



May 8<sup>th</sup>, 2017

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

**RE: Notice of Exempt Modification – Antenna Swap & Additional Ground Based Equipment for wireless facility located at 60 SOUTH MAIN STREET, EAST GRANBY, CONNECTICUT – CT43XC804 (41°56'29.5"N, - 72°44'19.2"W)**

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (97-foot level) on an existing (98-foot tower) at the above-referenced address. The tower is owned by Crown Castle, and the Property is owned by Galasso Holdings LLC.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas and add six (6) RET Cables, (6) Diplexers on the tower. Sprint is also proposing to add three (3) ground based remote radio heads (RRH's) and (6) Diplexers to an existing H frame. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to JAMES M. HAYDEN, First Selectman of the Town of East Granby. A copy of this letter is also being sent to GALASSO HOLDINGS, LLC the owner of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The antennas work is a one-for-one replacement of facility components.
3. The proposed modifications will include the addition of ground base equipment as depicted on the attached drawings; however, the proposed equipment will not require



an extension of the site boundaries.

4. The proposed modifications will not increase noise levels at the facility by six decibels or more.
5. The additional ground based equipment will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard.

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

If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 306-1711 or email me to [aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)

Kind Regards,

Arthur Perkowski  
Airosmith Development Inc.  
32 Clinton Street  
Saratoga Springs, NY 12866  
518-306-1711 desk & fax  
518-871-3707 cell  
[aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)

Attachment

CC: GALASSO HOLDINGS, LLC (Land Owner)  
JAMES M. HAYDEN (1<sup>st</sup> Selectman, East Granby, CT)  
Maryellen Perrotta, Crown Castle (Tower Owner)

7016 0910 0001 7545 5375

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Sent To  
 Str James Hayden, First Selectman  
 City 9 Center Street, PO Box 1858  
 East Granby, CT 06026

PS Form 3800, April 2015 PSN 7530-02-000-9010 See Reverse for Instructions

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Postage	\$0.49	05/10/2017
Total Postage and Fees	\$6.59	

Sent To  
 Str Galasso Holdings LLC  
 City PO Box 1776  
 East Granby, CT 06026

PS Form 3800, April 2015 PSN 7530-02-000-9010 See Reverse for Instructions

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$1.61	05/10/2017
Total Postage and Fees	\$7.71	

Sent To  
 Str Crown Castle  
 City Attn: Maryellen Perrotta  
 12 Gill Street, Suite 5800  
 Woburn, MA 01801

PS Form 3800, April 2015 PSN 7530-02-000-9010 See Reverse for Instructions



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

SPRINT Existing Facility

Site ID: CT43XC804

(R2E) CT4993 to CT43-804/ Galasso Materials (SSUSA)  
60 South Main Street East  
Granby, CT 06026

**April 26, 2017**

**EBI Project Number: 6217001789**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>33.54 %</b>



April 26, 2017

SPRINT

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

Emissions Analysis for Site: **CT43XC804 – (R2E) CT4993 to CT43-804/ Galasso Materials (SSUSA)**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **60 South Main Street East, Granby, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **60 South Main Street East, Granby, 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) 2 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) Since the Remote Radio Heads (RRH) radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 0.98 dB of additional cable loss for all ground mounted 850 MHz Channels and 1.65 dB of additional cable loss for all ground mounted 1900 MHz channels were factored into the calculations used for this analysis. This is based on manufacturers Specifications for 160 feet of 1-5/8" coax cable on each path



- 5) 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.
- 6) 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.
- 7) The antennas used in this modeling are the **RFS APXVSP18-C-A20** for transmission in the 850 MHz and 1900 MHz (PCS) 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.
- 8) The antenna mounting height centerlines of the proposed antennas are **97 feet** above ground level (AGL) for **Sector A**, **97 feet** above ground level (AGL) for **Sector B** and **97 feet** above ground level (AGL) for Sector C.
- 9) 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 public 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):	97 feet	Height (AGL):	97 feet	Height (AGL):	97 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,836.80	ERP (W):	5,836.80	ERP (W):	5,836.80
Antenna A1 MPE%	2.88 %	Antenna B1 MPE%	2.88 %	Antenna C1 MPE%	2.88 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	2.88 %
AT&T	7.02 %
MetroPCS	1.36 %
Verizon Wireless	17.97 %
T-Mobile	4.31 %
<b>Site Total MPE %:</b>	<b>33.54 %</b>

