EM-SPRINT-NEXTEL-027-130201

48 Cow Hill Road

Clinton

Alcatel·Lucent

1 Robbins Road
Westford, MA 01886

July 9, 2014

State of Connecticut
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notification of Construction Completion on telecommunication facilities

To whom it may concern:

Alcatel Lucent hereby acknowledges that the list of attached sites have completed construction per the approval granted on the specified date. Please advise if further information is needed..

Very truly yours,

Martha Powers

Martha Powers
Lead Development Manager
Alcatel-Lucent
Sprint Vision Project
1 Robbins Road
Westford, MA 01886

Cc: FST, Siterra

EM/TS #	Address	Town	Sprint ID	Decision Date
EM-SPRINT-062-130912	1065 Wintergreen Avenue	Hamden	CT03XC003	10/15/2013
EM-SPRINT-NEXTEL-060-130118	10 Tanner Marsh Road	Guilford	CT03XC022	2/14/2013
EM-SPRINT-004-130822	181 Montevideo Road	Avon	CT03XC053	9/6/2013
EM-SPRINT-NEXTEL-155-130214A	1358 New Britain Ave.	West Hartford	CT03XC057	3/1/2013
EM-SPRINT-NEXTEL-164-130201	440 Hayden Station Road	Windsor	CT03XC065	3/8/2013
EM-SPRINT-NEXTEL-132-130201	59 McGuire Road	South Windsor	CT03XC066	3/1/2013
EM-SPRINT-NEXTEL-054-130201	299 Paxton Way	Glastonbury	CT03XC081	3/1/2013
EM-SPRINT-NEXTEL-094-130214B	36 Prospect Street	Newington	CT03XC084	3/1/2013
EM-SPRINT-110-130725	10 Sparks Street	Plainville	CT03XC086	8/8/2013
EM-SPRINT-007-130314	260 Beckley Road	Kensington	CT03XC088	4/5/2013
EM-SPRINT-NEXTEL-155-130201	570 New Park Avenue	West Hartford	CT03XC091	3/1/2013
EM-SPRINT-NEXTEL-106-130201	430 Middlesex Turnpike	Old Saybrook	CT03XC102	3/1/2013
EM-SPRINT-NEXTEL-105-130201	30 Short Hills Road	Old Lyme	CT03XC104	3/1/2013
EM-SPRINT-NEXTEL-152-130201	41 Manitock Hill Road	Waterford	CT03XC105	3/1/2013
EM-SPRINT-NEXTEL-045-130201	93 Roxbury Road	East Lyme	CT03XC110	3/1/2013
EM-SPRINT-152-130114	45R Fargo Road	Waterford	CT03XC112	2/14/2013
EM-SPRINT-NEXTEL-027-130201	48 Cow Hill Road	Clinton	CT03XC156	3/1/2013
EM-SPRINT-NEXTEL-082-130201	238 Meridan Road	Middlefield	CT03XC160	3/8/2013
EM-SPRINT-047-130109	160 Plantation Road	East Windsor	CT03XC202	2/7/2013
EM-SPRINT-NEXTEL-077-130214	53 Slater Street	Manchester	CT03XC211	3/1/2013
EM-SPRINT-142-130109	497 Old Post Road	Tolland	CT03XC212	2/7/2013
EM-SPRINT-NEXTEL-042-130222	94 East High Street	East Hampton	CT03XC335	3/8/2013
EM-SPRINT-057-121226	Butternut Hollow Road	Greenwich	CT03XC343	1/11/2013
EM-SPRINT-158-130213	515 Boston Post Road	Westport	CT03XC355	3/1/2013
EM-SPRINT-046-130402	206 Everett Road	Easton	CT03XC362	4/19/2013
EM-SPRINT-085-130322	474 MAIN STREET	MONROE	CT03XC365	4/5/2013
EM-SPRINT-086-131011	57 Cook Drive	Montville	CT03XC365	10/25/2013
EM-SPRINT-118-130322	76 EAST RIDGE	RIDGEFIELD	CT03XC370	4/5/2013
EM-SPRINT-097-131230	20 Barnabas Road	Newtown	CT03XC383	1/21/2014
EM-SPRINT-051-130207	3965 Congress Street	Fairfield	CT03XC385	3/1/2013
EM-SPRINT-NEXTEL-094-130214A	123 Costello Road	Newington	CT23XC555	3/1/2013
EM-SPRINT-119-131008	699 Old Main Street	Rocky Hill	CT23XC556	10/25/2013
EM-SPRINT-077-131008	60 Adams Street	Manchester	CT23XC557	10/25/2013
EM-SPRINT-NEXTEL-080-130123	462 West Main Street	Meriden	CT25XC840	2/14/2013
EM-SPRINT-096-130920	18 Hilltop View Lane	New Milford	CT33XC095	10/4/2013
EM-SPRINT-157-130213	237 Godfrey Road	Weston	CT33XC522	3/1/2013
EM-SPRINT-018-131008	20 Vale Road	Brookfield	CT33XC525	10/25/2013
EM-SPRINT-077-130528	595 Keeney Street	Manchester	CT33XC538	6/14/2013
EM-SPRINT-NEXTEL-129-130214	400 Main Street	Somers	CT33XC554	3/1/2013
EM-SPRINT-047-130322	15 CHAMBERLAIN	BROADBROOK	CT33XC565	4/5/2013
EM-SPRINT-004-130502	277 Huckleberry Road	Avon	CT33XC589	5/17/2013

EM-SPRINT-143-130604	218 Wheeler Road	Torrington	CT33XC592	6/28/2013
EM-SPRINT-140-130724	583 Chapel Street	Thomaston	CT33XC603	8/8/2013
EM-SPRINT-103-130920	Charles Marshall Drive	Norwalk	CT33XC802	10/4/2013
EM-SPRINT-NEXTEL-064-130214	439-455 Homestead Ave.	Hartford	CT43XC805	3/1/2013
EM-SPRINT-064-130311	99 Meadow Street	Hartford	CT43XC806	4/5/2013
EM-SPRINT-083-131127	290 Preston Ave.	Middletown	CT43XC816	12/16/2013
EM-SPRINT-128-130920	530 Bushy Hill Road	Simsbury	CT43XC825	10/4/2013
EM-SPRINT-164-130405A	340 Bloomfield Avenue	Windsor	CT43XC826	4/19/2013
EM-SPRINT-077-130109	239 Middle Turnpike	Manchester	CT43XC827	2/13/2013
EM-SPRINT-165-130118	2-4 Volunteer Drive	Windsor Locks	CT43XC828	2/14/2013
EM-SPRINT-NEXTEL-139-130214	44 Fyler Place	Suffield	CT43XC829	3/8/2013
EM-SPRINT-111-130712	171 Town Hill Road	Plymouth	CT54XC712	7/26/2013
EM-SPRINT-009-130322	38 Spring Hill Road	Bethel	CT54XC749	4/5/2013
EM-SPRINT-154-131011	315 Spencer Plains Road	Westbrook	CT54XC758	10/25/2013
EM-SPRINT-023-130405	14 Canton Springs Road	Canton	CT54XC760	4/19/2013
EM-SPRINT-104-130606	153 Old Salem Road	Norwich	CT54XC775	6/28/2013
EM-SPRINT-164-130405B	99 Day Hill Road	Windsor	CT54XC787	4/19/2013
EM-SPRINT-132-130920	300 Governor's Highway	South Windsor	CT60XC014	10/4/2013
EM-SPRINT-094-130108	605 Willard Avenue	Newington	CT60XC018	1/25/2013
EM-SPRINT-146-130506	197 South Street	Vernon	CT60XC935	5/24/2013
EM-SPRINT-146-130311	777 Talcottville Road	Vernon	CT70XC147	4/5/2013
EM-SPRINT-126-130531	62 Birdseye Road	Shelton	CT73XC004	6/21/2013

CROWN CASTLE

500 West Cummings Park, Suite 3600 Woburn, Ma 01801

Telephone: 781-771-2255
Email
jeff.barbadora@crowncastle.com

June 27, 2014

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

RE: Sprint PCS-Exempt Modification - Crown Site BU: 806363
Sprint PCS Site ID: CT03XC156
Located at: 49 Cow Hill Road, Clinton, Connecticut

Dear Ms. Bachman:

This letter is to confirm that all construction activity has been completed. Pursuant to the Connecticut Siting Council approval of **EM-Sprint-Nextel-027-130201, t**his letter is to satisfy item number three of the approval letter that the CSC will be notified in writing within 45 days after completion of construction.

Please contact me if you have any questions.

Sincerely,

Jeffrey Barbadora
781-970-0053

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

March 1, 2013

Kevin Savage
Crown Castle
3530 Torrington Way, Suite 300
Charlotte, NC 28277

RE: **EM-SPRINT-NEXTEL-027-130201** - Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 49 Cow Hill Road, Clinton, Connecticut.

Dear Mr. Savage:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated January 29, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding

the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable William W. Fritz, Jr., First Selectman, Town of Clinton
Thomas Lane, Zoning Enforcement Officer, Town of Clinton

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

February 19, 2013

The Honorable William W. Fritz, Jr.
First Selectman
Town of Clinton
54 East Main Street
Clinton, CT 06413

RE: **EM-SPRINT-NEXTEL-027-130201** - Sprint Nextel Corporation notice of intent to modify an existing telecommunications facility located at 48 Cow Hill Road, Clinton, Connecticut.

Dear First Selectman Fritz:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by March 5, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/laf

c: Thomas Lane, Zoning Enforcement Officer, Town of Clinton

CSC
CONNECTICUT SITING COUNCIL

CROWN CASTLE

Crown Castle
3530 Torrington Way Suite 300
Charlotte NC 28277

Tel 704-405-6560
Fax 724-416-4911
www.crowncastle.com

EM-SPRINT-NEXTEL-027-130201

January 29, 2013

ORIGINAL

RECEIVED
FEB - 1 2013
CONNECTICUT
SITING COUNCIL

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

RE: Sprint Nextel-Exempt Modification Request- Crown Site BU 806363 Sprint Nextel Site CT03XC156 – Located at – 48 Cow Hill Road Clinton, CT 06413.

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of Sprint Nextel (Sprint). Sprint is making modifications to certain existing sites in its Connecticut system in order to implement their network vision technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that 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 attachments is being sent to the First Selectman William Fritz for Clinton, CT.

Sprint plans to modify the existing wireless communications facility owned by Crown Castle and located at 48 Cow Hill Road Clinton, CT 06413. Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to Sprints operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. 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 proposed modifications will not result in an increase in the height of the existing tower. Sprints replacement antennas and will be located at the same elevation on the existing tower.
2. Although the proposed modifications will involve replacing the ground-mounted equipment the proposed change will not require the extension of the site boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted a safely standard. A cumulative General Power Density table for Sprint modified facility is included behind Tab 2.

Also attached is a Structural Report confirming that the tower and foundation can support Sprints proposed modifications. (See Tab 3).

For the foregoing reasons, Sprint respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b) (2).

Sincerely,

/Kevin Savage

Kevin Savage

Enclosures
Copy to: Clinton, CT, First Selectman William Fritz

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: CT03XC156

Clinton (crown)
48 Cow Hill Road
Clinton, CT 06413

December 28, 2012

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

EBI Consulting
environmental | engineering | due diligence

December 28, 2012

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

Re: Emissions Values for Site: **CT03XC156 – Clinton (crown)**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 48 Cow Hill Road, Clinton, 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 48 Cow Hill Road, Clinton, 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) 3 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 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 **198 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	CT03XC156 - Clinton (crown)
Site Addresss	48 Cow Hill Road, Clinton, CT, 06413
Site Type	Self Support Tower

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	3	60	15.9	198	192	1/2 "	0.5	0	2080.4211	20.28873	2.02887%
1a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	198	192	1/2 "	0.5	0	389.96892	3.803063	0.67073%
														Sector total Power Density Value:		2.700%	

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	3	60	15.9	198	192	1/2 "	0.5	0	2080.4211	20.28873	2.02887%
2a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	198	192	1/2 "	0.5	0	389.96892	3.803063	0.67073%
														Sector total Power Density Value:		2.700%	

Sector 3

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
3a	RFS	APXVSPP18-C-A20	RRH	1900 MHz	CDMA / LTE	20	3	60	15.9	198	192	1/2 "	0.5	0	2080.4211	20.28873	2.02887%
3a	RFS	APXVSPP18-C-A20	RRH	850 MHz	CDMA / LTE	20	1	20	13.4	198	192	1/2 "	0.5	0	389.96892	3.803063	0.67073%
														Sector total Power Density Value:		2.700%	

Site Composite MPE %	
Carrier	MPE %
Sprint	8.099%
AT&T	6.150%
T-Mobile	4.660%
Pocket	2.050%
Nextel	1.860%
Verizon Wireless	6.720%
Town	6.900%
Media FLO	6.630%
Total Site MPE %	**43.069%**

EBI Consulting
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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 **8.099% (2.700% 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 **43.069%** 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

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **October 30, 2012**

Sean Dempsey
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6565

Paul J Ford and Company
250 E. Broad St Suite 1500
Columbus, OH 43215
614-221-6679
chedges@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate – Interim Loading**	
	Carrier Site Number:	CT03XC156
	Carrier Site Name:	CT03XC156
Crown Castle Designation:	**Crown Castle BU Number:**	806363
	Crown Castle Site Name:	HRT 105 943201
	Crown Castle JDE Job Number:	190484
	Crown Castle Work Order Number:	540371
	Crown Castle Application Number:	165580 Rev. 4
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37512-2762A
Site Data:	**48 COW HILL ROAD, CLINTON, Middlesex County, CT**	
	Latitude *41° 17' 20.2"*, Longitude *-72° 32' 18.5"*	
	212.625 Foot - Self Support Tower	

Dear Sean Dempsey,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 498438, in accordance with application 165580, revision 4.

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

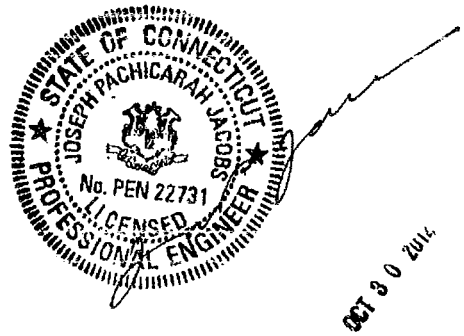
LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Christina Hedges, E.I.T
Structural Engineer



OCT 30 2012

tnxTower Report - version 6.0.3.0

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **October 30, 2012**

Sean Dempsey
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6565

Paul J Ford and Company
250 E. Broad St Suite 1500
Columbus, OH 43215
614-221-6679
chedges@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate – Interim Loading**	
	Carrier Site Number:	CT03XC156
	Carrier Site Name:	CT03XC156
Crown Castle Designation:	**Crown Castle BU Number:**	806363
	Crown Castle Site Name:	HRT 105 943201
	Crown Castle JDE Job Number:	190484
	Crown Castle Work Order Number:	540371
	Crown Castle Application Number:	165580 Rev. 4
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37512-2762A
Site Data:	**48 COW HILL ROAD, CLINTON, Middlesex County, CT**	
	Latitude *41° 17' 20.2"*, Longitude *-72° 32' 18.5"*	
	212.625 Foot - Self Support Tower	

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Christina Hedges, E.I.T
Structural Engineer

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1) INTRODUCTION

This tower is a 212.625 ft Self Support tower designed by ROHN in July of 1992. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
199.0	198.0	3	alcatel lucent	1900MHz RRH (65MHz)	3	1 1/4	
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
208.0	209.0	2	antel	BXA-70063/4CF w/ Mount Pipe	15	1 5/8	1
		1	antel	BXA-70080/6CF w/ Mount Pipe			
		6	antel	LPA-171080/8CFx2 w/ Mount Pipe			
		6	antel	LPA-80080/6CF w/ Mount Pipe			
	208.0	1	tower mounts	Sector Mount [SM 510-3]			
199.0	199.0	1	tower mounts	Sector Mount [SM 505-3]	6	1 5/8	1
	198.0	6	decibel	DB980H90E-M w/ Mount Pipe			
189.0	190.0	6	adc	DUAL BAND 800/1900 FULL BAND MASTHEAD	1 2 12	3/8 5/8 1 5/8	1
		6	ericsson	RRUS-11			
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		1	raycap	DC6-48-60-18-8F			
	189.0	1	tower mounts	Sector Mount [SM 602-3]			
183.0	183.0	3	rfs celwave	APXV18-206517LS w/ Mount Pipe	6	1 5/8	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note 1, 2
175.0	179.0	2	radiowaves	HPD2-23	5	3/8	1
	176.0	12	decibel	DB844H90E-XY w/ Mount Pipe			
	175.0	1	tower mounts	Sector Mount [SM 510-3]			
167.0	173.0	1	rfs celwave	1151-3	1	7/8	1
	167.0	1	tower mounts	Side Arm Mount [SO 308-1]			
164.0	173.0	1	andrew	DB589-Y	1	7/8	1
	164.0	1	tower mounts	Side Arm Mount [SO 308-1]			
162.0	160.0	1	sinclair	SD310-HL	1	7/8	1
147.0	153.0	1	rfs celwave	1151-3	1	7/8	1
	147.0	1	tower mounts	Side Arm Mount [SO 308-1]			
145.0	148.0	1	sinclair	SD310-HL	1	7/8	1
	145.0	1	tower mounts	Side Arm Mount [SO 308-1]			
139.0	140.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	6 6	1 5/8 1 1/4	1
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		3	rfs celwave	ATMPP1412D-1CWA			
133.0	134.0	1	andrew	PL6-59W	1	EW52	1
	133.0	1	tower mounts	Pipe Mount [PM 601-1]			
128.0	132.0	1	rfs celwave	1142-2C			1
	128.0	1	tower mounts	Side Arm Mount [SO 308-1]			
51.0	51.0	1	gps	GPS_A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Equipment to be removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., 7/6/92		262276
4-POST-MODIFICATION INSPECTION	Vertical Structures, 10/30/07	2007-004-163	2146143
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 8/11/92	28529JC	262273
4-TOWER MANUFACTURER DRAWINGS	Rohn, 7/17/92	28529JC	262274
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Structures, 6/29/07	2007-004-075	2169576

3.1) Analysis Method

tnxTower (version 6.0.3.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P allow (lb)	% Capacity	Pass / Fail
T1	212.625 - 202.458	Leg	Pipe 2.875" x 0.203" (2.5 STD)	1	-2079	37412	8.2	Pass
T2	202.458 - 182.292	Leg	Pipe 3.5" x 0.300" (3 XS)	28	-24625	83436	29.5	Pass
T3	182.292 - 162.104	Leg	Pipe 4.5" x 0.337" (4 XS)	67	-65181	139661	46.7	Pass
T4	162.104 - 141.896	Leg	Pipe 5.5" x 0.375" (5 EH)	106	-103812	203696	51.0	Pass
T5	141.896 - 121.688	Leg	Pipe 6.625" x 0.340" (6 EHS)	145	-134226	212984	63.0	Pass
T6	121.688 - 101.479	Leg	Pipe 6.625" x 0.432" (6 XS)	172	-168376	265263	63.5	Pass
T7	101.479 - 81.2708	Leg	Pipe 6.625" x 0.432" (6 XS)	199	-198575	265235	74.9	Pass
T8	81.2708 - 61	Leg	Pipe 8.75" x 0.375" (8 EHS)	226	-227501	339206	67.1	Pass
T9	61 - 40.6667	Leg	Pipe 8.75" x 0.375" (8 EHS)	253	-256540	338973	75.7	Pass
T10	40.6667 - 20.3333	Leg	Pipe 8.75" x 0.500" (8 EH)	280	-271355	443805	61.1	Pass
T11	20.3333 - 0	Leg	Pipe 8.75" x 0.500" (8 EH)	313	-299135	443805	67.4	Pass
T1	212.625 - 202.458	Diagonal	Pipe 2.375" x 0.154" (2 STD)	15	-2689	21598	12.5	Pass
T2	202.458 - 182.292	Diagonal	Pipe 2.375" x 0.154" (2 STD)	39	-9745	15455	63.1	Pass
T3	182.292 - 162.104	Diagonal	Pipe 2.375" x 0.154" (2 STD)	77	-10097	13700	73.7	Pass
T4	162.104 - 141.896	Diagonal	Pipe 2.375" x 0.154" (2 STD)	111	-9900	11720	84.5	Pass
T5	141.896 - 121.688	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	149	-12976	14738	88.0	Pass
T6	121.688 - 101.479	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	176	-11807	12881	91.7	Pass
T7	101.479 - 81.2708	Diagonal	Pipe 3.5" x 0.216" (3 STD)	203	-11368	22060	51.5	Pass
T8	81.2708 - 61	Diagonal	Pipe 3.5" x 0.216" (3 STD)	230	-12427	19594	63.4	Pass
T9	61 - 40.6667	Diagonal	Pipe 3.5" x 0.216" (3 STD)	257	-12843	17160	74.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P allow (lb)	% Capacity	Pass / Fail
T10	40.6667 - 20.3333	Diagonal	Pipe 3.5" x 0.216" (3 STD)	284	-18859	28340	66.5	Pass
T11	20.3333 - 0	Diagonal	Pipe 3.5" x 0.216" (3 STD)	317	-18264	26700	68.4	Pass
T1	212.625 - 202.458	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	13	-1921	20302	9.5	Pass
T2	202.458 - 182.292	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	37	-5219	20252	25.8	Pass
T3	182.292 - 162.104	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	76	-6331	17348	36.5	Pass
T4	162.104 - 141.896	Horizontal	Pipe 2.375" x 0.154" (2 STD)	109	-6847	24621	27.8	Pass
T5	141.896 - 121.688	Horizontal	Pipe 2.375" x 0.154" (2 STD)	148	-7852	20379	38.5	Pass
T6	121.688 - 101.479	Horizontal	Pipe 2.375" x 0.154" (2 STD)	175	-7788	14811	52.6	Pass
T7	101.479 - 81.2708	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	202	-7988	25160	31.7	Pass
T8	81.2708 - 61	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	229	-9123	19693	46.3	Pass
T9	61 - 40.6667	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	256	-9749	15682	62.2	Pass
T10	40.6667 - 20.3333	Horizontal	Pipe 3.5" x 0.216" (3 STD)	283	-10413	27796	37.5	Pass
T11	20.3333 - 0	Horizontal	Pipe 3.5" x 0.216" (3 STD)	316	-10873	22886	47.5	Pass
T1	212.625 - 202.458	Top Girt	Pipe 1.9" x 0.145" (1.5 STD)	4	-162	20345	0.8	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	304	-4709	11680	40.3	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	318	-5191	9928	52.3	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	305	-4284	7973	53.7	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	319	-4418	7442	59.4	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	308	-52	10674	0.5	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	341	-49	8915	0.5	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	307	-57	6996	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	340	-57	6286	0.9	Pass
T1	212.625 - 202.458	Inner Bracing	L 2 x 2 x 1/8	16	-3	5830	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L 2 x 2 x 1/8	41	-7	5727	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L 2 x 2 x 1/8	80	-7	4209	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L 2 x 2 x 1/8	118	-7	2886	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L 2 x 2 x 1/8	158	-8	2178	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L 2.5 x 2.5 x 3/16	185	-8	4590	0.4	Pass
T7	101.479 - 81.2708	Inner Bracing	L 3 x 3 x 3/16	213	-9	4507	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L 3.5 x 3.5 x 1/4	238	-10	7336	0.5	Pass
T9	61 - 40.6667	Inner Bracing	L 3.5 x 3.5 x 1/4	265	-10	5885	0.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T10	40.6667 - 20.3333	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	311	-12	19664	0.5	Pass
T11	20.3333 - 0	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	343	-13	16278	0.5	Pass
							Summary	
						Leg (T9)	75.7	Pass
						Diagonal (T6)	91.7	Pass
						Horizontal (T9)	62.2	Pass
						Top Girt (T1)	0.8	Pass
						Redund Horz 1 Bracing (T11)	52.3	Pass
						Redund Diag 1 Bracing (T11)	59.4	Pass
						Redund Hip 1 Bracing (T11)	0.5	Pass
						Redund Hip Diagonal Bracing (T11)	0.9	Pass
						Inner Bracing (T9)	0.6	Pass
						Bolt Checks	61.7	Pass
						Rating =	91.7	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
	Anchor Rods		57.8	Pass
1	Base Foundation		72.9	Pass
1	Base Foundation Soil Interaction		57.2	Pass

Structure Rating (max from all components) =	91.7%

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

APPENDIX A

TNXTOWER OUTPUT

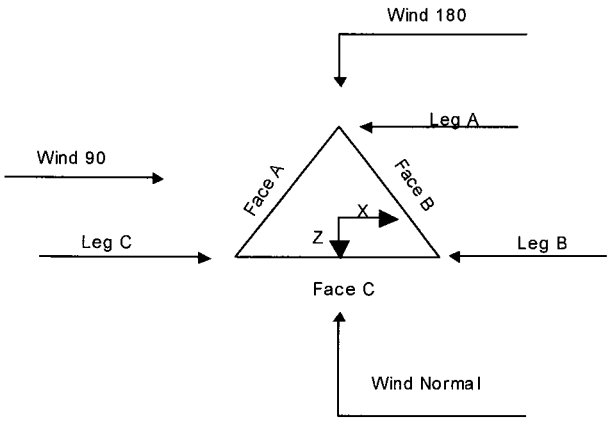
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 212.63 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.50 ft at the top and 30.18 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

3) Tower is located in Middlesex County, Connecticut.
4) Basic wind speed of 85.00 mph.
5) Nominal ice thickness of 0.750 in.
6) Ice thickness is considered to increase with height.
7) Ice density of 56 pcf.
8) A wind speed of 37.60 mph is used in combination with ice.
9) Deflections calculated using a wind speed of 50.00 mph.
10) A non-linear (P-delta) analysis was used.
11) Pressures are calculated at each section.
12) Stress ratio used in tower member design is 1.333.
13) 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	212.63-202.46		B056	8.50	1	10.17
T2	202.46-182.29		B087	8.54	1	20.17
T3	182.29-162.10		C034	8.63	1	20.19
T4	162.10-141.90		D054	10.71	1	20.21
T5	141.90-121.69		E066	12.79	1	20.21
T6	121.69-101.48		F020	15.04	1	20.21
T7	101.48-81.27		G023	17.54	1	20.21
T8	81.27-61.00		H029	20.18	1	20.27
T9	61.00-40.67		J035	22.68	1	20.33
T10	40.67-20.33		K004	25.18	1	20.33
T11	20.33-0.00		L075	27.68	1	20.33

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	212.63-202.46	5.08	K Brace Down	No	Yes	0.000	0.000
T2	202.46-182.29	6.72	K Brace Down	No	Yes	0.000	0.000
T3	182.29-162.10	6.59	K Brace Down	No	Yes	5.000	0.000
T4	162.10-141.90	6.60	K Brace Down	No	Yes	5.000	0.000
T5	141.90-121.69	9.90	K Brace Down	No	Yes	5.000	0.000
T6	121.69-101.48	9.90	K Brace Down	No	Yes	5.000	0.000
T7	101.48-81.27	9.90	K Brace Down	No	Yes	5.000	0.000
T8	81.27-61.00	9.93	K Brace Down	No	Yes	5.000	0.000
T9	61.00-40.67	9.96	K Brace Down	No	Yes	5.000	0.000
T10	40.67-20.33	19.92	K1 Down	No	Yes	5.000	0.000
T11	20.33-0.00	19.92	K1 Down	No	Yes	5.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 212.63-202.46	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T2 202.46-182.29	Pipe	Pipe 3.5" x 0.300" (3 XS)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T3 182.29-162.10	Pipe	Pipe 4.5" x 0.337" (4 XS)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T4 162.10-141.90	Pipe	Pipe 5.5" x 0.375" (5 EH)	A513-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T5 141.90-121.69	Pipe	Pipe 6.625" x 0.340" (6 EHS)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T6 121.69-101.48	Pipe	Pipe 6.625" x 0.432" (6 XS)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T7 101.48-81.27	Pipe	Pipe 6.625" x 0.432" (6 XS)	A513-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T8 81.27-61.00	Pipe	Pipe 8.75" x 0.375" (8 EHS)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T9 61.00-40.67	Pipe	Pipe 8.75" x 0.375" (8 EHS)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T10 40.67-20.33	Pipe	Pipe 8.75" x 0.500" (8 EH)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T11 20.33-0.00	Pipe	Pipe 8.75" x 0.500" (8 EH)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 212.63-202.46	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T2 202.46-182.29	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T3 182.29-162.10	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T4 162.10-141.90	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T5 141.90-121.69	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T6 121.69-101.48	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T7 101.48-81.27	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T8 81.27-61.00	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T9 61.00-40.67	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T10 40.67-20.33	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T11 20.33-0.00	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 212.63-202.46	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T2 202.46-182.29	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T3 182.29-162.10	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T4 162.10-141.90	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T5 141.90-121.69	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T6 121.69-101.48	Pipe		A618-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T7 101.48-81.27	Pipe		A618-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T8 81.27-61.00	Pipe		A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)
T9 61.00-40.67	Pipe		A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)
T10 40.67-20.33	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T11 20.33-0.00	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T10 40.67-20.33	A53-B-35 (35 ksi)	Horizontal (1) Diagonal (1) Hip (1) Hip Diagonal	Pipe Pipe Pipe	Pipe 1.9" x 0.145" (1.5 STD) Pipe 2.375" x 0.154" (2 STD) Pipe 1.9" x 0.145" (1.5 STD) Pipe 2.875" x 0.203" (2.5 STD)	1 1 1 1
T11 20.33-0.00	A53-B-35 (35 ksi)	Horizontal (1) Diagonal (1) Hip (1) Hip Diagonal	Pipe Pipe Pipe	Pipe 1.9" x 0.145" (1.5 STD) Pipe 2.375" x 0.154" (2 STD) Pipe 1.9" x 0.145" (1.5 STD) Pipe 2.875" x 0.203" (2.5 STD)	1 1 1 1

Tower Section Geometry (cont'd)

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
T1 212.63-202.46	0.00	0.250	A36 (36 ksi)	1	1	1.05	6.000	6.000
T2 202.46-182.29	0.00	0.250	A36 (36 ksi)	1	1	1.05	36.000	36.000
T3 182.29-162.10	0.00	0.250	A36 (36 ksi)	1	1	1.05	36.000	36.000
T4 162.10-141.90	0.00	0.250	A36 (36 ksi)	1	1	1.1	6.000	6.000

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
T5 141.90-121.69	0.00	0.250	A36 (36 ksi)	1	1	1.1	36.000	36.000
T6 121.69-101.48	0.00	0.375	A36 (36 ksi)	1	1	1.1	36.000	36.000
T7 101.48-81.27	0.00	0.375	A36 (36 ksi)	1	1	1.1	36.000	36.000
T8 81.27-61.00	0.00	0.375	A36 (36 ksi)	1	1	1.15	36.000	36.000
T9 61.00-40.67	0.00	0.375	A36 (36 ksi)	1	1	1.15	36.000	36.000
T10 40.67-20.33	0.00	0.375	A36 (36 ksi)	1	1	1.25	36.000	36.000
T11 20.33-0.00	0.00	0.375	A36 (36 ksi)	1	1	1.25	36.000	36.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 212.63-202.46	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 202.46-182.29	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 182.29-162.10	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 162.10-141.90	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 141.90-121.69	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 121.69-101.48	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 101.48-81.27	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 81.27-61.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 61.00-40.67	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 40.67-20.33	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 20.33-0.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 212.63-202.46	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T2 202.46-182.29	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T3 182.29-162.10	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75
T4 162.10-141.90	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T5 141.90-121.69	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T6 121.69-101.48	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 101.48-81.27	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T8 81.27-61.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 61.00-40.67	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T10 40.67-20.33	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T11 20.33-0.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 212.63-202.46	Flange	0.750 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T2 202.46-182.29	Flange	0.875 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T3 182.29-162.10	Flange	1.000 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T4 162.10-141.90	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T5 141.90-121.69	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T6 121.69-101.48	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T7 101.48-81.27	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T8 81.27-61.00	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T9 61.00-40.67	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T10 40.67-20.33	Flange	1.000 A325N	8	0.750 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.750 A325N	2	0.625 A325N	1
T11 20.33-0.00	Flange	1.000 A354-BC	10	0.750 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.750 A325N	2	0.625 A325N	1

