHELTER.
 16. PLACEMENT OF REINFORCING CONCRETE TO TOWER/MONOPOLE AND INTERIOR CEILING.
 17. ROOFTOP PRE-AND POST-CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND EXTERIOR CEILING.
 18. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT SHELTER LEVEL.
 19. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
 20. POWER OR EQUIPMENT BOLT DOWN REUSE SHELTER.
 21. TELCO TRENCH WITH FAUL-BUCKLED TUBE, BEFORE FURTHER BACKFILL.
 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL COAX WELDS AND BOND RADS).
 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL COAX WELDS AND BOND RADS).

8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGN, METAL AND ASPHALT CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL AND ASPHALT PAVING AND REINFORCING.

9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01-400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.2. RELATED DOCUMENTS

24. FENCE, GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL COAX WELDS AND BOND RADS).

25. ALL BITS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDBREAK POINTS ON TOWERS ABOVE 200'.

29. HNG UNITS INCLUDING CONDUITERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TROW AND/OR WAVE-SIDE BRIDGE.

32. DOOR-HOUSE/CABLE EXIT FROM ROOF.

33. EACH SECTION OF ANTENNA: ONE PHOTOGRAPH LOOKING AT THE SCTOR AND FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.

34. MASTER BIAS BAR.

35. TELCO BOUND AND WELL.

36. ELECTRICAL DISTRIBUTION WELL.

37. CABLE ENTRY WITH SURGE PROTECTION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX REINFORCING-TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING-TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING - WHERE APPLICABLE.

43. CABLE ENTRY WITH SURGE PROTECTION.

44. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROGRESSIONS IN THE SWS

45. ADDITIONAL REPORTING:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETION AND UPDATING REPORTS AS DETERMINED BY SPRINT. AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

46. FILE PHOTOGRAPH:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROGRESSIONS IN THE SWS

47. FILE LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. SHELTER AND TOWER OWNERSHIP.

2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON COVERED TOWER).

3. TOWER FOUNDATION(S) POUR WITH VERIFIER IN USE (EACH ANCHOR ON COVERED TOWER).

4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON TOWER).

5. PHOTOS OF TOWER SHELTER STACKING.

6. CONCRETE TESTING / SPLITTER.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

8. BUILDING/WATER TANK FROM ROAD TO TENANT IMPROVEMENTS OR CONCRETE.

9. SHELTER FOUNDATION-FORMS AND STEEL BEFORE POURING.

10. COAX CABLE ENTRY INTO SHELTER.

11. PLACEMENT OF REINFORCING CONCRETE TO TOWER/MONOPOLE AND INTERIOR CEILING.

12. ROOFTOP PRE-AND POST-CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND EXTERIOR CEILING.

13. ROOFTOP PRE-AND POST-CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND EXTERIOR CEILING.

14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT SHELTER LEVEL.

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. POWER OR EQUIPMENT BOLT DOWN REUSE SHELTER.

17. TELCO TRENCH WITH FAUL-BUCKLED TUBE, BEFORE FURTHER BACKFILL.

18. ELECTRICAL TRENCHES WITH ELECTRONIC / CONDUIT BEFORE BACKFILL.

19. ELECTRICAL TRENCHES WITH FAUL-BUCKLED TUBE, BEFORE FURTHER BACKFILL.

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

21. TELCO TRENCH WITH FAUL-BUCKLED TUBE, BEFORE FURTHER BACKFILL.

22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL COAX WELDS AND BOND RADS).

23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL COAX WELDS AND BOND RADS).