SPRINT Sector A Total:	2.88 %
SPRINT Sector B Total:	2.88 %
SPRINT Sector C Total:	2.88 %
<b>Site Total:</b>	<b>33.54 %</b>

SPRINT _ Max Values per Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	2	523.75	97	4.55	850 MHz	567	0.80%
Sprint 1900 MHz (PCS) CDMA	2	798.22	97	6.93	1900 MHz (PCS)	1000	0.69%
Sprint 1900 MHz (PCS) LTE	2	1,596.44	97	13.86	1900 MHz (PCS)	1000	1.39%
						<b>Total:</b>	<b>2.88%</b>





## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	2.88 %
Sector B:	2.88 %
Sector C:	2.88 %
SPRINT Maximum Total (per sector):	2.88 %
Site Total:	33.54 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **33.54 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Date: January 10, 2017

Kevin Morrow  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277  
704.405.6619

Paul J. Ford and Company  
250 East Broad St., Suite 600  
Columbus, Ohio  
614.221.6679  
jjohnson@pjfweb.com

**Subject: Structural Analysis Report**

**Carrier Designation:** *Sprint PCS Co-Locate*  
**Carrier Site Number:** CT43XC804  
**Carrier Site Name:** Galasso Materials

**Crown Castle Designation:**  
**Crown Castle BU Number:** 876399  
**Crown Castle Site Name:** (F) E. GRANBY 4Q2000 / GALASSO  
**Crown Castle JDE Job Number:** 414997  
**Crown Castle Work Order Number:** 1346671  
**Crown Castle Application Number:** 373234 Rev. 0

**Engineering Firm Designation:** Paul J. Ford and Company Project Number: 37517-0117.001.7805

**Site Data:** 60 South Main St., EAST GRANBY, Hartford County, CT  
 Latitude 41° 56' 29.59", Longitude -72° 44' 19.248"  
 98 Foot - Monopole Tower

Dear Kevin Morrow,

Paul J. Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 988320, in accordance with application 373234, revision 0.

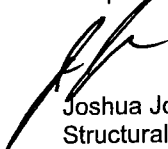
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

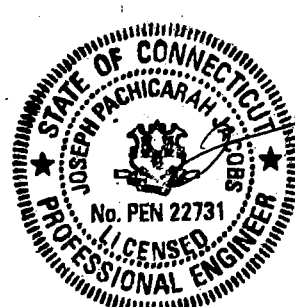
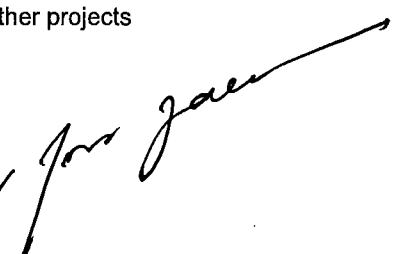
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**  
 Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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

Respectfully submitted by:

  
Joshua Johnson, EI  
Structural Designer 

Date: **January 10, 2017**

Kevin Morrow  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277  
704.405.6619

Paul J. Ford and Company  
250 East Broad St., Suite 600  
Columbus, Ohio  
614.221.6679  
jjohnson@pjfweb.com

**Subject: Structural Analysis Report**

**Carrier Designation:** **Sprint PCS Co-Locate**  
**Carrier Site Number:** CT43XC804  
**Carrier Site Name:** Galasso Materials

**Crown Castle Designation:** **Crown Castle BU Number:** 876399  
**Crown Castle Site Name:** (F) E. GRANBY 4Q2000 / GALASSO  
**Crown Castle JDE Job Number:** 414997  
**Crown Castle Work Order Number:** 1346671  
**Crown Castle Application Number:** 373234 Rev. 0

**Engineering Firm Designation:** **Paul J. Ford and Company Project Number:** 37517-0117.001.7805

**Site Data:** **60 South Main St., EAST GRANBY, Hartford County, CT**  
**Latitude 41° 56' 29.59", Longitude -72° 44' 19.248"**  
**98 Foot - Monopole Tower**

Dear Kevin Morrow,

*Paul J. Ford and Company* is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 988320, in accordance with application 373234, revision 0.