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
3/8" power cable	C	Yes	Ar (CfAe)	212.00 - 5.00	0.000	0.49	2	2	0.440	0.440		0.08
LDF4-50A (1/2" foam)	A	Yes	Ar (CfAe)	51.00 - 5.00	0.000	0.49	1	1	0.630	0.630		0.15
1.5" flat Cable Ladder Rail	A	Yes	Af (CfAe)	197.00 - 5.00	0.000	0.4	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	A	Yes	Ar (CfAe)	197.00 - 5.00	0.000	0.4	9	6	0.270	1.980		0.92
1.5" flat Cable Ladder Rail	A	Yes	Af (CfAe)	189.00 - 5.00	0.000	-0.4	2	2	24.000 1.500	1.500	6.000	1.80
WR-VG82ST-BRDA(5/8")	A	Yes	Ar (CfAe)	189.00 - 5.00	0.000	-0.32	3	2	0.645	0.645		0.31
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	145.00 - 5.00	0.000	-0.36	5	5	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	147.00 - 145.00	0.000	-0.36	4	4	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	162.00 - 147.00	0.000	-0.36	3	3	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	164.00 - 162.00	0.000	-0.36	2	2	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	167.00 - 164.00	0.000	-0.36	1	1	1.090	1.090		0.33
LDF7-50A (1 5/8" foam)	A	Yes	Ar (CfAe)	189.00 - 5.00	0.000	-0.42	12	6	0.270	1.980		0.92
FB-L98-002-XXX (3/8")	A	Yes	Ar (CfAe)	175.00 - 5.00	0.000	-0.48	5	2	0.394	0.394		0.88
1.5" flat Cable Ladder Rail	C	Yes	Af (CfAe)	208.00 - 5.00	0.000	0.4	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	C	Yes	Ar (CfAe)	208.00 - 5.00	0.000	0.42	6	6	0.270	1.980		0.92
LDF7-50A (1 5/8" foam)	C	Yes	Ar (CfAe)	208.00 - 5.00	0.000	0.38	9	6	0.270	1.980		0.92
EW52(ELLIPTICAL)	C	Yes	Ar (CfAe)	133.00 - 5.00	0.000	0.4	1	1	2.210	2.210		0.59
1.5" flat Cable Ladder Rail	C	Yes	Af (CfAe)	183.00 - 5.00	0.000	-0.45	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	C	Yes	Ar (CfAe)	183.00 - 5.00	0.000	-0.45	6	6	0.270	1.980		0.92
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	175.00 - 5.00	0.000	0.45	2	2	24.000 1.500	1.500	6.000	1.80
LDF6-50 (1 1/4" foam)	B	Yes	Ar (CfAe)	175.00 - 5.00	0.000	0.45	12	12	0.700	1.550		0.66
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	139.00 - 5.00	0.000	-0.45	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	B	Yes	Ar (CfAe)	139.00 - 5.00	0.000	-0.45	12	6	0.270	1.980		0.92

Discrete Tower Loads

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 lb
Strobe Light	B	From Leg	0.00 0 0	0.000	212.00	No Ice 1/2" Ice	1.72 1.93 2.14	1.72 1.93 2.14	50 76 104

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 lb
						1" Ice	2.60	2.60	170
						2" Ice	3.65	3.65	344
						4" Ice			
Obstruction light	A	From Leg	0.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.80 0.94 1.10 1.44 2.27	0.80 0.94 1.10 1.44 2.27	10 20 32 63 154
Obstruction light	B	From Leg	0.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.80 0.94 1.10 1.44 2.27	0.80 0.94 1.10 1.44 2.27	10 20 32 63 154
Obstruction light	C	From Leg	0.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.80 0.94 1.10 1.44 2.27	0.80 0.94 1.10 1.44 2.27	10 20 32 63 154
**									
BXA-70080/6CF w/ Mount Pipe	A	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.07 6.63 7.15 8.25 10.78	6.10 7.26 8.13 9.92 13.71	43 95 158 310 749
(2) LPA-171080/8CFx2 w/ Mount Pipe	A	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	27 58 99 198 498
(2) LPA-80080/6CF w/ Mount Pipe	A	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	46 110 185 363 857
BXA-70063/4CF w/ Mount Pipe	B	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.84 6.30 7.24 9.26	3.62 4.22 4.83 6.16 9.18	28 68 116 233 573
(2) LPA-171080/8CFx2 w/ Mount Pipe	B	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	27 58 99 198 498
(2) LPA-80080/6CF w/ Mount Pipe	B	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	46 110 185 363 857
BXA-70063/4CF w/ Mount Pipe	C	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.84 6.30 7.24 9.26	3.62 4.22 4.83 6.16 9.18	28 68 116 233 573
(2) LPA-171080/8CFx2 w/	C	From Face	4.00	0.000	208.00	No Ice	2.49	4.41	27

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 lb
Mount Pipe			0 1			1/2" Ice	2.85 3.22	5.07 5.74	58 99
						1" Ice	3.99	7.15	198
						2" Ice	5.84	10.23	498
						4" Ice			
(2) LPA-80080/6CF w/ Mount Pipe	C	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	46 110 185 363 857
Sector Mount [SM 510-3]	C	None		0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	40.10 57.33 74.56 109.02 177.94	40.10 57.33 74.56 109.02 177.94	2396 3089 3782 5167 7937
**									
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	30 64 107 216 549
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	30 64 107 216 549
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.04 4.50 4.95 5.87 8.05	3.62 4.48 5.22 6.74 10.00	30 64 107 216 549
1900MHz RRH (65MHz)	A	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	60 84 111 176 354
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	64 86 111 172 338
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	83 148 225 406 909
1900MHz RRH (65MHz)	B	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	60 84 111 176 354
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	64 86 111 172 338

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 lb
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	83 148 225 406 909
1900MHz RRH (65MHz)	C	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	60 84 111 176 354
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	64 86 111 172 338
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	83 148 225 406 909
Sector Mount [SM 505-3]	C	None		0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.86 49.79 64.72 94.58 154.30	34.86 49.79 64.72 94.58 154.30	1725 2317 2909 4092 6458
(2) 4' x 2" Pipe Mount	A	From Leg	4.00 0 0	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
(2) 4' x 2" Pipe Mount	B	From Leg	4.00 0 0	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
(2) 4' x 2" Pipe Mount	C	From Leg	4.00 0 0	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
**									
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	A	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.55 1.72 1.90 2.28 3.14	0.81 0.94 1.09 1.40 2.12	27 38 52 86 133
(2) 7770.00 w/ Mount Pipe	A	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	55 101 155 287 665
(2) LGP13519	A	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice	0.34 0.42 0.51	0.21 0.28 0.36	5 8 12

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 lb
						1" Ice	0.73	0.55	24
						2" Ice	1.25	1.03	71
						4" Ice			
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	B	From Face	4.00 0 1	0.000	189.00	No Ice	1.55	0.81	27
						1/2" Ice	1.72	0.94	38
						1" Ice	1.90	1.09	52
						2" Ice	2.28	1.40	86
						4" Ice	3.14	2.12	189
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00 0 1	0.000	189.00	No Ice	6.12	4.25	55
						1/2" Ice	6.63	5.01	101
						1" Ice	7.13	5.71	155
						2" Ice	8.16	7.16	287
						4" Ice	10.36	10.41	665
(2) LGP13519	B	From Face	4.00 0 1	0.000	189.00	No Ice	0.34	0.21	5
						1/2" Ice	0.42	0.28	8
						1" Ice	0.51	0.36	12
						2" Ice	0.73	0.55	24
						4" Ice	1.25	1.03	71
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	C	From Face	4.00 0 1	0.000	189.00	No Ice	1.55	0.81	27
						1/2" Ice	1.72	0.94	38
						1" Ice	1.90	1.09	52
						2" Ice	2.28	1.40	86
						4" Ice	3.14	2.12	189
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00 0 1	0.000	189.00	No Ice	6.12	4.25	55
						1/2" Ice	6.63	5.01	101
						1" Ice	7.13	5.71	155
						2" Ice	8.16	7.16	287
						4" Ice	10.36	10.41	665
(2) LGP13519	C	From Face	4.00 0 1	0.000	189.00	No Ice	0.34	0.21	5
						1/2" Ice	0.42	0.28	8
						1" Ice	0.51	0.36	12
						2" Ice	0.73	0.55	24
						4" Ice	1.25	1.03	71
DC6-48-60-18-8F	C	From Face	4.00 0 1	0.000	189.00	No Ice	1.47	1.47	19
						1/2" Ice	1.67	1.67	37
						1" Ice	1.88	1.88	57
						2" Ice	2.33	2.33	105
						4" Ice	3.38	3.38	239
(2) RRUS-11	A	From Face	4.00 0 1	0.000	189.00	No Ice	3.25	1.37	48
						1/2" Ice	3.49	1.55	69
						1" Ice	3.74	1.74	93
						2" Ice	4.27	2.14	150
						4" Ice	5.43	3.04	310
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Face	4.00 0 1	0.000	189.00	No Ice	5.74	4.02	35
						1/2" Ice	6.20	4.63	78
						1" Ice	6.66	5.28	130
						2" Ice	7.62	6.60	254
						4" Ice	9.67	9.74	610
(2) RRUS-11	B	From Face	4.00 0 1	0.000	189.00	No Ice	3.25	1.37	48
						1/2" Ice	3.49	1.55	69
						1" Ice	3.74	1.74	93
						2" Ice	4.27	2.14	150
						4" Ice	5.43	3.04	310
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0	0.000	189.00	No Ice	5.74	4.02	35
						1/2" Ice	6.20	4.63	78

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 lb
			1			Ice	6.66	5.28	130
						1" Ice	7.62	6.68	254
						2" Ice	9.67	9.74	610
						4" Ice			
(2) RRUS-11	C	From Face	4.00	0.000	189.00	No Ice	3.25	1.37	48
			0			1/2"	3.49	1.55	69
			1			Ice	3.74	1.74	93
						1" Ice	4.27	2.14	150
						2" Ice	5.43	3.04	310
						4" Ice			
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Face	4.00	0.000	189.00	No Ice	5.74	4.02	35
			0			1/2"	6.20	4.63	78
			1			Ice	6.66	5.28	130
						1" Ice	7.62	6.68	254
						2" Ice	9.67	9.74	610
						4" Ice			
Sector Mount [SM 602-3]	C	None		0.000	189.00	No Ice	33.11	33.11	1541
						1/2"	44.90	44.90	2159
						Ice	56.69	56.69	2777
						1" Ice	80.27	80.27	4014
						2" Ice	127.43	127.43	6487
						4" Ice			
4' x 2" Pipe Mount	A	From Leg	4.00	0.000	189.00	No Ice	0.79	0.79	29
			0			1/2"	1.03	1.03	35
			0			Ice	1.28	1.28	44
						1" Ice	1.81	1.81	72
						2" Ice	3.11	3.11	167
						4" Ice			
4' x 2" Pipe Mount	B	From Leg	4.00	0.000	189.00	No Ice	0.79	0.79	29
			0			1/2"	1.03	1.03	35
			0			Ice	1.28	1.28	44
						1" Ice	1.81	1.81	72
						2" Ice	3.11	3.11	167
						4" Ice			
4' x 2" Pipe Mount	C	From Leg	4.00	0.000	189.00	No Ice	0.79	0.79	29
			0			1/2"	1.03	1.03	35
			0			Ice	1.28	1.28	44
						1" Ice	1.81	1.81	72
						2" Ice	3.11	3.11	167
						4" Ice			
**									
APXV18-206517LS w/ Mount Pipe	A	From Leg	0.50	0.000	183.00	No Ice	5.29	4.67	53
			0			1/2"	5.84	5.82	95
			0			Ice	6.36	6.69	148
						1" Ice	7.42	8.46	279
						2" Ice	9.77	12.21	674
						4" Ice			
APXV18-206517LS w/ Mount Pipe	B	From Leg	0.50	0.000	183.00	No Ice	5.29	4.67	53
			0			1/2"	5.84	5.82	95
			0			Ice	6.36	6.69	148
						1" Ice	7.42	8.46	279
						2" Ice	9.77	12.21	674
						4" Ice			
APXV18-206517LS w/ Mount Pipe	C	From Leg	0.50	0.000	183.00	No Ice	5.29	4.67	53
			0			1/2"	5.84	5.82	95
			0			Ice	6.36	6.69	148
						1" Ice	7.42	8.46	279
						2" Ice	9.77	12.21	674
						4" Ice			
**									
(4) DB844H90E-XY w/ Mount Pipe	A	From Face	4.00	0.000	175.00	No Ice	3.30	4.92	32
			0			1/2"	3.69	5.60	70
			1			Ice	4.12	6.28	116
						1" Ice	5.01	7.71	228
						2" Ice	6.92	10.83	557

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 lb
						4" Ice			
(4) DB844H90E-XY w/ Mount Pipe	B	From Face	4.00 0 1	0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	32 70 116 228 557
(4) DB844H90E-XY w/ Mount Pipe	C	From Face	4.00 0 1	0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	32 70 116 228 557
Sector Mount [SM 510-3]	C	None		0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	40.10 57.33 74.56 109.02 177.94	40.10 57.33 74.56 109.02 177.94	2396 3089 3782 5167 7937
**									
Pipe Mount [PM 601-1]	B	From Leg	0.50 0 0	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	65 79 93 122 178
**									
1151-3	A	From Leg	6.00 0 6	0.000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	16 47 87 197 541
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0 0	0.000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
SD310-HL	A	From Leg	6.00 0 -2	0.000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 1.32 1.87 2.98 5.18	0.77 1.32 1.87 2.98 5.18	10 20 30 50 90
DB589-Y	B	From Leg	6.00 0 9	0.000	164.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.38 2.31 3.27 4.81 7.17	1.38 2.31 3.27 4.81 7.17	12 23 40 93 276
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0 0	0.000	164.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
1151-3	A	From Leg	6.00 0 6	0.000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	16 47 87 197 541
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0	0.000	147.00	No Ice 1/2"	0.98 1.70	3.03 5.22	53 79

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 lb
			0			Ice	2.42	7.41	105
						1" Ice	3.86	11.79	156
						2" Ice	6.74	20.55	259
						4" Ice			
SD310-HL	B	From Leg	6.00 0 3	0.000	145.00	No Ice	0.77	0.77	10
						1/2"	1.32	1.32	20
						Ice	1.87	1.87	30
						1" Ice	2.98	2.98	50
						2" Ice	5.18	5.18	90
						4" Ice			
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0 0	0.000	145.00	No Ice	0.98	3.03	53
						1/2"	1.70	5.22	79
						Ice	2.42	7.41	105
						1" Ice	3.86	11.79	156
						2" Ice	6.74	20.55	259
						4" Ice			
**									
RR90-17-02DP w/ Mount Pipe	A	From Leg	1.00 0 1	0.000	139.00	No Ice	4.59	3.32	34
						1/2"	5.09	4.09	69
						Ice	5.58	4.78	114
						1" Ice	6.59	6.23	224
						2" Ice	8.73	9.31	557
						4" Ice			
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	1.00 0 1	0.000	139.00	No Ice	7.47	3.49	61
						1/2"	7.99	4.26	108
						Ice	8.52	4.96	164
						1" Ice	9.59	6.40	298
						2" Ice	11.87	9.49	683
						4" Ice			
ATMAA1412D-1A20	A	From Leg	1.00 0 1	0.000	139.00	No Ice	1.17	0.47	13
						1/2"	1.31	0.57	21
						Ice	1.47	0.69	30
						1" Ice	1.81	0.95	56
						2" Ice	2.58	1.57	137
						4" Ice			
ATMPP1412D-1CWA	A	From Leg	1.00 0 1	0.000	139.00	No Ice	1.17	0.42	13
						1/2"	1.32	0.53	20
						Ice	1.48	0.65	28
						1" Ice	1.82	0.92	52
						2" Ice	2.61	1.57	131
						4" Ice			
RR90-17-02DP w/ Mount Pipe	B	From Leg	1.00 0 1	0.000	139.00	No Ice	4.59	3.32	34
						1/2"	5.09	4.09	69
						Ice	5.58	4.78	114
						1" Ice	6.59	6.23	224
						2" Ice	8.73	9.31	557
						4" Ice			
ATMPP1412D-1CWA	B	From Leg	1.00 0 1	0.000	139.00	No Ice	1.17	0.42	13
						1/2"	1.32	0.53	20
						Ice	1.48	0.65	28
						1" Ice	1.82	0.92	52
						2" Ice	2.61	1.57	131
						4" Ice			
RR90-17-02DP w/ Mount Pipe	C	From Leg	1.00 0 1	0.000	139.00	No Ice	4.59	3.32	34
						1/2"	5.09	4.09	69
						Ice	5.58	4.78	114
						1" Ice	6.59	6.23	224
						2" Ice	8.73	9.31	557
						4" Ice			
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	1.00 0 1	0.000	139.00	No Ice	7.47	3.49	61
						1/2"	7.99	4.26	108
						Ice	8.52	4.96	164
						1" Ice	9.59	6.40	298
						2" Ice	11.87	9.49	683
						4" Ice			

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 lb
(2) ATMAA1412D-1A20	C	From Leg	1.00 0 1	0.000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.17 1.31 1.47 1.81 2.58	0.47 0.57 0.69 0.95 1.57	13 21 30 56 137
ATMPP1412D-1CWA	C	From Leg	1.00 0 1	0.000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.17 1.32 1.48 1.82 2.61	0.42 0.53 0.65 0.92 1.57	13 20 28 52 131
**									
1142-2C	A	From Leg	6.00 0 4	0.000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.09 3.37 4.67 7.32 10.79	2.09 3.37 4.67 7.32 10.79	24 41 66 140 392
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0 0	0.000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
**									
GPS_A	A	From Leg	3.00 0 0	0.000	51.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.30 0.37 0.46 0.65 1.15	0.30 0.37 0.46 0.65 1.15	1 5 10 25 79
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0 0	0.000	51.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.85 1.14 1.43 2.01 3.17	1.67 2.34 3.01 4.35 7.03	65 79 93 121 177
**									

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 ft^2	Weight lb
HPD2-23	C	Paraboloid w/Shroud (HP)	From Leg	2.00 0 4	74.000		175.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.14 3.41 3.68 4.21 5.28	27 40 60 100 170
HPD2-23	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0 4	-90.000		175.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.14 3.41 3.68 4.21 5.28	27 40 60 100 170
PL6-59W	B	Paraboloid w/Radome	From Leg	1.00 0 1	-90.000		133.00	6.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.27 29.07 29.86 31.44 34.60	143 290 440 740 1340

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
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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 Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	10	323586	33438	-18953
	Max. H_x	10	323586	33438	-18953
	Max. H_z	3	-231808	-23973	17115
	Min. Vert	4	-269876	-29567	16751
	Min. H_x	4	-269876	-29567	16751
	Min. H_z	10	323586	33438	-18953
Leg B	Max. Vert	6	318502	-33268	-18450
	Max. H_x	12	-269619	29607	16284
	Max. H_z	13	-231180	24116	16359
	Min. Vert	12	-269619	29607	16284
	Min. H_x	6	318502	-33268	-18450
	Min. H_z	6	318502	-33268	-18450
Leg A	Max. Vert	2	320051	-433	38155
	Max. H_x	11	21795	4782	1909
	Max. H_z	2	320051	-433	38155
	Min. Vert	8	-271501	389	-34029
	Min. H_x	5	22857	-4855	2035

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. H_z	8	-271501	389	-34029

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	5.53	35	0.226	0.047
T2	202.458 - 182.292	5.04	35	0.226	0.046
T3	182.292 - 162.104	4.06	35	0.214	0.040
T4	162.104 - 141.896	3.15	35	0.190	0.030
T5	141.896 - 121.688	2.35	35	0.164	0.023
T6	121.688 - 101.479	1.69	35	0.134	0.017
T7	101.479 - 81.2708	1.15	35	0.109	0.013
T8	81.2708 - 61	0.74	35	0.082	0.010
T9	61 - 40.6667	0.42	35	0.058	0.008
T10	40.6667 - 20.3333	0.19	35	0.035	0.005
T11	20.3333 - 0	0.06	31	0.018	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212.00	Strobe Light	35	5.50	0.226	0.047	172548
208.00	BXA-70080/6CF w/ Mount Pipe	35	5.31	0.226	0.047	172548
199.00	(2) DB980H90E-M w/ Mount Pipe	35	4.87	0.225	0.046	144886
189.00	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	35	4.39	0.220	0.043	122886
183.00	APXV18-206517LS w/ Mount Pipe	35	4.10	0.215	0.041	61670
179.00	HPD2-23	35	3.91	0.211	0.039	53979
175.00	(4) DB844H90E-XY w/ Mount Pipe	35	3.72	0.207	0.036	51633
167.00	1151-3	35	3.36	0.197	0.032	47694
164.00	DB589-Y	35	3.23	0.193	0.031	46217
162.00	SD310-HL	35	3.15	0.190	0.030	44887
147.00	1151-3	35	2.54	0.171	0.024	33036
145.00	SD310-HL	35	2.47	0.168	0.023	31932
139.00	RR90-17-02DP w/ Mount Pipe	35	2.25	0.159	0.022	32212
134.00	PL6-59W	35	2.08	0.152	0.020	36061
133.00	Pipe Mount [PM 601-1]	35	2.05	0.151	0.020	36964
128.00	1142-2C	35	1.89	0.143	0.019	42258
110.00	Obstruction light	35	1.37	0.119	0.015	39252
51.00	GPS_A	35	0.29	0.047	0.006	52401

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	15.85	10	0.646	0.135
T2	202.458 - 182.292	14.46	10	0.645	0.134
T3	182.292 - 162.104	11.66	10	0.613	0.116
T4	162.104 - 141.896	9.05	10	0.545	0.086
T5	141.896 - 121.688	6.76	10	0.469	0.065
T6	121.688 - 101.479	4.87	10	0.385	0.050
T7	101.479 - 81.2708	3.31	10	0.311	0.038
T8	81.2708 - 61	2.12	10	0.234	0.029
T9	61 - 40.6667	1.20	10	0.168	0.022
T10	40.6667 - 20.3333	0.55	10	0.100	0.014
T11	20.3333 - 0	0.17	10	0.051	0.007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212.00	Strobe Light	10	15.76	0.646	0.135	60303
208.00	BXA-70080/6CF w/ Mount Pipe	10	15.22	0.646	0.135	60303
199.00	(2) DB980H90E-M w/ Mount Pipe	10	13.98	0.643	0.133	51571
189.00	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	10	12.59	0.629	0.125	44687
183.00	APXV18-206517LS w/ Mount Pipe	10	11.76	0.615	0.117	22020
179.00	HPD2-23	10	11.22	0.604	0.111	19191
175.00	(4) DB844H90E-XY w/ Mount Pipe	10	10.69	0.591	0.105	18295
167.00	1151-3	10	9.66	0.563	0.093	16798
164.00	DB589-Y	10	9.28	0.552	0.088	16245
162.00	SD310-HL	10	9.04	0.545	0.086	15762
147.00	1151-3	10	7.30	0.489	0.069	11553
145.00	SD310-HL	10	7.08	0.481	0.068	11150
139.00	RR90-17-02DP w/ Mount Pipe	10	6.46	0.457	0.063	11240
134.00	PL6-59W	10	5.98	0.436	0.059	12616
133.00	Pipe Mount [PM 601-1]	10	5.88	0.431	0.058	12932
128.00	1142-2C	10	5.42	0.410	0.054	14786
110.00	Obstruction light	10	3.93	0.342	0.042	13693
51.00	GPS_A	10	0.85	0.134	0.018	18285

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	212.625	Leg	A325N	0.750	4	0	19439	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	896	6443	0.139 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	979	6443	0.152 ✔	1.333	Bolt Shear
T2	202.458	Leg	A325N	0.875	4	4469	26449	0.169 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3248	6443	0.504 ✔	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Horizontal	A325N	0.625	2	2626	6443	0.408 ✔	1.333	Bolt Shear
T3	182.292	Leg	A325N	1.000	4	13432	34557	0.389 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3366	6443	0.522 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3166	6443	0.491 ✔	1.333	Bolt Shear
T4	162.104	Leg	A325N	1.000	6	14901	34557	0.431 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3393	6443	0.527 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3423	6443	0.531 ✔	1.333	Bolt Shear
T5	141.896	Leg	A325N	1.000	6	19400	34557	0.561 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4325	6443	0.671 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3926	6443	0.609 ✔	1.333	Bolt Shear
T6	121.688	Leg	A325N	1.000	6	24374	34557	0.705 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3975	6443	0.617 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3894	6443	0.604 ✔	1.333	Bolt Shear
T7	101.479	Leg	A325N	1.000	8	21479	34558	0.622 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3827	6443	0.594 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3994	6443	0.620 ✔	1.333	Bolt Shear
T8	81.2708	Leg	A325N	1.000	8	24447	34557	0.707 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4142	6443	0.643 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4580	6443	0.711 ✔	1.333	Bolt Shear
T9	61	Leg	A325N	1.000	8	27382	34557	0.792 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4281	6443	0.664 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4953	6443	0.769 ✔	1.333	Bolt Shear
T10	40.6667	Leg	A325N	1.000	8	28430	34556	0.823 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	3	6286	9278	0.678 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.750	2	5207	9278	0.561 ✔	1.333	Bolt Shear
T11	20.3333	Leg	A354-BC	1.000	10	24940	32398	0.770 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	3	6088	9278	0.656 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.750	2	5437	9278	0.586 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	212.625 - 202.458	Pipe 2.875" x 0.203" (2.5 STD)	10.17	5.08	64.4 K=1.00	21.95	1.704	-2462	37412	0.066 ✔
T2	202.458 - 182.292	Pipe 3.5" x 0.300" (3 XS)	20.17	6.72	71.0 K=1.00	20.75	3.016	-24625	62592	0.393 ✔
T3	182.292 - 162.104	Pipe 4.5" x 0.337" (4 XS)	20.22	6.60	53.7 K=1.00	23.77	4.407	-65181	104772	0.622 ✔
T4	162.104 - 141.896	Pipe 5.5" x 0.375" (5 EH)	20.24	6.61	43.7 K=1.00	25.31	6.038	-103812	152810	0.679 ✔
T5	141.896 -	Pipe 6.625" x 0.340" (6	20.25	9.92	53.5	23.80	6.713	-134226	159778	0.840

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	121.688	EHS)			K=1.00					✓
T6	121.688 - 101.479	Pipe 6.625" x 0.432" (6 XS)	20.26	9.92	54.2 K=1.00	23.68	8.405	-168376	198997	0.846 ✓
T7	101.479 - 81.2708	Pipe 6.625" x 0.432" (6 XS)	20.27	9.92	54.3 K=1.00	23.67	8.405	-198575	198976	0.998 ✓
T8	81.2708 - 61	Pipe 8.75" x 0.375" (8 EHS)	20.32	9.95	40.3 K=1.00	25.79	9.867	-227501	254468	0.894 ✓
T9	61 - 40.6667	Pipe 8.75" x 0.375" (8 EHS)	20.38	9.98	40.4 K=1.00	25.77	9.867	-256540	254293	1.009 ✓
T10	40.6667 - 20.3333	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0 K=1.00	25.69	12.959	-271355	332937	0.815 ✓
T11	20.3333 - 0	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0 K=1.00	25.69	12.959	-299135	332937	0.898 ✓

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 2.375" x 0.154" (2 STD)	6.64	6.45	98.4 K=1.00	15.08	1.075	-2689	16203	0.166 ✓
T2	202.458 - 182.292	Pipe 2.375" x 0.154" (2 STD)	7.99	7.72	117.6 K=1.00	10.79	1.075	-9745	11595	0.841 ✓
T3	182.292 - 162.104	Pipe 2.375" x 0.154" (2 STD)	8.49	8.20	125.0 K=1.00	9.56	1.075	-10097	10277	0.982 ✓
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	9.19	8.86	135.1 K=1.00	8.18	1.075	-9900	8792	1.126 ✓
T5	141.896 - 121.688	Pipe 2.875" x 0.203" (2.5 STD)	12.43	11.98	151.7 K=1.00	6.49	1.704	-12976	11057	1.174 ✓
T6	121.688 - 101.479	Pipe 2.875" x 0.203" (2.5 STD)	13.23	12.81	162.3 K=1.00	5.67	1.704	-11807	9663	1.222 ✓
T7	101.479 - 81.2708	Pipe 3.5" x 0.216" (3 STD)	14.14	13.75	141.8 K=1.00	7.43	2.228	-11368	16549	0.687 ✓
T8	81.2708 - 61	Pipe 3.5" x 0.216" (3 STD)	15.07	14.59	150.5 K=1.00	6.60	2.228	-12427	14699	0.845 ✓
T9	61 - 40.6667	Pipe 3.5" x 0.216" (3 STD)	16.06	15.59	160.8 K=1.00	5.78	2.228	-12843	12873	0.998 ✓
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	24.26	12.13	125.1 K=1.00	9.54	2.228	-18859	21260	0.887 ✓
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	25.00	12.50	128.9 K=1.00	8.99	2.228	-18264	20030	0.912 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.52	4.14	79.8 K=1.00	19.05	0.799	-1921	15231	0.126 ✓
T2	202.458 - 182.292	Pipe 1.9" x 0.145" (1.5 STD)	8.60	4.15	80.0 K=1.00	19.00	0.799	-5219	15193	0.344 ✓
T3	182.292 -	Pipe 1.9" x 0.145" (1.5	10.03	4.83	93.0	16.28	0.799	-6331	13015	0.486

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	162.104	STD)			K=1.00					✓
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	12.11	5.83	88.8 K=1.00	17.19	1.075	-6847	18470	0.371 ✓
T5	141.896 - 121.688	Pipe 2.375" x 0.154" (2 STD)	13.94	6.69	102.1 K=1.00	14.23	1.075	-7852	15288	0.514 ✓
T6	121.688 - 101.479	Pipe 2.375" x 0.154" (2 STD)	16.32	7.88	120.2 K=1.00	10.34	1.075	-7788	11111	0.701 ✓
T7	101.479 - 81.2708	Pipe 2.875" x 0.203" (2.5 STD)	18.89	9.17	116.1 K=1.00	11.08	1.704	-7988	18875	0.423 ✓
T8	81.2708 - 61	Pipe 2.875" x 0.203" (2.5 STD)	21.45	10.36	131.2 K=1.00	8.67	1.704	-9123	14774	0.618 ✓
T9	61 - 40.6667	Pipe 2.875" x 0.203" (2.5 STD)	23.95	11.61	147.1 K=1.00	6.90	1.704	-9749	11764	0.829 ✓
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	25.23	12.25	126.3 K=1.00	9.36	2.228	-10413	20852	0.499 ✓
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	27.73	13.50	139.2 K=1.00	7.70	2.228	-10873	17169	0.633 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.50	4.13	79.6 K=1.00	19.09	0.799	-162	15263	0.011 ✓

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 1.9" x 0.145" (1.5 STD)	6.31	5.94	114.5 K=1.00	10.96	0.799	-4709	8762	0.537 ✓
T11	20.3333 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.57	126.6 K=1.00	9.32	0.799	-5191	7448	0.697 ✓

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.375" x 0.154" (2 STD)	11.48	10.74	163.8 K=1.00	5.57	1.075	-4284	5981	0.716 ✓
T11	20.3333 - 0	Pipe 2.375" x 0.154" (2 STD)	11.80	11.12	169.5 K=1.00	5.20	1.075	-4418	5583	0.791 ✓

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T10	40.6667 - 20.3333	Pipe 1.9" x 0.145" (1.5 STD)	6.31	6.31	121.6 K=1.00	10.02	0.799	-52	8007	0.007 ✔
T11	20.3333 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.93	133.6 K=1.00	8.37	0.799	-49	6688	0.007 ✔

Redundant Hip Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T10	40.6667 - 20.3333	Pipe 2.875" x 0.203" (2.5 STD)	15.06	15.06	190.7 K=1.00	4.11	1.704	-57	6996	0.008* ✔
T11	20.3333 - 0	Pipe 2.875" x 0.203" (2.5 STD)	15.88	15.88	201.2 K=1.00	3.69	1.704	-57	6286	0.009* ✔

