1280 Route 46 West, Suite 9, Parsippany NJ, 07054

Ms. Melanie Bachman
Executive Director
CT Siting Council
10 Franklin Square
New Britain, CT 06051

September 27, 2017

Re: Notice of Exempt Modification –
Existing Sprint Telecommunication Facility
366 Old Long Ridge Road
Stamford, CT 06903

Latitude : N41.15311
Longitude: W73.5929

Dear Ms. Bachman:

Sprint currently maintains three (3) existing telecommunications antennas, 3 tower mounted amplifiers, and associated equipment at the 128' level of an existing 152' lattice Tower at 366 Old Long Ridge Road, Stamford Connecticut. Sprint intends to add three (3) new panel antennas and 3 pipe mounts, as well as (3) remote radio units. Sprint is performing a new high-performance air interface upgrade for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

The facility noted above was approved building by the City of Stamford on May 13, 1999. A copy of this approval is attached. There is no original CSC approval on file, but a reference to the CSC approval from August 27, 1998 is referenced in a subsequent request for rehearing by the City of Stamford.

Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, for construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).
In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to Chief Stuart Teitelbaum the Chief of the Long Ridge Fire Company, property owner and to Hon. David R. Martin, Mayor of the City of Stamford.
.
Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower with proposed modifications to accommodate the revised antenna configuration.

Existing Facility

The Stamford facility is located at 366 Old Long Ridge Road, Stamford, CT. The Site coordinates are: N41. 15311, W - 73. 5929. The facility is owned by Long Ridge Fire Company, Inc., 366 Old Long Ridge Road, Stamford, CT 06903. The existing facility consists of a 152' lattice tower. Sprint currently operates wireless communications equipment on s steel platform at the facility and has three antennas mounted on the tower at a centerline of 128' feet.

Statutory Considerations

The planned modifications to the facility fall within the activities explicitly provided for in R.C.S.A. 16-50j-72(b)(2)

1. The height of the overall structure will be unaffected.

2. The proposed changes will not require an extension of the property boundaries.

3. The proposed additions will not increase the noise level at the existing facility by

six decibels or more, or to levels that exceed state and/or local criteria

4. The changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Respectfully submitted,

Paul F. Sagristano

Paul F. Sagristano
Charles Cherundolo Consulting
917-841-0247
psagristano@lrivassoc.com

PFS/mtf

Additional Recipients:
City of Stamford Mayor, David R. Martin – Via Fed Ex
Long Ridge Fire Co., Chief Stuart Teitelbaum – Via Fed Ex
City of Stamford Planner – Mr. Dan Trap – Via email

366 OLD LONG RIDGE ROAD

Location	366 OLD LONG RIDGE ROAD	**Mblu**	002/ 6549/ / /
Acct#	002-6549	**Owner**	LONG RIDGE FIRE CO INC
Assessment	$1,381,680	**Appraisal**	$1,973,840
PID	24275	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$1,682,510	$291,330	$1,973,840
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$1,177,750	$203,930	$1,381,680

Owner of Record

Owner LONG RIDGE FIRE CO INC
Co-Owner
Address 366 OLD LONG RIDGE RD
STAMFORD, CT 06903-1133

Sale Price $0
Certificate
Book & Page 0686/ 581
Sale Date 01/14/1953
Instrument 25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
LONG RIDGE FIRE CO INC	$0		0686/ 581	25	01/14/1953

Building Information

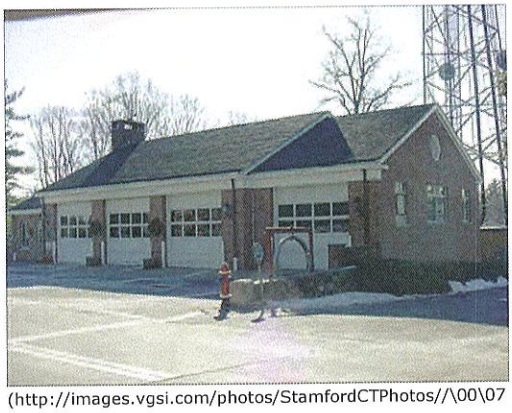
Building 1 : Section 1

Year Built: 1956
Living Area: 8,569

Building Photo

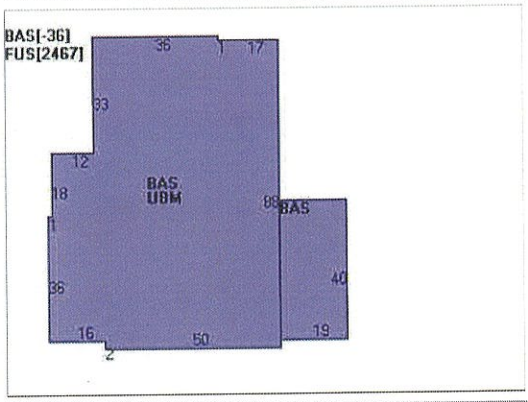
Building Attributes	
Field	**Description**
STYLE	Fire Station
Stories:	1
Occupancy	1
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	

Roof Structure	Gable/Hip
Roof Cover	Asph/F Gls/Cmp
Interior Wall 1	Minimum
Interior Wall 2	Drywall/Plaste
Interior Floor 1	Concrete Slab
Interior Floor 2	Vinyl/Asphalt
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Partial A/C
Bldg Use	Exmpt Comm MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	902C
Heat/AC	Heat/AC Pkgs
Frame Type	FireProofSteel
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Mn Wall
Rooms/Prtns	Average
Wall Height	11
% Comn Wall	



(http://images.vgsi.com/photos/StamfordCTPhotos//\00\07\72/71.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	6,102	6,102
FUS	Upper Story, Finished	2,467	2,467
UBM	Basement, Unfinished	5,378	0
		13,947	8,569

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
OH1	Door Overhd Co	4 UNITS	$10,500	1
H04	Air Con/Sfla	9620 S.F	$23,450	1

Land

Land Use

Use Code	902C
Description	Exmpt Comm MDL-94
Zone	RA2
Neighborhood	0100
Alt Land Appr	No

Land Line Valuation

Size (Acres)	0.49
Depth	
Assessed Value	$203,930
Appraised Value	$291,330

Category

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
LP6	Patio Asphlt			480 S.F.	$1,260	1
FC1	Shed Wood			108 S.F.	$1,220	1
FC1	Shed Wood			560 S.F.	$6,300	1
RG4	Gar 1.0 Det			1008 S.F.	$37,800	1
CEL1	Cell Tower			3 SITES	$419,630	1
CSHD	Cell Equipment			56 S.F.	$1,890	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	$1,682,510	$291,330	$1,973,840
2015	$1,682,510	$291,330	$1,973,840
2014	$1,682,510	$291,330	$1,973,840

Assessment			
Valuation Year	Improvements	Land	Total
2016	$1,177,750	$203,930	$1,381,680
2015	$1,177,750	$203,930	$1,381,680
2014	$1,177,750	$203,930	$1,381,680

Map: 14

Disclaimer:
This map is for informational purposes only. All information is subject to verification by user. This map is not intended to represent survey accuracy. The City of Stamford assumes no legal responsibility for the information contained herein.

This tax map is not to be used for property boundary description, conveyance, or determination of legal title. Property descriptions must be obtained from surveys or deeds. The GIS parcel data has been compiled from many sources including assessor records, tax maps, surveys, and deeds. The tax maps are not a substitute for survey or deed information.

For more information contact the City of Stamford Assessor's Office.

This map is formatted for 42" x 36" paper size. Printing these maps on smaller paper will render the map scale (1"=150') inaccurate.

Map Produced March 2016

1 inch = 100 feet

0 100 200 300 400 500 Feet

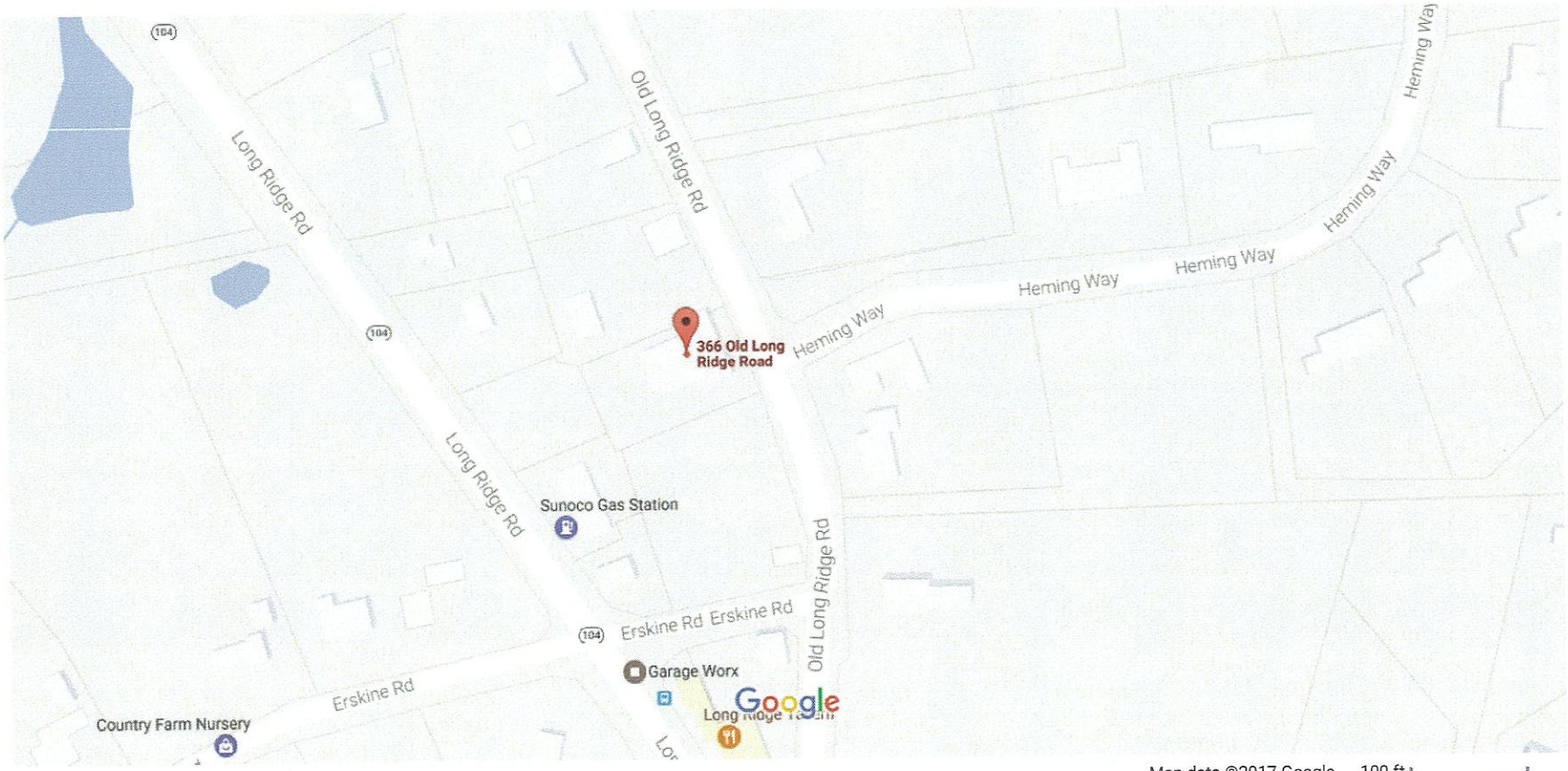
City of Stamford, Connecticut
Assessment Parcel Map

Parcel data current as of October 2015.
Assessment Data displayed on this map as of October 2015 grand list.
Building and Paved Roads based on aerial flight from Spring 2013.
Map Coordinates based on NAD 83 Connecticut State Plane Feet.

111 216 84 Map Block Lot
13 Address
003-0569 Parcel Id
Parcels
City Boundaries
Water Bodies
Streams and Rivers
Paved Roads
Buildings
Parks
Railroad

Map: 14

Google Maps 366 Old Long Ridge Rd



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square
New Britain, CT 06051
Phone: 860-827-2935
Fax: 860-827-2950

IN RE:

Sprint PCS Tower Sharing Request Tower at 366 Old Long Ridge Rd Stamford, CT	:	TS-SPRINT-135-980810 October 16, 1998

PETITION FOR REHEARING

The City of Stamford respectfully requests that the Siting Council reconsider its decision dated August 27, 1998 granting the above tower sharing request by Sprint PCS for the following reasons:

1) Jurisdictional claims: it is the position of the City that the neighbors and the city were not given the chance to comment or participate upon this application as inadequate time and notice was given. The application was dated August 10, 1998; Sprint sent the application (without any suspense date to respond or any date for a public meeting) to the Mayor's office which was received on August 14, 1998; the public meeting was held on August 25, 1998. No one appeared at the public meeting to contest the application, which was granted as uncontested.

No notice was given to concerned neighbors. A public hearing with proper notice to neighbors and time to respond as required by statute

Do Not Remove

There will be a $25.00 renewal fee if lost, mutilated, or destroyed

BUILDING BUREAU
STAMFORD, CONN.
Permit No. 80514

Owner Long Ridge Fire Co. **Date** May 13, 1999

Address 366 Old Long Ridge Rd

To erect a Telecommunications Antenna **Type of Const.**

Job Site Address 366 Old Long Ridge Rd.

General Contractor —— **APP.** Sprint PCS

Tenant **Use Group** B

Special Stipulations & Conditions

No inspections will be made unless this card is prominently displayed on front of building, properly protected from the weather, and easily accessible to the inspectors. This is the responsibility of the Owner and/or Builder. No CERTIFICATE OF OCCUPANCY will be issued unless this card has been signed by all inspectors, and then presented to the Building Division.

CAM

EPP/ENG.

FOOTING INSP.

Pour no concrete until above has been signed.

CPP ZONING OFFICER

FOUNDATION BEFORE BACKFILLING

Do not backfill until above has been signed.

ELECTRICAL (GROUND WORK)

HVAC (GROUND WORK)

PLUMBING (GROUND WORK)

FILL AND REINFORCEMENT

Do not pour until above has been signed.

X ELECTRICAL PERMIT NO.

ELECTRICAL – ROUGH

HVAC PERMIT NO.

HVAC – ROUGH

PLMG PER # SPR #

PLUMBING–ROUGH

FRAMING INSP.

INSULATION

Cover no work until each item above has been signed.

FINAL INSPECTIONS

CAM

X EPR

FIRE

X HEALTH

TRAFFIC

X ZONING

SITE DRAINAGE

PLUMBING

SPRINKLERS

HVAC

X ELECTRICAL

X BUILDING

CORRECTION NOTICE

The following violations have been found. You are hereby notified that no more work shall be done on these premises until these violations have been corrected. When corrections have been made, call the Building Division.

Date **Signed**

FOOTING INSPECTION
- ☐ WIDTH & DEPTH
- ☐ BELOW GRADE
- ☐ STONES IN FOOTING
- ☐ LOLLY FOOTINGS
- ☐ SOIL

ROUGH INSPECTION
- ☐ FOUNDATION
- ☐ THICKNESS
- ☐ BELOW GRADE
- ☐ HEIGHT OF BASEMENT
- ☐ SIZE OF GIRDERS
- ☐ SPAN
- ☐ FLOOR JOISTS
- ☐ CEILING JOISTS
- ☐ RAFTERS
- ☐ HEADERS
- ☐ CORNER BRACE
- ☐ PLYWOOD
- ☐ BRIDGING
- ☐ DOUBLE JOISTS UNDER PARTITIONS
- ☐ CORNERS BLOCKED
- ☐ RISE & RUN OF STAIRS
- ☐ TWO WAYS OUT OF BASEMENT
- ☐ LOUVERS
- ☐ ASH PIT IN FIREPLACE
- ☐ SMOKE SHELF & FLUE LINING
- ☐ HEAD ROOM ON STAIRS
- ☐ CEMENT ON CRAWL SPACE FLOOR
- ☐ VENTS IN FOUNDATION

FINAL INSPECTION
- ☐ GARAGE FIRE PROOFED
- ☐ WATER IN BASEMENT
- ☐ RAILS ON LANDINGS
- ☐ FOUNDATION 8" ABOVE GRADE
- ☐ TOILET WORKING
- ☐ CHIMNEY FLASHING
- ☐ HOLES IN FOUNDATION
- ☐ SHEET ROCK OVER BURNER
- ☐ CEMENT AROUND FLUE

Certificate of Occupancy Issued: (SEE BACK) 977-5700

PERMIT

№ 80514

BUILDING PERMIT

AMOUNT

$ 150.00

The City of Stamford

STAMFORD, CONN., MAY 13, 1999

PERMISSION IS HEREBY GIVEN

TO OWNER: NAME LONG RIDGE FIRE CO. ADDRESS 366 OLD LONG RIDGE RD. STAMFORD, CT.

APPLICANT: NAME JEFF YORK ADDRESS 3 BARNES INDUSTRIAL RD. WALLINGFORD, CT.

TO ERECT TELECOMMUNICATIONS ANTENNA

LOCATION 366 OLD LONG RIDGE RD.

USE GROUP B TYPE OF CONSTRUCTION

REMARKS

This permit is issued in accordance with the conditions stated in the application, and is subject to the strict observance of all laws, ordinances and regulations enacted for the protection of the city so far as they may apply, and particularly to the building code and zoning regulations of the city. It is subject to revocation at any time by the Chief Building Official, in the event of failure of the permittee to comply with any of the terms or conditions upon which this permit is issued.

This permit is void if the work is not substantially started within six months after date may 13, 1999

Chief Building Official

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: CT03XC328

Stamford Fire Department
366 Old Long Ridge Road
Stamford, CT 06903

September 12, 2017

EBI Project Number: 6217003982

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	35.04 %

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

EBI Consulting
environmental | engineering | due diligence

September 12, 2017

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

Emissions Analysis for Site: **CT03XC328 – Stamford Fire Department**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **366 Old Long Ridge Road, Stamford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands 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 SPRINT Wireless antenna facility located at **366 Old Long Ridge Road, Stamford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **RFS APXVSPP18-C-A20 and the RFS APXVTM14-C-120** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **128 feet** above ground level (AGL) for **Sector A**, **128 feet** above ground level (AGL) for **Sector B** and **128 feet** above ground level (AGL) for Sector C.

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**128 feet**	Height (AGL):	**128 feet**	Height (AGL):	**128 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	**2.07 %**	Antenna B1 MPE%	**2.07 %**	Antenna C1 MPE%	**2.07 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**128 feet**	Height (AGL):	**128 feet**	Height (AGL):	**128 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.50 %**	Antenna B2 MPE%	**1.50 %**	Antenna C2 MPE%	**1.50 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**3.57 %**
Nextel	0.45 %
AT&T	2.55 %
T-Mobile	3.94 %
EMCC	1.27 %
City of Stamford	2.39 %
Airtouch	5.51 %
SkyTel	1.87 %
Fire Dept	1.46 %
Gardella Trans.	0.95 %
Hoffman Fuel	0.47 %
Pronet	0.44 %
Verizon Wireless	10.17 %
Site Total MPE %:	**35.04 %**

SPRINT Sector A Total:	3.57 %
SPRINT Sector B Total:	3.57 %
SPRINT Sector C Total:	3.57 %
Site Total:	35.04 %

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	128	1.06	850 MHz	567	0.19%
Sprint 850 MHz LTE	2	437.55	128	2.11	850 MHz	567	0.38%
Sprint 1900 MHz (PCS) CDMA	5	622.47	128	7.52	1900 MHz (PCS)	1000	0.75%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	128	7.52	1900 MHz (PCS)	1000	0.75%
Sprint 2500 MHz (BRS) LTE	8	778.09	128	15.04	2500 MHz (BRS)	1000	1.50%
						Total:	**3.57%**

Summary

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

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	3.57 %
Sector B:	3.57 %
Sector C:	3.57 %
SPRINT Maximum Total (per sector):	3.57 %
Site Total:	35.04 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **35.04 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

RAMAKER & ASSOCIATES, INC.

September 29, 2017

Tom Jupin
Charles Cherundolo Consulting, Inc.
1280 Rt. 46 West
Parsippany, NJ 07054

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **MOUNT ASSESSMENT**

CARRIER: **SPRINT**

SITE: **LONG RIDGE FIRE COMPANY, INC. (CT03XC328-A)**
366 OLD LONG RIDGE ROAD
STAMFORD, FAIRFIELD COUNTY, CONNECTICUT 06903
RAMAKER & ASSOCIATES PROJECT NUMBER: 29012

RESULTS: **MOUNT:** **PASS**

Dear Tom Jupin:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this mount assessment for the above mentioned site. The purpose of this report is to determine the structural integrity of the mounting structure with the proposed loading configurations. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the mount(s) using RISA analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the mount loading occur.

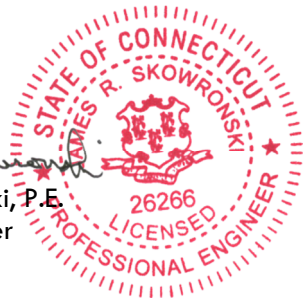
If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Ryan J. Nelson
Project Engineer

James R. Skowronski, P.E.
Supervising Engineer



ANALYSIS CRITERIA

State Building Code	2016 CT State Building Code
Adopted Building Code	2012 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	120 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	93 mph (3 sec. gust)
Design Wind Speed w/ Ice	50 mph (3 sec. gust)
Ice Thickness	3/4 inch
Exposure Category	B
Topographic Category	1
Crest Height	N/A

SUPPORTING DOCUMENTATION

- Construction drawings by RAMAKER, project number 29012
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

MOUNT LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antennas and equipment configurations as shown in the following chart(s):

Antenna Mount – All Sectors				
Elevation	**Position**	**Appurtenance**	**Mount Type**	**Status**
128	1	**(1) RFS APXVTM14-ALU-120**	Sector Frame	**Proposed**
		(1) ALU TD-RRH8x20		
	2	(1) ALU RRH2x50-800		Existing
		(1) ALU RRH4x45-1900		
	3	(1) RFS APXVSPP18-C-A20		Existing

MOUNT RESULTS

By engineering calculation and inspection, the antenna and equipment mounting structure(s) are capable of supporting the proposed loading configurations without causing an overstress condition in the antenna and equipment mounting structure(s).

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance
- Member grades less than assumed grades show below:

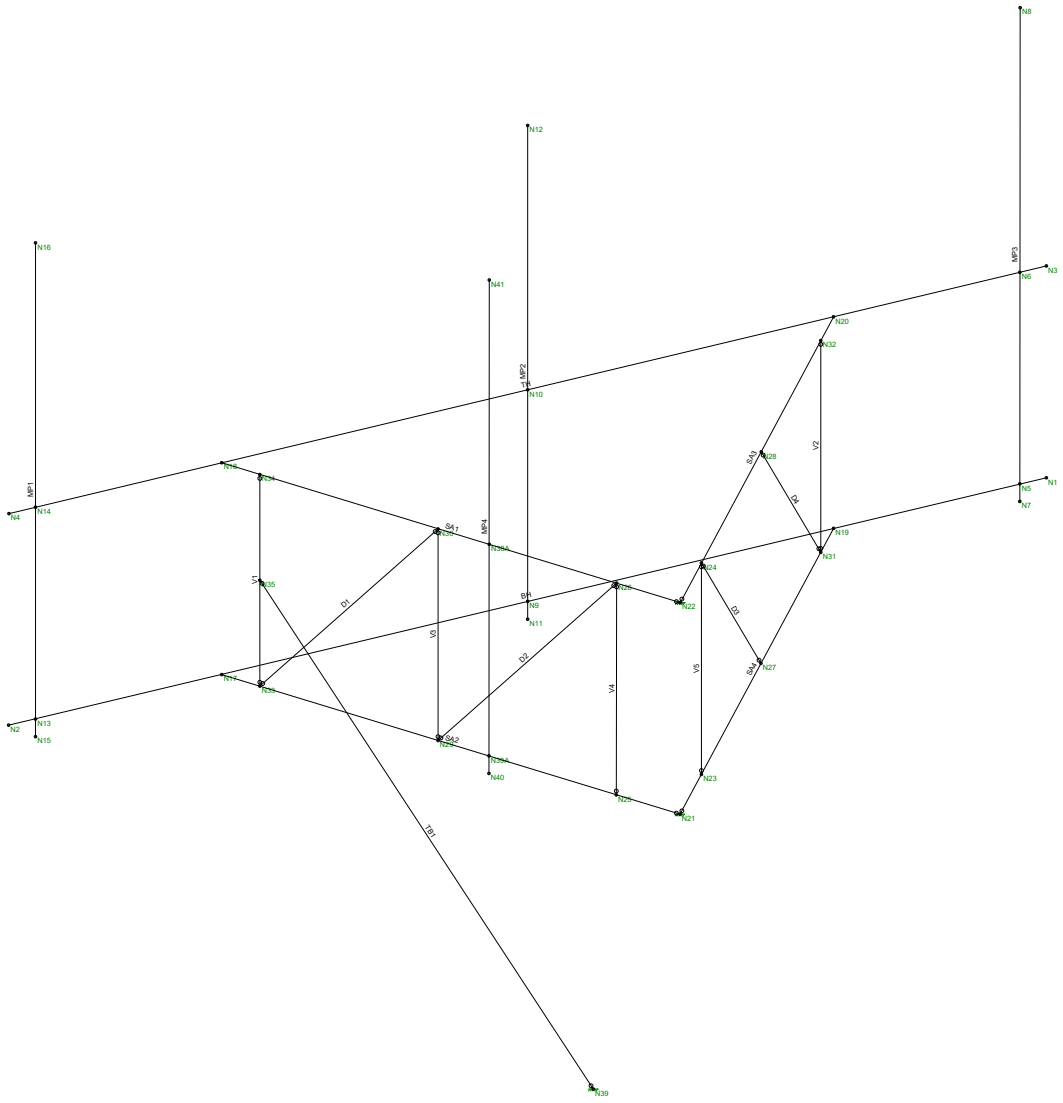
Assumed Steel Member Grades	
Angles	ASTM A36, 36 ksi
Pipes	ASTM A53 Gr. B, 35 ksi

RAMAKER is not responsible for verifying that the loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

This analysis pertains only to the mounting structure, and no analyses or conclusions were made regarding the supporting structure. Analysis and certification of the supporting structure is performed and submitted separately.

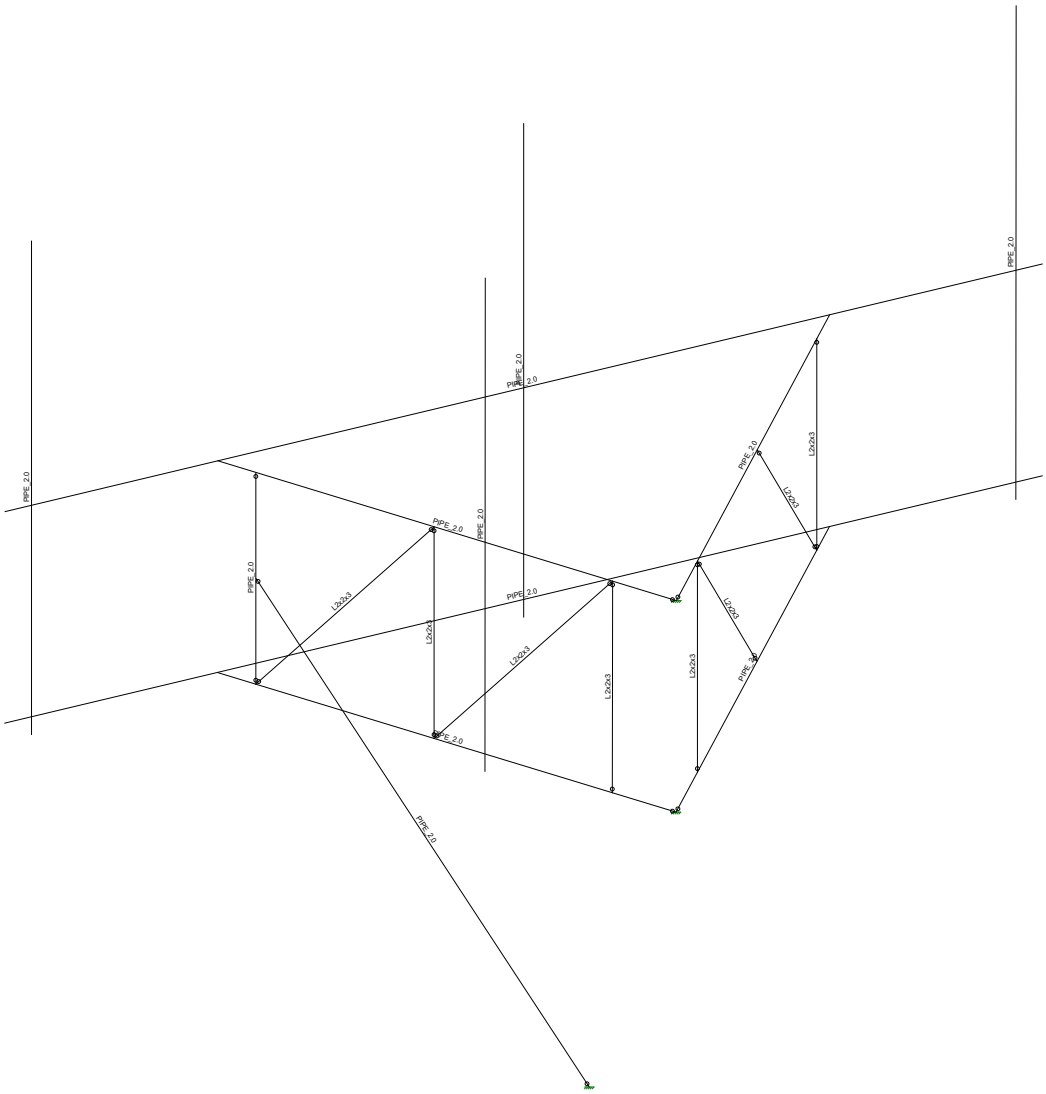
ATTACHMENTS

- Analysis Figures
- Analysis Calculations



Envelope Only Solution

Ramaker & Associates, Inc.	CT03XC328	SK - 1
RJN		Aug 23, 2017 at 10:56 AM
29012		29012 Mount.r3d



Envelope Only Solution

Ramaker & Associates, Inc.	CT03XC328	SK - 2
RJN		Aug 23, 2017 at 10:56 AM
29012		29012 Mount.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
2	L2x2x3	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	BH	N1	N2			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
2	TH	N3	N4			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
3	MP3	N7	N8			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
4	MP2	N11	N12			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
5	MP1	N15	N16			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
6	SA3	N22	N20			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
7	SA4	N21	N19			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
8	SA1	N22	N18			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
9	SA2	N21	N17			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
10	V5	N23	N24			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
11	V4	N25	N26			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
12	V6	N27	N28			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
13	V3	N29	N30			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
14	V2	N31	N32			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
15	V1	N33	N34			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
16	D4	N31	N28			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
17	D3	N27	N24			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
18	D1	N33	N30			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
19	D2	N29	N26			L2x2x3	Beam	Single Angle	A36 Gr.36	Typical
20	TB1	N39	N35			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical
21	MP4	N40	N41			PIPE_2.0	Beam	Pipe	A53 Gr. B	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead Load	None		-1			7			
2	Antenna Wind 0	None					14			
3	Antenna Wind 30	None					14			
4	Antenna Wind 45	None					14			
5	Antenna Wind 60	None					14			
6	Antenna Wind 90	None					14			
7	Antenna Wind 120	None					14			
8	Antenna Wind 135	None					14			
9	Antenna Wind 150	None					14			
10	Antenna Wind 180	None					14			
11	Antenna Wind 210	None					14			
12	Antenna Wind 225	None					14			
13	Antenna Wind 240	None					14			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
14	Antenna Wind 270	None					14			
15	Antenna Wind 300	None					14			
16	Antenna Wind 315	None					14			
17	Antenna Wind 330	None					14			
18	Antenna Ice Dead Load	None					7			
19	Antenna Wind w/Ice 0	None					14			
20	Antenna Wind w/Ice 30	None					14			
21	Antenna Wind w/Ice 45	None					14			
22	Antenna Wind w/Ice 60	None					14			
23	Antenna Wind w/Ice 90	None					14			
24	Antenna Wind w/Ice 1...	None					14			
25	Antenna Wind w/Ice 1...	None					14			
26	Antenna Wind w/Ice 1...	None					14			
27	Antenna Wind w/Ice 1...	None					14			
28	Antenna Wind w/Ice 2...	None					14			
29	Antenna Wind w/Ice 2...	None					14			
30	Antenna Wind w/Ice 2...	None					14			
31	Antenna Wind w/Ice 2...	None					14			
32	Antenna Wind w/Ice 3...	None					14			
33	Antenna Wind w/Ice 3...	None					14			
34	Antenna Wind w/Ice 3...	None					14			
35	Member Wind 0	None						42		
36	Member Wind 30	None						42		
37	Member Wind 45	None						42		
38	Member Wind 60	None						42		
39	Member Wind 90	None						42		
40	Member Wind 120	None						42		
41	Member Wind 135	None						42		
42	Member Wind 150	None						42		
43	Member Wind 180	None						42		
44	Member Wind 210	None						42		
45	Member Wind 225	None						42		
46	Member Wind 240	None						42		
47	Member Wind 270	None						42		
48	Member Wind 300	None						42		
49	Member Wind 315	None						42		
50	Member Wind 330	None						42		
51	Member Ice Dead Load	None						21		
52	Member Wind w/Ice 0	None						42		
53	Member Wind w/Ice 30	None						42		
54	Member Wind w/Ice 45	None						42		
55	Member Wind w/Ice 60	None						42		
56	Member Wind w/Ice 90	None						42		
57	Member Wind w/Ice 1...	None						42		
58	Member Wind w/Ice 1...	None						42		
59	Member Wind w/Ice 1...	None						42		
60	Member Wind w/Ice 1...	None						42		
61	Member Wind w/Ice 2...	None						42		
62	Member Wind w/Ice 2...	None						42		
63	Member Wind w/Ice 2...	None						42		
64	Member Wind w/Ice 2...	None						42		
65	Member Wind w/Ice 3...	None						42		
66	Member Wind w/Ice 3...	None						42		
67	Member Wind w/Ice 3...	None						42		
68	Live Load - Area	None								
69	Live Load - Point 1	None					2			
70	Live Load - Point 2	None					2			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
71	Live Load - Point 3	None					2			
72	Railing Dist. LL z	None								
73	Railing Dist. LL x	None								
74	Railing Point LL z	None								
75	Railing Point LL x	None								

