EM-SPRINT-098-121210

Together with Nextel

ORIGINAL

48 Spruce Street
Oakland, NJ 07436
Phone: (845) 499-4712
Jennifer Palumbo

September 19, 2012

Hand Delivered

Ms. Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Sprint Spectrum L.P. notice of intent to modify an existing telecommunications facility located at10 Ashpohtag Road, Norfolk, CT 06058, Known to Sprint Spectrum L.P. as site CT33XC590.

Dear Ms. Roberts:

In order to accommodate technological changes, implement Code Division Multiple Access ("CDMA") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the state of Connecticut, Sprint Spectrum L.P. plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and its attachments is being sent to the chief elected official of the municipality in which affected cell site is located.

CDMA employs Spread-Spectrum technology and special coding scheme to allow multiple users to be multiplexed over the same physical channel. LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

As part of the project the new multi-mode 800/1900 antenna will replace existing antennas. These antennas will provide more flexibility for optimization by allowing fast and easy electrical tilt adjustment from remote location and will enable the transmission of multiple technologies from a single antenna. As Sprint Nextel's network evolves to meet the demands of its customers, it is essential for Sprint Nextel to install modern equipment and antennas in order to provide reliable wireless voice and data services. The

proposed equipment will include multi-mode radios that will allow Sprint Nextel to transmit at different frequencies using different technologies, including LTE technology. Likewise, the proposed antennas are quad-pole multi-band high gain antennas that will allow Sprint to operate using its multiple frequency bands and technologies, including LTE technology. The proposed equipment and antennas will improve the reliability, coverage and capacity of Sprint Nextel's voice and data networks across Sprint Nextel's various FCC licensed frequency bands and significantly increase the data speeds of Sprint Nextel's network by utilizing the latest LTE technology. Without the proposed modifications Sprint Nextel will be unable to provide reliable wireless voice and data service using the latest technologies.

Sprint Spectrum L.P. will have an interim (testing) period during the modification/installation prior to the final configuration. This antenna configuration is shown on the attached drawings of the planned modifications. Also included is the power density calculation reflecting the change in Sprint's operations at the site and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modification as defined Connecticut General Statues ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for the R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will not be affected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by 6 decibels or more.
4. Radio Frequency power density may increase due to the use of one or more CDMA transmissions. Moreover, LTE will utilize additional radio frequencies newly licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons Sprint Spectrum L.P. respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (845)-499-4712 or email JPalumbo@Transcendwireless.com with questions concerning this matter.
Thank you for your consideration.

Sincerely,

Jennifer Palumbo
Real Estate Consultant

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: CT33XC590

West Norfolk
10 Ashpohtag Road
Norfolk, CT 06058

September 06, 2012

21 B Street Burlington, MA 01803 Tel: (781) 273-2500 Fax: (781) 273-3311

EBI Consulting
environmental | engineering | due diligence

September 6, 2012

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

Re: Emissions Values for Site **CT33XC590 – West Norfolk**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 10 Ashpohtag Road, Norfolk, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

General population/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. 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 upgrades to the existing Sprint Wireless antenna facility located at 10 Ashpohtag Road, Norfolk, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. 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 emissions were calculated using the following assumptions:

1) 2 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
2) 1 CDMA Carrier (850 MHz) was considered for each sector of the proposed installation
3) 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.
4) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
5) The antenna used in this modeling is the RFS APXVSPP18-C-A20. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.9 dBd gain value at its main lobe at 1900 MHz and 13.4 dBd at its main lobe for 850 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

6) The antenna mounting height centerline of the proposed antennas is **147 feet** above ground level (AGL).
7) 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT33XC590 – West Norfolk
Site Addresss	10 Ashpohtag Road, Norfolk, CT 06058
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	147	141	1/2 "	0.5	0	1386.9474	25.08001	2.50800%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	0	389.96892	7.051764	1.24370%
														Sector total Power Density Value:			3.752%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	2	40	15.9	147	141	1/2 "	0.5	0	1386.9474	25.08001	2.50800%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	147	141	1/2 "	0.5	0	389.96892	7.051764	1.24370%
														Sector total Power Density Value:			3.752%

Site Composite MPE %	
Carrier	MPE %
Sprint	7.503%
AT&T	7.500%
Verizon Wireless	19.460%
Total Site MPE %	**34.463%**

EBI Consulting
environmental | engineering | due diligence

Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **7.503% (3.752% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **34.463%** of the allowable FCC established general public 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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

PASS
(Shaft, 100% capacity)

October 5, 2012

Mr. Dwayne Lyerly
SBA Communications Corporation
5900 Broken Sound Parkway NW
Boca Raton, FL 33487
(919) 557- 0555

Vertical Solutions, Inc.
PO Box 579
Holly Springs, NC 27540
(888) 321-6167
operations@verticalsolutions-inc.com

Subject:	**Rigorous Structural Analysis**
Carrier Designation	**Sprint/Nextel, Reconfiguration - Final** **Site Number: CT33XC590** **Site Name: West Norfolk**
SBA Designation	**Site Number: CT46144-A** **Site Name: Cammilletti Property**
Engineering Firm Designation	**Vertical Solutions Project: 121779, Revision 0**
Site Data	**10 Ashpohtag Rd, Norfolk, Litchfield County, CT 06058** **Latitude: N42° 00' 09.70" ± Longitude: W073° 13' 17.00" ±** **Elevation: 983 ft±, Topography Category: 1;** **148.5-ft Self Supporting Pole Structure (Monopole)**

Dear Mr. Lyerly,

To your request, we present our structural analysis.

Our work indicates that with the proposed appurtenance configuration, the tower and foundation **will** satisfy the structural strength requirements of ANSI/TIA-222-F-1996, *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* (industry standard) and the *2005 Connecticut State Building Code* (local building code) for:

- 80-mph fastest mile basic wind speed
- 69-mph fastest mile basic wind speed with 1/2-in radial ice

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

We trust you find our work satisfactory. Please do not hesitate to call should you have any questions.

Sincerely,

Kingsley C. Igboanugo, E.I.
Structural Engineer-In-Training

Reviewed by: MER

STATE OF CONNECTICUT
MICHAEL L. LASSITER
No. 25064
LICENSED
PROFESSIONAL ENGINEER

NOV 15 2012

Michael L. Lassiter, S.E., P.E., C.W.I.
Structural Engineer, Civil Engineer, Certified Weld Inspector
& President
CT License No. 25064

Table 1: Existing, Proposed and Reserved Appurtenance Configuration

Elevation (AGL, ft)	Carrier	Mount	Equipment	Coax	Location[1]
145	**Sprint/ Nextel [NV]**	(3) T-Arms	**(6) 76"x14"x7" Panels (12) RRUs 24"x13"x7" (12) Combiners 12"x6"x2" (3) RRU Filters 24"x13"x7" (1) GPS**	**(4) 1 5/8 (1) 1/2**	**Inside**
137	AT&T	Low Profile Platform	(6) Powerwave 7770 (12) TMAs	(12) 1 5/8	Inside
127	Verizon	Low Profile Platform	(3) Antel BXA-70080/6CF (3) Antel BXA-171085/12BF (6) FD9R6004/2C-3L (6) Antel LPA-80080/6CF	(12) 1 5/8	Inside
117	Landlord Reserved	Low Profile Platform	(12) 72"x12"x6" Panels (6) 12"x6"x4" TMAs (2) GPS (1) 24" Dish	(15) 1 5/8 (3) 1/2	Inside

1. See coax configuration plan, QP-P for coax locations.

Table 2: Tower Structure Results, Percent Capacity Utilized

Elevation (ft)	Shaft	Result	Connections	Result
148.5 to 95.833	**100**	**O. K.**	-	-
95.833 to 47.174	100	O. K.	-	-
47.174 to 0	93	O. K.	72	O. K.

Table 3: Foundation Results, Percent Capacity Utilized

Component	Capacity	Analysis	Percent Utilized	Result
Bearing (kips)	6000	1828	30	O. K.
Overturning (kip-ft)	3661	2818	77	O. K.
Sliding (kips)	83	24	29	O. K.

Attachments:

- Project History
- Coax configuration
- Program input and output – wind
- Tower Improvement calculations
- Base plate and anchor rod calculations
- Foundation calculations
- Tower Improvement Design Drawings [Construction]

Project History

VSi Project #: 121779, Revision 0
SBA Site Id: CT46144-A
SBA Site Name: Cammilletti Property

--	CT2021	5/2/2003	292280_CT2021 CAMMILLETTI PROPERTY CD-s-Site Plan 5-2-03.pdf	URS	Sprint	Construction Drawings
--	CT2021	8/17/2004	308122_CT2021 CAMMILLETTI PROPERTY Geotechnical Report - 08-17-2004.pdf	Geotechnical Engineering	URS	Geotechnical Investigation
--	CT2021	8/26/2004	308118_CT2021 CAMMILLETTI PROPERTY CD-s - Development & Management Plan 8-26-04.pdf	URS	Sprint	Construction Drawings
--	CT2021	8/30/2004	308120_CT2021 CAMMILLETTI PROPERTY Tower and Foundation Design Drawings - 08-30-2004.pdf	Engineered Endeavors Inc.	Sprint	Tower and Foundation Design Drawings
--	CT2021	8/30/2004	308121_CT2021 CAMMILLETTI PROPERTY Tower and Foundation Design Drawings - 08-30-2004 duplicate.pdf	Engineered Endeavors Inc.	Sprint	Tower and Foundation Design Drawings
--	CT2021	12/14/2004	308126_CT2021 CAMMILLETTI PROPERTY Height Verification.pdf		Sprint	Height Verification Report
--	CT2021	1/17/2006	470913_CT2021 CAMMILLETTI PROPERTY Semaan Structural Analysis Cingluar CoLo 01-17-206.pdf	Semaan Engineering Solutions	Sprint Sites USA	Structural Analysis Report
--	CT2021	2/15/2006	292282_CT2021 CAMMILLETTI PROPERTY Cingular SLA.pdf	Sprint Spectrum	New Cingular	Site Lease Agreement
--	CT2021	5/17/2006	470921_CT2021 Cammilletti Property AT&T Rent Commencement Letter.pdf	Cingular Wireless	Sprint Spectrum	Commencement Notice
--	CT2021	7/24/2006	292281_CT2021 CAMMILLETTI PROPERTY CT33XC590-02 First Amendment to Cingular SLA.pdf	Sprint Spectrum	New Cingular	Amendment SLA
--	CT2021	7/24/2006	308154_CT2021 CAMMILLETTI PROPERTY Semaan Structural Analysis Verizon CoLo 07-24-2006.pdf	Semaan Engineering Solutions	Sprint Sites USA	Structural Analysis Report
--	CT2021	7/24/2006	470914_CT2021 CAMMILLETTI PROPERTY Semaan Structural Analysis Verizon CoLo 07-24-2006 duplicate.pdf	Semaan Engineering Solutions	Sprint Sites USA	Structural Analysis Report
--	CT2021	8/3/2007	308160_CT2021 CAMMILLETTI PROPERTY CT33XC590-03 Verizon SLA.pdf	Sprint Spectrum	Verizon	Site Lease Agreement
--	CT2021	12/31/2007	308161_CT2021 CAMMILLETTI PROPERTY Verizon Rent Commencement Letter.pdf	Sprint	Verizon	Commencement Notice
--	CT2021	5/1/2008	308155_CT2021 CAMMILLETTI PROPERTY Semaan Structural Analysis Verizon CoLo	Semaan	Sprint	Structural Analysis

Design Documents						
Document	Structure	Issued Date	Document ID	Issued By	Issued To	Description
			05-01-2008.pdf	Engineering Solutions		Report
--	CT2021	5/23/2008	308148_CT2021 CAMMILLETTI PROPERTY CT33XC590-01-1 Unexecuted First Amendment to Verizon Sla.pdf	Sprint	Verizon	Amendment SLA
--	CT2021	7/2/2008	308146_CT2021 CAMMILLETTI PROPERTY First Amendment to Verizon SLA.pdf	Sprint	MDG Law Offices	Amendment SLA
--	CT2021	9/23/2008	711895_CT2021 Cammilletti Property SLA.pdf	TowerCo	Sprint Spectrum	Site Lease Agreement
--	CT2021	10/30/2008	708817_CT2021 Cammilletti Property Site Plan.pdf	SiteMaster	TowerCo	Site Plan
--	CT2021	10/30/2008	714959_CT2021 Cammilletti Property Tower Profile.pdf	SiteMaster	TowerCo	Tower Profile Drawing
--	CT2021	10/30/2008	719742_CT2021 Cammilletti Property SiteMaster Inspection Report.pdf	SiteMaster	TowerCo	Tower Inspection Report
--	CT2021	2/17/2009	528776_CT2021 Cammilletti Property Verizon Email Confirming Rent Comm Date.pdf	Verizon	TowerCo	Rent Commencement
--	CT2021	12/6/2011	Pages+from+292282_CT2021+CAMMILLETTI+PROPERTY+Cingular+SLA.pdf	Sprint Spectrum	New Cingular	Site Lease Agreement
--	CT2021	12/6/2011	Tower co norfolk west.doc	Verizon	TowerCo	Reconfiguration Tenant Application
--	CT2021	12/9/2011	CT2021 SA Loading.xls	TowerCo	Vertical Solutions	SA Loading
--	CT2021	12/9/2011	Tower co norfolk west rev 1.doc	Verizon	TowerCo	Reconfiguration Tenant Application
--	CT2021	1/5/2012	857377_CT2021 Cammilletti Property _Vertical_Structural Analysis_Verizon_Reconfiguration_20120105.pdf	Vertical Solutions	TowerCo	Structural Analysis Report
--	CT2021	1/24/2012	860833_CT2021 Cammilletti Property Verizon 2nd Amendment to SLA Fully Executed.pdf	TowerCo	Cellco	Amendment SLA
--	CT2021	2/6/2012	861399_CT2021 Cammilletti Property Verizon 2nd Amendment Rent Commencement Letter.pdf	TowerCo	Verizon	Amendment SLA
--	CT2021	5/21/2012	CT33XC590_3-28-12 Colio App - CT2021 Sprint Reconfiguration Application.doc	Sprint	TowerCo	Reconfiguration Tenant Application
--	CT2021	5/22/2012	CT2021-SprintNetworkVision-SA+Loading-20120522.xls	TowerCo	Vertical Solutions	SA Loading

	CT2021	6/27/2012	Structural Analysis Report - Final	Vertical Solutions	TowerCo	Structural Analysis Report

Table Note:

Files name format YYYYMMDD-XXX-ZZZZZZ.pdf

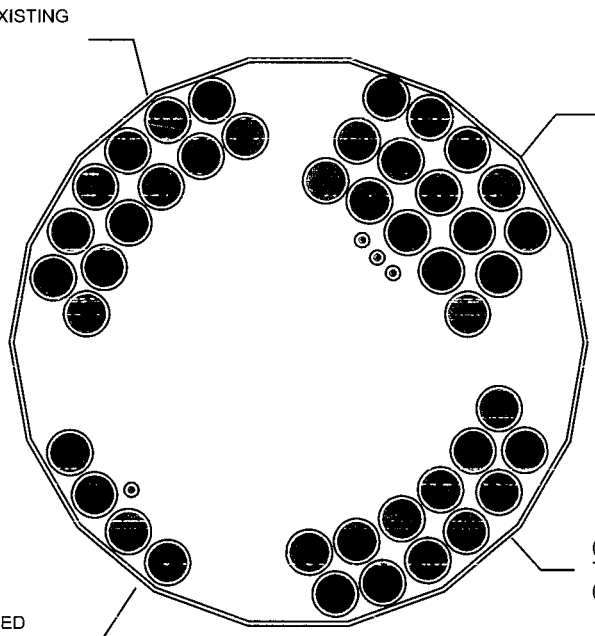
Where:

YYYYMMDD = Year, Month, Day published/issued

XXX=file describer

ZZZZZZ=TowerCo Site ID

A(INSIDE) = 464.46 SQ IN
A (COAX) = 133.63 SQ IN
FILL RATIO = 29%



COAX CONFIGURATION PLAN AT 117-FT

SCALE: 1 1/2" = 1'-0"

PROJECT INFORMATION:

CAMMILLETTI PROPERTY
CT46144-A

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

REV	DATE:	Issued For:
0	10-02-12	SBA Towers

DRAWN BY: KCI | CHECKED BY: AVF

SHEET NUMBER: **QP-P**

REVISION: 0

VSI #: 121779

PLANS PREPARED FOR:

SBA

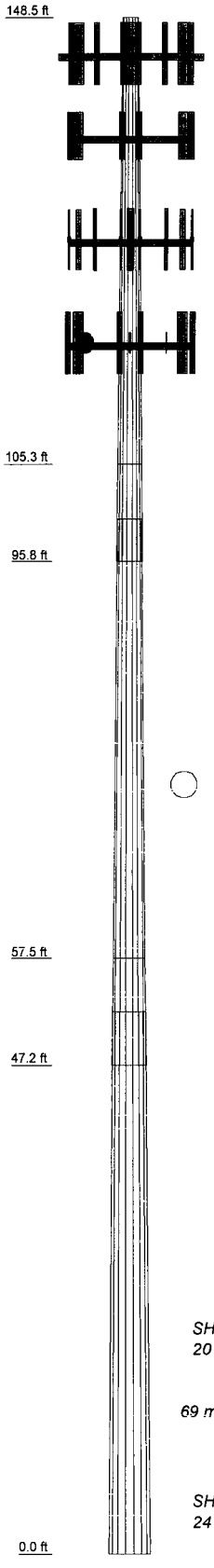
5900 Broken Sound Pkwy
Boca Raton, FL 33487
Office (919) 557-0555

PLANS PREPARED BY:

vertical solutions

2002 Production Drive
Apex, NC 27539
Office: (888) 321-6167
Fax: (919) 321-1768

Section	1	2	3	4	5
Length (ft)	43.25	9.45	42.38	10.30	52.35
Number of Sides	18	18	18	18	18
Thickness (in)	0.1875	0.2520	0.3125	0.4053	0.3750
Socket Length (ft)		4.08		5.15	
Top Dia (in)	18.0000	27.0080	28.4883	36.5990	37.0679
Bot Dia (in)	27.0080	30.5000	36.5990	39.1600	48.0000
Grade	A572-65	A572-65	A572-65	A572-50	A572-50
Weight (K)	2.0	0.7	4.6	1.7	8.9



AXIAL
38 K
SHEAR
20 K
MOMENT
2264 kip-ft
TORQUE 0 kip-ft
69 mph WIND - 0.5000 in ICE

AXIAL
31 K
SHEAR
24 K
MOMENT
2638 kip-ft
TORQUE 0 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
4' x 12' T-Arm (Sprint)	145	(2) 7770.00 w/ 2" Pipe (ATI)	137
4' x 12' T-Arm (Sprint)	145	(2) 7770.00 w/ 2" Pipe (ATI)	137
4' x 12' T-Arm (Sprint)	145	(4) 14" x 12" x 5" TMA (ATI)	137
(2) 76" x 14" x 7" Panel w/ Mount Pipe (Partially Shielded) (Sprint)	145	(4) 14" x 12" x 5" TMA (ATI)	137
		(4) 14" x 12" x 5" TMA (ATI)	137
(2) 76" x 14" x 7" Panel w/ Mount Pipe (Partially Shielded) (Sprint)	145	PiROD 13' Low Profile Platform (ATI)	137
(2) 76" x 14" x 7" Panel w/ Mount Pipe (Partially Shielded) (Sprint)	145	(2) FD9R6004/2C-3L (Verizon)	127
(2) RRUs 24" x 13" x 7" (60 LBs) (Fully Exposed) (Sprint)	145	(2) LPA-80080/6CF w/ MP (Verizon)	127
		(2) LPA-80080/6CF w/ MP (Verizon)	127
(2) RRUs 24" x 13" x 7" (60 LBs) (Fully Exposed) (Sprint)	145	(2) LPA-80080/6CF w/ MP (Verizon)	127
		PiROD 13' Low Profile Platform (Verizon)	127
(2) RRUs 24" x 13" x 7" (60 LBs) (Fully Exposed) (Sprint)	145	Antel BXA-70080/6CF w/ MP (Verizon)	127
(2) RRUs 24" x 13" x 7" (60 LBs) (Partially Shielded) (Sprint)	145	Antel BXA-70080/6CF w/ MP (Verizon)	127
		Antel BXA-70080/6CF w/ MP (Verizon)	127
(2) RRUs 24" x 13" x 7" (60 LBs) (Partially Shielded) (Sprint)	145	Antel BXA-171085/12BF with Mount Pipe (Verizon)	127
(2) RRUs 24" x 13" x 7" (60 LBs) (Partially Shielded) (Sprint)	145	Antel BXA-171085/12BF with Mount Pipe (Verizon)	127
		Antel BXA-171085/12BF with Mount Pipe (Verizon)	127
RRU Filters 24" x 13" x 7" (53 LBs) (Partially Shielded) (Sprint)	145	(2) FD9R6004/2C-3L (Verizon)	127
RRU Filters 24" x 13" x 7" (53 LBs) (Partially Shielded) (Sprint)	145	(2) FD9R6004/2C-3L (Verizon)	127
RRU Filters 24" x 13" x 7" (53 LBs) (Partially Shielded) (Sprint)	145	(4) 72" x 12" x 6" w/ MP (Landlord Reserved)	117
(2) Combiners 12" x 6" x 2" (10LBs) (Shielded) (Sprint)	145	(4) 72" x 12" x 6" w/ MP (Landlord Reserved)	117
(2) Combiners 12" x 6" x 2" (10LBs) (Shielded) (Sprint)	145	(4) 72" x 12" x 6" w/ MP (Landlord Reserved)	117
(2) Combiners 12" x 6" x 2" (10LBs) (Shielded) (Sprint)	145	(2) 12" x 6" x 4" (TMA/BTS/CPL) (Landlord Reserved)	117
(2) Combiners 12" x 6" x 2" (10LBs) (Partially Shielded) (Sprint)	145	(2) 12" x 6" x 4" (TMA/BTS/CPL) (Landlord Reserved)	117
(2) Combiners 12" x 6" x 2" (10LBs) (Partially Shielded) (Sprint)	145	(2) 12" x 6" x 4" (TMA/BTS/CPL) (Landlord Reserved)	117
(2) Combiners 12" x 6" x 2" (10LBs) (Partially Shielded) (Sprint)	145	GPS (Landlord Reserved)	117
		GPS (Landlord Reserved)	117
GPS (Sprint)	145	PiROD 13' Low Profile Platform (Landlord Reserved)	117
(2) 7770.00 w/ 2" Pipe (ATI)	137	24" Dish (Landlord Reserved)	117

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	A572-50	50 ksi	65 ksi

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 100%

vertical solutions
Execute and Deliver
Vertical Solutions Inc
2002 Production Drive
Apex, NC 27539
Phone: (888) 321-6167
FAX: (919) 321-1768

Job: CT46144-A			
Project: 121779 (100%)			
Client: TowerCo	Drawn by: Kingsley	App'd:	
Code: TIA/EIA-222-F	Date: 10/05/12	Scale: NTS	
Path: L:\2012\1779_Cammilleti Property_CT\Task 1\Models\PSAR\CT2021-ERP.eri		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Litchfield County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	148.50-105.25	43.25	0.00	18	18.0000	27.0080	0.1875	0.7500	A572-65 (65 ksi)
L2	105.25-95.80	9.45	4.08	18	27.0080	30.5000	0.2520	1.0080	A572-50 (50 ksi)
L3	95.80-57.50	42.38	0.00	18	28.4883	36.5990	0.3125	1.2500	A572-65 (65 ksi)
L4	57.50-47.20	10.30	5.15	18	36.5990	39.1600	0.4058	1.6232	A572-50 (50 ksi)
L5	47.20-0.00	52.35		18	37.0679	48.0000	0.3750	1.5000	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	It/Q in^2	w in	w/t
L1	18.2777	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	27.4246	15.9616	1450.5953	9.5213	13.7201	105.7280	2903.0993	7.9823	4.4234	23.592
L2	27.4246	21.4007	1935.5682	9.4984	13.7201	141.0757	3873.6832	10.7024	4.3099	17.103
	30.9705	24.1938	2796.6293	10.7380	15.4940	180.4976	5596.9385	12.0992	4.9245	19.542
L3	29.7207	27.9469	2803.0132	10.0024	14.4721	193.6842	5609.7148	13.9761	4.4639	14.285
	37.1636	35.9917	5987.2809	12.8817	18.5923	322.0303	11982.4401	17.9993	5.8914	18.853
L4	37.1636	46.6172	7715.0255	12.8486	18.5923	414.9583	15440.2025	23.3130	5.7272	14.113
	39.7641	49.9158	9471.3687	13.7577	19.8933	476.1090	18955.2001	24.9626	6.1780	15.224
L5	38.7318	43.6737	7428.8528	13.0260	18.8305	394.5119	14867.4806	21.8410	5.8640	15.637
	48.7405	56.6857	16243.5372	16.9069	24.3840	666.1556	32508.4480	28.3482	7.7880	20.768