* DL controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	212.625 - 202.458	L 2 x 2 x 1/8	4.26	4.26	128.6 K=1.00	9.03	0.484	-3	4374	0.001 ✔
T2	202.458 - 182.292	L 2 x 2 x 1/8	4.30	4.30	129.8 K=1.00	8.87	0.484	-7	4296	0.002 ✔
T3	182.292 - 162.104	L 2 x 2 x 1/8	5.01	5.01	151.4 K=1.00	6.52	0.484	-7	3158	0.002 ✔
T4	162.104 - 141.896	L 2 x 2 x 1/8	6.06	6.06	182.8 K=1.00	4.47	0.484	-7	2165	0.003 ✔
T5	141.896 - 121.688	L 2 x 2 x 1/8	6.97	6.97	210.4 K=1.00	3.37	0.484	-8	1634	0.005 ✔
T6	121.688 - 101.479	L 2.5 x 2.5 x 3/16	8.16	8.16	197.8 K=1.00	3.62	0.902	-8	3443	0.002 ✔
T7	101.479 - 81.2708	L 3 x 3 x 3/16	9.44	9.44	190.0 K=1.00	4.14	1.090	-9	4507	0.002* ✔
T8	81.2708 - 61	L 3.5 x 3.5 x 1/4	10.73	10.73	185.5 K=1.00	4.34	1.690	-10	7336	0.001* ✔
T9	61 - 40.6667	L 3.5 x 3.5 x 1/4	11.98	11.98	207.1 K=1.00	3.48	1.690	-10	5885	0.002* ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	12.61	12.61	130.1 K=1.00	8.82	2.228	-17	19664	0.001 ✔
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	13.86	13.86	143.0 K=1.00	7.30	2.228	-13	16278	0.001* ✔

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	202.458 - 182.292	Pipe 3.5" x 0.300" (3 XS)	20.17	6.72	71.0	30.00	3.016	17876	90478	0.198 ✓
T3	182.292 - 162.104	Pipe 4.5" x 0.337" (4 XS)	20.22	6.60	53.7	30.00	4.407	53726	132223	0.406 ✓
T4	162.104 - 141.896	Pipe 5.5" x 0.375" (5 EH)	20.24	6.61	43.7	30.00	6.038	89407	181132	0.494 ✓
T5	141.896 - 121.688	Pipe 6.625" x 0.340" (6 EHS)	20.25	9.92	53.5	30.00	6.713	116401	201398	0.578 ✓
T6	121.688 - 101.479	Pipe 6.625" x 0.432" (6 XS)	20.26	9.92	54.2	30.00	8.405	146245	252148	0.580 ✓
T7	101.479 - 81.2708	Pipe 6.625" x 0.432" (6 XS)	20.27	9.92	54.3	30.00	8.405	171831	252148	0.681 ✓
T8	81.2708 - 61	Pipe 8.75" x 0.375" (8 EHS)	20.32	9.95	40.3	30.00	9.867	195575	295997	0.661 ✓
T9	61 - 40.6667	Pipe 8.75" x 0.375" (8 EHS)	20.38	9.98	40.4	30.00	9.867	219054	295997	0.740 ✓
T10	40.6667 - 20.3333	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0	30.00	12.959	231626	388772	0.596 ✓
T11	20.3333 - 0	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0	30.00	12.959	253002	388772	0.651 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 2.375" x 0.154" (2 STD)	6.64	6.45	98.4	30.00	1.075	2626	32236	0.081 ✓
T2	202.458 - 182.292	Pipe 2.375" x 0.154" (2 STD)	7.99	7.72	117.6	30.00	1.075	9682	32236	0.300 ✓
T3	182.292 - 162.104	Pipe 2.375" x 0.154" (2 STD)	8.49	8.20	125.0	30.00	1.075	10018	32236	0.311 ✓
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	8.73	8.40	128.1	30.00	1.075	10082	32236	0.313 ✓
T5	141.896 - 121.688	Pipe 2.875" x 0.203" (2.5 STD)	12.43	11.98	151.7	30.00	1.704	12807	51122	0.251 ✓
T6	121.688 - 101.479	Pipe 2.875" x 0.203" (2.5 STD)	12.83	12.41	157.2	30.00	1.704	11729	51122	0.229 ✓
T7	101.479 - 81.2708	Pipe 3.5" x 0.216" (3 STD)	13.68	13.30	137.1	30.00	2.228	11165	66854	0.167 ✓
T8	81.2708 - 61	Pipe 3.5" x 0.216" (3 STD)	15.07	14.59	150.5	30.00	2.228	11972	66854	0.179 ✓
T9	61 - 40.6667	Pipe 3.5" x 0.216" (3 STD)	16.06	15.59	160.8	30.00	2.228	12315	66854	0.184 ✓
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	24.26	12.13	125.1	30.00	2.228	18102	66854	0.271 ✓
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	25.00	12.50	128.9	30.00	2.228	17536	66854	0.262 ✓

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.52	4.14	79.8	30.00	0.799	1958	23984	0.082 ✔
T2	202.458 - 182.292	Pipe 1.9" x 0.145" (1.5 STD)	8.60	4.15	80.0	30.00	0.799	5251	23984	0.219 ✔
T3	182.292 - 162.104	Pipe 1.9" x 0.145" (1.5 STD)	10.03	4.83	93.0	30.00	0.799	6329	23984	0.264 ✔
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	12.11	5.83	88.8	30.00	1.075	6829	32236	0.212 ✔
T5	141.896 - 121.688	Pipe 2.375" x 0.154" (2 STD)	13.94	6.69	102.1	30.00	1.075	7700	32236	0.239 ✔
T6	121.688 - 101.479	Pipe 2.375" x 0.154" (2 STD)	16.32	7.88	120.2	30.00	1.075	7683	32236	0.238 ✔
T7	101.479 - 81.2708	Pipe 2.875" x 0.203" (2.5 STD)	18.89	9.17	116.1	30.00	1.704	7929	51122	0.155 ✔
T8	81.2708 - 61	Pipe 2.875" x 0.203" (2.5 STD)	21.45	10.36	131.2	30.00	1.704	9160	51122	0.179 ✔
T9	61 - 40.6667	Pipe 2.875" x 0.203" (2.5 STD)	23.95	11.61	147.1	30.00	1.704	9906	51122	0.194 ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	25.23	12.25	126.3	30.00	2.228	10148	66854	0.152 ✔
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	27.73	13.50	139.2	30.00	2.228	10404	66854	0.156 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.50	4.13	79.6	30.00	0.799	161	23984	0.007 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 1.9" x 0.145" (1.5 STD)	6.31	5.94	114.5	21.00	0.799	4709	16789	0.280 ✔
T11	20.3333 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.57	126.6	21.00	0.799	5191	16789	0.309 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.375" x 0.154" (2 STD)	11.48	10.74	163.8	21.00	1.075	4284	22565	0.190 ✔
T11	20.3333 - 0	Pipe 2.375" x 0.154" (2 STD)	11.80	11.12	169.5	21.00	1.075	4418	22565	0.196 ✔

Redundant Hip Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.875" x 0.203" (2.5 STD)	15.06	15.06	190.7	21.00	1.704	95	35785	0.003 ✔
T11	20.3333 - 0	Pipe 2.875" x 0.203" (2.5 STD)	15.88	15.88	201.2	21.00	1.704	86	35785	0.002 ✔

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	L 2 x 2 x 1/8	4.26	4.26	81.6	21.60	0.484	3	10463	0.000 ✔
T2	202.458 - 182.292	L 2 x 2 x 1/8	4.30	4.30	82.4	21.60	0.484	6	10463	0.001 ✔
T3	182.292 - 162.104	L 2 x 2 x 1/8	4.33	4.33	83.0	21.60	0.484	5	10463	0.000 ✔
T4	162.104 - 141.896	L 2 x 2 x 1/8	5.38	5.38	103.0	21.60	0.484	6	10463	0.001 ✔
T5	141.896 - 121.688	L 2 x 2 x 1/8	6.42	6.42	123.0	21.60	0.484	4	10463	0.000 ✔
T6	121.688 - 101.479	L 2.5 x 2.5 x 3/16	7.55	7.55	116.3	21.60	0.902	2	19483	0.000 ✔
T7	101.479 - 81.2708	L 3 x 3 x 3/16	8.80	8.80	112.4	21.60	1.090	0	23541	0.000 ✔

Section Capacity Table

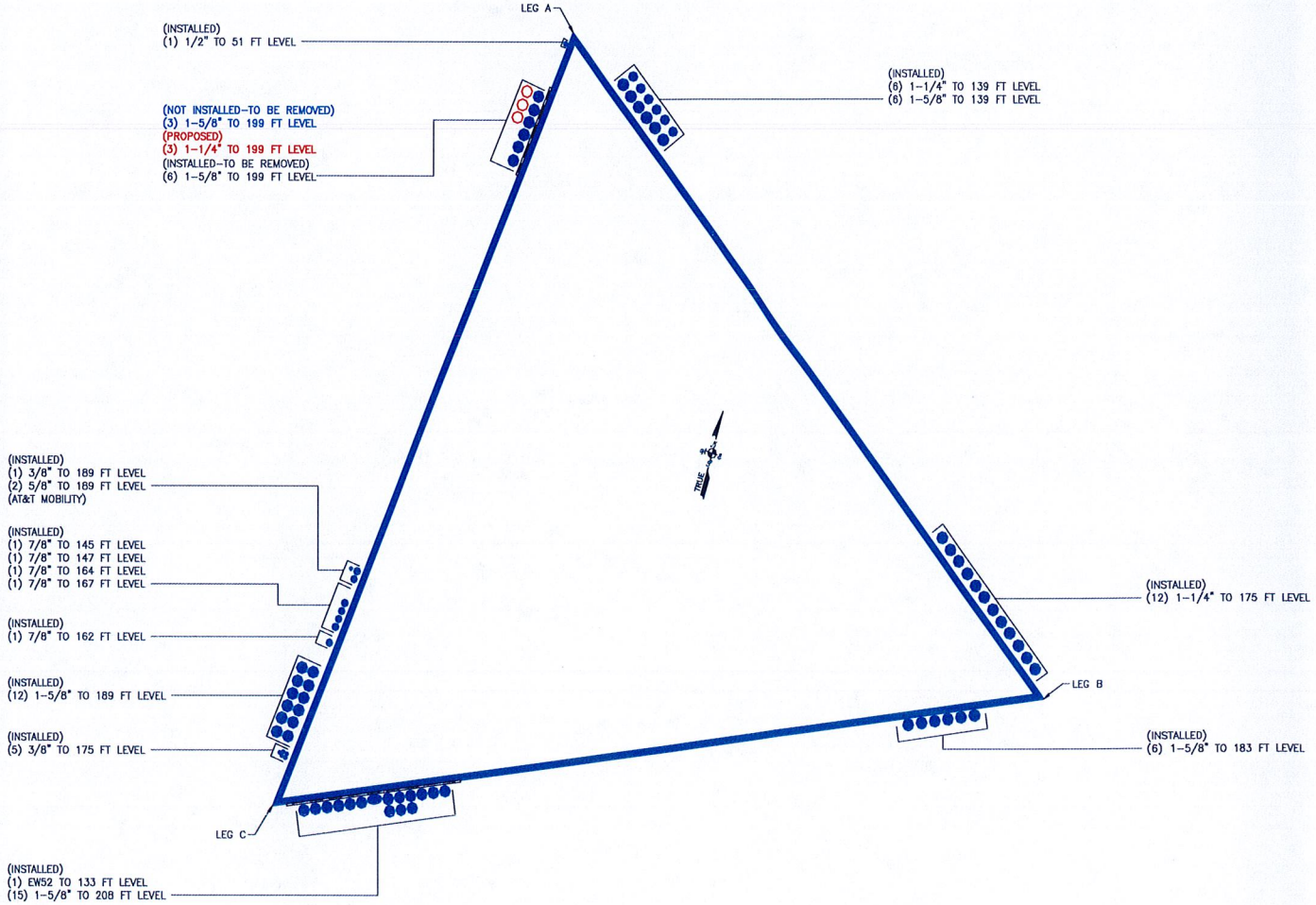
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	212.625 - 202.458	Leg	Pipe 2.875" x 0.203" (2.5 STD)	1	-2079	37412	8.2	Pass
T2	202.458 - 182.292	Leg	Pipe 3.5" x 0.300" (3 XS)	28	-24625	83436	29.5	Pass
T3	182.292 - 162.104	Leg	Pipe 4.5" x 0.337" (4 XS)	67	-65181	139661	46.7	Pass
T4	162.104 - 141.896	Leg	Pipe 5.5" x 0.375" (5 EH)	106	-103812	203696	51.0	Pass
T5	141.896 - 121.688	Leg	Pipe 6.625" x 0.340" (6 EHS)	145	-134226	212984	63.0	Pass
T6	121.688 - 101.479	Leg	Pipe 6.625" x 0.432" (6 XS)	172	-168376	265263	63.5	Pass
T7	101.479 - 81.2708	Leg	Pipe 6.625" x 0.432" (6 XS)	199	-198575	265235	74.9	Pass
T8	81.2708 - 61	Leg	Pipe 8.75" x 0.375" (8 EHS)	226	-227501	339206	67.1	Pass
T9	61 - 40.6667	Leg	Pipe 8.75" x 0.375" (8 EHS)	253	-256540	338973	75.7	Pass
T10	40.6667 - 20.3333	Leg	Pipe 8.75" x 0.500" (8 EH)	280	-271355	443805	61.1	Pass
T11	20.3333 - 0	Leg	Pipe 8.75" x 0.500" (8 EH)	313	-299135	443805	67.4	Pass
T1	212.625 - 202.458	Diagonal	Pipe 2.375" x 0.154" (2 STD)	15	-2689	21598	12.5	Pass
T2	202.458 - 182.292	Diagonal	Pipe 2.375" x 0.154" (2 STD)	39	-9745	15455	63.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T3	182.292 - 162.104	Diagonal	Pipe 2.375" x 0.154" (2 STD)	77	-10097	13700	73.7	Pass
T4	162.104 - 141.896	Diagonal	Pipe 2.375" x 0.154" (2 STD)	111	-9900	11720	84.5	Pass
T5	141.896 - 121.688	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	149	-12976	14738	88.0	Pass
T6	121.688 - 101.479	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	176	-11807	12881	91.7	Pass
T7	101.479 - 81.2708	Diagonal	Pipe 3.5" x 0.216" (3 STD)	203	-11368	22060	51.5	Pass
T8	81.2708 - 61	Diagonal	Pipe 3.5" x 0.216" (3 STD)	230	-12427	19594	63.4	Pass
T9	61 - 40.6667	Diagonal	Pipe 3.5" x 0.216" (3 STD)	257	-12843	17160	74.8	Pass
T10	40.6667 - 20.3333	Diagonal	Pipe 3.5" x 0.216" (3 STD)	284	-18859	28340	66.5	Pass
T11	20.3333 - 0	Diagonal	Pipe 3.5" x 0.216" (3 STD)	317	-18264	26700	68.4	Pass
T1	212.625 - 202.458	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	13	-1921	20302	9.5	Pass
T2	202.458 - 182.292	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	37	-5219	20252	25.8	Pass
T3	182.292 - 162.104	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	76	-6331	17348	36.5	Pass
T4	162.104 - 141.896	Horizontal	Pipe 2.375" x 0.154" (2 STD)	109	-6847	24621	27.8	Pass
T5	141.896 - 121.688	Horizontal	Pipe 2.375" x 0.154" (2 STD)	148	-7852	20379	38.5	Pass
T6	121.688 - 101.479	Horizontal	Pipe 2.375" x 0.154" (2 STD)	175	-7788	14811	52.6	Pass
T7	101.479 - 81.2708	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	202	-7988	25160	31.7	Pass
T8	81.2708 - 61	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	229	-9123	19693	46.3	Pass
T9	61 - 40.6667	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	256	-9749	15682	62.2	Pass
T10	40.6667 - 20.3333	Horizontal	Pipe 3.5" x 0.216" (3 STD)	283	-10413	27796	37.5	Pass
T11	20.3333 - 0	Horizontal	Pipe 3.5" x 0.216" (3 STD)	316	-10873	22886	47.5	Pass
T1	212.625 - 202.458	Top Girt	Pipe 1.9" x 0.145" (1.5 STD)	4	-162	20345	0.8	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	304	-4709	11680	40.3	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	318	-5191	9928	52.3	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	305	-4284	7973	53.7	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	319	-4418	7442	59.4	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	308	-52	10674	0.5	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	341	-49	8915	0.5	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	307	-57	6996	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	340	-57	6286	0.9	Pass
T1	212.625 - 202.458	Inner Bracing	L 2 x 2 x 1/8	16	-3	5830	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L 2 x 2 x 1/8	41	-7	5727	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L 2 x 2 x 1/8	80	-7	4209	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L 2 x 2 x 1/8	118	-7	2886	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L 2 x 2 x 1/8	158	-8	2178	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L 2.5 x 2.5 x 3/16	185	-8	4590	0.4	Pass
T7	101.479 - 81.2708	Inner Bracing	L 3 x 3 x 3/16	213	-9	4507	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L 3.5 x 3.5 x 1/4	238	-10	7336	0.5	Pass
T9	61 - 40.6667	Inner Bracing	L 3.5 x 3.5 x 1/4	265	-10	5885	0.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T10	40.6667 - 20.3333	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	311	-12	19664	0.5	Pass
T11	20.3333 - 0	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	343	-13	16278	0.5	Pass
							Summary	
						Leg (T9)	75.7	Pass
						Diagonal (T6)	91.7	Pass
						Horizontal (T9)	62.2	Pass
						Top Girt (T1)	0.8	Pass
						Redund Horz 1 Bracing (T11)	52.3	Pass
						Redund Diag 1 Bracing (T11)	59.4	Pass
						Redund Hip 1 Bracing (T11)	0.5	Pass
						Redund Hip Diagonal Bracing (T11)	0.9	Pass
						Inner Bracing (T9)	0.6	Pass
						Bolt Checks	61.7	Pass
						RATING =	**91.7**	**Pass**

APPENDIX B

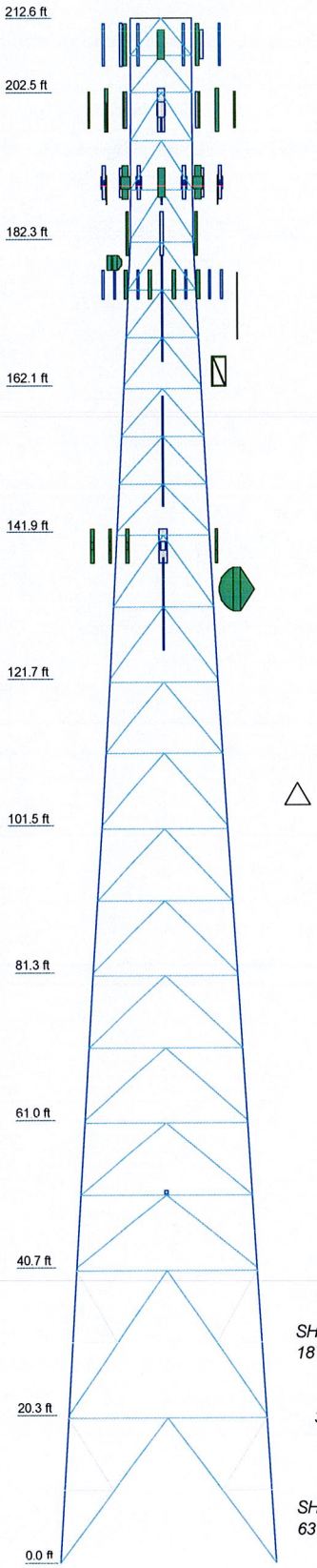
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pipe 8.75" x 0.500" (8 EH)		Pipe 8.75" x 0.375" (8 EHS)		Pipe 6.625" x 0.432" (6 XS)		E	D	C	B	A
Leg Grade	A500-50				A513-50				A618-50		
Diagonals	Pipe 3.5" x 0.216" (3 STD)				Pipe 2.875" x 0.203" (2.5 STD)				Pipe 2.375" x 0.154" (2 STD)		
Diagonal Grade	A618-50										
Top Girts	N.A.										F
Horizontals	Pipe 3.5" x 0.216" (3 STD)			Pipe 2.875" x 0.203" (2.5 STD)			Pipe 2.375" x 0.154" (2 STD)			Pipe 1.9" x 0.145" (1.5 STD)	
Red. Horizontals	Pipe 1.9" x 0.145" (1.5 STD)						N.A.				
Red. Diagonals	Pipe 2.375" x 0.154" (2 STD)						N.A.				
Red. Hips	Pipe 1.9" x 0.145" (1.5 STD)						N.A.				
Inner Bracing	Pipe 3.5" x 0.216" (3 STD)		L 3.5 x 3.5 x 1/4		L 3 x 3 x 3/16	L 2.5 x 2.5 x 3/16		L 2 x 2 x 1/8			
Face Width (ft)	27.6771	25.1771	22.6771	20.1771	17.5417	15.0417	12.7917	10.7083	8.625	8.54167	8.5
# Panels @ (ft)	2 @ 19.9167		2 @ 9.95833	2 @ 9.92708	6 @ 9.89583			3 @ 6.59722	3 @ 6.59028	3 @ 6.72222	2 @ 5.08333
Weight (lb)	4,1163.3	6662.0	5413.3	5154.9	4226.4	3447.5	2861.7	2528.3	1941.1	1460.4	681.5



DESIGNED APPURTENANCE LOADING

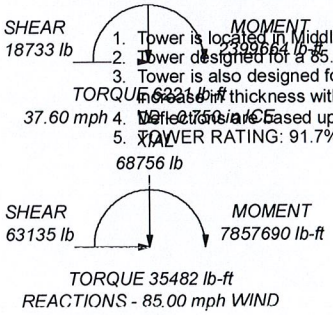
TYPE	ELEVATION	TYPE	ELEVATION
Strobe Light	212	(2) RRUS-11	189
BXA-70080/6CF w/ Mount Pipe	208	AM-X-CD-14-65-00T-RET w/ Mount Pipe	189
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	Sector Mount [SM 602-3]	189
(2) LPA-80080/6CF w/ Mount Pipe	208	4' x 2" Pipe Mount	189
BXA-70063/4CF w/ Mount Pipe	208	4' x 2" Pipe Mount	189
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	4' x 2" Pipe Mount	189
(2) LPA-80080/6CF w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
BXA-70063/4CF w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-80080/6CF w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
Sector Mount [SM 510-3]	208	(4) DB844H90E-XY w/ Mount Pipe	175
(2) DB980H90E-M w/ Mount Pipe	199	(4) DB844H90E-XY w/ Mount Pipe	175
(2) DB980H90E-M w/ Mount Pipe	199	Sector Mount [SM 510-3]	175
(2) DB980H90E-M w/ Mount Pipe	199	HPD2-23	175
1900MHz RRH (65MHz)	199	HPD2-23	175
800MHz 2X50W RRH W/FILTER	199	1151-3	167
APXVSPP18-C-A20 w/ Mount Pipe	199	Side Arm Mount [SO 308-1]	167
1900MHz RRH (65MHz)	199	DB589-Y	164
800MHz 2X50W RRH W/FILTER	199	Side Arm Mount [SO 308-1]	164
APXVSPP18-C-A20 w/ Mount Pipe	199	SD310-HL	162
1900MHz RRH (65MHz)	199	1151-3	147
800MHz 2X50W RRH W/FILTER	199	Side Arm Mount [SO 308-1]	147
APXVSPP18-C-A20 w/ Mount Pipe	199	SD310-HL	145
Sector Mount [SM 505-3]	199	Side Arm Mount [SO 308-1]	145
(2) 4' x 2" Pipe Mount	199	RR90-17-02DP w/ Mount Pipe	139
(2) 4' x 2" Pipe Mount	199	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	139
(2) 4' x 2" Pipe Mount	199	ATMAA1412D-1A20	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	ATMPP1412D-1CWA	139
(2) 7770.00 w/ Mount Pipe	189	RR90-17-02DP w/ Mount Pipe	139
(2) LGP13519	189	ATMPP1412D-1CWA	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	RR90-17-02DP w/ Mount Pipe	139
(2) 7770.00 w/ Mount Pipe	189	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	139
(2) LGP13519	189	(2) ATMAA1412D-1A20	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	ATMPP1412D-1CWA	139
(2) 7770.00 w/ Mount Pipe	189	Pipe Mount [PM 601-1]	133
(2) LGP13519	189	PL6-59W	133
DC6-48-60-18-8F	189	1142-2C	128
(2) RRUS-11	189	Side Arm Mount [SO 308-1]	128
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Obstruction light	110
(2) RRUS-11	189	Obstruction light	110
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Obstruction light	110
		Side Arm Mount [SO 701-1]	51
		GPS_A	51

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 2.875" x 0.203" (2.5 STD)	D	Pipe 5.5" x 0.375" (5 EH)
B	Pipe 3.5" x 0.300" (3 XS)	E	Pipe 6.625" x 0.340" (6 EHS)
C	Pipe 4.5" x 0.337" (4 XS)	F	Pipe 1.9" x 0.145" (1.5 STD)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A618-50	50 ksi	70 ksi	A500-50	50 ksi	62 ksi
A513-50	50 ksi	66 ksi			



TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.00 mph wind.
5. TOWER RATING: 91.7%

Paul J Ford and Company
250 E. Broad St. Suite 1500
Columbus, OH 43215
Phone: 614-221-6679
FAX: 614-448-4105

Job: 212 ft Clinton, CT S/S Tower		
Project: BU #806363 (PJF #37512-2762)		
Client: Crown Castle	Drawn by: chedges	App'd:
Code: TIA/EIA-222-F	Date: 10/30/12	Scale: NTS
Path: T:\375_Crown_Castle\2012\37512-2762 BU 806363\37512-2762A.er1		Dwg No. E-1

foundation loads

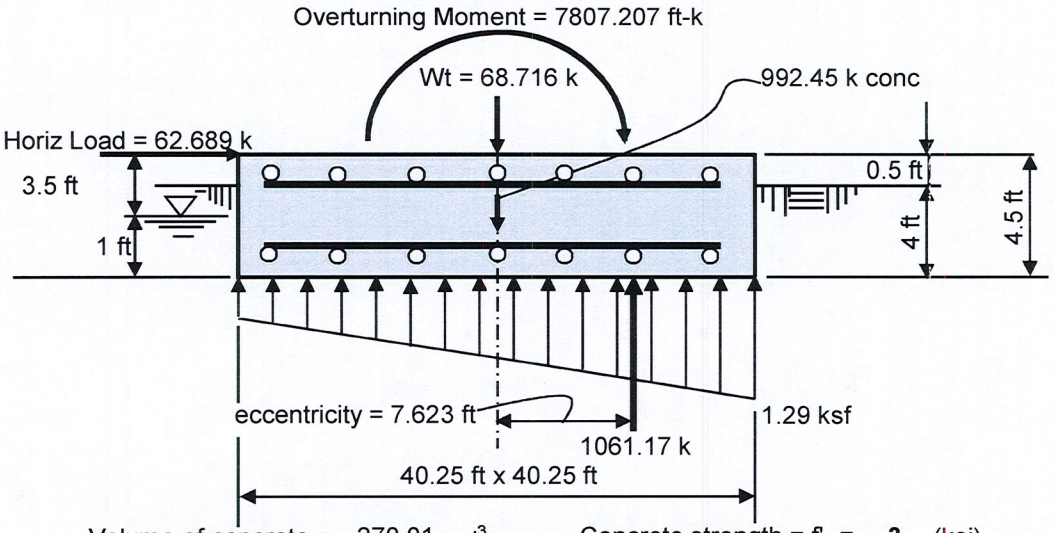
Tower or Pole Weight =	68.716	kips
Total Horizontal Force =	62.689	kips
Overturning Moment =	7807.2	ft-kips

soil properties

Safety factor against overturning =	1.5	
Soil density =	120	pcf
Allowable soil bearing =	4	ksf
Depth to water table =	3	ft

mat dimensions

depth to bottom of footing =	4	ft
Footing thickness =	4.5	ft
Footing Width =	40.25	ft
Footing Length =	40.25	ft
Tower/Pole Center Offset =	0	ft



Volume of concrete = 270.01 yd^3 Concrete strength = f'_c = 3 (ksi)

Rebar = (220) #7 bars by 39.75 ft long

reinforcing steel = **(55) #7 @ 8.83 in o.c. ea way top and bottom**

Summary of analysis results

Rebar strength = F_y = 60 (ksi)

minimum cover over rebar = 3 inches

Overturning Moment: (Stress Ratio = 0.568)

Calculated Overturning Moment = 8089.3 ft-kips

Resisting Moment = 21356 ft-kips

Factor of Safety against overturning = 2.640 **> 1.5 okay**

Soil Bearing (Stress Ratio = 0.323)

Net Soil Bearing Resistance = 4 ksf

Calculated Soil Bearing Pressure = 1.29 **ksf < 4 ksf okay**

Bending Moment (Stress Ratio = 0.724) **< CONTROLLING CRITERIA**

Ultimate Bending Moment Resistance = 7259 ft-kips

Calculated Ultimate Bending Moment = 5255 **ft-kips < 7259 ft-kips okay**

Bending Shear (Stress Ratio = 0.176)

Ultimate Bending Shear Resistance = 2235 kips

Calculated Ultimate Bending Shear = 394 **kips < 2235 kips okay**

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

Date: **October 30, 2012**

Sean Dempsey
Crown Castle USA Inc.
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6565

Paul J Ford and Company
250 E. Broad St Suite 1500
Columbus, OH 43215
614-221-6679
chedges@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Sprint PCS* Co-Locate**	
	Carrier Site Number:	CT03XC156
	Carrier Site Name:	CT03XC156
Crown Castle Designation:	**Crown Castle BU Number:**	806363
	Crown Castle Site Name:	HRT 105 943201
	Crown Castle JDE Job Number:	190484
	Crown Castle Work Order Number:	540371
	Crown Castle Application Number:	165580 Rev. 4
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37512-2762B
Site Data:	**48 COW HILL ROAD, CLINTON, Middlesex County, CT**	
	Latitude *41° 17' 20.2"*, Longitude *-72° 32' 18.5"*	
	212.625 Foot - Self Support Tower	

Dear Sean Dempsey,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 498438, in accordance with application 165580, revision 4.