Load Combinations

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.4D	Yes	Y		1	1.4																		
2	0.9D + 1.6 (0-W...	Yes	Y		1	.9	2	1.6	35	1.6														
3	0.9D + 1.6 (30-...	Yes	Y		1	.9	3	1.6	36	1.6														
4	0.9D + 1.6 (45-...	Yes	Y		1	.9	4	1.6	37	1.6														
5	0.9D + 1.6 (60-...	Yes	Y		1	.9	5	1.6	38	1.6														
6	0.9D + 1.6 (90-...	Yes	Y		1	.9	6	1.6	39	1.6														
7	0.9D + 1.6 (120-...	Yes	Y		1	.9	7	1.6	40	1.6														
8	0.9D + 1.6 (135-...	Yes	Y		1	.9	8	1.6	41	1.6														
9	0.9D + 1.6 (150-...	Yes	Y		1	.9	9	1.6	42	1.6														
10	0.9D + 1.6 (180-...	Yes	Y		1	.9	10	1.6	43	1.6														
11	0.9D + 1.6 (210-...	Yes	Y		1	.9	11	1.6	44	1.6														
12	0.9D + 1.6 (225-...	Yes	Y		1	.9	12	1.6	45	1.6														
13	0.9D + 1.6 (240-...	Yes	Y		1	.9	13	1.6	46	1.6														
14	0.9D + 1.6 (270-...	Yes	Y		1	.9	14	1.6	47	1.6														
15	0.9D + 1.6 (300-...	Yes	Y		1	.9	15	1.6	48	1.6														
16	0.9D + 1.6 (315-...	Yes	Y		1	.9	16	1.6	49	1.6														
17	0.9D + 1.6 (330-...	Yes	Y		1	.9	17	1.6	50	1.6														
18	1.2D + 1.6 (0-W...	Yes	Y		1	1.2	2	1.6	35	1.6														
19	1.2D + 1.6 (30-...	Yes	Y		1	1.2	3	1.6	36	1.6														
20	1.2D + 1.6 (45-...	Yes	Y		1	1.2	4	1.6	37	1.6														
21	1.2D + 1.6 (60-...	Yes	Y		1	1.2	5	1.6	38	1.6														
22	1.2D + 1.6 (90-...	Yes	Y		1	1.2	6	1.6	39	1.6														
23	1.2D + 1.6 (120-...	Yes	Y		1	1.2	7	1.6	40	1.6														
24	1.2D + 1.6 (135-...	Yes	Y		1	1.2	8	1.6	41	1.6														
25	1.2D + 1.6 (150-...	Yes	Y		1	1.2	9	1.6	42	1.6														
26	1.2D + 1.6 (180-...	Yes	Y		1	1.2	10	1.6	43	1.6														
27	1.2D + 1.6 (210-...	Yes	Y		1	1.2	11	1.6	44	1.6														
28	1.2D + 1.6 (225-...	Yes	Y		1	1.2	12	1.6	45	1.6														
29	1.2D + 1.6 (240-...	Yes	Y		1	1.2	13	1.6	46	1.6														
30	1.2D + 1.6 (270-...	Yes	Y		1	1.2	14	1.6	47	1.6														
31	1.2D + 1.6 (300-...	Yes	Y		1	1.2	15	1.6	48	1.6														
32	1.2D + 1.6 (315-...	Yes	Y		1	1.2	16	1.6	49	1.6														
33	1.2D + 1.6 (330-...	Yes	Y		1	1.2	17	1.6	50	1.6														
34	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	19	1	52	1										
35	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	20	1	53	1										
36	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	21	1	54	1										
37	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	22	1	55	1										
38	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	23	1	56	1										
39	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	24	1	57	1										
40	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	25	1	58	1										
41	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	26	1	59	1										
42	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	27	1	60	1										
43	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	28	1	61	1										
44	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	29	1	62	1										
45	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	30	1	63	1										
46	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	31	1	64	1										
47	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	32	1	65	1										

Load Combinations (Continued)

	Description	So...	P...	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
48	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	33	1	66	1										
49	1.2D + 1.0Di + 1...	Yes	Y		1	1.2	18	1	51	1	34	1	67	1										
50	1.0D + 1.5LL + ...	Yes	Y		1	1	68	1.5	72	1.5														
51	1.0D + 1.5LL + ...	Yes	Y		1	1	68	1.5	73	1.5														
52	1.0D + 1.5LL + ...	Yes	Y		1	1	68	1.5	74	1.5														
53	1.0D + 1.5LL + ...	Yes	Y		1	1	68	1.5	75	1.5														
54	1.0D + 1.5LL + ...	Yes	Y		1	1	69	1.5	72	1.5														
55	1.0D + 1.5LL + ...	Yes	Y		1	1	69	1.5	73	1.5														
56	1.0D + 1.5LL + ...	Yes	Y		1	1	69	1.5	74	1.5														
57	1.0D + 1.5LL + ...	Yes	Y		1	1	69	1.5	75	1.5														
58	1.0D + 1.5LL + ...	Yes	Y		1	1	70	1.5	72	1.5														
59	1.0D + 1.5LL + ...	Yes	Y		1	1	70	1.5	73	1.5														
60	1.0D + 1.5LL + ...	Yes	Y		1	1	70	1.5	74	1.5														
61	1.0D + 1.5LL + ...	Yes	Y		1	1	70	1.5	75	1.5														
62	1.0D + 1.5LL + ...	Yes	Y		1	1	71	1.5	72	1.5														
63	1.0D + 1.5LL + ...	Yes	Y		1	1	71	1.5	73	1.5														
64	1.0D + 1.5LL + ...	Yes	Y		1	1	71	1.5	74	1.5														
65	1.0D + 1.5LL + ...	Yes	Y		1	1	71	1.5	75	1.5														
66	Serviceability (0...	Yes	Y		1	1	2	.372	35	.372														
67	Serviceability (3...	Yes	Y		1	1	3	.372	36	.372														
68	Serviceability (4...	Yes	Y		1	1	4	.372	37	.372														
69	Serviceability (6...	Yes	Y		1	1	5	.372	38	.372														
70	Serviceability (9...	Yes	Y		1	1	6	.372	39	.372														
71	Serviceability (1...	Yes	Y		1	1	7	.372	40	.372														
72	Serviceability (1...	Yes	Y		1	1	8	.372	41	.372														
73	Serviceability (1...	Yes	Y		1	1	9	.372	42	.372														
74	Serviceability (1...	Yes	Y		1	1	10	.372	43	.372														
75	Serviceability (2...	Yes	Y		1	1	11	.372	44	.372														
76	Serviceability (2...	Yes	Y		1	1	12	.372	45	.372														
77	Serviceability (2...	Yes	Y		1	1	13	.372	46	.372														
78	Serviceability (2...	Yes	Y		1	1	14	.372	47	.372														
79	Serviceability (3...	Yes	Y		1	1	15	.372	48	.372														
80	Serviceability (3...	Yes	Y		1	1	16	.372	49	.372														
81	Serviceability (3...	Yes	Y		1	1	17	.372	50	.372														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N21	max	966.414	62	1895.457	46	3315.431	47	.024	4	0	1	.053	7
2		min	-567.149	58	330.162	5	166.198	7	-.045	58	0	1	-.067	58
3	N22	max	885.438	14	585.575	38	817.826	17	.056	19	0	1	.052	7
4		min	-1270.989	22	11.194	58	-3584.963	41	-.053	11	0	1	-.114	58
5	N38	max	0	1	0	1	0	1	0	1	0	1	0	1
6		min	0	1	0	1	0	1	0	1	0	1	0	1
7	N39	max	85.325	14	69.793	45	1275.859	5	0	58	0	1	.021	5
8		min	-83.17	6	16.76	5	-1278.082	13	0	5	0	1	-.026	58
9	Totals:	max	1272.539	30	2478.993	46	1592.256	2						
10		min	-1272.539	22	618.808	7	-1592.256	10						

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	BH	PIPE_2.0	.239	10.292	39	.141	2.573		58	5820.472	32130	1.872	1.872	1....	H1-1b
2	TH	PIPE_2.0	.446	10.427	26	.196	10.427		18	5820.472	32130	1.872	1.872	1....	H1-1b
3	MP3	PIPE_2.0	.313	3.281	18	.119	3.208		26	17855.085	32130	1.872	1.872	3	H1-1b
4	MP2	PIPE_2.0	.165	.292	21	.054	.292		29	17855.085	32130	1.872	1.872	2....	H1-1b

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
5	MP1	PIPE_2.0	.332	3.281	26	.144	3.208		26	17855.085	32130	1.872	1.872	3	H1-1b
6	SA3	PIPE_2.0	.353	3.125	44	.099	5.5		58	20867.52	32130	1.872	1.872	1....	H1-1b
7	SA4	PIPE_2.0	.582	.812	46	.134	0		47	20867.52	32130	1.872	1.872	1....	H1-1b
8	SA1	PIPE_2.0	.375	.812	39	.108	0		45	20867.53	32130	1.872	1.872	2....	H1-1b
9	SA2	PIPE_2.0	.361	.875	36	.101	0		45	20867.53	32130	1.872	1.872	2....	H1-1b
10	V5	L2x2x3	.143	1.406	45	.010	0	z	27	14902.829	23392.8	.558	1.169	1....	H2-1
11	V4	L2x2x3	.075	1.406	37	.008	0	y	29	14902.829	23392.8	.558	1.169	1....	H2-1
12	V3	L2x2x3	.113	1.406	37	.007	3	y	30	14902.829	23392.8	.558	1.169	1....	H2-1
13	V2	L2x2x3	.068	1.344	43	.006	3	z	33	14902.829	23392.8	.558	1.169	1....	H2-1
14	V1	PIPE_2.0	.501	1.5	29	.101	1.5		28	28843.414	32130	1.872	1.872	1....	H1-1b
15	D4	L2x2x3	.072	1.94	49	.006	0	z	31	11346.124	23392.8	.558	1.117	1....	H2-1
16	D3	L2x2x3	.104	1.94	49	.007	3.801	z	31	11343.471	23392.8	.558	1.117	1....	H2-1
17	D1	L2x2x3	.096	1.9	46	.006	3.8	y	18	11346.124	23392.8	.558	1.117	1....	H2-1
18	D2	L2x2x3	.143	1.9	46	.006	3.801	z	29	11343.471	23392.8	.558	1.117	1....	H2-1
19	TB1	PIPE_2.0	.154	0	5	.021	0		30	8271.9	32130	1.872	1.872	1....	H1-1b*
20	MP4	PIPE_2.0	.090	.292	39	.041	3.208		31	17855.085	32130	1.872	1.872	3	H1-1b

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Job: CT03XC328-A
Project: 29012
By: RJN
Date: 9/29/17

Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	93	mph	Basic Wind Speed (Annex B)
z:	128	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.06		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	22.3	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
APXVSPP18-C-A20	72.0	11.9	6.1	Flat	1.358	5.95	180.1	
APXV9TM14-ALU-120	56.3	12.6	4.5	Flat	1.287	4.93	141.5	
1900MHz 4x45W RRH	25.1	11.1	2.3	Flat	1.200	1.93	51.8	
800MHz 2x50W RRH	19.0	13.0	1.5	Flat	1.200	1.72	45.9	
TD-RRH8x20	26.1	18.6	1.4	Flat	1.200	3.37	90.2	
Pipe2STD x 11 ft	132.0	2.4	55.6	Round	1.200	2.18	58.3	5.3
Pipe2STD x 6 ft	72.0	2.4	30.3	Round	1.200	1.19	31.8	5.3
Pipe2STD x 3 ft	36.0	2.4	15.2	Round	0.981	0.59	13.0	4.3
Pipe2STD x 7 ft	84.0	2.4	35.4	Round	1.200	1.39	37.1	5.3
Pipe2STD x 13 ft	156.0	2.4	65.7	Round	1.200	2.57	68.9	5.3
L2X2X3/16 x 3.8 ft	45.6	2.0	22.8	Flat	1.927	0.63	27.2	7.2
L2X2X3/16 x 3 ft	36.0	2.0	18.0	Flat	1.767	0.50	19.7	6.6

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Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V:	93	mph	Basic Wind Speed (Annex B)
z:	128	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.06		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	22.3	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections

Mount & Antenna Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
APXVSPP18-C-A20	72.0	7.0	10.3	Flat	1.509	3.50	118.0	
APXV9TM14-ALU-120	56.3	6.3	8.9	Flat	1.465	2.46	80.5	
1900MHz 4x45W RRH	25.1	10.7	2.3	Flat	1.200	1.86	49.9	
800MHz 2x50W RRH	19.0	12.2	1.6	Flat	1.200	1.61	43.1	
TD-RRH8x20	26.1	6.7	3.9	Flat	1.262	1.21	34.2	
Pipe2STD x 11 ft	132.0	2.4	55.6	Round	1.200	2.18	58.3	5.3
Pipe2STD x 6 ft	72.0	2.4	30.3	Round	1.200	1.19	31.8	5.3
Pipe2STD x 3 ft	36.0	2.4	15.2	Round	0.981	0.59	13.0	4.3
Pipe2STD x 7 ft	84.0	2.4	35.4	Round	1.200	1.39	37.1	5.3
Pipe2STD x 13 ft	156.0	2.4	65.7	Round	1.200	2.57	68.9	5.3
L2X2X3/16 x 3.8 ft	45.6	2.0	22.8	Flat	1.927	0.63	27.2	7.2
L2X2X3/16 x 3 ft	36.0	2.0	18.0	Flat	1.767	0.50	19.7	6.6

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Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V_i:	50	mph	Basic Wind Speed (Annex B)
z:	128	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.06		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	6.45	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections
K_{iz}:	1.15		Height Escalation Factor for Ice Thickness
t_{iz}:	1.72	in	Factored Thickness of Radial Glaze Ice at Height z

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
APXVSPP18-C-A20	75.4	15.3	4.9	Flat	1.308	8.03	67.7	
APXV9TM14-ALU-120	59.7	16.0	3.7	Flat	1.254	6.65	53.8	
1900MHz 4x45W RRH	28.5	14.5	2.0	Flat	1.200	2.88	22.3	
800MHz 2x50W RRH	22.4	16.4	1.4	Flat	1.200	2.56	19.8	
TD-RRH8x20	29.5	22.0	1.3	Flat	1.200	4.52	35.0	
Pipe2STD x 11 ft	135.4	5.8	23.3	Round	1.162	5.46	41.0	3.6
Pipe2STD x 6 ft	75.4	5.8	13.0	Round	0.933	3.04	18.3	2.9
Pipe2STD x 3 ft	39.4	5.8	6.8	Round	0.795	1.59	8.2	2.5
Pipe2STD x 7 ft	87.4	5.8	15.0	Round	0.979	3.53	22.3	3.1
Pipe2STD x 13 ft	159.4	5.8	27.4	Round	1.200	6.43	49.8	3.7
L2X2X3/16 x 3.8 ft	49.0	5.4	9.0	Flat	1.467	1.85	17.5	4.3
L2X2X3/16 x 3 ft	39.4	5.4	7.3	Flat	1.409	1.49	13.5	4.1

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Ice Wind Load on Antennas TIA-222-G

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$

$F = q_z\ G_h\ C_a\ A_a$

Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V_i:	50	mph	Basic Wind Speed (Annex B)
z:	128	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_z:	1.06		Velocity Pressure Coefficient (2.6.5.2)
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
K_d:	0.95		Wind Direction Probability Factor (Table 2-2)
q_z:	6.45	psf	Velocity Pressure at Height z
G_h:	1.00		Strength Design of Appurtenances and their Connections
K_{iz}:	1.15		Height Escalation Factor for Ice Thickness
t_{iz}:	1.72	in	Factored Thickness of Radial Glaze Ice at Height z

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Depth	h/D	Shape	C_a	A_f	Force	Force
	in	*in*				*sq ft*	*lb*	*plf*
APXVSPP18-C-A20	75.4	10.4	7.2	Flat	1.407	5.47	49.7	
APXV9TM14-ALU-120	59.7	9.7	6.1	Flat	1.362	4.04	35.5	
1900MHz 4x45W RRH	28.5	14.1	2.0	Flat	1.200	2.80	21.7	
800MHz 2x50W RRH	22.4	15.6	1.4	Flat	1.200	2.44	18.8	
TD-RRH8x20	29.5	10.1	2.9	Flat	1.218	2.08	16.3	
Pipe2STD x 11 ft	135.4	5.8	23.3	Round	1.162	5.46	41.0	3.6
Pipe2STD x 6 ft	75.4	5.8	13.0	Round	0.933	3.04	18.3	2.9
Pipe2STD x 3 ft	39.4	5.8	6.8	Round	0.795	1.59	8.2	2.5
Pipe2STD x 7 ft	87.4	5.8	15.0	Round	0.979	3.53	22.3	3.1
Pipe2STD x 13 ft	159.4	5.8	27.4	Round	1.200	6.43	49.8	3.7
L2X2X3/16 x 3.8 ft	49.0	5.4	9.0	Flat	1.467	1.85	17.5	4.3
L2X2X3/16 x 3 ft	39.4	5.4	7.3	Flat	1.409	1.49	13.5	4.1

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Ice Load on Antennas TIA-222-G

Ice Weight:	56	pcf	Ice Density
t_i:	0.75		Design Ice Thickness
Occupancy:	II		Classification of Structures (Table 2-1)
Exposure:	B		Exposure Category
V_i:	50	mph	Basic Wind Speed (Annex B)
z:	128	ft	Height above ground level to the center of the antenna
I:	1.00		Importance Factor (Table 2-3)
K_{iz}:	1.15		Height Escalation Factor for Ice Thickness
K_{zt}:	1.00		Topographic Factor (2.6.6.4)
t_{iz}:	1.72	in	Factored Thickness of Radial Glaze Ice at Height z

Platform Grating: None
Ice Load: psf

Mount & Antenna Ice Wind Loads

Appurtenance	Height	Width	Depth	Diam.	Area	Perim.	Ice Weight	
	in	*in*	*in*	*in*	*sq in*	*in*	*lb*	*plf*
APXVSPP18-C-A20	75.4	15.3	10.4	13.80	83.75	44.67	195.4	
APXV9TM14-ALU-120	59.7	16.0	9.7	14.09	85.29	44.67	155.6	
1900MHz 4x45W RRH	28.5	14.5	14.1	15.41	92.43	50.45	75.2	
800MHz 2x50W RRH	22.4	16.4	15.6	17.83	105.48	57.27	64.9	
TD-RRH8x20	29.5	22.0	10.1	19.77	115.96	57.47	98.1	
Pipe2STD x 11 ft	135.4	5.8	5.8	2.38	22.09	12.86	94.5	8.6
Pipe2STD x 6 ft	75.4	5.8	5.8	2.38	22.09	12.86	51.5	8.6
Pipe2STD x 3 ft	39.4	5.8	5.8	2.38	22.09	12.86	25.8	8.6
Pipe2STD x 7 ft	87.4	5.8	5.8	2.38	22.09	12.86	60.1	8.6
Pipe2STD x 13 ft	159.4	5.8	5.8	2.38	22.09	12.86	111.7	8.6
L2X2X3/16 x 3.8 ft	49.0	5.4	5.4	2.83	24.53	14.87	36.3	9.5
L2X2X3/16 x 3 ft	39.4	5.4	5.4	2.83	24.53	14.87	28.6	9.5

RAMAKER & ASSOCIATES, INC.

September 29, 2017

Tom Jupin
Charles Cherundolo Consulting, Inc.
1280 Rt. 46 West
Parsippany, NJ 07054

Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

SUBJECT: **STRUCTURAL ASSESSMENT**
152-FOOT SELF-SUPPORT TOWER

CARRIER: **SPRINT**

SITE: **LONG RIDGE FIRE COMPANY, INC. (CT03XC328-A)**
366 OLD LONG RIDGE ROAD
STAMFORD, FAIRFIELD COUNTY, CONNECTICUT 06903
RAMAKER & ASSOCIATES PROJECT NUMBER: 29012

RESULTS:			
	TOWER:	**81.9%**	**PASS**
	FOUNDATION:	**88.4%**	**PASS**

Dear Tom Jupin:

Ramaker & Associates, Inc. (RAMAKER) respectfully submits this structural assessment for the above mentioned site. The purpose of this report is to determine the structural integrity of the existing structure with the existing and proposed loading. Engineering recommendations regarding the analysis results are provided in the following pages.

RAMAKER developed a finite element model of the tower using tnxTower analysis software. All information contained herein is valid only for the described structure configuration and loading conditions. RAMAKER reserves the right to modify our recommendations should alterations to the tower loading occur.

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,

RAMAKER & ASSOCIATES, INC.

Ryan J. Nelson
Project Engineer

James R. Skowronski, P.E.
Supervising Engineer

STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

ANALYSIS CRITERIA

State Building Code	2016 CT State Building Code
Adopted Building Code	2012 IBC
Referenced Standard	TIA-222-G
Risk Category	II
Ultimate Design Wind Speed, V_{ult}	120 mph (3 sec. gust)
Nominal Design Wind Speed, V_{asd}	93 mph (3 sec. gust)
Design Wind Speed w/ Ice	50 mph (3 sec. gust)
Ice Thickness	3/4 inch
Exposure Category	B
Topographic Category	1
Crest Height	N/A

SUPPORTING DOCUMENTATION

- Structural analysis by Centek Engineering, job number 16034.08, dated February 28, 2017
- Structural analysis by AECOM, dated June 16, 2016
- Construction drawings by RAMAKER, project number 29012
- Site visit(s) conducted by RAMAKER
- Other pertinent data procured or assumed by RAMAKER during site due diligence activities

TOWER LOADING

RAMAKER understands that the loading to be used for this analysis will consist of the antenna equipment, mount, and cable configurations as shown in the following chart:

Elevation	Appurtenance	Mount	Coax	Owner	Status
162	(1) dbSpectra DS9A09F36D-N	(1) Pipe Mount	(2) 1-5/8 (1) 1/2	Eversource	Existing
	(1) TMA				
152	(1) 4' Dish	(1) Pipe Mount	(1) EW180	--	Existing
150	(1) 12' Omni	(1) 3' Standoff	(1) 7/8 (1) 1/2	--	Existing
	(1) 6' Omni				
	(1) Junction Box				
145	(3) Quintel QS66512-2	(3) 3' Standoff	(12) 1-5/8	AT&T	Existing
	(6) Kaelus TMA2117F00V1-1				
140	(1) 4' Dish	(1) Pipe Mount	(1) EW180	--	Existing
128	(3) RFS APXVSPP18-C-A20	(3) Sector Frame	(3) 1-5/8	Sprint	Existing
	(3) ALU RRH2x50				
	(3) ALU RRH4x45				
	(3) RFS APXVTM14-ALU-12016				**Proposed**
	(3) ALU TD-RRH8x20				
118	(3) Ericsson AIR 32	(3) Sector Frame	(12) 1-5/8 (2) 1-1/4	T-Mobile	Existing
	(3) Andrew LNX-6515DS-A1M				
	(3) RFS APX16DWV-16DWVS-E-A20				
	(3) Ericsson RRUS-11				
	(3) Ericsson RRUS-32				
113	(1) DS4F03C36D-N	(1) 3' Standoff	(2) 1-5/8	Eversource	Existing
98	(6) Andrew HBXX-6517DS-VTM	(3) Sector Frame	(3) 1-5/8	VZW	Existing
	(2) Commscope LNX-8513DS-A1M				
	(4) Commscope LNX-6514DS-A1M				
	(3) ALU RRH2x60 AWS				
	(3) ALU RRH2x60 PCS				
	(3) ALU RRH2x40-07-U				
	(3) RFS DB-T1-6Z-8AB-0Z				
78	(1) 8' Dipole	(1) 3' Standoff	(1) 7/8	--	Existing
58	(1) GPS	(1) 3' Standoff	(1) 1/2	Sprint	Existing

TOWER RESULTS

The maximum tower member stress capacities under the loading conditions previously described are as follows:

Component Type	Percent Capacity	Pass/Fail
Leg	77.3	Pass
Diagonal	76.5	Pass
Horizontal	71.8	Pass
Redundant Bracing	26.8	Pass
Bolt	81.9	Pass
Anchor Rods	78.4	Pass
RATING	**81.9**	**PASS**

All tower and foundation modifications in the AECOM report were assumed to have been satisfactorily completed. Results of the analysis show that the existing tower will be stressed to a maximum of 81.9 percent of capacity. Therefore, the existing tower will pass the TIA-222-G analysis requirements under proposed loading conditions.

DISH TWIST/SWAY RESULTS

The twist/sway results for a 60 mph service wind speed are as follows:

Elevation	Dish	Deflection (in)	Tilt (deg)	Twist (deg)
152	Andrew HP4	3.138	0.1700	0.0124
140	Andrew HP4	2.707	0.1677	0.0103

FOUNDATION RESULTS

The maximum foundation stress capacities are as follows:

Component Type	Percent Capacity	Pass/Fail
Base Foundation - Soil Interaction	88.4	Pass
Base Foundation - Structural	14.4	Pass
RATING	**88.4**	**PASS**

The foundations were analyzed utilizing the structural analysis, dated February 28, 2017, referenced above. For simplicity, the rock anchors and concrete pads were ignored. Results of the analysis show that the existing foundation will be stressed to a maximum of 88.4 percent of capacity. Therefore, the existing foundation will pass the TIA-222-G analysis requirements under proposed loading conditions.

LIMITATIONS

The recommendations contained within this report were developed using the supporting documentation as previously described. All recommendations pertain only to the proposed antenna installation activities as described in this report. RAMAKER assumes no responsibility for failures caused by factors beyond our control. These include but are not limited to the following:

- Missing, corroding, and/or deteriorating members
- Improper manufacturing and/or construction
- Improper maintenance

RAMAKER assumes no responsibility for modifications completed prior to or hereafter in which RAMAKER was not directly involved. These modifications include but are not limited to the following:

- Replacing or strengthening bracing members
- Reinforcing or extending vertical members
- Installing or removing antenna mounting gates or side arms
- Changing loading configurations

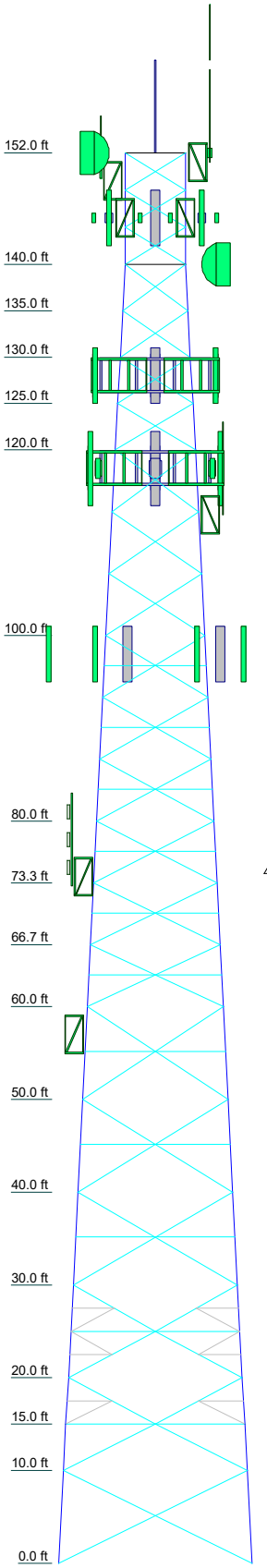
The tower owner is responsible for verifying that the existing loading on the structure is consistent with the loading applied to the structure within this report. If there is any information contrary to that contained herein, or if there are any defects arising from the original design, material, fabrication and erection deficiencies, this report should be disregarded and RAMAKER should be contacted immediately. RAMAKER is not liable for any representation, recommendation, or conclusion not expressly stated herein.

This analysis pertains only to the tower structure, and no analyses or conclusions were made regarding the antenna and equipment mounting structure(s). Analysis and certification of the antenna and equipment mounting structure(s) is performed and submitted separately.

ATTACHMENTS

- Analysis Figures
- Analysis Calculations

Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	E		D	C		ROHN 4 X-STR			B		A	ROHN 2.5 X-STR		ROHN 2.5 STD			ROHN 2 STD
Leg Grade										A572-50							
Diagonals	I	H		L3x3x5/16	L3x3x3/8	L3x3x5/16	L3x3x1/4	L2 1/2x2 1/2x5/16			L2 1/2x2 1/2x1/4	L2x2x1/4		G		F	L1 1/2x1 1/2x1/8
Diagonal Grade										A36							
Top Girts								N.A.									L2x2x1/8
Horizontals	N.A.	J	N.A.	L3x3x1/4							N.A.						
Sec. Horizontals		N.A.				L3x3x1/4			L2 1/2x2 1/2x1/4					N.A.			
Red. Horizontals	N.A.		L2x2x1/4								N.A.						
Red. Diagonals	N.A.		L2x2x1/4								N.A.						
Face Width (ft)	20.7813	19.7656	19.2578	18.75	17.7344	16.7188	15.7031	14.6875	14.0104	13.3333	12.6563	10.625	8.59375	8.08594	7.57813	7.07031	6.5625	6.52083
# Panels @ (ft)		1 @ 10		4 @ 5		3 @ 10					9 @ 6.66667			4 @ 5			3 @ 4	
Weight (lb)	16550.9	163.6	893.0	860.2	1973.1	1686.1	1381.1	1170.0	917.0	890.5	783.7	2064.4	1133.2	223.6	217.6	182.6	210.6	332.7



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2.5X-STR + 1/3 HSS3.5x0.300	F	L1 1/2x1 1/2x3/16
B	ROHN 3X-STR + 1/3 HSS4x0.25	G	L1 1/2x1 1/2x1/4
C	ROHN 4X-STR + 1/3 HSS5x0.25	H	L3 1/2x3 1/2x1/4
D	ROHN 5STD + 1/3 HSS6x0.25	I	L3 1/2x3 1/2x5/16
E	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	J	L2 1/2x2 1/2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

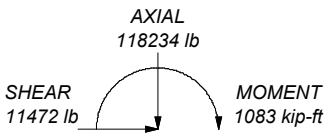
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 81.5%

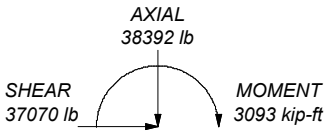
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 184655 lb
SHEAR: 23313 lb

UPLIFT: -152050 lb
SHEAR: 19947 lb



TORQUE 3 kip-ft
50.0 mph WIND - 0.7500 in ICE



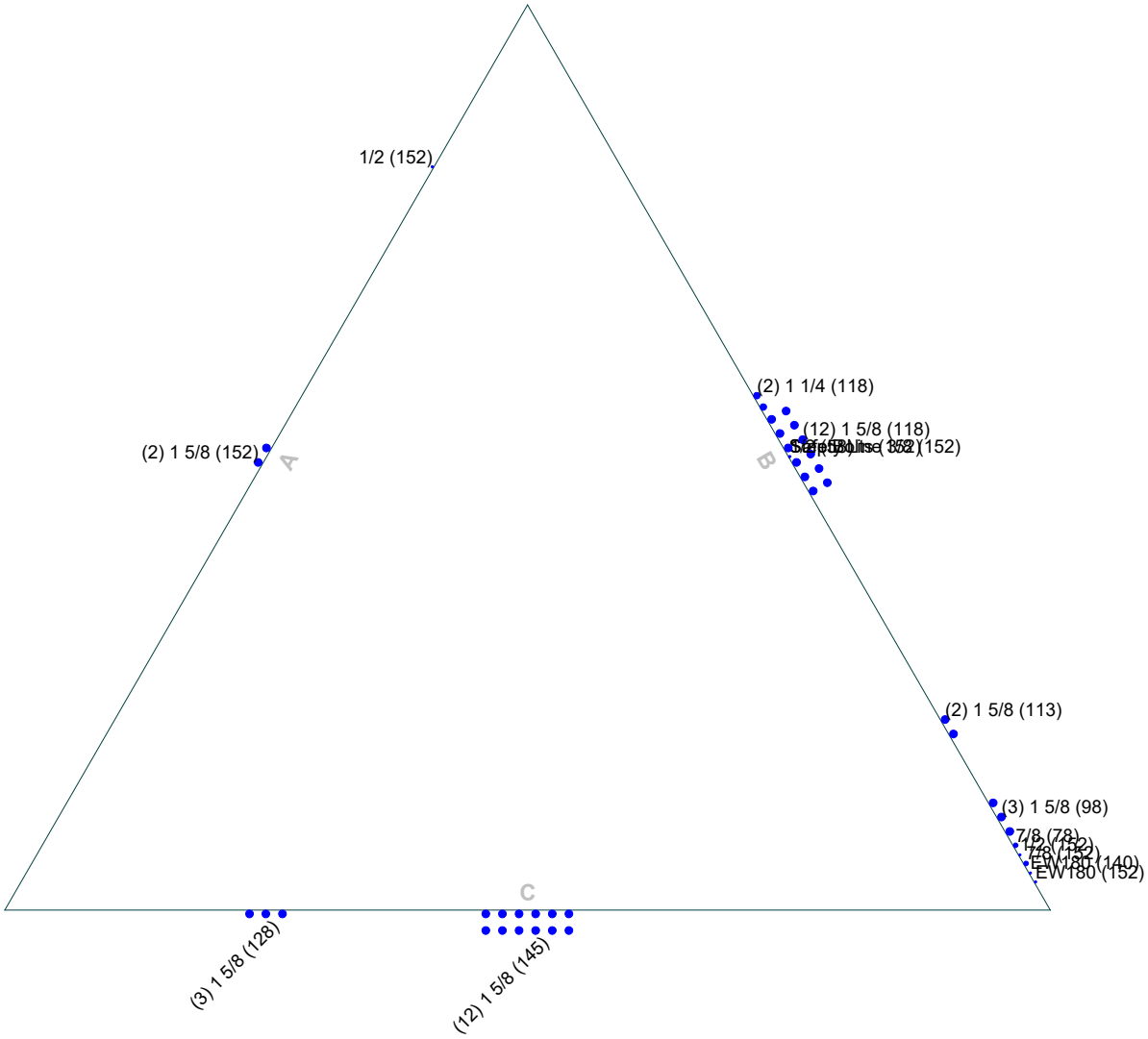
TORQUE 12 kip-ft
REACTIONS - 93.0 mph WIND

Ramaker & Associates, Inc.
855 Community Dr.
Sauk City, WI 53583
Phone: (608) 643-4100
FAX: (608) 643-7999

Job: **CT03XC328-A**			
Project: **29012**			
Client: Sprint/CCCI	Drawn by: RJN	App'd:	
Code: TIA-222-G	Date: 09/29/17	Scale: NTS	
Path: \\server1.ramaker.com\Projects\29000\29012\Structural\tnx\29012.rev3.eri		Dwg No. E-1	