SP-2

SP-3

SP-4

SP-5

SP-6

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SP-220

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ALL DRAWINGS ARE IN INCHES

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CASTLE

GENERAL CONTRACTOR

JOHN SISTECKI

PRESIDENT

14, 2008

PROFESSIONAL ENGINEER



STATE OF CONNECTICUT

JOHN SISTECKI

PRESIDENT

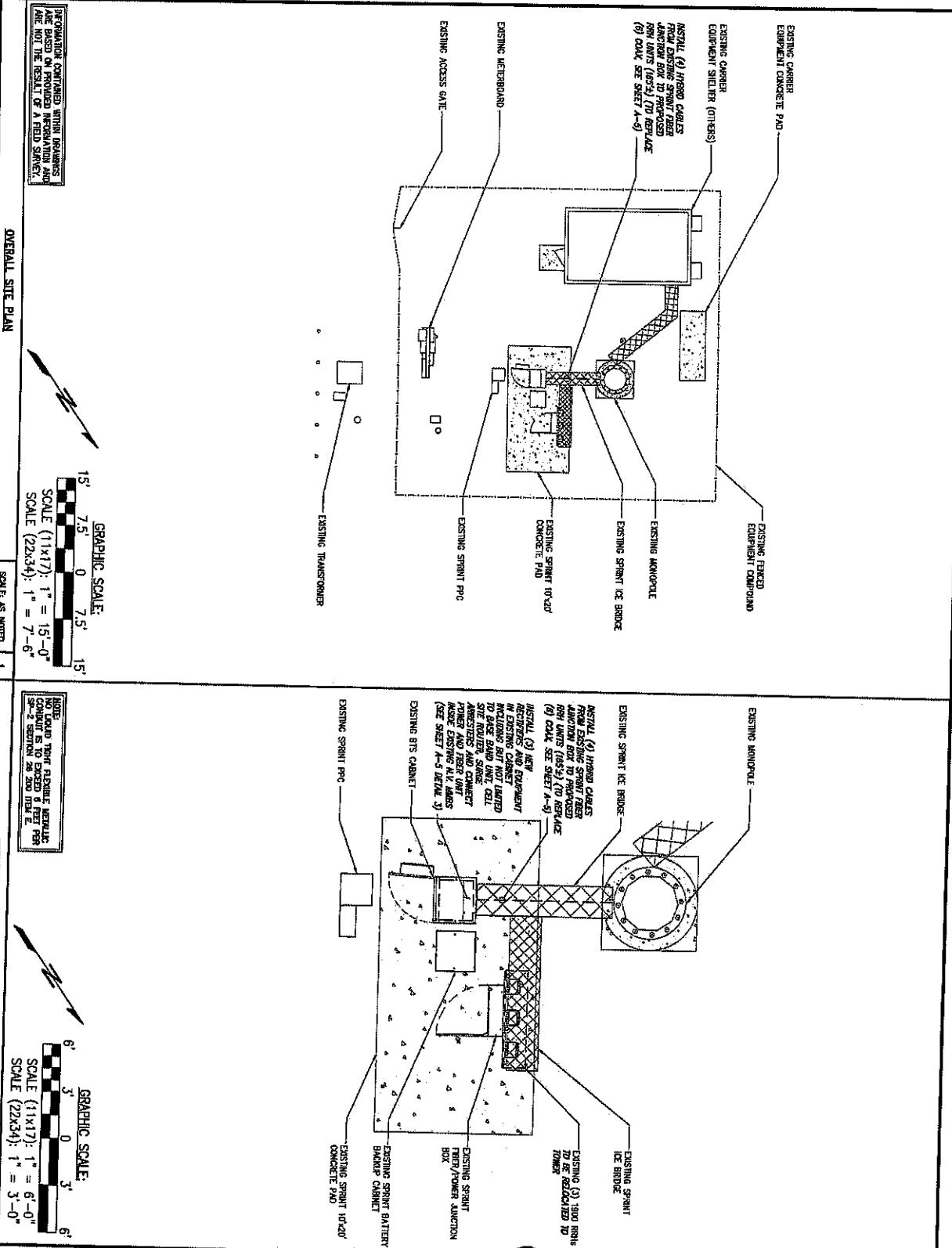
14, 2008

PROFESSIONAL ENGINEER

JOHN SISTECKI

PRESIDENT

14, 2008



OVERALL SITE PLAN

SCALE AS NOTED 1

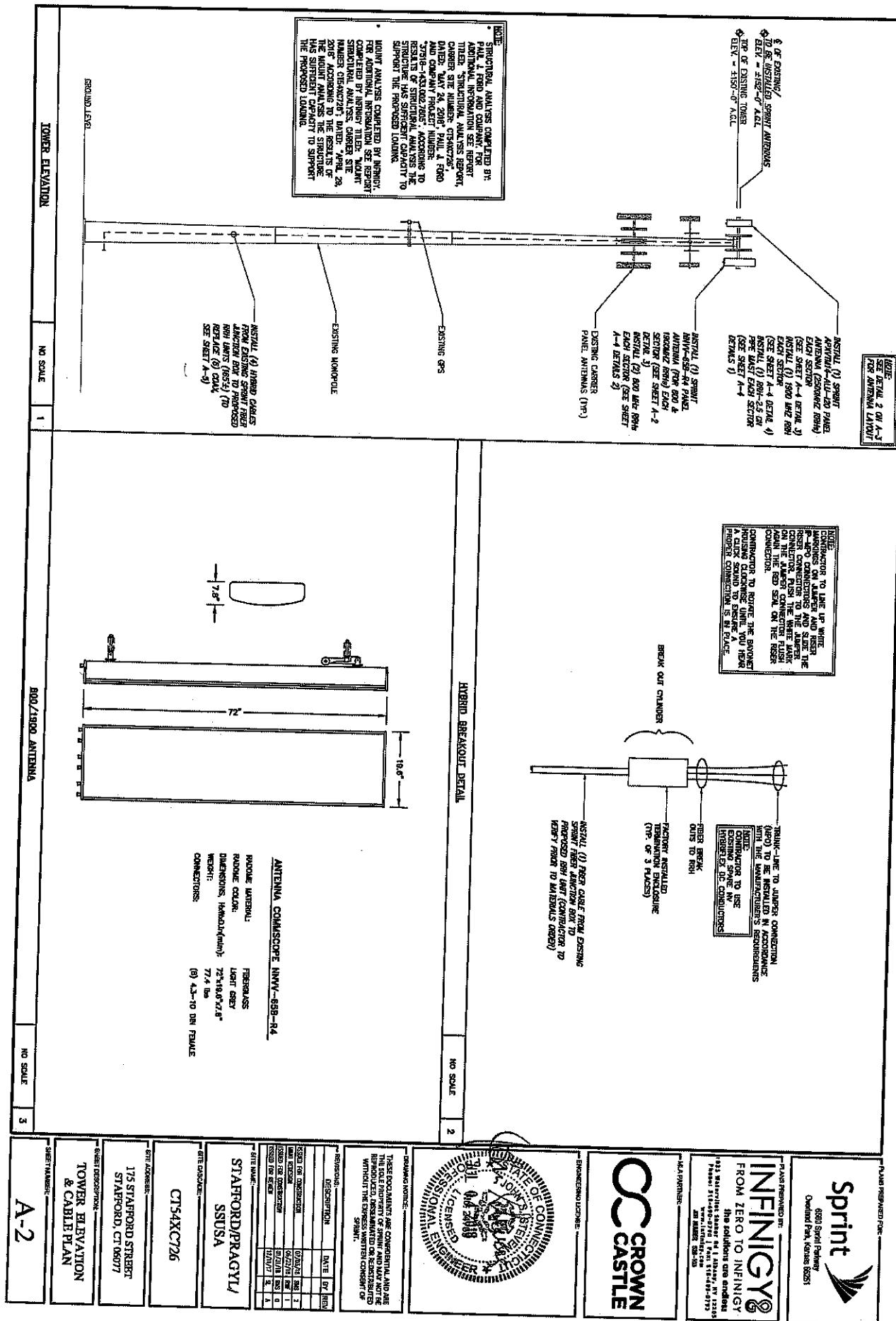
SERVANT EQUIPMENT PLAN

SCALE AS NOTED 2

SHEET NUMBER A-1

INFORMATION CONTAINED WITHIN DRAWINGS
ARE BASED ON PROVIDED INFORMATION AND
ARE NOT THE RESULT OF A FIELD SURVEY.

SHEET NUMBER A-1



RRH: ALCATEL LUCENT TD-RRHBR20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



RRH: ALCATEL LUCENT RRH 800 MHz 2450W
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES
COMPLY WITH MANUFACTURER'S INSTRUCTIONS TO ENSURE
THAT ALL PARTS RECEIVING ELECTRICAL POWER ARE
HOURS OF BEING REMOVED FROM THE MANUFACTURER'S
PACKAGING. DO NOT OPEN RRH PACKAGES IN THE FIELD.



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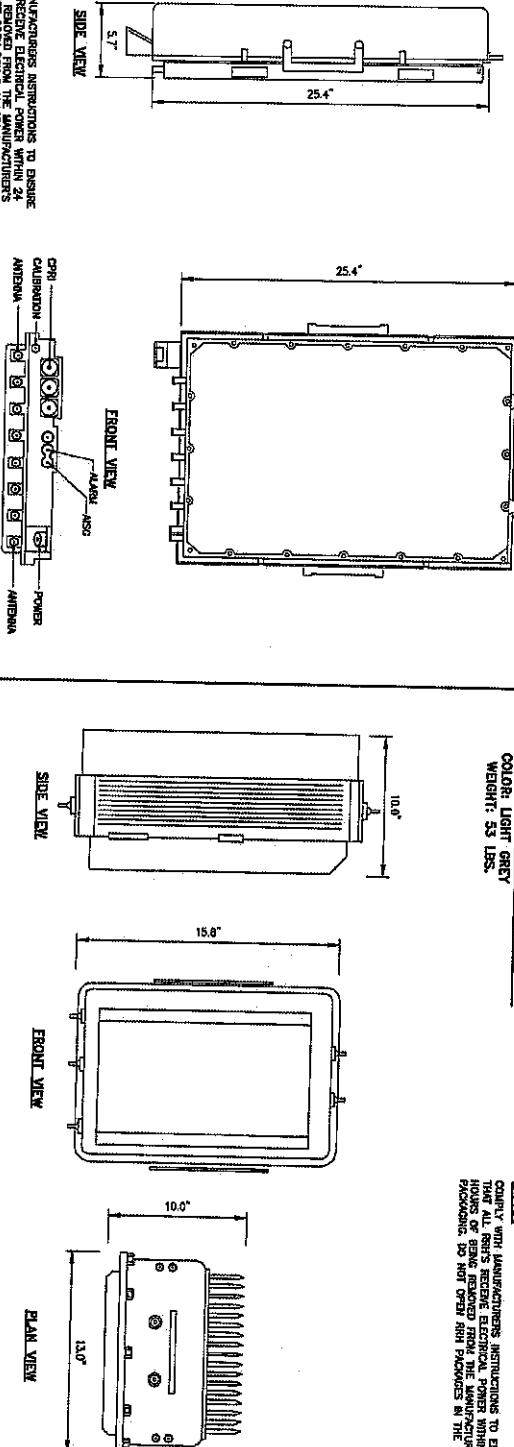
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Job Number: 120-03



PLANS PREPARED ON:

FROM: ZERO TO: CROWN CASTLE

103 Waukegan Road, Suite 100, Glenview, IL 60025
Phone: 847.223.1122 Fax: 847.223.1122
www.crowncastle.com
Job Number: 120-03



2.5. RRH'S

NO SCALE 1

800 MHz RRH

NO SCALE 2

RRH: ALCATEL LUCENT 1800 MHz
COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)

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REVISIONS:
DESCRIPTION: DATE BY REV.
ISSUED FOR CONSTRUCTION: 02/27/04 RS 2
ISSUED FOR OPERATION: 02/27/04 RS 2
ISSUED FOR REPAIR: 02/27/04 RS 2
ISSUED FOR DEMOLITION: 02/27/04 RS 2
ISSUED FOR REUSE: 02/27/04 RS 2
ISSUED FOR RECYCLING: 02/27/04 RS 2
ISSUED FOR ARCHIVING: 02/27/04 RS 2
ISSUED FOR DISPOSAL: 02/27/04 RS 2
ISSUED FOR REPAIR: 02/27/04 RS 2
ISSUED FOR DEMOLITION: 02/27/04 RS 2
ISSUED FOR REUSE: 02/27/04 RS 2
ISSUED FOR RECYCLING: 02/27/04 RS 2
ISSUED FOR ARCHIVING: 02/27/04 RS 2
ISSUED FOR DISPOSAL: 02/27/04 RS 2

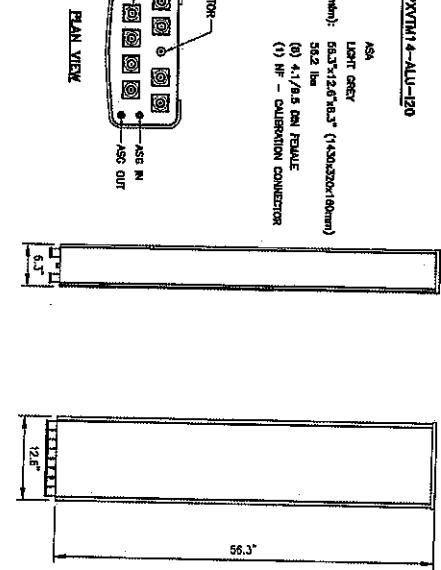
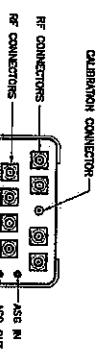
PRINT NAME: DATE: BY REV.
STAFFORD/PRAJYU/SSUSA
SPECS/CHGS: C154XC7/26
EQUIPMENT & MOUNTING DETAILS
SPECS NUMBER: 175 STAFFORD STREET
STAFFORD, CT 06077
EQUIPMENT & MOUNTING DETAILS
SPECS NUMBER: A-4

2.5 ANTENNA

NO SCALE 3

1800 MHz RRH

NO SCALE 4



NOTES
COMPLY WITH MANUFACTURER'S INSTRUCTIONS TO ENSURE
THAT ALL PARTS RECEIVING ELECTRICAL POWER ARE
HOURS OF BEING REMOVED FROM THE MANUFACTURER'S
PACKAGING. DO NOT OPEN RRH PACKAGES IN THE FIELD.

ANTENNA: RFS APXTH14-ALU-120

RRH: ALCATEL LUCENT TD-RRHBR20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.

NOTES
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ANTENNA: RFS APXTH14-ALU-120

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ANTENNA: RFS APXTH14-ALU-120

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PACKAGING. DO NOT OPEN RRH PACKAGES IN THE FIELD.

ANTENNA: RFS APXTH14-ALU-120

ALU 211 APXVTM14-ALU-120 & NNVV-65B-R4 w/o Filters



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CROWN CASTLE

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DATE ISSUED	07/02/03	REV. 1
EXPIRE DATE	07/02/03	REV. 1
EXPIRE BY	07/02/03	REV. 1

STAFFORD/PAGYL
SSUSA

REV. C

C154XCT26

SPR CONTRACTOR
175 STAFFORD STREET
STAFFORD, CT 06077

INLET DESCRIPTION
PLUMBING DIAGRAM

PLUMBING DIAGRAM

NO SCALE

1

PLUMBING DIAGRAM

A-6

NOTES
DO NOT REFER TO ALL SPEC'S FOR
CONNECTING THE POWER SUPPLY FOR
OF THE NEW INSTALLATION DOCUMENTS
FOR ALL CONNECTION SPECIFICATIONS.