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

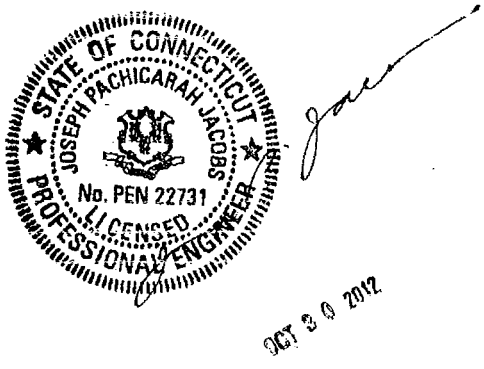
LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Christina Hedges, E.I.T
Structural Engineer



OCT 30 2012

tnxTower Report - version 6.0.3.0

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 1500 • Columbus, Ohio 43215-3708

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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1) INTRODUCTION

This tower is a 212.625 ft Self Support tower designed by ROHN in July of 1992. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
199.0	198.0	3	alcatel lucent	1900MHz RRH (65MHz)	3	1 1/4	
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
208.0	209.0	2	antel	BXA-70063/4CF w/ Mount Pipe	15	1 5/8	1
		1	antel	BXA-70080/6CF w/ Mount Pipe			
		6	antel	LPA-171080/8CFx2 w/ Mount Pipe			
		6	antel	LPA-80080/6CF w/ Mount Pipe			
	208.0	1	tower mounts	Sector Mount [SM 510-3]			
199.0	199.0	1	tower mounts	Sector Mount [SM 505-3]			1
	198.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1 5/8	2
189.0	190.0	6	adc	DUAL BAND 800/1900 FULL BAND MASTHEAD	1 2 12	3/8 5/8 1 5/8	1
		6	ericsson	RRUS-11			
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP13519			
		1	raycap	DC6-48-60-18-8F			
	189.0	1	tower mounts	Sector Mount [SM 602-3]			
183.0	183.0	3	rfs celwave	APXV18-206517LS w/ Mount Pipe	6	1 5/8	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
175.0	179.0	2	radiowaves	HPD2-23	5	3/8	1
	176.0	12	decibel	DB844H90E-XY w/ Mount Pipe			
	175.0	1	tower mounts	Sector Mount [SM 510-3]			
167.0	173.0	1	rfs celwave	1151-3	1	7/8	1
	167.0	1	tower mounts	Side Arm Mount [SO 308-1]			
164.0	173.0	1	andrew	DB589-Y	1	7/8	1
	164.0	1	tower mounts	Side Arm Mount [SO 308-1]			
162.0	160.0	1	sinclair	SD310-HL	1	7/8	1
147.0	153.0	1	rfs celwave	1151-3	1	7/8	1
	147.0	1	tower mounts	Side Arm Mount [SO 308-1]			
145.0	148.0	1	sinclair	SD310-HL	1	7/8	1
	145.0	1	tower mounts	Side Arm Mount [SO 308-1]			
139.0	140.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	6 6	1 5/8 1 1/4	1
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		3	rfs celwave	ATMPP1412D-1CWA			
133.0	134.0	1	andrew	PL6-59W	1	EW52	1
	133.0	1	tower mounts	Pipe Mount [PM 601-1]			
128.0	132.0	1	rfs celwave	1142-2C			1
	128.0	1	tower mounts	Side Arm Mount [SO 308-1]			
51.0	51.0	1	gps	GPS_A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Equipment to be removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., 7/6/92		262276
4-POST-MODIFICATION INSPECTION	Vertical Structures, 10/30/07	2007-004-163	2146143
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn, 8/11/92	28529JC	262273
4-TOWER MANUFACTURER DRAWINGS	Rohn, 7/17/92	28529JC	262274
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Structures, 6/29/07	2007-004-075	2169576

3.1) Analysis Method

tnxTower (version 6.0.3.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T1	212.625 - 202.458	Leg	Pipe 2.875" x 0.203" (2.5 STD)	1	-2079	37412	8.3	Pass
T2	202.458 - 182.292	Leg	Pipe 3.5" x 0.300" (3 XS)	28	-23665	83436	28.4	Pass
T3	182.292 - 162.104	Leg	Pipe 4.5" x 0.337" (4 XS)	67	-62879	139661	45.0	Pass
T4	162.104 - 141.896	Leg	Pipe 5.5" x 0.375" (5 EH)	106	-100666	203696	49.4	Pass
T5	141.896 - 121.688	Leg	Pipe 6.625" x 0.340" (6 EHS)	145	-130586	212984	61.3	Pass
T6	121.688 - 101.479	Leg	Pipe 6.625" x 0.432" (6 XS)	172	-164330	265263	61.9	Pass
T7	101.479 - 81.2708	Leg	Pipe 6.625" x 0.432" (6 XS)	199	-194263	265235	73.2	Pass
T8	81.2708 - 61	Leg	Pipe 8.75" x 0.375" (8 EHS)	226	-222986	339206	65.7	Pass
T9	61 - 40.6667	Leg	Pipe 8.75" x 0.375" (8 EHS)	253	-251845	338973	74.3	Pass
T10	40.6667 - 20.3333	Leg	Pipe 8.75" x 0.500" (8 EH)	280	-266560	443805	60.1	Pass
T11	20.3333 - 0	Leg	Pipe 8.75" x 0.500" (8 EH)	313	-294197	443805	66.3	Pass
T1	212.625 - 202.458	Diagonal	Pipe 2.375" x 0.154" (2 STD)	15	-2717	21598	12.6	Pass
T2	202.458 - 182.292	Diagonal	Pipe 2.375" x 0.154" (2 STD)	39	-9331	15455	60.4	Pass
T3	182.292 - 162.104	Diagonal	Pipe 2.375" x 0.154" (2 STD)	72	-10007	13700	73.0	Pass
T4	162.104 - 141.896	Diagonal	Pipe 2.375" x 0.154" (2 STD)	111	-9956	11720	85.0	Pass
T5	141.896 - 121.688	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	149	-13135	14738	89.1	Pass
T6	121.688 - 101.479	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	176	-12033	12881	93.4	Pass
T7	101.479 - 81.2708	Diagonal	Pipe 3.5" x 0.216" (3 STD)	203	-11634	22060	52.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	Allow. (lb)	% Capacity	Pass / Fail
T8	81.2708 - 61	Diagonal	Pipe 3.5" x 0.216" (3 STD)	230	-12705	19594	64.8	Pass
T9	61 - 40.6667	Diagonal	Pipe 3.5" x 0.216" (3 STD)	257	-13128	17160	76.5	Pass
T10	40.6667 - 20.3333	Diagonal	Pipe 3.5" x 0.216" (3 STD)	284	-19258	28340	68.0	Pass
T11	20.3333 - 0	Diagonal	Pipe 3.5" x 0.216" (3 STD)	317	-18686	26700	70.0	Pass
T1	212.625 - 202.458	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	13	-1942	20302	9.6	Pass
T2	202.458 - 182.292	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	37	-4995	20252	24.7	Pass
T3	182.292 - 162.104	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	70	-6276	17348	36.2	Pass
T4	162.104 - 141.896	Horizontal	Pipe 2.375" x 0.154" (2 STD)	109	-6882	24621	28.0	Pass
T5	141.896 - 121.688	Horizontal	Pipe 2.375" x 0.154" (2 STD)	148	-7944	20379	39.0	Pass
T6	121.688 - 101.479	Horizontal	Pipe 2.375" x 0.154" (2 STD)	175	-7933	14811	53.6	Pass
T7	101.479 - 81.2708	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	202	-8172	25160	32.5	Pass
T8	81.2708 - 61	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	229	-9327	19693	47.4	Pass
T9	61 - 40.6667	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	256	-9968	15682	63.6	Pass
T10	40.6667 - 20.3333	Horizontal	Pipe 3.5" x 0.216" (3 STD)	283	-10653	27796	38.3	Pass
T11	20.3333 - 0	Horizontal	Pipe 3.5" x 0.216" (3 STD)	316	-11138	22886	48.7	Pass
T1	212.625 - 202.458	Top Girt	Pipe 1.9" x 0.145" (1.5 STD)	4	-158	20345	0.8	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	285	-4626	11680	39.6	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	318	-5105	9928	51.4	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	305	-4209	7973	52.8	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	319	-4345	7442	58.4	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	308	-54	10674	0.5	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	341	-50	8915	0.6	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	307	-57	6996	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	340	-57	6286	0.9	Pass
T1	212.625 - 202.458	Inner Bracing	L 2 x 2 x 1/8	16	-3	5830	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L 2 x 2 x 1/8	41	-6	5727	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L 2 x 2 x 1/8	79	-7	4209	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L 2 x 2 x 1/8	120	-7	2886	0.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Kl/r or Cl/b	P (lb)	SF*P_allow (lb)	% Capacity	Pass / Fail
T5	141.896 - 121.688	Inner Bracing	L 2 x 2 x 1/8	158	-8	2178	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L 2.5 x 2.5 x 3/16	185	-8	4590	0.4	Pass
T7	101.479 - 81.2708	Inner Bracing	L 3 x 3 x 3/16	213	-9	4507	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L 3.5 x 3.5 x 1/4	238	-10	7336	0.5	Pass
T9	61 - 40.6667	Inner Bracing	L 3.5 x 3.5 x 1/4	265	-10	5885	0.6	Pass
T10	40.6667 - 20.3333	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	311	-12	19664	0.5	Pass
T11	20.3333 - 0	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	343	-13	16278	0.5	Pass
							Summary	
						Leg (T9)	74.3	Pass
						Diagonal (T6)	93.4	Pass
						Horizontal (T9)	63.6	Pass
						Top Girt (T1)	0.8	Pass
						Redund Horz 1 Bracing (T11)	51.4	Pass
						Redund Diag 1 Bracing (T11)	58.4	Pass
						Redund Hip 1 Bracing (T11)	0.6	Pass
						Redund Hip Diagonal Bracing (T11)	0.9	Pass
						Inner Bracing (T9)	0.6	Pass
						Bolt Checks	60.6	Pass
						RATING =	**93.4**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
	Anchor Rods		56.8	Pass
1	Base Foundation		71.7	Pass
1	Base Foundation Soil Interaction		56.4	Pass
Structure Rating (max from all components) =				**93.4%**

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

APPENDIX A

TNXTOWER OUTPUT

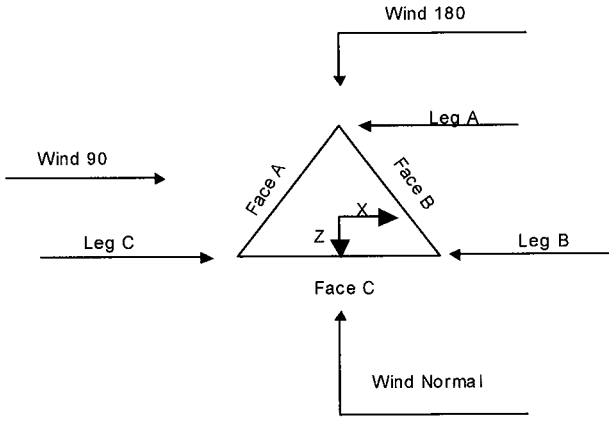
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 212.63 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.50 ft at the top and 30.18 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Middlesex County, Connecticut.
Basic wind speed of 85.00 mph.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 37.60 mph is used in combination with ice.
Deflections calculated using a wind speed of 50.00 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	212.63-202.46		B056	8.50	1	10.17
T2	202.46-182.29		B087	8.54	1	20.17
T3	182.29-162.10		C034	8.63	1	20.19
T4	162.10-141.90		D054	10.71	1	20.21
T5	141.90-121.69		E066	12.79	1	20.21
T6	121.69-101.48		F020	15.04	1	20.21
T7	101.48-81.27		G023	17.54	1	20.21
T8	81.27-61.00		H029	20.18	1	20.27
T9	61.00-40.67		J035	22.68	1	20.33
T10	40.67-20.33		K004	25.18	1	20.33
T11	20.33-0.00		L075	27.68	1	20.33

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	212.63-202.46	5.08	K Brace Down	No	Yes	0.000	0.000
T2	202.46-182.29	6.72	K Brace Down	No	Yes	0.000	0.000
T3	182.29-162.10	6.59	K Brace Down	No	Yes	5.000	0.000
T4	162.10-141.90	6.60	K Brace Down	No	Yes	5.000	0.000
T5	141.90-121.69	9.90	K Brace Down	No	Yes	5.000	0.000
T6	121.69-101.48	9.90	K Brace Down	No	Yes	5.000	0.000
T7	101.48-81.27	9.90	K Brace Down	No	Yes	5.000	0.000
T8	81.27-61.00	9.93	K Brace Down	No	Yes	5.000	0.000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T9	61.00-40.67	9.96	K Brace Down	No	Yes	5.000	0.000
T10	40.67-20.33	19.92	K1 Down	No	Yes	5.000	0.000
T11	20.33-0.00	19.92	K1 Down	No	Yes	5.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 212.63-202.46	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T2 202.46-182.29	Pipe	Pipe 3.5" x 0.300" (3 XS)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T3 182.29-162.10	Pipe	Pipe 4.5" x 0.337" (4 XS)	A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T4 162.10-141.90	Pipe	Pipe 5.5" x 0.375" (5 EH)	A513-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T5 141.90-121.69	Pipe	Pipe 6.625" x 0.340" (6 EHS)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T6 121.69-101.48	Pipe	Pipe 6.625" x 0.432" (6 XS)	A513-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T7 101.48-81.27	Pipe	Pipe 6.625" x 0.432" (6 XS)	A513-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T8 81.27-61.00	Pipe	Pipe 8.75" x 0.375" (8 EHS)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T9 61.00-40.67	Pipe	Pipe 8.75" x 0.375" (8 EHS)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T10 40.67-20.33	Pipe	Pipe 8.75" x 0.500" (8 EH)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T11 20.33-0.00	Pipe	Pipe 8.75" x 0.500" (8 EH)	A500-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 212.63-202.46	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T2 202.46-182.29	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T3 182.29-162.10	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	A618-50 (50 ksi)
T4 162.10-141.90	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T5 141.90-121.69	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T6 121.69-101.48	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.375" x 0.154" (2 STD)	A618-50 (50 ksi)
T7 101.48-81.27	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T8 81.27-61.00	None	Pipe		A618-50	Pipe	Pipe 2.875" x 0.203"	A618-50

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
				(50 ksi)		(2.5 STD)	(50 ksi)
T9 61.00-40.67	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 2.875" x 0.203" (2.5 STD)	A618-50 (50 ksi)
T10 40.67-20.33	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T11 20.33-0.00	None	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 212.63-202.46	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T2 202.46-182.29	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T3 182.29-162.10	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T4 162.10-141.90	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T5 141.90-121.69	Pipe		A618-50 (50 ksi)	Single Angle	L 2 x 2 x 1/8	A36 (36 ksi)
T6 121.69-101.48	Pipe		A618-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T7 101.48-81.27	Pipe		A618-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T8 81.27-61.00	Pipe		A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)
T9 61.00-40.67	Pipe		A618-50 (50 ksi)	Single Angle	L 3.5 x 3.5 x 1/4	A36 (36 ksi)
T10 40.67-20.33	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)
T11 20.33-0.00	Pipe		A618-50 (50 ksi)	Pipe	Pipe 3.5" x 0.216" (3 STD)	A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T10 40.67-20.33	A53-B-35 (35 ksi)	Horizontal (1) Diagonal (1) Hip (1) Hip Diagonal	Pipe Pipe Pipe	Pipe 1.9" x 0.145" (1.5 STD) Pipe 2.375" x 0.154" (2 STD) Pipe 1.9" x 0.145" (1.5 STD) Pipe 2.875" x 0.203" (2.5 STD)	1 1 1 1

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T11 20.33-0.00	A53-B-35 (35 ksi)	Horizontal (1)	Pipe	Pipe 1.9" x 0.145" (1.5 STD)	1
		Diagonal (1)	Pipe		1
		Hip (1)	Pipe	Pipe 2.375" x 0.154" (2 STD)	1
		Hip Diagonal		Pipe 1.9" x 0.145" (1.5 STD)	1
				Pipe 2.875" x 0.203" (2.5 STD)	

Tower Section Geometry *(cont'd)*

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
T1 212.63-202.46	0.00	0.250	A36 (36 ksi)	1	1	1.05	6.000	6.000
T2 202.46-182.29	0.00	0.250	A36 (36 ksi)	1	1	1.05	36.000	36.000
T3 182.29-162.10	0.00	0.250	A36 (36 ksi)	1	1	1.05	36.000	36.000
T4 162.10-141.90	0.00	0.250	A36 (36 ksi)	1	1	1.1	6.000	6.000
T5 141.90-121.69	0.00	0.250	A36 (36 ksi)	1	1	1.1	36.000	36.000
T6 121.69-101.48	0.00	0.375	A36 (36 ksi)	1	1	1.1	36.000	36.000
T7 101.48-81.27	0.00	0.375	A36 (36 ksi)	1	1	1.1	36.000	36.000
T8 81.27-61.00	0.00	0.375	A36 (36 ksi)	1	1	1.15	36.000	36.000
T9 61.00-40.67	0.00	0.375	A36 (36 ksi)	1	1	1.15	36.000	36.000
T10 40.67-20.33	0.00	0.375	A36 (36 ksi)	1	1	1.25	36.000	36.000
T11 20.33-0.00	0.00	0.375	A36 (36 ksi)	1	1	1.25	36.000	36.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 212.63-202.46	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 202.46-182.29	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 182.29-162.10	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 162.10-	No	No	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
141.90				1	1	1	1	1	1	1
T5 141.90-121.69	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 121.69-101.48	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 101.48-81.27	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 81.27-61.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 61.00-40.67	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 40.67-20.33	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 20.33-0.00	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	U	Diagonal Net Width Deduct in	U	Top Girt Net Width Deduct in	U	Bottom Girt Net Width Deduct in	U	Mid Girt Net Width Deduct in	U	Long Horizontal Net Width Deduct in	U	Short Horizontal Net Width Deduct in	U
T1 212.63-202.46	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T2 202.46-182.29	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T3 182.29-162.10	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75
T4 162.10-141.90	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T5 141.90-121.69	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T6 121.69-101.48	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T7 101.48-81.27	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T8 81.27-61.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T9 61.00-40.67	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T10 40.67-20.33	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1
T11 20.33-0.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1	0.000	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 212.63-202.46	Flange	0.750 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T2 202.46-182.29	Flange	0.875 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T3 182.29-162.10	Flange	1.000 A325N	4	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T4 162.10-141.90	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T5 141.90-121.69	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T6 121.69-101.48	Flange	1.000 A325N	6	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T7 101.48-81.27	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T8 81.27-61.00	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T9 61.00-40.67	Flange	1.000 A325N	8	0.625 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0
T10 40.67-20.33	Flange	1.000 A325N	8	0.750 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.750 A325N	2	0.625 A325N	1
T11 20.33-0.00	Flange	1.000 A354-BC	10	0.750 A325N	3	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.750 A325N	2	0.625 A325N	1

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
3/8" power cable	C	Yes	Ar (CfAe)	212.00 - 5.00	0.000	0.49	2	2	0.440	0.440		0.08
LDF4-50A (1/2" foam)	A	Yes	Ar (CfAe)	51.00 - 5.00	0.000	0.49	1	1	0.630	0.630		0.15
1.5" flat Cable Ladder Rail	A	Yes	Af (CfAe)	197.00 - 5.00	0.000	0.4	2	2	24.000 1.500	1.500	6.000	1.80
HB114-1-08U4-M5J(1 1/4")	A	Yes	Ar (CfAe)	199.00 - 5.00	0.000	0.4	3	3	0.750 1.540	1.540		1.08
1.5" flat Cable Ladder Rail	A	Yes	Af (CfAe)	189.00 - 5.00	0.000	-0.4	2	2	24.000 1.500	1.500	6.000	1.80
WR-VG82ST-BRDA(5/8")	A	Yes	Ar (CfAe)	189.00 - 5.00	0.000	-0.32	3	2	0.645	0.645		0.31
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	145.00 - 5.00	0.000	-0.36	5	5	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	147.00 - 145.00	0.000	-0.36	4	4	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	162.00 - 147.00	0.000	-0.36	3	3	1.090	1.090		0.33
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	164.00 - 162.00	0.000	-0.36	2	2	1.090	1.090		0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8" foam)	A	Yes	Ar (CfAe)	167.00 - 164.00	0.000	-0.36	1	1	1.090	1.090		0.33
LDF7-50A (1 5/8" foam)	A	Yes	Ar (CfAe)	189.00 - 5.00	0.000	-0.42	12	6	0.270	1.980		0.92
FB-L98-002-XXX (3/8")	A	Yes	Ar (CfAe)	175.00 - 5.00	0.000	-0.48	5	2	0.394	0.394		0.88
1.5" flat Cable Ladder Rail	C	Yes	Af (CfAe)	208.00 - 5.00	0.000	0.4	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	C	Yes	Ar (CfAe)	208.00 - 5.00	0.000	0.42	6	6	0.270	1.980		0.92
LDF7-50A (1 5/8" foam)	C	Yes	Ar (CfAe)	208.00 - 5.00	0.000	0.38	9	6	0.270	1.980		0.92
EW52(ELLIPTICAL)	C	Yes	Ar (CfAe)	133.00 - 5.00	0.000	0.4	1	1	2.210	2.210		0.59
1.5" flat Cable Ladder Rail	C	Yes	Af (CfAe)	183.00 - 5.00	0.000	-0.45	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	C	Yes	Ar (CfAe)	183.00 - 5.00	0.000	-0.45	6	6	0.270	1.980		0.92
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	175.00 - 5.00	0.000	0.45	2	2	24.000 1.500	1.500	6.000	1.80
LDF6-50 (1 1/4" foam)	B	Yes	Ar (CfAe)	175.00 - 5.00	0.000	0.45	12	12	0.700	1.550		0.66
1.5" flat Cable Ladder Rail	B	Yes	Af (CfAe)	139.00 - 5.00	0.000	-0.45	2	2	24.000 1.500	1.500	6.000	1.80
LDF7-50A (1 5/8" foam)	B	Yes	Ar (CfAe)	139.00 - 5.00	0.000	-0.45	12	6	0.270	1.980		0.92

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 lb
Strobe Light	B	From Leg	0.00 0 0	0.000	212.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.72 1.93 2.14 2.60 3.65	1.72 1.93 2.14 2.60 3.65	50 76 104 170 344
Obstruction light	A	From Leg	0.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.80 0.94 1.10 1.44 2.27	0.80 0.94 1.10 1.44 2.27	10 20 32 63 154
Obstruction light	B	From Leg	0.00 0 0	0.000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.80 0.94 1.10 1.44 2.27	0.80 0.94 1.10 1.44 2.27	10 20 32 63 154
Obstruction light	C	From Leg	0.00	0.000	110.00	No Ice	0.80	0.80	10

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 lb
			0 0			1/2" Ice 1" Ice 2" Ice 4" Ice	0.94 1.10 1.44 2.27	0.94 1.10 1.44 2.27	20 32 63 154
**									
BXA-70080/6CF w/ Mount Pipe	A	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.07 6.63 7.15 8.25 10.78	6.10 7.26 8.13 9.92 13.71	43 95 158 310 749
(2) LPA-171080/8CFx2 w/ Mount Pipe	A	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	27 58 99 198 498
(2) LPA-80080/6CF w/ Mount Pipe	A	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	46 110 185 363 857
BXA-70063/4CF w/ Mount Pipe	B	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.84 6.30 7.24 9.26	3.62 4.22 4.83 6.16 9.18	28 68 116 233 573
(2) LPA-171080/8CFx2 w/ Mount Pipe	B	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	27 58 99 198 498
(2) LPA-80080/6CF w/ Mount Pipe	B	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	46 110 185 363 857
BXA-70063/4CF w/ Mount Pipe	C	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.40 5.84 6.30 7.24 9.26	3.62 4.22 4.83 6.16 9.18	28 68 116 233 573
(2) LPA-171080/8CFx2 w/ Mount Pipe	C	From Face	4.00 0 1	0.000	208.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	27 58 99 198 498
(2) LPA-80080/6CF w/ Mount Pipe	C	From Face	4.00 0	0.000	208.00	No Ice 1/2"	4.56 5.11	10.73 11.99	46 110

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 lb
			1			Ice	5.61	12.97	185
						1" Ice	6.65	14.98	363
						2" Ice	8.83	19.22	857
						4" Ice			
Sector Mount [SM 510-3]	C	None		0.000	208.00	No Ice	40.10	40.10	2396
						1/2" Ice	57.33	57.33	3089
						1" Ice	74.56	74.56	3782
						2" Ice	109.02	109.02	5167
						4" Ice	177.94	177.94	7937
**									
1900MHz RRH (65MHz)	A	From Leg	4.00 0 1	0.000	199.00	No Ice	2.70	2.77	60
						1/2" Ice	2.94	3.01	84
						1" Ice	3.18	3.26	111
						2" Ice	3.70	3.78	176
						4" Ice	4.85	4.93	354
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00 0 -1	0.000	199.00	No Ice	2.40	2.25	64
						1/2" Ice	2.61	2.46	86
						1" Ice	2.83	2.68	111
						2" Ice	3.30	3.13	172
						4" Ice	4.34	4.15	338
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0 -1	0.000	199.00	No Ice	8.50	6.95	83
						1/2" Ice	9.15	8.13	148
						1" Ice	9.77	9.02	225
						2" Ice	11.03	10.84	406
						4" Ice	13.68	14.85	909
1900MHz RRH (65MHz)	B	From Leg	4.00 0 -1	0.000	199.00	No Ice	2.70	2.77	60
						1/2" Ice	2.94	3.01	84
						1" Ice	3.18	3.26	111
						2" Ice	3.70	3.78	176
						4" Ice	4.85	4.93	354
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00 0 -1	0.000	199.00	No Ice	2.40	2.25	64
						1/2" Ice	2.61	2.46	86
						1" Ice	2.83	2.68	111
						2" Ice	3.30	3.13	172
						4" Ice	4.34	4.15	338
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0 -1	0.000	199.00	No Ice	8.50	6.95	83
						1/2" Ice	9.15	8.13	148
						1" Ice	9.77	9.02	225
						2" Ice	11.03	10.84	406
						4" Ice	13.68	14.85	909
1900MHz RRH (65MHz)	C	From Leg	4.00 0 -1	0.000	199.00	No Ice	2.70	2.77	60
						1/2" Ice	2.94	3.01	84
						1" Ice	3.18	3.26	111
						2" Ice	3.70	3.78	176
						4" Ice	4.85	4.93	354
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00 0 -1	0.000	199.00	No Ice	2.40	2.25	64
						1/2" Ice	2.61	2.46	86
						1" Ice	2.83	2.68	111

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 lb
						1" Ice	3.30	3.13	172
						2" Ice	4.34	4.15	338
						4" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0 -1	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	83 148 225 406 909
Sector Mount [SM 505-3]	C	None		0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.86 49.79 64.72 94.58 154.30	34.86 49.79 64.72 94.58 154.30	1725 2317 2909 4092 6458
(4) 4' x 2" Pipe Mount	A	From Leg	4.00 0 0	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
(4) 4' x 2" Pipe Mount	B	From Leg	4.00 0 0	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
(4) 4' x 2" Pipe Mount	C	From Leg	4.00 0 0	0.000	199.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
**									
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	A	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.55 1.72 1.90 2.28 3.14	0.81 0.94 1.09 1.40 2.12	27 38 52 86 189
(2) 7770.00 w/ Mount Pipe	A	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	55 101 155 287 665
(2) LCP13519	A	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	5 8 12 24 71
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	B	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice	1.55 1.72 1.90 2.28	0.81 0.94 1.09 1.40	27 38 52 86

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 lb
						2" Ice	3.14	2.12	189
						4" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00	0.000	189.00	No Ice	6.12	4.25	55
			0			1/2"	6.63	5.01	101
			1			Ice	7.13	5.71	155
						1" Ice	8.16	7.16	287
						2" Ice	10.36	10.41	665
						4" Ice			
(2) LGP13519	B	From Face	4.00	0.000	189.00	No Ice	0.34	0.21	5
			0			1/2"	0.42	0.28	8
			1			Ice	0.51	0.36	12
						1" Ice	0.73	0.55	24
						2" Ice	1.25	1.03	71
						4" Ice			
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	C	From Face	4.00	0.000	189.00	No Ice	1.55	0.81	27
			0			1/2"	1.72	0.94	38
			1			Ice	1.90	1.09	52
						1" Ice	2.28	1.40	86
						2" Ice	3.14	2.12	189
						4" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00	0.000	189.00	No Ice	6.12	4.25	55
			0			1/2"	6.63	5.01	101
			1			Ice	7.13	5.71	155
						1" Ice	8.16	7.16	287
						2" Ice	10.36	10.41	665
						4" Ice			
(2) LGP13519	C	From Face	4.00	0.000	189.00	No Ice	0.34	0.21	5
			0			1/2"	0.42	0.28	8
			1			Ice	0.51	0.36	12
						1" Ice	0.73	0.55	24
						2" Ice	1.25	1.03	71
						4" Ice			
DC6-48-60-18-8F	C	From Face	4.00	0.000	189.00	No Ice	1.47	1.47	19
			0			1/2"	1.67	1.67	37
			1			Ice	1.88	1.88	57
						1" Ice	2.33	2.33	105
						2" Ice	3.38	3.38	239
						4" Ice			
(2) RRUS-11	A	From Face	4.00	0.000	189.00	No Ice	3.25	1.37	48
			0			1/2"	3.49	1.55	69
			1			Ice	3.74	1.74	93
						1" Ice	4.27	2.14	150
						2" Ice	5.43	3.04	310
						4" Ice			
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Face	4.00	0.000	189.00	No Ice	5.74	4.02	35
			0			1/2"	6.20	4.63	78
			1			Ice	6.66	5.28	130
						1" Ice	7.62	6.68	254
						2" Ice	9.67	9.74	610
						4" Ice			
(2) RRUS-11	B	From Face	4.00	0.000	189.00	No Ice	3.25	1.37	48
			0			1/2"	3.49	1.55	69
			1			Ice	3.74	1.74	93
						1" Ice	4.27	2.14	150
						2" Ice	5.43	3.04	310
						4" Ice			

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 lb
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	35 78 130 254 610
(2) RRUS-11	C	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	48 69 93 150 310
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Face	4.00 0 1	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.74 6.20 6.66 7.62 9.67	4.02 4.63 5.28 6.68 9.74	35 78 130 254 610
Sector Mount [SM 602-3]	C	None		0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	33.11 44.90 56.69 80.27 127.43	33.11 44.90 56.69 80.27 127.43	1541 2159 2777 4014 6487
4' x 2" Pipe Mount	A	From Leg	4.00 0 0	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
4' x 2" Pipe Mount	B	From Leg	4.00 0 0	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
4' x 2" Pipe Mount	C	From Leg	4.00 0 0	0.000	189.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	29 35 44 72 167
**									
APXV18-206517LS w/ Mount Pipe	A	From Leg	0.50 0 0	0.000	183.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.29 5.84 6.36 7.42 9.77	4.67 5.82 6.69 8.46 12.21	53 95 148 279 674
APXV18-206517LS w/ Mount Pipe	B	From Leg	0.50 0 0	0.000	183.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.29 5.84 6.36 7.42 9.77	4.67 5.82 6.69 8.46 12.21	53 95 148 279 674
APXV18-206517LS w/	C	From Leg	0.50	0.000	183.00	No Ice	5.29	4.67	53

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 lb
Mount Pipe			0 0			1/2" Ice 1" Ice 2" Ice 4" Ice	5.84 6.36 7.42 9.77	5.82 6.69 8.46 12.21	95 148 279 674
**									
(4) DB844H90E-XY w/ Mount Pipe	A	From Face	4.00 0 1	0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	32 70 116 228 557
(4) DB844H90E-XY w/ Mount Pipe	B	From Face	4.00 0 1	0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	32 70 116 228 557
(4) DB844H90E-XY w/ Mount Pipe	C	From Face	4.00 0 1	0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.30 3.69 4.12 5.01 6.92	4.92 5.60 6.28 7.71 10.83	32 70 116 228 557
Sector Mount [SM 510-3]	C	None		0.000	175.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	40.10 57.33 74.56 109.02 177.94	40.10 57.33 74.56 109.02 177.94	2396 3089 3782 5167 7937
**									
Pipe Mount [PM 601-1]	B	From Leg	0.50 0 0	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.00 3.74 4.48 5.96 8.92	0.90 1.12 1.34 1.78 2.66	65 79 93 122 178
**									
1151-3	A	From Leg	6.00 0 6	0.000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	16 47 87 197 541
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0 0	0.000	167.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
SD310-HL	A	From Leg	6.00 0 -2	0.000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 1.32 1.87 2.98 5.18	0.77 1.32 1.87 2.98 5.18	10 20 30 50 90

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 lb
DB589-Y	B	From Leg	6.00 0 9	0.000	164.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.38 2.31 3.27 4.81 7.17	1.38 2.31 3.27 4.81 7.17	12 23 40 93 276
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0 0	0.000	164.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
1151-3	A	From Leg	6.00 0 6	0.000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	16 47 87 197 541
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0 0	0.000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
SD310-HL	B	From Leg	6.00 0 3	0.000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.77 1.32 1.87 2.98 5.18	0.77 1.32 1.87 2.98 5.18	10 20 30 50 90
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0 0	0.000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	53 79 105 156 259
**									
RR90-17-02DP w/ Mount Pipe	A	From Leg	1.00 0 1	0.000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.59 5.09 5.58 6.59 8.73	3.32 4.09 4.78 6.23 9.31	34 69 114 224 557
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	1.00 0 1	0.000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.47 7.99 8.52 9.59 11.87	3.43 4.26 4.96 6.40 9.49	61 108 164 293 663
ATMAA1412D-1A20	A	From Leg	1.00 0 1	0.000	139.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.17 1.31 1.47 1.81 2.58	0.47 0.57 0.69 0.95 1.57	13 21 30 56 137
ATMPP1412D-1CWA	A	From Leg	1.00	0.000	139.00	No Ice	1.17	0.42	13

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 lb
			0			1/2"	1.32	0.53	20
			1			Ice	1.48	0.65	28
						1" Ice	1.82	0.92	52
						2" Ice	2.61	1.57	131
						4" Ice			
RR90-17-02DP w/ Mount Pipe	B	From Leg	1.00	0.000	139.00	No Ice	4.59	3.32	34
			0			1/2"	5.09	4.09	69
			1			Ice	5.58	4.78	114
						1" Ice	6.59	6.23	224
						2" Ice	8.73	9.31	557
						4" Ice			
ATMPP1412D-1CWA	B	From Leg	1.00	0.000	139.00	No Ice	1.17	0.42	13
			0			1/2"	1.32	0.53	20
			1			Ice	1.48	0.65	28
						1" Ice	1.82	0.92	52
						2" Ice	2.61	1.57	131
						4" Ice			
RR90-17-02DP w/ Mount Pipe	C	From Leg	1.00	0.000	139.00	No Ice	4.59	3.32	34
			0			1/2"	5.09	4.09	69
			1			Ice	5.58	4.78	114
						1" Ice	6.59	6.23	224
						2" Ice	8.73	9.31	557
						4" Ice			
(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	1.00	0.000	139.00	No Ice	7.47	3.49	61
			0			1/2"	7.99	4.26	108
			1			Ice	8.52	4.96	164
						1" Ice	9.59	6.40	298
						2" Ice	11.87	9.49	683
						4" Ice			
(2) ATMAA1412D-1A20	C	From Leg	1.00	0.000	139.00	No Ice	1.17	0.47	13
			0			1/2"	1.31	0.57	21
			1			Ice	1.47	0.69	30
						1" Ice	1.81	0.95	56
						2" Ice	2.58	1.57	137
						4" Ice			
ATMPP1412D-1CWA	C	From Leg	1.00	0.000	139.00	No Ice	1.17	0.42	13
			0			1/2"	1.32	0.53	20
			1			Ice	1.48	0.65	28
						1" Ice	1.82	0.92	52
						2" Ice	2.61	1.57	131
						4" Ice			
**									
1142-2C	A	From Leg	6.00	0.000	128.00	No Ice	2.09	2.09	24
			0			1/2"	3.37	3.37	41
			4			Ice	4.67	4.67	66
						1" Ice	7.32	7.32	140
						2" Ice	10.79	10.79	302
						4" Ice			
Side Arm Mount [SO 308-1]	A	From Leg	3.00	0.000	128.00	No Ice	0.98	3.03	53
			0			1/2"	1.70	5.22	79
			0			Ice	2.42	7.41	105
						1" Ice	3.86	11.79	156
						2" Ice	6.74	20.55	259
						4" Ice			
**									
GPS_A	A	From Leg	3.00	0.000	51.00	No Ice	0.30	0.30	1