Feed Line Plan

Round Flat App In Face App Out Face



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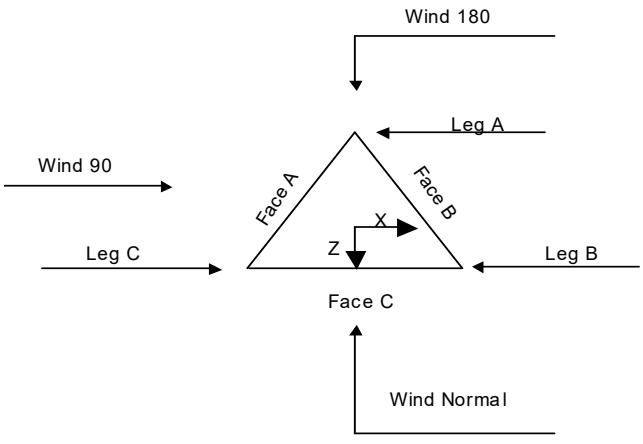
Job: ***CT03XC328-A***			
Project: ***29012***			
Client: Sprint/CCCI	Drawn by: RJN	App'd:	
Code: TIA-222-G	Date: 09/29/17	Scale: NTS	
Path: \\server1.ramaker.com\Projects\29000\29012\Structural\tnx\29012 rev3.eri		Dwg No. E-7	

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 152.00 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 6.52 ft at the top and 20.78 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 93.0 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50.0 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	152.00-140.00			6.52	1	12.00
T2	140.00-135.00			6.56	1	5.00
T3	135.00-130.00			7.07	1	5.00
T4	130.00-125.00			7.58	1	5.00
T5	125.00-120.00			8.09	1	5.00
T6	120.00-100.00			8.59	1	20.00
T7	100.00-80.00			10.63	1	20.00
T8	80.00-73.33			12.66	1	6.67
T9	73.33-66.67			13.33	1	6.67
T10	66.67-60.00			14.01	1	6.67
T11	60.00-50.00			14.69	1	10.00
T12	50.00-40.00			15.70	1	10.00
T13	40.00-30.00			16.72	1	10.00
T14	30.00-20.00			17.73	1	10.00
T15	20.00-15.00			18.75	1	5.00
T16	15.00-10.00			19.26	1	5.00
T17	10.00-0.00			19.77	1	10.00

Tower Section Geometry *(cont'd)*

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
T1	152.00-140.00	4.00	X Brace	No	Yes	0.0000	0.0000
T2	140.00-135.00	5.00	X Brace	No	Yes	0.0000	0.0000
T3	135.00-130.00	5.00	X Brace	No	No	0.0000	0.0000
T4	130.00-125.00	5.00	X Brace	No	No	0.0000	0.0000
T5	125.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
T6	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T7	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T8	80.00-73.33	6.67	X Brace	No	Yes	0.0000	0.0000
T9	73.33-66.67	6.67	X Brace	No	Yes	0.0000	0.0000
T10	66.67-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T11	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	30.00-20.00	5.00	Double K1	No	Yes	0.0000	0.0000
T15	20.00-15.00	5.00	K1 Up	No	Yes	0.0000	0.0000
T16	15.00-10.00	5.00	K Brace Down	No	Yes	0.0000	0.0000
T17	10.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 152.00-140.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 140.00-135.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 135.00-130.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 130.00-125.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)
T5 125.00-120.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/4	A36 (36 ksi)
T6 120.00-100.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T7 100.00-80.00	Arbitrary Shape	ROHN 2.5X-STR + 1/3 HSS3.5x0.300	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 80.00-73.33	Arbitrary Shape	ROHN 3X-STR + 1/3 HSS4x0.25	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 73.33-66.67	Arbitrary Shape	ROHN 3X-STR + 1/3 HSS4x0.25	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T10 66.67-60.00	Arbitrary Shape	ROHN 3X-STR + 1/3 HSS4x0.25	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T11 60.00-50.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T12 50.00-40.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T13 40.00-30.00	Arbitrary Shape	ROHN 4X-STR + 1/3 HSS5x0.25	A572-50 (50 ksi)	Equal Angle	L3x3x3/8	A36 (36 ksi)
T14 30.00-20.00	Arbitrary Shape	ROHN 4X-STR + 1/3 HSS5x0.25	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T15 20.00-15.00	Arbitrary Shape	ROHN 5STD + 1/3 HSS6x0.25	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T16 15.00-10.00	Arbitrary Shape	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T17 10.00-0.00	Arbitrary Shape	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 152.00-140.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 140.00-135.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Equal Angle		A36 (36 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

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T14 30.00-20.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T15 20.00-15.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T16 15.00-10.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 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
T7 100.00-80.00	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T8 80.00-73.33	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 73.33-66.67	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T10 66.67-60.00	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 60.00-50.00	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T12 50.00-40.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T13 40.00-30.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T14 30.00-20.00	A36 (36 ksi)	Horizontal (1)	Equal Angle	L2x2x1/4	1
		Diagonal (1)	Equal Angle	L2x2x1/4	1
T15 20.00-15.00	A36 (36 ksi)	Horizontal (1)	Equal Angle	L2x2x1/4	1
		Diagonal (1)	Equal Angle	L2x2x1/4	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	Double Angle Stitch Bolt Spacing Redundants in
T1 152.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T2 140.00-135.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 135.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 130.00-125.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 125.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 80.00-73.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 73.33-66.67	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 66.67-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T12 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T13 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T14 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T15 20.00-15.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T16 15.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T17 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

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 152.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 140.00-135.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 135.00-130.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 130.00-125.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 125.00-120.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 120.00-100.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 100.00-80.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	0.5 0.5	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T8 80.00-73.33	Yes	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T9 73.33-66.67	Yes	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T10 66.67-60.00	Yes	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T11 60.00-50.00	Yes	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T12 50.00-40.00	Yes	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T13 40.00-30.00	Yes	No	1	1	1	1	1	1	1	1	1	0.5	1	1	1
				1	1	1	1	1	1	1	1	0.5	1	1	1
T14 30.00-20.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T15 20.00-15.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T16 15.00-10.00	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1	1	1	1	1	1
T17 10.00-0.00	Yes	No	1	1	1	1	1	1	1	1	1	1	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	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 152.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-135.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 135.00-130.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 130.00-125.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 125.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 80.00-73.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 73.33-66.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 66.67-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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
T13 40.00-30.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 30.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.00-15.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 15.00-10.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 10.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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 152.00-140.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T2 140.00-135.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T3 135.00-130.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T4 130.00-125.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T5 125.00-120.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T6 120.00-100.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T7 100.00-80.00	Flange	0.7500 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T8 80.00-73.33	Flange	0.8750 A325N	4	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T9 73.33-66.67	Flange	0.8750 A325N	0	0.5000 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T10 66.67-60.00	Flange	0.8750 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T11 60.00-50.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T12 50.00-40.00	Flange	0.8750 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T13 40.00-30.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
T14 30.00-20.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2	0.5000 A325N	0
T15 20.00-15.00	Flange	1.0000 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0
T16 15.00-10.00	Flange	1.0000 A325N	0	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.5000 A325N	0
T17 10.00-0.00	Flange	1.0000 A325N	0	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	0

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
**********												
Safety Line 3/8 (152)	B	No	Ar (CaAa)	152.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
Step Bolts (152)	B	No	Ar (CaAa)	152.00 - 0.00	0.0000	0	1	1	0.2920	0.2920		0.49
**********												
1 5/8 (152)	A	No	Ar (CaAa)	152.00 - 0.00	0.0000	0	2	2	1.9800	1.9800		1.04
1/2 (152)	A	No	Ar (CaAa)	152.00 - 0.00	0.0000	0.32	1	1	0.5800	0.5800		0.25
**********												
EW180 (152)	B	No	Ar (CaAa)	152.00 - 0.00	0.0000	0.47	1	1	0.5899	0.5899		0.15
**********												
1/2 (152)	B	No	Ar (CaAa)	152.00 - 0.00	0.0000	0.44	1	1	0.5800	0.5800		0.25
7/8 (152)	B	No	Ar (CaAa)	152.00 - 0.00	0.0000	0.45	1	1	1.1100	1.1100		0.54
**********												
1 5/8 (145)	C	No	Ar (CaAa)	145.00 - 0.00	0.0000	0	12	6	1.9800	1.9800		1.04
**********												
EW180 (140)	B	No	Ar (CaAa)	140.00 - 0.00	0.0000	0.46	1	1	0.5899	0.5899		0.15
**********												
1 5/8 (128)	C	No	Ar (CaAa)	128.00 - 0.00	0.0000	0.25	3	3	1.9800	1.9800		1.04
**********												
1 5/8 (118)	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	0	12	6	1.9800	1.9800		1.04
1 1/4 (118)	B	No	Ar (CaAa)	118.00 - 0.00	0.0000	-0.06	2	2	1.5500	1.5500		0.66
**********												
1 5/8 (113)	B	No	Ar (CaAa)	113.00 - 0.00	0.0000	0.3	2	2	1.9800	1.9800		1.04
**********												
1 5/8 (98)	B	No	Ar (CaAa)	98.00 - 0.00	0.0000	0.4	3	3	1.9800	1.9800		1.04
**********												
7/8 (78)	B	No	Ar (CaAa)	78.00 - 0.00	0.0000	0.43	1	1	1.1100	1.1100		0.54
**********												
1/2 (58)	B	No	Ar (CaAa)	58.00 - 0.00	0.0000	0	1	1	0.5800	0.5800		0.25
**********												

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
**********							

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	152.00-140.00	A	0.000	0.000	5.448	0.000	27.96
		B	0.000	0.000	3.536	0.000	19.76
		C	0.000	0.000	11.880	0.000	62.40
T2	140.00-135.00	A	0.000	0.000	2.270	0.000	11.65
		B	0.000	0.000	1.768	0.000	8.98
		C	0.000	0.000	11.880	0.000	62.40
T3	135.00-130.00	A	0.000	0.000	2.270	0.000	11.65
		B	0.000	0.000	1.768	0.000	8.98
		C	0.000	0.000	11.880	0.000	62.40
T4	130.00-125.00	A	0.000	0.000	2.270	0.000	11.65
		B	0.000	0.000	1.768	0.000	8.98
		C	0.000	0.000	13.662	0.000	71.76
T5	125.00-120.00	A	0.000	0.000	2.270	0.000	11.65
		B	0.000	0.000	1.768	0.000	8.98
		C	0.000	0.000	14.850	0.000	78.00
T6	120.00-100.00	A	0.000	0.000	9.080	0.000	46.60
		B	0.000	0.000	60.569	0.000	311.38
		C	0.000	0.000	59.400	0.000	312.00
T7	100.00-80.00	A	0.000	0.000	9.080	0.000	46.60
		B	0.000	0.000	79.406	0.000	409.70
		C	0.000	0.000	59.400	0.000	312.00
T8	80.00-73.33	A	0.000	0.000	3.027	0.000	15.53
		B	0.000	0.000	27.383	0.000	141.17
		C	0.000	0.000	19.800	0.000	104.00
T9	73.33-66.67	A	0.000	0.000	3.027	0.000	15.53
		B	0.000	0.000	27.604	0.000	142.25
		C	0.000	0.000	19.800	0.000	104.00
T10	66.67-60.00	A	0.000	0.000	3.027	0.000	15.53
		B	0.000	0.000	27.605	0.000	142.25
		C	0.000	0.000	19.800	0.000	104.00
T11	60.00-50.00	A	0.000	0.000	4.540	0.000	23.30
		B	0.000	0.000	41.871	0.000	215.37
		C	0.000	0.000	29.700	0.000	156.00
T12	50.00-40.00	A	0.000	0.000	4.540	0.000	23.30
		B	0.000	0.000	41.987	0.000	215.87
		C	0.000	0.000	29.700	0.000	156.00
T13	40.00-30.00	A	0.000	0.000	4.540	0.000	23.30
		B	0.000	0.000	41.987	0.000	215.87
		C	0.000	0.000	29.700	0.000	156.00
T14	30.00-20.00	A	0.000	0.000	4.540	0.000	23.30
		B	0.000	0.000	41.987	0.000	215.87
		C	0.000	0.000	29.700	0.000	156.00
T15	20.00-15.00	A	0.000	0.000	2.270	0.000	11.65
		B	0.000	0.000	20.993	0.000	107.94
		C	0.000	0.000	14.850	0.000	78.00
T16	15.00-10.00	A	0.000	0.000	2.270	0.000	11.65
		B	0.000	0.000	20.993	0.000	107.94
		C	0.000	0.000	14.850	0.000	78.00
T17	10.00-0.00	A	0.000	0.000	4.540	0.000	23.30
		B	0.000	0.000	41.987	0.000	215.87
		C	0.000	0.000	29.700	0.000	156.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	152.00-140.00	A	1.741	0.000	0.000	21.207	0.000	268.66
		B		0.000	0.000	24.422	0.000	317.02
		C		0.000	0.000	16.850	0.000	440.86
T2	140.00-135.00	A	1.730	0.000	0.000	8.808	0.000	111.18
		B		0.000	0.000	12.149	0.000	156.07
		C		0.000	0.000	16.834	0.000	439.55
T3	135.00-130.00	A	1.724	0.000	0.000	8.791	0.000	110.71
		B		0.000	0.000	12.111	0.000	155.12
		C		0.000	0.000	16.823	0.000	438.75
T4	130.00-125.00	A	1.717	0.000	0.000	8.773	0.000	110.23
		B		0.000	0.000	12.071	0.000	154.15
		C		0.000	0.000	22.210	0.000	513.38
T5	125.00-120.00	A	1.710	0.000	0.000	8.754	0.000	109.73
		B		0.000	0.000	12.030	0.000	153.14
		C		0.000	0.000	25.785	0.000	562.40
T6	120.00-100.00	A	1.692	0.000	0.000	34.819	0.000	433.58
		B		0.000	0.000	146.752	0.000	2622.74
		C		0.000	0.000	102.904	0.000	2235.76
T7	100.00-80.00	A	1.658	0.000	0.000	34.455	0.000	423.91
		B		0.000	0.000	195.783	0.000	3331.31
		C		0.000	0.000	102.469	0.000	2210.44
T8	80.00-73.33	A	1.632	0.000	0.000	11.390	0.000	138.80
		B		0.000	0.000	68.044	0.000	1140.01
		C		0.000	0.000	34.043	0.000	730.22
T9	73.33-66.67	A	1.617	0.000	0.000	11.337	0.000	137.40
		B		0.000	0.000	68.650	0.000	1143.29
		C		0.000	0.000	33.979	0.000	726.53
T10	66.67-60.00	A	1.601	0.000	0.000	11.279	0.000	135.89
		B		0.000	0.000	68.357	0.000	1133.82
		C		0.000	0.000	33.910	0.000	722.52
T11	60.00-50.00	A	1.579	0.000	0.000	16.797	0.000	200.70
		B		0.000	0.000	104.912	0.000	1716.37
		C		0.000	0.000	50.720	0.000	1075.43
T12	50.00-40.00	A	1.547	0.000	0.000	16.627	0.000	196.36
		B		0.000	0.000	104.742	0.000	1696.50
		C		0.000	0.000	50.518	0.000	1063.79
T13	40.00-30.00	A	1.509	0.000	0.000	16.420	0.000	191.11
		B		0.000	0.000	103.618	0.000	1661.76
		C		0.000	0.000	50.271	0.000	1049.60
T14	30.00-20.00	A	1.459	0.000	0.000	16.150	0.000	184.39
		B		0.000	0.000	102.157	0.000	1617.23
		C		0.000	0.000	49.950	0.000	1031.26
T15	20.00-15.00	A	1.408	0.000	0.000	7.937	0.000	88.82
		B		0.000	0.000	50.331	0.000	786.20
		C		0.000	0.000	24.811	0.000	506.31
T16	15.00-10.00	A	1.361	0.000	0.000	7.812	0.000	85.80
		B		0.000	0.000	49.651	0.000	766.11
		C		0.000	0.000	24.662	0.000	497.87
T17	10.00-0.00	A	1.242	0.000	0.000	14.981	0.000	156.61
		B		0.000	0.000	95.822	0.000	1432.31
		C		0.000	0.000	48.561	0.000	953.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	152.00-140.00	0.1189	1.9176	1.4872	0.6984
T2	140.00-135.00	0.2079	3.3592	1.5414	1.6327
T3	135.00-130.00	0.2368	3.7811	1.7633	1.8617
T4	130.00-125.00	-0.2174	4.2281	1.3904	2.1646
T5	125.00-120.00	-0.5117	4.5894	1.1831	2.3945
T6	120.00-100.00	2.4465	1.9881	2.4420	1.3088
T7	100.00-80.00	3.7133	2.2422	3.3403	1.5594
T8	80.00-73.33	4.2012	2.5056	3.8997	1.8312
T9	73.33-66.67	4.4271	2.6345	4.1552	1.9580
T10	66.67-60.00	4.6036	2.7407	4.3195	2.0411
T11	60.00-50.00	4.9469	2.8840	4.7637	2.0867
T12	50.00-40.00	5.1911	3.0121	5.0345	2.1770
T13	40.00-30.00	5.4318	3.1531	5.3315	2.3240
T14	30.00-20.00	5.2981	3.0766	5.1106	2.2511
T15	20.00-15.00	5.5342	3.2144	5.4283	2.4172
T16	15.00-10.00	5.3973	3.1354	5.4198	2.4378
T17	10.00-0.00	6.0917	3.5396	6.1312	2.8317

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	Safety Line 3/8	140.00 - 152.00	0.6000	0.6000
T1	3	Step Bolts	140.00 - 152.00	0.6000	0.6000
T1	5	1 5/8	140.00 - 152.00	0.6000	0.6000
T1	6	1/2	140.00 - 152.00	0.6000	0.6000
T1	8	EW180	140.00 - 152.00	0.6000	0.6000
T1	10	1/2	140.00 - 152.00	0.6000	0.6000
T1	11	7/8	140.00 - 152.00	0.6000	0.6000
T1	13	1 5/8	140.00 - 145.00	0.6000	0.6000
T2	2	Safety Line 3/8	135.00 - 140.00	0.6000	0.5929
T2	3	Step Bolts	135.00 - 140.00	0.6000	0.5929
T2	5	1 5/8	135.00 - 140.00	0.6000	0.5929
T2	6	1/2	135.00 - 140.00	0.6000	0.5929
T2	8	EW180	135.00 - 140.00	0.6000	0.5929
T2	10	1/2	135.00 - 140.00	0.6000	0.5929
T2	11	7/8	135.00 - 140.00	0.6000	0.5929
T2	13	1 5/8	135.00 - 140.00	0.6000	0.5929
T2	15	EW180	135.00 - 140.00	0.6000	0.5929
T3	2	Safety Line 3/8	130.00 - 135.00	0.6000	0.6000
T3	3	Step Bolts	130.00 - 135.00	0.6000	0.6000
T3	5	1 5/8	130.00 - 135.00	0.6000	0.6000
T3	6	1/2	130.00 - 135.00	0.6000	0.6000
T3	8	EW180	130.00 - 135.00	0.6000	0.6000
T3	10	1/2	130.00 - 135.00	0.6000	0.6000
T3	11	7/8	130.00 - 135.00	0.6000	0.6000
T3	13	1 5/8	130.00 - 135.00	0.6000	0.6000
T3	15	EW180	130.00 - 135.00	0.6000	0.6000
T4	2	Safety Line 3/8	125.00 - 130.00	0.6000	0.6000
T4	3	Step Bolts	125.00 - 130.00	0.6000	0.6000
T4	5	1 5/8	125.00 - 130.00	0.6000	0.6000
T4	6	1/2	125.00 - 130.00	0.6000	0.6000
T4	8	EW180	125.00 - 130.00	0.6000	0.6000
T4	10	1/2	125.00 - 130.00	0.6000	0.6000
T4	11	7/8	125.00 - 130.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	13	1 5/8	125.00 - 130.00	0.6000	0.6000
T4	15	EW180	125.00 - 130.00	0.6000	0.6000
T4	17	1 5/8	125.00 - 128.00	0.6000	0.6000
T5	2	Safety Line 3/8	120.00 - 125.00	0.6000	0.6000
T5	3	Step Bolts	120.00 - 125.00	0.6000	0.6000
T5	5	1 5/8	120.00 - 125.00	0.6000	0.6000
T5	6	1/2	120.00 - 125.00	0.6000	0.6000
T5	8	EW180	120.00 - 125.00	0.6000	0.6000
T5	10	1/2	120.00 - 125.00	0.6000	0.6000
T5	11	7/8	120.00 - 125.00	0.6000	0.6000
T5	13	1 5/8	120.00 - 125.00	0.6000	0.6000
T5	15	EW180	120.00 - 125.00	0.6000	0.6000
T5	17	1 5/8	120.00 - 125.00	0.6000	0.6000
T6	2	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T6	3	Step Bolts	100.00 - 120.00	0.6000	0.6000
T6	5	1 5/8	100.00 - 120.00	0.6000	0.6000
T6	6	1/2	100.00 - 120.00	0.6000	0.6000
T6	8	EW180	100.00 - 120.00	0.6000	0.6000
T6	10	1/2	100.00 - 120.00	0.6000	0.6000
T6	11	7/8	100.00 - 120.00	0.6000	0.6000
T6	13	1 5/8	100.00 - 120.00	0.6000	0.6000
T6	15	EW180	100.00 - 120.00	0.6000	0.6000
T6	17	1 5/8	100.00 - 120.00	0.6000	0.6000
T6	19	1 5/8	100.00 - 118.00	0.6000	0.6000
T6	20	1 1/4	100.00 - 118.00	0.6000	0.6000
T6	22	1 5/8	100.00 - 113.00	0.6000	0.6000
T7	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T7	3	Step Bolts	80.00 - 100.00	0.6000	0.6000
T7	5	1 5/8	80.00 - 100.00	0.6000	0.6000
T7	6	1/2	80.00 - 100.00	0.6000	0.6000
T7	8	EW180	80.00 - 100.00	0.6000	0.6000
T7	10	1/2	80.00 - 100.00	0.6000	0.6000
T7	11	7/8	80.00 - 100.00	0.6000	0.6000
T7	13	1 5/8	80.00 - 100.00	0.6000	0.6000
T7	15	EW180	80.00 - 100.00	0.6000	0.6000
T7	17	1 5/8	80.00 - 100.00	0.6000	0.6000
T7	19	1 5/8	80.00 - 100.00	0.6000	0.6000
T7	20	1 1/4	80.00 - 100.00	0.6000	0.6000
T7	22	1 5/8	80.00 - 100.00	0.6000	0.6000
T7	24	1 5/8	80.00 - 98.00	0.6000	0.6000
T8	2	Safety Line 3/8	73.33 - 80.00	0.6000	0.6000
T8	3	Step Bolts	73.33 - 80.00	0.6000	0.6000
T8	5	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	6	1/2	73.33 - 80.00	0.6000	0.6000
T8	8	EW180	73.33 - 80.00	0.6000	0.6000
T8	10	1/2	73.33 - 80.00	0.6000	0.6000
T8	11	7/8	73.33 - 80.00	0.6000	0.6000
T8	13	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	15	EW180	73.33 - 80.00	0.6000	0.6000
T8	17	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	19	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	20	1 1/4	73.33 - 80.00	0.6000	0.6000
T8	22	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	24	1 5/8	73.33 - 80.00	0.6000	0.6000
T8	26	7/8	73.33 - 78.00	0.6000	0.6000
T9	2	Safety Line 3/8	66.67 - 73.33	0.6000	0.6000
T9	3	Step Bolts	66.67 - 73.33	0.6000	0.6000
T9	5	1 5/8	66.67 - 73.33	0.6000	0.6000
T9	6	1/2	66.67 - 73.33	0.6000	0.6000
T9	8	EW180	66.67 - 73.33	0.6000	0.6000
T9	10	1/2	66.67 - 73.33	0.6000	0.6000
T9	11	7/8	66.67 - 73.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	13	1 5/8	66.67 - 73.33	0.6000	0.6000
T9	15	EW180	66.67 - 73.33	0.6000	0.6000
T9	17	1 5/8	66.67 - 73.33	0.6000	0.6000
T9	19	1 5/8	66.67 - 73.33	0.6000	0.6000
T9	20	1 1/4	66.67 - 73.33	0.6000	0.6000
T9	22	1 5/8	66.67 - 73.33	0.6000	0.6000
T9	24	1 5/8	66.67 - 73.33	0.6000	0.6000
T9	26	7/8	66.67 - 73.33	0.6000	0.6000
T10	2	Safety Line 3/8	60.00 - 66.67	0.6000	0.6000
T10	3	Step Bolts	60.00 - 66.67	0.6000	0.6000
T10	5	1 5/8	60.00 - 66.67	0.6000	0.6000
T10	6	1/2	60.00 - 66.67	0.6000	0.6000
T10	8	EW180	60.00 - 66.67	0.6000	0.6000
T10	10	1/2	60.00 - 66.67	0.6000	0.6000
T10	11	7/8	60.00 - 66.67	0.6000	0.6000
T10	13	1 5/8	60.00 - 66.67	0.6000	0.6000
T10	15	EW180	60.00 - 66.67	0.6000	0.6000
T10	17	1 5/8	60.00 - 66.67	0.6000	0.6000
T10	19	1 5/8	60.00 - 66.67	0.6000	0.6000
T10	20	1 1/4	60.00 - 66.67	0.6000	0.6000
T10	22	1 5/8	60.00 - 66.67	0.6000	0.6000
T10	24	1 5/8	60.00 - 66.67	0.6000	0.6000
T10	26	7/8	60.00 - 66.67	0.6000	0.6000
T11	2	Safety Line 3/8	50.00 - 60.00	0.6000	0.6000
T11	3	Step Bolts	50.00 - 60.00	0.6000	0.6000
T11	5	1 5/8	50.00 - 60.00	0.6000	0.6000
T11	6	1/2	50.00 - 60.00	0.6000	0.6000
T11	8	EW180	50.00 - 60.00	0.6000	0.6000
T11	10	1/2	50.00 - 60.00	0.6000	0.6000
T11	11	7/8	50.00 - 60.00	0.6000	0.6000
T11	13	1 5/8	50.00 - 60.00	0.6000	0.6000
T11	15	EW180	50.00 - 60.00	0.6000	0.6000
T11	17	1 5/8	50.00 - 60.00	0.6000	0.6000
T11	19	1 5/8	50.00 - 60.00	0.6000	0.6000
T11	20	1 1/4	50.00 - 60.00	0.6000	0.6000
T11	22	1 5/8	50.00 - 60.00	0.6000	0.6000
T11	24	1 5/8	50.00 - 60.00	0.6000	0.6000
T11	26	7/8	50.00 - 60.00	0.6000	0.6000
T11	28	1/2	50.00 - 58.00	0.6000	0.6000
T12	2	Safety Line 3/8	40.00 - 50.00	0.6000	0.6000
T12	3	Step Bolts	40.00 - 50.00	0.6000	0.6000
T12	5	1 5/8	40.00 - 50.00	0.6000	0.6000
T12	6	1/2	40.00 - 50.00	0.6000	0.6000
T12	8	EW180	40.00 - 50.00	0.6000	0.6000
T12	10	1/2	40.00 - 50.00	0.6000	0.6000
T12	11	7/8	40.00 - 50.00	0.6000	0.6000
T12	13	1 5/8	40.00 - 50.00	0.6000	0.6000
T12	15	EW180	40.00 - 50.00	0.6000	0.6000
T12	17	1 5/8	40.00 - 50.00	0.6000	0.6000
T12	19	1 5/8	40.00 - 50.00	0.6000	0.6000
T12	20	1 1/4	40.00 - 50.00	0.6000	0.6000
T12	22	1 5/8	40.00 - 50.00	0.6000	0.6000
T12	24	1 5/8	40.00 - 50.00	0.6000	0.6000
T12	26	7/8	40.00 - 50.00	0.6000	0.6000
T12	28	1/2	40.00 - 50.00	0.6000	0.6000
T13	2	Safety Line 3/8	30.00 - 40.00	0.6000	0.6000
T13	3	Step Bolts	30.00 - 40.00	0.6000	0.6000
T13	5	1 5/8	30.00 - 40.00	0.6000	0.6000
T13	6	1/2	30.00 - 40.00	0.6000	0.6000
T13	8	EW180	30.00 - 40.00	0.6000	0.6000
T13	10	1/2	30.00 - 40.00	0.6000	0.6000
T13	11	7/8	30.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	13	1 5/8	30.00 - 40.00	0.6000	0.6000
T13	15	EW180	30.00 - 40.00	0.6000	0.6000
T13	17	1 5/8	30.00 - 40.00	0.6000	0.6000
T13	19	1 5/8	30.00 - 40.00	0.6000	0.6000
T13	20	1 1/4	30.00 - 40.00	0.6000	0.6000
T13	22	1 5/8	30.00 - 40.00	0.6000	0.6000
T13	24	1 5/8	30.00 - 40.00	0.6000	0.6000
T13	26	7/8	30.00 - 40.00	0.6000	0.6000
T13	28	1/2	30.00 - 40.00	0.6000	0.6000
T14	2	Safety Line 3/8	20.00 - 30.00	0.6000	0.6000
T14	3	Step Bolts	20.00 - 30.00	0.6000	0.6000
T14	5	1 5/8	20.00 - 30.00	0.6000	0.6000
T14	6	1/2	20.00 - 30.00	0.6000	0.6000
T14	8	EW180	20.00 - 30.00	0.6000	0.6000
T14	10	1/2	20.00 - 30.00	0.6000	0.6000
T14	11	7/8	20.00 - 30.00	0.6000	0.6000
T14	13	1 5/8	20.00 - 30.00	0.6000	0.6000
T14	15	EW180	20.00 - 30.00	0.6000	0.6000
T14	17	1 5/8	20.00 - 30.00	0.6000	0.6000
T14	19	1 5/8	20.00 - 30.00	0.6000	0.6000
T14	20	1 1/4	20.00 - 30.00	0.6000	0.6000
T14	22	1 5/8	20.00 - 30.00	0.6000	0.6000
T14	24	1 5/8	20.00 - 30.00	0.6000	0.6000
T14	26	7/8	20.00 - 30.00	0.6000	0.6000
T14	28	1/2	20.00 - 30.00	0.6000	0.6000
T15	2	Safety Line 3/8	15.00 - 20.00	0.6000	0.6000
T15	3	Step Bolts	15.00 - 20.00	0.6000	0.6000
T15	5	1 5/8	15.00 - 20.00	0.6000	0.6000
T15	6	1/2	15.00 - 20.00	0.6000	0.6000
T15	8	EW180	15.00 - 20.00	0.6000	0.6000
T15	10	1/2	15.00 - 20.00	0.6000	0.6000
T15	11	7/8	15.00 - 20.00	0.6000	0.6000
T15	13	1 5/8	15.00 - 20.00	0.6000	0.6000
T15	15	EW180	15.00 - 20.00	0.6000	0.6000
T15	17	1 5/8	15.00 - 20.00	0.6000	0.6000
T15	19	1 5/8	15.00 - 20.00	0.6000	0.6000
T15	20	1 1/4	15.00 - 20.00	0.6000	0.6000
T15	22	1 5/8	15.00 - 20.00	0.6000	0.6000
T15	24	1 5/8	15.00 - 20.00	0.6000	0.6000
T15	26	7/8	15.00 - 20.00	0.6000	0.6000
T15	28	1/2	15.00 - 20.00	0.6000	0.6000
T16	2	Safety Line 3/8	10.00 - 15.00	0.6000	0.6000
T16	3	Step Bolts	10.00 - 15.00	0.6000	0.6000
T16	5	1 5/8	10.00 - 15.00	0.6000	0.6000
T16	6	1/2	10.00 - 15.00	0.6000	0.6000
T16	8	EW180	10.00 - 15.00	0.6000	0.6000
T16	10	1/2	10.00 - 15.00	0.6000	0.6000
T16	11	7/8	10.00 - 15.00	0.6000	0.6000
T16	13	1 5/8	10.00 - 15.00	0.6000	0.6000
T16	15	EW180	10.00 - 15.00	0.6000	0.6000
T16	17	1 5/8	10.00 - 15.00	0.6000	0.6000
T16	19	1 5/8	10.00 - 15.00	0.6000	0.6000
T16	20	1 1/4	10.00 - 15.00	0.6000	0.6000
T16	22	1 5/8	10.00 - 15.00	0.6000	0.6000
T16	24	1 5/8	10.00 - 15.00	0.6000	0.6000
T16	26	7/8	10.00 - 15.00	0.6000	0.6000
T16	28	1/2	10.00 - 15.00	0.6000	0.6000
T17	2	Safety Line 3/8	0.00 - 10.00	0.6000	0.6000
T17	3	Step Bolts	0.00 - 10.00	0.6000	0.6000
T17	5	1 5/8	0.00 - 10.00	0.6000	0.6000
T17	6	1/2	0.00 - 10.00	0.6000	0.6000
T17	8	EW180	0.00 - 10.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	10	1/2	0.00 - 10.00	0.6000	0.6000
T17	11	7/8	0.00 - 10.00	0.6000	0.6000
T17	13	1 5/8	0.00 - 10.00	0.6000	0.6000
T17	15	EW180	0.00 - 10.00	0.6000	0.6000
T17	17	1 5/8	0.00 - 10.00	0.6000	0.6000
T17	19	1 5/8	0.00 - 10.00	0.6000	0.6000
T17	20	1 1/4	0.00 - 10.00	0.6000	0.6000
T17	22	1 5/8	0.00 - 10.00	0.6000	0.6000
T17	24	1 5/8	0.00 - 10.00	0.6000	0.6000
T17	26	7/8	0.00 - 10.00	0.6000	0.6000
T17	28	1/2	0.00 - 10.00	0.6000	0.6000