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ELECTRICAL ONE-LINE DIAGRAM

NO SCALE 1

NO SCALE

1

NO SCALE

1

NO SCALE

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NO SCALE

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NO SCALE

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NO SCALE

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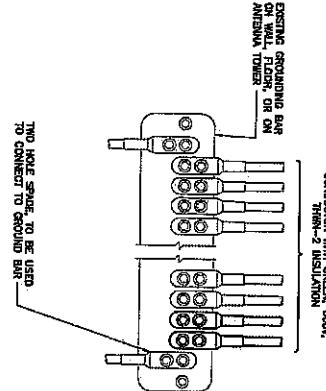
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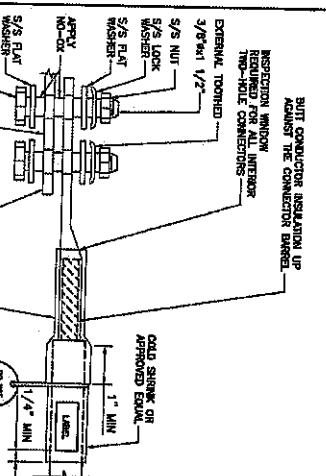
1

CIRCUIT SCHEDULE		
NO	FROM	TO
1	UTILITY SOURCE	METER/DISCONNECT
2	METER/DISCONNECT	TRANSFER & LOAD CENTER
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MAINS



4/0 OR 6 AWG SOLID CU.
CONDUCTOR WITH GREEN TAPE,
THICK-2 INSULATION

NOTES
1. APPLY AP-2 TO LUG AND BAR CONTACT SURFACE. DO
NOT USE BARE LUGS.
2. IF STORED GROUND BARS ARE ENCOUNTERED, CONTACT
SPRINT OR FOR REPLACEMENT THREADED ROD KIT.



BUTT CONDUCTOR INSULATION UP
AGAINST THE CONNECTOR BARREL

RECOMMENDED TERMINATION
THREE-HOLE CONNECTORS

EXTERNAL TORCHED
3/8" x 1 1/2"

S/S NUT
S/S FLAT
WASHER
S/S FLAT
WASHER
S/S BOLT
(1 OF 2)

APPLY
GROUND
WIRE
TO CONNECT TO GROUND BAR

COLD SINKING OR
APPLIED EQUAL

TO NOT DISCONNECT "TAP" ON
ALL GROUNDING BAR N.V.

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

NOTICE: DO NOT USE

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

NOTICE: DO NOT USE

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

NOTICE: DO NOT USE

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

NOTICE: DO NOT USE

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

NOTICE: DO NOT USE

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

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WIRE, GROUND BARS
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WIRE, GROUND BARS
WORLD, OTHER WIRELESS

NOTICE: DO NOT USE

WIRE, GROUND BARS
WORLD, OTHER WIRELESS

EXISTING GROUND RING
PIPE (TP)
REINFORCED
CABLE (TP)
MECHANICAL CONNECTION
(EXTERIOR WELD)

MECHANICAL
CONNECTION
CABLE GROUND KIT

ELECTRICAL &
GROUNDING DETAILS
SHEET NUMBER:

E-2

INSTALLATION OF GROUNDING BAR
CONDUCTOR TO GROUNDING BAR

NO SCALE 2

NO SCALE 3

NO SCALE 4

NO SCALE 5

NO SCALE 6

NO SCALE 7

NO SCALE 8

NO SCALE 9

NO SCALE 10

NO SCALE 11

NO SCALE 12

NO SCALE 13

NO SCALE 14

NO SCALE 15

NO SCALE 16

NO SCALE 17

NO SCALE 18

NO SCALE 19

NO SCALE 20

NO SCALE 21



Date: May 24, 2018

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: Structural Analysis Report

Carrier Designation:

Sprint PCS Co-Locate

Carrier Site Number:

CT54XC726

Carrier Site Name:

CT54XC726

Crown Castle Designation:

Crown Castle BU Number:

876402

Crown Castle Site Name:

stafford/pragyl/ssusa

Crown Castle JDE Job Number:

501753

Crown Castle Work Order Number:

1571238

Crown Castle Order Number:

438426 Rev. 0

Engineering Firm Designation:

Paul J. Ford and Company Project Number: 37518-1433.002.7805

Site Data:

175 Stafford Street, STAFFORD, Tolland County, CT

Latitude 41° 59' 13.38", Longitude -72° 15' 40.78"

150 Foot - Monopole Tower

Dear Marianne Dunst,

Paul J. Ford and Company 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 1192917, in accordance with Order 438426, 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:

LC7: Existing + Reserved + Proposed Equipment

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

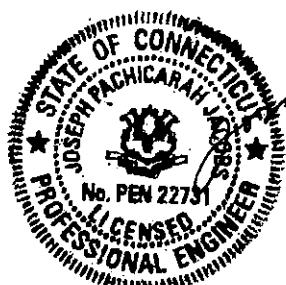
Sufficient Capacity

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 were used in this analysis.

We at *Paul J. Ford and Company* 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.

Respectfully submitted by:

J.A.A.
Jaime Acuna
Structural Designer
jacuna@pauljford.com



Date: **May 24, 2018**

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: Structural Analysis Report

Carrier Designation:	<i>Sprint PCS Co-Locate</i>	
	Carrier Site Number:	CT54XC726
	Carrier Site Name:	CT54XC726
Crown Castle Designation:	Crown Castle BU Number:	876402
	Crown Castle Site Name:	stafford/pragyl/ssusa
	Crown Castle JDE Job Number:	501753
	Crown Castle Work Order Number:	1571238
	Crown Castle Order Number:	438426 Rev. 0
Engineering Firm Designation:	Paul J. Ford and Company Project Number: 37518-1433.002.7805	
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Respectfully submitted by:

Jaime Acuna
Structural Designer
jacuna@pauljford.com

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- Table 3 - Design Antenna and Cable Information

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

4) ANALYSIS RESULTS

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- 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 150 ft Monopole tower mapped by TEP in December of 2007. The original wind speed and design code are unknown.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category B and Topographic Category 1 were used in this analysis.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	152.0	6	alcatel lucent	800MHZ 2X50W RRH	1 3	7/8 1-1/4	-
		3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ			
		3	alcatel lucent	TD-RRH8X20-25			
		3	commscope	NNVV-65B-R4 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	152.0	6	decibel	980F90T2E-M w/ Mount Pipe	6	1-5/8	3
	150.0	1	tower mounts	Platform Mount [LP 1201-1]			
136.0	138.0	3	ericsson	RRUS-11	12 1 2	1-5/8 3/8 3/4	1
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21903			
		1	raycap	DC6-48-60-18-8F			
	137.0	1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	136.0	1	tower mounts	T-Arm Mount [TA 602-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
127.0	127.0	3	alcatel lucent	B13 RRH 4X30	2	1-5/8	2
		3	alcatel lucent	B66A RRH4X45			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		2	raycap	RXXDC-3315-PF-48			
		1	tower mounts	Miscellaneous [NA 507-1]			
		1	tower mounts	Platform Mount [LP 303-1]	-	-	1
75.0	75.0	1	lucent	KS24019-L112A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment To Be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	TEP, 131001.876402.01G, 04/12/2013	2194187	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	TEP, 072309, 02/22/2008	2208777	CCISITES
4-TOWER MANUFACTURER DRAWINGS	TEP, 072309, 12/02/2007	2175539	CCISITES
4-POST-MODIFICATION INSPECTION	SGS, 145336, 09/10/2014	5639214	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Monopole was modified in conformance with the referenced modification drawings.
- 5) The monopole manufacturer drawings are not available at the time of this analysis. Therefore, we have assumed pole shaft and base plate steel yield strength(s) (Fy) as shown in the attached calculations. Anchor rods are assumed to be ASTM A615 #18J, 2.25" diam, (Fu = 100 ksi, Fy = 75 ksi).

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail	
L1	150 - 123	Pole	TP22.69x17x0.25	1	-9.39	1288.74	33.4	Pass	
L2	123 - 85	Pole	TP28.36x21.6105x0.375	2	-14.97	2423.44	53.7	Pass	
L3	85 - 44	Pole	TP36.86x27.0303x0.4063	3	-23.36	3397.00	56.7	Pass	
L4	44 - 0	Pole	TP42.53x35.0535x0.4375	4	-36.44	4342.59	61.8	Pass	
							Summary		
							Pole (L4)	61.8	Pass
							Rating =	61.8	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	71.4	Pass
1	Base Plate	0	81.0	Pass
1	Base Foundation Structural Steel	0	69.7	Pass
1	Base Foundation Soil Interaction	0	42.6	Pass

Structure Rating (max from all components) =

81.0%

Notes:

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

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 4) Tower is located in Tolland County, Connecticut.
- 5) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- 6) Basic wind speed of 97 mph.
- 7) Structure Class II.
- 8) Exposure Category B.
- 9) Topographic Category 1.
- 10) Crest Height 0.00 ft.
- 11) Nominal ice thickness of 1.0000 in.
- 12) Ice thickness is considered to increase with height.
- 13) Ice density of 56 pcf.
- 14) A wind speed of 50 mph is used in combination with ice.
- 15) Temperature drop of 50 °F.
- 16) Deflections calculated using a wind speed of 60 mph.
- 17) A non-linear (P-delta) analysis was used.
- 18) Pressures are calculated at each section.
- 19) Stress ratio used in pole design is 1.
- 20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
		ft	ft		in	in	in	in	
L1	150.00-123.00	27.00	2.75	18	17.0000	22.6900	0.2500	1.0000	A572-65 (65 ksi)
L2	123.00-85.00	40.75	3.50	18	21.6105	28.3600	0.3750	1.5000	A572-65 (65 ksi)
L3	85.00-44.00	44.50	4.50	18	27.0303	36.8600	0.4063	1.6250	A572-65 (65 ksi)
L4	44.00-0.00	48.50		18	35.0535	42.5300	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	17.2623	13.2911	471.1170	5.9463	8.6360	54.5527	942.8540	6.6468	2.5520	10.208
	23.0400	17.8061	1132.7992	7.9662	11.5265	98.2776	2267.0890	8.9048	3.5534	14.214
L2	22.4064	25.2755	1439.9945	7.5386	10.9781	131.1696	2881.8838	12.6402	3.1434	8.383
	28.7975	33.3091	3295.7296	9.9347	14.4069	228.7608	6595.7958	16.6577	4.3314	11.55
L3	28.2323	34.3300	3074.3930	9.4515	13.7314	223.8953	6152.8313	17.1683	4.0423	9.95
	37.4286	47.0048	7891.5876	12.9411	18.7249	421.4493	15793.559	23.5069	5.7724	14.209
						1				
L4	36.2986	48.0686	7277.0016	12.2887	17.8072	408.6557	14563.578	24.0389	5.3994	12.342
						5				
	43.1861	58.4507	13083.881	14.9428	21.6052	605.5883	26184.978	29.2309	6.7153	15.349
						2				
								5		