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0				1/2" Ice	0.37	0.37	5
			0				1" Ice	0.46	0.46	10
							2" Ice	0.65	0.65	25
							4" Ice	1.15	1.15	79
Side Arm Mount [SO 701-1]	A	From Leg	1.50		0.000	51.00	No Ice	0.85	1.67	65
			0				1/2" Ice	1.14	2.34	79
			0				1" Ice	1.43	3.01	93
							2" Ice	2.01	4.35	121
							4" Ice	3.17	7.03	177
**										

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
HPD2-23	C	Paraboloid w/Shroud (HP)	From Leg	2.00		74.000		175.00	2.00	No Ice	3.14	27
				0						1/2" Ice	3.41	40
				4						1" Ice	3.68	60
										2" Ice	4.21	100
										4" Ice	5.28	170
HPD2-23	C	Paraboloid w/Shroud (HP)	From Leg	1.00		-90.000		175.00	2.00	No Ice	3.14	27
				0						1/2" Ice	3.41	40
				4						1" Ice	3.68	60
										2" Ice	4.21	100
										4" Ice	5.28	170
PL6-59W	B	Paraboloid w/Radome	From Leg	1.00		-90.000		133.00	6.00	No Ice	28.27	143
				0						1/2" Ice	29.07	290
				1						1" Ice	29.86	440
										2" Ice	31.44	740
										4" Ice	34.60	1340

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

Comb. No.	Description
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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 Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	10	318556	33206	-18516
	Max. H_x	10	318556	33206	-18516
	Max. H_z	3	-227812	-23766	16803
	Min. Vert	4	-265231	-29361	16333
	Min. H_x	4	-265231	-29361	16333
	Min. H_z	9	276050	27143	-18547
Leg B	Max. Vert	6	313544	-33029	-18028
	Max. H_x	12	-264903	29393	15879
	Max. H_z	13	-227112	23895	16072
	Min. Vert	12	-264903	29393	15879
	Min. H_x	6	313544	-33029	-18028
	Min. H_z	6	313544	-33029	-18028
Leg A	Max. Vert	2	314561	-417	37727
	Max. H_x	11	21141	4476	1889
	Max. H_z	2	314561	-417	37727
	Min. Vert	8	-267316	373	-33650
	Min. H_x	5	22203	-4549	2015
	Min. H_z	8	-267316	373	-33650

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	5.41	35	0.220	0.057
T2	202.458 - 182.292	4.93	35	0.220	0.056
T3	182.292 - 162.104	3.98	35	0.209	0.051
T4	162.104 - 141.896	3.09	35	0.186	0.039
T5	141.896 - 121.688	2.31	35	0.160	0.030
T6	121.688 - 101.479	1.67	35	0.131	0.023
T7	101.479 - 81.2708	1.13	35	0.107	0.018
T8	81.2708 - 61	0.73	35	0.080	0.014
T9	61 - 40.6667	0.41	35	0.057	0.010
T10	40.6667 - 20.3333	0.19	35	0.034	0.007
T11	20.3333 - 0	0.06	27	0.017	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212.00	Strobe Light	35	5.38	0.220	0.057	191305
208.00	BXA-70080/6CF w/ Mount Pipe	35	5.19	0.220	0.057	191305
199.00	1900MHz RRH (65MHz)	35	4.77	0.219	0.056	161906
189.00	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	35	4.30	0.214	0.053	130044
183.00	APXV18-206517LS w/ Mount Pipe	35	4.01	0.210	0.051	66132
179.00	HPD2-23	35	3.83	0.206	0.049	57659
175.00	(4) DB844H90E-XY w/ Mount Pipe	35	3.65	0.202	0.047	54764
167.00	1151-3	35	3.30	0.192	0.042	49946
164.00	DB589-Y	35	3.17	0.188	0.040	48178
162.00	SD310-HL	35	3.09	0.186	0.039	46689
147.00	1151-3	35	2.50	0.167	0.032	34143
145.00	SD310-HL	35	2.42	0.164	0.031	32983
139.00	RR90-17-02DP w/ Mount Pipe	35	2.21	0.156	0.029	33240
134.00	PL6-59W	35	2.04	0.149	0.027	37200
133.00	Pipe Mount [PM 601-1]	35	2.01	0.147	0.027	38130
128.00	1142-2C	35	1.85	0.140	0.025	43575
110.00	Obstruction light	35	1.34	0.117	0.020	40218
51.00	GPS_A	35	0.29	0.046	0.008	53433

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 -	15.49	10	0.629	0.163

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
	202.458				
T2	202.458 - 182.292	14.13	10	0.628	0.162
T3	182.292 - 162.104	11.42	10	0.597	0.146
T4	162.104 - 141.896	8.87	10	0.532	0.113
T5	141.896 - 121.688	6.63	10	0.458	0.087
T6	121.688 - 101.479	4.79	10	0.376	0.067
T7	101.479 - 81.2708	3.26	10	0.305	0.051
T8	81.2708 - 61	2.09	10	0.229	0.040
T9	61 - 40.6667	1.18	10	0.164	0.029
T10	40.6667 - 20.3333	0.54	10	0.099	0.019
T11	20.3333 - 0	0.17	10	0.050	0.009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212.00	Strobe Light	10	15.40	0.629	0.163	66956
208.00	BXA-70080/6CF w/ Mount Pipe	10	14.87	0.629	0.163	66956
199.00	1900MHz RRH (65MHz)	10	13.67	0.625	0.161	57884
189.00	(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	10	12.31	0.612	0.154	47493
183.00	APXV18-206517LS w/ Mount Pipe	10	11.51	0.599	0.147	23710
179.00	HPD2-23	10	10.98	0.588	0.141	20572
175.00	(4) DB844H90E-XY w/ Mount Pipe	10	10.47	0.576	0.135	19459
167.00	1151-3	10	9.46	0.549	0.121	17619
164.00	DB589-Y	10	9.10	0.538	0.116	16965
162.00	SD310-HL	10	8.86	0.531	0.113	16426
147.00	1151-3	10	7.16	0.477	0.092	11953
145.00	SD310-HL	10	6.95	0.470	0.090	11527
139.00	RR90-17-02DP w/ Mount Pipe	10	6.34	0.446	0.084	11609
134.00	PL6-59W	10	5.87	0.426	0.079	13033
133.00	Pipe Mount [PM 601-1]	10	5.77	0.422	0.078	13359
128.00	1142-2C	10	5.33	0.401	0.073	15270
110.00	Obstruction light	10	3.86	0.335	0.057	14045
51.00	GPS_A	10	0.84	0.131	0.024	18669

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	212.625	Leg	A325N	0.750	4	0	19439	0.000 ✔	1.333	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.625	3	906	6443	0.141 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	990	6443	0.154 ✔	1.333	Bolt Shear
T2	202.458	Leg	A325N	0.875	4	4239	26449	0.160 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3110	6443	0.483 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	2514	6443	0.390 ✔	1.333	Bolt Shear
T3	182.292	Leg	A325N	1.000	4	12892	34557	0.373 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3336	6443	0.518 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3138	6443	0.487 ✔	1.333	Bolt Shear
T4	162.104	Leg	A325N	1.000	6	14413	34557	0.417 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3390	6443	0.526 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3441	6443	0.534 ✔	1.333	Bolt Shear
T5	141.896	Leg	A325N	1.000	6	18842	34557	0.545 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4378	6443	0.680 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3972	6443	0.617 ✔	1.333	Bolt Shear
T6	121.688	Leg	A325N	1.000	6	23763	34557	0.688 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4045	6443	0.628 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	3966	6443	0.616 ✔	1.333	Bolt Shear
T7	101.479	Leg	A325N	1.000	8	20999	34558	0.608 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	3913	6443	0.607 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4086	6443	0.634 ✔	1.333	Bolt Shear
T8	81.2708	Leg	A325N	1.000	8	23952	34557	0.693 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4235	6443	0.657 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	4687	6443	0.728 ✔	1.333	Bolt Shear
T9	61	Leg	A325N	1.000	8	26875	34557	0.778 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.625	3	4376	6443	0.679 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.625	2	5067	6443	0.786 ✔	1.333	Bolt Shear
T10	40.6667	Leg	A325N	1.000	8	27929	34556	0.808 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	3	6419	9278	0.692 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.750	2	5327	9278	0.574 ✔	1.333	Bolt Shear
T11	20.3333	Leg	A354-BC	1.000	10	24532	32398	0.757 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.750	3	6229	9278	0.671 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.750	2	5569	9278	0.600 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 2.875" x 0.203" (2.5 STD)	10.17	5.08	64.4 K=1.00	21.95	1.704	-2462	37412	0.066* ✔
T2	202.458 - 182.292	Pipe 3.5" x 0.300" (3 XS)	20.17	6.72	71.0 K=1.00	20.75	3.016	-23665	62592	0.378 ✔
T3	182.292 - 162.104	Pipe 4.5" x 0.337" (4 XS)	20.22	6.60	53.7 K=1.00	23.77	4.407	-62879	104772	0.600 ✔
T4	162.104 - 141.896	Pipe 5.5" x 0.375" (5 EH)	20.24	6.61	43.7 K=1.00	25.31	6.038	-100666	152810	0.659 ✔
T5	141.896 - 121.688	Pipe 6.625" x 0.340" (6 EHS)	20.25	9.92	53.5 K=1.00	23.80	6.713	-130586	159778	0.817 ✔
T6	121.688 - 101.479	Pipe 6.625" x 0.432" (6 XS)	20.26	9.92	54.2 K=1.00	23.68	8.405	-164330	198997	0.826 ✔
T7	101.479 - 81.2708	Pipe 6.625" x 0.432" (6 XS)	20.27	9.92	54.3 K=1.00	23.67	8.405	-194263	198976	0.976 ✔
T8	81.2708 - 61	Pipe 8.75" x 0.375" (8 EHS)	20.32	9.95	40.3 K=1.00	25.79	9.867	-222986	254468	0.876 ✔
T9	61 - 40.6667	Pipe 8.75" x 0.375" (8 EHS)	20.38	9.98	40.4 K=1.00	25.77	9.867	-251845	254293	0.990 ✔
T10	40.6667 - 20.3333	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0 K=1.00	25.69	12.959	-266560	332937	0.801 ✔
T11	20.3333 - 0	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0 K=1.00	25.69	12.959	-294197	332937	0.884 ✔

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 2.375" x 0.154" (2 STD)	6.64	6.45	98.4 K=1.00	15.08	1.075	-2717	16203	0.168 ✔
T2	202.458 - 182.292	Pipe 2.375" x 0.154" (2 STD)	7.99	7.72	117.6 K=1.00	10.79	1.075	-9331	11595	0.805 ✔
T3	182.292 - 162.104	Pipe 2.375" x 0.154" (2 STD)	8.49	8.20	125.0 K=1.00	9.56	1.075	-10007	10277	0.974 ✔
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	9.19	8.86	135.1 K=1.00	8.18	1.075	-9956	8792	1.132 ✔
T5	141.896 - 121.688	Pipe 2.875" x 0.203" (2.5 STD)	12.43	11.98	151.7 K=1.00	6.49	1.704	-13135	11057	1.188 ✔
T6	121.688 - 101.479	Pipe 2.875" x 0.203" (2.5 STD)	13.23	12.81	162.3 K=1.00	5.67	1.704	-12033	9663	1.245 ✔
T7	101.479 - 81.2708	Pipe 3.5" x 0.216" (3 STD)	14.14	13.75	141.8 K=1.00	7.43	2.228	-11634	16549	0.703 ✔
T8	81.2708 - 61	Pipe 3.5" x 0.216" (3 STD)	15.07	14.59	150.5 K=1.00	6.60	2.228	-12705	14699	0.864 ✔
T9	61 - 40.6667	Pipe 3.5" x 0.216" (3 STD)	16.06	15.59	160.8 K=1.00	5.78	2.228	-13128	12873	1.020 ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	24.26	12.13	125.1 K=1.00	9.54	2.228	-19258	21260	0.906 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	25.00	12.50	128.9 K=1.00	8.99	2.228	-18686	20030	0.933 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.52	4.14	79.8 K=1.00	19.05	0.799	-1942	15231	0.128 ✔
T2	202.458 - 182.292	Pipe 1.9" x 0.145" (1.5 STD)	8.60	4.15	80.0 K=1.00	19.00	0.799	-4995	15193	0.329 ✔
T3	182.292 - 162.104	Pipe 1.9" x 0.145" (1.5 STD)	10.03	4.83	93.0 K=1.00	16.28	0.799	-6276	13015	0.482 ✔
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	12.11	5.83	88.8 K=1.00	17.19	1.075	-6882	18470	0.373 ✔
T5	141.896 - 121.688	Pipe 2.375" x 0.154" (2 STD)	13.94	6.69	102.1 K=1.00	14.23	1.075	-7944	15288	0.520 ✔
T6	121.688 - 101.479	Pipe 2.375" x 0.154" (2 STD)	16.32	7.88	120.2 K=1.00	10.34	1.075	-7933	11111	0.714 ✔
T7	101.479 - 81.2708	Pipe 2.875" x 0.203" (2.5 STD)	18.89	9.17	116.1 K=1.00	11.08	1.704	-8172	18875	0.433 ✔
T8	81.2708 - 61	Pipe 2.875" x 0.203" (2.5 STD)	21.45	10.36	131.2 K=1.00	8.67	1.704	-9327	14774	0.631 ✔
T9	61 - 40.6667	Pipe 2.875" x 0.203" (2.5 STD)	23.95	11.61	147.1 K=1.00	6.90	1.704	-9968	11764	0.847 ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	25.23	12.25	126.3 K=1.00	9.36	2.228	-10653	20852	0.511 ✔
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	27.73	13.50	139.2 K=1.00	7.70	2.228	-11138	17169	0.649 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.50	4.13	79.6 K=1.00	19.09	0.799	-158	15263	0.010 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 1.9" x 0.145" (1.5 STD)	6.31	5.94	114.5 K=1.00	10.96	0.799	-4626	8762	0.528 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T11	20.3333 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.57	126.6 K=1.00	9.32	0.799	-5105	7448	0.685 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.375" x 0.154" (2 STD)	11.48	10.74	163.8 K=1.00	5.57	1.075	-4209	5981	0.704 ✔
T11	20.3333 - 0	Pipe 2.375" x 0.154" (2 STD)	11.80	11.12	169.5 K=1.00	5.20	1.075	-4345	5583	0.778 ✔

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 1.9" x 0.145" (1.5 STD)	6.31	6.31	121.6 K=1.00	10.02	0.799	-54	8007	0.007 ✔
T11	20.3333 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.93	133.6 K=1.00	8.37	0.799	-50	6688	0.007 ✔

Redundant Hip Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.875" x 0.203" (2.5 STD)	15.06	15.06	190.7 K=1.00	4.11	1.704	-57	6996	0.008* ✔
T11	20.3333 - 0	Pipe 2.875" x 0.203" (2.5 STD)	15.88	15.88	201.2 K=1.00	3.69	1.704	-57	6286	0.009* ✔

* DL controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	L 2 x 2 x 1/8	4.26	4.26	128.6 K=1.00	9.03	0.484	-3	4374	0.001 ✔
T2	202.458 - 182.292	L 2 x 2 x 1/8	4.30	4.30	129.8 K=1.00	8.87	0.484	-6	4296	0.001 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T3	182.292 - 162.104	L 2 x 2 x 1/8	5.01	5.01	151.4 K=1.00	6.52	0.484	-7	3158	0.002 ✔
T4	162.104 - 141.896	L 2 x 2 x 1/8	6.06	6.06	182.8 K=1.00	4.47	0.484	-7	2165	0.003 ✔
T5	141.896 - 121.688	L 2 x 2 x 1/8	6.97	6.97	210.4 K=1.00	3.37	0.484	-9	1634	0.005 ✔
T6	121.688 - 101.479	L 2.5 x 2.5 x 3/16	8.16	8.16	197.8 K=1.00	3.82	0.902	-8	3443	0.002 ✔
T7	101.479 - 81.2708	L 3 x 3 x 3/16	9.44	9.44	190.0 K=1.00	4.14	1.090	-9	4507	0.002* ✔
T8	81.2708 - 61	L 3.5 x 3.5 x 1/4	10.73	10.73	185.5 K=1.00	4.34	1.690	-10	7336	0.001* ✔
T9	61 - 40.6667	L 3.5 x 3.5 x 1/4	11.98	11.98	207.1 K=1.00	3.48	1.690	-10	5885	0.002* ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	12.61	12.61	130.1 K=1.00	8.82	2.228	-18	19664	0.001 ✔
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	13.86	13.86	143.0 K=1.00	7.30	2.228	-17	16278	0.001 ✔

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	202.458 - 182.292	Pipe 3.5" x 0.300" (3 XS)	20.17	6.72	71.0	30.00	3.016	16954	90478	0.187 ✔
T3	182.292 - 162.104	Pipe 4.5" x 0.337" (4 XS)	20.22	6.60	53.7	30.00	4.407	51568	132223	0.390 ✔
T4	162.104 - 141.896	Pipe 5.5" x 0.375" (5 EH)	20.24	6.61	43.7	30.00	6.038	86479	181132	0.477 ✔
T5	141.896 - 121.688	Pipe 6.625" x 0.340" (6 EHS)	20.25	9.92	53.5	30.00	6.713	113053	201398	0.561 ✔
T6	121.688 - 101.479	Pipe 6.625" x 0.432" (6 XS)	20.26	9.92	54.2	30.00	8.405	142580	252148	0.565 ✔
T7	101.479 - 81.2708	Pipe 6.625" x 0.432" (6 XS)	20.27	9.92	54.3	30.00	8.405	167988	252148	0.666 ✔
T8	81.2708 - 61	Pipe 8.75" x 0.375" (8 EHS)	20.32	9.95	40.3	30.00	9.867	191615	295997	0.647 ✔
T9	61 - 40.6667	Pipe 8.75" x 0.375" (8 EHS)	20.38	9.98	40.4	30.00	9.867	215002	295997	0.726 ✔
T10	40.6667 - 20.3333	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0	30.00	12.959	227528	388772	0.585 ✔
T11	20.3333 - 0	Pipe 8.75" x 0.500" (8 EH)	20.38	9.98	41.0	30.00	12.959	248850	388772	0.640 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 2.375" x 0.154" (2 STD)	6.64	6.45	98.4	30.00	1.075	2654	32236	0.082 ✔
T2	202.458 - 182.292	Pipe 2.375" x 0.154" (2 STD)	7.99	7.72	117.6	30.00	1.075	9267	32236	0.287 ✔
T3	182.292 - 162.104	Pipe 2.375" x 0.154" (2 STD)	8.49	8.20	125.0	30.00	1.075	9929	32236	0.308 ✔
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	8.73	8.40	128.1	30.00	1.075	10073	32236	0.312 ✔
T5	141.896 - 121.688	Pipe 2.875" x 0.203" (2.5 STD)	12.43	11.98	151.7	30.00	1.704	12967	51122	0.254 ✔
T6	121.688 - 101.479	Pipe 2.875" x 0.203" (2.5 STD)	12.83	12.41	157.2	30.00	1.704	11939	51122	0.234 ✔
T7	101.479 - 81.2708	Pipe 3.5" x 0.216" (3 STD)	13.68	13.30	137.1	30.00	2.228	11423	66854	0.171 ✔
T8	81.2708 - 61	Pipe 3.5" x 0.216" (3 STD)	15.07	14.59	150.5	30.00	2.228	12250	66854	0.183 ✔
T9	61 - 40.6667	Pipe 3.5" x 0.216" (3 STD)	16.06	15.59	160.8	30.00	2.228	12600	66854	0.188 ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	24.26	12.13	125.1	30.00	2.228	18483	66854	0.276 ✔
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	25.00	12.50	128.9	30.00	2.228	17939	66854	0.268 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.52	4.14	79.8	30.00	0.799	1979	23984	0.083 ✔
T2	202.458 - 182.292	Pipe 1.9" x 0.145" (1.5 STD)	8.60	4.15	80.0	30.00	0.799	5028	23984	0.210 ✔
T3	182.292 - 162.104	Pipe 1.9" x 0.145" (1.5 STD)	10.03	4.83	93.0	30.00	0.799	6271	23984	0.261 ✔
T4	162.104 - 141.896	Pipe 2.375" x 0.154" (2 STD)	12.11	5.83	88.8	30.00	1.075	6872	32236	0.213 ✔
T5	141.896 - 121.688	Pipe 2.375" x 0.154" (2 STD)	13.94	6.69	102.1	30.00	1.075	7801	32236	0.242 ✔
T6	121.688 - 101.479	Pipe 2.375" x 0.154" (2 STD)	16.32	7.88	120.2	30.00	1.075	7838	32236	0.243 ✔
T7	101.479 - 81.2708	Pipe 2.875" x 0.203" (2.5 STD)	18.89	9.17	116.1	30.00	1.704	8124	51122	0.159 ✔
T8	81.2708 - 61	Pipe 2.875" x 0.203" (2.5 STD)	21.45	10.36	131.2	30.00	1.704	9374	51122	0.183 ✔
T9	61 - 40.6667	Pipe 2.875" x 0.203" (2.5 STD)	23.95	11.61	147.1	30.00	1.704	10133	51122	0.198 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	25.23	12.25	126.3	30.00	2.228	10406	66854	0.156 ✔
T11	20.3333 - 0	Pipe 3.5" x 0.216" (3 STD)	27.73	13.50	139.2	30.00	2.228	10689	66854	0.160 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	Pipe 1.9" x 0.145" (1.5 STD)	8.50	4.13	79.6	30.00	0.799	158	23984	0.007 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 1.9" x 0.145" (1.5 STD)	6.31	5.94	114.5	21.00	0.799	4626	16789	0.276 ✔
T11	20.3333 - 0	Pipe 1.9" x 0.145" (1.5 STD)	6.93	6.57	126.6	21.00	0.799	5105	16789	0.304 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.375" x 0.154" (2 STD)	11.48	10.74	163.8	21.00	1.075	4209	22565	0.187 ✔
T11	20.3333 - 0	Pipe 2.375" x 0.154" (2 STD)	11.80	11.12	169.5	21.00	1.075	4345	22565	0.193 ✔

Redundant Hip Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	Pipe 2.875" x 0.203" (2.5 STD)	15.06	15.06	190.7	21.00	1.704	98	35785	0.003 ✔
T11	20.3333 - 0	Pipe 2.875" x 0.203" (2.5 STD)	15.88	15.88	201.2	21.00	1.704	88	35785	0.002 ✔

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	L 2 x 2 x 1/8	4.26	4.26	81.6	21.60	0.484	3	10463	0.000 ✔
T2	202.458 - 182.292	L 2 x 2 x 1/8	4.30	4.30	82.4	21.60	0.484	6	10463	0.001 ✔
T3	182.292 - 162.104	L 2 x 2 x 1/8	4.33	4.33	83.0	21.60	0.484	5	10463	0.000 ✔
T4	162.104 - 141.896	L 2 x 2 x 1/8	5.38	5.38	103.0	21.60	0.484	6	10463	0.001 ✔
T5	141.896 - 121.688	L 2 x 2 x 1/8	6.42	6.42	123.0	21.60	0.484	4	10463	0.000 ✔
T6	121.688 - 101.479	L 2.5 x 2.5 x 3/16	7.55	7.55	116.3	21.60	0.902	2	19483	0.000 ✔
T7	101.479 - 81.2708	L 3 x 3 x 3/16	8.80	8.80	112.4	21.60	1.090	0	23541	0.000 ✔
T10	40.6667 - 20.3333	Pipe 3.5" x 0.216" (3 STD)	12.61	12.61	130.1	30.00	2.228	0	66854	0.000 ✔

Section Capacity Table

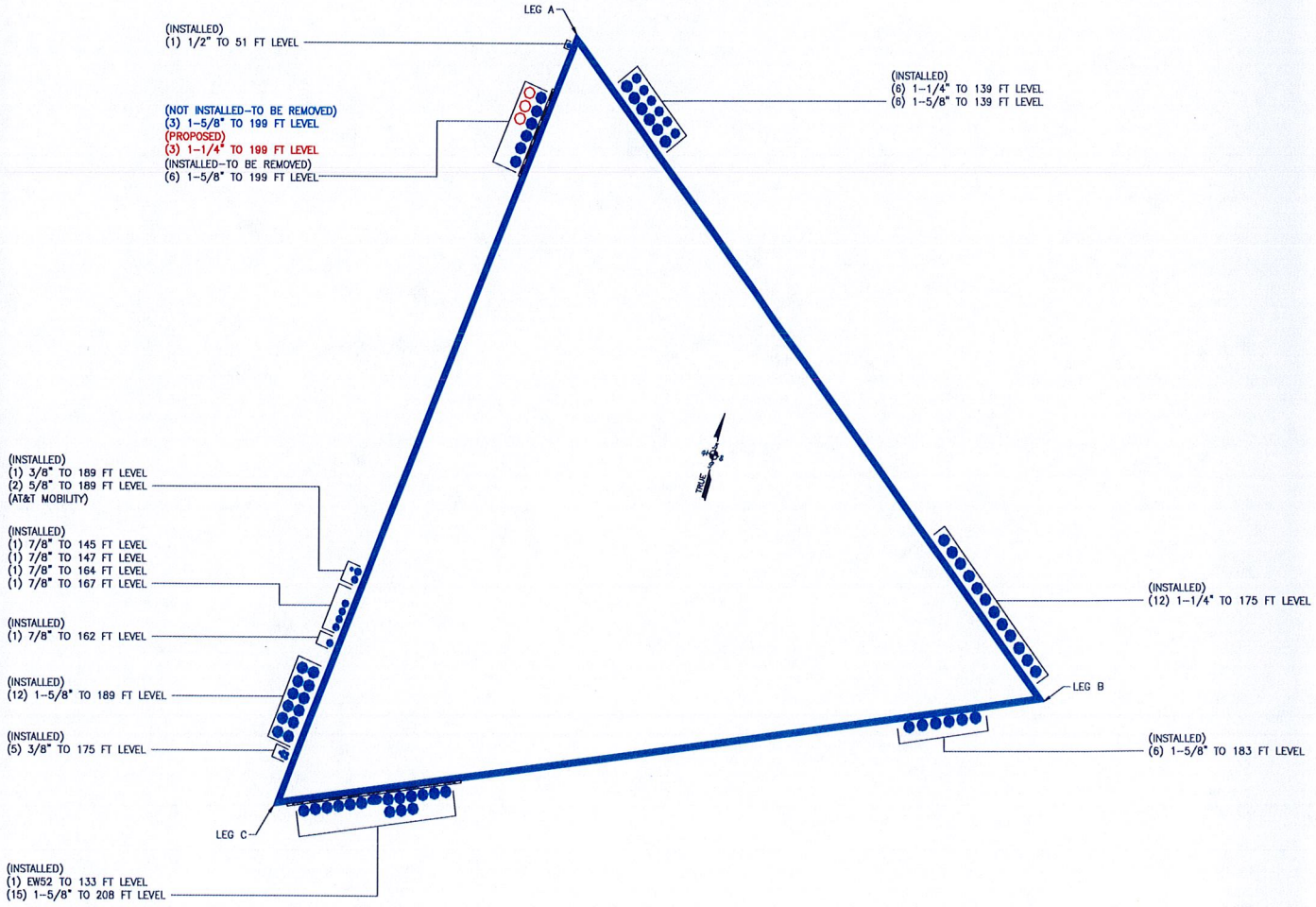
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	212.625 - 202.458	Leg	Pipe 2.875" x 0.203" (2.5 STD)	1	-2079	37412	8.3	Pass
T2	202.458 - 182.292	Leg	Pipe 3.5" x 0.300" (3 XS)	28	-23665	83436	28.4	Pass
T3	182.292 - 162.104	Leg	Pipe 4.5" x 0.337" (4 XS)	67	-62879	139661	45.0	Pass
T4	162.104 - 141.896	Leg	Pipe 5.5" x 0.375" (5 EH)	106	-100666	203696	49.4	Pass
T5	141.896 - 121.688	Leg	Pipe 6.625" x 0.340" (6 EHS)	145	-130586	212984	61.3	Pass
T6	121.688 - 101.479	Leg	Pipe 6.625" x 0.432" (6 XS)	172	-164330	265263	61.9	Pass
T7	101.479 - 81.2708	Leg	Pipe 6.625" x 0.432" (6 XS)	199	-194263	265235	73.2	Pass
T8	81.2708 - 61	Leg	Pipe 8.75" x 0.375" (8 EHS)	226	-222986	339206	65.7	Pass
T9	61 - 40.6667	Leg	Pipe 8.75" x 0.375" (8 EHS)	253	-251845	338973	74.3	Pass
T10	40.6667 - 20.3333	Leg	Pipe 8.75" x 0.500" (8 EH)	280	-266560	443805	60.1	Pass
T11	20.3333 - 0	Leg	Pipe 8.75" x 0.500" (8 EH)	313	-294197	443805	66.3	Pass
T1	212.625 - 202.458	Diagonal	Pipe 2.375" x 0.154" (2 STD)	15	-2717	21598	12.6	Pass
T2	202.458 - 182.292	Diagonal	Pipe 2.375" x 0.154" (2 STD)	39	-9331	15455	60.4	Pass
T3	182.292 - 162.104	Diagonal	Pipe 2.375" x 0.154" (2 STD)	72	-10007	13700	73.0	Pass
T4	162.104 - 141.896	Diagonal	Pipe 2.375" x 0.154" (2 STD)	111	-9956	11720	85.0	Pass
T5	141.896 - 121.688	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	149	-13135	14738	89.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T6	121.688 - 101.479	Diagonal	Pipe 2.875" x 0.203" (2.5 STD)	176	-12033	12881	93.4	Pass
T7	101.479 - 81.2708	Diagonal	Pipe 3.5" x 0.216" (3 STD)	203	-11634	22060	52.7	Pass
T8	81.2708 - 61	Diagonal	Pipe 3.5" x 0.216" (3 STD)	230	-12705	19594	64.8	Pass
T9	61 - 40.6667	Diagonal	Pipe 3.5" x 0.216" (3 STD)	257	-13128	17160	76.5	Pass
T10	40.6667 - 20.3333	Diagonal	Pipe 3.5" x 0.216" (3 STD)	284	-19258	28340	68.0	Pass
T11	20.3333 - 0	Diagonal	Pipe 3.5" x 0.216" (3 STD)	317	-18686	26700	70.0	Pass
T1	212.625 - 202.458	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	13	-1942	20302	9.6	Pass
T2	202.458 - 182.292	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	37	-4995	20252	24.7	Pass
T3	182.292 - 162.104	Horizontal	Pipe 1.9" x 0.145" (1.5 STD)	70	-6276	17348	36.2	Pass
T4	162.104 - 141.896	Horizontal	Pipe 2.375" x 0.154" (2 STD)	109	-6882	24621	28.0	Pass
T5	141.896 - 121.688	Horizontal	Pipe 2.375" x 0.154" (2 STD)	148	-7944	20379	39.0	Pass
T6	121.688 - 101.479	Horizontal	Pipe 2.375" x 0.154" (2 STD)	175	-7933	14811	53.6	Pass
T7	101.479 - 81.2708	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	202	-8172	25160	32.5	Pass
T8	81.2708 - 61	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	229	-9327	19693	47.4	Pass
T9	61 - 40.6667	Horizontal	Pipe 2.875" x 0.203" (2.5 STD)	256	-9968	15682	63.6	Pass
T10	40.6667 - 20.3333	Horizontal	Pipe 3.5" x 0.216" (3 STD)	283	-10653	27796	38.3	Pass
T11	20.3333 - 0	Horizontal	Pipe 3.5" x 0.216" (3 STD)	316	-11138	22886	48.7	Pass
T1	212.625 - 202.458	Top Girt	Pipe 1.9" x 0.145" (1.5 STD)	4	-158	20345	0.8	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	285	-4626	11680	39.6	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	318	-5105	9928	51.4	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	305	-4209	7973	52.8	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	Pipe 2.375" x 0.154" (2 STD)	319	-4345	7442	58.4	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	308	-54	10674	0.5	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	Pipe 1.9" x 0.145" (1.5 STD)	341	-50	8915	0.6	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	307	-57	6996	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	Pipe 2.875" x 0.203" (2.5 STD)	340	-57	6286	0.9	Pass
T1	212.625 - 202.458	Inner Bracing	L 2 x 2 x 1/8	16	-3	5830	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L 2 x 2 x 1/8	41	-6	5727	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L 2 x 2 x 1/8	79	-7	4209	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L 2 x 2 x 1/8	120	-7	2886	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L 2 x 2 x 1/8	158	-8	2178	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L 2.5 x 2.5 x 3/16	185	-8	4590	0.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T7	101.479 - 81.2708	Inner Bracing	L 3 x 3 x 3/16	213	-9	4507	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L 3.5 x 3.5 x 1/4	238	-10	7336	0.5	Pass
T9	61 - 40.6667	Inner Bracing	L 3.5 x 3.5 x 1/4	265	-10	5885	0.6	Pass
T10	40.6667 - 20.3333	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	311	-12	19664	0.5	Pass
T11	20.3333 - 0	Inner Bracing	Pipe 3.5" x 0.216" (3 STD)	343	-13	16278	0.5	Pass
							Summary	
						Leg (T9)	74.3	Pass
						Diagonal (T6)	93.4	Pass
						Horizontal (T9)	63.6	Pass
						Top Girt (T1)	0.8	Pass
						Redund Horz 1 Bracing (T11)	51.4	Pass
						Redund Diag 1 Bracing (T11)	58.4	Pass
						Redund Hip 1 Bracing (T11)	0.6	Pass
						Redund Hip Diagonal Bracing (T11)	0.9	Pass
						Inner Bracing (T9)	0.6	Pass
						Bolt Checks	60.6	Pass
						RATING =	**93.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