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
**********									
DS9A09F36D-N	B	From Leg	3.00	0.0000	162.00	No Ice	1.67	1.67	28.00
(Eversource)			0.00			1/2" Ice	2.28	2.28	40.53
			3.00			1" Ice	2.69	2.69	57.54
12'x2" Pipe Mount	B	From Leg	3.00	0.0000	162.00	No Ice	2.86	2.86	40.00
(Eversource)			0.00			1/2" Ice	4.08	4.08	61.40
			-6.00			1" Ice	5.33	5.33	90.53
TMA	B	From Leg	3.00	0.0000	162.00	No Ice	1.20	0.60	5.00
(Eversource)			0.00			1/2" Ice	1.34	0.70	15.34
			-10.00			1" Ice	1.48	0.81	27.81
Side Arm Mount [SO 203-1]	B	From Leg	1.50	0.0000	162.00	No Ice	2.96	3.36	125.00
(Eversource)			0.00			1/2" Ice	4.10	4.68	153.55
			-11.00			1" Ice	5.24	6.00	182.10
**********									
4'x4" Pipe Mount	C	From Leg	0.50	0.0000	152.00	No Ice	1.22	1.22	44.00
			0.00			1/2" Ice	1.58	1.58	56.99
			0.00			1" Ice	1.84	1.84	73.03
**********									
12' Omni	A	From Leg	3.00	0.0000	150.00	No Ice	3.00	3.00	35.00
			0.00			1/2" Ice	4.23	4.23	57.30
			7.00			1" Ice	5.47	5.47	87.34
Side Arm Mount [SO 601-1]	A	From Leg	1.50	0.0000	150.00	No Ice	1.22	6.30	158.70
			0.00			1/2" Ice	1.85	8.61	196.52
			0.00			1" Ice	2.48	10.92	234.34
6' Omni	C	From Leg	3.00	0.0000	150.00	No Ice	1.69	1.69	37.30
			0.00			1/2" Ice	2.36	2.36	53.11
			3.00			1" Ice	2.87	2.87	73.84
18"x6" Box	C	From Leg	3.00	0.0000	150.00	No Ice	0.92	0.64	20.00
			0.00			1/2" Ice	1.05	0.77	27.55
			0.00			1" Ice	1.19	0.90	37.11
4'x2" Pipe Mount	C	From Leg	3.00	0.0000	150.00	No Ice	0.87	0.87	14.64
			0.00			1/2" Ice	1.11	1.11	21.95
			0.00			1" Ice	1.36	1.36	32.11
10'x2" Pipe Mount	C	From Leg	0.00	0.0000	150.00	No Ice	2.38	2.38	36.50

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
			0.00			1/2" Ice	3.41	3.41	62.84
			0.00			1" Ice	4.47	4.47	91.81
Side Arm Mount [SO 601-1]	C	From Leg	1.50	0.0000	150.00	No Ice	1.22	6.30	158.70
			0.00			1/2" Ice	1.85	8.61	196.52
			-1.00			1" Ice	2.48	10.92	234.34
**********									
QS66512-2 w/Mount Pipe	A	From Leg	2.00	0.0000	145.00	No Ice	8.13	8.22	132.90
(ATT)			0.00			1/2" Ice	8.59	9.19	205.99
			0.00			1" Ice	9.05	10.02	287.01
QS66512-2 w/Mount Pipe	B	From Leg	2.00	0.0000	145.00	No Ice	8.13	8.22	132.90
(ATT)			0.00			1/2" Ice	8.59	9.19	205.99
			0.00			1" Ice	9.05	10.02	287.01
QS66512-2 w/Mount Pipe	C	From Leg	2.00	0.0000	145.00	No Ice	8.13	8.22	132.90
(ATT)			0.00			1/2" Ice	8.59	9.19	205.99
			0.00			1" Ice	9.05	10.02	287.01
(2) TMA2117F00V1-1	A	From Leg	1.00	0.0000	145.00	No Ice	0.97	0.46	26.00
(ATT)			0.00			1/2" Ice	1.09	0.55	33.91
			0.00			1" Ice	1.22	0.66	43.73
(2) TMA2117F00V1-1	B	From Leg	1.00	0.0000	145.00	No Ice	0.97	0.46	26.00
(ATT)			0.00			1/2" Ice	1.09	0.55	33.91
			0.00			1" Ice	1.22	0.66	43.73
(2) TMA2117F00V1-1	C	From Leg	1.00	0.0000	145.00	No Ice	0.97	0.46	26.00
(ATT)			0.00			1/2" Ice	1.09	0.55	33.91
			0.00			1" Ice	1.22	0.66	43.73
Side Arm Mount [SO 202-1]	A	From Leg	0.00	0.0000	145.00	No Ice	2.96	2.53	110.00
(ATT)			0.00			1/2" Ice	4.10	3.51	133.55
			0.00			1" Ice	5.24	4.49	157.10
Side Arm Mount [SO 202-1]	B	From Leg	0.00	0.0000	145.00	No Ice	2.96	2.53	110.00
(ATT)			0.00			1/2" Ice	4.10	3.51	133.55
			0.00			1" Ice	5.24	4.49	157.10
Side Arm Mount [SO 202-1]	C	From Leg	0.00	0.0000	145.00	No Ice	2.96	2.53	110.00
(ATT)			0.00			1/2" Ice	4.10	3.51	133.55
			0.00			1" Ice	5.24	4.49	157.10
**********									
4'x4" Pipe Mount	B	From Leg	0.50	0.0000	140.00	No Ice	1.23	1.23	44.00
			0.00			1/2" Ice	1.58	1.58	56.99
			0.00			1" Ice	1.84	1.84	73.03
**********									
APXV9TM14-ALU-120	A	From Leg	3.00	0.0000	128.00	No Ice	6.42	4.79	73.37
w/Mount Pipe			0.00			1/2" Ice	6.81	5.46	126.18
(Sprint)			0.00			1" Ice	7.21	6.14	185.53
APXV9TM14-ALU-120	B	From Leg	3.00	0.0000	128.00	No Ice	6.42	4.79	73.37
w/Mount Pipe			0.00			1/2" Ice	6.81	5.46	126.18
(Sprint)			0.00			1" Ice	7.21	6.14	185.53
APXV9TM14-ALU-120	C	From Leg	3.00	0.0000	128.00	No Ice	6.42	4.79	73.37
w/Mount Pipe			0.00			1/2" Ice	6.81	5.46	126.18
(Sprint)			0.00			1" Ice	7.21	6.14	185.53
TD-RRH8x20	A	From Leg	3.00	0.0000	128.00	No Ice	3.69	1.29	66.13
(Sprint)			0.00			1/2" Ice	3.93	1.46	89.99
			0.00			1" Ice	4.18	1.64	117.19
TD-RRH8x20	B	From Leg	3.00	0.0000	128.00	No Ice	3.69	1.29	66.13
(Sprint)			0.00			1/2" Ice	3.93	1.46	89.99
			0.00			1" Ice	4.18	1.64	117.19
TD-RRH8x20	C	From Leg	3.00	0.0000	128.00	No Ice	3.69	1.29	66.13
(Sprint)			0.00			1/2" Ice	3.93	1.46	89.99
			0.00			1" Ice	4.18	1.64	117.19
APXVSPP18-C-A20 w/Mount	A	From Leg	3.00	0.0000	128.00	No Ice	8.26	6.95	90.55

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
Pipe			0.00			1/2" Ice	8.82	8.13	158.56
(Sprint)			0.00			1" Ice	9.35	9.02	234.53
APXVSPP18-C-A20 w/Mount Pipe	B	From Leg	3.00 0.00	0.0000	128.00	No Ice 1/2" Ice	8.26 8.82	6.95 8.13	90.55 158.56
(Sprint)			0.00			1" Ice	9.35	9.02	234.53
APXVSPP18-C-A20 w/Mount Pipe	C	From Leg	3.00 0.00	0.0000	128.00	No Ice 1/2" Ice	8.26 8.82	6.95 8.13	90.55 158.56
(Sprint)			0.00			1" Ice	9.35	9.02	234.53
RRH2x50-WCS	A	From Leg	3.00	0.0000	128.00	No Ice	4.05	1.93	59.50
(Sprint)			0.00			1/2" Ice	4.34	2.20	83.98
			0.00			1" Ice	4.64	2.47	112.39
RRH2x50-WCS	B	From Leg	3.00	0.0000	128.00	No Ice	4.05	1.93	59.50
(Sprint)			0.00			1/2" Ice	4.34	2.20	83.98
			0.00			1" Ice	4.64	2.47	112.39
RRH2x50-WCS	C	From Leg	3.00	0.0000	128.00	No Ice	4.05	1.93	59.50
(Sprint)			0.00			1/2" Ice	4.34	2.20	83.98
			0.00			1" Ice	4.64	2.47	112.39
RRH 4x45 1900MHz	A	From Leg	3.00	0.0000	128.00	No Ice	2.32	2.24	59.50
(Sprint)			0.00			1/2" Ice	2.53	2.44	82.62
			0.00			1" Ice	2.74	2.65	108.98
RRH 4x45 1900MHz	B	From Leg	3.00	0.0000	128.00	No Ice	2.32	2.24	59.50
(Sprint)			0.00			1/2" Ice	2.53	2.44	82.62
			0.00			1" Ice	2.74	2.65	108.98
RRH 4x45 1900MHz	C	From Leg	3.00	0.0000	128.00	No Ice	2.32	2.24	59.50
(Sprint)			0.00			1/2" Ice	2.53	2.44	82.62
			0.00			1" Ice	2.74	2.65	108.98
Sector Mount [SM 502-1]	A	From Leg	0.00	0.0000	128.00	No Ice	15.35	14.00	557.70
(Sprint)			0.00			1/2" Ice	21.29	20.81	741.30
			0.00			1" Ice	27.23	27.62	924.90
Sector Mount [SM 502-1]	B	From Leg	0.00	0.0000	128.00	No Ice	15.35	14.00	557.70
(Sprint)			0.00			1/2" Ice	21.29	20.81	741.30
			0.00			1" Ice	27.23	27.62	924.90
Sector Mount [SM 502-1]	C	From Leg	0.00	0.0000	128.00	No Ice	15.35	14.00	557.70
(Sprint)			0.00			1/2" Ice	21.29	20.81	741.30
			0.00			1" Ice	27.23	27.62	924.90
**********									
AIR 32 w/Mount Pipe	A	From Leg	3.00	0.0000	118.00	No Ice	6.23	5.63	117.25
(T-Mobile)			0.00			1/2" Ice	6.62	6.30	173.11
			0.00			1" Ice	7.02	6.97	235.64
AIR 32 w/Mount Pipe	B	From Leg	3.00	0.0000	118.00	No Ice	6.23	5.63	117.25
(T-Mobile)			0.00			1/2" Ice	6.62	6.30	173.11
			0.00			1" Ice	7.02	6.97	235.64
AIR 32 w/Mount Pipe	C	From Leg	3.00	0.0000	118.00	No Ice	6.23	5.63	117.25
(T-Mobile)			0.00			1/2" Ice	6.62	6.30	173.11
			0.00			1" Ice	7.02	6.97	235.64
LNX-6515DS-A1M w/Mount Pipe	A	From Leg	3.00 0.00	0.0000	118.00	No Ice 1/2" Ice	11.47 12.09	9.62 11.04	72.90 160.00
(T-Mobile)			0.00			1" Ice	12.72	12.31	256.86
LNX-6515DS-A1M w/Mount Pipe	B	From Leg	3.00 0.00	0.0000	118.00	No Ice 1/2" Ice	11.47 12.09	9.62 11.04	72.90 160.00
(T-Mobile)			0.00			1" Ice	12.72	12.31	256.86
LNX-6515DS-A1M w/Mount Pipe	C	From Leg	3.00 0.00	0.0000	118.00	No Ice 1/2" Ice	11.47 12.09	9.62 11.04	72.90 160.00
(T-Mobile)			0.00			1" Ice	12.72	12.31	256.86
APX16DWV-16DWVS-E-A20 w/Mount Pipe	A	From Leg	3.00 0.00	0.0000	118.00	No Ice 1/2" Ice	6.46 6.83	2.15 2.49	40.70 73.65
(T-Mobile)			0.00			1" Ice	7.21	2.84	111.47

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
APX16DWV-16DWVS-E-A20	B	From Leg	3.00	0.0000	118.00	No Ice	6.46	2.15	40.70
w/Mount Pipe			0.00			1/2" Ice	6.83	2.49	73.65
(T-Mobile)			0.00			1" Ice	7.21	2.84	111.47
APX16DWV-16DWVS-E-A20	C	From Leg	3.00	0.0000	118.00	No Ice	6.46	2.15	40.70
w/Mount Pipe			0.00			1/2" Ice	6.83	2.49	73.65
(T-Mobile)			0.00			1" Ice	7.21	2.84	111.47
RRUS-11	A	From Leg	2.00	0.0000	118.00	No Ice	2.78	1.19	50.71
(T-Mobile)			0.00			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-11	B	From Leg	2.00	0.0000	118.00	No Ice	2.78	1.19	50.71
(T-Mobile)			0.00			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-11	C	From Leg	2.00	0.0000	118.00	No Ice	2.78	1.19	50.71
(T-Mobile)			0.00			1/2" Ice	2.99	1.33	71.49
			0.00			1" Ice	3.21	1.49	95.32
RRUS-32	A	From Leg	2.00	0.0000	118.00	No Ice	2.69	1.59	50.80
(T-Mobile)			0.00			1/2" Ice	2.91	1.78	71.33
			0.00			1" Ice	3.14	1.97	95.01
RRUS-32	B	From Leg	2.00	0.0000	118.00	No Ice	2.69	1.59	50.80
(T-Mobile)			0.00			1/2" Ice	2.91	1.78	71.33
			0.00			1" Ice	3.14	1.97	95.01
RRUS-32	C	From Leg	2.00	0.0000	118.00	No Ice	2.69	1.59	50.80
(T-Mobile)			0.00			1/2" Ice	2.91	1.78	71.33
			0.00			1" Ice	3.14	1.97	95.01
Sector Mount [SM 502-1]	A	From Leg	0.00	0.0000	118.00	No Ice	15.35	14.00	557.70
(Sprint)			0.00			1/2" Ice	21.29	20.81	741.30
			0.00			1" Ice	27.23	27.62	924.90
Sector Mount [SM 502-1]	B	From Leg	0.00	0.0000	118.00	No Ice	15.35	14.00	557.70
(Sprint)			0.00			1/2" Ice	21.29	20.81	741.30
			0.00			1" Ice	27.23	27.62	924.90
Sector Mount [SM 502-1]	C	From Leg	0.00	0.0000	118.00	No Ice	15.35	14.00	557.70
(Sprint)			0.00			1/2" Ice	21.29	20.81	741.30
			0.00			1" Ice	27.23	27.62	924.90
**********									
DS4F03C36D-N	B	From Leg	3.00	0.0000	113.00	No Ice	2.50	2.50	14.00
			0.00			1/2" Ice	3.53	3.53	32.64
			5.00			1" Ice	4.58	4.58	57.79
Side Arm Mount [SO 203-1]	B	From Leg	1.50	0.0000	113.00	No Ice	2.96	3.36	125.00
			0.00			1/2" Ice	4.10	4.68	153.55
			0.00			1" Ice	5.24	6.00	182.10
**********									
(2) HBXX-6517DS-VTM	A	From Leg	3.00	0.0000	98.00	No Ice	8.72	6.91	66.35
w/Mount Pipe			-2.00			1/2" Ice	9.27	8.11	135.40
(VZW)			0.00			1" Ice	9.80	9.02	212.58
(2) HBXX-6517DS-VTM	B	From Leg	3.00	0.0000	98.00	No Ice	8.72	6.91	66.35
w/Mount Pipe			-2.00			1/2" Ice	9.27	8.11	135.40
(VZW)			0.00			1" Ice	9.80	9.02	212.58
(2) HBXX-6517DS-VTM	C	From Leg	3.00	0.0000	98.00	No Ice	8.72	6.91	66.35
w/Mount Pipe			-2.00			1/2" Ice	9.27	8.11	135.40
(VZW)			0.00			1" Ice	9.80	9.02	212.58
(2) LNX-8513DS-A1M w/Mount	A	From Leg	3.00	0.0000	98.00	No Ice	8.17	6.83	61.10
Pipe			2.00			1/2" Ice	8.63	7.79	127.49
(VZW)			0.00			1" Ice	9.10	8.62	201.70
(2) LNX-6514DS-A1M w/Mount	B	From Leg	3.00	0.0000	98.00	No Ice	8.20	6.85	53.20
Pipe			2.00			1/2" Ice	8.66	7.81	119.72
(VZW)			0.00			1" Ice	9.13	8.64	194.08
(2) LNX-6514DS-A1M w/Mount	C	From Leg	3.00	0.0000	98.00	No Ice	8.20	6.85	53.20

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
Pipe			2.00			1/2" Ice	8.66	7.81	119.72
(VZW)			0.00			1" Ice	9.13	8.64	194.08
RRH 2x60 1900MHz	A	From Leg	2.00	0.0000	98.00	No Ice	1.88	1.28	46.00
(VZW)			-2.00			1/2" Ice	2.06	1.43	62.30
			0.00			1" Ice	2.24	1.59	81.32
RRH 2x60 1900MHz	B	From Leg	2.00	0.0000	98.00	No Ice	1.88	1.28	46.00
(VZW)			-2.00			1/2" Ice	2.06	1.43	62.30
			0.00			1" Ice	2.24	1.59	81.32
RRH 2x60 1900MHz	C	From Leg	2.00	0.0000	98.00	No Ice	1.88	1.28	46.00
(VZW)			-2.00			1/2" Ice	2.06	1.43	62.30
			0.00			1" Ice	2.24	1.59	81.32
RRH 2x60 850MHz	A	From Leg	2.00	0.0000	98.00	No Ice	1.81	1.43	50.00
(VZW)			-6.00			1/2" Ice	1.99	1.58	67.29
			0.00			1" Ice	2.17	1.75	87.33
RRH 2x60 850MHz	B	From Leg	2.00	0.0000	98.00	No Ice	1.81	1.43	50.00
(VZW)			-6.00			1/2" Ice	1.99	1.58	67.29
			0.00			1" Ice	2.17	1.75	87.33
RRH 2x60 850MHz	C	From Leg	2.00	0.0000	98.00	No Ice	1.81	1.43	50.00
(VZW)			-6.00			1/2" Ice	1.99	1.58	67.29
			0.00			1" Ice	2.17	1.75	87.33
RRH2x40-07-U	A	From Leg	2.00	0.0000	98.00	No Ice	1.93	1.05	50.00
(VZW)			2.00			1/2" Ice	2.10	1.19	66.85
			0.00			1" Ice	2.28	1.33	86.39
RRH2x40-07-U	B	From Leg	2.00	0.0000	98.00	No Ice	1.93	1.05	50.00
(VZW)			2.00			1/2" Ice	2.10	1.19	66.85
			0.00			1" Ice	2.28	1.33	86.39
RRH2x40-07-U	C	From Leg	2.00	0.0000	98.00	No Ice	1.93	1.05	50.00
(VZW)			2.00			1/2" Ice	2.10	1.19	66.85
			0.00			1" Ice	2.28	1.33	86.39
DB-T1-6Z-8AB-0Z Dist. Box	A	From Leg	1.00	0.0000	98.00	No Ice	4.80	2.00	44.00
(VZW)			0.00			1/2" Ice	5.07	2.19	80.13
			3.00			1" Ice	5.35	2.39	120.22
DB-T1-6Z-8AB-0Z Dist. Box	B	From Leg	1.00	0.0000	98.00	No Ice	4.80	2.00	44.00
(VZW)			0.00			1/2" Ice	5.07	2.19	80.13
			3.00			1" Ice	5.35	2.39	120.22
DB-T1-6Z-8AB-0Z Dist. Box	C	From Leg	1.00	0.0000	98.00	No Ice	4.80	2.00	44.00
(VZW)			0.00			1/2" Ice	5.07	2.19	80.13
			3.00			1" Ice	5.35	2.39	120.22
Sector Mount [SM 403-1]	A	From Leg	0.00	0.0000	98.00	No Ice	10.22	7.05	291.16
(VZW)			0.00			1/2" Ice	14.32	10.13	422.38
			0.00			1" Ice	18.42	13.21	553.60
Sector Mount [SM 403-1]	B	From Leg	0.00	0.0000	98.00	No Ice	10.22	7.05	291.16
(VZW)			0.00			1/2" Ice	14.32	10.13	422.38
			0.00			1" Ice	18.42	13.21	553.60
Sector Mount [SM 403-1]	C	From Leg	0.00	0.0000	98.00	No Ice	10.22	7.05	291.16
(VZW)			0.00			1/2" Ice	14.32	10.13	422.38
			0.00			1" Ice	18.42	13.21	553.60
**********									
8' Dipole	C	From Leg	3.00	0.0000	78.00	No Ice	4.80	4.80	45.00
			0.00			1/2" Ice	6.40	6.40	89.00
			0.00			1" Ice	8.00	8.00	133.00
Side Arm Mount [SO 203-1]	C	From Leg	1.50	0.0000	78.00	No Ice	2.96	3.36	125.00
			0.00			1/2" Ice	4.10	4.68	153.55
			-4.00			1" Ice	5.24	6.00	182.10
**********									
GPS	C	From Leg	3.00	0.0000	58.00	No Ice	1.00	1.00	10.00
(Sprint)			0.00			1/2" Ice	1.50	1.50	15.00

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
Side Arm Mount [SO 203-1] (Sprint) **********	C	From Leg	0.00 1.50 0.00 -1.00	0.0000	58.00	1" Ice No Ice 1/2" Ice 1" Ice	2.00 2.96 4.10 5.24	2.00 3.36 4.68 6.00	20.00 125.00 153.55 182.10

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
Andrew HP4	C	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 0.00	0.0000		152.00	4.67	No Ice 1/2" Ice 1" Ice	17.11 17.72 18.34	370.00 460.96 551.93
Andrew HP4	B	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 0.00	0.0000		140.00	4.67	No Ice 1/2" Ice 1" Ice	17.11 17.72 18.34	370.00 460.96 551.93

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	5763.74					
Bracing Weight	10787.20					
Total Member Self-Weight	16550.94			10.73	-7.21	
Total Weight	31993.77			10.73	-7.21	
Wind 0 deg - No Ice		-35.94	-23009.24	-1885.22	-4.43	4.36
Wind 30 deg - No Ice		11362.39	-19374.85	-1591.49	-959.12	7.09
Wind 60 deg - No Ice		18336.52	-10406.40	-854.04	-1549.70	6.95
Wind 90 deg - No Ice		20606.67	14.89	11.41	-1738.65	5.42
Wind 120 deg - No Ice		18856.72	10666.35	885.02	-1580.49	2.96
Wind 150 deg - No Ice		10444.43	17886.94	1524.75	-897.86	0.17
Wind 180 deg - No Ice		37.63	21229.94	1796.64	-11.09	-3.73
Wind 210 deg - No Ice		-11247.87	19353.24	1609.28	927.97	-7.04
Wind 240 deg - No Ice		-19833.05	11188.54	914.92	1623.42	-7.34
Wind 270 deg - No Ice		-20604.91	-60.82	3.34	1723.08	-5.42
Wind 300 deg - No Ice		-17357.49	-9884.60	-824.40	1476.18	-3.20
Wind 330 deg - No Ice		-10558.94	-17906.51	-1505.63	900.17	-0.23
Member Ice	28789.27					
Total Weight Ice	111835.61			54.87	-71.74	
Wind 0 deg - Ice		-22.72	-11271.41	-906.37	-69.31	1.94
Wind 30 deg - Ice		5603.15	-9609.28	-763.66	-552.94	3.02
Wind 60 deg - Ice		9408.04	-5362.48	-401.68	-879.88	3.03
Wind 90 deg - Ice		10572.52	15.90	56.63	-984.92	2.30

Load Case	*Vertical Forces* *lb*	*Sum of Forces X* *lb*	*Sum of Forces Z* *lb*	*Sum of Overturning Moments, M_x* *kip-ft*	*Sum of Overturning Moments, M_z* *kip-ft*	*Sum of Torques* *kip-ft*
Wind 120 deg - Ice		9308.76	5304.78	508.68	-876.73	1.14
Wind 150 deg - Ice		5300.18	9095.59	845.79	-535.40	-0.14
Wind 180 deg - Ice		23.29	10784.77	986.82	-74.53	-1.77
Wind 210 deg - Ice		-5565.92	9602.25	872.21	404.02	-3.00
Wind 240 deg - Ice		-9815.04	5570.85	520.99	759.43	-3.09
Wind 270 deg - Ice		-10571.92	-30.83	50.94	841.06	-2.30
Wind 300 deg - Ice		-8900.85	-5096.54	-389.45	709.64	-1.25
Wind 330 deg - Ice		-5337.41	-9101.94	-736.80	397.36	0.12
Total Weight	31993.77			10.73	-7.21	
Wind 0 deg - Service		-14.96	-9577.21	-784.78	3.10	1.82
Wind 30 deg - Service		4729.40	-8064.45	-662.52	-394.27	2.95
Wind 60 deg - Service		7632.27	-4331.49	-355.56	-640.09	2.89
Wind 90 deg - Service		8577.18	6.20	4.67	-718.74	2.25
Wind 120 deg - Service		7848.79	4439.69	368.29	-652.91	1.23
Wind 150 deg - Service		4347.32	7445.14	634.57	-368.77	0.07
Wind 180 deg - Service		15.66	8836.61	747.74	0.33	-1.55
Wind 210 deg - Service		-4681.74	8055.46	669.75	391.20	-2.93
Wind 240 deg - Service		-8255.17	4657.04	380.74	680.67	-3.05
Wind 270 deg - Service		-8576.45	-25.32	1.31	722.15	-2.25
Wind 300 deg - Service		-7224.76	-4114.30	-343.23	619.38	-1.33
Wind 330 deg - Service		-4394.98	-7453.28	-626.78	379.63	-0.09

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	152 - 140	Leg	Max Tension	23	2777.90	-0.07	-0.00
			Max. Compression	18	-4918.94	0.03	-0.00
			Max. Mx	2	-1796.48	-0.14	0.05
			Max. My	2	-647.38	-0.05	-0.21
			Max. Vy	14	213.22	-0.07	0.01
			Max. Vx	16	-237.40	-0.00	0.10
		Diagonal	Max Tension	9	1280.14	0.00	0.00
			Max. Compression	10	-1324.28	0.00	0.00
			Max. Mx	35	282.06	0.02	0.00
			Max. My	12	-695.71	0.00	-0.00
			Max. Vy	35	-20.25	0.02	0.00
			Max. Vx	12	0.26	0.00	-0.00
		Top Girt	Max Tension	18	119.20	0.00	0.00
			Max. Compression	7	-132.87	0.00	0.00
			Max. Mx	26	11.53	-0.06	0.00
			Max. My	35	-8.38	0.00	0.00
			Max. Vy	26	38.13	0.00	0.00
			Max. Vx	35	0.04	0.00	0.00
T2	140 - 135	Leg	Max Tension	23	5287.51	-0.02	0.01
			Max. Compression	18	-7572.71	0.03	-0.00
			Max. Mx	22	4431.46	0.07	0.01
			Max. My	4	-1939.33	0.00	0.04
			Max. Vy	22	-298.87	-0.02	0.01
			Max. Vx	4	-328.55	0.00	0.01
		Diagonal	Max Tension	20	1596.54	0.00	0.00
			Max. Compression	20	-1637.28	0.00	0.00
			Max. Mx	32	152.07	0.02	0.00
			Max. My	32	-216.14	0.02	-0.00
			Max. Vy	32	22.66	0.02	0.00
			Max. Vx	32	1.45	0.00	0.00
		Top Girt	Max Tension	11	167.35	0.00	0.00
			Max. Compression	22	-199.37	0.00	0.00
			Max. Mx	31	24.34	-0.06	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	29	-0.14	0.00	0.00
			Max. Vy	31	-38.09	0.00	0.00
			Max. Vx	29	1.12	0.00	0.00
T3	135 - 130	Leg	Max Tension	7	7571.43	0.07	-0.01
			Max. Compression	18	-10334.38	0.37	0.01
			Max. Mx	22	7010.04	-0.42	0.01
			Max. My	25	-1794.75	-0.02	0.33
			Max. Vy	22	121.75	-0.42	0.01
			Max. Vx	24	-94.66	-0.02	0.33
		Diagonal	Max Tension	20	1595.34	0.00	0.00
			Max. Compression	20	-1569.46	0.00	0.00
			Max. Mx	31	265.22	0.02	-0.00
			Max. My	30	301.08	0.02	-0.00
			Max. Vy	31	24.44	0.02	-0.00
			Max. Vx	30	-1.46	0.00	0.00
T4	130 - 125	Leg	Max Tension	7	10672.59	-0.41	-0.00
			Max. Compression	10	-14781.02	0.13	-0.01
			Max. Mx	6	10286.74	0.70	-0.00
			Max. My	4	-2381.66	-0.02	0.67
			Max. Vy	22	-570.33	-0.42	0.01
			Max. Vx	24	510.90	-0.02	0.33
		Diagonal	Max Tension	21	2282.13	0.00	0.00
			Max. Compression	20	-2382.90	0.00	0.00
			Max. Mx	32	301.10	0.03	0.00
			Max. My	32	-284.69	0.02	-0.00
			Max. Vy	32	27.29	0.03	0.00
			Max. Vx	32	1.65	0.00	0.00
T5	125 - 120	Leg	Max Tension	23	14016.47	-0.16	0.01
			Max. Compression	10	-19393.89	0.42	-0.01
			Max. Mx	22	13292.31	-0.48	0.01
			Max. My	5	-3118.64	-0.02	-0.42
			Max. Vy	22	85.03	-0.48	0.01
			Max. Vx	24	-70.14	-0.03	0.42
		Diagonal	Max Tension	20	2637.94	0.00	0.00
			Max. Compression	20	-2595.84	0.00	0.00
			Max. Mx	31	837.86	0.03	0.00
			Max. My	31	91.51	0.03	-0.00
			Max. Vy	32	29.12	0.03	-0.00
			Max. Vx	31	-1.68	0.00	0.00
T6	120 - 100	Leg	Max Tension	7	33316.12	0.04	-0.01
			Max. Compression	10	-42482.83	0.14	-0.00
			Max. Mx	22	18647.80	0.84	0.01
			Max. My	4	-3979.22	-0.03	0.81
			Max. Vy	22	-667.82	-0.48	0.01
			Max. Vx	4	-625.31	-0.03	-0.42
		Diagonal	Max Tension	20	4257.26	0.00	0.00
			Max. Compression	20	-4227.66	0.00	0.00
			Max. Mx	31	1038.89	0.06	-0.01
			Max. My	30	733.35	0.05	-0.01
			Max. Vy	33	43.60	0.05	-0.01
			Max. Vx	30	-2.56	0.00	0.00
T7	100 - 80	Leg	Max Tension	23	57357.62	0.16	0.01
			Max. Compression	10	-70907.22	-0.28	-0.02
			Max. Mx	10	-51463.90	0.49	0.00
			Max. My	4	-6446.45	-0.02	0.55
			Max. Vy	22	721.69	-0.44	-0.00
			Max. Vx	4	608.76	0.03	-0.19
		Diagonal	Max Tension	21	5663.53	0.04	0.00
			Max. Compression	20	-5865.52	0.00	0.00
			Max. Mx	31	1389.70	0.10	0.01
			Max. My	34	1574.74	0.10	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	33	61.87	0.09	-0.01
			Max. Vx	28	-3.08	0.00	0.00
		Secondary Horizontal	Max Tension	10	1229.73	0.02	-0.00
			Max. Compression	10	-1229.73	0.00	0.00
			Max. Mx	35	-197.07	0.08	0.01
			Max. My	32	36.55	0.08	0.01
			Max. Vy	35	-60.69	0.08	0.01
			Max. Vx	30	-3.75	0.00	0.00
T8	80 - 73.3333	Leg	Max Tension	23	65759.78	0.18	0.02
			Max. Compression	10	-80456.05	-0.33	-0.01
			Max. Mx	10	-80375.35	0.57	-0.01
			Max. My	16	-6495.48	-0.05	0.28
			Max. Vy	10	-321.90	0.57	-0.01
			Max. Vx	12	-159.76	-0.05	-0.22
		Diagonal	Max Tension	21	5958.40	0.04	-0.00
			Max. Compression	20	-6143.16	0.00	0.00
			Max. Mx	31	1654.25	0.09	-0.01
			Max. My	29	-1706.39	0.08	-0.01
			Max. Vy	33	62.22	0.09	-0.01
			Max. Vx	29	-3.17	0.00	0.00
		Secondary Horizontal	Max Tension	10	1395.33	0.02	0.00
			Max. Compression	10	-1395.33	0.00	0.00
			Max. Mx	38	91.15	0.07	0.01
			Max. My	32	4.46	0.07	0.01
			Max. Vy	38	60.28	0.07	0.01
			Max. Vx	30	-3.73	0.00	0.00
T9	73.3333 - 66.6667	Leg	Max Tension	23	73924.26	0.21	0.01
			Max. Compression	10	-89877.95	-0.40	-0.01
			Max. Mx	10	-89796.02	0.60	0.00
			Max. My	16	-6749.46	-0.05	0.28
			Max. Vy	10	313.53	0.60	0.00
			Max. Vx	16	135.22	-0.05	0.28
		Diagonal	Max Tension	21	6081.39	0.05	-0.00
			Max. Compression	20	-6375.08	0.00	0.00
			Max. Mx	31	1415.84	0.13	0.01
			Max. My	29	-2164.07	0.11	-0.01
			Max. Vy	33	72.18	0.12	-0.01
			Max. Vx	34	3.62	0.00	0.00
		Secondary Horizontal	Max Tension	10	1558.74	0.03	0.00
			Max. Compression	10	-1558.74	0.00	0.00
			Max. Mx	35	-204.89	0.10	0.01
			Max. My	32	-13.21	0.10	0.01
			Max. Vy	35	-65.75	0.10	0.01
			Max. Vx	30	-3.75	0.00	0.00
T10	66.6667 - 60	Leg	Max Tension	23	82048.09	0.27	0.01
			Max. Compression	10	-99462.64	-0.48	-0.02
			Max. Mx	10	-99383.68	0.66	0.01
			Max. My	12	-6826.97	-0.07	-0.36
			Max. Vy	10	353.46	0.66	0.01
			Max. Vx	5	159.86	-0.06	-0.35
		Diagonal	Max Tension	21	6277.49	0.05	-0.00
			Max. Compression	20	-6482.32	0.00	0.00
			Max. Mx	31	1899.64	0.11	-0.01
			Max. My	29	-1661.65	0.09	-0.01
			Max. Vy	33	71.96	0.11	0.01
			Max. Vx	29	-3.73	0.00	0.00
		Secondary Horizontal	Max Tension	10	1724.96	0.03	0.00
			Max. Compression	10	-1724.96	0.00	0.00
			Max. Mx	37	38.35	0.08	0.01
			Max. My	32	6.99	0.08	0.01
			Max. Vy	37	65.09	0.08	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	30	-3.70	0.00	0.00
T11	60 - 50	Leg	Max Tension	23	91789.70	0.32	0.02
			Max. Compression	10	-110864.27	-0.78	-0.02
			Max. Mx	10	-110721.83	1.07	-0.00
			Max. My	4	-10750.08	-0.16	-0.87
			Max. Vy	10	387.26	1.07	-0.00
			Max. Vx	4	244.94	-0.16	-0.87
		Diagonal	Max Tension	21	7086.01	0.07	0.00
			Max. Compression	20	-7349.18	0.00	0.00
			Max. Mx	31	1330.80	0.17	-0.02
			Max. My	30	-2869.48	0.14	-0.02
			Max. Vy	33	85.44	0.17	0.02
			Max. Vx	30	-4.89	0.00	0.00
		Secondary Horizontal	Max Tension	10	1922.70	0.03	-0.00
			Max. Compression	10	-1922.70	0.00	0.00
			Max. Mx	30	-26.05	0.11	0.02
			Max. My	32	-33.51	0.11	0.02
			Max. Vy	30	-70.90	0.11	0.02
			Max. Vx	30	-4.11	0.00	0.00
T12	50 - 40	Leg	Max Tension	23	103475.25	0.51	0.02
			Max. Compression	10	-124553.54	-0.70	-0.01
			Max. Mx	10	-124414.52	1.15	0.01
			Max. My	4	-11186.22	-0.16	-0.87
			Max. Vy	10	-425.51	1.15	0.01
			Max. Vx	4	-261.32	-0.16	-0.87
		Diagonal	Max Tension	21	7197.63	0.10	-0.00
			Max. Compression	20	-7590.91	0.00	0.00
			Max. Mx	31	2207.10	0.18	0.02
			Max. My	32	2418.36	0.18	-0.02
			Max. Vy	33	93.86	0.17	-0.02
			Max. Vx	32	5.01	0.00	0.00
		Secondary Horizontal	Max Tension	10	2160.11	0.05	-0.00
			Max. Compression	10	-2160.11	0.00	0.00
			Max. Mx	34	-569.50	0.13	0.02
			Max. My	32	-6.54	0.12	0.03
			Max. Vy	34	-83.75	0.13	0.02
			Max. Vx	30	-5.22	0.00	0.00
T13	40 - 30	Leg	Max Tension	23	114693.12	0.51	0.01
			Max. Compression	10	-138176.23	-1.90	-0.01
			Max. Mx	10	-138176.23	-1.90	-0.01
			Max. My	8	-9120.32	-0.23	0.72
			Max. Vy	10	697.49	1.53	0.00
			Max. Vx	4	212.80	-0.26	-0.69
		Diagonal	Max Tension	21	7517.46	0.11	-0.00
			Max. Compression	20	-7834.59	0.00	0.00
			Max. Mx	33	1130.62	0.25	0.02
			Max. My	30	-3119.48	0.22	-0.03
			Max. Vy	33	109.32	0.25	0.02
			Max. Vx	30	-5.70	0.00	0.00
		Secondary Horizontal	Max Tension	10	2396.36	0.05	0.00
			Max. Compression	10	-2396.36	0.00	0.00
			Max. Mx	29	-76.25	0.17	0.03
			Max. My	32	-101.24	0.17	0.03
			Max. Vy	29	-91.10	0.17	0.03
			Max. Vx	30	-5.28	0.00	0.00
T14	30 - 20	Leg	Max Tension	23	125143.56	1.38	0.00
			Max. Compression	10	-151084.34	1.54	0.02
			Max. Mx	31	-83928.60	-3.12	0.00
			Max. My	8	-9597.63	-0.23	0.72
			Max. Vy	31	1741.74	-3.12	0.00
			Max. Vx	5	295.73	-0.17	-0.37