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
							Stitch Bolt Spacing Diagonals in	Stitch Bolt Spacing Horizontals in	Stitch Bolt Spacing Redundants in
L1 150.00- 123.00				1	1	1			
L2 123.00- 85.00				1	1	1			
L3 85.00- 44.00				1	1	1			
L4 44.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diamete r in	Perimete r in	Weight plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A	Weight	
						ft ² /ft	plf	

HB114-08U3M12- XXXF(7/8)	C	No	Inside Pole	150.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.68 0.68 0.68
HB114-1-08U4-M5F(1- 1/4)	C	No	Inside Pole	150.00 - 0.00	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.08 1.08 1.08

FXL 1873 PE(1-5/8)	C	No	Inside Pole	136.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.67 0.67 0.67
FB-L98B-002- 75000(3/8)	C	No	Inside Pole	136.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.06 0.06 0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	136.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.58 0.58 0.58
2" (Nominal) Conduit	C	No	Inside Pole	136.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.72 0.72 0.72

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf

HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	127.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.30 1.30 1.30

LDF4-50A(1/2)	C	No	Inside Pole	75.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.15 0.15 0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
L1	150.00-123.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.25
L2	123.00-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.63
L3	85.00-44.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.68
L4	44.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.73

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L1	150.00-123.00	A	2.304	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.25
L2	123.00-85.00	A	2.242	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.63
L3	85.00-44.00	A	2.137	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.68
L4	44.00-0.00	A	1.916	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.73

Feed Line Center of Pressure

Section	Elevation	CP _X	CP _Z	CP _X	CP _Z
	ft	in	in	ice in	ice in
L1	150.00-123.00	0.0000	0.0000	0.0000	0.0000
L2	123.00-85.00	0.0000	0.0000	0.0000	0.0000
L3	85.00-44.00	0.0000	0.0000	0.0000	0.0000
L4	44.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

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

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA}		Weight K	
						Front	Side		
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			2.00			Ice	13.67	9.50	0.29
						1" Ice			
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			2.00			Ice	13.67	9.50	0.29
						1" Ice			
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	12.51	7.41	0.10
			0.00			1/2" Ice	13.11	8.60	0.19
			2.00			Ice	13.67	9.50	0.29
						1" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00	0.0000	150.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			2.00			Ice	7.47	6.47	0.19
						1" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00	0.0000	150.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			2.00			Ice	7.47	6.47	0.19
						1" Ice			
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00	0.0000	150.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			2.00			Ice	7.47	6.47	0.19
						1" Ice			
(2) 800MHZ 2X50W RRH	A	From Leg	4.00	0.0000	150.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			2.00			Ice	2.51	2.13	0.10
						1" Ice			
(2) 800MHZ 2X50W RRH	B	From Leg	4.00	0.0000	150.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			2.00			Ice	2.51	2.13	0.10
						1" Ice			
(2) 800MHZ 2X50W RRH	C	From Leg	4.00	0.0000	150.00	No Ice	2.13	1.77	0.05
			0.00			1/2" Ice	2.32	1.95	0.07
			2.00			Ice	2.51	2.13	0.10
						1" Ice			
TD-RRH8X20-25	A	From Leg	4.00	0.0000	150.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			2.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8X20-25	B	From Leg	4.00	0.0000	150.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			2.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8X20-25	C	From Leg	4.00	0.0000	150.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			2.00			Ice	4.56	1.90	0.13
						1" Ice			
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.00	0.0000	150.00	No Ice	2.32	2.24	0.06
			0.00			1/2" Ice	2.53	2.44	0.08
			2.00			Ice	2.74	2.65	0.11
						1" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz ft	Azimuth Adjustmen t °	Placement ft	C _A A		Weight K
						Front	Side	
			ft ft ft	°	ft	ft ²	ft ²	
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74 2.65	2.24 2.44 0.08 0.11
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74 2.65	2.24 2.44 0.08 0.11
Platform Mount [LP 1201-1]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 2.50 2.90
(2) 2.375" OD x 5' Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81 1.81	1.19 1.50 0.03 0.04
(2) 2.375" OD x 5' Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81 1.81	1.19 1.50 0.03 0.04
(2) 2.375" OD x 5' Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81 1.81	1.19 1.50 0.03 0.04

(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61 6.61	4.25 5.01 5.71 0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61 6.61	4.25 5.01 5.71 0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61 6.61	4.25 5.01 5.71 0.16
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.82 12.59 13.38 13.38	9.06 10.62 12.21 0.28
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.82 12.59 13.38 13.38	9.06 10.62 12.21 0.28
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35 9.35	6.30 7.48 8.37 0.21
(2) LGP21401	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38 1.38	0.35 0.44 0.54 0.03
(2) LGP21401	B	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38 1.38	0.35 0.44 0.54 0.03
(2) LGP21401	C	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38 1.38	0.35 0.44 0.54 0.03
RRUS-11	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21 3.21	1.19 1.34 1.50 0.09

Description	Face or Leg	Offset Type	Offsets: Horz ft	Azimuth Adjustment	Placement	$C_A A_A$	$C_A A_A$	Weight	
						Front	Side		
			Vert ft	°	ft	ft ²	ft ²	K	
RRUS-11	B	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.09
RRUS-11	C	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.79 3.00 3.21	1.19 1.34 1.50	0.05 0.07 0.09
DC6-48-60-18-8F	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
(2) LGP21903	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.02
(2) LGP21903	B	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.02
(2) LGP21903	C	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.02
T-Arm Mount [TA 602-3]	C	None		0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.59 15.44 19.29	11.59 15.44 19.29	0.77 0.99 1.21

(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	8.40 8.96 9.49	7.07 8.26 9.18	0.07 0.14 0.21
B13 RRH 4X30	A	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.32 1.48 1.64	0.06 0.07 0.09
B13 RRH 4X30	B	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.32 1.48 1.64	0.06 0.07 0.09
B13 RRH 4X30	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.06 2.24 2.43	1.32 1.48 1.64	0.06 0.07 0.09
B66A RRH4X45	A	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.07 0.09 0.11
B66A RRH4X45	B	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.07 0.09 0.11
B66A RRH4X45	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.58 2.79 3.01	1.63 1.81 2.00	0.07 0.09 0.11

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	Vert ft						
RXXDC-3315-PF-48	B	From Leg	4.00	0.0000		127.00	No Ice	3.01	1.96	0.02
			0.00				1/2"	3.23	2.15	0.05
			0.00				Ice	3.46	2.35	0.08
							1" Ice			
RXXDC-3315-PF-48	C	From Leg	4.00	0.0000		127.00	No Ice	3.01	1.96	0.02
			0.00				1/2"	3.23	2.15	0.05
			0.00				Ice	3.46	2.35	0.08
							1" Ice			
Platform Mount [LP 303-1]	C	None		0.0000		127.00	No Ice	14.66	14.66	1.25
							1/2"	18.87	18.87	1.48
							Ice	23.08	23.08	1.71
Miscellaneous [NA 507-1]	C	None		0.0000		127.00	No Ice	4.80	4.80	0.25
							1/2"	6.70	6.70	0.29
							Ice	8.60	8.60	0.34
(2) 2.375" OD x 5' Mount Pipe	A	From Leg	4.00	0.0000		127.00	No Ice	1.19	1.19	0.02
			0.00				1/2"	1.50	1.50	0.03
			0.00				Ice	1.81	1.81	0.04
							1" Ice			
(2) 2.375" OD x 5' Mount Pipe	B	From Leg	4.00	0.0000		127.00	No Ice	1.19	1.19	0.02
			0.00				1/2"	1.50	1.50	0.03
			0.00				Ice	1.81	1.81	0.04
(2) 2.375" OD x 5' Mount Pipe	C	From Leg	4.00	0.0000		127.00	No Ice	1.19	1.19	0.02
			0.00				1/2"	1.50	1.50	0.03
			0.00				Ice	1.81	1.81	0.04
							1" Ice			

KS24019-L112A	C	From Leg	4.00	0.0000		75.00	No Ice	0.14	0.14	0.01
			0.00				1/2"	0.20	0.20	0.01
			0.00				Ice	0.26	0.26	0.01
							1" Ice			
Side Arm Mount [SO 701-1]	C	None		0.0000		75.00	No Ice	0.85	1.67	0.07
							1/2"	1.14	2.34	0.08
							Ice	1.43	3.01	0.09
							1" Ice			