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

LC7: Existing + Reserved + Proposed Equipment

**Sufficient Capacity**

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

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

Respectfully submitted by:

Joshua Johnson, EI  
Structural Designer

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## 1) INTRODUCTION

This tower is a 98 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in September of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

## 2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
94.0	97.0	3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe	6	5/16	-
		3	rfs celwave	FD9R6004/1C-3L			

**Table 2 – Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
94.0	96.0	1	andrew	HBX-6516DS-VTM w/ Mount Pipe	2	7/8	3
		1	antel	BXA-80063/4CF w/ Mount Pipe			
		4	decibel	DB980H65E-M w/ Mount Pipe			
	94.0	1	tower mounts	Platform Mount [LP 305-1]	6	1-5/8	1
89.0	90.0	3	commscope	ATBT-BOTTOM-24V	12	7/8	1
		3	commscope	LNx-6515DS-VTM w/ Mount Pipe			
		3	rfs celwave	APXV18-209014-C w/ Mount Pipe			
		3	rfs celwave	ATMPP1412D-1CWA			
	89.0	1	tower mounts	Platform Mount [LP 305-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
74.0	76.0	6	powerwave technologies	7770.00 w/ Mount Pipe	1 2 12 1	3/8 3/4 7/8 2" Conduit	1
		3	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		3	ericsson	RRUS-11			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21903			
		1	raycap	DC6-48-60-18-8F			
	74.0	1	tower mounts	Platform Mount [LP 303-1]			
67.0	67.0	3	alcatel lucent	B13 RRH 4X30	2	1-3/8	2
		3	alcatel lucent	B66A RRH4X45			
		2	commscope	RC2DC-3315-PF-48			
		6	commscope	SBNHH-1D65B w/ Mount Pipe	12	1-5/8	1
		6	antel	LPA-80063/6CFx2 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 303-1]			
52.0	54.0	1	lucent	KS24019-L112A	1	7/8	1
	52.0	1	tower mounts	Side Arm Mount [SO 701-1]			

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

**Table 3 - Design Antenna and Cable Information**

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

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 7/25/2000	1531971	CCISITES
4-POST-MODIFICATION INSPECTION	IETS, 2010-70158, 7/7/2010	2682749	CCISITES
4-POST-MODIFICATION INSPECTION	PJF, 32912-0138 MO, 3/13/2013	3713020	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 160019, 3/16/2016	6139057	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEl, 7832 Rev 1, 9/22/2000	2066334	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEl, 7832, 9/22/2000	1613691	CCISITES

#### 3.1) Analysis Method

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

#### 3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) For existing modifications: monopole was modified in conformance with the referenced modification drawings.
- 5) The existing monopole shaft has been reinforced using a Crown-approved system in accordance with the above referenced document (CCI #3713020). However, in this analysis we found that due to the change from the EIA/TIA-222-F Standard (the Standard used in the original reinforcing design) to the TIA-222-G-2 Standard (the most current Standard) the shaft reinforcing was found to be ineffective and, therefore, not considered in this analysis.

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

#### 4) ANALYSIS RESULTS

**Table 5 - Section Capacity (Summary)**

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	98 - 82.79	Pole	TP15.28x12x0.1875	1	-3.41	644.24	19.9	Pass
L2	82.79 - 45.29	Pole	TP22.86x14.3831x0.25	2	-11.85	1290.12	82.9	Pass
L3	45.29 - 0	Pole	TP32x21.6338x0.3125	3	-21.18	2327.26	92.9	Pass
							Summary	
						Pole (L3)	92.9	Pass
						<b>RATING =</b>	<b>92.9</b>	<b>Pass</b>

**Table 6 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	55.9	Pass
1	Base Plate	0	71.5	Pass
1	Base Foundation Steel	0	74.2	Pass
1	Base Foundation Soil Interaction	0	46.5	Pass

<b>Structure Rating (max from all components) =</b>	<b>92.9%</b>
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Notes:

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

#### 4.1) Recommendations

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



**APPENDIX A**  
**TNXTOWER OUTPUT**

## Tower Input Data

There is a pole section.