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
L1 148.50-105.25				1	1	1		
L2 105.25-95.80				1	1	1		
L3 95.80-57.50				1	1	1		
L4 57.50-47.20				1	1	1		
L5 47.20-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A (1-5/8 FOAM) (Sprint)	C	No	Inside Pole	145.00 - 5.00	4	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF4RN-50A (1/2 FOAM) (Sprint)	C	No	Inside Pole	145.00 - 5.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
LDF7-50A (1-5/8 FOAM) (AT&T)	C	No	Inside Pole	137.00 - 5.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (Verizon)	C	No	Inside Pole	127.00 - 5.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (Landlord Reserved)	C	No	Inside Pole	117.00 - 5.00	15	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF4RN-50A (1/2 FOAM) (Landlord Reserved)	C	No	Inside Pole	117.00 - 5.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	148.50-105.25	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	0.81
L2	105.25-95.80	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	0.34
L3	95.80-57.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.37
L4	57.50-47.20	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	0.37
L5	47.20-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.51

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	148.50-105.25	A	0.500	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	0.81
L2	105.25-95.80	A	0.500	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	0.34
L3	95.80-57.50	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.37
L4	57.50-47.20	A	0.500	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	0.37
L5	47.20-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.51

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	148.50-105.25	0.0000	0.0000	0.0000	0.0000
L2	105.25-95.80	0.0000	0.0000	0.0000	0.0000
L3	95.80-57.50	0.0000	0.0000	0.0000	0.0000
L4	57.50-47.20	0.0000	0.0000	0.0000	0.0000
L5	47.20-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4' x 12' T-Arm (Sprint)	A	None		0.0000	145.00	No Ice	7.00	7.00	0.33
						1/2" Ice	9.70	9.70	0.43
4' x 12' T-Arm (Sprint)	B	None		0.0000	145.00	No Ice	7.00	7.00	0.33
						1/2" Ice	9.70	9.70	0.43
4' x 12' T-Arm (Sprint)	C	None		0.0000	145.00	No Ice	7.00	7.00	0.33
						1/2" Ice	9.70	9.70	0.43
*****									
(2) 7770.00 w/ 2" Pipe (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	137.00	No Ice	6.22	4.35	0.06
						1/2" Ice	6.77	5.20	0.10
(2) 7770.00 w/ 2" Pipe (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	137.00	No Ice	6.22	4.35	0.06
						1/2" Ice	6.77	5.20	0.10
(2) 7770.00 w/ 2" Pipe (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	137.00	No Ice	6.22	4.35	0.06
						1/2" Ice	6.77	5.20	0.10
(4) 14" x 12" x 5" TMA (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	137.00	No Ice	1.63	0.68	0.01
						1/2" Ice	1.81	0.81	0.02
(4) 14" x 12" x 5" TMA (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	137.00	No Ice	1.63	0.68	0.01
						1/2" Ice	1.81	0.81	0.02
(4) 14" x 12" x 5" TMA (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	137.00	No Ice	1.63	0.68	0.01
						1/2" Ice	1.81	0.81	0.02
PiROD 13' Low Profile Platform (AT&T)	C	None		0.0000	137.00	No Ice	15.70	15.70	1.30
						1/2" Ice	20.10	20.10	1.76
*****									
(2) LPA-80080/6CF w/ MP (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	4.35	10.51	0.04
						1/2" Ice	4.79	11.56	0.10
(2) LPA-80080/6CF w/ MP (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	4.35	10.51	0.04
						1/2" Ice	4.79	11.56	0.10
(2) LPA-80080/6CF w/ MP (Verizon)	C	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	4.35	10.51	0.04
						1/2" Ice	4.79	11.56	0.10
PiROD 13' Low Profile Platform (Verizon)	C	None		0.0000	127.00	No Ice	15.70	15.70	1.30
						1/2" Ice	20.10	20.10	1.76
Antel BXA-70080/6CF w/ MP (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	6.03	6.22	0.04
						1/2" Ice	6.59	7.39	0.10
Antel BXA-70080/6CF w/ MP (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	6.03	6.22	0.04
						1/2" Ice	6.59	7.39	0.10
Antel BXA-70080/6CF w/ MP (Verizon)	C	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	6.03	6.22	0.04
						1/2" Ice	6.59	7.39	0.10
Antel BXA-171085/12BF with Mount Pipe (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	4.98	5.23	0.04
						1/2" Ice	5.53	6.40	0.08
Antel BXA-171085/12BF with Mount Pipe (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	127.00	No Ice	4.98	5.23	0.04
						1/2" Ice	5.53	6.40	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Antel BXA-171085/12BF	C	From Leg	3.00	0.0000	127.00	No Ice	4.98	5.23	0.04
with Mount Pipe			0.00			1/2" Ice	5.53	6.40	0.08
(Verizon)			0.00						
(2) FD9R6004/2C-3L	A	From Leg	3.00	0.0000	127.00	No Ice	0.37	0.08	0.00
(Verizon)			0.00			1/2" Ice	0.45	0.14	0.00
			0.00						
(2) FD9R6004/2C-3L	B	From Leg	3.00	0.0000	127.00	No Ice	0.37	0.08	0.00
(Verizon)			0.00			1/2" Ice	0.45	0.14	0.00
			0.00						
(2) FD9R6004/2C-3L	C	From Leg	3.00	0.0000	127.00	No Ice	0.37	0.08	0.00
(Verizon)			0.00			1/2" Ice	0.45	0.14	0.00
			0.00						
*****									
Partially Exposed NV Loading									
(2) 76" x 14" x 7" Panel w/	A	From Leg	3.00	0.0000	145.00	No Ice	9.83	5.65	0.06
Mount Pipe (Partially			0.00			1/2" Ice	10.56	6.36	0.08
Shielded)			0.00						
(Sprint)									
(2) 76" x 14" x 7" Panel w/	B	From Leg	3.00	0.0000	145.00	No Ice	9.83	5.65	0.06
Mount Pipe (Partially			0.00			1/2" Ice	10.56	6.36	0.08
Shielded)			0.00						
(Sprint)									
(2) 76" x 14" x 7" Panel w/	C	From Leg	3.00	0.0000	145.00	No Ice	9.83	5.65	0.06
Mount Pipe (Partially			0.00			1/2" Ice	10.56	6.36	0.08
Shielded)			0.00						
(Sprint)									
(2) RRUs 24" x 13" x 7" (60	A	From Leg	3.00	0.0000	145.00	No Ice	2.60	1.45	0.06
LBs) (Fully Exposed)			0.00			1/2" Ice	2.92	1.71	0.07
(Sprint)			0.00						
(2) RRUs 24" x 13" x 7" (60	B	From Leg	3.00	0.0000	145.00	No Ice	2.60	1.45	0.06
LBs) (Fully Exposed)			0.00			1/2" Ice	2.92	1.71	0.07
(Sprint)			0.00						
(2) RRUs 24" x 13" x 7" (60	C	From Leg	3.00	0.0000	145.00	No Ice	2.60	1.45	0.06
LBs) (Fully Exposed)			0.00			1/2" Ice	2.92	1.71	0.07
(Sprint)			0.00						
(2) RRUs 24" x 13" x 7" (60	A	From Leg	3.00	0.0000	145.00	No Ice	0.00	1.45	0.06
LBs) (Partially Shielded)			0.00			1/2" Ice	0.00	1.71	0.07
(Sprint)			0.00						
(2) RRUs 24" x 13" x 7" (60	B	From Leg	3.00	0.0000	145.00	No Ice	0.00	1.45	0.06
LBs) (Partially Shielded)			0.00			1/2" Ice	0.00	1.71	0.07
(Sprint)			0.00						
(2) RRUs 24" x 13" x 7" (60	C	From Leg	3.00	0.0000	145.00	No Ice	0.00	1.45	0.06
LBs) (Partially Shielded)			0.00			1/2" Ice	0.00	1.71	0.07
(Sprint)			0.00						
RRU Filters 24" x 13" x 7"	A	From Leg	3.00	0.0000	145.00	No Ice	2.60	0.00	0.05
(53 LBs) (Partially Shielded)			0.00			1/2" Ice	2.92	0.00	0.06
(Sprint)			0.00						
RRU Filters 24" x 13" x 7"	B	From Leg	3.00	0.0000	145.00	No Ice	2.60	0.00	0.05
(53 LBs) (Partially Shielded)			0.00			1/2" Ice	2.92	0.00	0.06
(Sprint)			0.00						
RRU Filters 24" x 13" x 7"	C	From Leg	3.00	0.0000	145.00	No Ice	2.60	0.00	0.05
(53 LBs) (Partially Shielded)			0.00			1/2" Ice	2.92	0.00	0.06
(Sprint)			0.00						
(2) Combiners 12" x 6" x 2"	A	From Leg	3.00	0.0000	145.00	No Ice	0.00	0.00	0.01
(10LBs) (Shielded)			0.00			1/2" Ice	0.00	0.00	0.01
(Sprint)			0.00						

tnxTower	Job	Page
	CT46144-A	6 of 16
Vertical Solutions Inc 2002 Production Drive Apex, NC 27539 Phone: (888) 321-6167 FAX: (919) 321-1768	Project 121779 (100%)	Date 17:10:09 10/05/12
	Client TowerCo	Designed by Kingsley

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) Combiners 12" x 6" x 2" (10LBs) (Shielded) (Sprint)	B	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) Combiners 12" x 6" x 2" (10LBs) (Shielded) (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	0.01 0.01
(2) Combiners 12" x 6" x 2" (10LBs) (Partially Shielded) (Sprint)	A	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.00 0.00	0.23 0.35	0.01 0.01
(2) Combiners 12" x 6" x 2" (10LBs) (Partially Shielded) (Sprint)	B	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.00 0.00	0.23 0.35	0.01 0.01
(2) Combiners 12" x 6" x 2" (10LBs) (Partially Shielded) (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.00 0.00	0.23 0.35	0.01 0.01
GPS (Sprint)	C	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.20 0.29	0.20 0.29	0.01 0.01
****LRL******									
(4) 72" x 12" x 6" w/ MP (Landlord Reserved)	A	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	8.40 8.95	6.63 7.44	0.07 0.14
(4) 72" x 12" x 6" w/ MP (Landlord Reserved)	B	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	8.40 8.95	6.63 7.44	0.07 0.14
(4) 72" x 12" x 6" w/ MP (Landlord Reserved)	C	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	8.40 8.95	6.63 7.44	0.07 0.14
(2) 12" x 6" x 4" (TMA/BTS/CPL) (Landlord Reserved)	A	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	0.70 0.82	0.63 0.82	0.02 0.03
(2) 12" x 6" x 4" (TMA/BTS/CPL) (Landlord Reserved)	B	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	0.70 0.82	0.63 0.82	0.02 0.03
(2) 12" x 6" x 4" (TMA/BTS/CPL) (Landlord Reserved)	C	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	0.70 0.82	0.63 0.82	0.02 0.03
GPS (Landlord Reserved)	A	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	0.30 0.43	0.30 0.43	0.00 0.00
GPS (Landlord Reserved)	B	From Leg	3.00 0.00 0.00	0.0000	117.00	No Ice 1/2" Ice	0.30 0.43	0.30 0.43	0.00 0.00
PiROD 13' Low Profile Platform (Landlord Reserved)	A	None		0.0000	117.00	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1.30 1.76

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
24" Dish (Landlord Reserved)	C	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	0.0000		117.00	2.00	No Ice 1/2" Ice	3.14 3.41	0.05 0.07

Load Combinations

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148.5 - 105.25	68.859	29	4.1791	0.0019

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	105.25 - 95.8	33.774	29	3.1946	0.0011
L3	99.88 - 57.5	30.294	29	2.9998	0.0009
L4	57.5 - 47.2	9.605	29	1.5724	0.0003
L5	52.35 - 0	7.987	29	1.4285	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	4' x 12' T-Arm	29	65.776	4.1204	0.0019	15323
137.00	(2) 7770.00 w/ 2" Pipe	29	58.780	3.9819	0.0017	4662
127.00	(2) LPA-80080/6CF w/ MP	29	50.282	3.7875	0.0016	2492
117.00	24" Dish	29	42.268	3.5515	0.0014	1699

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148.5 - 105.25	121.921	5	7.4062	0.0034
L2	105.25 - 95.8	59.851	4	5.6641	0.0019
L3	99.88 - 57.5	53.692	4	5.3191	0.0016
L4	57.5 - 47.2	17.039	4	2.7897	0.0006
L5	52.35 - 0	14.170	4	2.5347	0.0005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
145.00	4' x 12' T-Arm	5	116.466	7.3025	0.0033	8847
137.00	(2) 7770.00 w/ 2" Pipe	5	104.091	7.0574	0.0031	2691
127.00	(2) LPA-80080/6CF w/ MP	5	89.056	6.7135	0.0028	1436
117.00	24" Dish	5	74.876	6.2958	0.0024	977

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	148.5 - 146.338	TP27.008x18x0.1875	43.25	0.00	0.0	39.000	10.8687	-0.11	423.88	0.000
	146.338 - 144.175					39.000	11.1368	-2.04	434.33	0.005
	144.175 - 142.012					39.000	11.4048	-2.15	444.79	0.005
	142.012 - 139.85					39.000	11.6728	-2.27	455.24	0.005
	139.85 - 137.688					39.000	11.9409	-2.38	465.69	0.005
	137.688 - 135 525					39.000	12.2089	-3.94	476.15	0.008
	135.525 - 133.363					39.000	12.4770	-4.06	486.60	0.008
	133.363 - 131.2					39.000	12.7450	-4.19	497.06	0.008
	131.2 - 129.037					39.000	13.0131	-4.32	507.51	0.009
	129.037 - 126.875					39.000	13.2811	-5.76	517.96	0.011
	126.875 - 124.713					39.000	13.5492	-5.90	528.42	0.011
	124.713 - 122.55					39.000	13.8172	-6.05	538.87	0.011
	122.55 - 120.388					39.000	14.0852	-6.20	549.32	0.011
	120.388 - 118.225					39.000	14.3533	-6.36	559.78	0.011
	118.225 - 116.063					39.000	14.6213	-8.30	570.23	0.015
	116.063 - 113.9					39.000	14.8894	-8.48	580.69	0.015
	113.9 - 111.738					39.000	15.1574	-8.66	591.14	0.015
	111.738 - 109.575					39.000	15.4255	-8.85	601.59	0.015
	109.575 - 107.412					39.000	15.6935	-9.04	612.05	0.015
	107.412 - 105.25					39.000	15.9615	-9.24	622.50	0.015
L2	105.25 - 104.176	TP30.5x27.008x0.252	9.45	0.00	0.0	30.000	21.7182	-9.39	651.54	0.014
	104.176 - 103.102					30.000	22.0356	-9.53	661.07	0.014
	103.102 - 102.028					30.000	22.3530	-9.66	670.59	0.014
	102.028 - 100.954					30.000	22.6705	-9.79	680.11	0.014
	100.954 - 99.88					30.000	22.9879	-9.93	689.64	0.014
	99.88 - 95.8					30.000	24.1938	-4.94	725.81	0.007
L3	99.88 - 95.8	TP36.599x28.4883x0.3125	42.38	0.00	0.0	39.000	28.7214	-5.86	1120.13	0.005
	95.8 - 93.7842					39.000	29.1040	-11.10	1135.06	0.010
	93.7842 - 91.7684					39.000	29.4867	-11.40	1149.98	0.010
	91.7684 - 89.7526					39.000	29.8693	-11.70	1164.90	0.010
	89.7526 - 87.7368					39.000	30.2520	-12.01	1179.83	0.010
	87.7368 - 85.7211					39.000	30.6346	-12.32	1194.75	0.010
	85.7211 - 83.7053					39.000	31.0173	-12.63	1209.67	0.010
	83.7053 - 81.6895					39.000	31.3999	-12.95	1224.60	0.011
	81.6895 -					39.000	31.7826	-13.27	1239.52	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	79.6737									
	79.6737 - 77.6579					39.000	32.1652	-13.60	1254.44	0.011
	77.6579 - 75.6421					39.000	32.5479	-13.93	1269.37	0.011
	75.6421 - 73.6263					39.000	32.9305	-14.26	1284.29	0.011
	73.6263 - 71.6105					39.000	33.3131	-14.59	1299.21	0.011
	71.6105 - 69.5947					39.000	33.6958	-14.93	1314.14	0.011
	69.5947 - 67.5789					39.000	34.0784	-15.27	1329.06	0.011
	67.5789 - 65.5632					39.000	34.4611	-15.62	1343.98	0.012
	65.5632 - 63.5474					39.000	34.8437	-15.97	1358.91	0.012
	63.5474 - 61.5316					39.000	35.2264	-16.32	1373.83	0.012
	61.5316 - 59.5158					39.000	35.6090	-16.67	1388.75	0.012
	59.5158 - 57.5					39.000	35.9917	-17.03	1403.68	0.012
L4	57.5 - 56.47	TP39.16x36.599x0.4058 H1-3 (1.33 CR) - 4/5	10.30	0.00	0.0	30.000	46.9470	-17.26	1408.41	0.012
	56.47 - 55.44	H1-3 (1.33 CR) - 4/4				30.000	47.2769	-17.48	1418.31	0.012
	55.44 - 54.41	H1-3 (1.33 CR) - 4/3				30.000	47.6068	-17.70	1428.20	0.012
	54.41 - 53.38	H1-3 (1.33 CR) - 4/2				30.000	47.9366	-17.92	1438.10	0.012
	53.38 - 52.35	H1-3 (1.33 CR) - 4				30.000	48.2665	-18.14	1447.99	0.013
	52.35 - 47.2	H1-3 (1.33 CR) - 4				30.000	49.9158	-10.54	1497.47	0.007
L5	52.35 - 47.2	TP48x37.0679x0.375	52.35	0.00	0.0	39.000	44.9538	-9.44	1753.20	0.005
	47.2 - 44.7158					39.000	45.5713	-20.48	1777.28	0.012
	44.7158 - 42.2316					39.000	46.1887	-20.99	1801.36	0.012
	42.2316 - 39.7474					39.000	46.8062	-21.51	1825.44	0.012
	39.7474 - 37.2632					39.000	47.4237	-22.04	1849.52	0.012
	37.2632 - 34.7789					39.000	48.0411	-22.56	1873.60	0.012
	34.7789 - 32.2947					39.000	48.6586	-23.10	1897.69	0.012
	32.2947 - 29.8105					39.000	49.2761	-23.64	1921.77	0.012
	29.8105 - 27.3263					39.000	49.8935	-24.18	1945.85	0.012
	27.3263 - 24.8421					39.000	50.5110	-24.73	1969.93	0.013
	24.8421 - 22.3579					39.000	51.1285	-25.29	1994.01	0.013
	22.3579 - 19.8737					39.000	51.7459	-25.85	2018.09	0.013
	19.8737 - 17.3895					39.000	52.3634	-26.42	2042.17	0.013
	17.3895 - 14.9053					39.000	52.9809	-26.99	2066.25	0.013

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	14.9053 - 12.4211					39.000	53.5983	-27.56	2090.33	0.013
	12.4211 - 9.93684					39.000	54.2158	-28.15	2114.42	0.013
	9.93684 - 7.45263					39.000	54.8333	-28.73	2138.50	0.013
	7.45263 - 4.96842					39.000	55.4507	-29.33	2162.58	0.014
	4.96842 - 2.48421					39.000	56.0682	-29.93	2186.66	0.014
	2.48421 - 0					39.000	56.6857	-30.53	2210.74	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	148.5 - 146.338	TP27.008x18x0.1875	0.12	-0.029	39.000	0.001	0.00	0.000	39.000	0.000
	146.338 - 144.175		3.82	-0.892	39.000	0.023	0.00	0.000	39.000	0.000
	144.175 - 142.012		13.08	-2.916	39.000	0.075	0.00	0.000	39.000	0.000
	142.012 - 139.85		22.58	-4.805	39.000	0.123	0.00	0.000	39.000	0.000
	139.85 - 137.688		32.33	-6.571	39.000	0.168	0.00	0.000	39.000	0.000
	137.688 - 135.525		46.37	-9.015	39.000	0.231	0.00	0.000	39.000	0.000
	135.525 - 133.363		62.56	-11.642	39.000	0.299	0.00	0.000	39.000	0.000
	133.363 - 131.2		78.99	-14.086	39.000	0.361	0.00	0.000	39.000	0.000
	131.2 - 129.037		95.67	-16.361	39.000	0.420	0.00	0.000	39.000	0.000
	129.037 - 126.875		113.11	-18.568	39.000	0.476	0.00	0.000	39.000	0.000
	126.875 - 124.713		139.09	-21.935	39.000	0.562	0.00	0.000	39.000	0.000
	124.713 - 122.55		165.32	-25.066	39.000	0.643	0.00	0.000	39.000	0.000
	122.55 - 120.388		191.79	-27.980	39.000	0.717	0.00	0.000	39.000	0.000
	120.388 - 118.225		218.52	-30.695	39.000	0.787	0.00	0.000	39.000	0.000
	118.225 - 116.063		250.15	-33.856	39.000	0.868	0.00	0.000	39.000	0.000
	116.063 - 113.9		287.64	-37.537	39.000	0.962	0.00	0.000	39.000	0.000
	113.9 - 111.738		325.37	-40.967	39.000	1.050	0.00	0.000	39.000	0.000
	111.738 - 109.575		363.35	-44.166	39.000	1.132	0.00	0.000	39.000	0.000
	109.575 - 107.412		401.56	-47.152	39.000	1.209	0.00	0.000	39.000	0.000
	107.412 -		440.00	-49.940	39.000	1.281	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	105.25									
L2	105.25 - 104.176	TP30.5x27.008x0.252	459.20	-37.921	30.000	1.264	0.00	0.000	30.000	0.000
	104.176 - 103.102		478.45	-38.375	30.000	1.279	0.00	0.000	30.000	0.000
	103.102 - 102.028		497.77	-38.795	30.000	1.293	0.00	0.000	30.000	0.000
	102.028 - 100.954		517.19	-39.182	30.000	1.306	0.00	0.000	30.000	0.000
	100.954 - 99.88		536.67	-39.538	30.000	1.318	0.00	0.000	30.000	0.000
	99.88 - 95.8		287.76	-19.131	30.000	0.638	0.00	0.000	30.000	0.000
L3	99.88 - 95.8	TP36.599x28.4883x0.3125	323.67	-18.981	39.000	0.487	0.00	0.000	39.000	0.000
	95.8 - 93.7842		648.80	-37.049	39.000	0.950	0.00	0.000	39.000	0.000
	93.7842 - 91.7684		686.42	-38.181	39.000	0.979	0.00	0.000	39.000	0.000
	91.7684 - 89.7526		724.27	-39.255	39.000	1.007	0.00	0.000	39.000	0.000
	89.7526 - 87.7368		762.37	-40.276	39.000	1.033	0.00	0.000	39.000	0.000
	87.7368 - 85.7211		800.71	-41.246	39.000	1.058	0.00	0.000	39.000	0.000
	85.7211 - 83.7053		839.28	-42.168	39.000	1.081	0.00	0.000	39.000	0.000
	83.7053 - 81.6895		878.09	-43.044	39.000	1.104	0.00	0.000	39.000	0.000
	81.6895 - 79.6737		917.14	-43.877	39.000	1.125	0.00	0.000	39.000	0.000
	79.6737 - 77.6579		956.42	-44.669	39.000	1.145	0.00	0.000	39.000	0.000
	77.6579 - 75.6421		995.93	-45.422	39.000	1.165	0.00	0.000	39.000	0.000
	75.6421 - 73.6263		1035.68	-46.138	39.000	1.183	0.00	0.000	39.000	0.000
	73.6263 - 71.6105		1075.66	-46.820	39.000	1.201	0.00	0.000	39.000	0.000
	71.6105 - 69.5947		1115.87	-47.468	39.000	1.217	0.00	0.000	39.000	0.000
	69.5947 - 67.5789		1156.31	-48.085	39.000	1.233	0.00	0.000	39.000	0.000
	67.5789 - 65.5632		1196.97	-48.672	39.000	1.248	0.00	0.000	39.000	0.000
	65.5632 - 63.5474		1237.86	-49.230	39.000	1.262	0.00	0.000	39.000	0.000
	63.5474 - 61.5316		1278.97	-49.762	39.000	1.276	0.00	0.000	39.000	0.000
	61.5316 - 59.5158		1320.32	-50.267	39.000	1.289	0.00	0.000	39.000	0.000
	59.5158 - 57.5		1361.88	-50.749	39.000	1.301	0.00	0.000	39.000	0.000
L4	57.5 - 56.47	TP39.16x36.599x0.4058	1383.21	-39.437	30.000	1.315	0.00	0.000	30.000	0.000
	56.47 - 55.44		1404.59	-39.487	30.000	1.316	0.00	0.000	30.000	0.000
	55.44 - 54.41		1426.04	-39.533	30.000	1.318	0.00	0.000	30.000	0.000
	54.41 - 53.38		1447.54	-39.576	30.000	1.319	0.00	0.000	30.000	0.000
	53.38 - 52.35		1469.12	-39.616	30.000	1.321	0.00	0.000	30.000	0.000
	52.35 - 47.2		847.98	-21.373	30.000	0.712	0.00	0.000	30.000	0.000
L5	52.35 - 47.2	TP48x37.0679x0.375	730.10	-20.955	39.000	0.537	0.00	0.000	39.000	0.000
	47.2 - 44.7158		1631.23	-45.553	39.000	1.168	0.00	0.000	39.000	0.000
	44.7158 - 42.2316		1684.69	-45.790	39.000	1.174	0.00	0.000	39.000	0.000
	42.2316 -		1738.44	-46.007	39.000	1.180	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{bv}}{F_{bv}}$
	39.7474									
	39.7474 - 37.2632		1792.47	-46.204	39.000	1.185	0.00	0.000	39.000	0.000
	37.2632 - 34.7789		1846.80	-46.383	39.000	1.189	0.00	0.000	39.000	0.000
	34.7789 - 32.2947		1901.42	-46.545	39.000	1.193	0.00	0.000	39.000	0.000
	32.2947 - 29.8105		1956.33	-46.691	39.000	1.197	0.00	0.000	39.000	0.000
	29.8105 - 27.3263		2011.52	-46.822	39.000	1.201	0.00	0.000	39.000	0.000
	27.3263 - 24.8421		2067.00	-46.939	39.000	1.204	0.00	0.000	39.000	0.000
	24.8421 - 22.3579		2122.78	-47.044	39.000	1.206	0.00	0.000	39.000	0.000
	22.3579 - 19.8737		2178.84	-47.136	39.000	1.209	0.00	0.000	39.000	0.000
	19.8737 - 17.3895		2235.20	-47.216	39.000	1.211	0.00	0.000	39.000	0.000
	17.3895 - 14.9053		2291.85	-47.286	39.000	1.212	0.00	0.000	39.000	0.000
	14.9053 - 12.4211		2348.78	-47.346	39.000	1.214	0.00	0.000	39.000	0.000
	12.4211 - 9.93684		2406.01	-47.397	39.000	1.215	0.00	0.000	39.000	0.000
	9.93684 - 7.45263		2463.53	-47.439	39.000	1.216	0.00	0.000	39.000	0.000
	7.45263 - 4.96842		2521.33	-47.473	39.000	1.217	0.00	0.000	39.000	0.000
	4.96842 - 2.48421		2579.43	-47.499	39.000	1.218	0.00	0.000	39.000	0.000
	2.48421 - 0		2637.82	-47.517	39.000	1.218	0.00	0.000	39.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	148.5 - 146.338	TP27.008x18x0.1875	0.000	0.001	0.000	0.001 ✓	1.333	H1-3 ✓
	146.338 - 144.175		0.005	0.023	0.000	0.028 ✓	1.333	H1-3 ✓
	144.175 - 142.012		0.005	0.075	0.000	0.080 ✓	1.333	H1-3 ✓
	142.012 - 139.85		0.005	0.123	0.000	0.128 ✓	1.333	H1-3 ✓
	139.85 - 137.688		0.005	0.168	0.000	0.174 ✓	1.333	H1-3 ✓
	137.688 - 135.525		0.008	0.231	0.000	0.239 ✓	1.333	H1-3 ✓
	135.525 - 133.363		0.008	0.299	0.000	0.307 ✓	1.333	H1-3 ✓
	133.363 - 131.2		0.008	0.361	0.000	0.370 ✓	1.333	H1-3 ✓