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K_z	q_z	A_G	F a c e	A_F	A_R	A_{leg}	Leg %	$C_A A_A$ In Face	$C_A A_A$ Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
L1 150.00-123.00	135.85	1.079	24.68	45.340	A	0.000	45.340	45.340	100.00	0.000	0.000
					B	0.000	45.340		100.00	0.000	0.000
					C	0.000	45.340		100.00	0.000	0.000
L2 123.00-85.00	103.46	0.998	22.80	81.073	A	0.000	81.073	81.073	100.00	0.000	0.000
					B	0.000	81.073		100.00	0.000	0.000
					C	0.000	81.073		100.00	0.000	0.000
L3 85.00-44.00	64.01	0.87	19.81	112.17	A	0.000	112.171	112.171	100.00	0.000	0.000
					B	0.000	112.171		100.00	0.000	0.000
					C	0.000	112.171		100.00	0.000	0.000
L4 44.00-0.00	21.51	0.7	16.22	145.72	A	0.000	145.722	145.722	100.00	0.000	0.000
					B	0.000	145.722		100.00	0.000	0.000
					C	0.000	145.722		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation	z	K_z	q_z	t_z	A_G	$F_a c_e$	A_F	A_R	A_{leg}	Leg %	C_{AA_A} In Face ft^2	C_{AA_A} Out Face ft^2	
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2				
L1 150.00-123.00	135.85	1.079	6.56	2.3040	55.708	A	0.000	55.708	55.708	100.00	0.000	0.000	
						B	0.000	55.708			100.00	0.000	0.000
						C	0.000	55.708			100.00	0.000	0.000
L2 123.00-85.00	103.46	0.998	6.06	2.2421	95.665	A	0.000	95.665	95.665	100.00	0.000	0.000	
						B	0.000	95.665			100.00	0.000	0.000
						C	0.000	95.665			100.00	0.000	0.000
L3 85.00-44.00	64.01	0.87	5.26	2.1370	127.492	A	0.000	127.492	127.492	100.00	0.000	0.000	
						B	0.000	127.492			100.00	0.000	0.000
						C	0.000	127.492			100.00	0.000	0.000
L4 44.00-0.00	21.51	0.7	4.31	1.9162	161.393	A	0.000	161.393	161.393	100.00	0.000	0.000	
						B	0.000	161.393			100.00	0.000	0.000
						C	0.000	161.393			100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation	z	K_z	q_z	A_G	$F_a c_e$	A_F	A_R	A_{leg}	Leg %	C_{AA_A} In Face ft^2	C_{AA_A} Out Face ft^2		
ft	ft		psf	ft^2		ft^2	ft^2	ft^2					
L1 150.00-123.00	135.85	1.079	8.45	45.340	A	0.000	45.340	45.340	100.00	0.000	0.000		
						B	0.000	45.340			100.00	0.000	0.000
						C	0.000	45.340			100.00	0.000	0.000
L2 123.00-85.00	103.46	0.998	7.80	81.073	A	0.000	81.073	81.073	100.00	0.000	0.000		
						B	0.000	81.073			100.00	0.000	0.000
						C	0.000	81.073			100.00	0.000	0.000
L3 85.00-44.00	64.01	0.87	6.78	112.17	A	0.000	112.171	112.171	100.00	0.000	0.000		
						B	0.000	112.171			100.00	0.000	0.000
						C	0.000	112.171			100.00	0.000	0.000
L4 44.00-0.00	21.51	0.7	5.55	145.72	A	0.000	145.722	145.722	100.00	0.000	0.000		
						B	0.000	145.722			100.00	0.000	0.000
						C	0.000	145.722			100.00	0.000	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.16	0.66	0.12
			Max. Mx	20	-9.39	188.40	-0.10
			Max. My	2	-9.40	-0.08	188.45
			Max. Vy	20	-13.20	188.40	-0.10
			Max. Vx	2	-13.18	-0.08	188.45
L2	123 - 85	Pole	Max. Torque	4		0.56	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.48	0.65	0.12
			Max. Mx	20	-14.98	720.70	-0.59
			Max. My	2	-14.98	-0.55	719.89
			Max. Vy	20	-15.35	720.70	-0.59
L3	85 - 44	Pole	Max. Vx	2	-15.32	-0.55	719.89
			Max. Torque	14		-0.41	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.35	0.73	0.05
			Max. Mx	20	-23.36	1380.53	-1.13
			Max. My	2	-23.36	-1.04	1378.75
L4	44 - 0	Pole	Max. Vy	20	-17.59	1380.53	-1.13
			Max. Vx	2	-17.56	-1.04	1378.75
			Max. Torque	14		-0.43	
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.83	0.70	0.04
			Max. Mx	20	-36.44	2285.58	-1.74

Section n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-19.58	-1.66	2282.72
			Max. Torque	14			-0.42

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	66.83	-0.00	-0.00
	Max. H _x	20	36.46	19.57	-0.01
	Max. H _z	3	27.35	-0.01	19.55
	Max. M _x	2	2282.72	-0.01	19.55
	Max. M _z	8	2285.30	-19.57	0.01
	Max. Torsion	2	0.42	-0.01	19.55
	Min. Vert	21	27.35	19.57	-0.01
	Min. H _x	8	36.46	-19.57	0.01
	Mtn. H _z	15	27.35	0.01	-19.55
	Min. M _x	14	-2282.63	0.01	-19.55
	Min. M _z	20	-2285.58	19.57	-0.01
	Min. Torsion	14	-0.42	0.01	-19.55

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overshoring Moment, M _x kip-ft	Overshoring Moment, M _z kip-ft	Torque kip-ft
Dead Only	30.39	-0.00	0.00	-0.03	0.11	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	36.46	0.01	-19.55	-2282.72	-1.66	-0.42
0.9 Dead+1.6 Wind 0 deg - No Ice	27.35	0.01	-19.55	-2243.72	-1.66	-0.42
1.2 Dead+1.6 Wind 30 deg - No Ice	36.46	9.80	-16.94	-1978.23	-1144.40	-0.39
0.9 Dead+1.6 Wind 30 deg - No Ice	27.35	9.80	-16.94	-1944.27	-1124.79	-0.39
1.2 Dead+1.6 Wind 60 deg - No Ice	36.46	16.96	-9.79	-1143.18	-1980.45	-0.26
0.9 Dead+1.6 Wind 60 deg - No Ice	27.35	16.95	-9.79	-1123.55	-1946.50	-0.25
1.2 Dead+1.6 Wind 90 deg - No Ice	36.46	19.57	-0.01	-1.84	-2285.30	-0.05
0.9 Dead+1.6 Wind 90 deg - No Ice	27.35	19.57	-0.01	-1.79	-2246.03	-0.05
1.2 Dead+1.6 Wind 120 deg - No Ice	36.46	16.94	9.76	1140.00	-1978.68	0.17
0.9 Dead+1.6 Wind 120 deg - No Ice	27.35	16.94	9.76	1120.44	-1944.75	0.17
1.2 Dead+1.6 Wind 150 deg - No Ice	36.46	9.77	16.92	1976.37	-1141.30	0.34
0.9 Dead+1.6 Wind 150 deg - No Ice	27.35	9.77	16.92	1942.45	-1121.75	0.34
1.2 Dead+1.6 Wind 180 deg - No Ice	36.46	-0.01	19.55	2282.63	1.93	0.42
0.9 Dead+1.6 Wind 180 deg - No Ice	27.35	-0.01	19.55	2243.65	1.86	0.42
1.2 Dead+1.6 Wind 210 deg - No Ice	36.46	-9.80	16.94	1978.15	1144.67	0.39
0.9 Dead+1.6 Wind 210 deg - No Ice	27.35	-9.80	16.94	1944.20	1124.99	0.39
1.2 Dead+1.6 Wind 240 deg - No Ice	36.46	-16.96	9.79	1143.10	1980.73	0.25

Load Combination	Vertical	Shear _x	Shear _z	Overspinning Moment, M _x kip-ft	Overspinning Moment, M _z kip-ft	Torque
	K	K	K			kip-ft
0.9 Dead+1.6 Wind 240 deg	27.35	-16.95	9.79	1123.49	1946.70	0.25
- No Ice						
1.2 Dead+1.6 Wind 270 deg	36.46	-19.57	0.01	1.74	2285.58	0.05
- No Ice						
0.9 Dead+1.6 Wind 270 deg	27.35	-19.57	0.01	1.72	2246.23	0.05
- No Ice						
1.2 Dead+1.6 Wind 300 deg	36.46	-16.94	-9.76	-1140.10	1978.96	-0.17
- No Ice						
0.9 Dead+1.6 Wind 300 deg	27.35	-16.94	-9.76	-1120.51	1944.95	-0.17
- No Ice						
1.2 Dead+1.6 Wind 330 deg	36.46	-9.77	-16.92	-1976.46	1141.58	-0.34
- No Ice						
0.9 Dead+1.6 Wind 330 deg	27.35	-9.77	-16.92	-1942.53	1121.95	-0.34
- No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	66.83	0.00	0.00	-0.04	0.70	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	66.83	-0.00	-6.09	-757.70	1.05	-0.15
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	66.83	3.05	-5.27	-656.16	-378.31	-0.15
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	66.83	5.28	-3.04	-378.83	-656.05	-0.11
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	66.83	6.10	0.00	-0.01	-757.73	-0.04
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	66.83	5.28	3.05	378.78	-656.12	0.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	66.83	3.05	5.27	656.05	-378.45	0.11
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	66.83	0.00	6.09	757.51	0.89	0.15
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	66.83	-3.05	5.27	655.97	380.26	0.15
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	66.83	-5.28	3.04	378.64	657.99	0.11
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	66.83	-6.10	-0.00	-0.17	759.68	0.04
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	66.83	-5.28	-3.05	-378.96	658.07	-0.04
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	66.83	-3.05	-5.27	-656.24	380.39	-0.10
Dead+Wind 0 deg - Service	30.39	0.00	-4.18	-484.00	-0.26	-0.09
Dead+Wind 30 deg - Service	30.39	2.10	-3.62	-419.35	-242.49	-0.08
Dead+Wind 60 deg - Service	30.39	3.63	-2.09	-242.35	-419.70	-0.06
Dead+Wind 90 deg - Service	30.39	4.19	-0.00	-0.42	-484.43	-0.01
Dead+Wind 120 deg - Service	30.39	3.62	2.09	241.61	-419.32	0.04
Dead+Wind 150 deg - Service	30.39	2.09	3.62	418.89	-241.83	0.07
Dead+Wind 180 deg - Service	30.39	-0.00	4.18	483.92	0.50	0.09
Dead+Wind 210 deg - Service	30.39	-2.10	3.62	419.27	242.72	0.08
Dead+Wind 240 deg - Service	30.39	-3.63	2.09	242.27	419.94	0.06
Dead+Wind 270 deg - Service	30.39	-4.19	0.00	0.34	484.66	0.01
Dead+Wind 300 deg - Service	30.39	-3.62	-2.09	-241.69	419.56	-0.04
Dead+Wind 330 deg - Service	30.39	-2.09	-3.62	-418.97	242.06	-0.07