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

The following design criteria apply:

- 1) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- 2) Basic wind speed of 93 mph.
- 3) Structure Class II.
- 4) Exposure Category C.
- 5) Topographic Category 1.
- 6) Crest Height 0.00 ft.
- 7) Nominal ice thickness of 1.0000 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56 pcf.
- 10) A wind speed of 50 mph is used in combination with ice.
- 11) Temperature drop of 50 °F.
- 12) Deflections calculated using a wind speed of 60 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.
- 16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

## Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	98.00-82.79	15.21	2.42	18	12.0000	15.2800	0.1875	0.7500	A572-65 (65 ksi)
L2	82.79-45.29	39.92	3.42	18	14.3831	22.8600	0.2500	1.0000	A572-65 (65 ksi)
L3	45.29-0.00	48.71		18	21.6338	32.0000	0.3125	1.2500	A572-65 (65 ksi)

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	12.1851	7.0299	123.9285	4.1934	6.0960	20.3295	248.0200	3.5156	1.7820	9.504
	15.5157	8.9819	258.4813	5.3578	7.7622	33.2998	517.3028	4.4918	2.3593	12.583
L2	15.1268	11.2146	283.0086	5.0173	7.3066	38.7331	566.3897	5.6084	2.0914	8.366
	23.2127	17.9410	1158.7402	8.0266	11.6129	99.7806	2319.0051	8.9722	3.5834	14.333
L3	22.7066	21.1480	1214.6018	7.5691	10.9900	110.5192	2430.8019	10.5760	3.2575	10.424
	32.4937	31.4300	3987.1110	11.2491	16.2560	245.2701	7979.4683	15.7180	5.0820	16.262

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C <sub>A</sub> A <sub>A</sub> ft <sup>2</sup> /ft	Weight plf
LDF5-50A(7/8")	C	No	Inside Pole	94.00 - 0.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF7-50A(1-5/8")	C	No	Inside Pole	94.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
ATCB-B01-006(5/16")	C	No	Inside Pole	94.00 - 0.00	6	No Ice	0.00	0.07
						1/2" Ice	0.00	0.07
						1" Ice	0.00	0.07
****								
AVA5-50( 7/8")	C	No	Inside Pole	89.00 - 0.00	6	No Ice	0.00	0.30
						1/2" Ice	0.00	0.30
						1" Ice	0.00	0.30
LDF5-50A(7/8")	C	No	Inside Pole	89.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
****								
LDF5-50A(7/8")	C	No	Inside Pole	74.00 - 0.00	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
FB-L98B-002-75000(3/8")	C	No	Inside Pole	74.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	74.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
2" (Nominal) Conduit	C	No	Inside Pole	74.00 - 0.00	1	No Ice	0.00	0.72
						1/2" Ice	0.00	0.72
						1" Ice	0.00	0.72
****								
AVA7-50(1-5/8")	C	No	CaAa (Out Of Face)	67.00 - 0.00	10	No Ice	0.00	0.72
						1/2" Ice	0.00	2.23
						1" Ice	0.00	4.36
AVA7-50(1-5/8")	C	No	CaAa (Out Of Face)	67.00 - 0.00	2	No Ice	0.20	0.72
						1/2" Ice	0.30	2.23
						1" Ice	0.40	4.36
MLCH 6/12 LOW INDUCTION(1-3/8")	C	No	CaAa (Out Of Face)	67.00 - 0.00	2	No Ice	0.00	1.70
						1/2" Ice	0.00	2.90
						1" Ice	0.00	4.72
****								
LDF4-50A(1/2")	C	No	Inside Pole	52.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
****								
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	60.50 - 0.00	1	No Ice	0.17	15.00
						1/2" Ice	0.28	15.69
						1" Ice	0.39	16.73

### Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	98.00-82.79	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.09
L2	82.79-45.29	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	11.132	1.01
L3	45.29-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	25.483	1.93