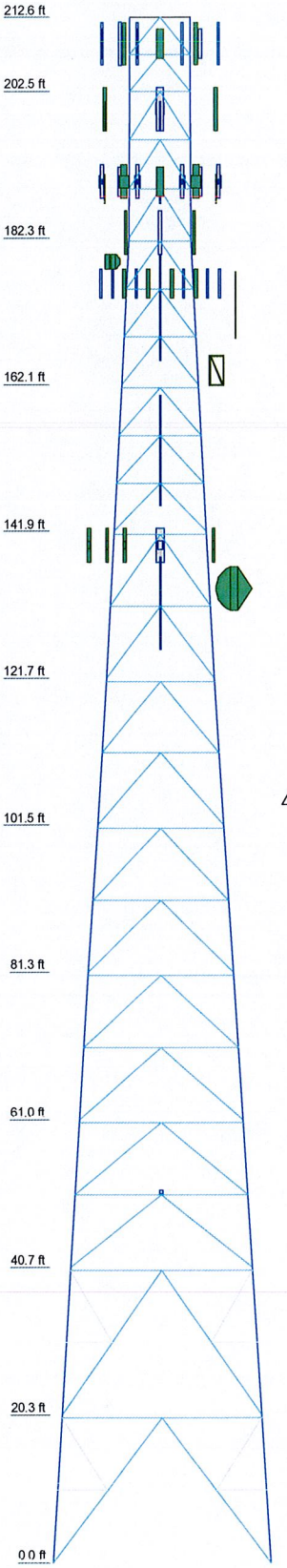


APPENDIX C

ADDITIONAL CALCULATIONS

Program Version 6.0.3.0 - 12/7/2011 File:T:/375_Crown_Castle/2012/37512-2762 BU 806363/37512-2762B.eri

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pipe 8.75" x 0.500" (8 EH)		Pipe 8.75" x 0.375" (8 EHS)		Pipe 6.625" x 0.432" (6 XS)		L 2.5 x 2.5 x 3/16		L 2 x 2 x 1/8		A
Leg Grade	A500-50				A513-50					A618-50	
Diagonals	Pipe 3.5" x 0.216" (3 STD)				Pipe 2.875" x 0.203" (2.5 STD)						
Diagonal Grade	A618-50										
Top Girts	N.A.										F
Horizontals	Pipe 3.5" x 0.216" (3 STD)			Pipe 2.875" x 0.203" (2.5 STD)		Pipe 2.375" x 0.154" (2 STD)			Pipe 1.9" x 0.145" (1.5 STD)		
Red. Horizontals	Pipe 1.9" x 0.145" (1.5 STD)					N.A.					
Red. Diagonals	Pipe 2.375" x 0.154" (2 STD)					N.A.					
Red. Hips	Pipe 1.9" x 0.145" (1.5 STD)					N.A.					
Inner Bracing	Pipe 3.5" x 0.216" (3 STD)		L 3.5 x 3.5 x 1/4		L 3 x 3 x 3/16		L 2.5 x 2.5 x 3/16		L 2 x 2 x 1/8		
Face Width (ft)	30.1771	25.1771	22.6771	20.1771	17.5417	15.0417	12.7917	10.7083	8.625	8.54167	8.5
# Panels @ (ft)		2 @ 19.9167	2 @ 9.95833	2 @ 9.92708	6 @ 9.89583			3 @ 6.59722	3 @ 6.59028	3 @ 6.72222	2 @ 5.08333
Weight (lb)	4.1163.3	6662.0	5413.3	5154.9	4226.4	3447.5	2851.7	2538.3	1941.1	1460.4	681.5



DESIGNED APPURTENANCE LOADING

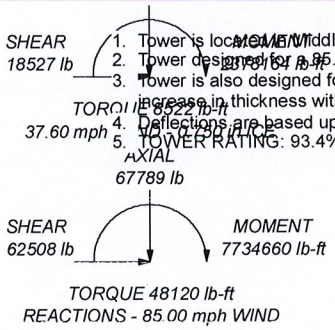
TYPE	ELEVATION	TYPE	ELEVATION
Strobe Light	212	Sector Mount [SM 602-3]	189
BXA-70080/6CF w/ Mount Pipe	208	4' x 2" Pipe Mount	189
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	4' x 2" Pipe Mount	189
(2) LPA-80080/6CF w/ Mount Pipe	208	4' x 2" Pipe Mount	189
BXA-70063/4CF w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-80080/6CF w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
BXA-70063/4CF w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
(2) LPA-80080/6CF w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
Sector Mount [SM 510-3]	208	Sector Mount [SM 510-3]	175
1900MHz RRH (65MHz)	199	HPD2-23	175
800MHz 2X50W RRH W/FILTER	199	HPD2-23	175
APXVSPP18-C-A20 w/ Mount Pipe	199	1151-3	167
1900MHz RRH (65MHz)	199	Side Arm Mount [SO 308-1]	167
800MHz 2X50W RRH W/FILTER	199	DB589-Y	164
APXVSPP18-C-A20 w/ Mount Pipe	199	Side Arm Mount [SO 308-1]	164
1900MHz RRH (65MHz)	199	SD310-HL	162
800MHz 2X50W RRH W/FILTER	199	1151-3	147
APXVSPP18-C-A20 w/ Mount Pipe	199	Side Arm Mount [SO 308-1]	147
Sector Mount [SM 505-3]	199	SD310-HL	145
(4) 4' x 2" Pipe Mount	199	Side Arm Mount [SO 308-1]	145
(4) 4' x 2" Pipe Mount	199	RR90-17-02DP w/ Mount Pipe	139
(4) 4' x 2" Pipe Mount	199	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	ATMAA1412D-1A20	139
(2) 7770.00 w/ Mount Pipe	189	ATMPP1412D-1CWA	139
(2) LGP13519	189	RR90-17-02DP w/ Mount Pipe	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	ATMPP1412D-1CWA	139
		RR90-17-02DP w/ Mount Pipe	139
(2) 7770.00 w/ Mount Pipe	189	(2) APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	139
(2) LGP13519	189	(2) ATMAA1412D-1A20	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	ATMPP1412D-1CWA	139
(2) 7770.00 w/ Mount Pipe	189	Pipe Mount [PM 601-1]	133
(2) LGP13519	189	PL6-59W	133
DC6-48-60-18-8F	189	1142-2C	128
(2) RRUS-11	189	Side Arm Mount [SO 308-1]	128
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Obstruction light	110
(2) RRUS-11	189	Obstruction light	110
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	Obstruction light	110
(2) RRUS-11	189	Side Arm Mount [SO 701-1]	51
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	GPS_A	51

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 2.875" x 0.203" (2.5 STD)	D	Pipe 5.5" x 0.375" (5 EH)
B	Pipe 3.5" x 0.300" (3 XS)	E	Pipe 6.625" x 0.340" (6 EHS)
C	Pipe 4.5" x 0.337" (4 XS)	F	Pipe 1.9" x 0.145" (1.5 STD)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A618-50	50 ksi	70 ksi	A500-50	50 ksi	62 ksi
A513-50	50 ksi	66 ksi			



TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.60 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.00 mph wind.
5. TOWER RATING: 93.4%

Paul J Ford and Company
250 E. Broad St. Suite 1500
Columbus, OH 43215
Phone: 614-221-6679
FAX: 614-448-4105

Job: 212 ft Clinton, CT S/S Tower		
Project: BU #806363 (PJF #37512-2762)		
Client: Crown Castle	Drawn by: chedges	App'd:
Code: TIA/EIA-222-F	Date: 10/30/12	Scale: NTS
Path: T:\375_Crown_Castle\2012\37512-2762 BU 806363\37512-2762B.er		Dwg No. E-1

foundation loads

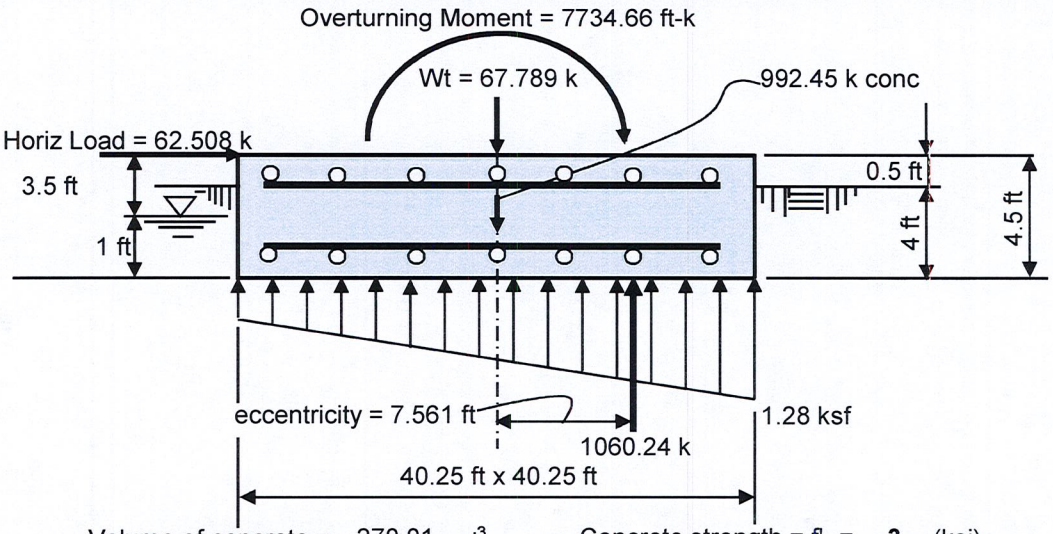
Tower or Pole Weight =	67.789	kips
Total Horizontal Force =	62.508	kips
Overturning Moment =	7734.7	ft-kips

soil properties

Safety factor against overturning =	1.5	
Soil density =	120	pcf
Allowable soil bearing =	4	ksf
Depth to water table =	3	ft

mat dimensions

depth to bottom of footing =	4	ft
Footing thickness =	4.5	ft
Footing Width =	40.25	ft
Footing Length =	40.25	ft
Tower/Pole Center Offset =	0	ft



Volume of concrete = 270.01 yd^3 Concrete strength = f'_c = 3 (ksi)

Rebar = (220) #7 bars by 39.75 ft long

reinforcing steel = **(55) #7 @ 8.83 in o.c. ea way top and bottom**

Summary of analysis results

Rebar strength = F_y = 60 (ksi)

minimum cover over rebar = 3 inches

Overturning Moment: (Stress Ratio = 0.564)

Calculated Overturning Moment = 8015.9 ft-kips

Resisting Moment = 21337.3 ft-kips

Factor of Safety against overturning = 2.662 **> 1.5 okay**

Soil Bearing (Stress Ratio = 0.32)

Net Soil Bearing Resistance = 4 ksf

Calculated Soil Bearing Pressure = 1.28 **ksf < 4 ksf okay**

Bending Moment (Stress Ratio = 0.717) **< CONTROLLING CRITERIA**

Ultimate Bending Moment Resistance = 7259 ft-kips

Calculated Ultimate Bending Moment = 5208 **ft-kips < 7259 ft-kips okay**

Bending Shear (Stress Ratio = 0.174)

Ultimate Bending Shear Resistance = 2235 kips

Calculated Ultimate Bending Shear = 390 **kips < 2235 kips okay**

SHEET INDEX

NO.	DESCRIPTION
T1	TITLE SHEET
C1	GENERAL NOTES
C2	COMPOUND SITE PLAN & ELEVATION
C3	EQUIPMENT SITE PLANS
C4	EQUIPMENT DETAILS
C5	ANTENNA PLANS
C6	ANTENNA CABLE RISER & GPS DETAILS
C7	EQUIPMENT DETAILS
C8	RF AND CABLE DETAILS
C9	FIBER DISTRIBUTION BOX DETAILS
E1	UTILITY SITE PLAN
E2	DETAILS
E3	GROUNDING PLAN AND DETAILS

DRIVING DIRECTIONS

DEPART FROM SPRINT:
1 INTERNATIONAL BLVD MAHWAH, NJ 07430

1. HEAD NORTH ON INTERNATIONAL BLVD/PARK ST TOWARD QUEENSLAND RD.
2. TAKE THE 3RD RIGHT ONTO PARK LN.
3. CONTINUE STRAIGHT ONTO LEISURE LN.
4. CONTINUE ONTO NJ-17 N.
5. TAKE THE NEW JERSEY 17 N/INTERSTATE 287 N EXIT TOWARD INTERSTATE 87/NORTH Y. THRUWAY.
6. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR I-287 N/I-87/NJ-17 N/NY. THRUWAY AND MERGE ONTO I-287 N/NJ-17 N.
7. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-87 S/I-287/TAPPAN ZEE. BR/NEW YORK CITY/NEW YORK THRUWAY AND MERGE ONTO I-287 E/I-87 S.
8. TAKE THE EXIT ONTO I-95 N.
9. TAKE EXIT 63 TOWARD CT-81/CLINTON/KILLINGWORTH.
10. TURN RIGHT ONTO N HIGH ST.
11. TAKE THE 1ST RIGHT TOWARD COW HILL RD.
12. TURN RIGHT ONTO COW HILL RD.

DESTINATION WILL BE ON THE RIGHT.

Sprint™

NETWORK VISION MMBTS LAUNCH
NORTHERN CONNECTICUT MARKET

SITE NAME
CLINTON (CROWN)

SPRINT SITE NUMBER
CT03XC156

CROWN SITE NUMBER
806363

CROWN SITE NAME
HRT 105 943201

SITE ADDRESS
48 COW HILL ROAD
CLINTON, CT 06413

STRUCTURE TYPE
SELF SUPPORT TOWER

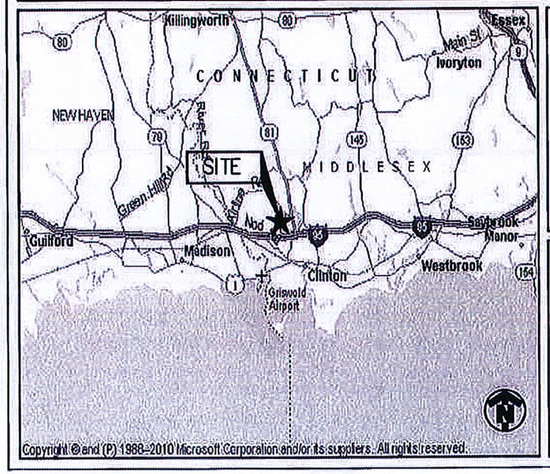
OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

UNDERGROUND SERVICE ALERT
CALL TOLL FREE
1-800-922-4455
THREE WORKING DAYS BEFORE YOU DIG

PROJECT SUMMARY

SITE NAME:	CLINTON (CROWN)
SITE NO.:	CT03XC156
SITE ADDRESS:	48 COW HILL ROAD CLINTON, CT 06413
COUNTY:	MIDDLESEX
SITE COORDINATES:	
LATITUDE:	41° 17' 20.1984" N (NAD 83)
LONGITUDE:	72° 32' 18.4986" W (NAD 83)
GROUND ELEV.:	±44' (AMSL)
JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING CLASSIFICATION:	TBD
LANDLORD:	CROWN ATLANTIC COMPANY LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (704) 405-6555
CONTACT:	PROJECT MANAGER: JOSH MOSTOW (201) 236-9059 CONSTRUCTION MANAGER: MIKE CALLAHAN (860) 919-7278
APPLICANT:	SPRINT 1 INTERNATIONAL BLVD. MAHWAH, NJ 07495
PROJECT MANAGER:	ALCATEL LUCENT 1 ROBBINS ROAD WESTFORD, MA 01886
CONTACT:	CAMILLE MULLIGAN – (845) 313-6920
CONSTRUCTION MANAGER:	TRACEY SWEARINGEN (518) 944-8794 (CELL)
ENGINEER:	INFINIGY 11 HERBERT DRIVE LATHAM, NY 12110
CONTACT:	PAUL FANOS – (518) 690-0790
BUILDING CODE:	2003 INTERNATIONAL BUILDING CODE 2005 CONNECTICUT BUILDING CODE W/ 2009 AMENDMENT UNIFORM MECHANICAL CODE UNIFORM PLUMBING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES
ELECTRICAL CODE:	2005 NATIONAL ELECTRICAL CODE

VICINITY MAP



PROJECT TEAM

ALCATEL•LUCENT

1 ROBBINS ROAD
WESTFORD, MA 01886

PROJECT MANAGER

INFINIGY Design. Build. Deliver.

11 Herbert Drive
Latham, NY 12110
OFFICE #: (518) 690-0790
FAX #: (518) 690-0793

ENGINEER

SCOPE OF WORK:

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
- FACILITY HAS NO PLUMBING OR REFRIGERANTS
- THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS
- ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. CABINETS, ANTENNAS/RRU AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR
- INSTALL NEW ANTENNAS/RRH'S ON EXISTING TOWER
- INSTALL NEW BTS OR RETROFIT EXISTING BTS IN EXISTING EQUIPMENT AREA
- REMOVE EXISTING CDMA ANTENNAS AND COAX CABLES
- REPLACE EXISTING BATTERY CABINET WITH NEW BATTERY CABINET IF REQUIRED
- REPLACE EXISTING GPS IF REQUIRED

ENGINEER'S LICENSE

CERTIFICATION STATEMENT:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CONNECTICUT.

LICENSED ENGINEER – STATE OF CONNECTICUT

APPROVALS

SPRINT CONST.		DATE
ALU RF		DATE
ALU LEASING/SITE ACQ.		DATE
IN-MARKET CONSTRUCTION LEAD		DATE
SITE OWNER	NAME/COMPANY: TITLE:	DATE

INFINIGY Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF APPLICABLE STATE AND/OR LOCAL LAWS

No.	Submittal / Revision	App'd	Date
3	REVISED PER COMMENTS	KMF	1/18/13
2	REVISED PER COMMENTS	AHS	12/19/12
1	REVISED PER COMMENTS	KMF	11/13/12
0	ISSUED FOR REVIEW	KMF	11/13/12

Drawn: KMF Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: AGF Date: 11/13/12

Project Number
294-034

Project Title
CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/18/13

Drawing Title
TITLE SHEET

Drawing Number
T1

GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
- A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
- B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
- C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC").
- D. AND NFPA 101 (LIFE SAFETY CODE).
- E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
- F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).

1.2 DEFINITIONS:
A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B: COMPANY: SPRINT NEXTEL CORPORATION
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.

1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.7 NOTICE TO PROCEED:
A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT NEXTEL WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
A. CONTRACTOR SHALL PROCURE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY SPRINT NEXTEL TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.

2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR SPRINT NEXTEL PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
- A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
- B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
- C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
- D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT NEXTEL OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
- E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
- F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.

4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

5.1 TESTS AND INSPECTIONS:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.

C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.

D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.

F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS. HYBERFLEX TESTING NOT LIMITED TO COAX SWEEPS.

G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.

A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.

B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.

C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.

E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRISE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.

F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.

G. BACKFILLING OF TRENCHES. TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPACTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ICE, SNOW, ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ICE, SNOW ROOTS, SOD, RUBBISH, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

PROJECT INFORMATION

THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT FACILITY AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS COMMUNICATIONS SERVICE.

NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.

NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.

NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

SPRINT MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAGE OF ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

LEGEND

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
F	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
M	KILOWATT HOUR METER
JB	JUNCTION BOX
PB	PULL BOX TO NEC/TELCO STANDARDS
	UNDERGROUND UTILITIES
#	DENOTES REFERENCE NOTE
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION
OR	GROUND ROD
OR	GROUND ROD WITH INSPECTION SLEEVE
	GROUND BAR
	PIN AND SLEEVE RECEPTACLE
	120AC DUPLEX RECEPTACLE
G	GROUND CONDUCTOR
# / #	REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER

ABBREVIATIONS

CIGBE	COAX ISOLATED GROUND BAR EXTERNAL
MIGB	MASTER ISOLATED GROUND BAR
SST	SELF SUPPORTING TOWER
GPS	GLOBAL POSITIONING SYSTEM
TYP.	TYPICAL
DWG	DRAWING
BCW	BARE COPPER WIRE
BFG	BELOW FINISH GRADE
PVC	POLYVINYL CHLORIDE
CAB	CABINET
C	CONDUIT
SS	STAINLESS STEEL
G	GROUND
AWG	AMERICAN WIRE GAUGE
RGS	RIGID GALVANIZED STEEL
AHJ	AUTHORITY HAVING JURISDICTION
TTLNA	TOWER TOP LOW NOISE AMPLIFIER
UNO	UNLESS NOTED OTHERWISE
EMT	ELECTRICAL METALLIC TUBING
AGL	ABOVE GROUND LEVEL

INFINIGY
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STATE OF CONNECTICUT
JOHN S. STEWNIOCH
No. 24705
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PROFESSIONAL ENGINEER

No	Submittal / Revision	App'd	Date
2	REVISED PER COMMENTS	KMF	1/18/13
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Drawn: KMF Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: AGF Date: 11/13/12

Project Number: 294-034

Project Title:
CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

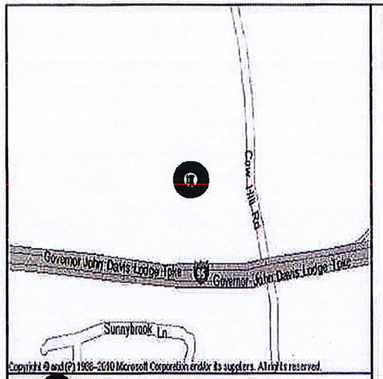
Prepared For:
Sprint VISION

Drawing Scale: AS NOTED
Date: 1/18/13

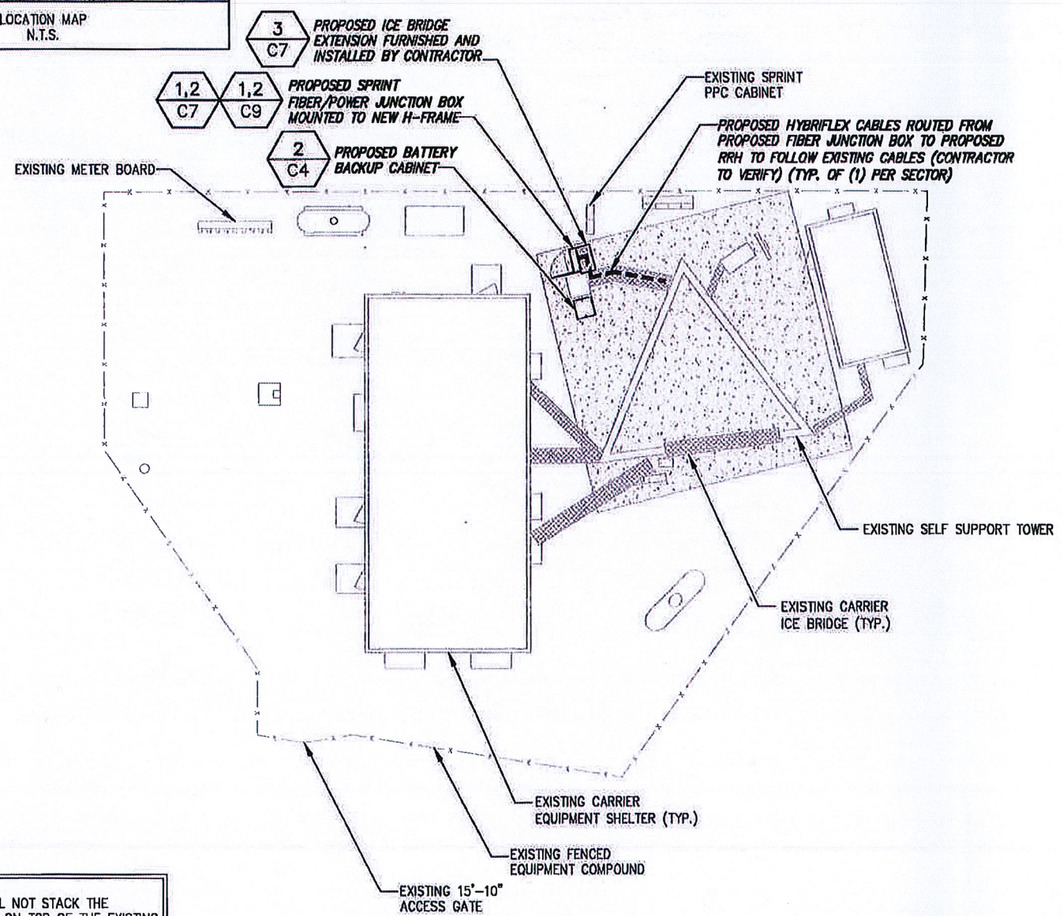
Drawing Title:
GENERAL NOTES

Drawing Number:
C1

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION.



LOCATION MAP
N.T.S.



1 — COMPOUND SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE

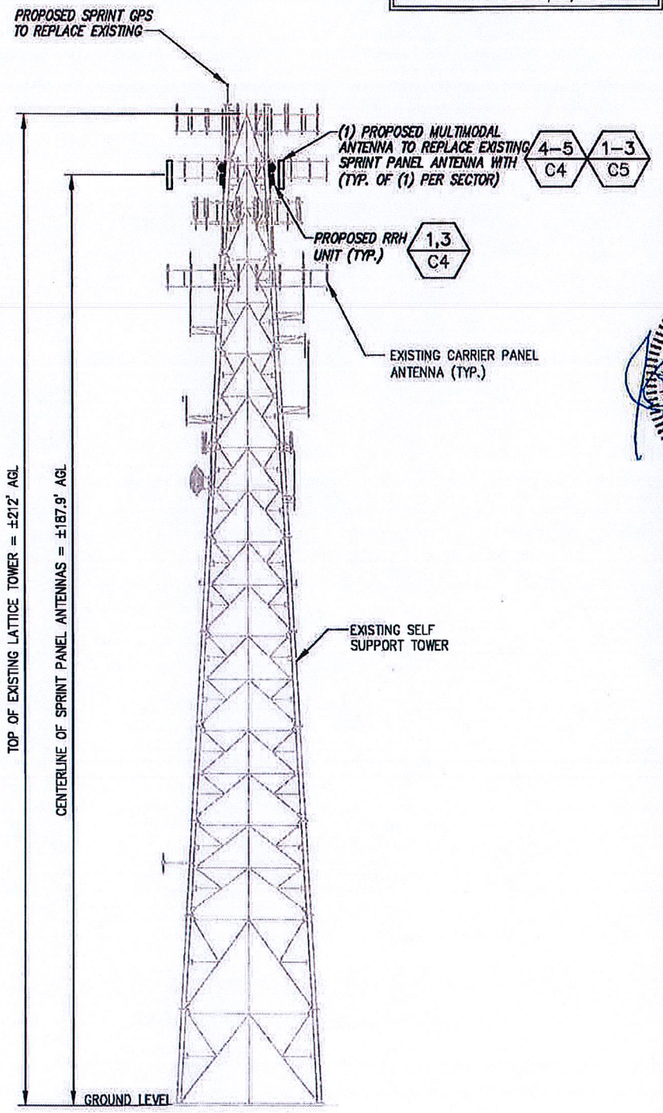
20' 10' 0 10' 20'

SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

NOTE:
CONTRACTOR SHALL NOT STACK THE HYBRIFLEX CABLES ON TOP OF THE EXISTING COAXIAL CABLES AS TO PREVENT THE COAXIAL CABLES FROM BEING REMOVED.

NOTE:
1. REFER TO: CONSTRUCTION STANDARDS–SPRINT DOCUMENT: "EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV 4.0 – 02.15.2011.DOCM"
2. REFER TO: "WEATHERPROOFING SPECS: EXCERPT EXH A – WTHRPRF – STD CONSTR SPECS._157201110421855429.DOCM"
3. REFER TO: "COLOR CODING–SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09–08–11.PDF"
4. CONTRACTOR TO VERIFY LATEST REV AND DATE PRIOR TO CONSTRUCTION.

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD DATED: 10/30/12



2 — SITE ELEVATION
NOT TO SCALE

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Checked: MSF Date: 11/23/12

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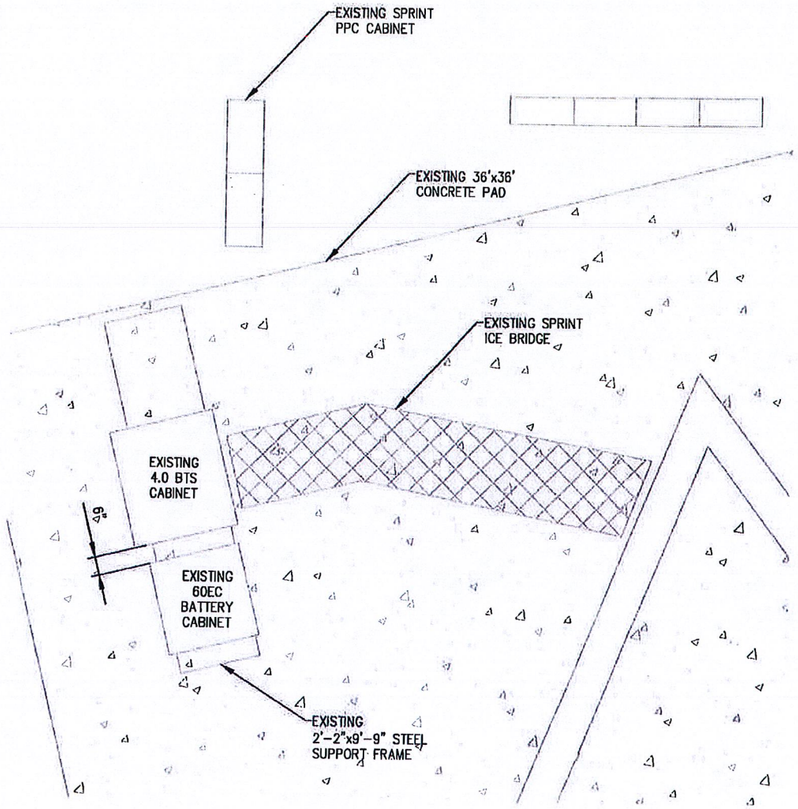
CLINTON (CROWN)
CT03XC156
48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint VISION

Drawing Scale: AS NOTED
Date: 1/18/13

Drawing Title
COMPOUND SITE PLAN & ELEVATION

Drawing Number
C2



CALLED NORTH

1 / -- EQUIPMENT SITE PLAN (EXISTING)
SCALE: AS NOTED

GRAPHIC SCALE

4' 2' 0 2' 4'

SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

NOTE:
CONTRACTOR SHALL NOT STACK THE HYBRIFLEX CABLES ON TOP OF THE EXISTING COAXIAL CABLES AS TO PREVENT THE COAXIAL CABLES FROM BEING REMOVED.