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-30.39	0.00	0.00	30.39	0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
2	0.01	-36.46	-19.55	-0.01	36.46	19.55	0.010%
3	0.01	-27.35	-19.55	-0.01	27.35	19.55	0.008%
4	9.80	-36.46	-16.94	-9.80	36.46	16.94	0.000%
5	9.80	-27.35	-16.94	-9.80	27.35	16.94	0.000%
6	16.96	-36.46	-9.79	-16.96	36.46	9.79	0.000%
7	16.96	-27.35	-9.79	-16.95	27.35	9.79	0.000%
8	19.57	-36.46	-0.01	-19.57	36.46	0.01	0.010%
9	19.57	-27.35	-0.01	-19.57	27.35	0.01	0.014%
10	16.94	-36.46	9.76	-16.94	36.46	-9.76	0.000%
11	16.94	-27.35	9.76	-16.94	27.35	-9.76	0.000%
12	9.77	-36.46	16.92	-9.77	36.46	-16.92	0.000%
13	9.77	-27.35	16.92	-9.77	27.35	-16.92	0.000%
14	-0.01	-36.46	19.55	0.01	36.46	-19.55	0.010%
15	-0.01	-27.35	19.55	0.01	27.35	-19.55	0.008%
16	-9.80	-36.46	16.94	9.80	36.46	-16.94	0.000%
17	-9.80	-27.35	16.94	9.80	27.35	-16.94	0.000%
18	-16.96	-36.46	9.79	16.96	36.46	-9.79	0.000%
19	-16.96	-27.35	9.79	16.95	27.35	-9.79	0.000%
20	-19.57	-36.46	0.01	19.57	36.46	-0.01	0.010%
21	-19.57	-27.35	0.01	19.57	27.35	-0.01	0.014%
22	-16.94	-36.46	-9.76	16.94	36.46	9.76	0.000%
23	-16.94	-27.35	-9.76	16.94	27.35	9.76	0.000%
24	-9.77	-36.46	-16.92	9.77	36.46	16.92	0.000%
25	-9.77	-27.35	-16.92	9.77	27.35	16.92	0.000%
26	0.00	-66.83	0.00	-0.00	66.83	-0.00	0.001%
27	-0.00	-66.83	-6.09	0.00	66.83	6.09	0.002%
28	3.05	-66.83	-5.28	-3.05	66.83	5.27	0.002%
29	5.28	-66.83	-3.05	-5.28	66.83	3.04	0.002%
30	6.10	-66.83	0.00	-6.10	66.83	-0.00	0.002%
31	5.28	-66.83	3.05	-5.28	66.83	-3.05	0.002%
32	3.05	-66.83	5.28	-3.05	66.83	-5.27	0.002%
33	0.00	-66.83	6.09	-0.00	66.83	-6.09	0.002%
34	-3.05	-66.83	5.28	3.05	66.83	-5.27	0.002%
35	-5.28	-66.83	3.05	5.28	66.83	-3.04	0.002%
36	-6.10	-66.83	-0.00	6.10	66.83	0.00	0.002%
37	-5.28	-66.83	-3.05	5.28	66.83	3.05	0.002%
38	-3.05	-66.83	-5.28	3.05	66.83	5.27	0.002%
39	0.00	-30.39	-4.18	-0.00	30.39	4.18	0.002%
40	2.10	-30.39	-3.62	-2.10	30.39	3.62	0.002%
41	3.63	-30.39	-2.09	-3.63	30.39	2.09	0.002%
42	4.19	-30.39	-0.00	-4.19	30.39	0.00	0.002%
43	3.63	-30.39	2.09	-3.62	30.39	-2.09	0.002%
44	2.09	-30.39	3.62	-2.09	30.39	-3.62	0.002%
45	-0.00	-30.39	4.18	0.00	30.39	-4.18	0.002%
46	-2.10	-30.39	3.62	2.10	30.39	-3.62	0.002%
47	-3.63	-30.39	2.09	3.63	30.39	-2.09	0.002%
48	-4.19	-30.39	0.00	4.19	30.39	-0.00	0.002%
49	-3.63	-30.39	-2.09	3.62	30.39	2.09	0.002%
50	-2.09	-30.39	-3.62	2.09	30.39	3.62	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	18	0.00010406	0.00011052
3	Yes	18	0.00006715	0.00008779
4	Yes	24	0.00000001	0.00009469
5	Yes	23	0.00000001	0.00011930
6	Yes	24	0.00000001	0.00009593
7	Yes	23	0.00000001	0.00012092
8	Yes	18	0.00010404	0.00010495
9	Yes	17	0.00012185	0.00014955
10	Yes	24	0.00000001	0.00009518
11	Yes	23	0.00000001	0.00011999
12	Yes	24	0.00000001	0.00009440
13	Yes	23	0.00000001	0.00011898
14	Yes	18	0.00010406	0.00011557
15	Yes	18	0.00006715	0.00009158
16	Yes	24	0.00000001	0.00009614
17	Yes	23	0.00000001	0.00012120
18	Yes	24	0.00000001	0.00009493
19	Yes	23	0.00000001	0.00011960
20	Yes	18	0.00010404	0.00010364
21	Yes	17	0.00012185	0.00014794
22	Yes	24	0.00000001	0.00009483
23	Yes	23	0.00000001	0.00011950
24	Yes	24	0.00000001	0.00009558
25	Yes	23	0.00000001	0.00012050
26	Yes	6	0.00000001	0.00000439
27	Yes	21	0.00013070	0.00003435
28	Yes	21	0.00013034	0.00010047
29	Yes	21	0.00013032	0.00010267
30	Yes	21	0.00013066	0.00003416
31	Yes	21	0.00013030	0.00010166
32	Yes	21	0.00013031	0.00010072
33	Yes	21	0.00013068	0.00003431
34	Yes	21	0.00013033	0.00010362
35	Yes	21	0.00013035	0.00010148
36	Yes	21	0.00013071	0.00003433
37	Yes	21	0.00013036	0.00010257
38	Yes	21	0.00013036	0.00010345
39	Yes	18	0.00008513	0.00002626
40	Yes	18	0.00008501	0.00003193
41	Yes	18	0.00008500	0.00003421
42	Yes	18	0.00008512	0.00002617
43	Yes	18	0.00008500	0.00003346
44	Yes	18	0.00008500	0.00003203
45	Yes	18	0.00008512	0.00002626
46	Yes	18	0.00008500	0.00003462
47	Yes	18	0.00008500	0.00003233
48	Yes	18	0.00008512	0.00002619
49	Yes	18	0.00008501	0.00003276
50	Yes	18	0.00008501	0.00003418

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123	26.433	47	1.5835	0.0014
L2	125.75 - 85	18.675	47	1.4331	0.0010
L3	88.5 - 44	9.014	47	0.9988	0.0004
L4	48.5 - 0	2.674	47	0.5103	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	NNVV-65B-R4 w/ Mount Pipe	47	26.433	1.5835	0.0014	27056
136.00	(2) 7770.00 w/ Mount Pipe	47	21.873	1.5071	0.0011	9662
127.00	(2) SBNHH-1D65B w/ Mount Pipe	47	19.055	1.4435	0.0010	5958
75.00	KS24019-L112A	47	6.380	0.8268	0.0003	4390

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 123	124.645	20	7.4822	0.0065
L2	125.75 - 85	88.097	20	6.7725	0.0044
L3	88.5 - 44	42.540	18	4.7202	0.0019
L4	48.5 - 0	12.623	18	2.4104	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	NNVV-65B-R4 w/ Mount Pipe	20	124.645	7.4822	0.0065	5916
136.00	(2) 7770.00 w/ Mount Pipe	20	103.165	7.1217	0.0052	2111
127.00	(2) SBNHH-1D65B w/ Mount Pipe	20	89.887	6.8212	0.0046	1299
75.00	KS24019-L112A	18	30.115	3.9067	0.0014	938

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	K/l/r	A in ²	P _u K	ϕP _n K	Ratio P _u ϕP _n
L1	150 - 123 (1)	TP22.69x17x0.25	27.00	0.00	0.0	17.346 3	-9.39	1288.74	0.007
L2	123 - 85 (2)	TP28.36x21.6105x0.375	40.75	0.00	0.0	32.619 1	-14.97	2423.44	0.006
L3	85 - 44 (3)	TP36.86x27.0303x0.4063	44.50	0.00	0.0	45.723 1	-23.36	3397.00	0.007
L4	44 - 0 (4)	TP42.53x35.0535x0.4375	48.50	0.00	0.0	58.450 7	-36.44	4342.59	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	ϕM _{nx} kip-ft	Ratio M _{ux} ϕM _{nx}	M _{uy} kip-ft	ϕM _{ny} kip-ft	Ratio M _{uy} ϕM _{ny}
L1	150 - 123 (1)	TP22.69x17x0.25	188.55	577.27	0.327	0.00	577.27	0.000

Section No.	Elevation ft	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
			kip-ft	kip-ft		kip-ft	kip-ft	
L2	123 - 85 (2)	TP28.36x21.6105x0.375	721.18	1357.87	0.531	0.00	1357.87	0.000
L3	85 - 44 (3)	TP36.86x27.0303x0.4063	1381.39	2468.18	0.560	0.00	2468.18	0.000
L4	44 - 0 (4)	TP42.53x35.0535x0.4375	2286.92	3749.35	0.610	0.00	3749.35	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
			V_u	K	K	T_u	kip-ft	K
L1	150 - 123 (1)	TP22.69x17x0.25	13.21	644.37	0.021	0.55	1155.95	0.000
L2	123 - 85 (2)	TP28.36x21.6105x0.375	15.36	1211.72	0.013	0.26	2719.05	0.000
L3	85 - 44 (3)	TP36.86x27.0303x0.4063	17.60	1698.50	0.010	0.25	4942.39	0.000
L4	44 - 0 (4)	TP42.53x35.0535x0.4375	19.61	2171.30	0.009	0.25	7507.87	0.000