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	131.2 - 129.037		0.009	0.420	0.000	0.428 ✓	1.333	H1-3 ✓
	129.037 - 126.875		0.011	0.476	0.000	0.487 ✓	1.333	H1-3 ✓
	126.875 - 124.713		0.011	0.562	0.000	0.574 ✓	1.333	H1-3 ✓
	124.713 - 122.55		0.011	0.643	0.000	0.654 ✓	1.333	H1-3 ✓
	122.55 - 120.388		0.011	0.717	0.000	0.729 ✓	1.333	H1-3 ✓
	120.388 - 118.225		0.011	0.787	0.000	0.798 ✓	1.333	H1-3 ✓
	118.225 - 116.063		0.015	0.868	0.000	0.883 ✓	1.333	H1-3 ✓
	116.063 - 113.9		0.015	0.962	0.000	0.977 ✓	1.333	H1-3 ✓
	113.9 - 111.738		0.015	1.050	0.000	1.065 ✓	1.333	H1-3 ✓
	111.738 - 109.575		0.015	1.132	0.000	1.147 ✓	1.333	H1-3 ✓
	109.575 - 107.412		0.015	1.209	0.000	1.224 ✓	1.333	H1-3 ✓
	107.412 - 105.25		0.015	1.281	0.000	1.295 ✓	1.333	H1-3 ✓
L2	105.25 - 104.176	TP30.5x27.008x0.252	0.014	1.264	0.000	1.278 ✓	1.333	H1-3 ✓
	104.176 - 103.102		0.014	1.279	0.000	1.294 ✓	1.333	H1-3 ✓
	103.102 - 102.028		0.014	1.293	0.000	1.308 ✓	1.333	H1-3 ✓
	102.028 - 100.954		0.014	1.306	0.000	1.320 ✓	1.333	H1-3 ✓
	100.954 - 99.88		0.014	1.318	0.000	1.332 ✓	1.333	H1-3 ✓
	99.88 - 95.8		0.007	0.638	0.000	0.645 ✓	1.333	H1-3 ✓
L3	99.88 - 95.8	TP36.599x28.4883x0.3125	0.005	0.487	0.000	0.492 ✓	1.333	H1-3 ✓
	95.8 - 93.7842		0.010	0.950	0.000	0.960 ✓	1.333	H1-3 ✓
	93.7842 - 91.7684		0.010	0.979	0.000	0.989 ✓	1.333	H1-3 ✓
	91.7684 - 89.7526		0.010	1.007	0.000	1.017 ✓	1.333	H1-3 ✓
	89.7526 - 87.7368		0.010	1.033	0.000	1.043 ✓	1.333	H1-3 ✓
	87.7368 - 85.7211		0.010	1.058	0.000	1.068 ✓	1.333	H1-3 ✓
	85.7211 - 83.7053		0.010	1.081	0.000	1.092 ✓	1.333	H1-3 ✓
	83.7053 - 81.6895		0.011	1.104	0.000	1.114 ✓	1.333	H1-3 ✓

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	81.6895 - 79.6737		0.011	1.125	0.000	1.136 ✓	1.333	H1-3 ✓
	79.6737 - 77.6579		0.011	1.145	0.000	1.156 ✓	1.333	H1-3 ✓
	77.6579 - 75.6421		0.011	1.165	0.000	1.176 ✓	1.333	H1-3 ✓
	75.6421 - 73.6263		0.011	1.183	0.000	1.194 ✓	1.333	H1-3 ✓
	73.6263 - 71.6105		0.011	1.201	0.000	1.212 ✓	1.333	H1-3 ✓
	71.6105 - 69.5947		0.011	1.217	0.000	1.229 ✓	1.333	H1-3 ✓
	69.5947 - 67.5789		0.011	1.233	0.000	1.244 ✓	1.333	H1-3 ✓
	67.5789 - 65.5632		0.012	1.248	0.000	1.260 ✓	1.333	H1-3 ✓
	65.5632 - 63.5474		0.012	1.262	0.000	1.274 ✓	1.333	H1-3 ✓
	63.5474 - 61.5316		0.012	1.276	0.000	1.288 ✓	1.333	H1-3 ✓
	61.5316 - 59.5158		0.012	1.289	0.000	1.301 ✓	1.333	H1-3 ✓
	59.5158 - 57.5		0.012	1.301	0.000	1.313 ✓	1.333	H1-3 ✓
L4	57.5 - 56.47	TP39.16x36.599x0.4058	0.012	1.315	0.000	1.327 ✓	1.333	H1-3 ✓
	56.47 - 55.44		0.012	1.316	0.000	1.329 ✓	1.333	H1-3 ✓
	55.44 - 54.41		0.012	1.318	0.000	1.330 ✓	1.333	H1-3 ✓
	54.41 - 53.38		0.012	1.319	0.000	1.332 ✓	1.333	H1-3 ✓
	53.38 - 52.35		0.013	1.321	0.000	1.333 ✗	1.333	H1-3 ✗
	52.35 - 47.2		0.007	0.712	0.000	0.719 ✓	1.333	H1-3 ✓
L5	52.35 - 47.2	TP48x37.0679x0.375	0.005	0.537	0.000	0.543 ✓	1.333	H1-3 ✓
	47.2 - 44.7158		0.012	1.168	0.000	1.180 ✓	1.333	H1-3 ✓
	44.7158 - 42.2316		0.012	1.174	0.000	1.186 ✓	1.333	H1-3 ✓
	42.2316 - 39.7474		0.012	1.180	0.000	1.191 ✓	1.333	H1-3 ✓
	39.7474 - 37.2632		0.012	1.185	0.000	1.197 ✓	1.333	H1-3 ✓
	37.2632 - 34.7789		0.012	1.189	0.000	1.201 ✓	1.333	H1-3 ✓
	34.7789 - 32.2947		0.012	1.193	0.000	1.206 ✓	1.333	H1-3 ✓
	32.2947 - 29.8105		0.012	1.197	0.000	1.209 ✓	1.333	H1-3 ✓
	29.8105 - 27.3263		0.012	1.201	0.000	1.213	1.333	H1-3 ✓

tnxTower	Job	Page
	CT46144-A	16 of 16
Vertical Solutions Inc 2002 Production Drive Apex, NC 27539 Phone: (888) 321-6167 FAX: (919) 321-1768	Project 121779 (100%)	Date 17:10:09 10/05/12
	Client TowerCo	Designed by Kingsley

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	27.3263 - 24.8421		0.013	1.204	0.000	1.216	1.333	H1-3
	24.8421 - 22.3579		0.013	1.206	0.000	1.219	1.333	H1-3
	22.3579 - 19.8737		0.013	1.209	0.000	1.221	1.333	H1-3
	19.8737 - 17.3895		0.013	1.211	0.000	1.224	1.333	H1-3
	17.3895 - 14.9053		0.013	1.212	0.000	1.226	1.333	H1-3
	14.9053 - 12.4211		0.013	1.214	0.000	1.227	1.333	H1-3
	12.4211 - 9.93684		0.013	1.215	0.000	1.229	1.333	H1-3
	9.93684 - 7.45263		0.013	1.216	0.000	1.230	1.333	H1-3
	7.45263 - 4.96842		0.014	1.217	0.000	1.231	1.333	H1-3
	4.96842 - 2.48421		0.014	1.218	0.000	1.232	1.333	H1-3
	2.48421 - 0		0.014	1.218	0.000	1.232	1.333	H1-3

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	148.5 - 105.25	Pole	TP27.008x18x0.1875	1	-9.24	829.79	97.2	Pass
L2	105.25 - 95.8	Pole	TP30.5x27.008x0.252	2	-9.93	919.29	100.0	Pass
L3	95.8 - 57.5	Pole	TP36.599x28.4883x0.3125	3	-17.03	1871.11	98.5	Pass
L4	57.5 - 47.2	Pole	TP39.16x36.599x0.4058	4	-18.14	1930.17	100.0	Pass
L5	47.2 - 0	Pole	TP48x37.0679x0.375	5	-30.53	2946.92	92.4	Pass
							Summary	
						Pole (L4)	100.0	Pass
						RATING =	**100.0**	**Pass**

vertical solutions

Design	0

	Initials	Date
Produced By:	KCI	10/2/2012
Checked By:	MER	10/2/2012

SELF-SUPPORTING POLE STRUCTURE REINFORCEMENT DESIGN, TIA-222-F

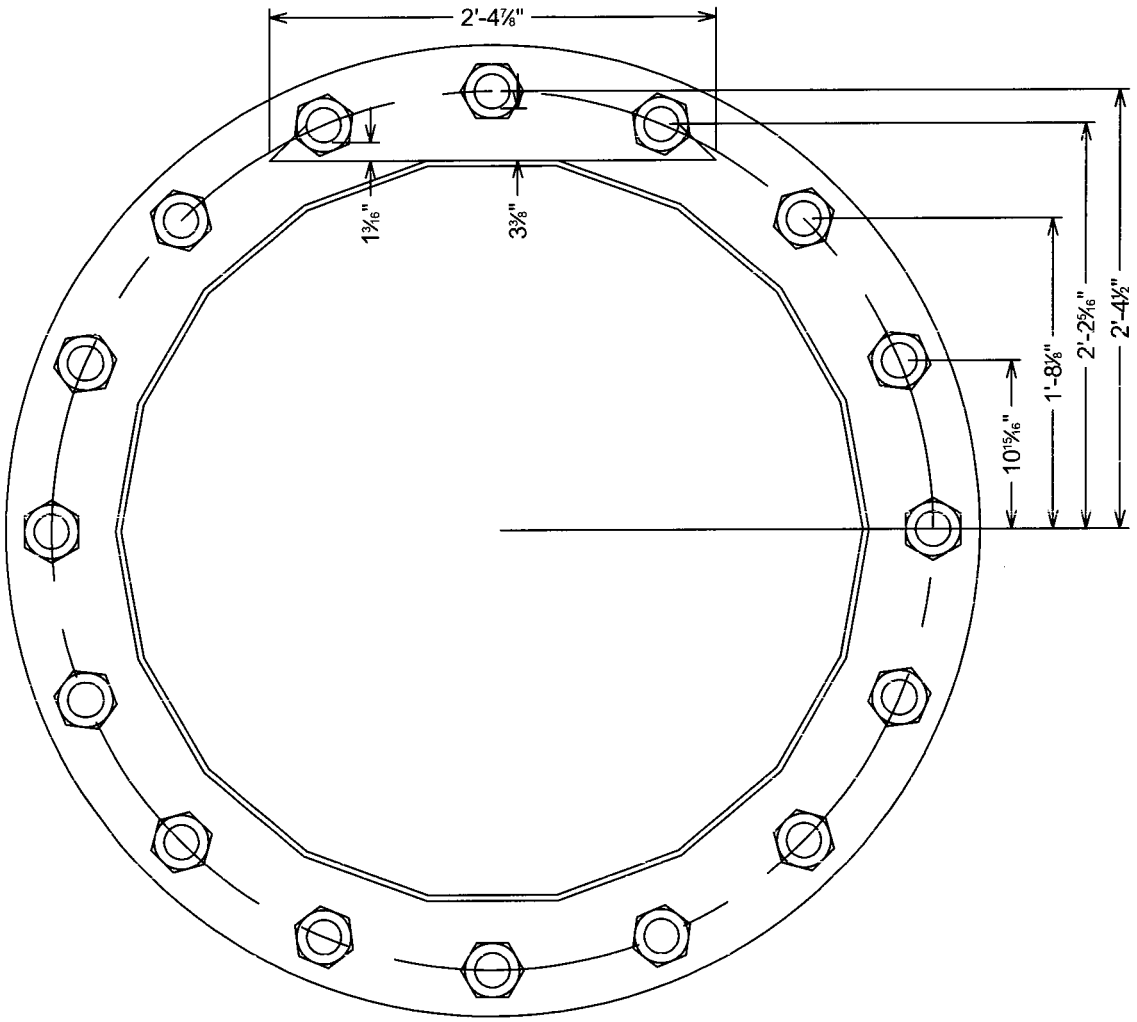
VSi Job #	121779	
Client Site Name:	Cammilletti Property, CT	
Client Site Number:	CT2021	
Analysis Company:	Vertical Solutions	
Analysis Date:	10/02/2012	
Hole Size Allowance:	0.0625	inches
Allowable Stress Increase	133%	
Design Percentage	100%	
	133%	

vertical solutions

Pole Geometry									CT2021	121779
Section #	Sides # (12,16,18,0)	Elevation (ft) TOP	Elevation (ft) BOTTOM	Dia Across Flats (in) TOP	Dia Across Flats (in) BOTTOM	Splice (ft)	Thickness (in)	Material Specification	Taper (in/ft)	Length (ft)
1	18	148.5	95.8	18.00	28.99	4.08	0.1875	A572-65	0.209	52.70
2	18	99.9	47.2	27.76	38.77	5.33	0.3125	A572-65	0.209	52.68
3	18	52.5	0.0	37.03	48.00	0.00	0.3750	A572-65	0.209	52.53

vertical solutions

																								CT2021	121779
				Bar	Bar Width	Bar Thickness	Bar Length	OS Number	r_{max}	r_b Pole	r_c	r_t Gross	rt Net	r_{BS}	r_b Bar	r_b Pole	r_v	L_{weld}	L_{plate}	t Model	F_y Model	I Model	MOI total	r_t	D_o Model	t_A Model
	(ft)	(kip-ft)		(3-4)	(in)	(in)	(in)											(in)	(in)	(in)	(ksi)	(in^4)	(in^4)		(in)	(in)
F	105.25	440	1	3	4.50	1.5	24	6	88%	39%	64%	49%	75%	31%	15%	88%	87%	6	27	0.54	42	4683	3509	133%	28.52	0.54
E	100	536.71	1	3	4.50	1.5	24	100	87%	45%	73%	56%	87%	3%	1%	6%	6%	6	309	0.54	42	5254	3854	136%	29.61	0.54
D	95.75	648.94	1	3	4.50	1.5	24	8	100%	53%	85%	65%	100%	33%	15%	88%	87%	7	34	0.54	42	5749	4149	139%	30.50	0.54
C	57.5	1362.58	2	3	6.00	1.5	24	10	93%	55%	85%	65%	91%	34%	16%	57%	93%	10	43	0.54	42	11344	10873	104%	38.12	0.54
B	52.5	1469.85	2	3	6.00	1.5	24	100	94%	55%	88%	67%	94%	4%	2%	6%	10%	10	313	0.54	42	12316	11674	105%	39.16	0.54
A	47.2	1631.92	2	3	6.00	1.5	24	11	100%	58%	93%	71%	100%	34%	16%	56%	92%	10	46	0.54	42	13406	12565	107%	40.27	0.54



Base Plate

SCALE: 1" = 1'-0"

PROJECT INFORMATION:

CAMMILLETTI PROPERTY
CT46144-A

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

REV	DATE:	Issued For:
0	10-02-12	SBA Towers

DRAWN BY: KCI | CHECKED BY: AVF

SHEET NUMBER: **BPL**

REVISION: 0

VSI #: 121779

PLANS PREPARED FOR:

SBA

5900 Broken Sound Pkwy
Boca Raton, FL 33487
Office (919) 557-0555

PLANS PREPARED BY:

vertical solutions

2002 Production Drive
Apex, NC 27539
Office: (888) 321-6167
Fax: (919) 321-1768

VSi Job No.: 121779
Date: 10/02/2012
Calculated by: KCI

FLANGE PLATE DESIGN, DEFORMATION METHOD (DIFFERENT AREAS)

CONSTANTS:

$psi \equiv \frac{lb}{in^2}$

$ksi \equiv 1000 \cdot psi$

$kip \equiv 1000 \cdot lb$

Input -

$M := 2638 \cdot kip \cdot ft$ = moment at top of flange plate

$P := 31 \cdot kip$ = axial load (use zero if base plate is grouted)

$F_y := 60 \cdot ksi$ = yield stress of flange plate

$b_{eff} := 28.875 \cdot in$ = effective width of flange plate in flexure

$t := 2 \cdot in$ = thickness of flange plate

$ASI := 133 \cdot \%$ = allowable stress increase

$$Q := \begin{pmatrix} 2 \\ 4 \\ 4 \\ 4 \\ 2 \end{pmatrix} \qquad d := \begin{pmatrix} 2 \cdot 12 + 4 + \frac{1}{2} \\ 2 \cdot 12 + 2 + \frac{5}{16} \\ 12 + 8 + \frac{1}{8} \\ 10 + \frac{15}{16} \\ 0 \end{pmatrix} \cdot in \qquad A_{stiff} := \begin{pmatrix} 3.98 \\ 3.98 \\ 3.98 \\ 3.98 \\ 3.98 \end{pmatrix} in^2 \qquad A_{stress} := \begin{pmatrix} 3.25 \\ 3.25 \\ 3.25 \\ 3.25 \\ 3.25 \end{pmatrix} in^2 \qquad F_t := \begin{pmatrix} 0.6 \cdot 75 \\ 0.6 \cdot 75 \\ 0.6 \cdot 75 \\ 0.6 \cdot 75 \\ 0.6 \cdot 75 \end{pmatrix} \cdot ksi$$

Output -

$\sum \overrightarrow{(Q)} = 16$ $\qquad sumQAd := \sum \overrightarrow{\left(Q \cdot d^2 \cdot A_{stiff}\right)}$

$sumQAd = 25840 \cdot in^4$

$$R := \frac{M \cdot \overrightarrow{\left(d \cdot A_{stiff}\right)}}{sumQAd} + \frac{P \cdot A_{stiff}}{\sum \overrightarrow{\left(A_{stiff} \cdot Q\right)}}$$

$$f_t := \overrightarrow{\left(\frac{R}{A_{stress}}\right)} \qquad r := \overrightarrow{\left(\frac{f_t}{ASI \cdot F_t}\right)}$$

$$R = \begin{pmatrix} 140.9 \\ 130.2 \\ 100.1 \\ 55.3 \\ 1.9 \end{pmatrix} \cdot kip \qquad f_t = \begin{pmatrix} 43.4 \\ 40.1 \\ 30.8 \\ 17.0 \\ 0.6 \end{pmatrix} \cdot ksi \qquad r = \begin{pmatrix} 72 \\ 67 \\ 51 \\ 28 \\ 1 \end{pmatrix} \cdot \%$$

Q = quantity of fasteners

d = distance from center

A = area of fastener

Ft = allowable tension stress

$$\underset{\sim}{m} := \begin{pmatrix} 3 + \frac{3}{8} \\ 1 + \frac{3}{16} \\ 0 \\ 0 \\ 0 \end{pmatrix} \cdot in \qquad M_{PL} := \overrightarrow{\left[\left(\frac{Q}{2}\right) \cdot R \cdot m\right]}$$

$$M_{PL} = \begin{pmatrix} 39.6 \\ 25.8 \\ 0.0 \\ 0.0 \\ 0.0 \end{pmatrix} \cdot kip \cdot ft \qquad \sum M_{PL} = 784.8 \cdot kip \cdot in$$

$$f_b := \frac{\sum M_{PL}}{\left(\frac{b_{eff} \cdot t^2}{6}\right)} \qquad f_b = 40.8 \cdot ksi$$

$$F'_b := ASI \cdot 0.75 \cdot F_y$$

$$r_b := \frac{f_b}{F'_b} \qquad r_b = 68 \cdot \%$$

vertical solutions

VSi Job No.: 121779
Date: 10/02/2012
Calculated by: KCI

PAD AND PIER FOUNDATION DESIGN FOR SELF-SUPPORTING POLE STRUCTURE: ANSI TIA-222-F

Inputs: Reactions

$M := 2638 \cdot k \cdot ft$ = Overturning moment at top of pier, unfactored

$P := 31 \cdot k$ = Axial load at top of pier unfactored

$V := 24 \cdot k$ = Shear load at top of pier unfactored

Inputs: Concrete

$B_{pad} := 22.5 \cdot ft$ = Pad width (and length)

$B_{pier} := 6.5 \cdot ft$ = Pier diameter

$H := 12 \cdot in$ = Distance from top of pier to top of grade

$z_{pad} := 6.5 \cdot ft$ = Pad depth

$t_{pad} := 3 \cdot ft$ = Pad thickness

$f'_c := 4000 \cdot psi$ = specified 28-day compressive strength

$\gamma_c := 150 \cdot pcf$ = Density of concrete

Inputs: Rebar and Anchorage

$d_{tie} := 0.5 \cdot in$ = diameter of tie in pier

$d_{vert} := 1 \cdot in$ = diameter of verticals in pier

$n_{vert} := 40$ = number of verticals in pier

$d_{hTop} := 1 \cdot in$ = diameter of horizontal bars in top of pad

$n_{hTop} := 23$ = number of horizontal bars in top of pad

$d_{hBot} := 1 \cdot in$ = diameter of horizontal bars in bottom of pad

$n_{hBot} := 32$ = number of horizontal bars in bottom of pad

$cover := 3 \cdot in$ = distanced from outside of concrete to edge of rebar

$BC := 57 \cdot in$ = bolt-circle diameter for anchor rods

$d_{template} := 6 \cdot in$ = anchor rod template width

$embed := 84 \cdot in$ = anchor rod embedment

$f_y := 60 \cdot ksi$ = specified minimum yield strength of rebar

Inputs: Strength

$\Phi M_{nPier} := 5849 \cdot k \cdot ft$ = nominal flexural resistance, positive moment [Pier.lpd (A-02)]

$\Phi M_{nBot} := 3489 \cdot k \cdot ft$ = nominal flexural resistance, positive moment [BM-FLEX_MnPadBot.xmcd (A-03)]

$\Phi M_{nTop} := 2527 \cdot k \cdot ft$ = nominal flexural resistance, negative moment [BM-FLEX_MnPadTop.xmcd (A-03)]

Inputs: Soil

$\gamma_s := 125 \cdot pcf$ = Density of soil

$q'_{all} := 6000 \cdot psf$ = Net allowable bearing pressure

$\psi := 0.59$ = coefficient of friction

CONSTANTS:

$kip \equiv 1000 \cdot lbf$

$ksi \equiv \frac{kip}{in^2}$

$G \equiv 11200 \cdot ksi$

$E \equiv 29000 \cdot ksi$

$pcf \equiv \frac{lb}{ft^3}$

$psf \equiv \frac{lb}{ft^2}$

$k \equiv 1000 \cdot lb$

$\Phi_s \equiv 0.75$

Ouput: Factored Reactions

$M_u := 1.3 \cdot M$ = Overturning moment at top of pier, factored $M_u = 3429 \cdot k \cdot ft$

$P_u := 1.3P$ = Axial load at top of pier, factored $P_u = 40 \cdot k$

$V_u := 1.3V$ = Shear load at top of pier, factored $V_u = 31 \cdot k$

Output: Dead Loads

$$V_{pier} := \frac{\pi \cdot B_{pier}^{2}}{4}\left(z_{pad} - t_{pad} + H\right)$$

$D_{pier} := V_{pier} \cdot \gamma_c$ $D_{pier} = 22.4 \cdot k$

$V_{pad} := B_{pad}^{2} \cdot t_{pad}$

$D_{pad} := V_{pad} \cdot \gamma_c$ $D_{pad} = 227.8 \cdot k$

$$V_{soil} := B_{pad}^{2} \cdot \left(z_{pad} - t_{pad}\right) - V_{pier} + \frac{\pi \cdot B_{pier}^{2}}{4} \cdot H$$

$D_{soil} := V_{soil} \cdot \gamma_s$ $D_{soil} = 207.0 \cdot k$

Output: Eccentricity:

$P_{total} := D_{pier} + D_{pad} + D_{soil} + P$ $P_{total} = 488.2 \cdot k$

$M_{total} := M + V \cdot \left(H + z_{pad}\right)$ $M_{total} = 2818 \cdot k \cdot ft$

$$ecc := \frac{M_{total}}{P_{total}}$$ $ecc = 5.77\ ft$

$$limit := \frac{B_{pad}}{6}$$ $limit = 3.75\ ft$

$$X := 3 \cdot \left(\frac{B_{pad}}{2} - ecc\right)$$ $X = 16.43\ ft$

Output: Bearing pressures, unfactored (bottom)

$$q_{max1} := \frac{P_{total}}{B_{pad}^{2}} + \frac{M_{total}}{B_{pad}^{3}}$$ $q_{max1} = 2449 \cdot psf$

$$q_{max2} := \frac{2 \cdot P_{total}}{3 \cdot B_{pad}^{2} \cdot \left(0.5 - \frac{ecc}{B_{pad}}\right)}$$ $q_{max2} = 2641 \cdot psf$

$$q_{max} := if\left(ecc > \frac{B_{pad}}{6}, q_{max2}, q_{max1}\right)$$ $q_{max} = 2641 \cdot psf$

$$q_{min1} := \frac{P_{total}}{B_{pad}^{2}} + \frac{M_{total}}{B_{pad}^{3}}$$ $q_{min1} = 1212 \cdot psf$

$$B_{cant} := \frac{B_{pad} - B_{pier}}{2}$$ $B_{cant} = 8.00\,ft$

$$q_{pier1} := q_{min1} + (q_{max1} - q_{min1}) \cdot \frac{B_{pad} - B_{cant}}{B_{pad}}$$

$$q_{pier2} := q_{max} \cdot \left(\frac{X - B_{cant}}{X}\right)$$

$$q_{pier} := if(ecc < limit, q_{pier1}, if(q_{pier2} > 0, q_{pier2}, 0))$$ $q_{pier} = 1355 \cdot psf$

$$q'_{max} := q_{max} - \gamma_s \cdot z_{pad}$$ $q'_{max} = 1828 \cdot psf$

Calculate qu, Bottom

$$q_{uMax} := 1.3 \cdot [q_{max} - \gamma_c \cdot t_{pad} - \gamma_s \cdot (z_{pad} - t_{pad})]$$ $q_{uMax} = 2279 \cdot psf$

$$q_{uPier} := 1.3 \cdot [q_{pier} - \gamma_c t_{pad} - \gamma_s \cdot (z_{pad} - t_{pad})]$$ $q_{uPier} = 608 \cdot psf$

Calculate qu, Top

$$q_{uTop} := 1.3[\gamma_c t_{pad} + \gamma_s \cdot (z_{pad} - t_{pad})]$$ $q_{uTop} = 1154 \cdot psf$

Calculate shear nominal resistances

$$A_{pier} := \frac{\pi \cdot B_{pier}^{2}}{4}$$ $A_{pier} = 4778 \cdot in^2$

$$\Phi V_{cPier} := 0.85 \cdot 2 \cdot \frac{\sqrt{\frac{f_c}{psi}}}{1000} \cdot \frac{A_{pier}}{in^2} \cdot 1k$$ $\Phi V_{cPier} = 514 \cdot k$

$$d_{Bot} := t_{pad} - cover - 1.5 \cdot d_{hBot}$$ $d_{Bot} = 31.50 \cdot in$

$$\Phi V_{cPad} := 0.85 \cdot 2 \cdot \frac{\sqrt{\frac{f_c}{psi}}}{1000} \left(\frac{B_{pad}}{1 \cdot in} \cdot \frac{d_{Bot}}{1 \cdot in}\right) \cdot 1k$$ $\Phi V_{cPad} = 914 \cdot k$

Calculate Factored Forces in Pier:

$$M_{uPier} := M_u + V_u \cdot (H + z_{pad} - t_{pad})$$ $M_{uPier} = 3570 \cdot k \cdot ft$

$$V_{uPier} := V_u$$ $V_{uPier} = 31 \cdot k$

Calculate Factored Forces in Pad, Postive:

$$R_r := if(q_{uPier} > 0 \cdot psf, q_{uPier} \cdot B_{pad} \cdot B_{cant}, 0)$$

$$R_t := if\left[X < B_{cant}, \frac{1}{2} \cdot q_{uMax} \cdot X \cdot B_{pad}, \frac{1}{2} \cdot (q_{uMax} - q_{uPier}) \cdot B_{cant} \cdot B_{pad}\right]$$

$$M_{uR} := R_r \cdot \frac{B_{cant}}{2}$$

$$M_{uT} := \text{if}\left[X > B_{cant}, R_t \cdot \frac{2}{3} \cdot B_{cant}, R_t \cdot \left(B_{cant} - \frac{X}{3}\right)\right]$$

$$M_{uBot} := M_{uR} + M_{uT} \qquad M_{uBot} = 1240 \cdot k \cdot ft$$

$$V_{uBot} := R_r + R_t \qquad V_{uBot} = 260 \cdot k$$

Calculate Factored Forces in Pad, Negative:

$$M_{uTop} := q_{uTop} \cdot B_{cant} \cdot B_{pad} \cdot \frac{B_{cant}}{2} \qquad M_{uTop} = 831 \cdot k \cdot ft$$

$$V_{uTop} := q_{uTop} \cdot B_{cant} \cdot B_{pad} \qquad V_{uTop} = 208 \cdot k$$

Calculate Overturning Stability:

$$OTM_{total} := M + V \cdot \left(H + z_{pad}\right) \qquad OTM_{total} = 2818 \cdot k \cdot ft$$

$$OTM_r := P_{total} \cdot \frac{B_{pad}}{2} \qquad OTM_r = 5492 \cdot k \cdot ft$$

Calculate Sliding Stability:

$$H_{total} := V \qquad H_{total} = 24 \cdot k$$

$$H_r := \left(D_{pier} + D_{pad} + P\right) \cdot \psi \qquad H_r = 166 \cdot k$$

Design Checks, Soil:

$$r_{q'} := \frac{q'_{max}}{q'_{all}} \qquad \text{Net Bearing Pressure} \qquad r_{q'} = 30 \cdot \%$$

$$r_{OTM} := \frac{OTM_{total}}{\frac{OTM_r}{1.5}} \qquad \text{Overturning Stability} \qquad r_{OTM} = 77 \cdot \%$$

$$r_H := \frac{H_{total}}{\frac{H_r}{2.0}} \qquad \text{Sliding Stability} \qquad r_H = 29 \cdot \%$$

Design Checks, Pier Structure:

$$r_{mPier} := \frac{M_{uPier}}{\Phi M_{nPier}} \qquad r_{mPier} = 61 \cdot \%$$

$$r_{vPier} := \frac{V_{uPier}}{\Phi V_{cPier}} \qquad r_{vPier} = 6 \cdot \%$$

$$r_{dlPier} := \frac{0.04 \cdot \frac{\pi \cdot d_{vert}^2}{4 \cdot in} \cdot \frac{\frac{f_y}{psi}}{\sqrt{\frac{f'_c}{psi}}}}{embed - cover - \left(\frac{B_{pier}}{2} - cover - d_{tie} - \frac{d_{vert}}{2} - \frac{BC}{2} \right)}$$

$r_{dlPier} = 40.\%$

Design Checks, Pier Serviceability:

$$r_{sPier} := \frac{0.5 \cdot \% \cdot A_{pier}}{n_{vert} \cdot \frac{\pi \cdot d_{vert}^2}{4}}$$

$r_{sPier} = 76.\%$

$$r_{vcPier} := \frac{3 \cdot in}{\frac{B_{pier} - BC}{2} - \frac{d_{template}}{2} - cover - d_{tie} - d_{vert}}$$

$r_{vcPier} = 100.\%$

Design Checks, Pad Structure:

$$r_{mBot} := \frac{M_{uBot}}{\Phi M_{nBot}}$$

$r_{mBot} = 36.\%$

$$r_{vBot} := \frac{V_{uBot}}{\Phi V_{cPad}}$$

$r_{vBot} = 28.\%$

$$r_{mTop} := \frac{M_{uTop}}{\Phi M_{nTop}}$$

$r_{mTop} = 33.\%$

$$r_{vTop} := \frac{V_{uTop}}{\Phi V_{cPad}}$$

$r_{vTop} = 23.\%$

Design Checks, Pad Serviceability:

$$r_{sPad} := \frac{0.0018 \cdot B_{pad} \cdot t_{pad}}{n_{hTop} \cdot \frac{\pi \cdot d_{hTop}^2}{4} + n_{hBot} \cdot \frac{\pi \cdot d_{hBot}^2}{4}}$$

$r_{sPad} = 41.\%$

811 Know what's **below.** **Call** before you dig.

APPROVALS				
		APPROVED	APPROVED AS NOTED	DISAPPROVED REVISE
SPRINT REPRESENTATIVES	DATE	☐	☐	☐
SPRINT RF ENGINEER	DATE	☐	☐	☐
SITE OWNER	DATE	☐	☐	☐
	DATE	☐	☐	☐

Sprint®

SITE ID: CT33XC590
SITE NAME: WEST NORFOLK

THE STRUCTURAL ENGINEERING CONCERNING THE STRUCTURAL STABILITY OF THE TOWER/POLE, FOUNDATION, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT IS BEING COMPLETED BY OTHERS. KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PERFORM ANY STRUCTURAL ANALYSIS SERVICES TO VERIFY THAT THE TOWER/POLE AND/OR FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT DEPICTED WITHIN THESE SIGNED AND SEALED DRAWINGS. FURTHERMORE KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PHYSICALLY CONFIRM THE EXISTING MOUNT CONFIGURATION AND PERFORM A STRUCTURAL ANALYSIS TO VERIFY THAT THE EXISTING, INTERIM AND PROPOSED ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT CAN BE SAFELY SUPPORTED. SIGNED AND SEALED DRAWINGS REVISED TO STATE "ISSUED FOR CONSTRUCTION" SHALL BE PROVIDED TO THE PROFESSIONAL ENGINEERS RESPONSIBLE FOR THE STRUCTURAL ANALYSIS OF THE TOWER/POLE, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT. KMB DESIGN GROUP, LLC SHALL BE NOTIFIED SHOULD THE STRUCTURAL ANALYSIS RESULT IN SOME ELEMENTS NOT BEING STRUCTURALLY CAPABLE OF SUPPORTING THE PROPOSED DESIGN DEPICTED. THE CONTRACTOR SHALL NOT COMMENCE CONSTRUCTION WITHOUT OBTAINING (A) A SIGNED AND SEALED COPY OF THE PLANS "ISSUED FOR CONSTRUCTION"; (B) STRUCTURAL ANALYSIS REPORT STATING THAT THE TOWER/POLE/FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED LOADING REFERENCING THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC; (C) SPRINT PLATFORM ANALYSIS STATING THAT THE SPRINT PLATFORM IS CAPABLE OF SUPPORTING THE PROPOSED DESIGN AS REFERENCED WITHIN THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC.

NETWORK VISION CONSTRUCTION DRAWINGS

AERIAL VIEW
SCALE: NTS

LOCATION MAP
SCALE: NTS

DRAWING INDEX

DWG #	DRAWING TITLES
A01	COVER SHEET
C01	GENERAL NOTES 1 OF 2
C01A	GENERAL NOTES 2 OF 2
C02	COMPOUND PLAN
C02A	ELEVATION
C03	EQUIPMENT PLANS
C03A	EQUIPMENT & ANTENNA SPECIFICATIONS
C04	ANTENNA PLANS (ALL SECTORS)
C04A	RRH PLANS & DETAILS (ALL SECTORS)
C05	SITE DETAILS
C06	RF SCHEDULE
C06A	RF DATA SHEET
C07	AAV DRAWINGS - COVER SHEET
C07A	AAV DRAWINGS - SITE PHOTOS
C07B	AAV DRAWINGS - KEY & EQUIPMENT PLAN
C07C	AAV DRAWINGS - DETAILS
E01	ELECTRICAL NOTES
E02	ELECTRICAL & GROUNDING DETAILS

CODES & STANDARDS

These documents are in compliance & all construction to be in accordance with the following codes & standards as applicable:

State Building Code: 2005 Connecticut Supplement *which includes the 2009 Amendment (effective August 1, 2009) to the 2005 State Building Code.*
2003 International Building Code
2003 International Residential Code
2003 International Existing Building Code
2003 International Mechanic Code
2003 International Plumbing Code
2006 International Energy Conservation Code *(new edition adopted with changes-effective August 1, 2009)*
2009 International Energy Conservation Code with Connecticut Amendments *(effective October 7, 2011)*
ICC/ANSI A117.1-2003 Accessible and Usable Buildings and Facilities
2005 National Electrical Code (NFPA-70)

DRIVING DIRECTIONS

1. Depart 1 International Blvd, Mahwah, NJ 07495
2. Head north on International Blvd toward Queensland Rd
3. Turn right onto Park Ln.
4. Slight right onto NJ-17 N
5. Merge onto I-287 N/NJ-17 N via the ramp on the left to I-87/N Y Thruway & Enter New York
6. Keep left at the fork, follow signs for I-87 N/NY-17 N/Albany and merge onto I-87 N/NY-17 N
7. Continue to follow I-87 N
8. Take the NY-300/New York 17K exit toward I-84/Middletown/Newburgh
9. Follow signs for Interstate 84 E/Danbury and merge onto I-84 E
10. Take exit 16N for Taconic State Pkwy N toward Albany
11. Merge onto Taconic State Parkway
12. Take the US-44 exit toward Poughkeepsie/Millbrook
13. Slight right onto U.S. 44 E. Turn left onto U.S. 44 E/Cty Rd 44A/Sharon Turnpike
14. Turn left onto NY-22 N/U.S. 44 E/North St
15. Turn right onto Main St
16. Turn right onto U.S. 44 E/Main St
17. Enter Connecticut
18. Turn right onto U.S. 44 E/W Main St
19. Turn left onto Ashpohtag Rd
20. Arrive at 10 Ashpohtag Rd, Norfolk, CT 06058

SITE INFORMATION

PARCEL ID 8-14-34

ZONING CLASSIFICATION I-FR
ZONING JURISDICTION NORFOLK

PROJECT INFORMATION:

SITE ADDRESS:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

COORDINATES:
LATITUDE: N 42° 0' 9.71"
LONGITUDE: W 73° 13' 17.01" DATUM : NAD 83

STRUCTURE HEIGHT:
±150'-0" (TOP OF MONOPOLE)

PROJECT DIRECTORY:

PROPERTY OWNER:
LOUIS CAMMILLETTI
10 ASHPOHTAG ROAD
NORFOLK, CT 06058

APPLICANT:
SPRINT-NEXTEL
6200 SPRINT PARKWAY
OVERLAND PARK, KS 66251

ENGINEER:
KMB DESIGN GROUP, LLC
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
KEITH DRENNAN - PROJECT MANAGER
(732) 280-5623

POWER COMPANY:
CONNECTICUT LIGHT & POWER
P.O. BOX 270
HARTFORD, CT 06141-0270
(800) 286-2000

CONSTRUCTION MANAGER:
TODD AMANN
(914) 715-9363

NOTE:
1. CONTRACTOR TO VERIFY ALL TOWER MODIFICATIONS REQUIRED BY TOWER OWNER HAVE BEEN COMPLETED PRIOR TO PROCEEDING WITH INSTALLATION AS DESCRIBED WITHIN THESE DRAWINGS.

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT · STEPHEN A. BRAY · No. 26657 · LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER: **332.1512**

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

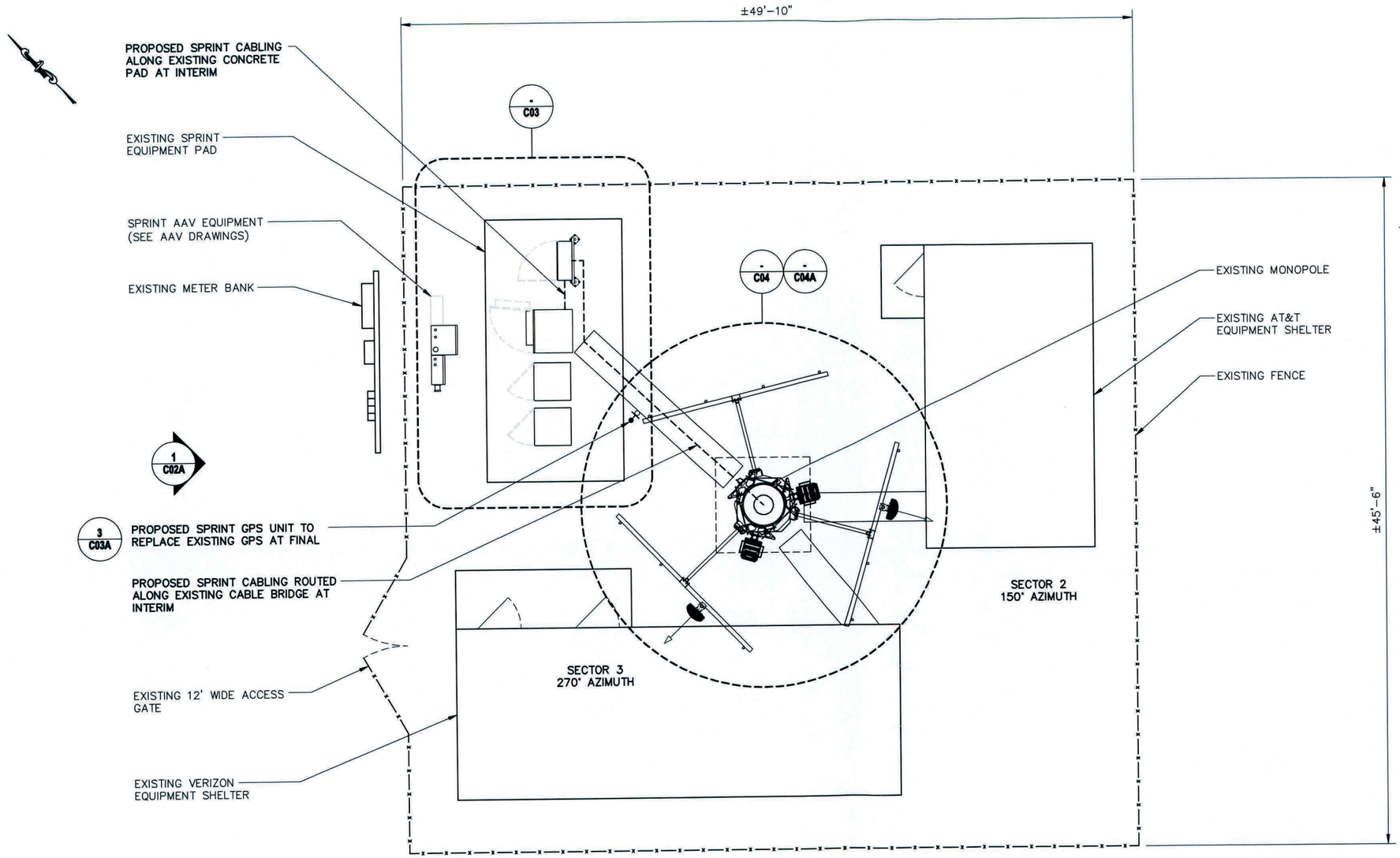
PROJECT TYPE:
NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE:
COVER SHEET

SHEET NUMBER: A01 REV.: 0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512.A01.dwg, 11/19/2012 4:55:30 PM, jford



CABLING NOTES:
1. PROPOSED CABLING TO FOLLOW EXISTING ROUTE AND METHOD OF ATTACHMENT AT INTERIM.
2. EXISTING COAXIAL CABLES TO BE REMOVED AT FINAL.
3. CONTRACTOR TO REPAIR/REPLACE ANY MISSING/DAMAGED CABLE TRAY AND ADD HURRICANE STRAPS AS REQUIRED IF APPLICABLE.

GENERAL NOTES:
1. FINAL ANTENNA & EQUIPMENT CONFIGURATION SHOWN ON THIS PLAN. SEE EQUIPMENT & ANTENNA PLAN SHEETS FOR EXISTING AND INTERIM CONFIGURATION.
2. CONTRACTOR TO REPLACE ALL MISSING GROUND BARS AND GROUNDING CONNECTIONS AS REQUIRED WITH GALVANIZED GROUND BARS. CONTRACTOR SHALL PROVIDE BEFORE & AFTER PHOTOS.
3. CONTRACTOR TO RESTORE ANY RUST AREA TO ORIGINAL CONDITION AND PROTECTIVE COATING TO BE APPLIED.
4. STRUCTURAL ANALYSIS PROVIDED UNDER SEPARATE COVER.