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	21	8032.48	0.04	-0.00
			Max. Compression	20	-8567.48	0.00	0.00
			Max. Mx	10	5450.69	0.12	0.00
			Max. My	36	-3044.21	0.03	0.01
			Max. Vy	31	-58.55	0.10	0.01
			Max. Vx	36	-3.77	0.00	0.00
		Horizontal	Max Tension	10	2620.23	0.07	0.03
			Max. Compression	10	-2620.23	0.00	0.00
			Max. Mx	33	937.05	0.14	0.07
			Max. My	28	-1196.49	0.14	0.07
			Max. Vy	33	89.02	0.14	0.07
			Max. Vx	31	-10.40	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	10	2620.23	0.00	0.00
			Max. Compression	10	-2620.23	0.00	0.00
			Max. Mx	27	1313.14	-0.03	0.00
			Max. My	32	1338.41	0.00	0.00
			Max. Vy	27	26.15	0.00	0.00
			Max. Vx	32	-0.77	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	10	1526.27	0.00	0.00
			Max. Compression	10	-1526.27	0.00	0.00
			Max. Mx	32	-5.03	-0.04	0.00
			Max. My	31	85.99	0.00	0.00
			Max. Vy	32	26.89	0.00	0.00
			Max. Vx	31	0.91	0.00	0.00
T15	20 - 15	Leg	Max Tension	23	135733.37	2.08	0.01
			Max. Compression	10	-163998.52	3.27	-0.02
			Max. Mx	10	-163998.52	3.27	-0.02
			Max. My	4	-14061.67	0.21	-0.50
			Max. Vy	10	-2385.89	3.27	-0.02
			Max. Vx	5	-296.41	0.17	-0.50
		Diagonal	Max Tension	20	7601.09	0.15	-0.00
			Max. Compression	21	-7529.78	0.00	0.00
			Max. Mx	18	6720.36	0.15	-0.00
			Max. My	36	-3305.02	0.03	0.01
			Max. Vy	31	-61.85	0.11	0.01
			Max. Vx	36	-3.63	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	10	2844.19	0.00	0.00
			Max. Compression	10	-2844.19	0.00	0.00
			Max. Mx	34	346.60	-0.03	0.00
			Max. My	32	1431.12	0.00	0.00
			Max. Vy	34	-26.75	0.00	0.00
			Max. Vx	32	0.78	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	10	1649.45	0.00	0.00
			Max. Compression	10	-1649.45	0.00	0.00
			Max. Mx	30	-315.23	-0.04	0.00
			Max. My	27	93.05	0.00	0.00
			Max. Vy	30	-27.45	0.00	0.00
			Max. Vx	27	0.96	0.00	0.00
T16	15 - 10	Leg	Max Tension	23	136353.85	-0.18	-0.01
			Max. Compression	10	-165355.99	0.22	-0.07
			Max. Mx	35	-82934.72	1.30	-0.09
			Max. My	8	-10950.63	-0.13	4.36
			Max. Vy	33	-316.45	-0.41	0.00
			Max. Vx	4	960.39	-0.14	-4.36
		Diagonal	Max Tension	21	7208.88	0.00	0.00
			Max. Compression	20	-7435.12	0.00	0.00
			Max. Mx	31	513.54	-0.24	0.00
			Max. My	27	-1273.99	0.00	0.01
			Max. Vy	31	85.93	0.00	0.00
			Max. Vx	27	-3.01	0.00	0.00
		Horizontal	Max Tension	10	2867.74	0.04	0.03

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	10	-2867.74	0.00	0.00
			Max. Mx	31	-154.98	0.15	0.16
			Max. My	27	161.77	0.15	0.16
			Max. Vy	31	-72.55	0.15	0.16
			Max. Vx	27	-18.19	0.00	0.00
T17	10 - 0	Leg	Max Tension	23	146440.93	-0.41	0.06
			Max. Compression	10	-177590.95	0.00	0.00
			Max. Mx	35	-90228.32	1.30	-0.09
			Max. My	8	-11492.15	-0.13	4.36
			Max. Vy	37	151.41	-0.00	-0.00
			Max. Vx	4	-544.30	-0.14	-4.36
		Diagonal	Max Tension	20	8365.83	0.00	0.00
			Max. Compression	20	-8677.44	0.00	0.00
			Max. Mx	31	3218.71	0.21	0.03
			Max. My	31	2677.58	0.20	-0.03
			Max. Vy	32	110.89	0.21	-0.03
			Max. Vx	31	-5.90	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	183027.25	20282.98	-11314.61
	Max. H_x	18	183027.25	20282.98	-11314.61
	Max. H_z	5	-135884.48	-15207.76	9789.11
	Min. Vert	7	-152009.16	-17375.52	9689.64
	Min. H_x	7	-152009.16	-17375.52	9689.64
	Min. H_z	18	183027.25	20282.98	-11314.61
Leg B	Max. Vert	10	184655.31	-20256.64	-11540.46
	Max. H_x	23	-152049.79	17340.65	9857.83
	Max. H_z	25	-136025.13	15114.05	10082.47
	Min. Vert	23	-152049.79	17340.65	9857.83
	Min. H_x	10	184655.31	-20256.64	-11540.46
	Min. H_z	10	184655.31	-20256.64	-11540.46
Leg A	Max. Vert	2	181425.30	208.05	23137.31
	Max. H_x	20	12733.70	2128.73	1062.77
	Max. H_z	2	181425.30	208.05	23137.31
	Min. Vert	15	-150314.76	-162.31	-19729.35
	Min. H_x	9	8994.57	-2109.72	720.03
	Min. H_z	15	-150314.76	-162.31	-19729.35

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	31993.77	-0.00	-0.01	10.74	-7.21	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	38392.43	-57.52	-36853.33	-3034.81	-4.24	7.01
0.9 Dead+1.6 Wind 0 deg - No Ice	28794.32	-57.50	-36856.91	-3035.15	-2.07	7.00
1.2 Dead+1.6 Wind 30 deg - No Ice	38392.42	18211.53	-31056.04	-2569.64	-1542.93	11.42
0.9 Dead+1.6 Wind 30 deg - No Ice	28794.32	18213.39	-31059.06	-2570.43	-1539.27	11.39
1.2 Dead+1.6 Wind 60 deg - No Ice	38392.42	29791.31	-16911.99	-1411.17	-2547.21	11.20

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
0.9 Dead+1.6 Wind 60 deg - No Ice	28794.37	29794.48	-16913.74	-1413.05	-2542.58	11.18
1.2 Dead+1.6 Wind 90 deg - No Ice	38392.42	36244.65	24.22	14.11	-3048.06	8.75
0.9 Dead+1.6 Wind 90 deg - No Ice	28794.84	36248.58	23.77	10.87	-3042.96	8.73
1.2 Dead+1.6 Wind 120 deg - No Ice	38392.42	32251.91	18268.13	1511.37	-2698.83	4.79
0.9 Dead+1.6 Wind 120 deg - No Ice	28794.31	32255.16	18269.94	1506.70	-2694.07	4.78
1.2 Dead+1.6 Wind 150 deg - No Ice	38392.42	18135.17	31085.25	2598.55	-1528.11	0.29
0.9 Dead+1.6 Wind 150 deg - No Ice	28794.28	18137.05	31088.34	2592.84	-1524.47	0.27
1.2 Dead+1.6 Wind 180 deg - No Ice	38392.43	60.17	34006.13	2883.98	-14.92	-6.00
0.9 Dead+1.6 Wind 180 deg - No Ice	28794.34	60.19	34009.64	2877.97	-12.74	-5.99
1.2 Dead+1.6 Wind 210 deg - No Ice	38392.42	-18029.12	31021.01	2589.61	1498.70	-11.32
0.9 Dead+1.6 Wind 210 deg - No Ice	28794.32	-18030.92	31024.11	2583.90	1499.43	-11.30
1.2 Dead+1.6 Wind 240 deg - No Ice	38392.42	-32185.94	18163.63	1500.39	2671.34	-11.83
0.9 Dead+1.6 Wind 240 deg - No Ice	28794.31	-32189.14	18165.43	1495.73	2670.94	-11.81
1.2 Dead+1.6 Wind 270 deg - No Ice	38392.42	-36241.91	-96.86	1.15	3028.84	-8.75
0.9 Dead+1.6 Wind 270 deg - No Ice	28794.84	-36245.81	-97.34	-2.09	3028.09	-8.74
1.2 Dead+1.6 Wind 300 deg - No Ice	38392.42	-29853.10	-17017.14	-1422.58	2537.13	-5.17
0.9 Dead+1.6 Wind 300 deg - No Ice	28794.31	-29856.17	-17018.81	-1424.45	2536.84	-5.16
1.2 Dead+1.6 Wind 330 deg - No Ice	38392.42	-18317.63	-31117.08	-2576.45	1537.59	-0.38
0.9 Dead+1.6 Wind 330 deg - No Ice	28794.28	-18319.45	-31120.13	-2577.23	1538.27	-0.36
1.2 Dead+1.0 Ice+1.0 Temp	118234.34	-0.09	-0.09	57.95	-74.08	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	118234.33	-22.84	-11415.49	-923.68	-71.60	2.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	118234.33	5619.83	-9638.59	-775.60	-564.10	3.15
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	118234.31	9534.00	-5435.70	-414.29	-909.66	3.17
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	118234.31	11220.60	15.59	59.72	-1050.60	2.41
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	118234.31	9965.44	5683.84	544.76	-936.56	1.19
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	118234.31	5622.28	9653.72	893.50	-563.61	-0.18
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	118234.31	23.00	10926.69	1009.76	-76.89	-1.86
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	118234.31	-5582.11	9629.59	890.10	410.34	-3.13
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	118234.31	-9941.47	5643.48	539.81	784.81	-3.23
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	118234.33	-11222.22	-30.97	53.96	902.30	-2.41
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	118234.33	-9559.56	-5476.94	-419.41	764.77	-1.29
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	118234.33	-5660.81	-9662.05	-778.56	421.13	0.16
Dead+Wind 0 deg - Service	31993.77	-14.98	-9587.82	-781.58	-6.07	1.82

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 30 deg - Service	31993.77	4738.01	-8079.64	-660.65	-406.11	2.97
Dead+Wind 60 deg - Service	31993.77	7750.65	-4399.98	-359.48	-667.20	2.91
Dead+Wind 90 deg - Service	31993.76	9429.50	6.16	11.07	-797.41	2.27
Dead+Wind 120 deg - Service	31993.76	8390.67	4752.58	400.34	-706.61	1.24
Dead+Wind 150 deg - Service	31993.77	4718.03	8087.21	683.00	-402.25	0.08
Dead+Wind 180 deg - Service	31993.77	15.63	8847.17	757.20	-8.85	-1.56
Dead+Wind 210 deg - Service	31993.77	-4690.47	8070.50	680.67	384.66	-2.94
Dead+Wind 240 deg - Service	31993.77	-8373.54	4725.39	397.48	689.52	-3.07
Dead+Wind 270 deg - Service	31993.77	-9428.82	-25.34	7.70	782.47	-2.27
Dead+Wind 300 deg - Service	31993.77	-7766.76	-4427.33	-362.44	654.64	-1.34
Dead+Wind 330 deg - Service	31993.77	-4765.65	-8095.52	-662.42	394.78	-0.10

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	-0.00	-31993.77	0.00	0.00	31993.77	0.01	0.000%
2	-57.51	-38392.52	-36867.12	57.52	38392.43	36853.33	0.026%
3	-57.51	-28794.39	-36867.12	57.50	28794.32	36856.91	0.022%
4	18219.18	-38392.52	-31067.92	-18211.53	38392.42	31056.04	0.027%
5	18219.18	-28794.39	-31067.92	-18213.39	28794.32	31059.06	0.023%
6	29803.82	-38392.52	-16918.93	-29791.31	38392.42	16911.99	0.028%
7	29803.82	-28794.39	-16918.93	-29794.48	28794.37	16913.74	0.024%
8	36259.08	-38392.52	23.83	-36244.65	38392.42	-24.22	0.027%
9	36259.08	-28794.39	23.83	-36248.58	28794.84	-23.77	0.023%
10	32264.36	-38392.52	18274.91	-32251.91	38392.42	-18268.13	0.027%
11	32264.36	-28794.39	18274.91	-32255.16	28794.31	-18269.94	0.022%
12	18142.08	-38392.52	31097.66	-18135.17	38392.42	-31085.25	0.027%
13	18142.08	-28794.39	31097.66	-18137.05	28794.28	-31088.34	0.023%
14	60.20	-38392.52	34020.25	-60.17	38392.43	-34006.13	0.028%
15	60.20	-28794.39	34020.25	-60.19	28794.34	-34009.64	0.024%
16	-18035.95	-38392.52	31033.35	18029.12	38392.42	-31021.01	0.027%
17	-18035.95	-28794.39	31033.35	18030.92	28794.32	-31024.11	0.023%
18	-32198.27	-38392.52	18170.35	32185.94	38392.42	-18163.63	0.026%
19	-32198.27	-28794.39	18170.35	32189.14	28794.31	-18165.43	0.022%
20	-36256.26	-38392.52	-97.31	36241.91	38392.42	96.86	0.027%
21	-36256.26	-28794.39	-97.31	36245.81	28794.84	97.34	0.023%
22	-29865.60	-38392.52	-17024.11	29853.10	38392.42	17017.14	0.028%
23	-29865.60	-28794.39	-17024.11	29856.17	28794.31	17018.81	0.024%
24	-18325.30	-38392.52	-31128.97	18317.63	38392.42	31117.08	0.027%
25	-18325.30	-28794.39	-31128.97	18319.45	28794.28	31120.13	0.023%
26	-0.00	-118234.37	-0.00	0.09	118234.34	0.09	0.000%
27	-22.72	-118234.37	-11417.18	22.84	118234.33	11415.49	0.001%
28	5620.89	-118234.37	-9640.01	-5619.83	118234.33	9638.59	0.001%
29	9537.41	-118234.37	-5437.17	-9534.00	118234.31	5435.70	0.003%
30	11224.53	-118234.37	15.90	-11220.60	118234.31	-15.59	0.003%
31	9968.93	-118234.37	5685.93	-9965.44	118234.31	-5683.84	0.003%
32	5624.39	-118234.37	9657.13	-5622.28	118234.31	-9653.72	0.003%
33	23.29	-118234.37	10930.54	-23.00	118234.31	-10926.69	0.003%
34	-5583.66	-118234.37	9632.97	5582.11	118234.31	-9629.59	0.003%
35	-9944.40	-118234.37	5645.54	9941.47	118234.31	-5643.48	0.003%
36	-11223.93	-118234.37	-30.83	11222.22	118234.33	30.97	0.001%
37	-9561.02	-118234.37	-5477.69	9559.56	118234.33	5476.94	0.001%
38	-5661.61	-118234.37	-9663.48	5660.81	118234.33	9662.05	0.001%
39	-14.96	-31993.77	-9590.82	14.98	31993.77	9587.82	0.009%
40	4739.64	-31993.77	-8082.18	-4738.01	31993.77	8079.64	0.009%
41	7753.34	-31993.77	-4401.39	-7750.65	31993.77	4399.98	0.009%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
42	9432.64	-31993.77	6.20	-9429.50	31993.76	-6.16	0.009%
43	8393.43	-31993.77	4754.14	-8390.67	31993.76	-4752.58	0.009%
44	4719.58	-31993.77	8089.92	-4718.03	31993.77	-8087.21	0.009%
45	15.66	-31993.77	8850.22	-15.63	31993.77	-8847.17	0.009%
46	-4691.97	-31993.77	8073.19	4690.47	31993.77	-8070.50	0.009%
47	-8376.24	-31993.77	4726.94	8373.54	31993.77	-4725.39	0.009%
48	-9431.91	-31993.77	-25.32	9428.82	31993.77	25.34	0.009%
49	-7769.41	-31993.77	-4428.75	7766.76	31993.77	4427.33	0.009%
50	-4767.25	-31993.77	-8098.07	4765.65	31993.77	8095.52	0.009%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00035522	0.00069869
3	Yes	4	0.00026276	0.00051900
4	Yes	4	0.00036754	0.00072062
5	Yes	4	0.00027502	0.00054074
6	Yes	4	0.00037820	0.00074206
7	Yes	4	0.00028547	0.00056116
8	Yes	4	0.00036711	0.00072169
9	Yes	4	0.00027522	0.00054107
10	Yes	4	0.00035559	0.00070142
11	Yes	4	0.00026299	0.00052060
12	Yes	4	0.00036654	0.00071957
13	Yes	4	0.00027396	0.00053917
14	Yes	4	0.00037774	0.00074057
15	Yes	4	0.00028497	0.00055972
16	Yes	4	0.00036672	0.00071957
17	Yes	4	0.00027414	0.00053922
18	Yes	4	0.00035575	0.00070123
19	Yes	4	0.00026307	0.00052052
20	Yes	4	0.00036716	0.00072162
21	Yes	4	0.00027535	0.00054110
22	Yes	4	0.00037817	0.00074217
23	Yes	4	0.00028542	0.00056126
24	Yes	4	0.00036743	0.00072055
25	Yes	4	0.00027495	0.00054071
26	Yes	8	0.00000001	0.00006180
27	Yes	7	0.00067874	0.00017474
28	Yes	7	0.00065948	0.00017891
29	Yes	6	0.00097314	0.00036573
30	Yes	6	0.00093256	0.00037505
31	Yes	6	0.00090756	0.00038013
32	Yes	6	0.00092026	0.00037904
33	Yes	6	0.00094322	0.00037484
34	Yes	6	0.00096651	0.00036749
35	Yes	6	0.00098819	0.00035987
36	Yes	7	0.00067219	0.00017746
37	Yes	7	0.00069478	0.00017431
38	Yes	7	0.00069733	0.00017290
39	Yes	4	0.00000001	0.00055788
40	Yes	4	0.00000001	0.00056375
41	Yes	4	0.00000001	0.00057106
42	Yes	4	0.00000001	0.00056896

43	Yes	4	0.00000001	0.00056589
44	Yes	4	0.00000001	0.00056885
45	Yes	4	0.00000001	0.00057294
46	Yes	4	0.00000001	0.00056798
47	Yes	4	0.00000001	0.00056458
48	Yes	4	0.00000001	0.00056778
49	Yes	4	0.00000001	0.00057048
50	Yes	4	0.00000001	0.00056337

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	152 - 140	3.102	43	0.1680	0.0125
T2	140 - 135	2.676	43	0.1655	0.0104
T3	135 - 130	2.501	43	0.1631	0.0095
T4	130 - 125	2.329	43	0.1600	0.0086
T5	125 - 120	2.159	43	0.1559	0.0080
T6	120 - 100	1.995	43	0.1507	0.0074
T7	100 - 80	1.392	43	0.1262	0.0054
T8	80 - 73.3333	0.892	43	0.1006	0.0039
T9	73.3333 - 66.6667	0.749	43	0.0923	0.0034
T10	66.6667 - 60	0.619	43	0.0834	0.0030
T11	60 - 50	0.502	43	0.0740	0.0026
T12	50 - 40	0.348	43	0.0604	0.0021
T13	40 - 30	0.229	43	0.0462	0.0016
T14	30 - 20	0.135	43	0.0344	0.0013
T15	20 - 15	0.067	43	0.0224	0.0008
T16	15 - 10	0.038	43	0.0164	0.0006
T17	10 - 0	0.019	43	0.0109	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
162.00	DS9A09F36D-N	43	3.102	0.1680	0.0125	291544
152.00	Andrew HP4	43	3.102	0.1680	0.0125	291544
150.00	12' Omni	43	3.031	0.1672	0.0118	291544
145.00	QS66512-2 w/Mount Pipe	43	2.853	0.1668	0.0109	208246
140.00	Andrew HP4	43	2.676	0.1655	0.0104	101132
128.00	APXV9TM14-ALU-120 w/Mount Pipe	43	2.261	0.1585	0.0083	112282
118.00	AIR 32 w/Mount Pipe	43	1.931	0.1485	0.0071	59777
113.00	DS4F03C36D-N	43	1.773	0.1426	0.0066	54896
98.00	(2) HBXX-6517DS-VTM w/Mount Pipe	43	1.337	0.1236	0.0052	43740
78.00	8' Dipole	43	0.848	0.0981	0.0038	44123
58.00	GPS	43	0.469	0.0712	0.0025	44027

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	152 - 140	11.787	10	0.6353	0.0483
T2	140 - 135	10.174	10	0.6258	0.0402
T3	135 - 130	9.509	10	0.6172	0.0365
T4	130 - 125	8.860	10	0.6058	0.0331
T5	125 - 120	8.216	10	0.5906	0.0307
T6	120 - 100	7.592	10	0.5714	0.0283
T7	100 - 80	5.302	10	0.4796	0.0208
T8	80 - 73.3333	3.402	10	0.3826	0.0151
T9	73.3333 - 66.6667	2.857	10	0.3512	0.0132
T10	66.6667 - 60	2.362	10	0.3174	0.0117
T11	60 - 50	1.914	10	0.2815	0.0101
T12	50 - 40	1.329	10	0.2301	0.0080
T13	40 - 30	0.875	10	0.1758	0.0063
T14	30 - 20	0.518	10	0.1310	0.0049
T15	20 - 15	0.256	10	0.0853	0.0032
T16	15 - 10	0.147	10	0.0623	0.0023
T17	10 - 0	0.074	10	0.0417	0.0015

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
162.00	DS9A09F36D-N	10	11.787	0.6353	0.0483	126161
152.00	Andrew HP4	10	11.787	0.6353	0.0483	126161
150.00	12' Omni	10	11.518	0.6343	0.0454	126161
145.00	QS66512-2 w/Mount Pipe	10	10.845	0.6312	0.0420	90115
140.00	Andrew HP4	10	10.174	0.6258	0.0402	35786
128.00	APXV9TM14-ALU-120 w/Mount Pipe	10	8.601	0.6002	0.0321	31644
118.00	AIR 32 w/Mount Pipe	10	7.348	0.5631	0.0275	16020
113.00	DS4F03C36D-N	10	6.752	0.5412	0.0254	14671
98.00	(2) HBXX-6517DS-VTM w/Mount Pipe	10	5.094	0.4698	0.0202	11621
78.00	8' Dipole	10	3.233	0.3733	0.0145	11614
58.00	GPS	10	1.788	0.2712	0.0097	11467

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	152	Diagonal	A325N	0.5000	1	1280.14	3126.56	0.409 ✔	1	Member Block Shear
		Top Girt	A325N	0.5000	1	119.20	4132.50	0.029 ✔	1	Member Bearing
T2	140	Leg	A325N	0.6250	4	1321.88	20708.70	0.064 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1596.54	4689.84	0.340 ✔	1	Member Block Shear
		Top Girt	A325N	0.5000	1	167.35	4132.50	0.040 ✔	1	Member Bearing
T3	135	Diagonal	A325N	0.5000	1	1595.34	4689.84	0.340 ✔	1	Member Block 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
T4	130	Diagonal	A325N	0.5000	1	2282.13	6253.13	0.365 ✔	1	Member Block Shear
T5	125	Diagonal	A325N	0.5000	1	2637.94	6253.13	0.422 ✔	1	Member Block Shear
T6	120	Leg	A325N	0.6250	4	4832.69	20708.70	0.233 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	4257.26	7952.16	0.535 ✔	1	Bolt Shear
T7	100	Leg	A325N	0.7500	4	10143.60	29820.60	0.340 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	5663.53	8265.00	0.685 ✔	1	Member Bearing
		Secondary Horizontal	A325N	0.5000	2	614.86	7952.16	0.077 ✔	1	Bolt Shear
T8	80	Leg	A325N	0.8750	4	16439.90	40589.10	0.405 ✔	1	Bolt Tension
		Diagonal	A325X	0.5000	1	5958.40	8265.00	0.721 ✔	1	Member Bearing
		Secondary Horizontal	A325N	0.5000	2	697.67	7952.16	0.088 ✔	1	Bolt Shear
T9	73.3333	Diagonal	A325X	0.5000	1	6375.08	9719.30	0.656 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.5000	2	779.37	7952.16	0.098 ✔	1	Bolt Shear
T10	66.6667	Diagonal	A325N	0.5000	1	6482.32	7952.16	0.815 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.5000	2	862.48	7952.16	0.108 ✔	1	Bolt Shear
T11	60	Leg	A325N	0.8750	4	22947.40	40589.10	0.565 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7086.01	10440.00	0.679 ✔	1	Member Bearing
		Secondary Horizontal	A325N	0.5000	2	961.35	7952.16	0.121 ✔	1	Bolt Shear
T12	50	Diagonal	A325N	0.6250	1	7590.91	12425.20	0.611 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.5000	2	1080.05	7952.16	0.136 ✔	1	Bolt Shear
T13	40	Leg	A325N	1.0000	4	28673.30	53014.40	0.541 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7834.59	12425.20	0.631 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.5000	2	1198.18	7952.16	0.151 ✔	1	Bolt Shear
T14	30	Diagonal	A325N	0.6250	1	8567.48	12425.20	0.690 ✔	1	Bolt Shear
		Horizontal	A325N	0.5000	2	1310.11	7952.16	0.165 ✔	1	Bolt Shear
T15	20	Leg	A325N	1.0000	4	33933.30	53014.40	0.640 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	7601.09	10440.00	0.728 ✔	1	Member Bearing
T16	15	Diagonal	A325X	0.6250	1	7208.88	10440.00	0.691 ✔	1	Member Bearing
		Horizontal	A325N	0.6250	1	2867.74	7830.00	0.366 ✔	1	Member Bearing
T17	10	Diagonal	A325X	0.6250	1	8365.83	13050.00	0.641 ✔	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	152 - 140	ROHN 2 STD	12.00	4.00	61.0 K=1.00	1.0745	-4918.94	36842.20	0.134 [1] ✓
T2	140 - 135	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-7572.71	57134.60	0.133 [1] ✓
T3	135 - 130	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-10334.40	57134.60	0.181 [1] ✓
T4	130 - 125	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-14781.00	57134.60	0.259 [1] ✓
T5	125 - 120	ROHN 2.5 STD	5.01	5.01	63.4 K=1.00	1.7040	-19393.90	57134.60	0.339 [1] ✓
T6	120 - 100	ROHN 2.5 X-STR	20.03	6.68	86.7 K=1.00	2.2535	-42482.80	58512.90	0.726 [1] ✓
T7	100 - 80	ROHN 2.5X-STR + 1/3 HSS3.5x0.300	20.03	3.44	45.6 K=1.00	3.2390	-70907.20	125163.00	0.567 [1] ✓
T8	80 - 73.3333	ROHN 3X-STR + 1/3 HSS4x0.25	6.68	3.43	37.2 K=1.00	3.9770	-80456.00	161754.00	0.497 [1] ✓
T9	73.3333 - 66.6667	ROHN 3X-STR + 1/3 HSS4x0.25	6.68	3.42	37.1 K=1.00	3.9770	-89877.90	161796.00	0.556 [1] ✓
T10	66.6667 - 60	ROHN 3X-STR + 1/3 HSS4x0.25	6.68	3.42	37.1 K=1.00	3.9770	-99462.60	161833.00	0.615 [1] ✓
T11	60 - 50	ROHN 4 X-STR	10.02	5.18	42.1 K=1.00	4.4074	-110864.00	174268.00	0.636 [1] ✓
T12	50 - 40	ROHN 4 X-STR	10.02	5.17	42.0 K=1.00	4.4074	-124554.00	174359.00	0.714 [1] ✓
T13	40 - 30	ROHN 4X-STR + 1/3 HSS5x0.25	10.02	5.16	43.2 K=1.00	5.6220	-138176.00	220777.00	0.626 [1] ✓
T14	30 - 20	ROHN 4X-STR + 1/3 HSS5x0.25	10.02	2.50	21.0 K=1.00	5.6220	-151084.00	244991.00	0.617 [1] ✓
T15	20 - 15	ROHN 5STD + 1/3 HSS6x0.25	5.01	2.50	16.7 K=1.00	5.7760	-163999.00	254652.00	0.644 [1] ✓
T16	15 - 10	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	5.01	5.01	28.4 K=1.00	6.5220	-165356.00	276693.00	0.598 [1] ✓
T17	10 - 0	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	10.02	10.02	56.8 K=1.00	6.5220	-177591.00	231853.00	0.766 [1] ✓

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	152 - 140	L1 1/2x1 1/2x1/8	7.68	3.62	146.8 K=1.00	0.3594	-1324.28	3766.54	0.352 [1] ✓
T2	140 - 135	L1 1/2x1 1/2x3/16	8.45	4.13	169.0 K=1.00	0.5273	-1637.28	4169.52	0.393 [1] ✓
T3	135 - 130	L1 1/2x1 1/2x3/16	8.87	4.34	177.5 K=1.00	0.5273	-1569.46	3781.14	0.415 [1] ✓
T4	130 - 125	L1 1/2x1 1/2x1/4	9.29	4.55	187.0	0.6875	-2382.90	4440.68	0.537 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				✓
T5	125 - 120	L1 1/2x1 1/2x1/4	9.72	4.77	195.9 K=1.00	0.6875	-2595.84	4047.78	0.641 [1] ✓
T6	120 - 100	L2x2x1/4	12.26	6.08	186.7 K=1.00	0.9380	-4227.66	6076.83	0.696 [1] ✓
T7	100 - 80	L2 1/2x2 1/2x1/4	14.01	6.95	169.8 K=1.00	1.1900	-5865.52	9322.05	0.629 [1] ✓
T8	80 - 73.3333	L2 1/2x2 1/2x1/4	14.61	7.23	176.6 K=1.00	1.1900	-6143.16	8621.11	0.713 [1] ✓
T9	73.3333 - 66.6667	L2 1/2x2 1/2x5/16	15.21	7.53	184.7 K=1.00	1.4600	-6375.08	9664.98	0.660 [1] ✓
T10	66.6667 - 60	L2 1/2x2 1/2x5/16	15.82	7.83	192.2 K=1.00	1.4600	-6482.32	8925.99	0.726 [1] ✓
T11	60 - 50	L3x3x1/4	18.19	9.06	183.6 K=1.00	1.4400	-7349.18	9653.58	0.761 [1] ✓
T12	50 - 40	L3x3x5/16	19.05	9.48	193.2 K=1.00	1.7800	-7590.91	10773.00	0.705 [1] ✓
T13	40 - 30	L3x3x3/8	19.92	9.92	202.7 K=1.00	2.1100	-7834.59	11596.70	0.676 [1] ✓
T14	30 - 20	KL/R > 200 (C) - 178 L3x3x5/16	10.63	10.17	132.4 K=1.00	1.7800	-8567.48	22913.10	0.374 [1] ✓
T15	20 - 15	L3 1/2x3 1/2x1/4	10.63	10.17	116.0 K=1.04	1.6900	-7529.78	26962.90	0.279 [1] ✓
T16	15 - 10	L3 1/2x3 1/2x1/4	11.08	10.48	181.2 K=1.00	1.6900	-7435.12	11628.80	0.639 [1] ✓
T17	10 - 0	L3 1/2x3 1/2x5/16	22.61	11.11	193.2 K=1.00	2.0900	-8677.44	12644.90	0.686 [1] ✓

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T14	30 - 20	L3x3x1/4	18.24	8.77	164.0 K=0.92	1.4400	-2620.23	12093.30	0.217 [1] ✓
T16	15 - 10	L2 1/2x2 1/2x3/16	19.26	9.28	224.9 K=1.00	0.9020	-2867.74	4028.55	0.712 [1] ✓
		KL/R > 200 (C) - 232							