Pole Interaction Design Data

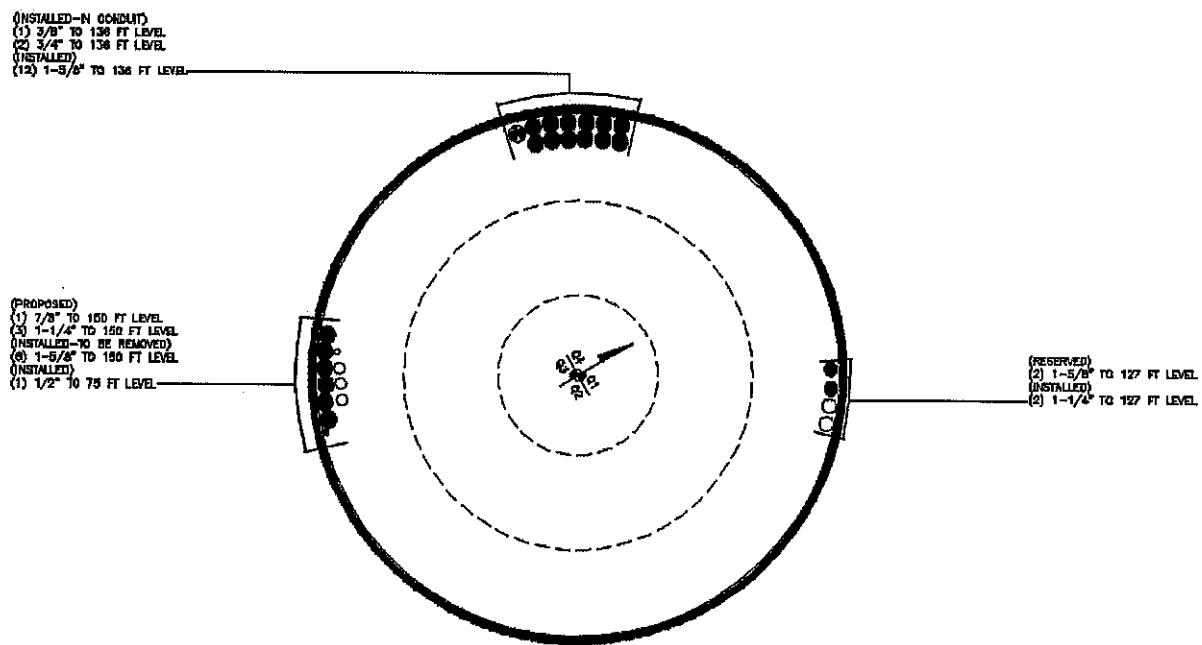
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 123 (1)	0.007	0.327	0.000	0.021	0.000	0.334	1.000	4.8.2
L2	123 - 85 (2)	0.006	0.531	0.000	0.013	0.000	0.537	1.000	4.8.2
L3	85 - 44 (3)	0.007	0.560	0.000	0.010	0.000	0.567	1.000	4.8.2
L4	44 - 0 (4)	0.008	0.610	0.000	0.009	0.000	0.618	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 123	Pole	TP22.69x17x0.25	1	-9.39	1288.74	33.4	Pass
L2	123 - 85	Pole	TP28.36x21.6105x0.375	2	-14.97	2423.44	53.7	Pass
L3	85 - 44	Pole	TP36.86x27.0303x0.4063	3	-23.36	3397.00	56.7	Pass
L4	44 - 0	Pole	TP42.53x35.0535x0.4375	4	-36.44	4342.59	61.8	Pass
Summary								
Pole (L4)							61.8	Pass
RATING =							61.8	Pass

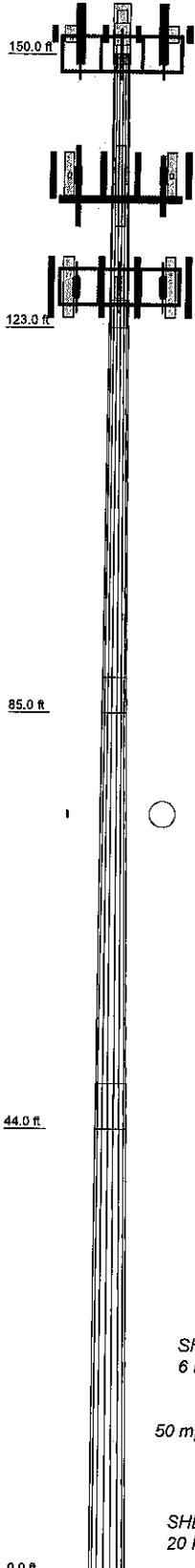
APPENDIX B

BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	1	1	1	1
Length (ft)	27.00	40.75	40.75	44.50
Number of Sides	18	18	18	18
Thickness (in)	0.4375	0.4953	0.3750	0.2500
Socket Length (ft)	35.0535	27.0303	3.50	2.75
Top Dia (in)	42.5300	36.8600	21.6105	17.0000
Bot Dia (in)			28.3600	22.5900
Grade				
Weight (K)	20.4	6.2	4.1	1.4



ALL REACTIONS
ARE FACORED

AXIAL
67 K

SHEAR
6 K

MOMENT
760 kip-ft

TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL
36 K

SHEAR
20 K

MOMENT
2287 kip-ft

TORQUE 0 kip-ft
REACTIONS - 97 mph WIND

DESIGNED APPURTEINANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
NNV-65B-R4 w/ Mount Pipe	150	(2) LGP21401	136
NNV-65B-R4 w/ Mount Pipe	150	RRUS-11	136
NNV-65B-R4 w/ Mount Pipe	150	RRUS-11	136
APXVTM14-ALL-120 w/ Mount Pipe	150	RRUS-11	136
APXVTM14-ALL-120 w/ Mount Pipe	150	DC6-48-60-18-8F	136
APXVTM14-ALL-120 w/ Mount Pipe	150	(2) LGP21903	136
(2) 800MHZ 2X50W RRH	150	(2) LGP21903	136
(2) 800MHZ 2X50W RRH	150	(2) LGP21903	136
(2) 800MHZ 2X50W RRH	150	(2) LGP21903	136
(2) 800MHZ 2X50W RRH	150	T-Arm Mount [TA 602-3]	136
TD-RRH8X20-25	150	(2) SBNHH-1D65B w/ Mount Pipe	127
TD-RRH8X20-25	150	(2) SBNHH-1D65B w/ Mount Pipe	127
TD-RRH8X20-25	150	(2) SBNHH-1D65B w/ Mount Pipe	127
PCS 1900MHZ 4X45W-65MHZ	150	B13 RRH 4X30	127
PCS 1900MHZ 4X45W-65MHZ	150	B13 RRH 4X30	127
PCS 1900MHZ 4X45W-65MHZ	150	B13 RRH 4X30	127
Platform Mount [LP 1201-1]	150	B66A RRH4X45	127
(2) 2.375" OD x 5" Mount Pipe	150	B66A RRH4X45	127
(2) 2.375" OD x 5" Mount Pipe	150	B66A RRH4X45	127
(2) 2.375" OD x 5" Mount Pipe	150	RXXDC-3315-PF-48	127
(2) 7770.00 w/ Mount Pipe	136	RXXDC-3315-PF-48	127
(2) 7770.00 w/ Mount Pipe	136	Platform Mount [LP 303-1]	127
(2) 7770.00 w/ Mount Pipe	136	Miscellaneous [NA 507-1]	127
P65-17-XLH-RR w/ Mount Pipe	136	(2) 2.375" OD x 5" Mount Pipe	127
P65-17-XLH-RR w/ Mount Pipe	136	(2) 2.375" OD x 5" Mount Pipe	127
AM-X-CD-16-65-00T-RET w/ Mount Pipe	136	(2) 2.375" OD x 5" Mount Pipe	127
AM-X-CD-16-65-00T-RET w/ Mount Pipe	136	KS24019-L112A	75
(2) LGP21401	136	Side Arm Mount [SO 701-1]	75
(2) LGP21401	136		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 61.8%



Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job: 150-Ft. Monopole / Stafford/Pragy/SSUSA		
Project: PJF# 37518-1433.002.7805 / BU# 876402		
Client: Crown Castle	Drawn by: jacuna	App'd:
Code: TIA-222-G	Date: 05/24/18	Scale: NTS
Path: G:\\TOWER15_Crown_Castle\\2018\\37518-1433_002.7805\\S91\\S9137518-1433_002.7805\\SA_157723037518-1433_002.7805.dwg		Dwg No. E-1

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

TIA Rev G

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

Site Data

BU#:

Site Name: Stafford/Pragy/SSUSA

App #:

Pole Manufacturer: Other

Reactions		
Mu:	2287	ft-kips
Axial, Pu:	36	kips
Shear, Vu:	20	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data

Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	51.03	in

Plate Data

Diam:	57.53	in
Thick:	1.75	in
Grade:	50	ksi
Single-Rod B-eff:	11.25	in

Stiffener Data (Welding at both sides)

Config:	1	*
Weld Type:	Both	
Groove Depth:	0.49	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.375	in
Width:	6	in
Height:	18	in
Thick:	1	in
Notch:	0.75	in
Grade:	50	ksi
Weld str.:	80	ksi

Pole Data

Diam:	42.53	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Anchor Rod Results

Max Rod (Cu+ Vu/ η): 185.6 Kips
 Allowable Axial, ϕ^*Fu^*Anet : 260.0 Kips
 Anchor Rod Stress Ratio: 71.4% Pass

Stiffened
AISC LRFD
ϕ^*Tn

Base Plate Results

Base Plate Stress: 36.4 ksi
 Allowable Plate Stress: 45.0 ksi
 Base Plate Stress Ratio: 81.0% Pass

Flexural Check

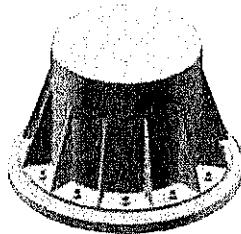
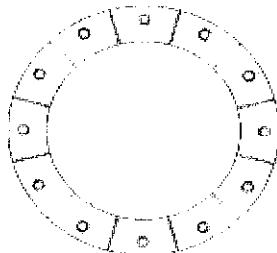
Stiffened
AISC LRFD
ϕ^*Fy
Y.L. Length: N/A, Roark

Stiffener Results

Horizontal Weld: 59.4% Pass
 Vertical Weld: 38.5% Pass
 Plate Flex+Shear, $fb/Fb+(fv/Fv)^2$: 13.5% Pass
 Plate Tension+Shear, $ft/Ft+(fv/Fv)^2$: 52.1% Pass
 Plate Comp. (AISC Bracket): 52.4% Pass

Pole Results

Pole Punching Shear Check: 11.3% 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 #:	876402
Site Name:	Stafford/Pragy/SSU
App. Number:	

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?