2 0 1 2 4 8
(IN FEET)

1 COMPOUND PLAN

11x17 SCALE: 1/8" = 1'-0" | 24x36 SCALE: 1/4" = 1'-0"

Sprint

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT · STEPHEN A. BRAY · No. 26657 · LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER: 332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

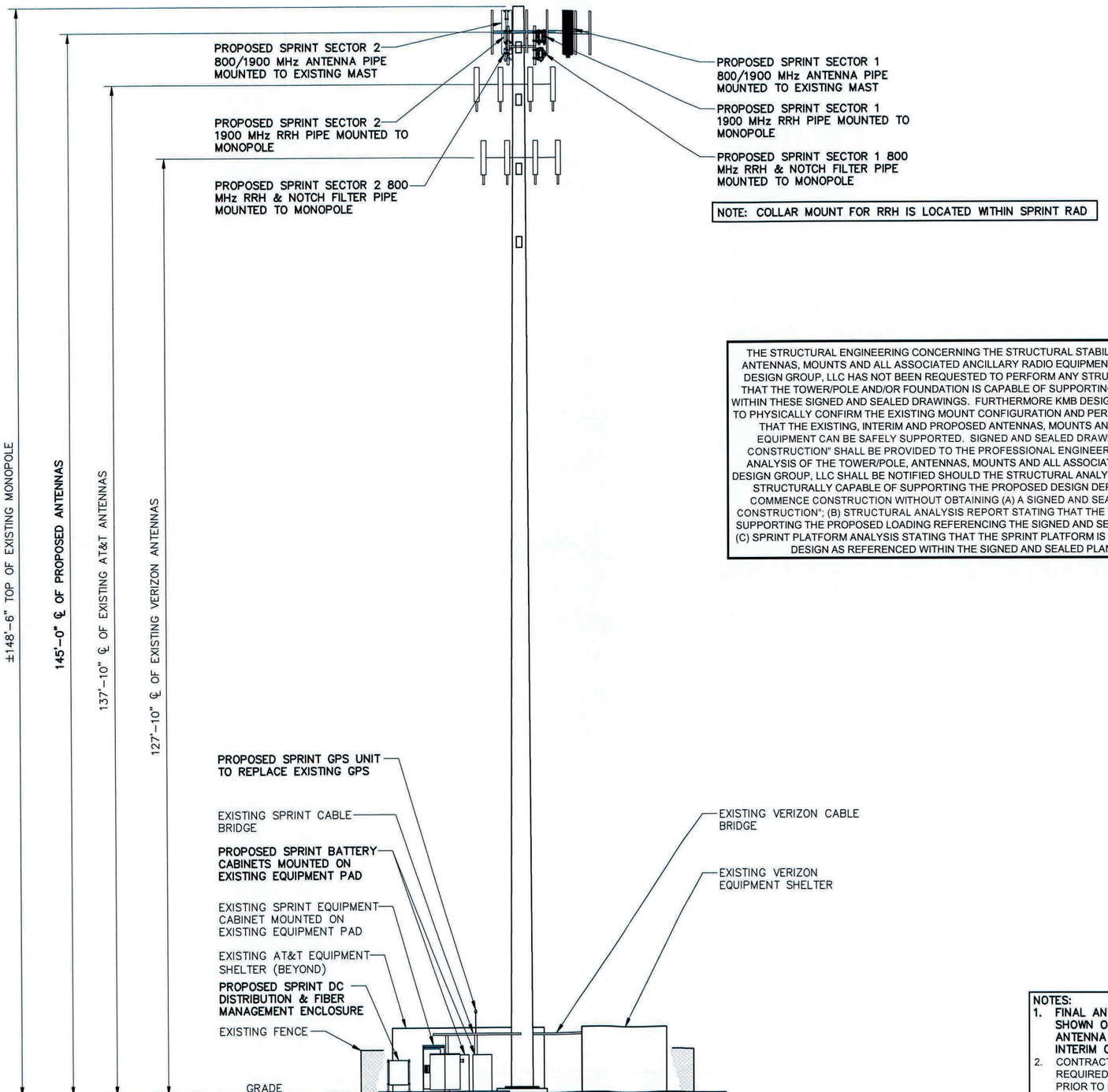
CT33XC590

PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE: COMPOUND PLAN

SHEET NUMBER: C02 | REV.: 0



NOTE: COLLAR MOUNT FOR RRH IS LOCATED WITHIN SPRINT RAD

THE STRUCTURAL ENGINEERING CONCERNING THE STRUCTURAL STABILITY OF THE TOWER/POLE, FOUNDATION, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT IS BEING COMPLETED BY OTHERS. KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PERFORM ANY STRUCTURAL ANALYSIS SERVICES TO VERIFY THAT THE TOWER/POLE AND/OR FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT DEPICTED WITHIN THESE SIGNED AND SEALED DRAWINGS. FURTHERMORE KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PHYSICALLY CONFIRM THE EXISTING MOUNT CONFIGURATION AND PERFORM A STRUCTURAL ANALYSIS TO VERIFY THAT THE EXISTING, INTERIM AND PROPOSED ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT CAN BE SAFELY SUPPORTED. SIGNED AND SEALED DRAWINGS REVISED TO STATE "ISSUED FOR CONSTRUCTION" SHALL BE PROVIDED TO THE PROFESSIONAL ENGINEERS RESPONSIBLE FOR THE STRUCTURAL ANALYSIS OF THE TOWER/POLE, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT. KMB DESIGN GROUP, LLC SHALL BE NOTIFIED SHOULD THE STRUCTURAL ANALYSIS RESULT IN SOME ELEMENTS NOT BEING STRUCTURALLY CAPABLE OF SUPPORTING THE PROPOSED DESIGN DEPICTED. THE CONTRACTOR SHALL NOT COMMENCE CONSTRUCTION WITHOUT OBTAINING (A) A SIGNED AND SEALED COPY OF THE PLANS "ISSUED FOR CONSTRUCTION"; (B) STRUCTURAL ANALYSIS REPORT STATING THAT THE TOWER/POLE/FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED LOADING REFERENCING THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC; (C) SPRINT PLATFORM ANALYSIS STATING THAT THE SPRINT PLATFORM IS CAPABLE OF SUPPORTING THE PROPOSED DESIGN AS REFERENCED WITHIN THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC.

NOTES:
1. **FINAL ANTENNA & EQUIPMENT CONFIGURATION SHOWN ON THIS PLAN. SEE EQUIPMENT & ANTENNA PLAN SHEETS FOR EXISTING AND INTERIM CONFIGURATION.**
2. CONTRACTOR TO VERIFY ALL TOWER MODIFICATIONS REQUIRED BY TOWER OWNER HAVE BEEN COMPLETED PRIOR TO PROCEEDING WITH INSTALLATION AS DESCRIBED WITHIN THESE DRAWINGS.

1 NORTHWEST ELEVATION

11x17 SCALE: 1/16" = 1'-0" | 24x36 SCALE: 1/8" = 1'-0"

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT
STEPHEN A. BRAY
No. 26657
LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER: **332.1512**

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

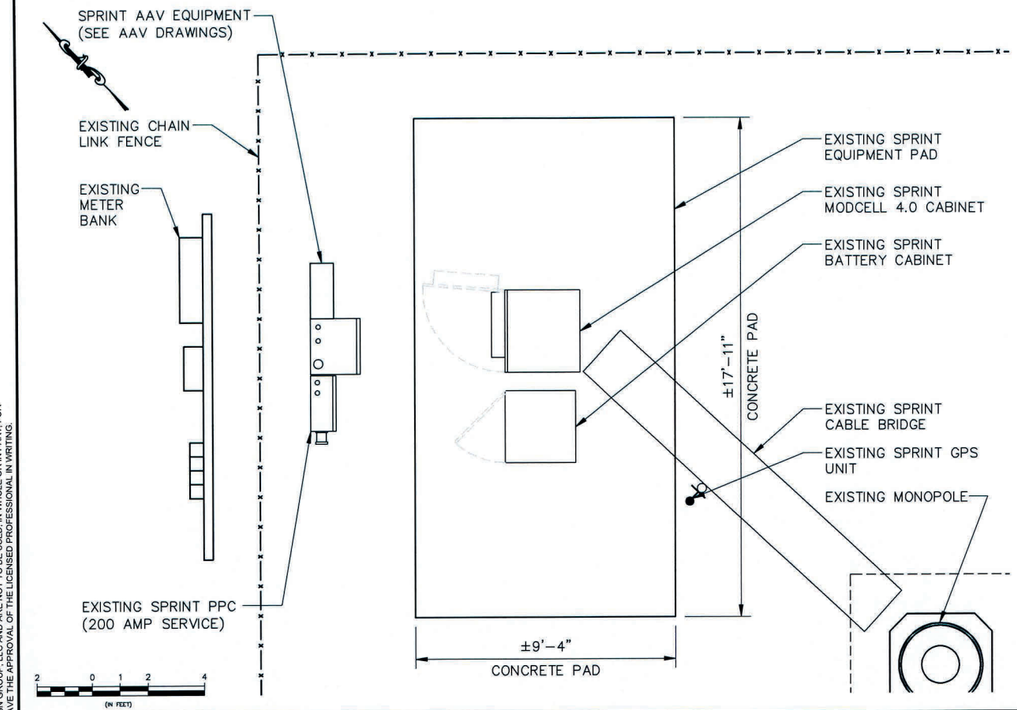
CT33XC590

PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

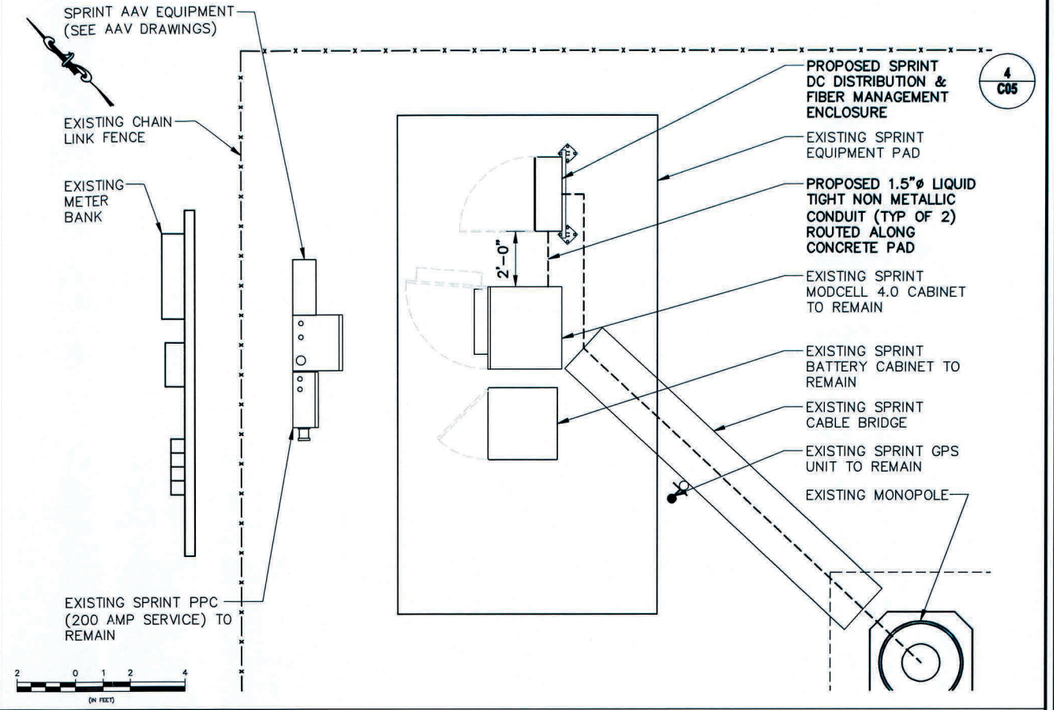
SHEET TITLE: ELEVATION

SHEET NUMBER: C02A | REV.: 0



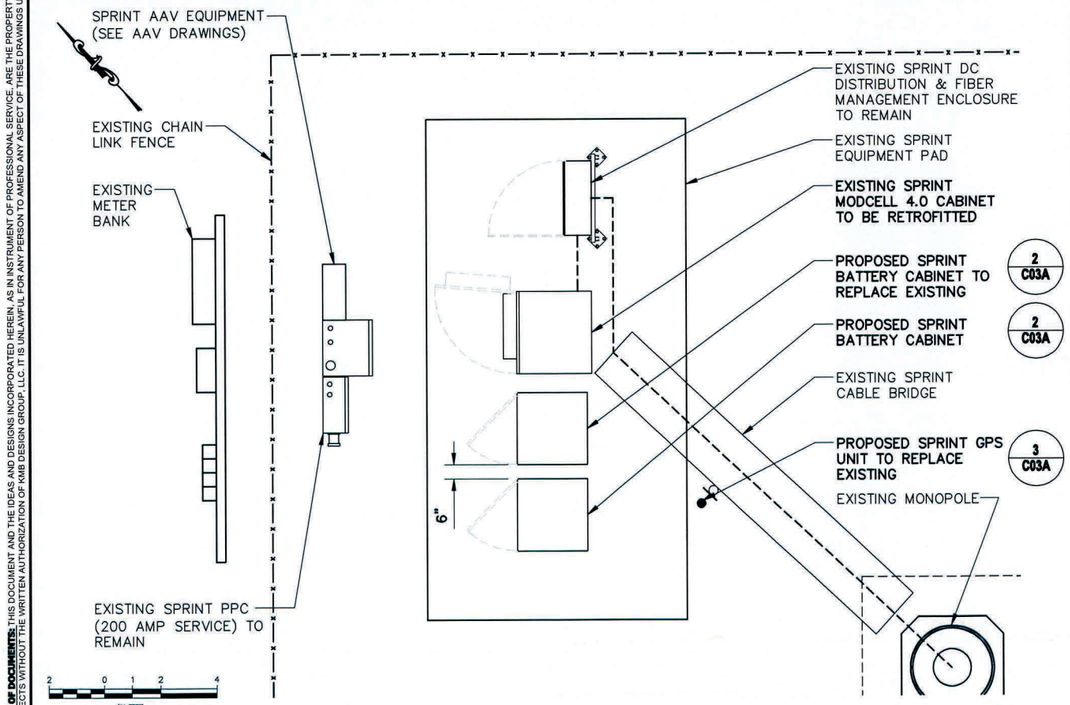
1 EXISTING EQUIPMENT PLAN

11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"



2 INTERIM EQUIPMENT PLAN

11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"



3 FINAL EQUIPMENT PLAN

11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"

NOTE:
1. CONTRACTOR TO REPLACE ALL MISSING GROUND BARS AND GROUNDING CONNECTIONS AS REQUIRED.

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT
STEPHEN A. BRAY
No. 26657
LICENSED
PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER:
332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

PROJECT TYPE:
NETWORK VISION

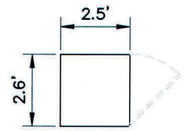
DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE:
EQUIPMENT
PLANS

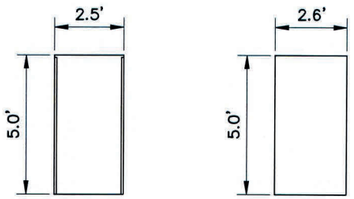
SHEET NUMBER:	REV.:
C03	0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512.C03.dwg, 11/19/2012 4:55:47 PM, jford

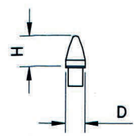
DETAIL NOT USED



AVAYA 60ECv2
BATTERY CABINET
CABINET WEIGHT: 1625 lbs
FOOTPRINT: 6.5 SF



1		2	BATTERY CABINET SPECIFICATION		3	GPS UNIT SPECIFICATIONS		4	
		11x17 SCALE: 3/16" = 1'-0"		24x36 SCALE: 3/8" = 1'-0"	11x17 SCALE: 1/4" = 1'-0"		24x36 SCALE: 1/2" = 1'-0"		



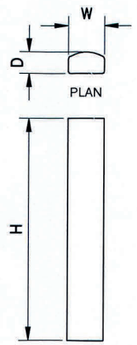
MANUF.: PCTEL
MODEL #: GPS-TMG-HR-26NCM
HEIGHT: 5.0"
DIAMETER: 3.2"
WEIGHT: 0.6 lbs

DETAIL NOT USED

DETAIL NOT USED

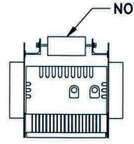
DETAIL NOT USED

DETAIL NOT USED



MANUF.: RFS
MODEL: APXVSPP18-C-A20
LENGTH 72.0"
WIDTH: 11.8"
DEPTH: 7.0"
WEIGHT: 64.5 lbs
AREA: 5.9 SF

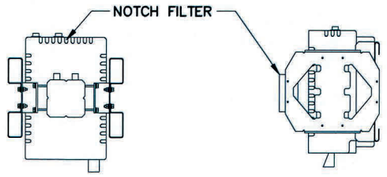
5		6		7	ANTENNA SPECIFICATIONS - 800/1900 MHz	8	
				SCALE: NTS			



PLAN

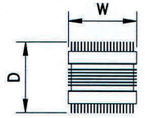
MANUF.: ANDREW
MODEL #: 800 MHz 2x50W
HEIGHT: 19.7"
WIDTH: 13.0"
DEPTH: 10.8"
WEIGHT: ±53 lbs

DIMENSIONS AND WEIGHT INCLUDES FILTER



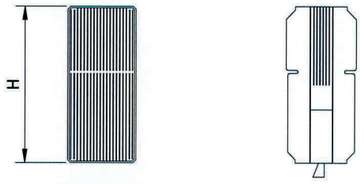
FRONT ELEVATION

SIDE



PLAN

MANUF.: ALCATEL LUCENT
MODEL #: RRH 1900 4x45 65MHz
HEIGHT: 25.1"
WIDTH: 11.1"
DEPTH: 10.69"
WEIGHT: ±59.5 lbs



FRONT ELEVATION

SIDE

DETAIL NOT USED

9	RRH SPECIFICATIONS - 800 MHz		10	RRH SPECIFICATIONS - 1900 MHz		11	
11x17 SCALE: 1/2" = 1'-0"		24x36 SCALE: 1" = 1'-0"	11x17 SCALE: 1/2" = 1'-0"		24x36 SCALE: 1" = 1'-0"		

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER

STATE OF CONNECTICUT
STEPHEN A. BRAY
No. 26657
LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER:
332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

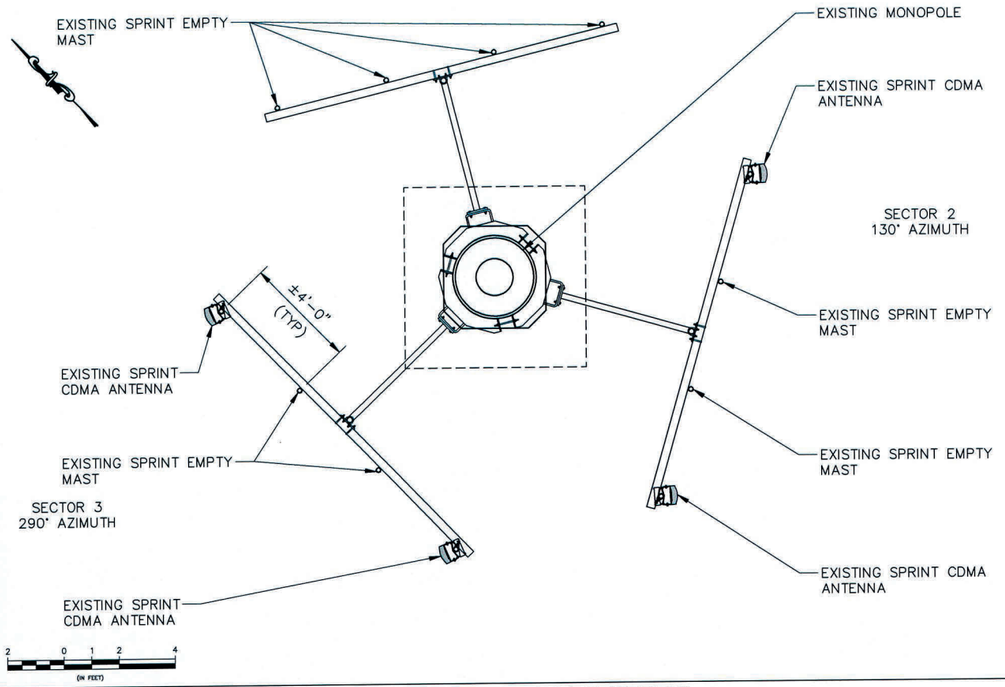
PROJECT TYPE:
NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE:
EQUIPMENT & ANTENNA SPECIFICATIONS

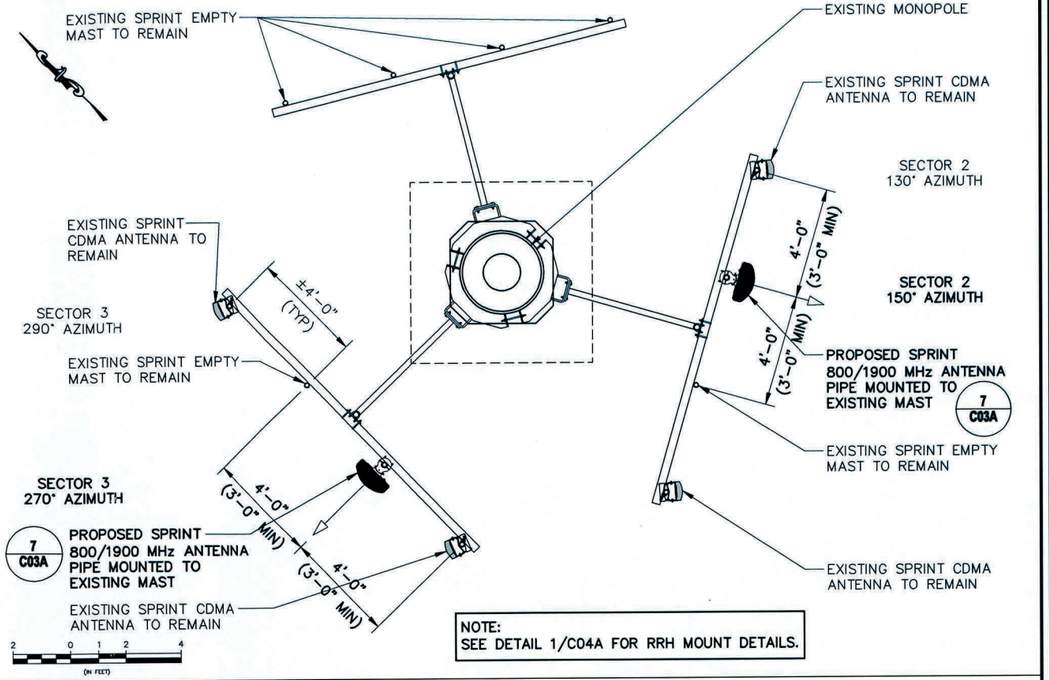
SHEET NUMBER:	REV.:
C03A	0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512-C03A.dwg, 11/19/2012 4:55:50 PM, jford



1 EXISTING ANTENNA PLAN @ ±145'-0" AGL (ALL SECTORS)

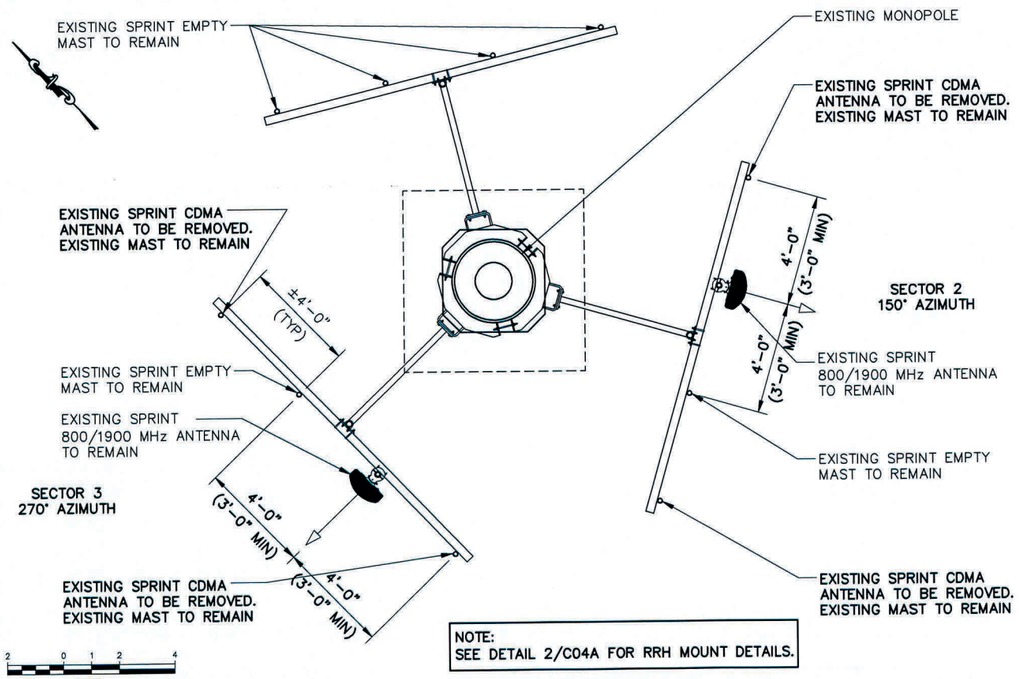
11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"



2 INTERIM ANTENNA PLAN @ ±145'-0" AGL (ALL SECTORS)

11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"

NOTE:
SEE DETAIL 1/C04A FOR RRH MOUNT DETAILS.



NOTE:
SEE DETAIL 2/C04A FOR RRH MOUNT DETAILS.

3 FINAL ANTENNA PLAN @ ±145'-0" AGL (ALL SECTORS)

11x17 SCALE: 3/16" = 1'-0" | 24x36 SCALE: 3/8" = 1'-0"

THE STRUCTURAL ENGINEERING CONCERNING THE STRUCTURAL STABILITY OF THE TOWER/POLE, FOUNDATION, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT IS BEING COMPLETED BY OTHERS. KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PERFORM ANY STRUCTURAL ANALYSIS SERVICES TO VERIFY THAT THE TOWER/POLE AND/OR FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT DEPICTED WITHIN THESE SIGNED AND SEALED DRAWINGS. FURTHERMORE KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PHYSICALLY CONFIRM THE EXISTING MOUNT CONFIGURATION AND PERFORM A STRUCTURAL ANALYSIS TO VERIFY THAT THE EXISTING, INTERIM AND PROPOSED ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT CAN BE SAFELY SUPPORTED. SIGNED AND SEALED DRAWINGS REVISED TO STATE "ISSUED FOR CONSTRUCTION" SHALL BE PROVIDED TO THE PROFESSIONAL ENGINEERS RESPONSIBLE FOR THE STRUCTURAL ANALYSIS OF THE TOWER/POLE, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT. KMB DESIGN GROUP, LLC SHALL BE NOTIFIED SHOULD THE STRUCTURAL ANALYSIS RESULT IN SOME ELEMENTS NOT BEING STRUCTURALLY CAPABLE OF SUPPORTING THE PROPOSED DESIGN DEPICTED. THE CONTRACTOR SHALL NOT COMMENCE CONSTRUCTION WITHOUT OBTAINING (A) A SIGNED AND SEALED COPY OF THE PLANS "ISSUED FOR CONSTRUCTION"; (B) STRUCTURAL ANALYSIS REPORT STATING THAT THE TOWER/POLE/FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED LOADING REFERENCING THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC; (C) SPRINT PLATFORM ANALYSIS STATING THAT THE SPRINT PLATFORM IS CAPABLE OF SUPPORTING THE PROPOSED DESIGN AS REFERENCED WITHIN THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC.

NOTES:
1. CONTRACTOR TO VERIFY ALL TOWER MODIFICATIONS REQUIRED BY TOWER OWNER HAVE BEEN COMPLETED PRIOR TO PROCEEDING WITH INSTALLATION AS DESCRIBED WITHIN THESE DRAWINGS.

NOTE:
1. CONTRACTOR TO REPLACE ALL MISSING GROUND BARS AND GROUNDING CONNECTIONS AS REQUIRED WITH GALVANIZED GROUND BARS. CONTRACTOR SHALL PROVIDE BEFORE & AFTER PHOTOS.