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T7	100 - 80	L2 1/2x2 1/2x1/4	12.31	12.06	107.0 K=0.57	1.1900	-1229.73	21094.80	0.058 [1] ✔
T8	80 - 73.3333	L2 1/2x2 1/2x1/4	12.99	12.69	109.5 K=0.55	1.1900	-1395.33	20504.20	0.068 [1] ✔
T9	73.3333 - 66.6667	L2 1/2x2 1/2x1/4	13.66	13.37	112.2 K=0.54	1.1900	-1558.74	19881.40	0.078 [1] ✔
T10	66.6667 - 60	L2 1/2x2 1/2x1/4	14.34	14.05	114.8 K=0.52	1.1900	-1724.96	19263.30	0.090 [1] ✔
T11	60 - 50	L2 1/2x2 1/2x1/4	15.18	14.80	117.8 K=0.51	1.1900	-1922.70	18581.90	0.103 [1] ✔
T12	50 - 40	L3x3x1/4	16.19	15.82	111.0 K=0.54	1.4400	-2160.11	24380.70	0.089 [1] ✔
T13	40 - 30	L3x3x1/4	17.21	16.84	114.3 K=0.53	1.4400	-2396.36	23450.40	0.102 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	152 - 140	L2x2x1/8	6.52	6.11	184.6 K=1.00	0.4844	-132.87	3212.12	0.041 [1] ✔
T2	140 - 135	L2x2x1/8	6.56	6.16	185.8 K=1.00	0.4844	-199.37	3168.79	0.063 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T14	30 - 20	L2x2x1/4	4.56	4.37	134.2 K=1.00	0.9380	-2620.23	11764.30	0.223 [1] ✔
T15	20 - 15	L2x2x1/4	4.81	4.58	140.6 K=1.00	0.9380	-2844.19	10712.70	0.265 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T14	30 - 20	L2x2x1/4	5.31	5.10	156.5 K=1.00	0.9380	-1526.27	8657.16	0.176 [1] ✓
T15	20 - 15	L2x2x1/4	5.54	5.28	162.0 K=1.00	0.9380	-1649.45	8074.30	0.204 [1] ✓

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	152 - 140	ROHN 2 STD	12.00	4.00	61.0	1.0745	2777.90	48353.90	0.057 [1] ✓
T2	140 - 135	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	5287.51	76682.30	0.069 [1] ✓
T3	135 - 130	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	7571.43	76682.30	0.099 [1] ✓
T4	130 - 125	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	10672.60	76682.30	0.139 [1] ✓
T5	125 - 120	ROHN 2.5 STD	5.01	5.01	63.4	1.7040	14016.50	76682.30	0.183 [1] ✓
T6	120 - 100	ROHN 2.5 X-STR	20.03	6.68	86.7	2.2535	33316.10	101409.00	0.329 [1] ✓
T7	100 - 80	ROHN 2.5X-STR + 1/3 HSS3.5x0.300	20.03	3.44	45.6	3.2390	57357.60	145755.00	0.394 [1] ✓
T8	80 - 73.3333	ROHN 3X-STR + 1/3 HSS4x0.25	6.68	3.43	37.2	3.9770	65759.80	178965.00	0.367 [1] ✓
T9	73.3333 - 66.6667	ROHN 3X-STR + 1/3 HSS4x0.25	6.68	3.42	37.1	3.9770	73924.30	178965.00	0.413 [1] ✓
T10	66.6667 - 60	ROHN 3X-STR + 1/3 HSS4x0.25	6.68	3.42	37.1	3.9770	82048.10	178965.00	0.458 [1] ✓
T11	60 - 50	ROHN 4 X-STR	10.02	5.18	42.1	4.4074	91789.70	198335.00	0.463 [1] ✓
T12	50 - 40	ROHN 4 X-STR	10.02	5.17	42.0	4.4074	103475.00	198335.00	0.522 [1] ✓
T13	40 - 30	ROHN 4X-STR + 1/3 HSS5x0.25	10.02	5.16	43.2	5.6220	114693.00	252990.00	0.453 [1] ✓
T14	30 - 20	ROHN 4X-STR + 1/3 HSS5x0.25	10.02	2.50	21.0	5.6220	125144.00	252990.00	0.495 [1] ✓
T15	20 - 15	ROHN 5STD + 1/3 HSS6x0.25	5.01	2.50	16.7	5.7760	135733.00	259920.00	0.522 [1] ✓
T16	15 - 10	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	5.01	5.01	28.4	6.5220	136354.00	293490.00	0.465 [1] ✓
T17	10 - 0	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	10.02	10.02	56.8	6.5220	146441.00	293490.00	0.499 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	152 - 140	L1 1/2x1 1/2x1/8	7.68	3.62	96.2	0.2109	1280.14	9175.78	0.140 [1] ✓
T2	140 - 135	L1 1/2x1 1/2x3/16	8.45	4.13	111.3	0.3076	1596.54	13381.30	0.119 [1] ✓
T3	135 - 130	L1 1/2x1 1/2x3/16	8.87	4.34	116.8	0.3076	1595.34	13381.30	0.119 [1] ✓
T4	130 - 125	L1 1/2x1 1/2x1/4	9.29	4.55	124.4	0.3984	2282.13	17332.00	0.132 [1] ✓
T5	125 - 120	L1 1/2x1 1/2x1/4	9.72	4.77	130.2	0.3984	2637.94	17332.00	0.152 [1] ✓
T6	120 - 100	L2x2x1/4	11.70	5.81	116.5	0.5863	4257.26	25504.60	0.167 [1] ✓
T7	100 - 80	L2 1/2x2 1/2x1/4	14.01	6.95	110.1	0.7753	5663.53	33726.10	0.168 [1] ✓
T8	80 - 73.3333	L2 1/2x2 1/2x1/4	14.61	7.23	114.4	0.7753	5958.40	33726.10	0.177 [1] ✓
T9	73.3333 - 66.6667	L2 1/2x2 1/2x5/16	15.21	7.53	120.3	0.9485	6081.39	41260.40	0.147 [1] ✓
T10	66.6667 - 60	L2 1/2x2 1/2x5/16	15.82	7.83	125.2	0.9485	6277.49	41260.40	0.152 [1] ✓
T11	60 - 50	L3x3x1/4	18.19	9.06	118.4	0.9394	7086.01	40862.80	0.173 [1] ✓
T12	50 - 40	L3x3x5/16	19.05	9.48	125.0	1.1592	7197.63	50426.00	0.143 [1] ✓
T13	40 - 30	L3x3x3/8	19.92	9.92	131.9	1.3716	7517.46	59663.00	0.126 [1] ✓
T14	30 - 20	L3x3x5/16	10.63	10.17	135.5	1.1592	8032.48	50426.00	0.159 [1] ✓
T15	20 - 15	L3 1/2x3 1/2x1/4	10.63	10.17	114.6	1.1269	7601.09	49019.10	0.155 [1] ✓
T16	15 - 10	L3 1/2x3 1/2x1/4	11.08	10.48	118.0	1.1269	7208.88	49019.10	0.147 [1] ✓
T17	10 - 0	L3 1/2x3 1/2x5/16	22.61	11.11	124.8	1.3917	8365.83	60539.80	0.138 [1] ✓

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T14	30 - 20	L3x3x1/4	18.24	8.77	172.9	0.9628	2620.23	41882.30	0.063 [1] ✓
T16	15 - 10	L2 1/2x2 1/2x3/16	19.26	9.28	217.4	0.5710	2867.74	24839.90	0.115 [1] ✓

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T7	100 - 80	L2 1/2x2 1/2x1/4	12.31	12.06	188.1	0.7753	1229.73	33726.10	0.036 [1] ✓
T8	80 - 73.3333	L2 1/2x2 1/2x1/4	12.99	12.69	198.1	0.7753	1395.33	33726.10	0.041 [1] ✓
T9	73.3333 - 66.6667	L2 1/2x2 1/2x1/4	13.66	13.37	208.7	0.7753	1558.74	33726.10	0.046 [1] ✓
T10	66.6667 - 60	L2 1/2x2 1/2x1/4	14.34	14.05	219.2	0.7753	1724.96	33726.10	0.051 [1] ✓
T11	60 - 50	L2 1/2x2 1/2x1/4	15.18	14.80	231.0	0.7753	1922.70	33726.10	0.057 [1] ✓
T12	50 - 40	L3x3x1/4	16.19	15.82	204.1	0.9628	2160.11	41882.30	0.052 [1] ✓
T13	40 - 30	L3x3x1/4	17.21	16.84	217.2	0.9628	2396.36	41882.30	0.057 [1] ✓

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	152 - 140	L2x2x1/8	6.52	6.11	121.2	0.3047	119.20	13253.90	0.009 [1] ✓
T2	140 - 135	L2x2x1/8	6.56	6.16	122.0	0.3047	167.35	13253.90	0.013 [1] ✓

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T14	30 - 20	L2x2x1/4	4.56	4.37	86.2	0.9380	2620.23	30391.20	0.086 [1] ✓
T15	20 - 15	L2x2x1/4	4.81	4.58	90.3	0.9380	2844.19	30391.20	0.094 [1] ✓

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T14	30 - 20	L2x2x1/4	5.31	5.10	100.4	0.9380	1526.27	30391.20	0.050 [1] ✓
T15	20 - 15	L2x2x1/4	5.54	5.28	104.0	0.9380	1649.45	30391.20	0.054 [1] ✓

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	152 - 140	Leg	ROHN 2 STD	1	-4918.94	36842.20	13.4	Pass
		Diagonal	L1 1/2x1 1/2x1/8	8	-1324.28	3766.54	35.2	Pass
		Top Girt	L2x2x1/8	5	-132.87	3212.12	4.1	Pass
T2	140 - 135	Leg	ROHN 2.5 STD	25	-7572.71	57134.60	13.3	Pass
		Diagonal	L1 1/2x1 1/2x3/16	31	-1637.28	4169.52	39.3	Pass
		Top Girt	L2x2x1/8	30	-199.37	3168.79	6.3	Pass
T3	135 - 130	Leg	ROHN 2.5 STD	37	-10334.40	57134.60	18.1	Pass
		Diagonal	L1 1/2x1 1/2x3/16	40	-1569.46	3781.14	41.5	Pass
T4	130 - 125	Leg	ROHN 2.5 STD	47	-14781.00	57134.60	25.9	Pass
		Diagonal	L1 1/2x1 1/2x1/4	49	-2382.90	4440.68	53.7	Pass
T5	125 - 120	Leg	ROHN 2.5 STD	56	-19393.90	57134.60	33.9	Pass
		Diagonal	L1 1/2x1 1/2x1/4	58	-2595.84	4047.78	64.1	Pass
T6	120 - 100	Leg	ROHN 2.5 X-STR	65	-42482.80	58512.90	72.6	Pass
		Diagonal	L2x2x1/4	67	-4227.66	6076.83	69.6	Pass
T7	100 - 80	Leg	ROHN 2.5X-STR + 1/3 HSS3.5x0.300	86	-70907.20	125163.00	56.7	Pass
		Diagonal	L2 1/2x2 1/2x1/4	88	-5865.52	9322.05	62.9	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	94	-1229.73	21094.80	5.8	Pass
T8	80 - 73.3333	Leg	ROHN 3X-STR + 1/3 HSS4x0.25	116	-80456.00	161754.00	49.7	Pass
		Diagonal	L2 1/2x2 1/2x1/4	118	-6143.16	8621.11	71.3	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	124	-1395.33	20504.20	6.8	Pass
T9	73.3333 - 66.6667	Leg	ROHN 3X-STR + 1/3 HSS4x0.25	128	-89877.90	161796.00	55.6	Pass
		Diagonal	L2 1/2x2 1/2x5/16	130	-6375.08	9664.98	66.0	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	136	-1558.74	19881.40	7.8	Pass
T10	66.6667 - 60	Leg	ROHN 3X-STR + 1/3 HSS4x0.25	140	-99462.60	161833.00	61.5	Pass
		Diagonal	L2 1/2x2 1/2x5/16	142	-6482.32	8925.99	72.6	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	148	-1724.96	19263.30	9.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T11	60 - 50	Leg	ROHN 4 X-STR	152	-110864.00	174268.00	63.6	Pass
		Diagonal	L3x3x1/4	154	-7349.18	9653.58	76.1	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	161	-1922.70	18581.90	10.3	Pass
T12	50 - 40	Leg	ROHN 4 X-STR	164	-124554.00	174359.00	71.4	Pass
		Diagonal	L3x3x5/16	166	-7590.91	10773.00	70.5	Pass
		Secondary Horizontal	L3x3x1/4	172	-2160.11	24380.70	8.9	Pass
T13	40 - 30	Leg	ROHN 4X-STR + 1/3 HSS5x0.25	176	-138176.00	220777.00	62.6	Pass
		Diagonal	L3x3x3/8	178	-7834.59	11596.70	67.6	Pass
		Secondary Horizontal	L3x3x1/4	185	-2396.36	23450.40	10.2	Pass
T14	30 - 20	Leg	ROHN 4X-STR + 1/3 HSS5x0.25	188	-151084.00	244991.00	61.7	Pass
		Diagonal	L3x3x5/16	191	-8567.48	22913.10	37.4	Pass
		Horizontal	L3x3x1/4	190	-2620.23	12093.30	21.7	Pass
		Redund Horz 1 Bracing	L2x2x1/4	215	-2620.23	11764.30	22.3	Pass
		Redund Diag 1 Bracing	L2x2x1/4	216	-1526.27	8657.16	17.6	Pass
T15	20 - 15	Leg	ROHN 5STD + 1/3 HSS6x0.25	230	-163999.00	254652.00	64.4	Pass
		Diagonal	L3 1/2x3 1/2x1/4	236	-7529.78	26962.90	27.9	Pass
		Redund Horz 1 Bracing	L2x2x1/4	237	-2844.19	10712.70	26.5	Pass
		Redund Diag 1 Bracing	L2x2x1/4	242	-1649.45	8074.30	20.4	Pass
T16	15 - 10	Leg	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	254	-165356.00	276693.00	59.8	Pass
		Diagonal	L3 1/2x3 1/2x1/4	256	-7435.12	11628.80	63.9	Pass
		Horizontal	L2 1/2x2 1/2x3/16	232	-2867.74	4028.55	71.2	Pass
T17	10 - 0	Leg	Rohn 5 Std w/ (3) 1.5"x0.5" Bars	263	-177591.00	231853.00	76.6	Pass
		Diagonal	L3 1/2x3 1/2x5/16	265	-8677.44	12644.90	68.6	Pass
							Summary	
						Leg (T17)	76.6	Pass
						Diagonal (T11)	76.1	Pass
						Horizontal (T16)	71.2	Pass
						Secondary Horizontal (T11)	10.3	Pass
						Top Girt (T2)	6.3	Pass
						Redund Horz 1 Bracing (T15)	26.5	Pass
						Redund Diag 1 Bracing (T15)	20.4	Pass
						Bolt Checks	81.5	Pass
						RATING =	**81.5**	**Pass**

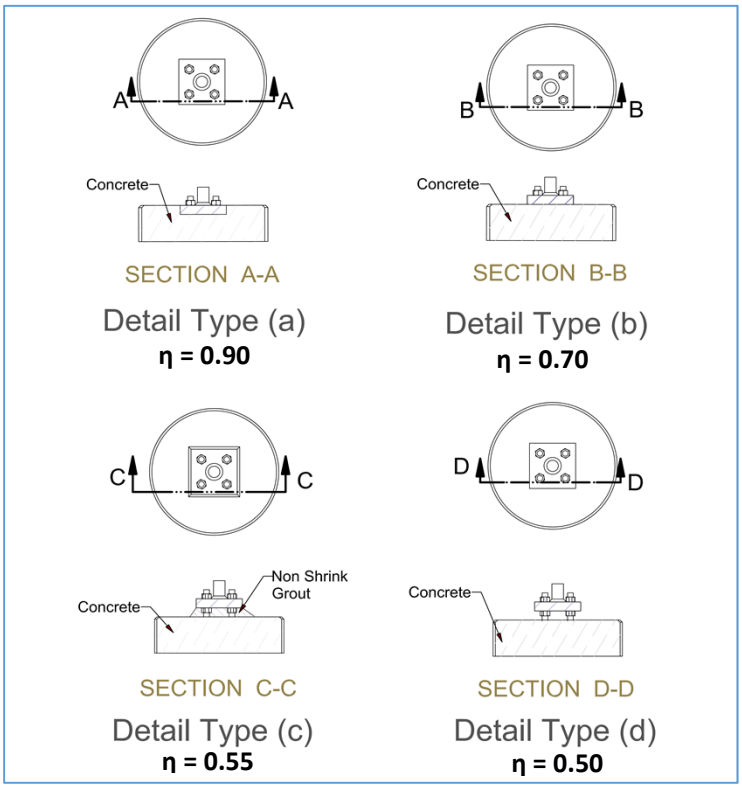
Ramaker & Associates, Inc.
855 Community Drive
Sauk City, WI 53583

Site:	CT03XC328-A
Project:	29012
Date:	9/29/17

Self Support Tower Anchor Rod Check - TIA-222-G

Eta, η:	0.55	
Tension, Pu:	153.5	kip
Shear, Vu:	20.1	kip
Quantity:	4	
Diameter:	1	in
Grade:	F1554 Gr 105	
Fy:	105	ksi
Fu:	125	ksi
Anchor Force:	47.5	kip
Design Capacity:	60.6	kip
Stress Ratio:	78.4%	
Length, lar:		in
Moment, Mu:		kip-in
Stress Ratio:		
Maximum Acceptable:	105%	
Governing Stress Ratio:	**78.4%**	Pass

Anchor Rod Detail Types



Drilled Pier Foundation

Project #:	29012
Site Name:	CT03XC328-A

TIA-222 Revison:	G
Tower Type:	Self Support

Applied Loads	Comp.	Uplift
Moment (kip-ft)	0	0
Axial Force (kips)	186.2	153.5
Shear Force (kips)	23.5	20.1

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	21	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 21' below grade		
Pier Diameter	4.5	ft
Rebar Quantity	15	
Rebar Size	8	
Clear Cover to Ties	3	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	11.63	11.63
Soil Safety Factor	10.24	11.98
Max Moment (kip-ft)	181.19	154.97
Rating	*13.0%*	*11.1%*
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	139.11	139.11
End Bearing (kips)	167.00	-
Weight of Concrete (kips)	46.07	34.55
Total Capacity (kips)	306.11	173.66
Axial (kips)	232.27	153.50
Rating	*75.9%*	*88.4%*
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	11.81	11.18
Critical Moment (kip-ft)	181.10	154.51
Critical Moment Capacity	1455.12	1070.47
Rating	*12.4%*	*14.4%*

Min. Steel is assumed

Soil Interaction Rating	**88.4%**
Structural Foundation Rating	**14.4%**

Soil Profile

Groundwater Depth	8	ft	# of Layers: 3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ultimate Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	5	5	120	150	0	0	0.000	0.000					Cohesionless
2	5	8	3	120	150	0	30	0.000	0.000	0.82	0.82			Cohesionless
3	8	21	13	120	87.6	0	30	0.000	0.000	0.82	0.82	14		Cohesionless

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PROJECT: DO MACRO UPGRADE

SITE NAME: LONG RIDGE FIRE CO. INC.

SITE CASCADE: CT03XC328-A

SITE ADDRESS: 366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903

SITE TYPE: 152'-0' SELF SUPPORT TOWER

SITE INFORMATION

PROPERTY OWNER:
LONG RIDGE FIRE CO. INC.
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903-1133

SITE ADDRESS:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903-1133
FAIRFIELD COUNTY

GEOGRAPHIC COORDINATES:
LATITUDE: 41.153119° (41° 09' 11.1954" N)
LONGITUDE: -73.5929° (73° 35' 34.44" W)

ZONING JURISDICTION:
CITY OF STAMFORD

ZONING DISTRICT:
RA-2 ONE FAMILY RESIDENCE

POWER COMPANY:
CONNECTICUT LIGHT & POWER
PH.: (800) 286-2000

AAV PROVIDER:
VERIZON
PH.: (203) 968-6116

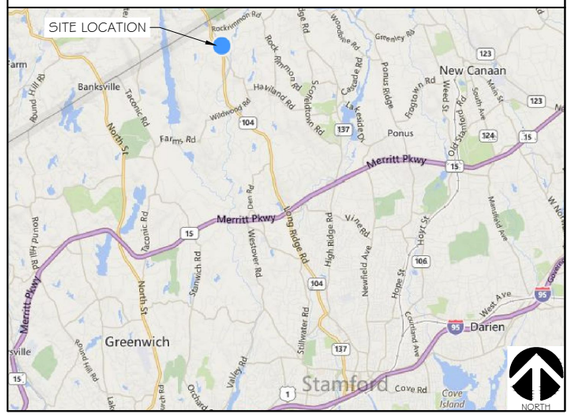
SPRINT CONSTRUCTION MANAGER:
NAME: GARY WOOD
PHONE: (860) 940-9168
E-MAIL: gary.wood@sprint.com

EQUIPMENT SUPPLIER:
ALCATEL-LUCENT
600-700 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974
PH.: (908) 508-8080

SITE ACQUISITION:
CHARLES CHERUNDOLO CONSULTING, INC.
1280 RT. 46 WEST
PARSIPPANY, NJ 07054
CONTACT: TOM JUPIN, PMP, PROJECT MANAGER
CELL: (973) 819-9033
EMAIL: tom.jupin@cherundoloconsulting.com

PLANS PREPARED BY:
RAMAKER & ASSOCIATES, INC.
CONTACT: KEITH BOHNSACK, PROJECT MANAGER
PH.: (608) 643-4100
EMAIL: kbohnsack@ramaker.com

AREA MAP



LOCATION MAP

PROJECT DESCRIPTION

- INSTALL NEW 2.5 EQUIPMENT IN EXISTING BTS CABINET
  *(1) RECTIFIER SHELF AND (3) RECTIFIERS
  *(1) BASE BAND UNIT
- INSTALL (2) NEW BATTERY STRINGS IN EXISTING BATTERY CABINET
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) RRH'S ON TOWER
- INSTALL (1) FIBER CABLE AND (3) SECTOR JUMPERS
- INSTALL (27) ANTENNA / RRH JUMPERS

APPLICABLE CODES

* ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE
2. ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. NATIONAL ELECTRIC CODE

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SHEET INDEX

SHT NO:	SHEET TITLE:	REV:	ENGINEER:
T-1	TITLE SHEET	-	JRS
SP-1	SPRINT SPECIFICATIONS	-	JRS
SP-2	SPRINT SPECIFICATIONS	-	JRS
SP-3	SPRINT SPECIFICATIONS	-	JRS
A-1	SITE PLAN	-	JRS
A-2	EQUIPMENT PLAN	-	JRS
A-3	BUILDING ELEVATION & ANTENNA DETAILS	-	JRS
A-4	RF DATA SHEET	-	JRS
A-5	FIBER PLUMBING DIAGRAM	-	JRS
A-6	CABLE COLOR CODING	-	JRS
A-7	ANTENNA & HYBRID CABLE DETAILS	-	JRS
A-8	EQUIPMENT DETAILS	-	JRS
E-1	EQUIPMENT UTILITY & GROUNDING PLAN	-	JRS
E-2	GROUNDING DETAILS	-	JRS
E-3	DC POWER DETAILS & PANEL SCHEDULES	-	JRS

Sprint®
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

RAMAKER & ASSOCIATES, INC.
855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

Charles Cherundolo Consulting, Inc.
713 Clover Lane, Moscow, PA 18444
Phone: 570-840-5084 Fax: 570-842-5592

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: 9/29/2017 Date:

MARK	DATE	DESCRIPTION
1	09/29/17	REVISED PER LANDLORD COMMENTS

ISSUE PHASE: FINAL DATE ISSUED: 08/23/2017

PROJECT TITLE:
LONG RIDGE FIRE CO. INC.
CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
TITLE SHEET

SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: T-1

DRAWN BY: TWS CHECKED BY: KAB

I:\29000\29012\CAD\Sprint Macro Upgrade\29012 Sprint Macro Upgrade CD.dwg Printed by: cfoley on Sep 29, 2017 - 11:02am

SECTION 01 100 - SCOPE OF WORK

THE WORK:
THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE CONSTRUCTION DRAWINGS AND ASSOCIATED OUTLINE SPECIFICATIONS AND THE SITE SPECIFIC WORK ORDER, DESCRIBE THE WORK TO BE PERFORMED BY THIS CONSTRUCTION CONTRACTOR (SUPPLIER).

RELATED DOCUMENTS:
A. THE REQUIREMENTS OF EACH SECTION OF THIS SPECIFICATION APPLY TO ALL SECTIONS, INDIVIDUALLY AND COLLECTIVELY.
B. RELATED DOCUMENTS: THE CONTRACTOR SHALL COMPLY WITH THE MOST CURRENT VERSION OF THE FOLLOWING SUPPLEMENTAL REQUIREMENTS FOR INSTALLATION AND TESTING.
   1. EN-2012-001: (FIBER OPTIC, DC CABLE, AND DC CIRCUIT BREAKER TAGGING STANDARDS)
   2. TS-0200 - (TRANSMISSION ANTENNA LINE ACCEPTANCE STANDARDS)
   3. EL-0568: (FIBER TESTING POLICY)
   4. NP-312-201: (EXTERIOR GROUNDING SYSTEM TESTING)
   5. NP-760-500: ETHERNET, MICROWAVE, TESTING AND ACCEPTANCE

PRECEDENCE:
SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

NATIONALLY RECOGNIZED CODES AND STANDARDS:
THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL 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. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
D. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE - "NEC") AND NFPA 101 (LIFE SAFETY CODE).
E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
G. AMERICAN CONCRETE INSTITUTE (ACI)
H. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
I. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
J. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
K. PORTLAND CEMENT ASSOCIATION (PCA)
L. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
M. BRICK INDUSTRY ASSOCIATION (BIA)
N. AMERICAN WELDING SOCIETY (AWS)
O. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
P. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
Q. DOOR AND HARDWARE INSTITUTE (DHI)
R. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
S. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

DEFINITIONS:
A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B. COMPANY: "SPRINT"; SPRINT NEXTEL CORPORATION AND IT'S OPERATING ENTITIES.
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D. CONTRACTOR: CONSTRUCTION CONTRACTOR, SUPPLIER, 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.
F. CONSTRUCTION MANAGER - ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT.

SITE FAMILIARITY:
CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

POINT OF CONTACT:
COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

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.

DRAWINGS REQUIRED AT JOBSITE:
THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
A. THE JOBSITE DRAWINGS SHALL BE CLEARLY MARKED DAILY IN RED 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.
B. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

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.

UTILITY SERVICES:
WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

PERMITS/FEES:
WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

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

USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:
CONTRACTOR WILL UTILIZE ITS BEST EFFORTS TO WORK WITH SPRINT ELECTRONIC PROJECT MANAGEMENT SYSTEMS. CONTRACTOR UNDERSTANDS THAT SUFFICIENT INTERNET ACCESS, EQUIVALENT TO "BROADBAND" OR BETTER, IS REQUIRED TO TIMELY AND EFFECTIVELY UTILIZE SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS AND AGREES TO MAINTAIN APPROPRIATE CONNECTIONS FOR CONTRACTOR'S STAFF AND OFFICES THAT ARE COMPATIBLE WITH SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS

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 LESSOR'S OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

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.

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

EXISTING CONDITIONS:
NOTIFY THE SPRINT CONSTRUCTION MANAGER 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.

SECTION 01 200 - COMPANY FURNISHED MATERIAL AND EQUIPMENT

FURNISHED MATERIALS:
COMPANY FURNISHED MATERIALS AND EQUIPMENT TO BE INSTALLED BY THE CONTRACTOR (OFIC) IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

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

DELIVERABLES:
A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

SECTION 01 300 - CELL SITE CONSTRUCTION

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

GENERAL REQUIREMENTS FOR CONSTRUCTION:
A. 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.
B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
   1. 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.
   2. 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.
D. 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

FUNCTIONAL REQUIREMENTS:
A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. CONTRACTOR SHALL TAKE ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
   2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
   3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND BACKHAUL (FIBER, COPPER, OR MICROWAVE).
   4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
   5. INSTALL ABOVE GROUND GROUNDING SYSTEMS, CONDUIT AND BOXES.
   6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
   7. INSTALL "H-FRAMES", CABINETS AND PADS AND PLATFORMS AS INDICATED.
   8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
   9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
   10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
   11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
   12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
   13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
   14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
   15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
   16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
   17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
   18. CONDUCT ALL REQUIRED TESTS AND INSPECTIONS
   19. PERFORM, DOCUMENT, AND CLOSE OUT ALL JURISDICTIONAL PERMITTING REQUIREMENTS AND ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
   20. PERFORM ALL ADDITIONAL WORK AS IDENTIFIED IN SCOPE OF SERVICES ATTACHED TO THE SUPPLIER AGREEMENT FOR THIS PROJECT. THIS WORK MAY INCLUDE COMMISSIONING, INTEGRATION, SPECIAL WAREHOUSING, REVERSE LOGISTICS ACTIVITIES, ETC. PERFORM COMMISSIONING AND INTEGRATION ACTIVITIES PER APPLICABLE MOPS.

DELIVERABLES:
A. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TEST REPORTS AND DOCUMENTATION INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
   1. PRODUCT SPECIFICATIONS FOR MATERIALS OR SPECIAL CONSTRUCTION IF REQUESTED BY SPRINT
   2. ACTUALIZE ALL CONSTRUCTION RELATED MILESTONES IN SITERRA AND COMPLETE ALL ON-LINE FORMS AND COMPLETE DOCUMENT UP-LOADS. UPLOAD ALL REQUIRED CLOSEOUT DOCUMENTS AND FINAL SITE PHOTOS
   3. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT LEFT ON SITE INSIDE BASE OF MAIN RF CABINET IN A PROTECTIVE POUCH.
   4. ALL REQUIRED TEST REPORTS.
   5. REQUIRED CLOSEOUT DOCUMENTATION INCLUDING BUT NOT LIMITED TO:
      a. ALL JURISDICTIONAL PERMITTING AND OCCUPANCY INFORMATION
      b. PDF SCAN OF REDLINES PRODUCED IN THE FIELD
      c. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS
      d. LIEN WAIVERS
      e. FINAL PAYMENT APPLICATION
      f. REQUIRED FINAL CONSTRUCTION PHOTOS
      g. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
      h. LISTS OF SUBCONTRACTORS
B. PROVIDE ADDITIONAL DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
   1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
   2. PROJECT PROGRESS REPORTS.
   3. PRE-CONSTRUCTION MEETING NOTES.

SECTION 01 400 - TESTS, INSPECTIONS, SUBMITTALS, AND PROJECT CLOSEOUT

TESTS AND INSPECTIONS:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   1. COAX SWEEPS AND FIBER TESTS PER TS-0200 (CURRENT VERSION) ANTENNA LINE ACCEPTANCE STANDARDS
   2. POST CONSTRUCTION HEIGHT VERIFICATION, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
   3. CONCRETE BREAK TESTS
   4. SITE RESISTANCE TO EARTH TEST
   5. STRUCTURAL BACKFILL COMPACTION TESTS
   6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
   7. ADDITIONAL TESTING AS REQUIRED ELSEWHERE IN THIS SPECIFICATION.

SUBMITTALS:
A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
B. UPLOAD THE FOLLOWING TO SITERRA AS APPLICABLE INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
   2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
   3. CHEMICAL GROUNDING SYSTEM .
   4. REINFORCEMENT CERTIFICATIONS
   5. STRUCTURAL BACKFILL TEST RESULTS
   6. SWEEP AND FIBER TESTS
   7. ANTENNA AZIMUTH AND DOWN-TILT VERIFICATION
   8. POST CONSTRUCTION HEIGHT VERIFICATION
   9. ADDITIONAL SUBMITTALS MAY BE REQUIRED FOR SPECIAL CONSTRUCTION OR MINOR MATERIALS
C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

TESTING BY THIRD PARTY AGENCY:
A. EMPLOY AN AGENCY OF ENGINEERS AND SCIENTISTS WHO IS REGULARLY ENGAGED IN FIELD AND LABORATORY TESTING AND ANALYSIS. AGENCY SHALL HAVE BEEN IN BUSINESS A MINIMUM OF FIVE YEARS, AND BE LICENSED AS PROFESSIONAL ENGINEERS IN THE STATE WHERE THE PROJECT IS LOCATED. AGENCY IS SUBJECT TO APPROVAL BY COMPANY.
   1. AGENCY MUST HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
   2. 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.
   3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
B. REQUIRED THIRD PARTY TESTS:
   1. SITE RESISTANCE TO EARTH TEST PER NP-312-201
   2. CONCRETE CYLINDER BREAK TESTS FOR TOWER PIER AND ANCHORS PER NATIONALLY RECOGNIZED STANDARDS
   3. STRUCTURAL SOILS COMPACTION TESTS PER NATIONALLY RECOGNIZED STANDARDS
   4. REBAR PLACEMENT VERIFICATION WITH REPORT
   5. TESTING TENSION STUDY FOR ROCK ANCHORS
   6. ALL THIRD PARTY TESTS AS REQUIRED BY LOCAL JURISDICTION
C. REQUIRED TESTS BY CONTRACTOR
   1. COAX SWEEP TESTS PER SPRINT STANDARD TS-0200
   2. FIBER TESTS PER SPRINT STANDARD EL-0568
   3. MICROWAVE LINK TESTS PER NP-760-500
   4. ANTENNA AZIMUTHS AND DOWN TILT USING ELECTRONIC ALIGNMENT TOOL PER ANTENNA INSTALLATION SPECIFICATION HEREIN.

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Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: Date: 9/29/2017

MARK	DATE	DESCRIPTION
1	09/29/17	REVISED PER LANDLORD COMMENTS

ISSUE PHASE: FINAL DATE ISSUED: 08/23/2017

PROJECT TITLE:
LONG RIDGE FIRE CO. INC.
CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: SP-1

DRAWN BY: TWS CHECKED BY: KAB

5. POST CONSTRUCTION HEIGHT VERIFICATION AS REQUIRED HEREWITH IN THE TOWER INSTALLATION SPECIFICATIONS.
6. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED HEREWITH IN THE ASPHALT PAVING SPECIFICATIONS.
7. FIELD QUALITY CONTROL TESTING AS SPECIFIED HEREWITH IN THE CONCRETE PAVING SPECIFICATIONS.
8. TESTING REQUIRED HEREWITH UNDER SPECIFICATIONS FOR AGGREGATE BASE FOR ROADWAYS
9. ALL OTHER TESTS REQUIRED BY LOCAL JURISDICTION

D. INSPECTIONS BY COMPANY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN INSPECTION ACTIVITIES, FINAL ACCEPTANCE / PUNCH WALK REVIEW, AND/OR AS A RESULT OF TESTING

E. SPRINT RESERVES THE RIGHT TO INSPECT THE CONSTRUCTION SITE AT ANY TIME VIA SITE WALKS AND/OR PHOTO REVIEWS. CONTRACTOR SHALL GIVE SPRINT 24 HOURS NOTICE PRIOR TO THE COMMENCEMENT OF THE FOLLOWING CONSTRUCTION ACTIVITIES AND PHOTOGRAPHS OF THE IN-PROGRESS WORK.
1. GROUNDING SYSTEM AND BURIED UTILITIES INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS, AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS, ASPHALT PAVING, AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE AND POST CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES. PRIOR TO CONSTRUCTION ACTIVITIES AND AFTER CONSTRUCTION IS COMPLETE, PROVIDE PHOTOGRAPHIC DOCUMENTATION OF ROOF, FLASHINGS, AND PARAPETS, BOTH BEFORE AND AFTER CONSTRUCTION IS COMPLETE.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. TOWER TOP AND INACCESSIBLE EQUIPMENT (RRUS, ANTENNAS, AND CABLING): PROVIDE PHOTOS OF THE BACKS OF ALL ANTENNAS, RRUS, COMBINERS, FILTERS, FIBER AND DC CABLING, CABLE COLOR CODING, EQUIPMENT GROUNDING AND CONNECTOR WATER PROOFING INCLUDING NAME PLATE AND SERIAL NUMBER FOR ALL SERIALIZED EQUIPMENT.