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	98.00-82.79	A	2.211	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.09
L2	82.79-45.29	A	2.134	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	37.809	4.63
L3	45.29-0.00	A	1.923	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	85.610	9.05

**Feed Line Center of Pressure**

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
L1	98.00-82.79	0.0000	0.0000	0.0000	0.0000
L2	82.79-45.29	-0.3514	0.2029	-0.7610	0.4394
L3	45.29-0.00	-0.5783	0.3339	-1.2235	0.7064

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
Platform Mount [LP 305-1]	C	None		0.0000	94.00	No Ice	18.01	18.01	1.12
						1/2" Ice	23.33	23.33	1.35
						1" Ice	28.65	28.65	1.58
2.375" OD x 6' Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	94.00	No Ice	1.43	1.43	0.03
						1/2" Ice	1.92	1.92	0.04
						1" Ice	2.29	2.29	0.05
2.375" OD x 6' Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	94.00	No Ice	1.43	1.43	0.03
						1/2" Ice	1.92	1.92	0.04
						1" Ice	2.29	2.29	0.05
2.375" OD x 6' Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	94.00	No Ice	1.43	1.43	0.03
						1/2" Ice	1.92	1.92	0.04
						1" Ice	2.29	2.29	0.05
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	94.00	No Ice	8.26	6.95	0.08
						1/2" Ice	8.82	8.13	0.15
						1" Ice	9.35	9.02	0.23
APXVSP18-C-A20 w/	B	From Leg	4.00	0.0000	94.00	No Ice	8.26	6.95	0.08