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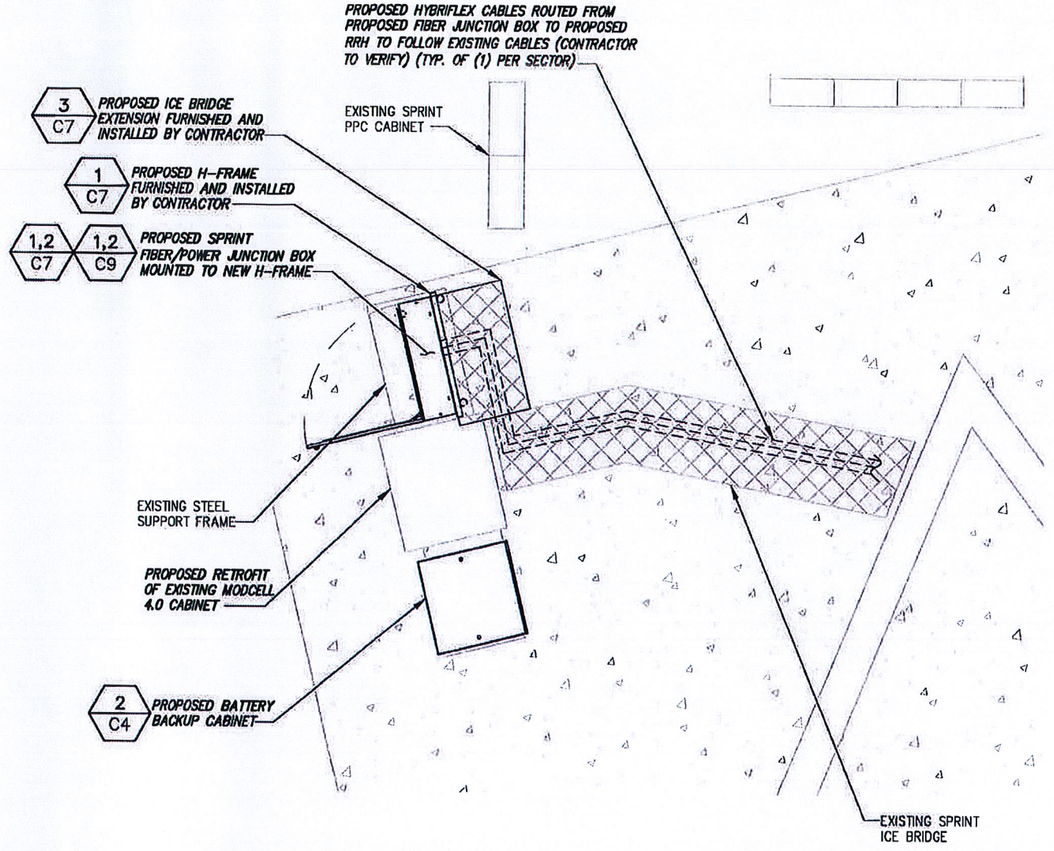
3. REFER TO: "COLOR CODING-SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09-08-11.PDF"
4. CONTRACTOR TO VERIFY LATEST REV AND DATE PRIOR TO CONSTRUCTION.



CALLED NORTH

2 / -- EQUIPMENT SITE PLAN (FINAL/PERMANENT)
SCALE: AS NOTED

GRAPHIC SCALE

4' 2' 0 2' 4'

SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

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CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint VISION

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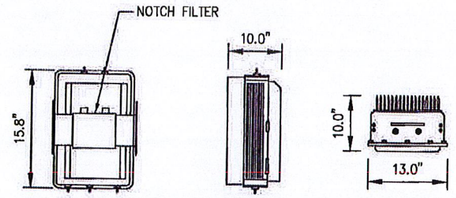
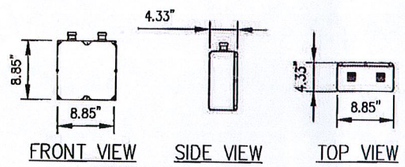
Drawing Title
EQUIPMENT SITE PLANS

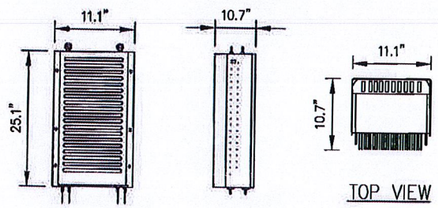
Drawing Number
C3



800 MHZ RRH
(ALU)
WEIGHT = 50.6LBS.



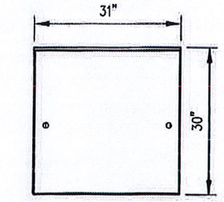
850 MHZ NOTCH FILTERS
WEIGHT = 11 LBS.



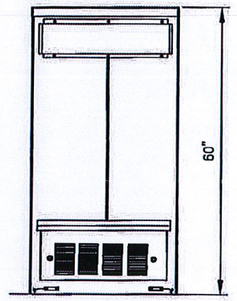
1900 MHZ RRH
(ALU)
WEIGHT = 60LBS.

NOTE:
REFER TO R.F. SYSTEM SCHEDULE FOR EXACT RRH SPECIFICATIONS AND QUANTITIES.

1 RRH EQUIPMENT DETAILS
NOT TO SCALE



TOP VIEW

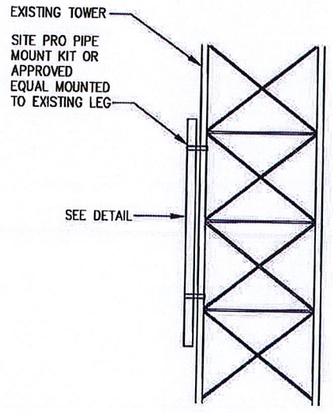


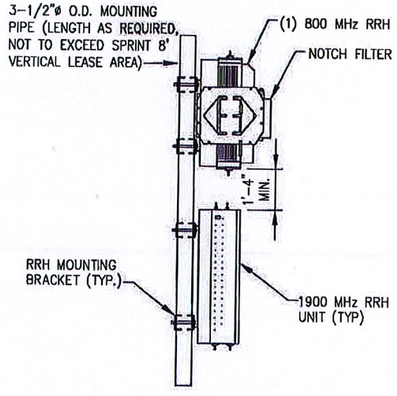
REAR VIEW

2 BATTERY CABINET PROFILE
NOT TO SCALE

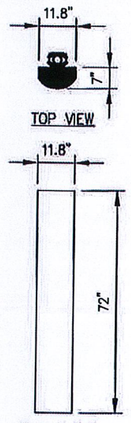
DESIGN CRITERIA:

2009 INTERNATIONAL BUILDING CODE W/ STATE MODIFICATION	
WIND SPEED (ASCE-7-05)	90 MPH
EXPOSURE B	
IMPORTANCE FACTOR	1.0
SEISMIC SITE CLASS	D
Ss=0.152 S¹=0.050	
SEISMIC IMPORTANCE FACTOR	1.0
SEISMIC DESIGN CATEGORY	B
CABINET WEIGHT:	
9928 MM BTS CABINET	1074 LBS.
60EC V2 BATTERY CABINET	2830 LBS.
MATERIAL SPECIFICATIONS	
C-, M-, AND ANGLE SHAPES:	ASTM A36
HIGH-STRENGTH BOLTS:	ASTM A325SC OR (A325N)
STRUCTURAL WF SHAPES:	ASTM A572-GR50
TUBE STEEL & PIPE COLUMNS:	ASTM A500, GRADE B
WELDING ELECTRODES:	E70XX
W - SHAPES:	ASTM A992, GRADE 50
U-BOLTS:	ASTM A36





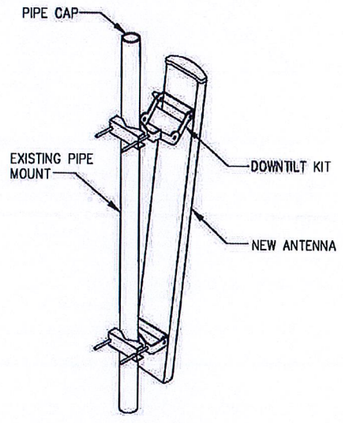
3 RRH MOUNTING DETAIL (TYP.)
NOT TO SCALE



FRONT VIEW
800/1900
MULTI-MODE

RFS ANTENNA
P/N: APXVSPP18-C-A20

4 ANTENNA DETAILS
NOT TO SCALE



5 PANEL ANTENNA MOUNT DETAIL
NOT TO SCALE

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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
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1	REVISED PER COMMENTS	AKS	12/18/12
0	ISSUED FOR REVIEW	KMF	11/13/12

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Designed: A-D Date: 11/13/12
Checked: AGF Date: 11/13/12

Project Number
294-034

Project Title

CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For

Sprint VISION

Drawing Scale:
AS NOTED

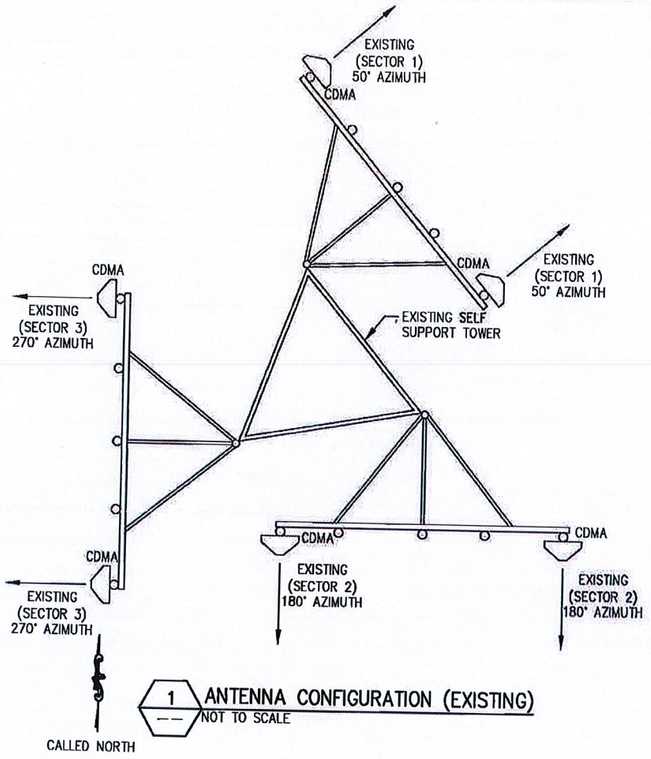
Date:
1/18/13

Drawing Title

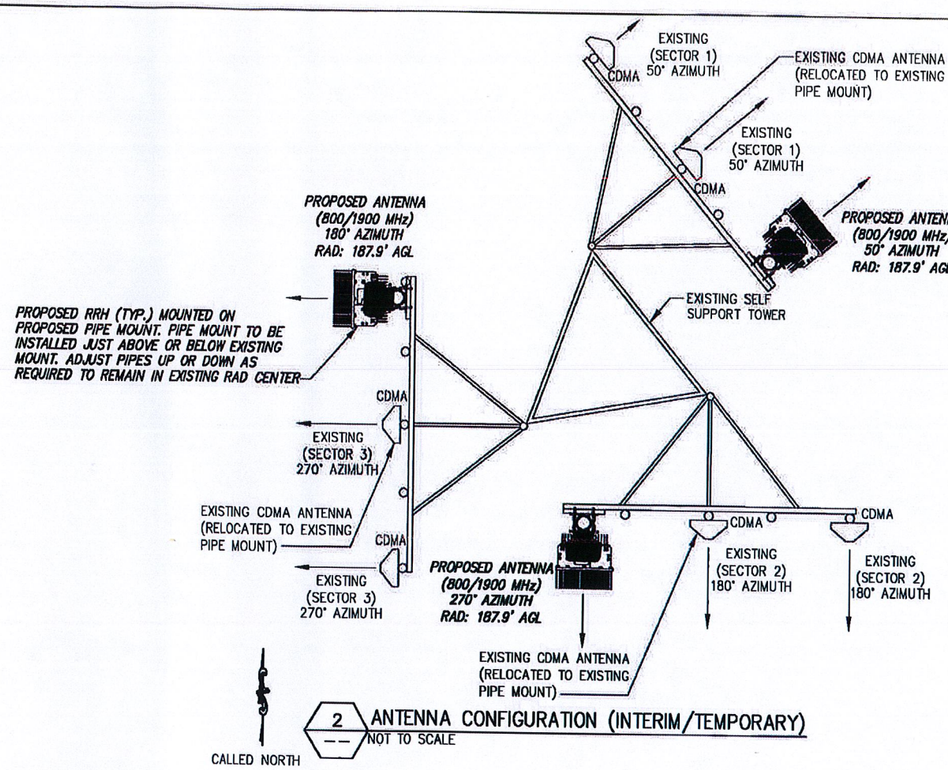
EQUIPMENT DETAILS

Drawing Number

C4

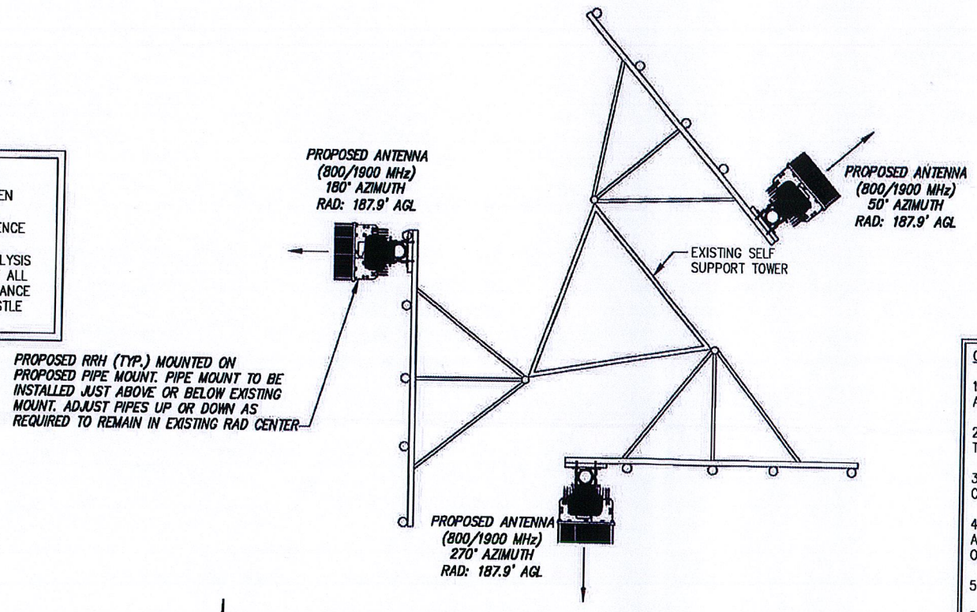


1 ANTENNA CONFIGURATION (EXISTING)
NOT TO SCALE



2 ANTENNA CONFIGURATION (INTERIM/TEMPORARY)
NOT TO SCALE

CONTRACTOR TO VERIFY A PASSING SIGNED AND SEALED ANTENNA MOUNT/ PLATFORM STRUCTUAL ANALYSIS HAS BEEN COMPLETED FOR INTERIM AND FINAL RF CONFIGURATION. NO ANTENNA MOUNT/ PLATFORM MODIFICATIONS SHOULD COMMENCE OR INSTALLATION OF ANTENNAS, RRH OR TOWER MOUNTED EQUIPMENT WITHOUT VERIFYING THE MOUNT/ PLATFORM ANALYSIS HAS BEEN COMPLETED FOR SPECIFIC LOADING. ADDITIONALLY ALL MOUNTS ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH TOWER STRUCTUAL ANALYSIS PROVIDED BY CROWN CASTLE



3 ANTENNA CONFIGURATION (FINAL/PERMANENT)
NOT TO SCALE

NOTE:
REQUIRED PIPE MOUNTS TO BE SUPPLIED BY CONTRACTOR.

FOR ADDITIONAL STRUCTURAL INFORMATION SEE STRUCTURAL ANALYSIS COMPLETED BY PAUL J. FORD DATED: 10/30/12

RRH NOTES:

- SEE PAGE C4 FOR RRH MOUNTING INFORMATION (TYP. ALL SECTORS).
- REFER TO RF SCHEDULE ON SHEET C8 FOR RRH UNIT SPECS AND QUANTITIES.

GENERAL NOTES:

1. NEW SPRINT PANEL ANTENNAS TO MEET RF DESIGN REQUIREMENTS PER EBTS, PER APPROVED STRUCTURAL ANALYSIS.
2. CONTRACTOR TO PROVIDE EXISTING ANTENNA VERIFICATION AND TO INCLUDE MOUNTING HEIGHT, RAD CENTER, TOP AND BOTTOM OF ANTENNAS.
3. THE CONFIGURATION PLANS ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS.
4. THE ANTENNA INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE STRUCTURAL ANALYSIS AND ASSOCIATED DETAILS THEREIN. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO WORK ON THE STRUCTURE.
5. CONTRACTOR SHALL VERIFY NEW PARTS BEFORE ORDERING.
6. REFER TO SHEET C4 & C8 FOR ANTENNA SPECS.
7. CONTRACTOR TO USE PROPER TORQUE WHEN INSTALLING AND TIGHTENING CONNECTORS TO INSURE PROPER FIT.
8. ALL HYBRID CABLES SHALL BE MARKED WITHIN 24" OF THE END OF EACH CABLE WITH 2" WIDE VINYL TAPE. THIS INCLUDES ALL JUMPERS AND MAIN LINE HYBRID CABLES.
9. CDMA ANTENNAS SHALL NOT BE REMOVED UNTIL ALL NEW MULTI-MODE ANTENNAS ARE INSTALLED AND ON-AIR.

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STATE OF CONNECTICUT
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No. 24705
LICENSED PROFESSIONAL ENGINEER

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CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

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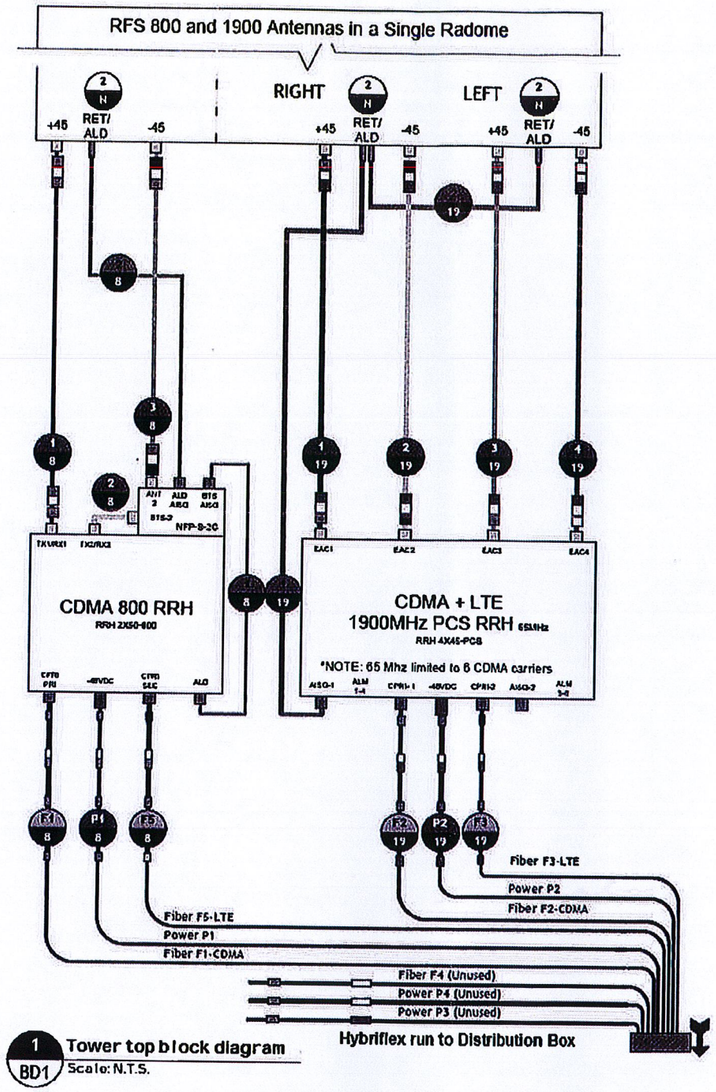
Sprint
VISION

Drawing Scale:
AS NOTED

Date:
1/16/13

Drawing Title
ANTENNA PLANS

Drawing Number
C5



1 BD1 Tower top block diagram
Scale: N.T.S.

SCENARIO 124 v2.0

1 ANTENNA CABLE RISER DIAGRAM
NOT TO SCALE

INSTALLER VERIFY LATEST PLUMBING/WIRING DIAGRAMS, PRIOR TO INSTALLATION.

WEATHERPROOFING CONNECTORS AND GROUND KIT NOTES:
1. ALL CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED USING BUTYL RUBBER WEATHERPROOFING AND TAPE, THIS INSTALLATION MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION OR PER THE FOLLOWING INSTRUCTIONS (WHICHEVER IS GREATER).
2. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE ENCOMPASSED INTO COLD SHRINK AND COMPLETELY WRAPPED WITH 2 IN. WIDE ELECTRICAL TAPE OVERLAPPING EACH ROW BY APPROXIMATELY ½" AND EXTENDING PAST THE CONNECTION BY TWO INCHES AND DISCUSSED BELOW; OR
3. THE COAXIAL ABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH LAYERS OR ELECTRICAL/BUTYL RUBBER/ELECTRICAL TAPE AS DISCUSSED BELOW OR;
4. THE COAXIAL CABLE CONNECTION OR GROUND KIT CAN BE WRAPPED WITH TWO LAYERS OF 1.5 INCH WIDE SELF-AMALGAMATING TAPE COVERED WITH TWO LAYERS OF ELECTRICAL TAPE.

RRH JUMPER NOTES:
1. FOR DISTANCES BETWEEN RRH'S AND ANTENNAS LESS THAN 10'-0" USE A 1/2" JUMPER.
2. FOR DISTANCES BETWEEN RRH'S AND ANTENNAS GREATER THAN 10'-0" USE A 7/8" JUMPER.

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STATE OF CONNECTICUT
KEVIN S. STEVENS
No. 24705
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48 COW HILL ROAD
CLINTON, CT 06413

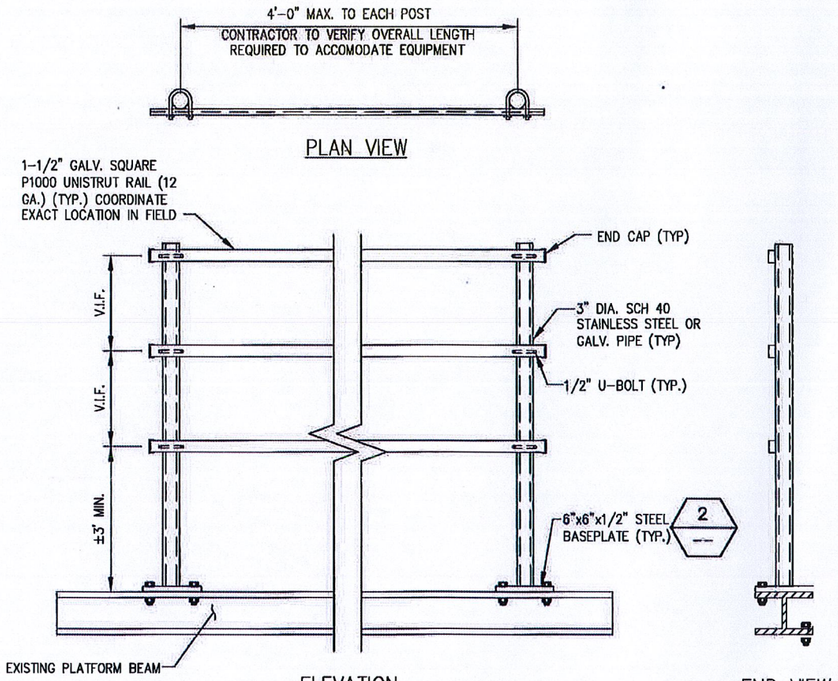
Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

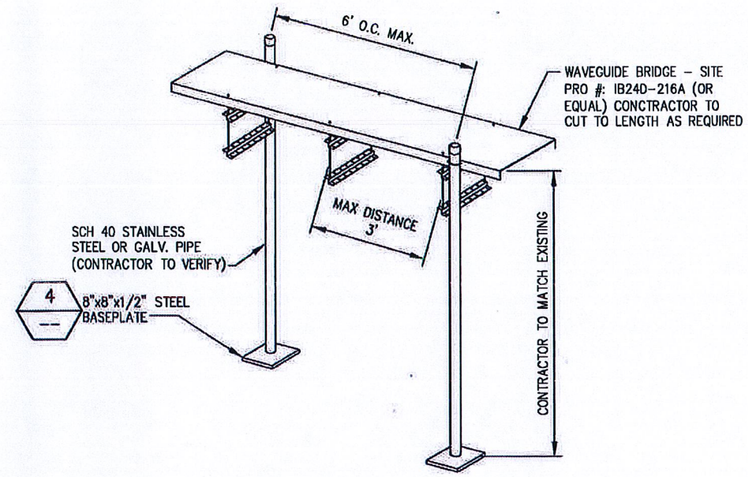
Date:
1/18/13

Drawing Title
ANTENNA CABLE RISER AND GPS DETAILS

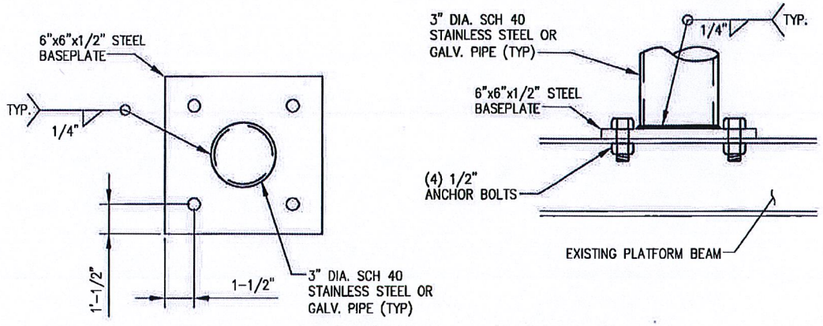
Drawing Number
C6



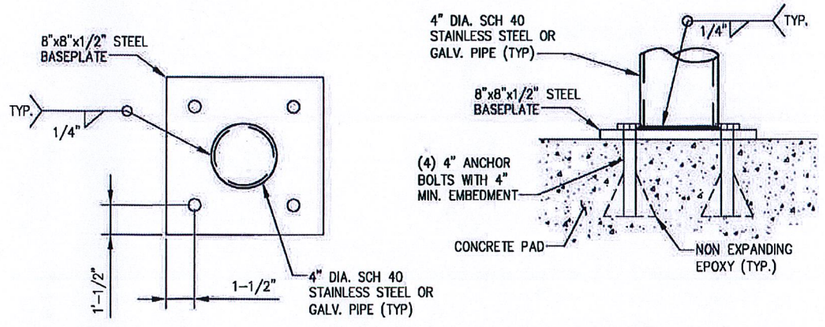
1 H-FRAME FABRICATION DETAIL
NOT TO SCALE



3 TYPICAL ICE BRIDGE DETAIL
NOT TO SCALE



2 SUPPORT POST MOUNTING DETAIL
NOT TO SCALE



4 SUPPORT POST MOUNTING DETAIL
NOT TO SCALE

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

No.	Submittal / Revision	App'd	Date
2	REVISED PER COMMENTS	KMF	1/18/13
1	REVISED PER COMMENTS	AHS	12/19/12
0	ISSUED FOR REVIEW	KMF	11/13/12

Drawn: KMF Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: AGF Date: 11/13/12

Project Number
294-034

Project Title

CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For

Sprint VISION

Drawing Scale: AS NOTED
Date: 1/18/13

Drawing Title

EQUIPMENT DETAILS

Drawing Number

C7

	Market	Northern Connecticut		
	Cascade ID	CT03XC156		
		SECTOR 1	SECTOR 2	SECTOR 3
1900	Split sector present	No	No	No
	1900MHz_Azimuth	50	180	270
	1900MHz_No_of_Antennas	1	1	1
	1900MHz_RADCenter(ft)	187.9	187.9	187.9
	1900MHz_Antenna Make	RFS	RFS	RFS
	1900MHz_Antenna Model	APXVSPP18-C-A20	APXVSPP18-C-A20	APXVSPP18-C-A20
	1900MHz_Horizontal_Beamwidth	65	65	65
	1900MHz_Vertical_Beamwidth	5.5	5.5	5.5
	1900MHz_AntennaHeight (ft)	6	6	6
	1900MHz_AntennaGain(dBd)	15.9	15.9	15.9
	1900MHz_E_Tilt	0	-2	-1
	1900MHz _M_Tilt	0	0	0
	1900MHz_Carrier_Forecast_Year_2013	3	3	3
	1900MHz_RRH Manufacturer	ALU	ALU	ALU
	1900MHz_RRH Model	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz	RRH 1900 4X45 65MHz
	1900MHz_RRH Count	1	1	1
	1900MHz_RRH Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
	1900MHz Combiner Model	No Combiner Required	No Combiner Required	No Combiner Required
	1900MHz_Top_Jumper #1_Length (RRH or Combiner-to-Antenna for TT or Main Coax to	10	10	10
	1900MHz_Top_Jumper #1_Cable_Model (RRH or Combiner-to-Antenna for TT or Main Coax	LCF12-50J	LCF12-50J	LCF12-50J
	1900MHz_Top_Jumper #2_Length (RRH to Combiner for TT if applicable, ft)	N/A	N/A	N/A
	1900MHz_Top_Jumper #2_Cable_Model (RRH to Combiner for TT if applicable)	N/A	N/A	N/A
	1900MHz_Main_Coax_Cable_Length (ft)	N/A	N/A	N/A
	1900MHz_Main_Coax_Cable_Model	N/A	N/A	N/A
	1900MHz_Bottom_Jumper #1_Length (Ground based RRH to Combiner-OR-Main Coax, ft)	N/A	N/A	N/A
	1900MHz_Bottom_Jumper #1_Cable_Model (Ground based RRH to Combiner-OR-Main Coax)	N/A	N/A	N/A
	1900MHz_Bottom_Jumper #2_Length (Ground based-Combiner to Main Coax, ft)	N/A	N/A	N/A
	1900MHz_Bottom_Jumper #2_Cable_Model (Ground based-Combiner to Main Coax)	N/A	N/A	N/A
800	800MHz_Azimuth	50	180	270
	800MHz_No_of_Antennas	0	0	0
	800MHz_RADCenter(ft)	187.9	187.9	187.9
	800MHz_AntennaMake	RFS	RFS	RFS
	800MHz_AntennaModel	APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)	APXVSPP18-C-A20 (Shared w/1900)
	800MHz_Horizontal_Beamwidth	65	65	65
	800MHz_Vertical_Beamwidth	11.5	11.5	11.5
	800MHz_AntennaHeight (ft)	6	6	6
	800MHz_AntennaGain (dBd)	13.4	13.4	13.4
	800MHz_E_Tilt	0	-3	-4
	800MHz_M_Tilt	0	0	0
	800MHz_RRH Manufacturer	ALU	ALU	ALU
	800MHz_RRH Model	800 MHz RRH 2x50W	800 MHz RRH 2x50W	800 MHz RRH 2x50W
	800MHz_RRH Count	1	1	1
	800MHz_RRH Location	Top of the Pole/Tower	Top of the Pole/Tower	Top of the Pole/Tower
	800_Top_Jumper #1_Length (RRH to Antenna for TT or Main Coax to Antenna for GM)	10	10	10
	800_Top_Jumper_Cable_Model (RRH to Antenna for TT or Main Coax to Antenna for GM)	LCF12-50J	LCF12-50J	LCF12-50J
	800MHz_Main_Coax_Cable_Length (ft)	N/A	N/A	N/A
	800MHz_Main_Coax_Cable_Model	N/A	N/A	N/A
	800_Bottom_Jumper #1_Length (Ground based RRH to Main Coax)	N/A	N/A	N/A
	800_Bottom_Jumper #1_Cable_Model (Ground based RRH to Main Coax)	N/A	N/A	N/A
	Plumbing Scenario *	124	124	124
Comments	* If plumbing scenario does not match the material received, please contact your Construction Manager			
	11/9/2012			

NOTE:
RFDS SHOWN PROVIDED BY SPRINT DATED 11/09/12.