PROJECT CLOSEOUT:

A. FINAL ACCEPTANCE PUNCH WALK AND INSPECTION: AS IDENTIFIED IN THE SCOPE OF SERVICES, SPRINT WILL CONDUCT A FINAL PUNCH WALK OR FINAL DESK TOP PHOTO REVIEW (SITE MODIFICATIONS). PUNCH WALKS MUST BE SCHEDULED IN ADVANCE AS REQUIRED. AT THE PUNCH WALK / REVIEW, SPRINT MAY IDENTIFY CRITICAL DEFICIENCIES WHICH MUST BE CORRECTED PRIOR TO PUTTING SITE ON AIR. MINOR DEFICIENCIES MUST BE CORRECTED WITHIN 30 DAYS EXCEPT AS OTHERWISE REQUIRED. VERIFICATIONS OF CORRECTIONS MAY BE MADE BY COMPANY DURING A REPEAT SITE WALK OR DESK TOP PHOTO REVIEW AT COMPANY'S SOLE DISCRETION.

B. CLOSEOUT DOCUMENTATION: ALL CLOSEOUT DOCUMENTATION AND PHOTOGRAPHS SHALL BE UPLOADED PRIOR TO FINAL ACCEPTANCE. SPRINT WILL REVIEW CLOSEOUT DOCUMENTATION FOR PRESENCE AND CONTENT. CLOSEOUT DOCUMENTATION SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING AS APPLICABLE:
1. COAX SWEEP TESTS:
2. FIBER TESTS:
3. JURISDICTION FINAL INSPECTION DOCUMENTATION
4. REINFORCEMENT CERTIFICATION (MILL CERTIFICATION)
5. CONCRETE MIX DESIGN AND PRODUCT DATA (TOWER FOUNDATION)
6. LIEN WAIVERS AND RELEASES.
7. POST -CONSTRUCTION HEIGHT VERIFICATION
8. JURISDICTION CERTIFICATE OF OCCUPANCY
9. ELECTRONIC ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
10. STRUCTURAL BACKFILL TEST RESULTS (IF APPLICABLE)
11. CELL SITE UTILITY SETUP
12. AS-BUILT REDLINE CONSTRUCTION DRAWINGS (PDF SCAN OF FIELD MARKS)
13. AS-BUILT CONSTRUCTION DRAWINGS IN DWG AND PDF FORMATS
14. LIST OF SUB CONTRACTORS
15. APPROVED PERMITTING DOCUMENTS
16. FINAL SITE PHOTOS UP-LOADED TO SITERRA. INCLUDE THE FOLLOWING AS APPLICABLE:
    a. TOWER, ANTENNAS, RRUS, AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAXCABLE LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
    b. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
    c. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
    d. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

PROJECT PHOTOGRAPHS:

A. PROVIDE PROJECT CLOSEOUT GENERAL ARRANGEMENT PHOTOS OF ALL NEW WORK. THE FOLLOWING LIST REPRESENTS MINIMUM REQUIREMENTS AND MINIMUM QUANTITY. ADDITIONAL PHOTOS MAY BE REQUIRED TO ADEQUATELY DOCUMENT THE WORK.
1. ASR AND RF MPE SIGNAGE (IF NOT IN PLACE, SUPPLIER NOTIFIES EMS FIELD REPRESENTATIVE)
2. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR)
3. BACK OF ANTENNAS AND RRUS (1 EACH SECTOR) CLOSE UP SHOWING WEATHERPROOFING AND GROUNDING (AS REQUIRED). CLOSE-UP OF BACK SIDE OF EACH PERMANENT RRU SHOWING SERIAL NUMBER/BAR CODE.
4. VIEW (1 EACH SECTOR) ALONG THE AZIMUTH AND TILT OF THE ANTENNAS
5. TOP OF TOWER FROM GROUND, 1 EACH SECTOR
6. MAINLINE HYBRID CABLE ROUTE DOWN TOWER SHOWING FASTENERS AND SUPPORT
7. MAINLINE/HYBRID CABLE ROUTE ALONG ICE BRIDGE OR IN CABLE TRAY SHOWING FASTENERS AND SUPPORT
8. GROUND MOUNTED RRU RACKS (FRONT AND BACK)
9. FRONT, SIDE AND BACK ELEVATIONS OF ALL GROUND CABINETS
10. VIEW OF COMPOUND FROM A DISTANCE
11. VIEW OF EACH GROUND CABINET (POWER, RF, FIBER SPOOL, PPC POWER, PPC TELCO WITH DOOR OPEN)
12. BACKHAUL FIBER MEET-ME-POINT AND CONDUIT ROUTE (MICROWAVE INSTALLATION IF NOT FIBER)
13. AAV NETWORK INTERFACE DEVICE OR MICROWAVE RADIO INSTALLATION

DEFICIENCY CORRECTIONS:

CONTRACTOR IS RESPONSIBLE FOR ALL CORRECTIONS TO DEFICIENCIES IDENTIFIED THROUGH TESTING, REVIEW OF SUBMITTALS, INSPECTIONS AND CLOSEOUT REVIEWS.

SECTION 01 500 - PROJECT REPORTING

WEEKLY REPORTS:

A. CONTRACTOR SHALL REPORT TO SPRINT AT MINIMUM ON A WEEKLY BASIS VIA SITERRA BY UPDATING ALL APPLICABLE POST END KEEPING MILESTONES WITH ACTUAL AND FORECASTED COMPLETION DATES.

B. ADDITIONAL REQUIREMENTS FOR REPORTING MAY BE IDENTIFIED ELSEWHERE OR REQUIRED BY THE SCOPE OF SERVICES OR SPRINTS LOCAL MARKET CONSTRUCTION MANAGER. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

PROJECT CONFERENCE CALLS:

SPRINT MAY HOLD PERIODIC PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

FINAL PROJECT ACCEPTANCE: PRIOR TO SPRINTS FINAL PROJECT ACCEPTANCE. ALL REQUIRED MILESTONE ACTUALS MUST BE UPDATED IN SITERRA AND ALL REQUIRED REPORTING TASKS MUST BE COMPLETE.

SECTION 11 700 - ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION

SUMMARY:

THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRU'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRU'S:

THE NUMBER AND TYPE OF ANTENNAS AND RRU'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:

HYBRID CABLE WILL BE DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

JUMPERS AND CONNECTORS:

FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRU'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRU'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE, MIN. LENGTH FOR JUMPER SHALL BE 10'-0".

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:

INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:

THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS.

A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.

B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

HYBRID CABLE INSTALLATION:

A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.

C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE INSTALLED INSIDE MONOPOLE WITH CABLE SUPPORT GRIPS AS REQUIRED BY THE MANUFACTURER.
2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
    a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH AT 18" O.C. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
    b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
4. CABLE INSTALLATION:
    a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
    b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
    c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS.
5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED IN TS 0200 (CURRENT VERSION).
7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.
1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBS) AND RELATED EQUIPMENT

SUMMARY:

A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRED BY THE APPLICABLE INSTALLATION MOPS.

C. COMPLY WITH MANUFACTURER'S INSTALLATION AND START-UP REQUIREMENTS.

DC CIRCUIT BREAKER LABELING

A. NEW DC CIRCUIT IS REQUIRED IN MMBS CABINET SHALL BE CLEARLY IDENTIFIED AS TO RRU BEING SERVICED.

SECTION 26 100 - BASIC ELECTRICAL REQUIREMENTS

SUMMARY:

THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS

QUALITY ASSURANCE:

A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTINGS ARE AVAILABLE IN THE INDUSTRY.

B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE PROPOSED USE FOR THIS PROJECT.

C. MATERIALS AND EQUIPMENT: ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS.

SUPPORTING DEVICES:

A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
1. ALLIED TUBE AND CONDUIT.
2. B-LINE SYSTEM.
3. UNISTRUT DIVERSIFIED PRODUCTS.
4. THOMAS & BETTS.

B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED PROFESSIONAL ENGINEER

Signature: 9/29/2017 Date:

MARK	DATE	DESCRIPTION
1	09/29/17	REVISED PER LANDLORD COMMENTS

ISSUE PHASE: FINAL DATE ISSUED: 08/23/2017

PROJECT TITLE:

LONG RIDGE FIRE CO. INC.
CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:

SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 29012

SHEET NUMBER: SP-2

SUPPORTING DEVICES:

A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.

B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.

C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:

1. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.

2. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

ELECTRICAL IDENTIFICATION:

A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.

B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR UNDERGROUND RUNS. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED - SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.

B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.

C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.

D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.

E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6-FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRED BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.

F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

HUBS AND BOXES:

A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKNUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.

B. CABLE TERMINATION FITTINGS FOR CONDUIT

1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL BY ROXTEC.

2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.

C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.

D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKET COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.

E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

SUPPLEMENTAL GROUNDING SYSTEM:

A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM TO THE EXTENT INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS EXCEPT AS OTHERWISE NOTED.

B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPADES WITH NO-OX.

C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

EXISTING STRUCTURE:

A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

CONDUIT AND CONDUCTOR INSTALLATION:

A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

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LONG RIDGE FIRE CO. INC.
CT03XC328-A

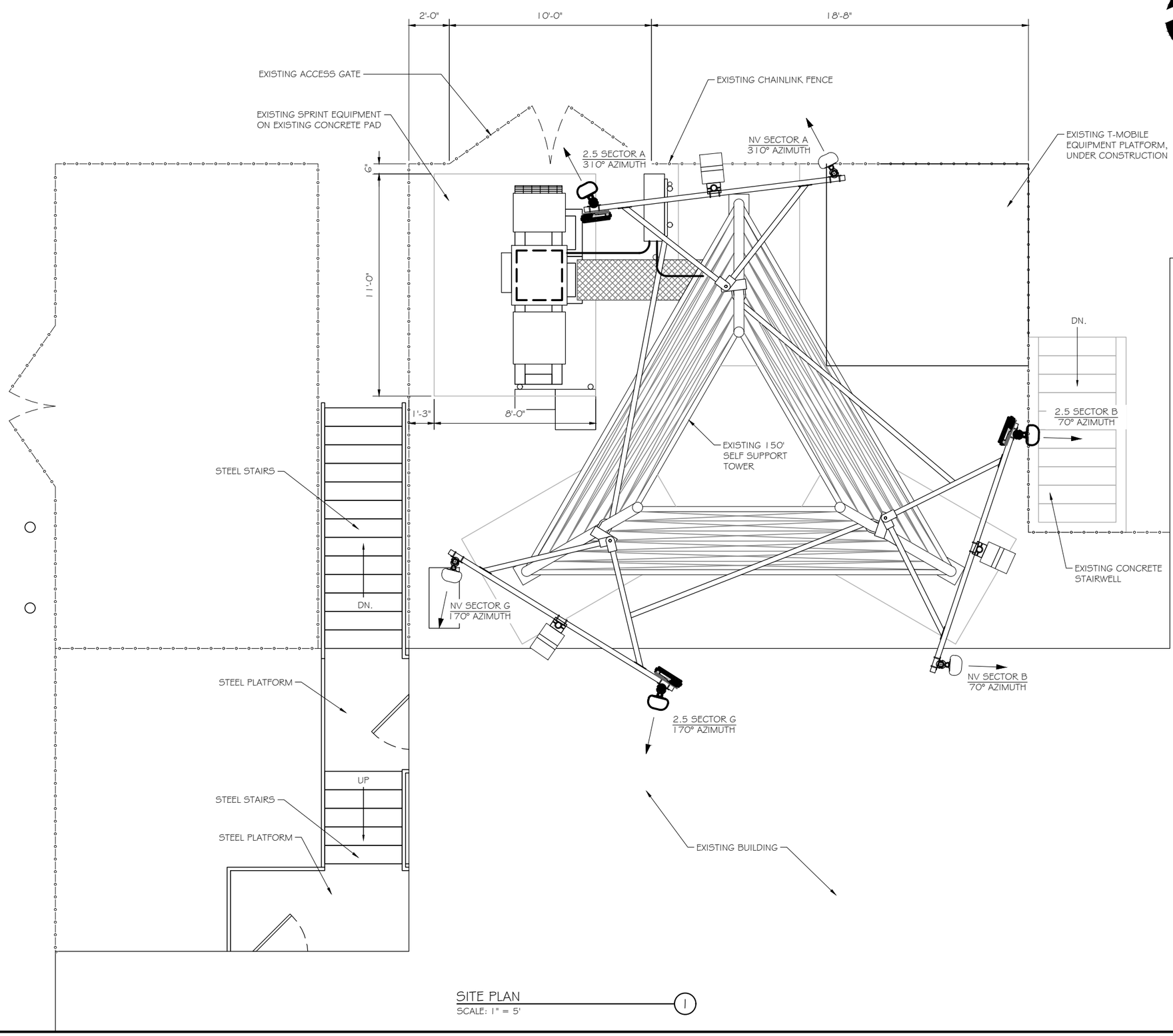
PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
SPRINT SPECIFICATIONS

SCALE: NONE

PROJECT NUMBER: 29012

SHEET NUMBER: SP-3



SITE PLAN
SCALE: 1" = 5'

NORTH

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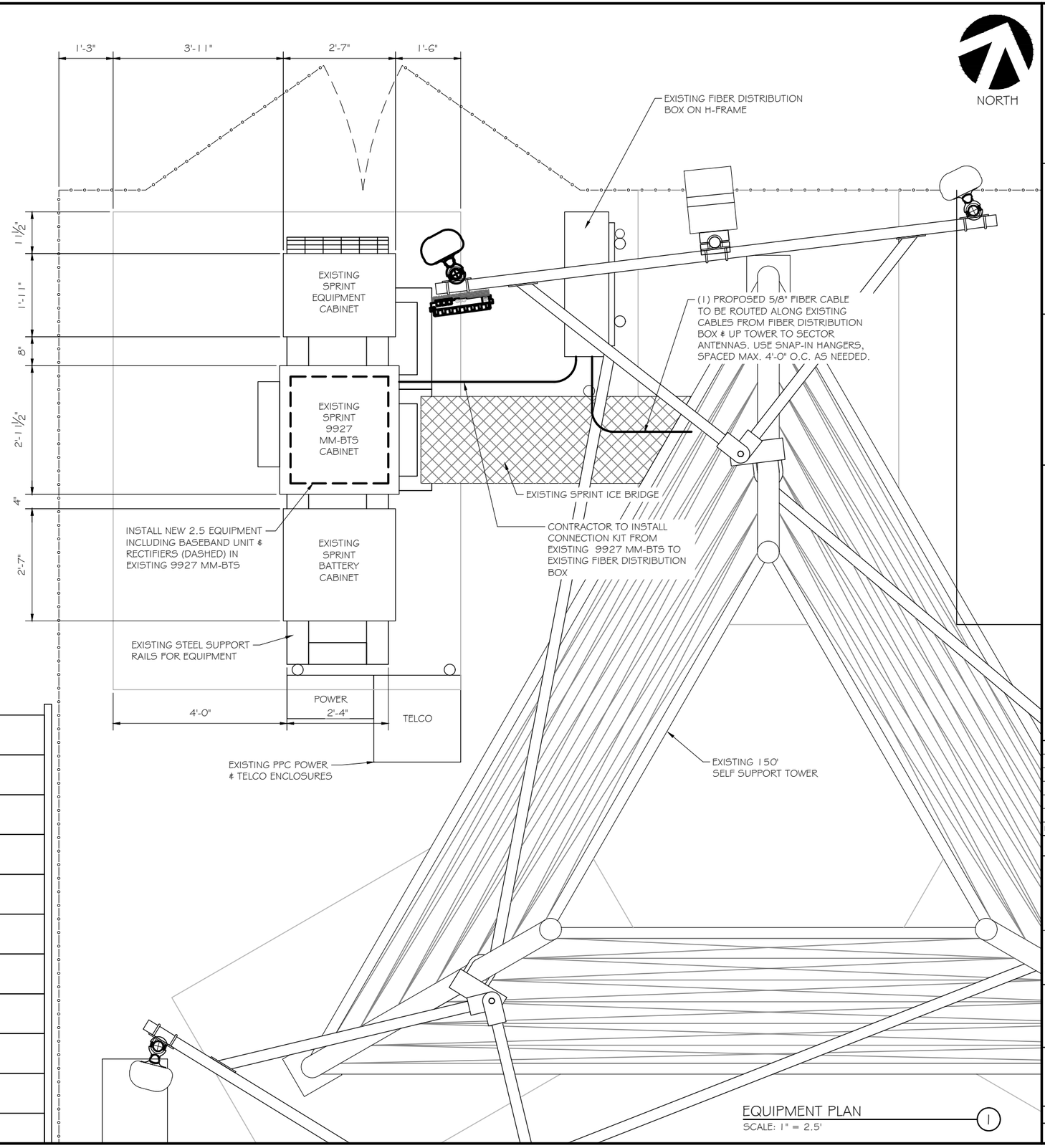
CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
SITE PLAN

0 2.5' 5' 10'
11" x 17" - 1" = 5'
22" x 34" - 1" = 2.5'

PROJECT NUMBER: 29012
SHEET NUMBER: A-1



EQUIPMENT PLAN
SCALE: 1" = 2.5'

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PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
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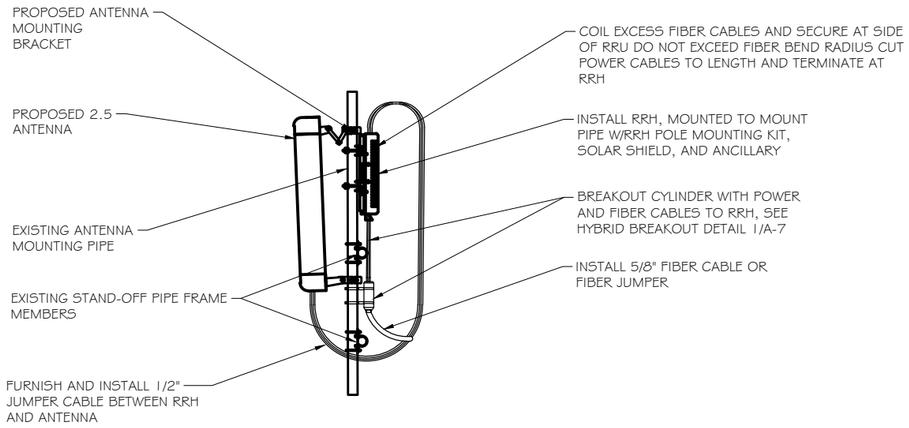
FAIRFIELD COUNTY

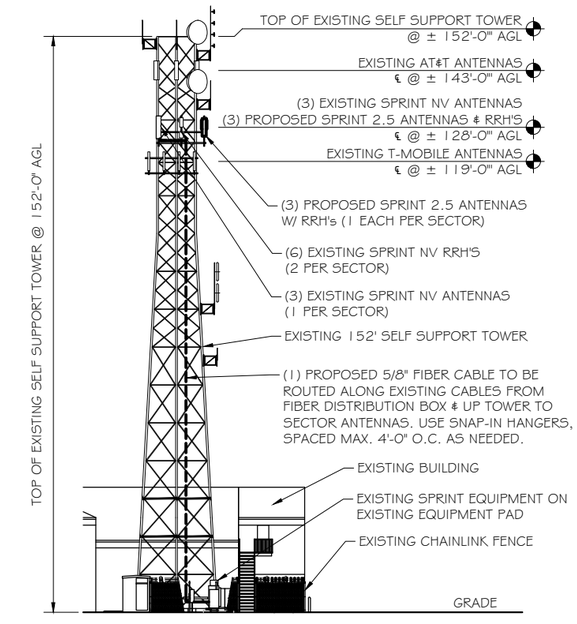
SHEET TITLE:
EQUIPMENT PLAN

0 1.25' 2.5' 5'
11" x 17" - 1" = 2.5'
22" x 34" - 1" = 1.25'

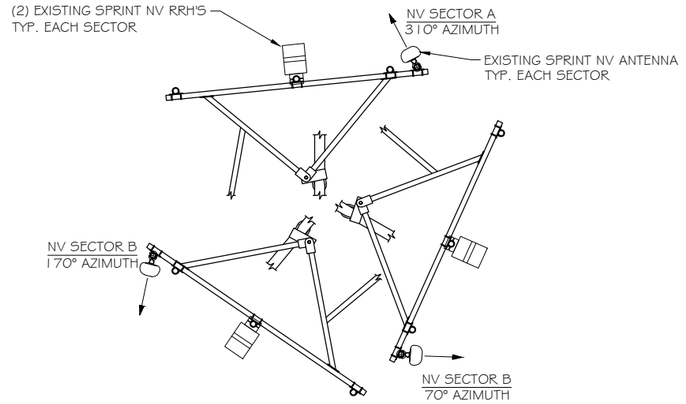
PROJECT NUMBER: 29012
SHEET NUMBER: A-2



ANTENNA & RRH MOUNTING DETAILS (1)
SCALE: NTS

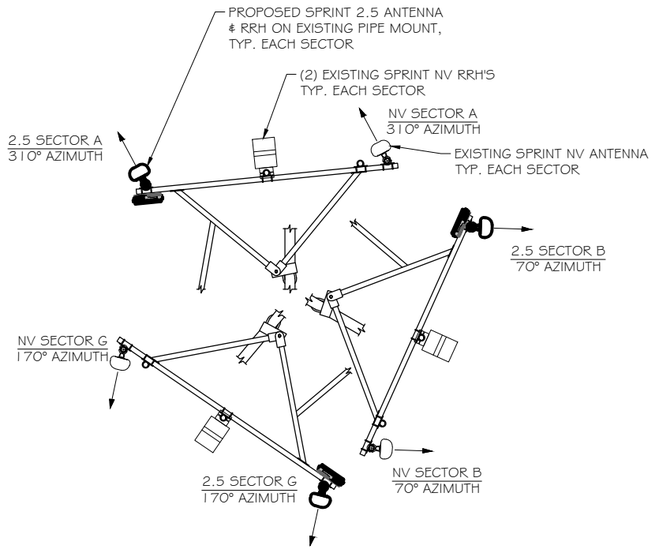


BUILDING ELEVATION (2)
SCALE: 1" = 40'



NORTH

EXISTING ANTENNA ARRAY (3)
SCALE: NTS



NORTH

PROPOSED ANTENNA ARRAY (4)
SCALE: NTS

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CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
BUILDING ELEVATIONS & ANTENNA DETAILS

0 20' 40' 80'
11" x 17" - 1" = 40'
22" x 34" - 1" = 20'

PROJECT NUMBER: 29012
SHEET NUMBER: A-3

RFDS Sheet

General Site Information

Site ID	CT03XC328	Equipment Vendor	Alcatel-Lucent
Market	Southern Connecticut	Lattitude	41.15311
Region	Northeast	Longitude	-73.5929397
MLA	N/A	LL SITE ID	N/A
Structure Type	SELF SUPPORT		
BTS Type			

Solution ID		Siterra SR Equipment type	
		Equipment Vendor	Alcatel-Lucent

Incremental Power Draw needed by added Equipment: 0

Base Equipment

BBU Kit	ALU BBU Kit	Top Hat	None
BBU Kit Qty	1	Top Hat Qty	N/A
		Top Hat Dimenstions	N/A
Growth Cabinet	N/A	Top Hat Weight (lbs)	N/A
Growth Cabinet Qty	N/A		
Growth Cabinet Dimensions	N/A		
Growth Cabinet Weight	N/A		

RF Path Information

RRH	TD-RRH8x20-25
RRH Qty	3
RRH Dimensions	26.1"x18.6"x6.7"
RRH Weight. lbs.	70
RRH Mount Weight. Lbs.	10
Power and Fiber Cable	ALU Fiber Only
Cable Qty	1
Weight per foot. Lbs.	0.242
Diameter. Inches.	0.73
Length Ft.	150 (calculated as antenna height plus 20%)
Coax Jumper	TBD
Coax Jumper Qty	27
Coax Jumper Length. Feet.	25
Coax Jumper Weight	1.7
Coax Jumper Diameter. Inches	0.5
AISG Cable	Commscope ATCB-B01-006
AISG Cable Qty	3
AISG Diameter. Inches.	0.315
AISG Cable length.	8
Weight of entire AISG cable. Lbs.	1.3

Antenna Sector Information

	Sector 1	Sector 2	Sector 3
Antenna make/model	RFS APXVTM14-ALU-I20	RFS APXVTM14-ALU-I20	RFS APXVTM14-ALU-I20
Antenna qty	1	1	1
Antenna Dimensions. Inches	56.3"x12.6"x6.3"	56.3"x12.6"x6.3"	56.3"x12.6"x6.3"
Antenna Weight. Lbs	55.12	55.12	55.12
Antenna Mounting Kit Weight. Lbs.	11.5	11.5	11.5
CL Height	128	128	128
Antenna Azimuth	310	70	170
Antenna Mechanical Downtilt	0	0	0
Antenna etilt	-2	-2	-2

*RFDS SHEET WAS GENERATED BY RAMAKER & ASSOCIATES FROM PLAN OF RECORD (POR) PROVIDED BY SPRINT. CONTRACTOR SHALL VERIFY AND OBTAIN FINAL RFDS FROM SPRINT CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.

NOTES:

1. GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND C/L HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT BELOW, HALT ANTENNA WORK FOR ONE HOUR. CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING CONTACT INFORMATION ABOVE FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5GHZ ANTENNA AT SAME C/L HEIGHT AS 1.9GHZ ANTENNA AND EMAIL CORRECT C/L HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILD DRAWING WITH CORRECT C/L HEIGHT. ALSO EMAIL CORRECT 1.9GHZ AND 800MHZ ANTENNA C/L HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
2. AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5GHZ. TEST TO INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
3. GENERAL CONTRACTOR MUST ENSURE THAT NO OBJECT IS LOCATED WITHIN 45 DEGREES OF LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5GHZ ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
4. 2.5GHZ ANTENNA MUST BE AT LEAST 6' FROM 1.9GHZ ANTENNA, 30" FROM 800MHZ ANTENNA AND 30" FROM DUAL BAND 1.9GHZ AND 800MHZ ANTENNA.
5. GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREE. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 32 RF ALIGNMENT TOOL OR EQUIVALENT TOOL.

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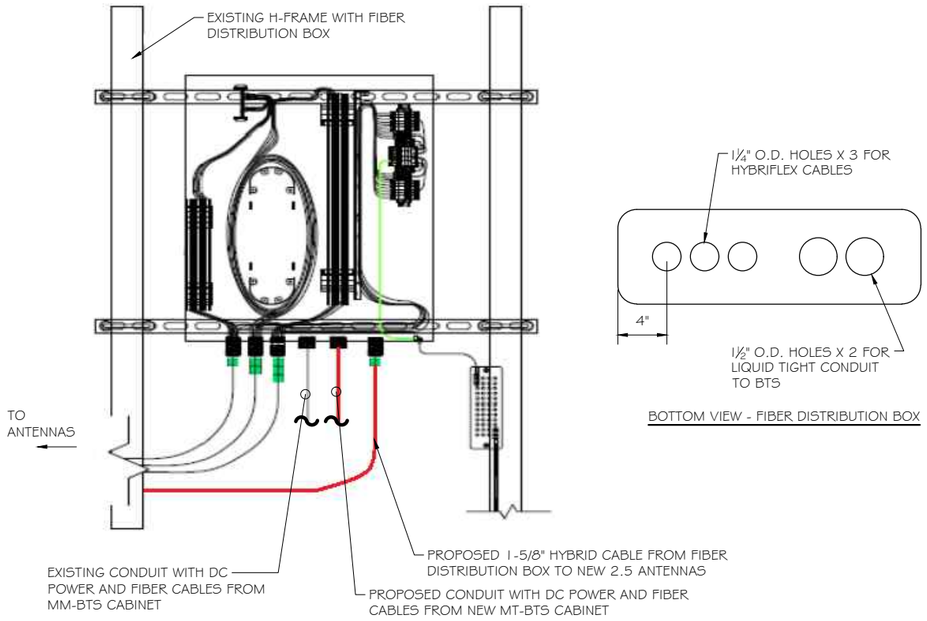
SHEET TITLE:
RF DATA SHEET

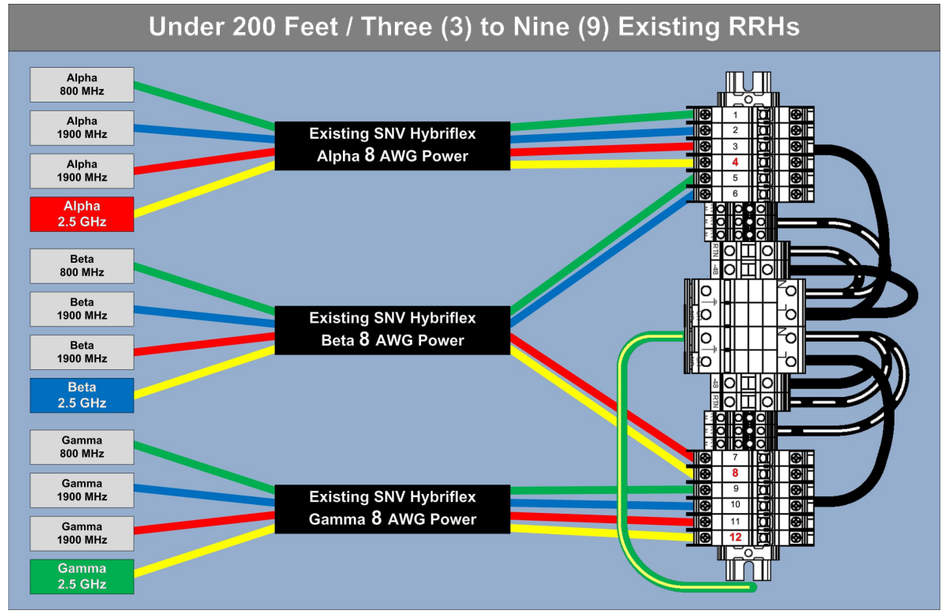
SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: A-4

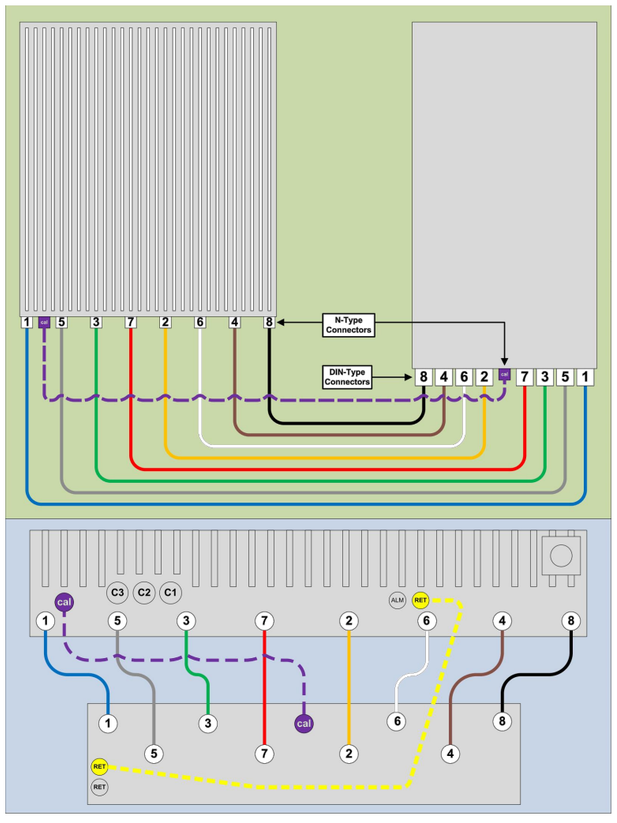


TYPICAL FIBER DISTRIBUTION BOX DETAIL (1)
SCALE: NTS

BOTTOM VIEW - FIBER DISTRIBUTION BOX



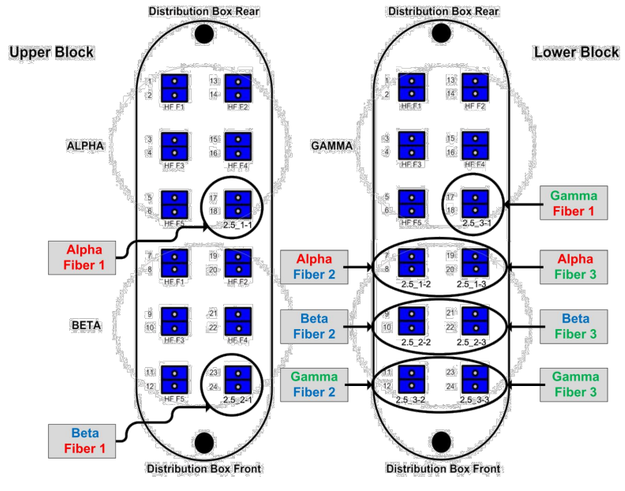
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL (2)
SCALE: NTS