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT
STEPHEN A. BRAY
No. 26657
LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER:
332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

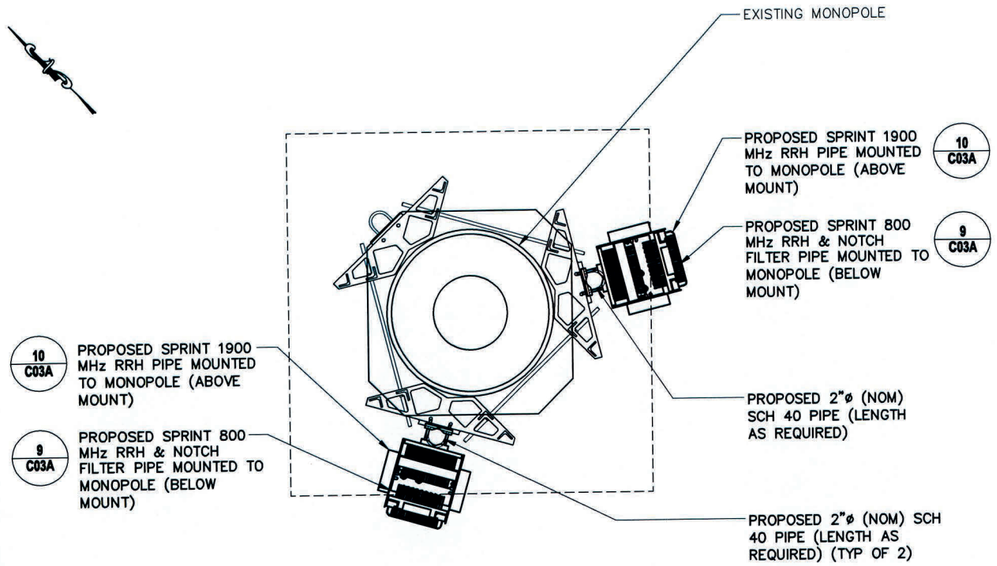
CT33XC590

PROJECT TYPE:
NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

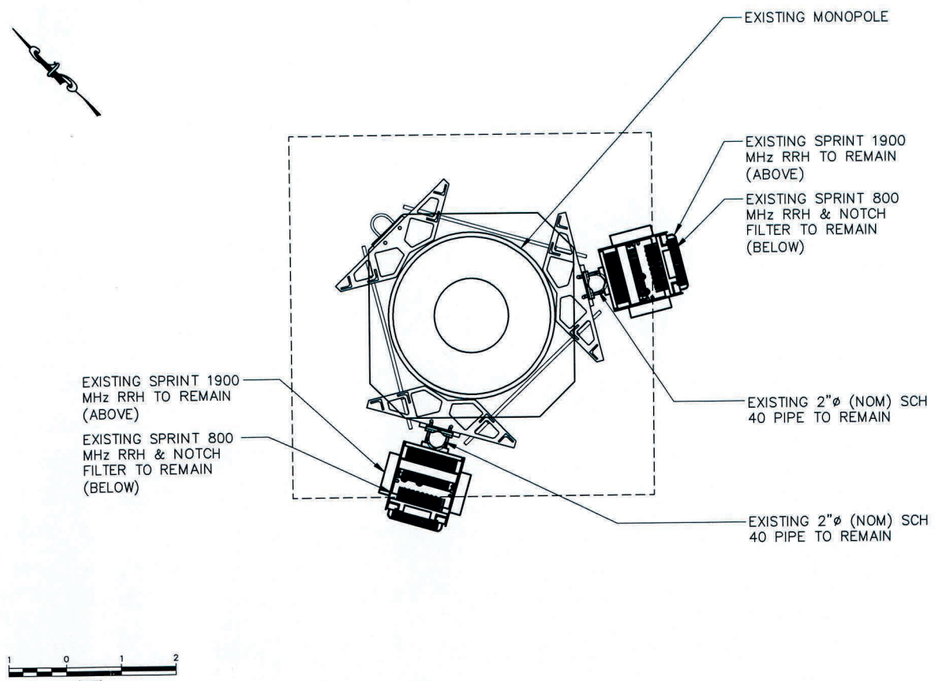
SHEET TITLE:
ANTENNA PLANS
(ALL SECTORS)

SHEET NUMBER:	REV.:
C04	0



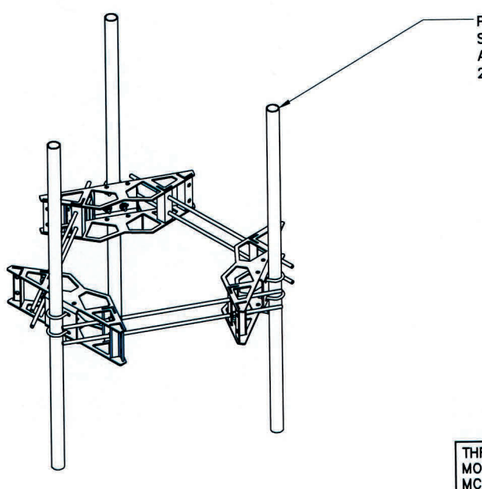
1 INTERIM RRH PLAN @ ±143'-0" AGL (ALL SECTORS)

11x17 SCALE: 3/8" = 1'-0" | 24x36 SCALE: 3/4" = 1'-0"



2 FINAL RRH PLAN @ ±143'-0" AGL (ALL SECTORS)

11x17 SCALE: 3/8" = 1'-0" | 24x36 SCALE: 3/4" = 1'-0"



THREE SECTOR DUAL RADIO RING MOUNT BY COMMSCOPE, PART # MC-551050-3 OR AN APPROVED EQUAL
KIT INCLUDES:
RING MOUNT, THREADED ROD, HARDWARE AND (6) 2-3/8" U-BOLTS

3 RRH MOUNT DETAIL

SCALE: NTS

THE STRUCTURAL ENGINEERING CONCERNING THE STRUCTURAL STABILITY OF THE TOWER/POLE, FOUNDATION, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT IS BEING COMPLETED BY OTHERS. KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PERFORM ANY STRUCTURAL ANALYSIS SERVICES TO VERIFY THAT THE TOWER/POLE AND/OR FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED EQUIPMENT DEPICTED WITHIN THESE SIGNED AND SEALED DRAWINGS. FURTHERMORE KMB DESIGN GROUP, LLC HAS NOT BEEN REQUESTED TO PHYSICALLY CONFIRM THE EXISTING MOUNT CONFIGURATION AND PERFORM A STRUCTURAL ANALYSIS TO VERIFY THAT THE EXISTING, INTERIM AND PROPOSED ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT CAN BE SAFELY SUPPORTED. SIGNED AND SEALED DRAWINGS REVISED TO STATE "ISSUED FOR CONSTRUCTION" SHALL BE PROVIDED TO THE PROFESSIONAL ENGINEERS RESPONSIBLE FOR THE STRUCTURAL ANALYSIS OF THE TOWER/POLE, ANTENNAS, MOUNTS AND ALL ASSOCIATED ANCILLARY RADIO EQUIPMENT. KMB DESIGN GROUP, LLC SHALL BE NOTIFIED SHOULD THE STRUCTURAL ANALYSIS RESULT IN SOME ELEMENTS NOT BEING STRUCTURALLY CAPABLE OF SUPPORTING THE PROPOSED DESIGN DEPICTED. THE CONTRACTOR SHALL NOT COMMENCE CONSTRUCTION WITHOUT OBTAINING (A) A SIGNED AND SEALED COPY OF THE PLANS "ISSUED FOR CONSTRUCTION"; (B) STRUCTURAL ANALYSIS REPORT STATING THAT THE TOWER/POLE/FOUNDATION IS CAPABLE OF SUPPORTING THE PROPOSED LOADING REFERENCING THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC; (C) SPRINT PLATFORM ANALYSIS STATING THAT THE SPRINT PLATFORM IS CAPABLE OF SUPPORTING THE PROPOSED DESIGN AS REFERENCED WITHIN THE SIGNED AND SEALED PLANS BY KMB DESIGN GROUP, LLC.

NOTES:
1. CONTRACTOR TO VERIFY ALL TOWER MODIFICATIONS REQUIRED BY TOWER OWNER HAVE BEEN COMPLETED PRIOR TO PROCEEDING WITH INSTALLATION AS DESCRIBED WITHIN THESE DRAWINGS.

NOTE:
1. CONTRACTOR TO REPLACE ALL MISSING GROUND BARS AND GROUNDING CONNECTIONS AS REQUIRED WITH GALVANIZED GROUND BARS. CONTRACTOR SHALL PROVIDE BEFORE & AFTER PHOTOS.

Sprint

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT STEPHEN A. BRAY No. 26657 LICENSED PROFESSIONAL ENGINEER
CT LICENSE: 26657 11/19/12

PROJECT NUMBER: 332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

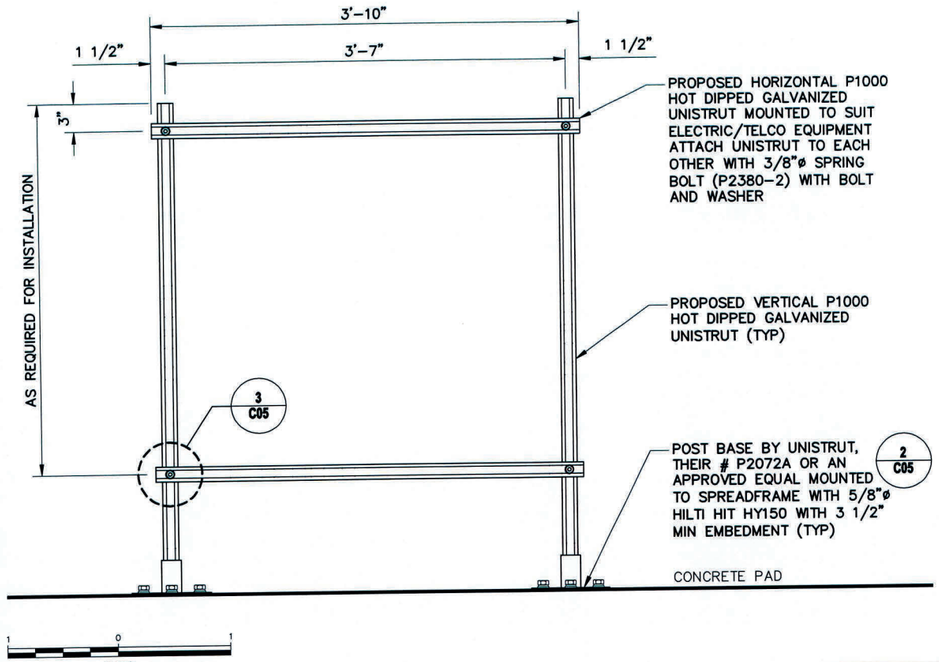
PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE: RRH PLANS & DETAILS (ALL SECTORS)

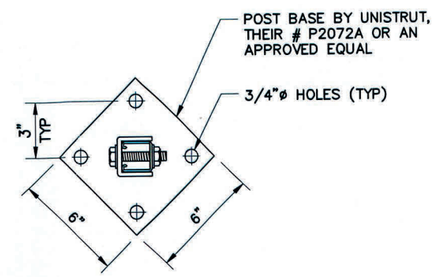
SHEET NUMBER:	REV.:
C04A	0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512.C04A.dwg, 11/19/2012 4:55:59 PM, jford



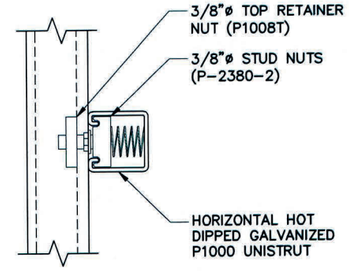
1 **UNISTRUT BACKBOARD ELEVATION**

11x17 SCALE: 3/4" = 1'-0" | 24x36 SCALE: 1 1/2" = 1'-0"



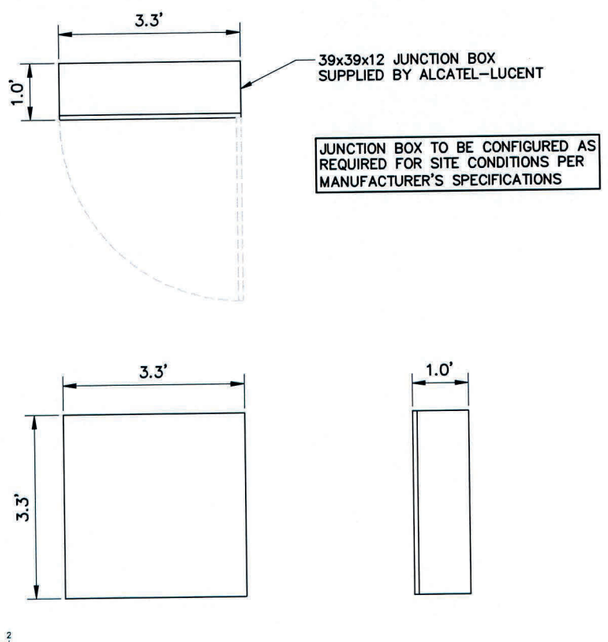
2 **POST BASE DETAIL**

11x17 SCALE: 1 1/2" = 1'-0" | 24x36 SCALE: 3" = 1'-0"



3 **UNISTRUT CONNECTION DETAIL**

11x17 SCALE: 3" = 1'-0" | 24x36 SCALE: 6" = 1'-0"



4 **DC DISTRIBUTION & FIBER MGMT ENCLOSURE DETAIL**

11x17 SCALE: 3/8" = 1'-0" | 24x36 SCALE: 3/4" = 1'-0"

Sprint

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER: **332.1512**

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE: SITE DETAILS

SHEET NUMBER: C05 | REV.: 0

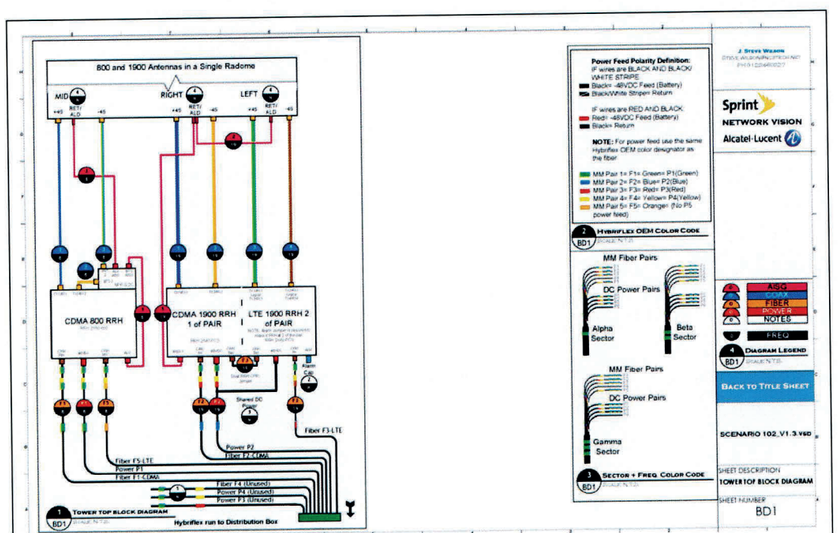
K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512.C05.dwg, 11/19/2012 4:56:03 PM, jford

FINAL ANTENNA AND CABLE SCHEDULE

SECTOR	ANTENNA	AZIMUTH (DEGREES)	MECHANICAL DT (DEGREES)	ELECTRICAL DT (DEGREES)	RAD CENTER AGL (FT)	ANTENNA MAKE	ANTENNA MODEL	RRH QTY	TOP COAX JUMPER QTY	TOP COAX JUMPER LENGTH (FT)	COMBINER JUMPER QTY	COMBINER JUMPER LENGTH (FT)	NOTCH FILTER JUMPER QTY	NOTCH FILTER JUMPER LENGTH (FT)	HYBRIFLEX LENGTH (FT)
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	200
	800/1900	150	0	800: -1 / 1900: 0	147.0	RFS	APXVSPP18-C-A20	800: 1 / 1900: 1	6	10	–	–	1	3	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	200
	800/1900	270	0	800: -8 / 1900: 0	145.0	RFS	APXVSPP18-C-A20	800: 1 / 1900: 1	6	10	–	–	1	3	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	

NOTES:
1. DUE TO FIELD MEASUREMENTS AND THE INSTALLATION OF NEW ANTENNAS THAT VARY IN SIZE FROM THE EXISTING ANTENNAS, THE ANTENNA RAD CENTER HAS CHANGED FROM WHAT IS ON RECORD. THE DATABASE MAY NEED TO BE UPDATED TO MATCH THESE PLANS.
2. SOME CABLING MAY CHANGE AT THE TIME OF CONSTRUCTION. CONTRACTOR TO CONFIRM ALL CABLE LENGTHS, TYPE, QUANTITIES, AND CONFIGURATION PRIOR TO CONSTRUCTION.
3. ALL UNUSED POWER AND FIBER MUST BE PROPERLY TERMINATED AND WEATHERPROOFED.

CONTRACTOR TO VERIFY & USE THE LATEST TOWER TOP SCENARIO AS PROVIDED BY ALCATEL-LUCENT CONSTRUCTION MANAGER



ALL SECTORS

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT · STEPHEN A. BRAY · No. 26657 · LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER: **332.1512**

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE: RF SCHEDULE

SHEET NUMBER:	REV.:
C06	0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512.C06.dwg, 11/19/2012 4:56:06 PM, jford

GENERAL SPECIFICATIONS

1. Contractor shall verify that the total number of service entrance disconnects in the existing utility company pedestal must not exceed six. If the new service added exceeds this value, contractor must coordinate with the utility company and authority having jurisdiction. Run an additional exclusive and dedicated service lateral set for the new load added to the compound as per NEC Article # 230-2(B)
2. All work should be done in a neat workmanlike manner, left clean and free from defects, and completely operable. The contractor shall provide all equipment as scheduled on the drawings. All materials shall be new and all work and materials shall be guaranteed by the contractor for a period of one (1) year from the date of acceptance by the owner.
3. All work shall be carefully coordinated with the landlord and all trades involved, and the contractor shall provide proper connections, fittings, valves, piping, etc. for all equipment furnished by carrier or other trades involved in this contract.
4. Contractor shall inform the engineer immediately of any conflict discovered before performing any work related to such conflict.
5. Provide all required temporary utilities and pay all associated fees and operating costs.
6. Before submitting this bid, the contractor shall visit the job site to examine and fully acquaint himself with the existing job conditions, paying particular attention to the location of existing conditions to make a complete and operable system without additional cost to the carrier or the engineer.
7. Obtain all permits and approvals from authorities having jurisdiction and paying all fees required.
8. Label all equipment served from Sprint panelboard with phenolic labels sized in relation to usage.
9. Contractor to provide and install engraved label on the Sprint meter socket enclosure.
10. Redlined As-Builts are to be delivered to a Sprint representative.
11. The equipment/protections must be rated for standard of AIC rate higher than incoming equipment and/or utility company AIC rate.

GROUNDING NOTES

1. The subcontractor is responsible for properly sequencing grounding and underground conduit installation as to prevent any loss of continuity in the grounding system or damage to the conduit.
2. All exterior ground conductors shall be #2 AWG solid tinned copper unless otherwise indicated.
3. All ground connections above grade (interior & exterior) shall be formed using high press crimps.
4. All ground connections below grade shall be exothermic (Cadweld).
5. Connections to equipment and enclosures shall be made utilizing two-hole ground lugs with an antioxidant compound.
6. Maximum resistance of the completed ground system shall not exceed 5 Ohms. Testing shall be performed in accordance with technical specification for facility grounding, using fall potential method.
7. Where grounding connections are made to painted metal surfaces shall be scraped clean to bear metal to ensure proper contact. Surfaces shall be restored to match original finishes.
8. Use of 90° bends in the protection grounding conductors shall be avoided when 45° bends can be adequately supported.
9. Ground depth shall be 30" minimum below finished grade, or 6" below frost line, whichever is greater.

ELECTRICAL SYMBOLS		ABBREVIATIONS	
WIRING SYMBOLS		AWG	AMERICAN WIRE GAUGE
	DISCONNECT SWITCH	BCW	BARE COPPER WIRE
M	METER	DWG	DRAWING
	CIRCUIT BREAKER	EMT	ELECTRICAL METALLIC TUBING
■	CADWELD TYPE CONNECTION	GEN	GENERATOR
●	COMPRESSION TYPE CONNECTION	MGB	MASTER GROUND BAR
⊠	GROUND ROD WITH ACCESS	PVC	RIGID (SCH 40) PVC CONDUIT
	CHEMICAL GROUND ROD	RGS	RIGID GALVANIZED STEEL
⊗	GROUND ROD	RWY	RACEWAY
——●	CONDUIT TURNING DOWN	TYP	TYPICAL
——○	CONDUIT TURNING UP		
JB	JUNCTION BOX		
PB	PULL BOX		
———	CONDUIT RUNNING ABOVE GRADE		
———	CONDUIT RUNNING UNDER GROUND		

ELECTRICAL SPECIFICATIONS

1. General:
   - A. The electrical contractor shall furnish all labor,materials, tools, transportation equipment, services and facilities required for the complete, proper and substantial installation of all electrical work. All fixtures, devices, and equipment shown, noted or required on these drawings, and/or contained herein shall be connected from the source of electric power to the final connection, tested and made ready for satisfactory operation.
   - B. Service equipment shall be 120/240 VAC, 100 Amp, single phase, unless otherwise directed by the Sprint Construction Manager.
   - C. Unless otherwise indicated, the arrangement, position, connections, etc. shown on the drawings shall be taken on a diagram basis. The right is reserved by the engineer to make minor changes in locations and arrangements when required by job development without additional compensation to the contractor.
   - D. All work shall conform to the adopted edition of the National Electrical Code and local, state and applicable codes.
   - E. When a utility company meter is specified, the contractor shall obtain all associated cut-in cards, inspections, etc., necessary to have the meter set. It is the responsibility of the contractor to meet with utility company prior to construction to verify source of electric service, tap and meter location.
2. Identification:
   - A. Provide typewritten directories for panels, indicating use of each branch circuit and designating spare circuits. Handwritten directories are not acceptable.
   - B. All panel boards, switches and other equipment enclosures shall bear engraved nameplates as manufactured by Seton Nameplate Corp., or equal lettering to be 1/2" white letters on black background unless noted otherwise.
3. Raceways:
   - A. Minimum conduit size shall be 3/4" unless otherwise noted on the drawings.
   - B. Exposed raceways shall be run true, plumb, and parallel or perpendicular to building lines.
   - C. Conduit routings are schematic. Sub contractor shall install conduits so that access to equipment is not blocked.
4. Wiring Methods:
   - A. All feeders shall consist of pulled conductors in conduit. All branch circuits shall consist of pulled conductors in conduit. Except 15 and 20 Ampere 1 pole lighting receptacles, miscellaneous branch circuits concealed above suspended ceilings or within dry walls shall consist of type MC metal clad cable if allowed by code. Connections to communications cabinets and vibrating equipment shall consist of pulled conductors in LFMC, maximum 6' in length.
   - B. Conductors shall be continuous from origin to panel or equipment without splices. Where tap splices are necessary and approved, they shall be made with suitable connectors in junction boxes.
   - C. Equipment ground conductors shall be provided for all feeders and branch circuits.
   - D. The contractor shall conceal all conduit routing passing through finished areas. Conduit routing through unfinished shall be supported as specified in drawings. Unless clearly specified, no conduits shall be routed on exterior surface of buildings.
   - E. All conductor terminals shall be U.L. listed for minimum of 75° C.
   - F. Provide fire stopping around all conduits at wall and floor penetrations.
   - G. Seal all exterior wall penetrations as required.
   - H. Underground conduits shall be a minimum of 24" below finished grade. All underground work shall be documented by photograph before any backfill is begun. Photos will be required at time punchlist is performed. Feeders shall be individual conductors in schedule 40 PVC, direct burial conduit. When buried conduits are subject to vehicular traffic, conduits shall be encased in concrete. All sweeps below grade shall be schedule 80 PVC.
   - I. All feeders in "damp" or "wet" locations shall consist of individual conductor in rigid galvanized steel or rigid aluminum conduit. Liquid-tight flexible metallic conduit shall be utilized when connecting to equipment cabinets and vibrating equipment. The maximum length for flexible conduit shall be 6'-0".
5. Wiring Devices:
   - A. Switches, receptacles and other wiring devices shall be specification grade of type, size and rating indicated on the drawings.
6. Disconnect Switches:
   - A. Switches shall be quick-make, quick-break NEMA 1 for indoor use and NEMA 3R for outdoor use as manufactured by General Electric, Square D or equal. Electrical contractor to provide all safety disconnects.
7. Special Requirements:
   - A. The electrical contractor shall furnish and install all power and control wiring for equipment contained in contract documents.
   - B. All work requiring an outage or interruption of service (power, telephone) shall be scheduled only at such time permitted by owner.
8. Lighting fixtures and lamps:
   - A. Lighting fixtures shall be furnished complete with necessary hardware and lamps.
9. Transformers:
   - A. Transformers shall be dry type with average temperature rise not to exceed 150° C (115° C)(80° C)
   - B. Transformers shall be as manufactured by Square D, General Electric, or Siemens.