Superstructure Analysis Reactions		
Compression, P_{comp} :	36	kips
Base Shear, V_u comp:	20	kips
Moment, M_u :	2287	ft-kips
Tower Height, H :	150	ft
BP Dist. Above Fdn, bp_{dist} :	0.5	in

Foundation Analysis Checks				
	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	353.53	20.00	5.7%	Pass
Bearing Pressure (ksf)	45.16	2.13	4.7%	Pass
Overturming (kip*ft)	5718.49	2437.83	42.6%	Pass
Pier Flexure (Comp.) (kip*ft)	5163.92	2377.00	46.0%	Pass
Pier Compression (kip)	17184.96	65.16	0.4%	Pass
Pad Flexure (kip*ft)	1228.11	855.81	69.7%	Pass
Pad Shear - 1-way (kips)	674.44	143.97	21.3%	Pass
Pad Shear - 2-way (ksi)	0.16	0.03	17.9%	Pass

Soil Rating:	42.6%
Structural Rating:	69.7%

Pier Properties		
Pier Shape:	Square	
Pier Diameter, d_{pier} :	6.0	ft
Ext. Above Grade, E :	0.5	ft
Pier Rebar Size, S_c :	11	
Pier Rebar Quantity, m_c :	26	
Pier Tie/Spiral Size, S_t :	4	
Pier Tie/Spiral Quantity, m_t :	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

Pad Properties		
Depth, D :	7.0	ft
Pad Width, W :	22.0	ft
Pad Thickness, T :	3.0	ft
Pad Rebar Size, S_p :	10	
Pad Rebar Quantity, m_p :	7	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60000	psi
Concrete Compressive Strength, F'_c :	3000	psi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	116	pcf
Ultimate Net Bearing, Q_{net} :	59.400	ksf
Cohesion, C_u :	0.000	ksf
Friction Angle, φ :	45	degrees
SPT Blow Count, N_{blows} :	100	
Base Friction, μ :	0.5	
Neglected Depth, N :	3.3	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	None	ft

<-Toggle between Gross and Net



EBI Consulting

environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT54XC726

Stafford/Pragyl/SSUSA
175 Stafford Street
Stafford, CT 06077

July 26, 2018

EBI Project Number: 6218005225

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	7.04 %



July 26, 2018

SPRINT

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

Emissions Analysis for Site: **CT54XC726 – Stafford/Pragyl/SSUSA**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **175 Stafford Street, Stafford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **175 Stafford Street, Stafford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB, 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 manufacturer's 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 **Commscope NNVV-65B-R4** and the **RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's 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 **152 feet** above ground level (AGL) for **Sector A**, **152 feet** above ground level (AGL) for **Sector B** and **152 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	152 feet	Height (AGL):	152 feet	Height (AGL):	152 feet
Frequency Bands:	850 MHz / 1900 MHz (PCS)	Frequency Bands:	850 MHz / 1900 MHz (PCS)	Frequency Bands:	850 MHz / 1900 MHz (PCS)
Channel Count:	10	Channel Count:	10	Channel Count:	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%:	1.54 %	Antenna B1 MPE%:	1.54 %	Antenna C1 MPE%:	1.54 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-ALU-120	Make / Model:	RFS APXVTM14-ALU-120	Make / Model:	RFS APXVTM14-ALU-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	152 feet	Height (AGL):	152 feet	Height (AGL):	152 feet
Frequency Bands:	2500 MHz (BRS)	Frequency Bands:	2500 MHz (BRS)	Frequency Bands:	2500 MHz (BRS)
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%:	1.05 %	Antenna B2 MPE%:	1.05 %	Antenna C2 MPE%:	1.05 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	2.59 %
AT&T	1.91 %
Verizon Wireless	2.54 %
Site Total MPE %:	7.04 %

SPRINT Sector A Total:	2.59 %
SPRINT Sector B Total:	2.59 %
SPRINT Sector C Total:	2.59 %
Site Total:	7.04 %

SPRINT Frequency Band / Technology Max Power Values (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	152	0.64	850 MHz	567	0.12%
Sprint 850 MHz LTE	2	941.82	152	3.18	850 MHz	567	0.56%
Sprint 1900 MHz (PCS) CDMA	5	511.82	152	4.32	1900 MHz (PCS)	1000	0.43%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	152	4.32	1900 MHz (PCS)	1000	0.43%
Sprint 2500 MHz (BRS) LTE	8	778.09	152	10.50	2500 MHz (BRS)	1000	1.05%
							Total: 2.59%



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:	2.59 %
Sector B:	2.59 %
Sector C:	2.59 %
SPRINT Maximum MPE % (per sector):	2.59 %
Site Total:	7.04 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **7.04 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

ORIGIN/DEBDA (781) 970-0053
 JEFF BARBADOA
 CROWN CASTLE
 12 GILL STREET
 SUITE 5800
 WOBURN, MA 01801
 UNITED STATES US

SHIP DATE: 27 JUL 18
 ACT WGT: 0.50 LB
 CAD: 10492419/NET4040
 BILL SENDER

TO: HARRY & NANCY PRAGL

HARRY & NANCY PRAGL

175 STAFFORD STREET

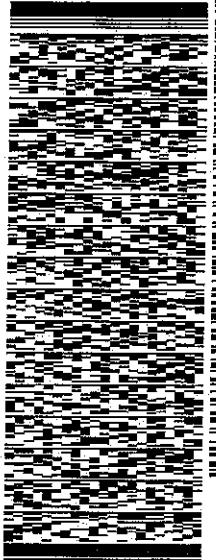
BOX 154

STAFFORD SPRINGS CT 06076

(800) 684-7190
 INQ.
 PO:

DEPT:

552J28532/DCAS



J182018072201uv

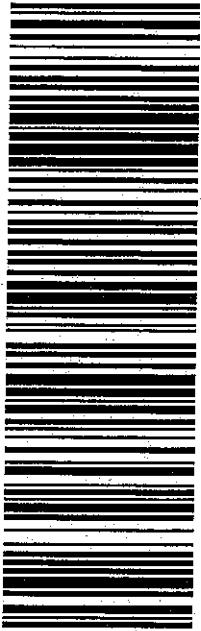
MON - 30 JUL 10:30A

PRIORITY OVERNIGHT

06076
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TRK# 0201 7728 3856 4568

SE QCWA



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Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, July 30, 2018 9:29 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 772838564568 Delivered

Your package has been delivered

Tracking # 772838564568

Ship date:

Fri, 7/27/2018

Jeff Barbadora

Crown Castle

WOBURN, MA 01801

US

Delivery date:

Mon, 7/30/2018 9:24
am

Harry & Nancy Pragl

Harry & Nancy Pragl

175 Stafford Street

Box 154

STAFFORD SPRINGS, CT

06076

US



Delivered

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: 772838564568

Status: Delivered: 07/30/2018 09:24

AM Signed for By: Signature
not required

Reference: 1766.6680

Signed for by: Signature not required

Delivery location: STAFFORD SPRINGS, CT

Delivered to: Residence

Service type: FedEx Priority Overnight®

Packaging type: FedEx® Envelope

Number of pieces: 1

Weight: 1.00 lb.

Special handling/Services: Deliver Weekday

Residential Delivery

Standard transit: 7/30/2018 by 10:30 am



ORIGIN ID: BEDA
JEFF BARBARA
CROWN CASTLE
12 GILL STREET
SUITE 3800
WOBURN, MA 01801
UNITED STATES US

(781) 970-0053

SHIP DATE: 27 JUL 18
ACT WGT: 0.50 LB
CAD: 10492419/NET4040

BILL SENDER

To FIRST SELECTWOMEN-MARY MITTA

TOWN OF STAFFORD SPRINGS

1 MAIN STREET

WARREN MEMORIAL TOWN HALL

STAFFORD SPRINGS CT 06076

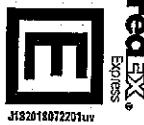
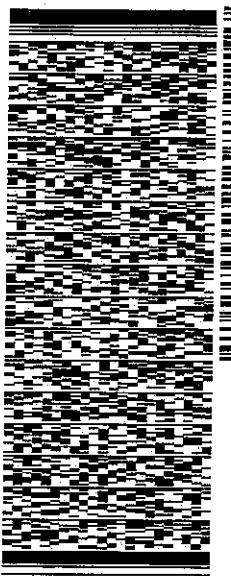
(800) 384-1777

REF: 17656690

NY:

PO:

DEPT:



J132018072201uv

552J26532/0CA5

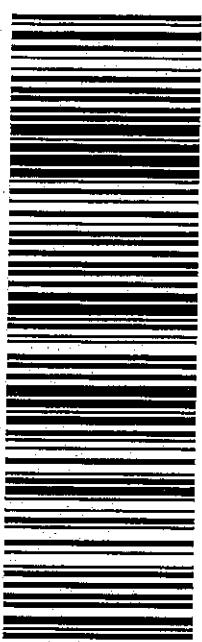
MON - 30 JUL 10:30A

PRIORITY OVERNIGHT

TRK#
0201

7728 3851 7161

SE QCWA
06076
CT-US
BDL



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Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, July 30, 2018 8:56 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 772838517161 Delivered

Your package has been delivered

Tracking # 772838517161

Ship date:
Fri, 7/27/2018
Jeff Barbadora
Crown Castle
WOBURN, MA 01801
US



Delivery date:
Mon, 7/30/2018 8:51 am
First Selectwomen-Mary Mitta
Town of Stafford Springs
1 Main Street
Warren Memorial Town Hall
STAFFORD SPRINGS, CT
06076
US



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	<u>772838517161</u>
Status:	Delivered: 07/30/2018 08:51 AM Signed for By: M.MITTA
Reference:	1766.6680
Signed for by:	M.MITTA
Delivery location:	STAFFORD SPRINGS, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx Priority Overnight®
Packaging type:	FedEx® Envelope
Number of pieces:	1
Weight:	1.00 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	7/30/2018 by 10:30 am

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