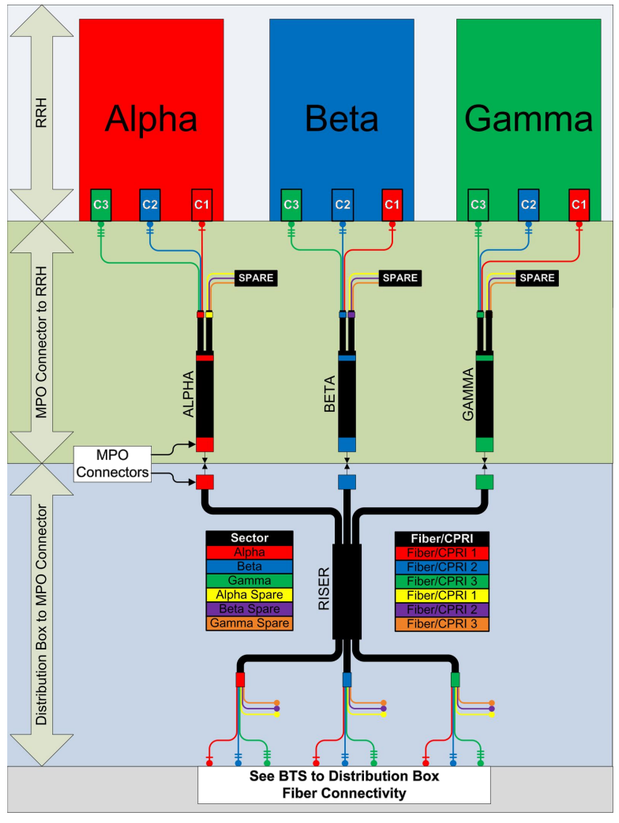
8T8R DETAIL (3)
SCALE: NTS

eCCM2-HR

Distribution Box Fiber Panel



BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (4)
SCALE: NTS



RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (5)
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DATE ISSUED: 08/23/2017

PROJECT TITLE:
LONG RIDGE FIRE CO. INC.
CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
FIBER PLUMBING DIAGRAM

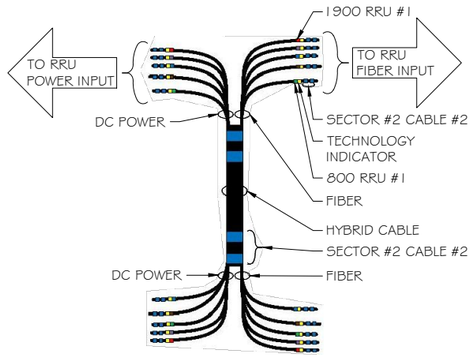
SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: A-5

2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange




Example – Sector 2, Cable 2, 800mhz Radio #1


Example – Sector 3, Cable 1, 1900mhz Radio #1


Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

COLOR CODING CHARTS (1)
SCALE: NTS

CABLE MARKING NOTES

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

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FAIRFIELD COUNTY

SHEET TITLE:
CABLE COLOR CODING

SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: A-6

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE
MANUF:RFS

CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
Fiber Only	Varies	Use NV Hybriflex	5/8"
Hybriflex	<200'	8 AWG	1-1/4"
Hybriflex	225-300'	6 AWG	1-1/4"
Hybriflex	325-375'	4 AWG	1-1/4"

RFS HYBRIFLEX RISER CABLE SCHEDULE

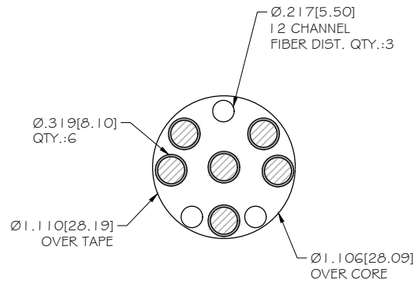
FIBER ONLY (EXISTING DC POWER)	Hybrid cable MN:HB058-M12-050F 12x multi-mode fiber pairs, Top:Outdoor protected connectors, Bottom:LC Connectors, 5/8 cable, 50 ft	50 ft
	MN:HB058-M12-075F	75 ft
	MN:HB058-M12-100F	100 ft
	MN:HB058-M12-125F	125 ft
	MN:HB058-M12-150F	150 ft
	MN:HB058-M12-175F	175 ft
	MN:HB058-M12-200F	200 ft
8 AWG Power	Hybrid cable MN:HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC connectors. 1 1/4 cable, 50 ft	50 ft
	MN:HB114-08U3M12-075F	75 ft
	MN:HB114-08U3M12-100F	100 ft
	MN:HB114-08U3M12-125F	125 ft
	MN:HB114-08U3M12-150F	150 ft
	MN:HB114-08U3M12-175F	175 ft
	MN:HB114-08U3M12-200F	200 ft
6 AWG Power	Hybrid cable MN:HB114-13U3M12-225F 3x 6 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC connectors. 1 1/4 cable, 225 ft	225 ft
	MN:HB114-13U3M12-250F	250 ft
	MN:HB114-13U3M12-275F	275 ft
	MN:HB114-13U3M12-300F	300 ft
4 AWG Power	Hybrid cable MN:HB114-21U3M12-325F 3x 4 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC connectors. 1 1/4 cable, 325 ft	325 ft
	MN:HB114-21U3M12-350F	350 ft
	MN:HB114-21U3M12-375F	375 ft

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

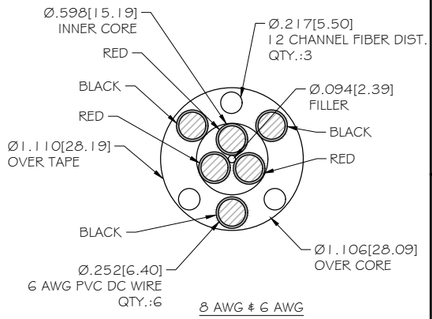
FIBER ONLY	Hybrid Jumper cable MN:HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN:HBF012-M3-10F1	10 ft
	MN:HBF012-M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15' NOTIFY SPRINT CM OF ANY DISCREPANCY	
8 AWG POWER	Hybrid Jumper cable MN:HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC connectors, 5/8 cable	5 ft
	MN:HBF058-08U1M3-10F1	10 ft
	MN:HBF058-08U1M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15' NOTIFY SPRINT CM OF ANY DISCREPANCY	
6 AWG POWER	Hybrid Jumper cable MN:HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC connectors, 5/8 cable	5 ft
	MN:HBF058-13U1M3-10F1	10 ft
	MN:HBF058-13U1M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15' NOTIFY SPRINT CM OF ANY DISCREPANCY	
4 AWG POWER	Hybrid Jumper cable MN:HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC connectors, 7/8 cable	5 ft
	MN:HBF078-21U1M3-10F1	10 ft
	MN:HBF078-21U1M3-15F1	15 ft
	SPECIAL INSTALLATION NOTE: JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15' NOTIFY SPRINT CM OF ANY DISCREPANCY	

*NOTE: SPRINT CM TO CONFIRM HYBRID/FIBER RISER CABLE & HYBRID/FIBER JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.

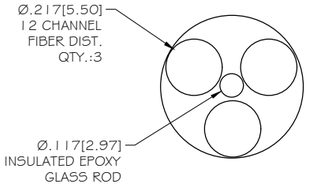
HYBRID CABLE CROSS SECTION & DATA (1)
SCALE: NTS



4 AWG



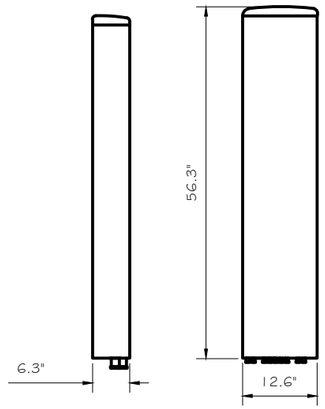
8 AWG & 6 AWG



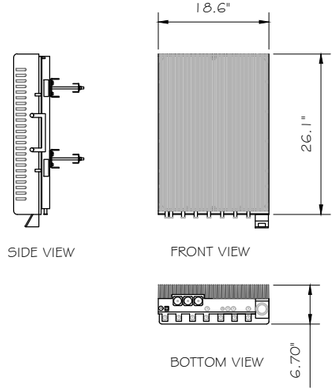
FIBER ONLY

RFS: APXVTM14-ALU-120

DIMENSIONS, HxWxD:	56.3" x 12.6" x 6.3"
WEIGHT, WITHOUT PRE-MOUNTED BRACKETS:	55.12 lbs
CONNECTOR:	(9) MINI-DIN FEMALE/BOTTOM



2.5 ANTENNA DETAIL (2)
SCALE: NTS



ALCATEL-LUCENT: TD-RRH8x20

HxWxD = (26.1" x 18.6" x 6.7")

WEIGHT = 70 lbs.

2.5 RRH DETAIL (3)
SCALE: NTS

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366 OLD LONG RIDGE ROAD
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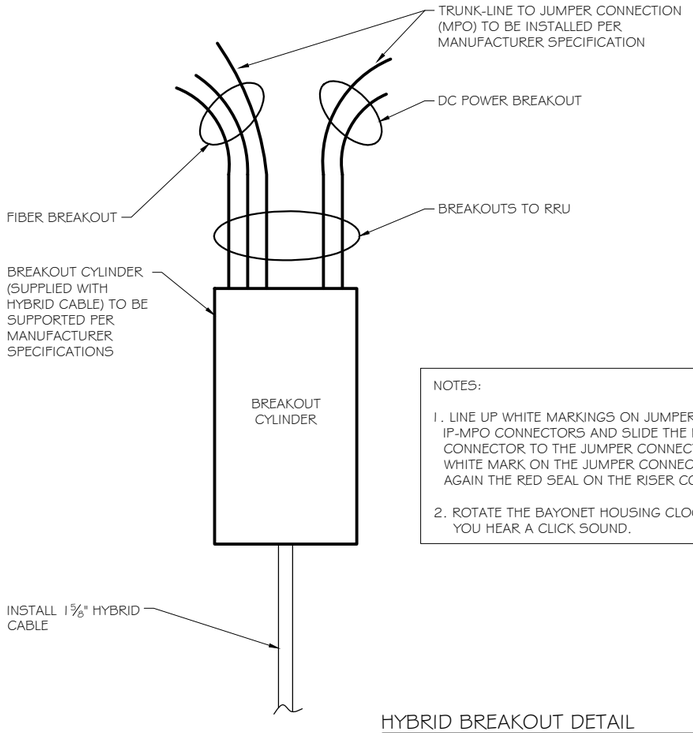
FAIRFIELD COUNTY

SHEET TITLE:
ANTENNA & HYBRID CABLE DETAILS

SCALE: NONE

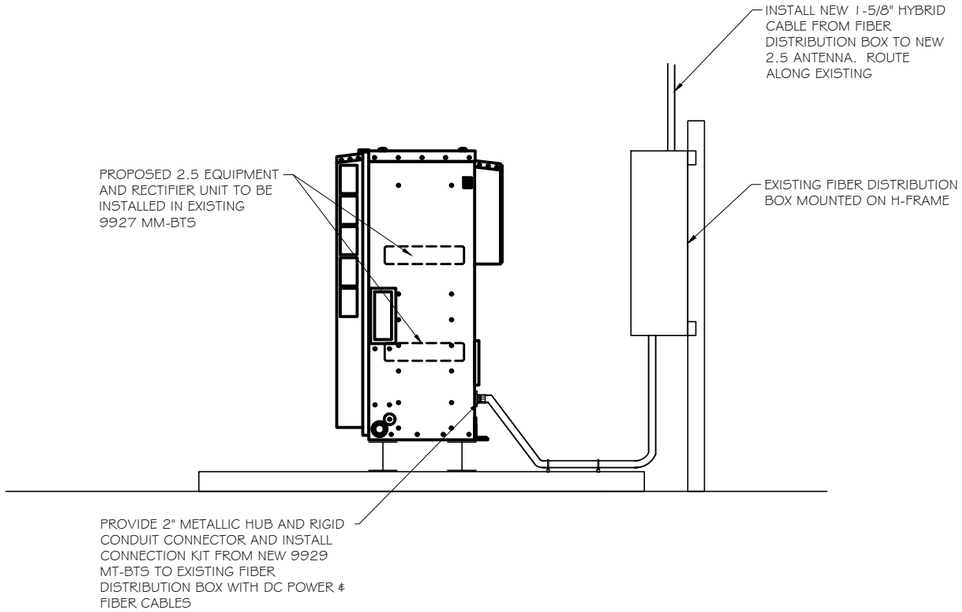
PROJECT NUMBER: 29012
SHEET NUMBER: A-7



NOTES:

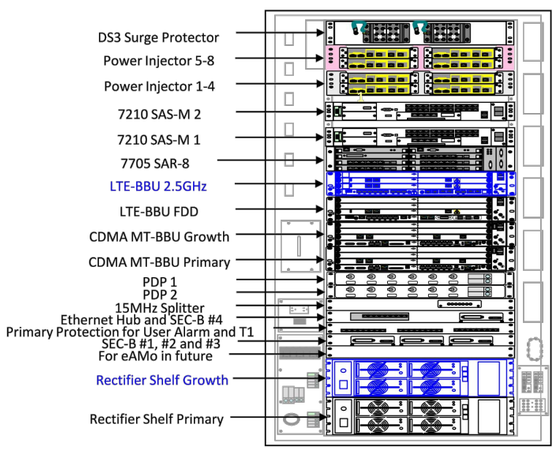
1. LINE UP WHITE MARKINGS ON JUMPER AND RISER IP-MPO CONNECTORS AND SLIDE THE RISER CONNECTOR TO THE JUMPER CONNECTOR. PUSH THE WHITE MARK ON THE JUMPER CONNECTOR FLUSH AGAIN THE RED SEAL ON THE RISER CONNECTOR.
2. ROTATE THE BAYONET HOUSING CLOCKWISE UNTIL YOU HEAR A CLICK SOUND.

HYBRID BREAKOUT DETAIL (1)
SCALE: NTS



CABLE ROUTE FROM CABINET (2)
SCALE: NTS

EXISTING BBU CABINET (3)
SCALE: NTS



EXISTING MMBS CABINET (4)
SCALE: NTS

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FAIRFIELD COUNTY

SHEET TITLE:
EQUIPMENT DETAILS

SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: A-8

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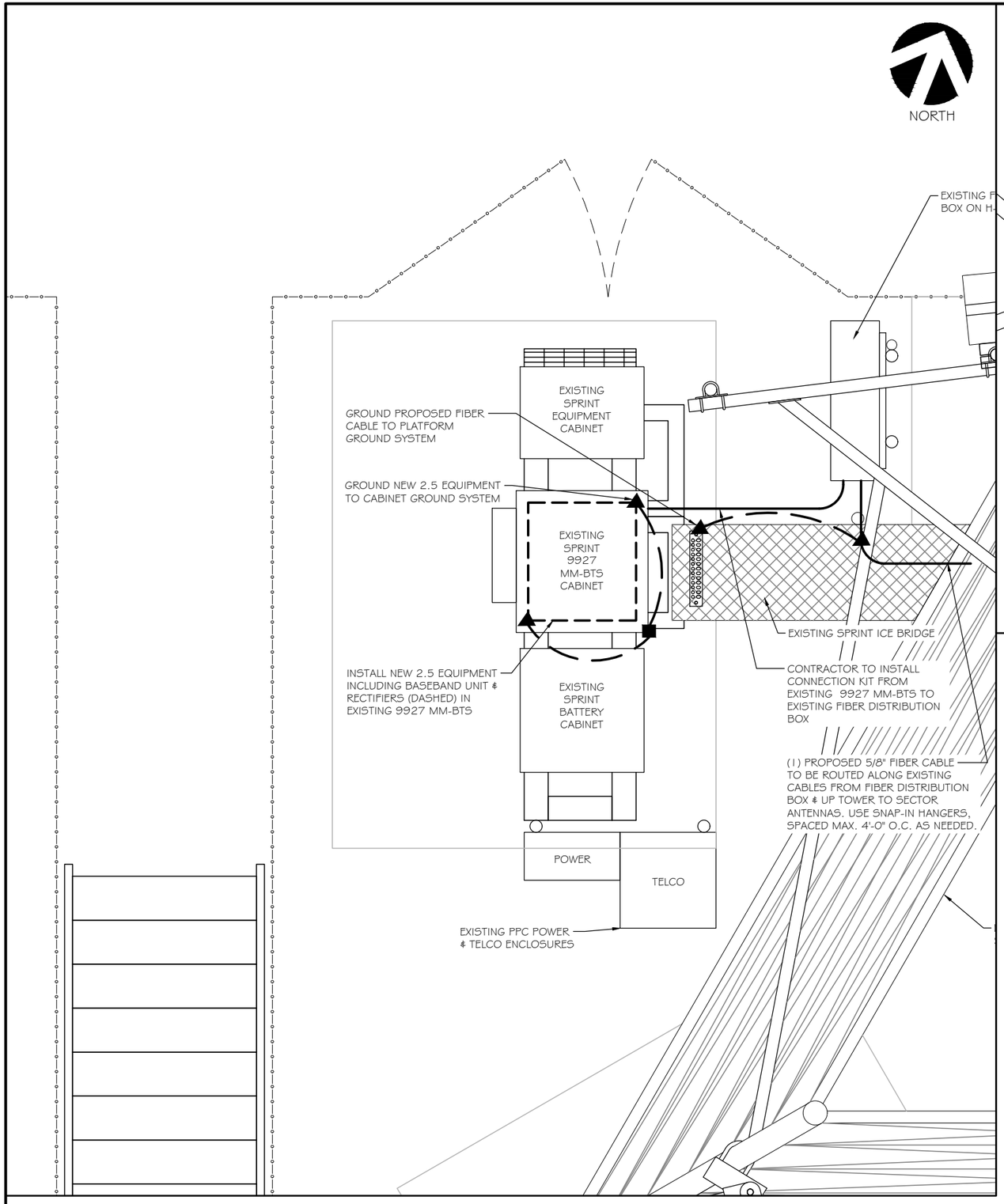
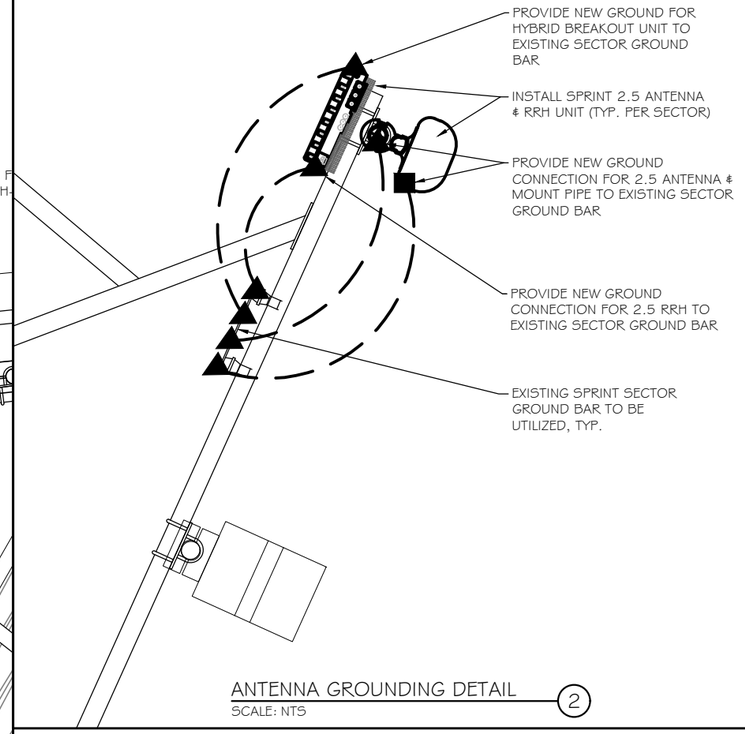


EQUIPMENT UTILITY & GROUNDING PLAN (1)
SCALE: NTS



ANTENNA GROUNDING DETAIL (2)
SCALE: NTS

GROUNDING NOTES:

1. CONTRACTOR TO ENSURE PROPER SEQUENCING OF GROUNDING AND UNDERGROUND CONDUIT INSTALLATION TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM AND/OR DAMAGE TO THE CONDUIT.
2. ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID TINNED COPPER UNLESS NOTED OTHERWISE.
3. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE EXOTHERMIC (CADWELD).
4. ALL GROUND CONNECTIONS ABOVE GRADE AND/OR INTERIOR SHALL BE COMPRESSION TYPE, TWO-HOLE LUGS OR DOUBLE-CRIMP "C" TAPS.
5. CONTACT AREAS WHERE CONNECTIONS ARE MADE SHALL BE PREPARED TO A BARE BRIGHT FINISH AND COATED WITH AN ANTI-OXIDATION MATERIAL BEFORE CONNECTIONS ARE MADE.
6. MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS.
7. WHERE GROUNDING CONNECTIONS ARE MADE TO PAINTED METAL SURFACES, PAINT SHALL BE REMOVED TO BEAR METAL TO ENSURE PROPER CONTACT AND RESTORED/PAINTED TO ORIGINAL FINISH.
8. GROUND DEPTH SHALL BE 30" MINIMUM BELOW FINISHED GRADE, OR 6" BELOW FROST LINE, WHICHEVER IS GREATER.

LEGEND:	
- - - - - - - - - - - - -	EXISTING GROUND CABLE
▬▬▬▬▬▬▬▬▬▬▬	PROPOSED GROUND CABLE
▲	MECHANICAL CONNECTION
■	EXOTHERMIC CONNECTION
—E—E—E—E—	PROPOSED ELECTRIC

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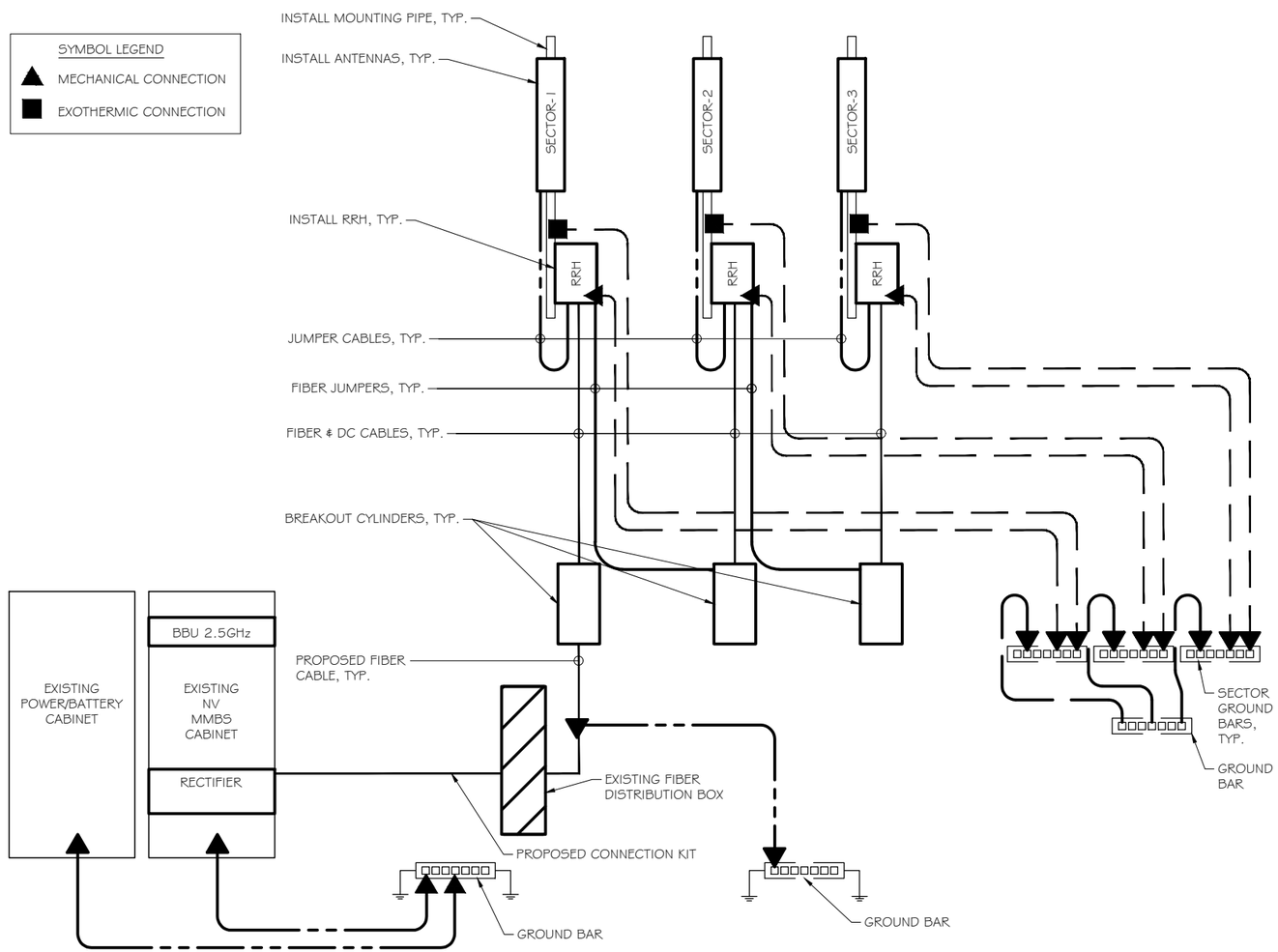
SHEET TITLE:
EQUIPMENT UTILITY & GROUNDING PLAN

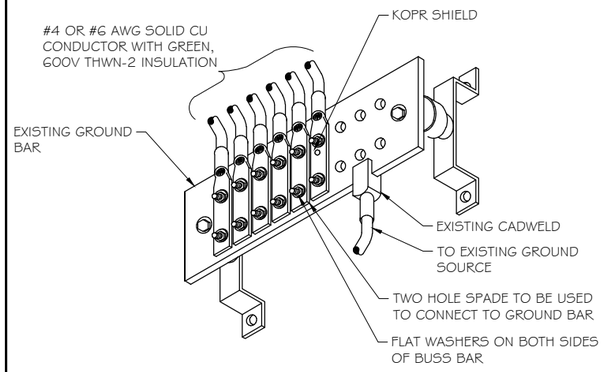
SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: E-1

SYMBOL LEGEND
- MECHANICAL CONNECTION
- EXOTHERMIC CONNECTION



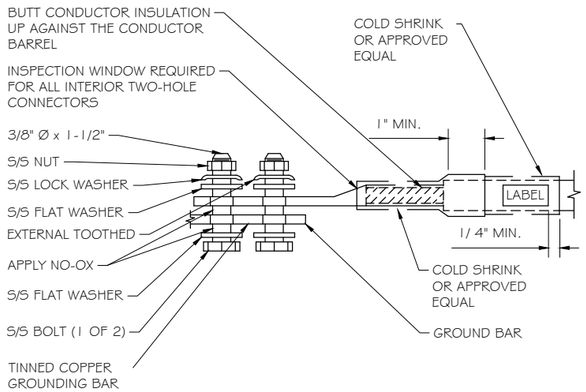
GROUNDING RISER DIAGRAM (1)
SCALE: NTS



NOTES:
1. APPLY NO-OX TO LUG AND GROUND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.

2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

GROUNDING CONDUCTOR INSTALLATION (2)
SCALE: NTS



TWO-HOLE LUG (3)
SCALE: NTS

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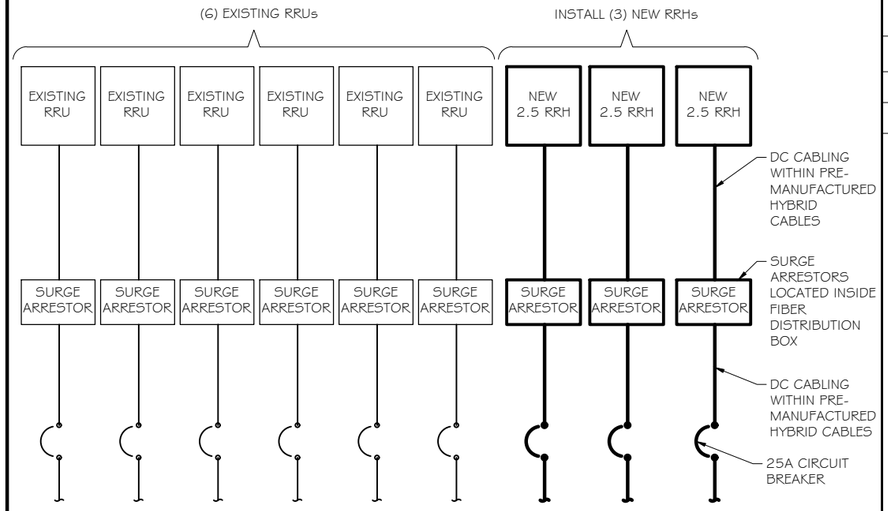
SHEET TITLE:
GROUNDING DETAILS

SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: E-2



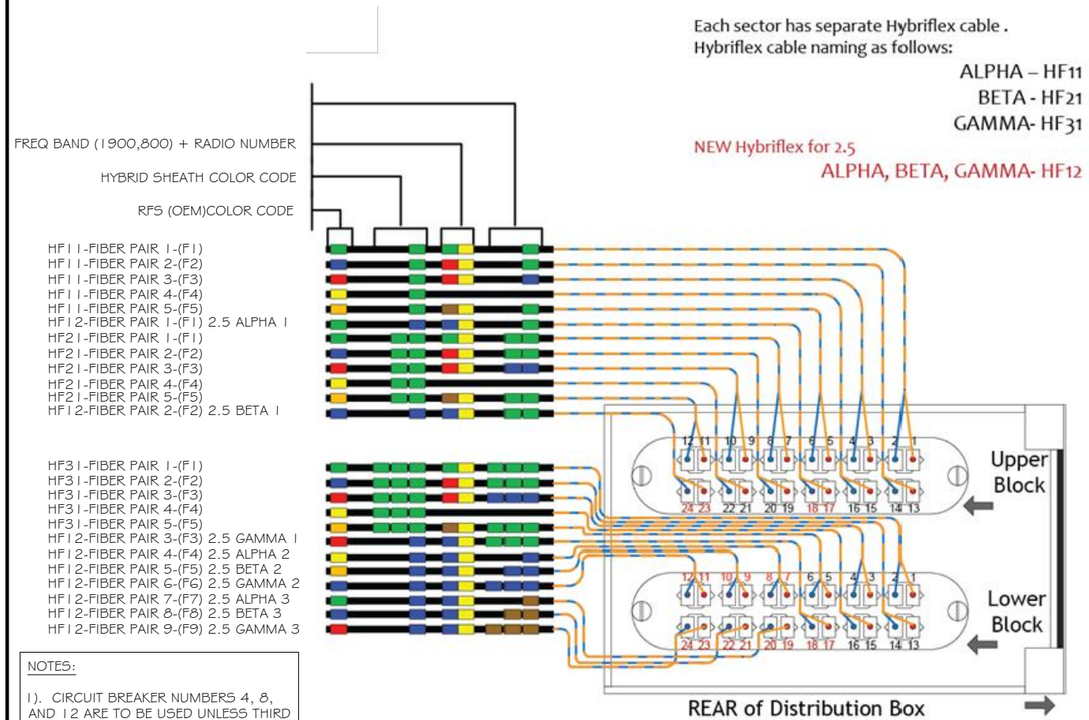
DC ONE-LINE DIAGRAM (1)
SCALE: NTS

A/C PANEL SCHEDULE

VOLTAGE:	240V/120	PANEL STATUS:	EXISTING	N TO GROUND BOND:	YES
MAIN BREAKER:	200 AMP	MODEL NUMBER:	TBD	INTERNAL TVSS:	YES
MOUNT:	GROUND	PHASE:	1	WIRE:	3
ENCLOSURE TYPE:	NEMA 3R	BUSS RATING:	200 AMP	GROUND BAR:	YES
		NEUTRAL BAR:	YES		

CKT	DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	PHASE A VA	PHASE B VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	DESCRIPTION	CKT
1	NOT LABELED	60	2	ON			OFF	1	10	NOT LABELED	13
2							OFF	1	15	NOT LABELED	14
3	NOT LABELED	60	2	ON			-	-	-	BLANK (UNUSED)	15
4							-	-	-	BLANK (UNUSED)	16
5	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	17
6	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	18
7	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	19
8	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	20
9	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	21
10	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	22
11	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	23
12	BLANK (UNUSED)	-	-	-			-	-	-	BLANK (UNUSED)	24

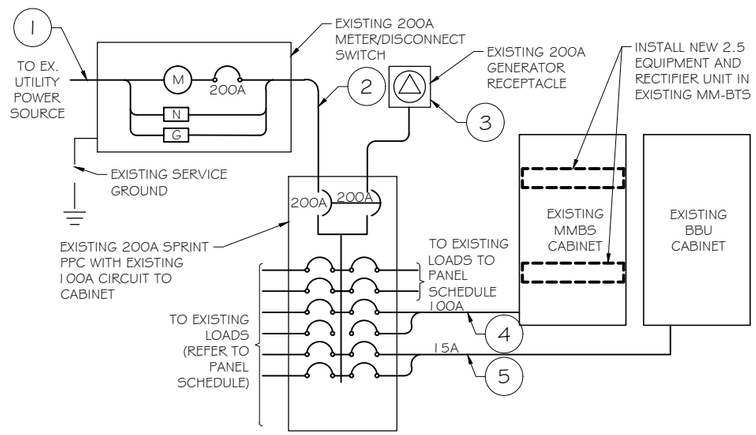
AC PANEL SCHEDULE (2)
SCALE: NTS



NOTES:

1). CIRCUIT BREAKER NUMBERS 4, 8, AND 12 ARE TO BE USED UNLESS THIRD DC RAIL IS REQUIRED FOR MICROWAVE.
2). USE DC POWER LOOP.
3). ALL UNUSED DC FEEDERS TO BE TERMINATED WITH WIRE NUTS AND TAPED.
4). REMOVE ALL DEBRIS FROM INTERIOR OF FIBER DISTRIBUTION BOX WHEN COMPLETE.

TYPICAL FIBER DISTRIBUTION (3)
SCALE: NTS



CIRCUIT SCHEDULE			
NO.	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/ DISCONNECT	EXISTING
2	METER/ DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EX. MMBS CABINET	(3) #2 AWG, (1) #8 GND IN 1½" CONDUIT
5	TRANSFER & LOAD CENTER	EX. BBU CABINET	(2) #12 AWG, (1) #12 GND IN ¾" CONDUIT

ELECTRICAL ONE-LINE DIAGRAM (4)
SCALE: NTS

Sprint
6580 SPRINT PARKWAY
OVERLAND PARK, KANSAS 66251

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855 Community Drive, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
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Charles Cherundolo Consulting, Inc.
713 Clover Lane, Moscow, PA 18444
Phone: 570-840-5084 Fax: 570-842-5592

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED PROFESSIONAL ENGINEER

Signature: 9/29/2017 Date:

MARK	DATE	DESCRIPTION
1	09/29/17	REVISED PER LANDLORD COMMENTS

ISSUE PHASE: FINAL DATE ISSUED: 08/23/2017

PROJECT TITLE:
LONG RIDGE FIRE CO. INC.
CT03XC328-A

PROJECT INFORMATION:
366 OLD LONG RIDGE ROAD
STAMFORD, CT 06903
FAIRFIELD COUNTY

SHEET TITLE:
DC POWER DETAILS & PANEL SCHEDULES

SCALE: NONE

PROJECT NUMBER: 29012
SHEET NUMBER: E-3