The contractor is required to contact the utility companies prior to starting construction. This is necessary to reconfirm that the utility points have remained consistent with the contractor documents:

* Telephone Demarcation Point
* Electrical Service Tap Point
* New Utility Meter Location

Sprint®

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER

STATE OF CONNECTICUT · STEPHEN A. BRAY · No. 26657 · LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER:
332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

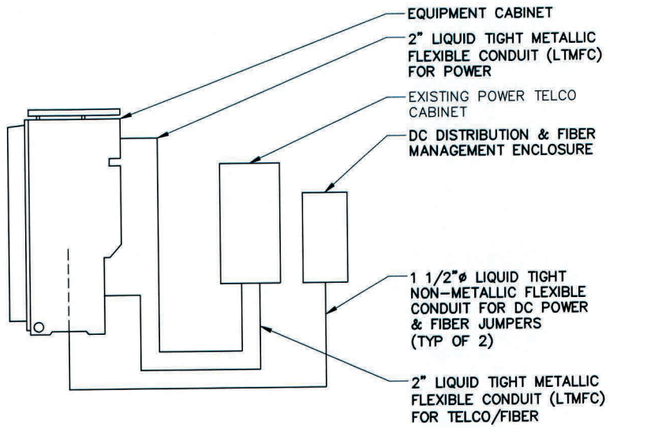
PROJECT TYPE:
NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

SHEET TITLE:
ELECTRICAL NOTES

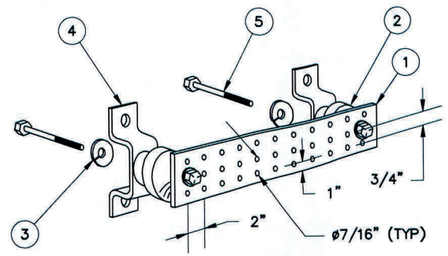
SHEET NUMBER:	REV.:
E01	0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512.E01.dwg, 11/19/2012 4:56:26 PM, jford



1 PLUMBING SCHEMATIC (IF REQUIRED)

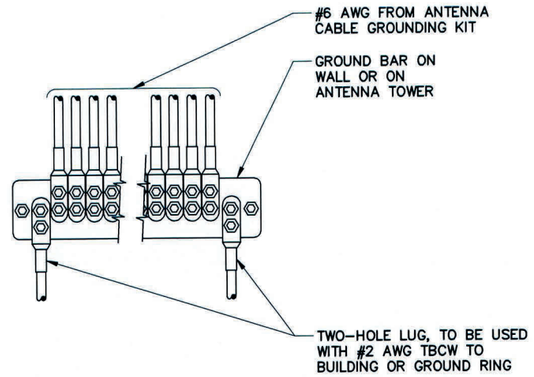
SCALE: NTS



1. GALVANIZED STEEL GROUND BAR, 1/4" x 4" x 20", HAGER PART NO TGBI-14420C OR A.L.T. PART NO. 382227. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4.
3. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056.
5. 5/8-11 X 1" H.H.C.S.BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

2 GROUND BAR DETAIL

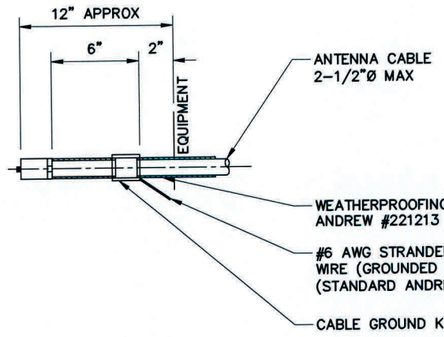
SCALE: NTS



NOTE:
CONTRACTOR TO UTILIZE KOPR-SHIELD (THOMAS & BETTS) ON ALL LUG CONNECTIONS

3 GROUND LUG TO GROUND BAR CONNECTION DETAIL

SCALE: NTS



NOTE:
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

4 CABLE GROUND KIT CONNECTION DETAIL

SCALE: NTS

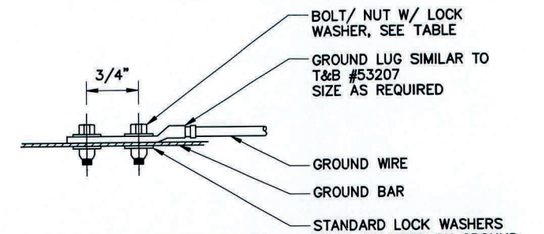
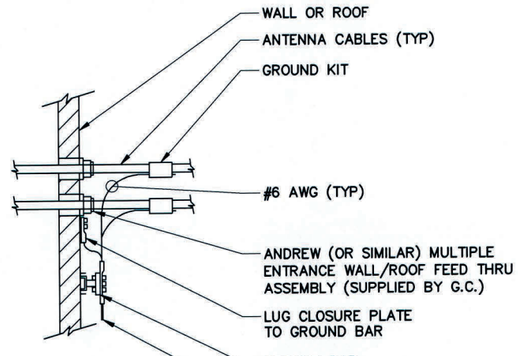


TABLE		
WIRE SIZE	LUG #	BOLT SIZE
#4/0	53212	1/2" - 20 NC x 1/2" S.S. BOLT & NUT W/ LOCK WASHERS
#2	53207	1/4" - 20 NC x 1/2" S.S. BOLT & NUT W/ LOCK WASHERS
#6	53205	

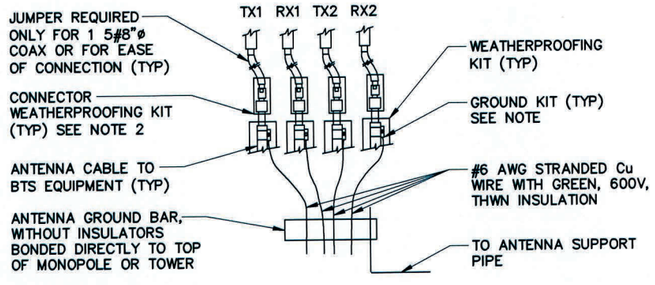
5 GROUND LUG CONNECTION DETAIL

SCALE: NTS



6 CABLE GROUNDING DETAIL

SCALE: NTS



NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.
3. ATTACH "DO NOT DISCONNECT" LABELS TO GROUND BARS. CAN USE BRASS TAG "DO NOT DISCONNECT" AT EACH COAX GROUND POINT OR BACK-A-LITE PLATE ON GROUND BAR.

7 GROUND BAR TO GROUND WIRE CONNECTION DETAIL

SCALE: NTS

Sprint

Alcatel·Lucent

REV.	DATE	REVISION DESCRIPTION	DRAWN BY	CHKD. BY
0	11-19-12	ISSUED FOR CONSTRUCTION	JRF	KCD

KMB DESIGN GROUP
kmbdg.com
1800 ROUTE 34, SUITE 209
WALL, NJ 07719
(732) 280-5623

Stephen A. Bray
PROFESSIONAL ENGINEER
STATE OF CONNECTICUT STEPHEN A. BRAY No. 26657 LICENSED PROFESSIONAL ENGINEER

CT LICENSE: 26657 11/19/12

PROJECT NUMBER: 332.1512

SITE INFORMATION:
10 ASHPOHTAG ROAD
NORFOLK, CT 06058
LITCHFIELD COUNTY

CT33XC590

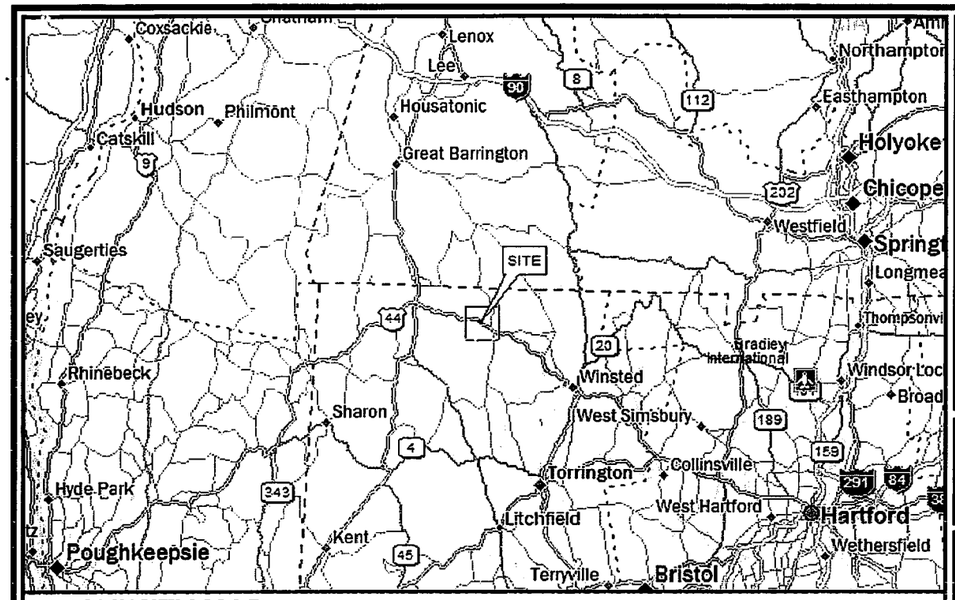
PROJECT TYPE: NETWORK VISION

DRAWN BY:	CHECKED BY:	DATE:
KAZ		03-20-12

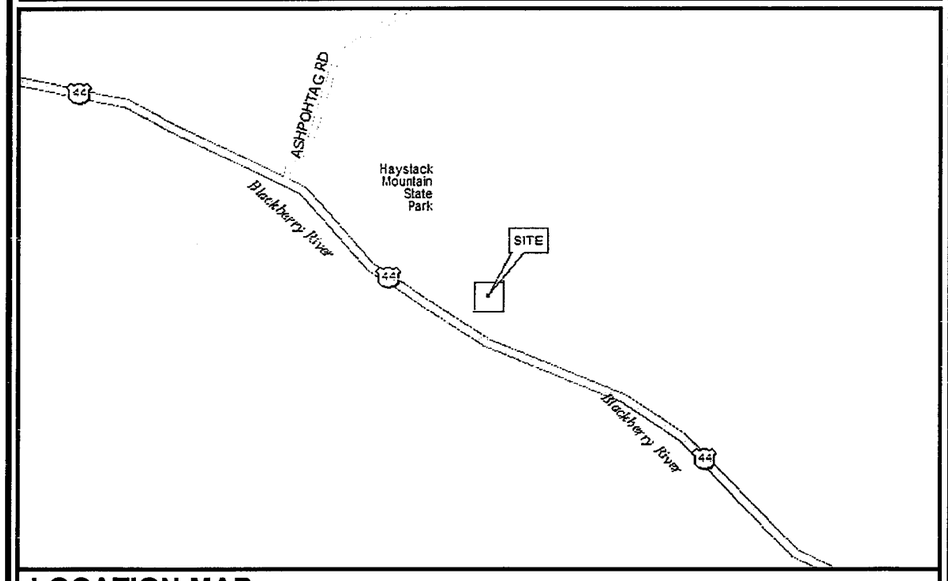
SHEET TITLE:
ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER: E02 REV.: 0

K:\332_Sprint_332.1000_Alcatel-Lucent\332.1512_CT33XC590_10 Ashpohtag Road\332.1512_CAD\332.1512_Construction\332.1512-E02.dwg, 11/19/2012 4:56:29 PM, jford



PROXIMITY MAP



LOCATION MAP

START AT BRADLEY INTERNATIONAL. GO STRAIGHT (WNW) ON ACCESS RD. IN 0.55 MI KEEP LEFT (SW) ON TO SR 401 (BRADLEY INTL AIRPORT) RAMP. IN 0.44 MI GO STRAIGHT (WNW) ON TO SR 20 RAINBOW RD) RAMP. IN 5.58 MI TURN RIGHT (NNW) ON TO US 202 (SR 10|SR 20|SR 189|SALMON BROOK ST S). IN 0.02 MI KEEP LEFT (W) ON TO SR 20 (SR 189|N GRANBY RD). IN 3.63 MI KEEP LEFT (WSW) ON TO SR 219 (BARKHAMSTED RD). IN 3.77 MI TURN LEFT (S) ON TO SR 179 (SR 219|E HARTLAND.I IN 0.07 MI KEEP RIGHT (SW) ON TO SR 219 (E HARTLAND RD). IN 2.48 MI KEEP RIGHT (W) ON TO SR 318. IN 1.67 MI TURN LEFT (WSW) ON TO SR 181 (SR 318|PLEASANT VALLEY RD). IN 0.72 MI KEEP RIGHT (WSW) ON TO SR 318 (RIPLEY HILL RD). IN 0.73 MI TURN RIGHT (WNW) ON TO US 44 (NEW HARTFORD RD). IN 13.25 MI TURN RIGHT (NNW) ON TO US 44 (SR 272|GREENWOODS RD W). IN 0.35 MI KEEP LEFT (WNW) ON TO US 44 (GREENWOODS RD W). IN 1.18 MI FINISH AT SITE.

DRIVING DIRECTIONS

PROJECT INFORMATION:

PROJECT NAME:

CAMMILLETTI PROPERTY

SITE NUMBER:

CT2021

PROJECT LOCATION:

10 ASHPOHTAG RD NORFOLK, CT 06058 (LITCHFIELD COUNTY)

LATITUDE	N42° 0' 9.70"
LONGITUDE	W73° 13' 17.0"
GROUND ELEVATION	983'

2-C CERTIFICATION (REF: TOWERCO)

SITE CONSTRUCTON MANAGER:

NAME	TOWERCO
ADDRESS	5000 VALLEYSTONE DRIVE
CITY, STATE, ZIP	CARY, NC 27519
CONTACT	DWAYNE LYERLY
PHONE	(919) 653-5713

SITE APPLICANT:

NAME	SPRINT
ADDRESS	18 INDUSTRIAL AVE
CITY, STATE, ZIP	MAHWAH, NJ 07430
CONTACT	DOUG TALMADGE
PHONE	(203) 410-4531

SURVEYOR:

NAME	N/A
ADDRESS	N/A
CITY, STATE, ZIP	N/A
CONTACT	N/A
PHONE	N/A

CIVIL ENGINEER:

NAME	VERTICAL SOLUTIONS
ADDRESS	2002 PRODUCTION DRIVE
CITY, STATE, ZIP	APEX, NC 27539
CONTACT	MIKE LASSITER
PHONE	(888) 321-6167

ELECTRICAL ENGINEER:

NAME	N/A
ADDRESS	N/A
CITY, STATE, ZIP	N/A
CONTACT	N/A
PHONE	N/A

PROPERTY INFORMATION:

NAME	CAMMILLETTI PROPERTY
ADDRESS	10 ASHPOHTAG RD
CITY, STATE, ZIP	NORFOLK, CT 06058
CONTACT	CRAIG HARTMAN
PHONE	(617) 733-6007

UTILITIES:

POWER COMPANY	N/A
CONTACT	N/A
PHONE	N/A
TELEPHONE COMPANY	N/A
CONTACT	N/A
PHONE	N/A
PHONE # NEAR SITE	N/A

CONTACT INFORMATION

PROJECT DESCRIPTION:
STRUCTURAL UPGRADE

TOWER TYPE:
148.5' SELF SUPPORTING POLE STRUCTURE

AREA OF CONSTRUCTION:
-

PROJECT INFORMATION

SOUTH CAROLINA ONE CALL

CALL BEFORE YOU DIG
1-803-939-1117

ONE CALL

SHEET	DESCRIPTION	REV
T-1	TITLE SHEET	0
N-1	PROJECT NOTES	0
N-2	PROJECT NOTES	0
B-1	BILL OF MATERIALS	0
S-1	TOWER ELEVATION AND MODIFICATION SCHEDULE	0
S-2	CONSTRUCTION DETAILS	0
S-3	CONSTRUCTION DETAILS	0
S-4	FABRICATION DETAILS	0

INDEX OF SHEETS

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA | CHECKED BY: KCI

SHEET TITLE:

TITLE SHEET

SHEET NUMBER: **T-1**

REVISION: **0**

VSI #: 121779

SEAL:

NOV 1 5 2012

October 2, 2012

GENERAL NOTES:

1. ALL REFERENCES TO TOWER OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED AS TOWERCO OR ITS DESIGNATED REPRESENTATIVE.

2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF CONNECTICUT.

3. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-F-1996, FOR A 80 MPH FASTEST MILE BASIC WIND SPEED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONNECTICUT STATE BUILDING CODE, 2005 EDITION.

4. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.

5. ALL PRODUCT MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERCEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.

6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE MODIFICATION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE-DOWNS THAT MAY BE NECESSARY, SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.

7. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATION. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES AND PROCEDURES.

8. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN COMFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE AND LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.

10. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.

11. BILL OF MATERIALS AND PART NUMBERS LISTED ON THE CONSTRUCTION DRAWINGS ARE INTENDED TO AID THE CONTRACTOR/OWNER. CONTRACTOR/OWNER SHALL VERIFY PARTS AND QUANTITIES WITH THE MANUFACTURER PRIOR TO BIDDING AND/OR ORDERING MATERIALS.

12. CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THIS PROJECT FROM ALL APPLICABLE GOVERNING AGENCIES.

13. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.

14. 24 HOURS BEFORE THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.

15. THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN ITS PRESENT STATE. IF THE MATERIAL REMAINS UNSUITABLE AFTER REWORKING, THE CONTRACTOR SHALL UNDERCUT THIS MATERIAL AND REPLACE IT WITH APPROVED MATERIAL. IF PAVING IS TO BE DONE, ALL SUBGRADES SHALL BE PROOFROLLED WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK PRIOR TO PAVING. ANY SOFT MATERIAL SHALL BE REWORKED OR REPLACED.

16. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL PIPES, DITCHES, AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION UNTIL WORK IS ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURE IN OPERABLE CONDITION.

17. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.

18. ALL DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

STRUCTURAL STEEL NOTES:

1. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION FOR THE MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN, 9TH EDITION.

2. UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
   A. ALL SHAPES SHALL BE ASTM A572-50, PLATES A572-65, TUBES A500-C, PIPES A500-C
   B. ALL BOLTS SHALL BE GALVANIZED A325 HIGH STRENGTH BOLTS.
   C. ALL NUTS SHALL BE CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS SHALL BE ASTM F436 HARDENED STEEL WASHERS.

3. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN, 9TH EDITION.

4. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER.

5. HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM A153/153M OR ASTM A653/653M, G90, AS APPLICABLE.

6. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM OR BY APPLICATION OF STICK OR THICK PASTE MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH, TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTE; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL.

7. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.

8. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.

9. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.

10. DO NOT OVER TORQUE ASSEMBLY BOLTS. GALVANIZING ON BOLT NUTS AND STEEL PARTS MAY ACT AS A LUBRICANT, THUS OVER TIGHTENING MAY OCCUR AND MAY CAUSE BOLTS TO CRACK AND SNAP OFF.

BOLT TIGHTENING PROCEDURE:

1. TIGHTEN FLANGE BOLTS BY AISC- "TURN OF THE NUT" METHOD, USING THE CHART BELOW:

BOLT LENGTHS UP TO AND INCLUDING FOUR DIA.

3/4"	BOLTS UP TO AND INCLUDING 4.0 LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 LENGTH	+1/3 TURN BEYOND SNUG TIGHT

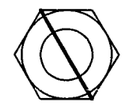
BOLT LENGTH OVER FOUR DIA. BUT NOT EXCEEDING 8 DIA.

3/4"	BOLTS 4.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

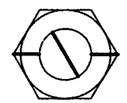
2. SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8(d)(1) OF THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

"FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND BE TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8(d)(1) THROUGH 8(d)(4).

8(d)(1) TURN-OF-THE-NUT TIGHTENING.
BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN THE PLIES OF A JOINT ARE IN FIRM CONTACT. THIS MAY BE OBTAINED BY A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. SNUG TIGHTENING SHALL PROGRESS SYSTEMATICALLY...UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.



BEFORE 1/3 TURN



AFTER 1/3 TURN

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA	CHECKED BY: KCI

SHEET TITLE:

PROJECT NOTES

SHEET NUMBER:	REVISION:
N-1	0
	VSI #: 121779

SEAL:

NOV 15 2012

October 2, 2012

APPLICABLE CODES AND STANDARDS

1. ANSI/TIA STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, 222-F 1996 EDITION.

2. 2005 CONNECTICUT STATE BUILDING CODE.

3. ACI 318: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 318-99.

4. CRSI: CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.

5. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.

6. AWS: AMERICAN WELDING SOCIETY D1.1, STRUCTURAL WELDING CODE, LATEST EDITION.

STRUCTURAL STEEL

1. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.

2. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.

3. ALL U-BOLTS SHALL BE ASTM A307 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY WELDERS CURRENTLY STATE OR AWS CERTIFIED TO THE AWS D1.1 STRUCTURAL WELDING CODE, LATEST EDITION.

2. ALL FIELD WELDING SHALL UTILIZE LOW HYDROGEN ELECTRODES.

3. PRIOR TO FIELD WELDING, GRIND OFF GALVANIZING TO 1/2" BEYOND ALL FIELD WELD SURFACES.

4. ALL FIELD CUT, FIELD WELDED, OR DAMAGED GALVANIZING SURFACES SHALL BE REPAIRED WITH ZINC RICH PAINT (95% ZINC CONTENT) PER ASTM A780.

5. PRIOR TO FIELD WELDING, CONTRACTOR SHALL CLEAR THE INTERIOR OF MONOPOLE OF FLAMMABLE DEBRIS. COAXIAL CABLE SHALL BE SHIFTED AWAY FROM PROXIMITY OF THE WELD AND/OR COVERED WITH A HEAT RESISTANT BLANKET.

PAINT

1. CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1K.

REINFORCEMENT STEEL

1. ALL REINFORCEMENT BARS ARE ASTM A572 GRADE 50, Fy = 50 ksi, Fu = 65 ksi.

FIELD WELDS

1. ALL FIELD WELDS SHALL BE MADE WITH E70XX WELD RODS.

GENERAL NOTES:

1. ALL METHODS, MATERIAL AND WORKMANSHIP SHALL FOLLOW THE DICTATES OF GOOD CONSTRUCTION PRACTICES.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS MUST CONFORM TO THE REQUIREMENTS OF THE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
6. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
8. ANY STEEL WHICH HAS BEEN FIELD CUT OR WELDED SHALL BE COLD GALVANIZED WITH 95% ZINC RICH PAINT PER ASTM A780.
9. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

SPECIAL INSPECTION

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH IBC 2006, SECTION 1704 AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
   a) STRUCTURAL WELDING
   b) HIGH STRENGTH BOLTS
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER IN ACCORDANCE WITH IBC 2006, SECTION 1704. UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM SUCH WORK WITHOUT THE SPECIAL INSPECTIONS.

FIELD BOLTS

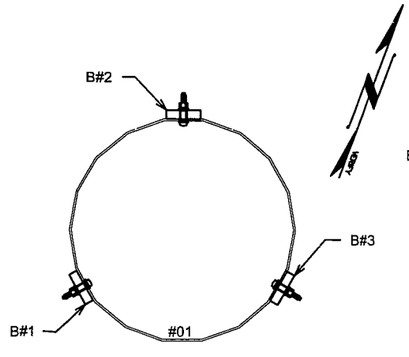
1. ALL STITCH, SPLICE & TERMINATION BOLTS ARE 20 mm ONESIDE BOLTS BY AJAX.
   a) BOLTS SHALL MEET AS 1252, PROPERTRY CLASS 8.8 (SIMILAR TO ASTM A325M)
   b) Fu = 120 ksi
2. EACH BOLT SHALL INCLUDE A 30 mm O.D. BY 20 mm I.D. SLEEVE (Fu=120 ksi)
3. BOLT HOLES SHALL BE 31 mm MAXIMUM.

PHOTO CHECKLIST

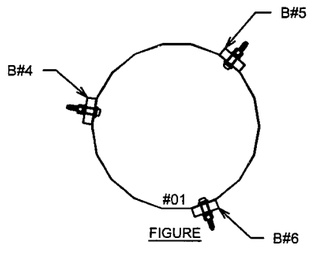
1. CONTRACTOR SHALL SUBMIT THE FOLLOWING PHOTOS TO VERTICAL SOLUTIONS. IF PHOTOS DON'T MEET THE SATISFACTION OF OWNER OR ENGINEER OF RECORD, CONTRACTOR SHALL RETURN TO SITE AT HIS OWN EXPENSE TO OBTAIN ADDITIONAL PHOTOS. AS AN ALTERNATE, CONTRACTOR MAY RETAIN VERTICAL SOLUTIONS TO EXECUTE AN INSPECTION FOR A FEE. TOWERCO MAY ALSO ELECT TO RETAIN VERTICAL SOLUTIONS IF CONTRACTOR SCHEDULE DOES NOT MEET PROJECT TIMELINES. CONTACT inspection@verticalsolutions-inc.com FOR FEE AMOUNT AND / OR SCHEDULE.