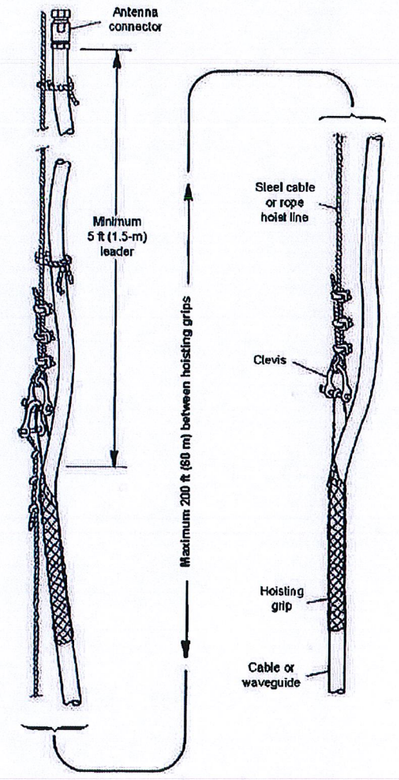
NOTE:
COORDINATE RF ANTENNA INSTALLATION WITH FINAL SPRINT RFDS. COORDINATE RF MW DISH (IF APPLICABLE) INSTALLATION WITH FINAL SPRINT RFDS.

1 SPRINT RFDS
NOT TO SCALE

CHECK FST FOR LATEST VERSION OF RFDS

NOTE:
1. REFER TO: CONSTRUCTION STANDARDS–SPRINT DOCUMENT: "EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES REV 4.0 – 02.15.2011.DOCM"
2. REFER TO: "WEATHERPROOFING SPECS: EXCERPT EXH A – WTHRPRF – STD CONSTR SPECS._157201110421855429.DOCM"
3. REFER TO: "COLOR CODING–SPRINT NEXTEL ANT AND LINE COLOR CODING (DRAFT) V3 09–08–11.PDF"
4. CONTRACTOR TO VERIFY LATEST REV AND DATE PRIOR TO CONSTRUCTION.

1. DO NOT USE ONE HOISTING GRIP FOR HOISTING TWO OR MORE CABLES OR CABLE TRAYS. THIS CAN CAUSE THE HOISTING GRIP TO BREAK OR THE CABLES OR WAVE– GUIDES TO FALL.
2. DO NOT USE THE HOISTING GRIP FOR LOWERING CABLE OR CABLE TRAY. SNAGGING OF THE CABLE OR CABLE TRAY MAY LOOSEN THE GRIP AND POSSIBLY CAUSE THE CABLE TO CABLE TRAY TO SWAY OR FALL.
3. DO NOT REUSE HOISTING GRIPS. USED GRIPS MAY HAVE LOST ELASTICITY, STRETCHED, OR BECOME WEAKENED. REUSING A GRIP CAN CAUSE THE CABLE OR CABLE TRAY TO SLIP, BREAK, OR FALL.
4. USE HOISTING GRIPS AT INTERVALS OF NO MORE THAN 200 FT (60 M).
5. MAKE SURE THAT THE PROPER HOISTING GRIP IS USED FOR THE CABLE OR CABLE TRAY BEING INSTALLED. SLIPPAGE OR INSUFFICIENT GRIPPING STRENGTH WILL RESULT IF YOU ARE USING THE WRONG HOISTING GRIP.



2 HOIST GRIP DETAIL
NOT TO SCALE

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
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Fax # (518) 690-0793

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Project Number
294-034

Project Title
CLINTON (CROWN)
CT03XC156

46 COW HILL ROAD
CLINTON, CT 06413

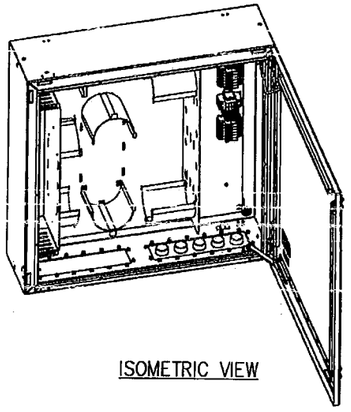
Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

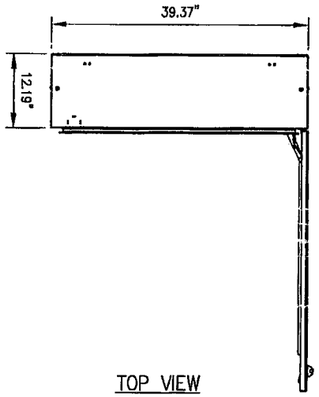
Date:
1/18/13

Drawing Title
RF AND CABLE DETAILS

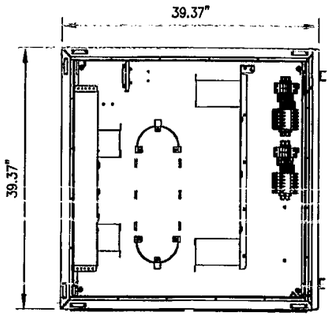
Drawing Number
C8



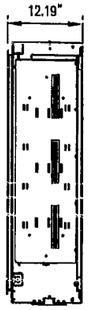
ISOMETRIC VIEW



TOP VIEW

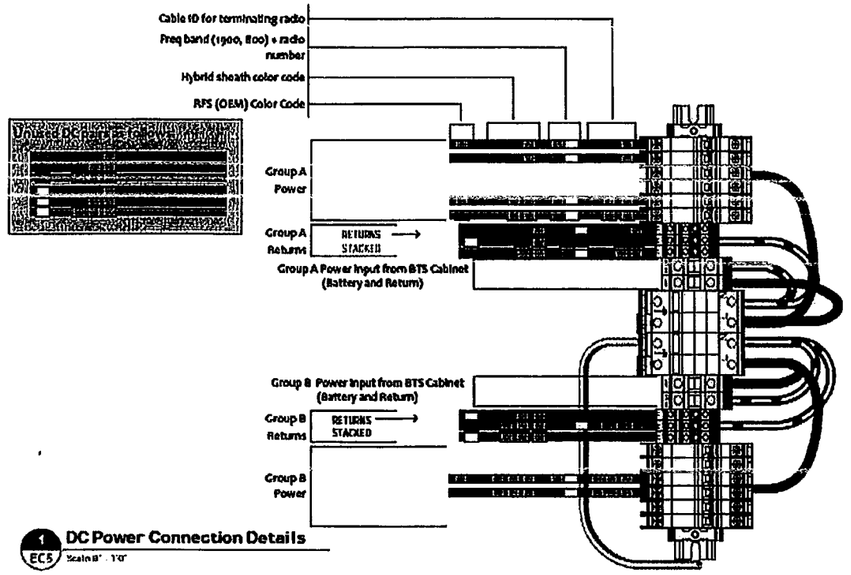


FRONT VIEW

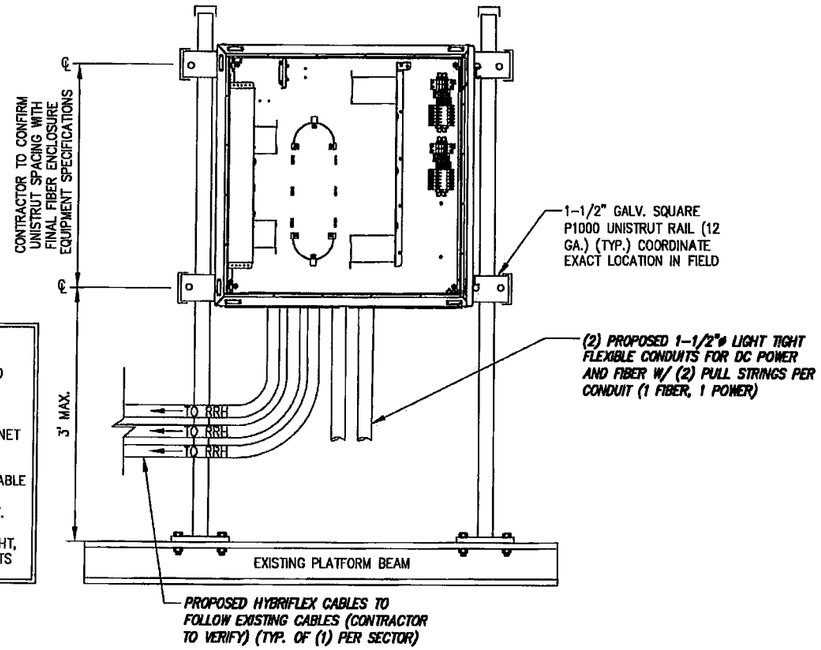


SIDE VIEW

1 DISTRIBUTION BOX DETAIL
NOT TO SCALE



1 EC5 DC Power Connection Details
Scale: 1" = 1'-0"



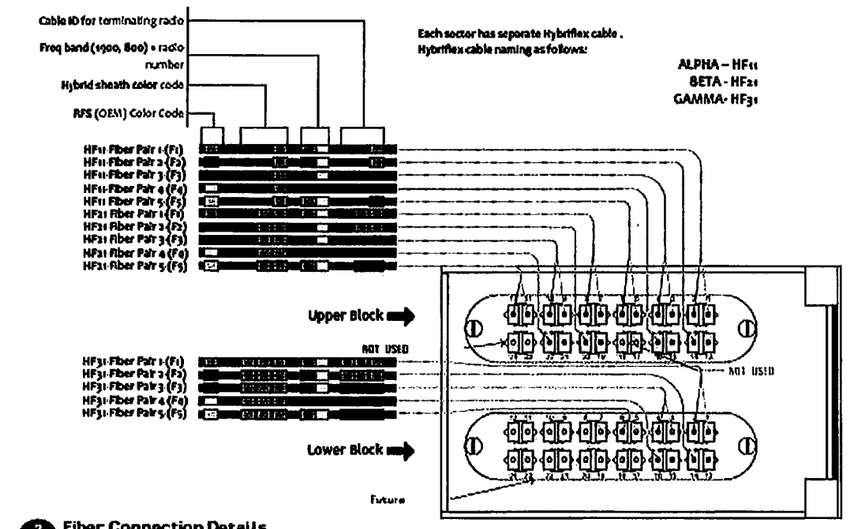
NOTE:
– DISTRIBUTION BOX IS KITTED WITH 50' OF 1–1/2" LIQUID–TIGHT CONDUIT AND CONNECTORS. THIS SHOULD BE:
* SPLIT IN HALF,
* TERMINATED TO THE DISTRIBUTION BOX AS SHOWN,
* RAN TO AND COILED AS CLOSE TO WHERE THE CABINET IS GOING TO BE MOUNTED AS POSSIBLE.

– DISTRIBUTION BOX IS KITTED WITH 2 AWG, POWER CABLE 35' x 2EA. RUNS RED AND 2EA. RUNS BLACK. THIS SHOULD BE COILED AND LEFT INSIDE DISTRIBUTION BOX.

– BTS INSTALLATION TEAM WILL TERMINATE LIQUID–TIGHT, RUN THE FIBER JUMPERS AND POWER CABLES FROM BTS CABINET TO DISTRIBUTION BOX.

NOTE:
1. ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT–DIPPED GALVANIZED FINISH.
2. MOUNT FIBER AND POWER DISTRIBUTION BOX WITH FOUR (4) 1/4"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS.

2 TYPICAL DISTRIBUTION BOX ON H–FRAME DETAIL
NOT TO SCALE



2 EC5 Fiber Connection Details
Scale: 1" = 1'-0"

SCENARIO 124 v2.0

3 FIBER & DC CONNECTION DETAILS
NOT TO SCALE

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (516) 690-0790
Fax # (516) 690-0793

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER

USE OF DRAWING IN VIOLATION OF LAW IS PROHIBITED. ANY MODIFICATION OR ADDITION TO THIS DRAWING BY A PERSON OTHER THAN A LICENSED ENGINEER IS A VIOLATION OF APPLICABLE STATE AND/OR LOCAL LAWS

No.	Submittal / Revision	Appvd	Date
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0	ISSUED FOR REVIEW	KMF	11/13/12

Drawn: KMF Date: 11/13/12
Designed: A-D Date: 11/13/12
Checked: AGF Date: 11/13/12

Project Number
284-034

Project Title
CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint
VISION

Drawing Scale:
AS NOTED

Date:
1/18/13

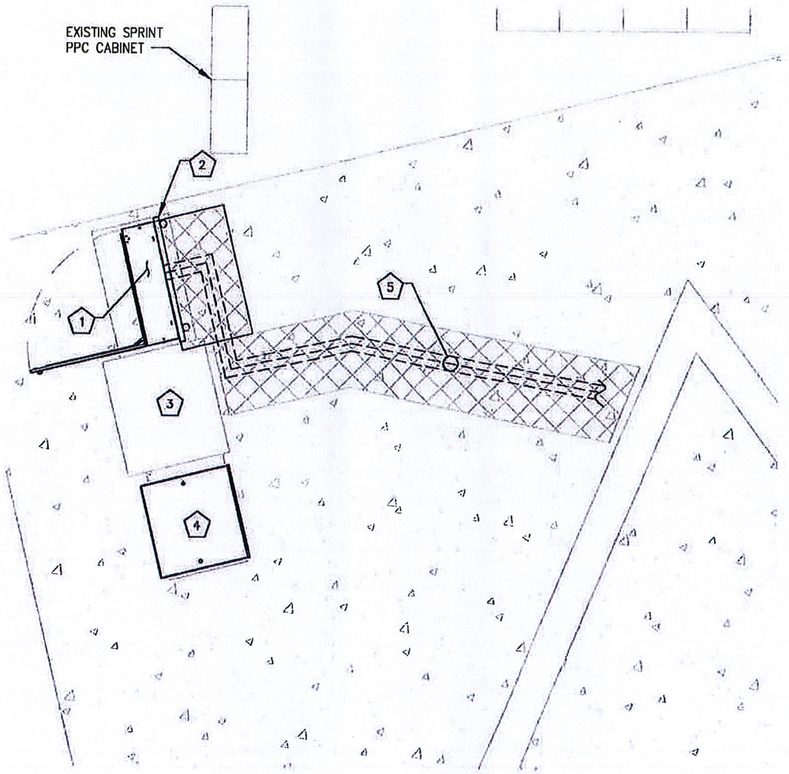
Drawing Title
FIBER DISTRIBUTION BOX DETAILS

Drawing Number
C9

CODED NOTES:

1. PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO NEW H-FRAME
2. PROPOSED H-FRAME FURNISHED AND INSTALLED BY CONTRACTOR
3. PROPOSED RETROFIT OF EXISTING MODCELL 4.0 CABINET
4. PROPOSED BATTERY BACKUP CABINET
5. PROPOSED HYBRIFLEX CABLES ROUTED FROM PROPOSED FIBER JUNCTION BOX TO PROPOSED RRH TO FOLLOW EXISTING CABLES (CONTRACTOR TO VERIFY) (TYP. OF (1) PER SECTOR)

NOTE:
CONTRACTOR SHALL NOT STACK THE HYBRIFLEX CABLES ON TOP OF THE EXISTING COAXIAL CABLES AS TO PREVENT THE COAXIAL CABLES FROM BEING REMOVED.



CALLED NORTH

1 UTILITY SITE PLAN
SCALE: AS NOTED

GRAPHIC SCALE
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

UNDERGROUND SERVICE ALERT
CALL TOLL FREE
1-800-922-4455
THREE WORKING DAYS BEFORE YOU DIG

NOTES:
CONTRACTOR TO USE EXISTING SPARE CONDUITS, IF AVAILABLE. CONDUIT SIZES MUST BE EQUAL TO OR GREATER THAN THAT ALLOWED BY CODE.

EXISTING ALARMS NEED TO BE RE-ROUTED AND VERIFIED IN PROPER WORKING CONDITION WHEN NEW MMBTS EQUIPMENT IS INSTALLED.

REMAINING GROUND LEADS FROM REMOVED CABINETS TO BE COILED (NOT ON WALKING SURFACE).

REMAINING UNUSED CONDUITS FROM EXISTING CABINETS TO BE COVERED WITH WATERPROOF CAPS (NOT DUCT TAPE).

ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (N.E.C.), AND APPLICABLE LOCAL CODES
2. GROUNDING SHALL COMPLY WITH THE ARTICLE 250 OF NATIONAL ELECTRICAL CODE.
3. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
4. ALL WIRES SHALL BE AWG MIN #12 THHN COPPER UNLESS NOTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT UNLESS NOTED OTHERWISE.
6. LABEL SPRINT SERVICE DISCONNECTS WITH SWITCH AND PPC CABINET WITH ENGRAVED LAMACOID LABELS, LETTERS 1" IN HEIGHT.
7. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 8" RADIUS.
8. ENGAGE AN INDEPENDENT TESTING FIRM TO TEST AND VERIFY THAT RESISTANCE DOES NOT EXCEED 10 OHMS TO GROUND. TEST GROUND RING RESISTANCE PRIOR TO MAKING FINAL GROUND CONNECTIONS TO INFRASTRUCTURE AND EQUIPMENT. GROUNDING AND OTHER OPERATIONAL TESTING SHALL BE WITNESSED BY SPRINTS REPRESENTATIVE.
9. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE REQUIRED SO THAT CONDUIT BENDS DO NOT EXCEED 360 DEGREES.
10. OBTAIN PERMITS AND PAY FEES RELATED TO ELECTRICAL WORK PERFORMED ON THIS PROJECT. DELIVER COPIES OF ALL PERMITS TO SPRINT REPRESENTATIVE.
11. SCHEDULE AND ATTEND INSPECTIONS RELATED TO ELECTRICAL WORK REQUIRED BY JURISDICTION HAVING AUTHORITY. CORRECT AND PAY FOR ANY WORK REQUIRED TO PASS ANY FAILED INSPECTION.
12. REDLINED AS-BUILTS ARE TO BE DELIVERED TO A SPRINT REPRESENTATIVE.
13. PROVIDE TWO COPIES OF OPERATION AND MAINTENANCE MANUALS IN THREE-RING BINDER.
14. FURNISH AND INSTALL THE COMPLETE ELECTRICAL SERVICE, TELCO CONDUIT, AND THE COMPLETE GROUNDING SYSTEM.
15. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE BUILDING CODES AND LOCAL ORDINANCES, INSTALLED IN A NEAT MANNER AND SHALL BE SUBJECT TO APPROVAL BY A SPRING REPRESENTATIVE.
16. CONDUCT A PRE-CONSTRUCTION SITE VISIT AND VERIFY EXISTING SITE CONDITIONS AFFECTING THIS WORK. REPORT ANY OMISSIONS OR DISCREPANCIES FOR CLARIFICATION PRIOR TO THE START OF CONSTRUCTION.
17. PROJECT ADJACENT STRUCTURES AND FINISHES FROM DAMAGE, REPAIR TO ORIGINAL CONDITION ANY DAMAGED AREA.
18. REMOVE DEBRIS ON A DAILY BASIS. DEBRIS NOT REMOVED IN A TIMELY FASHION WILL BE REMOVED BY OTHERS AND THE RESPONSIBLE SUBCONTRACTOR SHALL BE CHARGED ACCORDINGLY. REMOVAL OF DEBRIS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE. DEBRIS SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF LEGALLY.
19. UPON COMPLETION OF WORK, THE SITE SHALL BE CLEAN AND FREE OF DUST AND FINGERPRINTS.
20. PRIOR TO ANY TRENCHING, CONTACT LOCAL UTILITY TO VERIFY LOCATION OF ANY EXISTING BURIED SERVICE CONDUITS.
21. DOCUMENT GROUND RING INSTALLATION AND CONNECTIONS TO IT WITH PHOTOGRAPHS PRIOR TO BACKFILLING SITE. PRESENT PHOTO ARCHIVE A SITE "PUNCH LIST" WALK TO SPRINT'S REPRESENTATIVE.

NOTE:
INFINIGY ENGINEERING HAS NOT CONDUCTED AN ELECTRICAL LOAD STUDY FOR THIS SITE. CONTRACTOR IS TO VERIFY EXISTING ELECTRICAL LOADS PRIOR TO CONSTRUCTION TO ENSURE THERE IS AMPLE SERVICE AVAILABLE TO ACCOMMODATE THE EXISTING AND PROPOSED EQUIPMENT.

INFINIGY
Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
Office # (518) 690-0790
Fax # (518) 690-0793

STATE OF CONNECTICUT
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No. 24705
LICENSED PROFESSIONAL ENGINEER

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Project Number
294-034

Project Title
CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint VISION

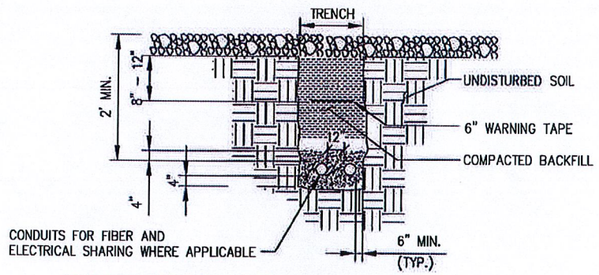
Drawing Scale:
AS NOTED

Date:
1/18/13

Drawing Title
UTILITY SITE PLAN

Drawing Number
E1

GROUNDING NOTES:
IN ADDITION TO POWER SERVICE GROUNDING AS REQUIRED BY NEC. CONTRACTOR SHALL BE RESPONSIBLE TO COORD AND INSTALL ALL SURGE AND LIGHTING PROTECTION GROUNDING AS REQUIRED AND SPECIFIED BY SPRINT.

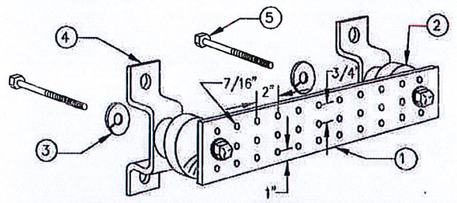


- SEPARATION DIMENSIONS MUST BE VERIFIED WITH LOCAL UTILITY CO. REQUIREMENTS.

***HAND DIG INSIDE COMPOUND**

1 UTILITY TRENCH DETAIL
NOT TO SCALE

NOTE:
ANTENNA BUSS BARS SHOULD BE INSTALLED DIRECTLY TO TOWER STEEL WITHOUT INSULATORS OR DOWN CONDUCTORS SHOULD BE INCLUDED.

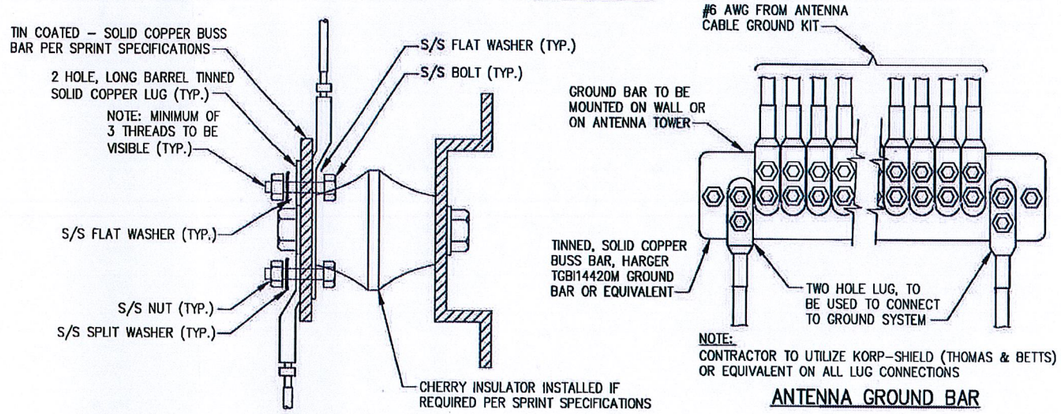


LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO., HARGER TGBI14420M, OR EQUIVALENT. HOLE CENTERS TO MATCH
2. NEMA DOUBLE LUG CONFIGURATION.
3. INSULATORS, NEWTON INSTRUMENT CO. CAT. NO. 3061-4 OR HARGER EQUIVALENT.
4. 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8 OR EQUIVALENT.
5. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056 OR HARGER EQUIVALENT.
6. 5/8-11"x1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT. NO. 3012-1 OR HARGER EQUIVALENT.

NOTE:
1) ALL MOUNTING HARDWARE CAN ALSO BE USED ON 6", 12", 18", ETC. GROUND BARS.
2) ENTIRE ESSEMBLY AVAILABLE FROM NEWTON INSTRUMENT CO. CAT. NO. 2106060010 OR AS HARGER TGBI14420M.

GROUND BAR



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

ANTENNA GROUND BAR

NOTE:
1) ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2) COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3) APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

GROUND LUG

2 GROUND BAR DETAILS
NOT TO SCALE

INFINIGY Design. Build. Deliver.
11 Herbert Drive
Latham, NY 12110
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STATE OF CONNECTICUT JOHN S. STEVENS No. 24705 LICENSED PROFESSIONAL ENGINEER

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CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint VISION

Drawing Scale: AS NOTED
Date: 1/18/13

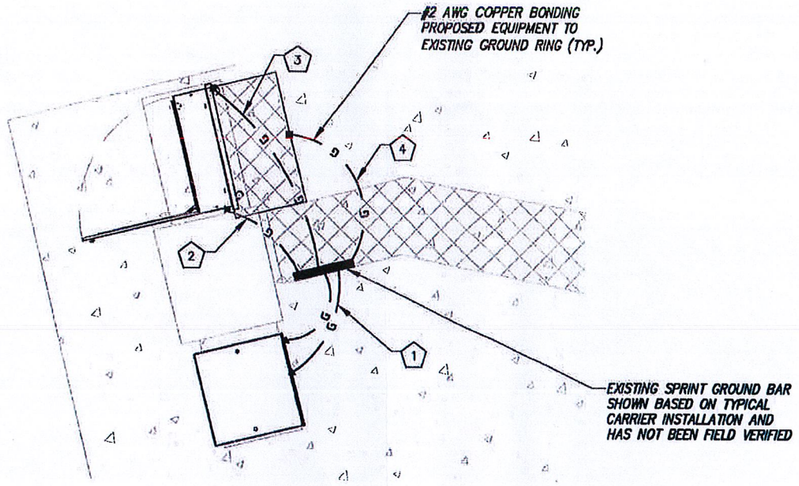
Drawing Title
DETAILS

Drawing Number
E2

CODED NOTES:

1. PROPOSED BATTERY BACKUP CABINET
2. PROPOSED SPRINT FIBER/POWER JUNCTION BOX MOUNTED TO NEW H-FRAME
3. PROPOSED H-FRAME FURNISHED AND INSTALLED BY CONTRACTOR
4. PROPOSED ICE BRIDGE EXTENSION FURNISHED AND INSTALLED BY CONTRACTOR

SYMBOL	
⊗	COPPER GROUND ROD
▸	CONNECT PER MANUFACTURER SPECS
■	CADWELD CONNECTION
•	MECHANICAL CONNECTION
▬	GROUND BAR



CALLED NORTH

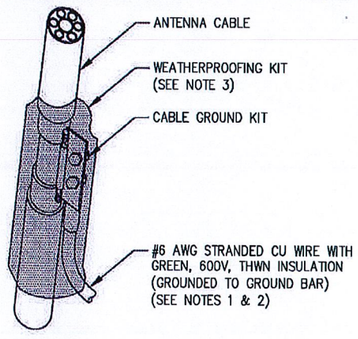
1 EQUIPMENT GROUNDING PLAN
SCALE: AS NOTED

GRAPHIC SCALE
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

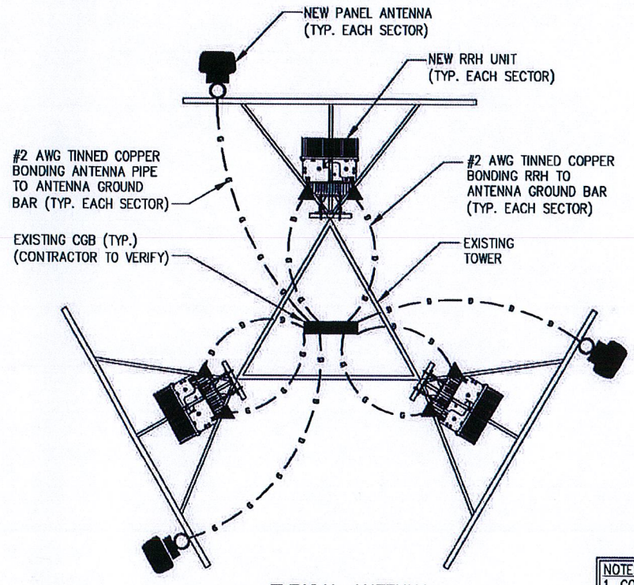
GROUNDING NOTES:

1. ALL DOWN CONDUCTORS AND GROUND RING AND CONDUCTOR SHALL BE #2 AWG, SOLID, BARE, TINNED COPPER, UNO. ALL CONNECTIONS TO GROUND RING SHALL BE EXOTHERMICALLY WELDED. CONDUCTOR SHALL BE A MINIMUM DEPTH BELOW GRADE OF 30 INCHES OR TO THE LEDGE. MINIMUM BEND RADIUS SHALL BE 8 INCHES. CONDUCTOR SHALL BE AT LEAST 24 INCHES FROM ANY FOUNDATION, UNO.
2. WHERE MECHANICAL CONDUCTOR CONNECTIONS ARE SPECIFIED, BOLTED, COMPRESSION-TYPE CLAMPS OR SPLIT-BOLT TYPE CONNECTORS SHALL BE USED.
3. GRIND OFF GALVANIZING IN AFFECTED AREA. EXOTHERMICALLY WELD #2 CONDUCTOR AT 6 INCHES ABOVE GRADE R FOUNDATION, WHICHEVER IS HIGHER. COLD-GALV AFTER. EXOTHERMICALLY WELD OTHER END TO THE GROUND.
4. GROUND CONDUCTORS ON EXTERIOR WALL OF SHELTER SHALL BE ENCASED IN PVC CONDUIT TO GRADE. MOUNT PVC WITH GALVANIZED "C" CLAMPS. SEAL TOP ENDS.
5. FOLLOWING COMPLETION OF WORK, CONDUCT GROUND TEST. SUBMIT WRITTEN TEST TO CONSTRUCTION MANAGER AND PROJECT MANAGER.
6. ALL GROUNDING WORK SHALL COMPLY WITH CARRIER(S) STANDARDS.
7. GROUNDING REQUIREMENTS SHOWN ON THIS PLAN ARE FOR ITEMS THAT ARE LOCATED NEAR GRADE LEVEL AND THAT NEED TO BE TIED TO THE BELOW GRADE GROUND RING.
8. UNLESS NOTED OTHERWISE, ALL GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT'S SSEQ DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES", AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING". ALL GROUNDING SHALL ALSO COMPLY WITH ALL STATE AND LOCAL CODES, AND THE NATIONAL ELECTRICAL CODE (NEC).
9. UNLESS NOTED OTHERWISE, ALL GROUNDING CONNECTIONS SHALL BE MADE BY AN EXOTHERMIC WELD.
10. RESISTANCE TO EARTH TESTING IS REQUIRED PER SPRINT STANDARDS ON ALL NEW SITES.
11. REFER TO "ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412.PDF" FOR GUIDELINE TO SUSPECTED OR ACTUAL THEFT OF GROUND RING.

NOTES:
1) DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2) GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3) WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.



2 CONNECTION OF GROUND KIT TO ANTENNA CABLE
NOT TO SCALE



3 TYPICAL ANTENNA GROUNDING PLAN
NOTES:
1. CONTRACTOR TO VERIFY EXISTING LUG SPACES ARE AVAILABLE ON GROUND BAR. ADD ADDITIONAL BUS BAR IF NO LUG SPACES ARE AVAILABLE.
2. ANTENNA GROUNDING CONNECTIONS SHOWN ARE NOT EXACT TO THIS SITE. FOR EXACT ANTENNA LAYOUT REFER TO ANTENNA CONFIGURATION SHEET.

INFINIGY
Design. Build. Deliver.
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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER

No	Submittal / Revision	App'd	Date
2	REVISED PER COMMENTS	KMF	1/18/13
1	REVISED PER COMMENTS	AHS	12/18/12
0	ISSUED FOR REVIEW	KMF	11/13/12

Drawn: KMF Date: 11/13/12
Designed: AJD Date: 11/13/12
Checked: AGF Date: 11/13/12

Project Number
294-034

Project Title
CLINTON (CROWN)
CT03XC156

48 COW HILL ROAD
CLINTON, CT 06413

Prepared For
Sprint VISION

Drawing Scale:
AS NOTED

Date:
1/18/13

Drawing Title
GROUNDING PLAN AND DETAILS

Drawing Number
E3