BAR REINFORCEMENT - SELF SUPPORTING POLE STRUCTURE

COMPLETE (Y/N)	PHOTOGRAPH(S) DESCRIPTION
	BOTTOM OF B#1 TO B#6, INCLUDING ALL TERMINATION BOLTS. MAKE SURE RB'S ARE LABELED PER FIGURE BELOW.
	FULL ELEVATION OF B#1 TO B#6, INCLUDING FULL LENGTH OF BAR.
	TOP OF B#1 TO B#6, INCLUDING ALL TERMINATION BOLTS.



FIGURE



FIGURE

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA | CHECKED BY: KCI

SHEET TITLE:

PROJECT NOTES

SHEET NUMBER: **N-2**

REVISION: **0**

VSI #: 121779

SEAL:

STATE OF CONNECTICUT
No. 25064
LICENSED PROFESSIONAL ENGINEER

NOV 15 2012

October 2, 2012

BILL OF MATERIAL - MONOPOLE REINFORCEMENT

MARK NO.	DESCRIPTION	SIZE	QTY
RB-01	REINFORCING BAR 01	A572-50 ℄ 1 1/2" x 6" x 10'-4"	3
RB-02	REINFORCING BAR 02	A572-50 ℄ 1 1/2" x 4 1/2" x 9'-6"	3
SB	STITCH BOLT (AJAX)*	20-mmØ - STANDARD LENGTH ONESIDE W/ 30-mmØ SLEEVE	117

NOTES:
1. LABEL BARS WITH BAR #.
2. BARS ARE TO BE ASTM A572 GRADE 50 STEEL & HOT-DIP GALVANIZED.
3. HOLES IN BARS ARE 31mmØ & DIMENSIONED TO CENTERS.
4. BOTTOM OF BARS ON LEFT AS SHOWN.
5. SEE SLEEVE CHART FOR AJAX SLEEVE SIZE AND QUANTITY.

* = A325 1 1/8"Ø MAY BE USED.

AJAX SLEEVE

SLEEVE SIZE	QTY
30-mmØ O.D. x 20-mmØ I.D. x 2.0625"	36
30-mmØ O.D. x 20-mmØ I.D. x 1.6875	33
30-mmØ O.D. x 20-mmØ I.D. x 1.875"	27
30-mmØ O.D. x 20-mmØ I.D. x 1.5625"	21

NOTE:
1. 20'-0"± TOTAL NEEDED.

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA | CHECKED BY: KCI

SHEET TITLE:

BILL OF MATERIALS

SHEET NUMBER: **B-1**

REVISION: **0**

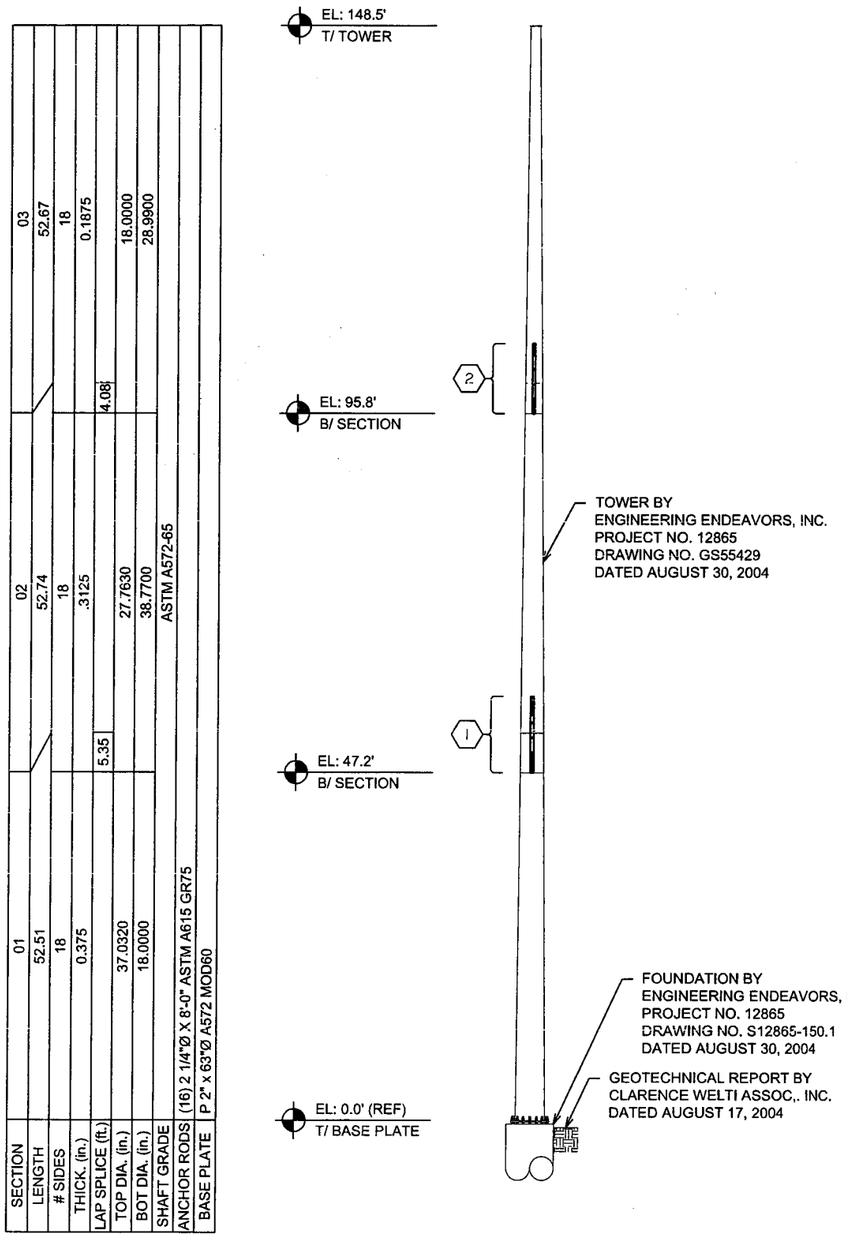
VSI #: 121779

SEAL:

STATE OF CONNECTICUT
MICHAEL L. LITS
No. 25064
LICENSED PROFESSIONAL ENGINEER

NOV 15 2012

October 2, 2012



SECTION	01	02	03
LENGTH	52.51	52.74	52.67
# SIDES	18	18	18
THICK. (in.)	0.375	.3125	0.1875
LAP SPLICE (ft.)		5.35	4.08
TOP DIA. (in.)	37.0320	27.7630	18.0000
BOT DIA. (in.)	18.0000	38.7700	28.9900
SHAFT GRADE	ASTM A572-65		
ANCHOR RODS	(16) 2 1/4"Ø X 8'-0" ASTM A615 GR75		
BASE PLATE	P 2" x 63"Ø A572 MOD60		

TOWER ELEVATION 3

SCALE: 1" = 20'

MODIFICATION DESIGN PROVISIONS

THIS MODIFICATION DESIGN IS BASED ON VERTICAL SOLUTIONS STRUCTURAL ANALYSIS REPORT, VSI JOB # 121779 REV00, DATED OCTOBER 2, 2012. THIS REPORT IS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATION, SEE THE REPORT FOR ANTENNA AND COAX LOADING. ANY OTHER ANTENNA CONFIGURATION REQUIRES REVIEW BY VERTICAL SOLUTIONS.

CONSTRUCTION INTERFERENCES

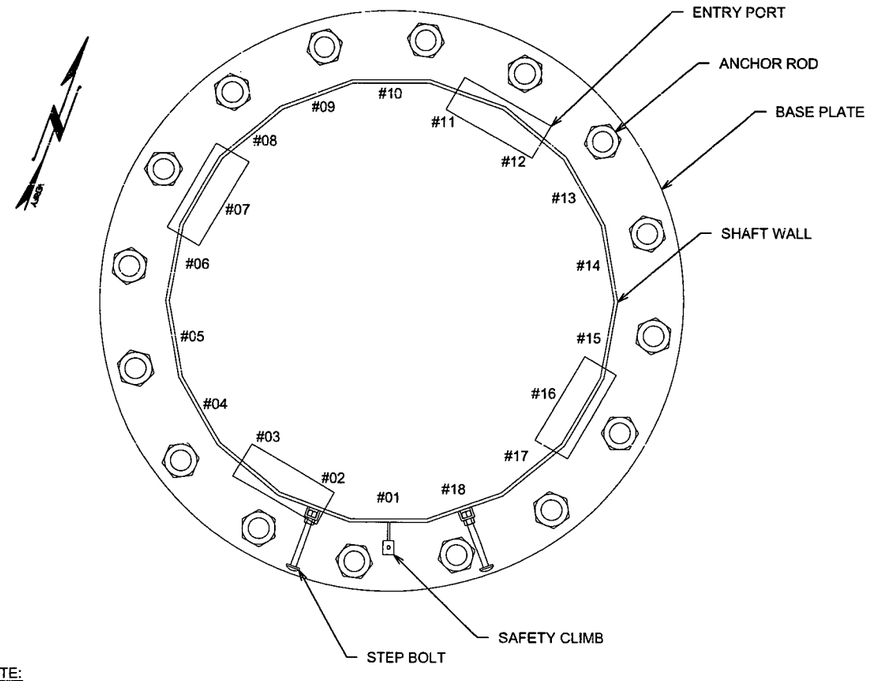
EXISTING AND PROPOSED ANTENNAS, MOUNTS, COAX, AND HAND-HOLE RIMS ARE NOT SHOWN FOR CLARITY. CONTRACTOR SHALL COORDINATE WITH THE TOWER OWNER WITH RESPECT TO INTERFERENCES TO REINFORCEMENT. CONTRACTOR SHALL FIELD VERIFY TOWER DIMENSION PRIOR TO FABRICATION.

FIELD VERIFICATION

FIELD VERIFICATION COMPLETED BY VERTICAL SOLUTIONS. PRE-MODIFICATION INSPECTION REPORT JOB #121779, DATED, AUGUST 21, 2012.

MODIFICATION SCHEDULE

NO.	MODIFICATION DESCRIPTION
1	INSTALL (3) REINFORCING BARS, SEE SHEET S-2.
2	INSTALL (3) REINFORCING BARS, SEE SHEET S-2.
3	CONTRACTOR SHALL PROVIDE CONSTRUCTION PROGRESS PHOTOS, AS WELL AS PROJECT COMPLETION PHOTOS, ALONG WITH STEEL & CONCRETE CERTIFICATION FOR VERTICAL SOLUTIONS, INC. TO COMPLETE A POST MODIFICATION LETTER. SEE SHEET N-2



NOTE:
1. #XX DENOTES FLAT NUMBER

SECTION @ BASE 3.0'

SCALE: 3/4" = 1'-0"

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA | CHECKED BY: KCI

SHEET TITLE:

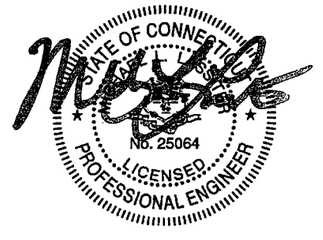
TOWER ELEVATION AND MODIFICATION SCHEDULE

SHEET NUMBER: **S-1**

REVISION: 0

VSI #: 121779

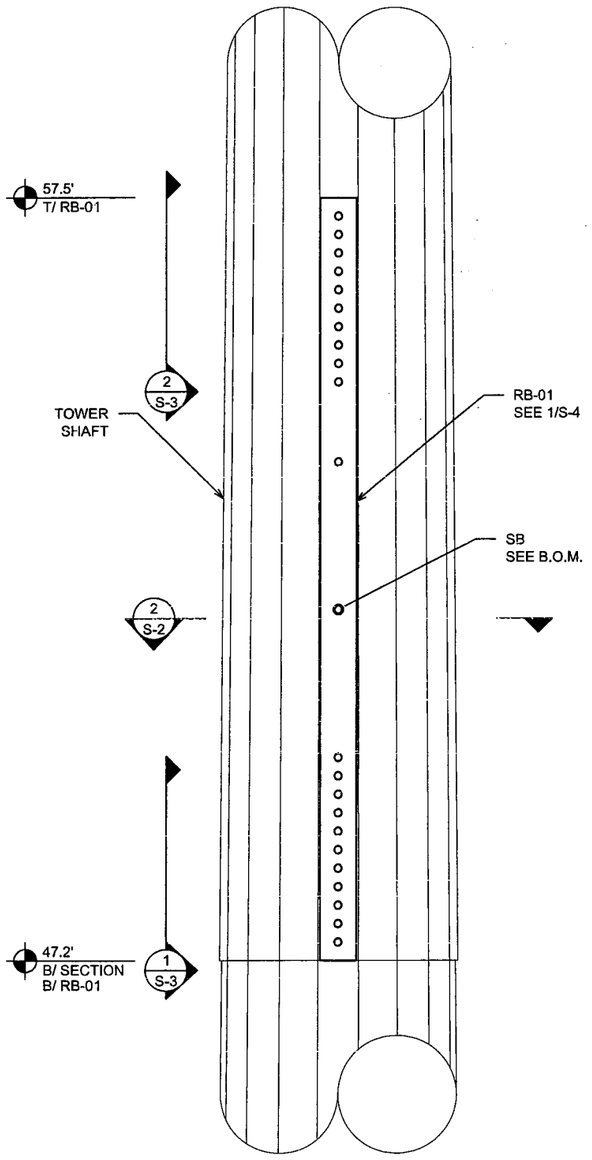
SEAL:



NOV 15 2012

October 2, 2012

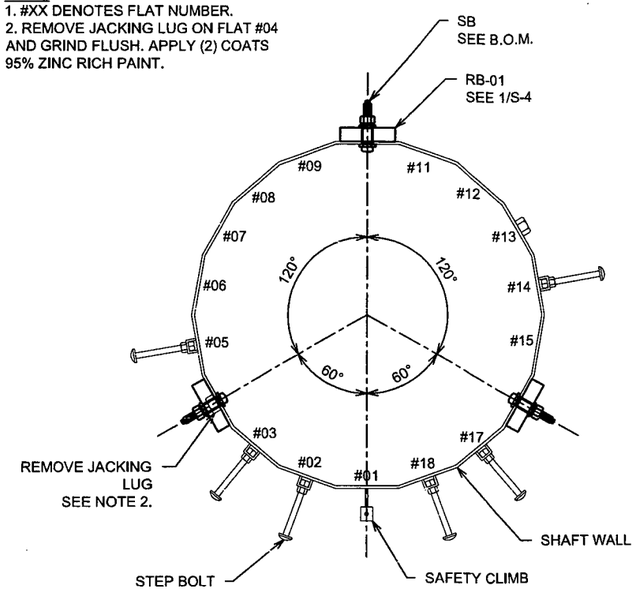
NOTE:
1. VIEW FACING FLAT #10.



1 S-2 SECTION ELEVATION

SCALE: 1/2" = 1'-0"

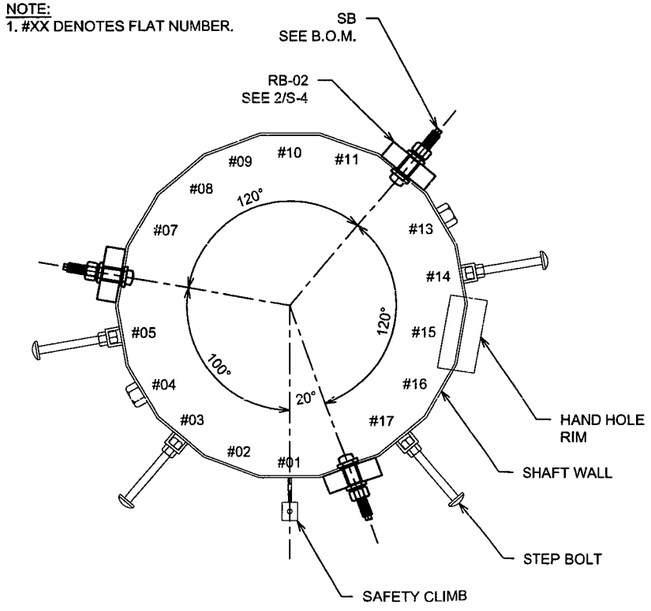
NOTE:
1. #XX DENOTES FLAT NUMBER.
2. REMOVE JACKING LUG ON FLAT #04 AND GRIND FLUSH. APPLY (2) COATS 95% ZINC RICH PAINT.



2 S-2 SECTION ELEVATION

SCALE: 3/4" = 1'-0"

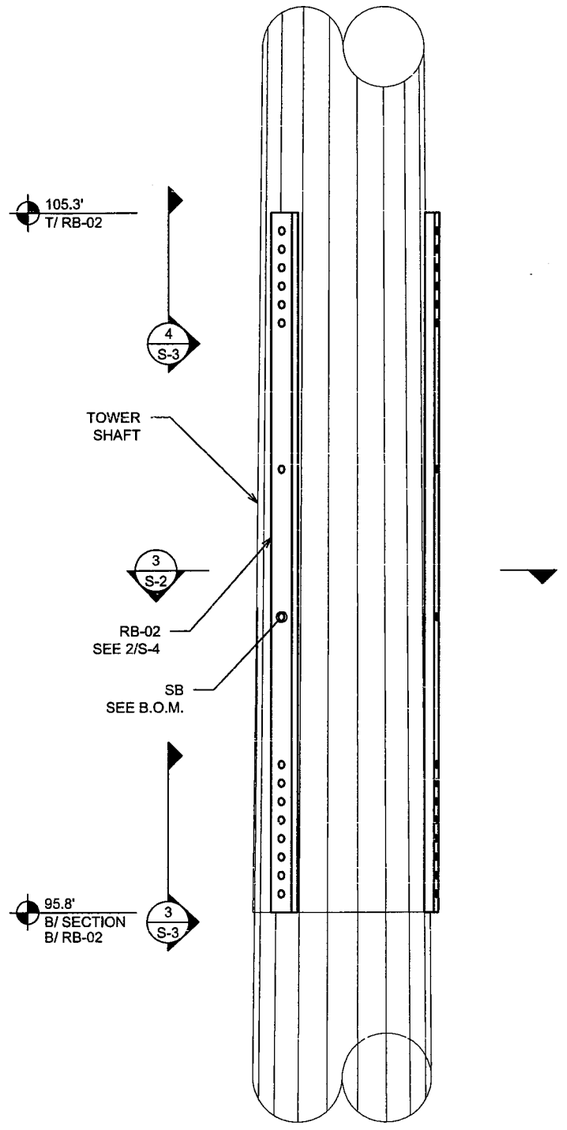
NOTE:
1. #XX DENOTES FLAT NUMBER.



3 S-2 SECTION ELEVATION

SCALE: 1" = 1'-0"

NOTE:
1. VIEW FACING FLAT #10.



4 S-2 SECTION ELEVATION

SCALE: 1/2" = 1'-0"

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA	CHECKED BY: KCI

SHEET TITLE:

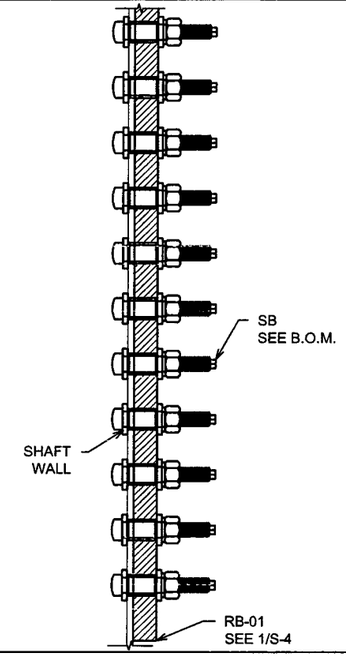
CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
S-2	0
	VSI #: 121779

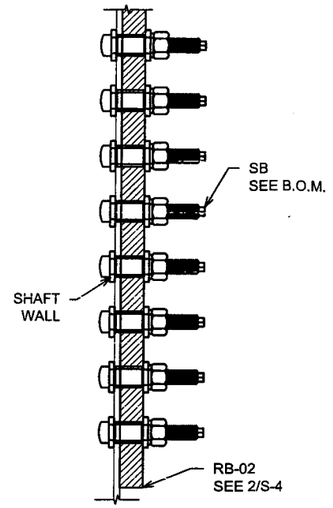
SEAL:

NOV 15 2012

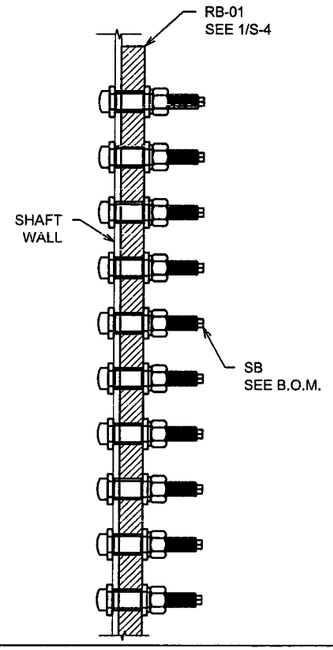
October 2, 2012



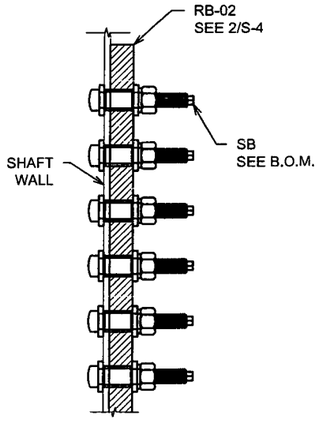
1 S-3 **RB-01 BOTTOM TERMINATION**
SCALE: 1 1/2" = 1'-0"



3 S-3 **RB-02 BOTTOM TERMINATION**
SCALE: 1 1/2" = 1'-0"



2 S-3 **RB-01 TOP TERMINATION**
SCALE: 1 1/2" = 1'-0"



4 S-3 **RB-02 TOP TERMINATION**
SCALE: 1 1/2" = 1'-0"

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA | CHECKED BY: KCI

SHEET TITLE:

CONSTRUCTION DETAILS

SHEET NUMBER: **S-3**

REVISION: **0**

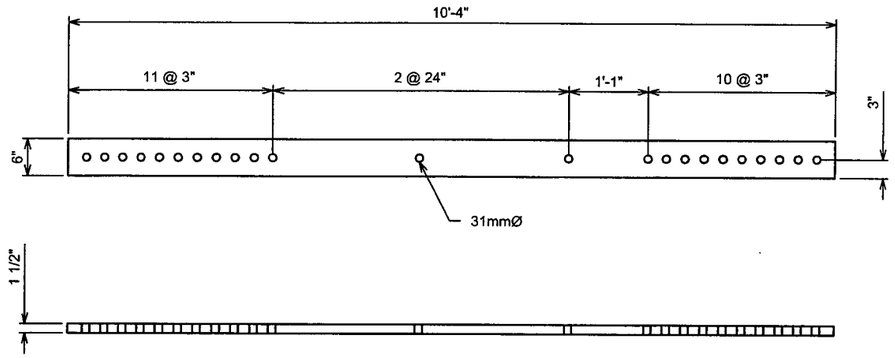
VSI #: 121779

SEAL:

STATE OF CONNECTICUT
No. 25064
LICENSED
PROFESSIONAL ENGINEER

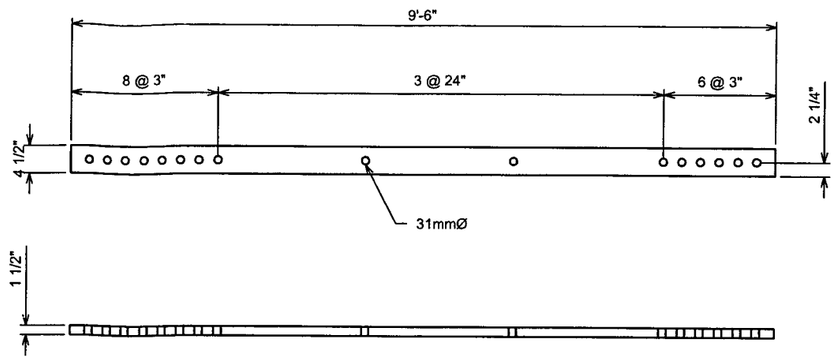
NOV 15 2012

October 2, 2012



1 **S-4** **RB-01 DETAIL**

SCALE: 1/2" = 1'-0"



2 **S-4** **RB-02 DETAIL**

SCALE: 1/2" = 1'-0"

PLANS PREPARED FOR:

TowerCo

5000 VALLEYSTONE DRIVE
CARY, NC 27519
(919) 653-5713

PROJECT INFORMATION:

CAMMILLETTI PROPERTY

CT2021

10 ASHPOHTAG RD
NORFOLK, CT 06058
(LITCHFIELD COUNTY)

PLANS PREPARED BY:

vertical solutions

2002 PRODUCTION DRIVE
APEX, NC 27539
OFFICE: (888) 321-6167
www.verticalsolutions-inc.com

REV	DATE	ISSUED FOR:
0	10-02-12	CONSTRUCTION

DRAWN BY: MEA	CHECKED BY: KCI

SHEET TITLE:

FABRICATION DETAILS

SHEET NUMBER:	REVISION:
S-4	**0**
	VSI #: 121779

SEAL:

STATE OF CONNECTICUT
No. 28064
LICENSED PROFESSIONAL ENGINEER

NOV 15 2012

October 2, 2012