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight	
			Horz	Lateral						ft
Mount Pipe			0.00			1/2"	8.82	8.13	0.15	
			3.00			Ice	9.35	9.02	0.23	
						1" Ice				
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.00		0.0000	94.00	No Ice	8.26	6.95	0.08
			0.00				1/2"	8.82	8.13	0.15
			3.00				Ice	9.35	9.02	0.23
FD9R6004/1C-3L	A	From Leg	4.00		0.0000	94.00	No Ice	0.31	0.08	0.00
			0.00				1/2"	0.39	0.12	0.00
			3.00				Ice	0.47	0.17	0.01
FD9R6004/1C-3L	B	From Leg	4.00		0.0000	94.00	No Ice	0.31	0.08	0.00
			0.00				1/2"	0.39	0.12	0.00
			3.00				Ice	0.47	0.17	0.01
FD9R6004/1C-3L	C	From Leg	4.00		0.0000	94.00	No Ice	0.31	0.08	0.00
			0.00				1/2"	0.39	0.12	0.00
			3.00				Ice	0.47	0.17	0.01
**** APXV18-209014-C w/ Mount Pipe	A	From Leg	4.00		0.0000	89.00	No Ice	3.72	3.31	0.04
			0.00				1/2"	4.13	4.02	0.07
			1.00				Ice	4.54	4.68	0.11
APXV18-209014-C w/ Mount Pipe	B	From Leg	4.00		0.0000	89.00	No Ice	3.72	3.31	0.04
			0.00				1/2"	4.13	4.02	0.07
			1.00				Ice	4.54	4.68	0.11
APXV18-209014-C w/ Mount Pipe	C	From Leg	4.00		0.0000	89.00	No Ice	3.72	3.31	0.04
			0.00				1/2"	4.13	4.02	0.07
			1.00				Ice	4.54	4.68	0.11
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00		0.0000	89.00	No Ice	11.68	9.84	0.08
			0.00				1/2"	12.40	11.37	0.17
			1.00				Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00		0.0000	89.00	No Ice	11.68	9.84	0.08
			0.00				1/2"	12.40	11.37	0.17
			1.00				Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00		0.0000	89.00	No Ice	11.68	9.84	0.08
			0.00				1/2"	12.40	11.37	0.17
			1.00				Ice	13.14	12.91	0.27
ATBT-BOTTOM-24V	A	From Leg	4.00		0.0000	89.00	No Ice	0.10	0.06	0.00
			0.00				1/2"	0.15	0.10	0.00
			1.00				Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	B	From Leg	4.00		0.0000	89.00	No Ice	0.10	0.06	0.00
			0.00				1/2"	0.15	0.10	0.00
			1.00				Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	C	From Leg	4.00		0.0000	89.00	No Ice	0.10	0.06	0.00
			0.00				1/2"	0.15	0.10	0.00
			1.00				Ice	0.20	0.15	0.01
ATMPP1412D-1CWA	A	From Leg	4.00		0.0000	89.00	No Ice	1.00	0.38	0.01
			0.00				1/2"	1.13	0.48	0.02
			1.00				Ice	1.27	0.58	0.03
ATMPP1412D-1CWA	B	From Leg	4.00		0.0000	89.00	No Ice	1.00	0.38	0.01
			0.00				1/2"	1.13	0.48	0.02
			1.00				Ice	1.27	0.58	0.03
ATMPP1412D-1CWA	C	From Leg	4.00		0.0000	89.00	No Ice	1.00	0.38	0.01
							1" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			0.00			1/2"	1.13	0.02
			1.00			Ice	1.27	0.03
Platform Mount [LP 305-1]	C	None		0.0000	89.00	1" Ice		
						No Ice	18.01	1.12
						1/2"	23.33	1.35
						Ice	28.65	1.58
						1" Ice		
2.375" OD x 6' Mount Pipe	A	From Leg	4.00	0.0000	89.00	No Ice	1.43	0.03
			0.00			1/2"	1.92	0.04
			0.00			Ice	2.29	0.05
						1" Ice		
2.375" OD x 6' Mount Pipe	B	From Leg	4.00	0.0000	89.00	No Ice	1.43	0.03
			0.00			1/2"	1.92	0.04
			0.00			Ice	2.29	0.05
						1" Ice		
2.375" OD x 6' Mount Pipe	C	From Leg	4.00	0.0000	89.00	No Ice	1.43	0.03
			0.00			1/2"	1.92	0.04
			0.00			Ice	2.29	0.05
						1" Ice		
****								
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	74.00	No Ice	5.83	0.09
			0.00			1/2"	6.27	0.14
			2.00			Ice	6.70	0.21
						1" Ice		
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	74.00	No Ice	5.83	0.09
			0.00			1/2"	6.27	0.14
			2.00			Ice	6.70	0.21
						1" Ice		
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	74.00	No Ice	5.83	0.09
			0.00			1/2"	6.27	0.14
			2.00			Ice	6.70	0.21
						1" Ice		
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0.0000	74.00	No Ice	11.82	0.09
			0.00			1/2"	12.59	0.18
			2.00			Ice	13.38	0.28
						1" Ice		
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.00	0.0000	74.00	No Ice	11.82	0.09
			0.00			1/2"	12.59	0.18
			2.00			Ice	13.38	0.28
						1" Ice		
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00	0.0000	74.00	No Ice	11.82	0.09
			0.00			1/2"	12.59	0.18
			2.00			Ice	13.38	0.28
						1" Ice		
(2) LGP21903	A	From Leg	4.00	0.0000	74.00	No Ice	0.23	0.01
			0.00			1/2"	0.29	0.01
			2.00			Ice	0.36	0.02
						1" Ice		
(2) LGP21903	B	From Leg	4.00	0.0000	74.00	No Ice	0.23	0.01
			0.00			1/2"	0.29	0.01
			2.00			Ice	0.36	0.02
						1" Ice		
(2) LGP21903	C	From Leg	4.00	0.0000	74.00	No Ice	0.23	0.01
			0.00			1/2"	0.29	0.01
			2.00			Ice	0.36	0.02
						1" Ice		
(2) LGP21401	A	From Leg	4.00	0.0000	74.00	No Ice	1.10	0.01
			0.00			1/2"	1.24	0.02
			2.00			Ice	1.38	0.03
						1" Ice		
(2) LGP21401	B	From Leg	4.00	0.0000	74.00	No Ice	1.10	0.01
			0.00			1/2"	1.24	0.02
			2.00			Ice	1.38	0.03
						1" Ice		
(2) LGP21401	C	From Leg	4.00	0.0000	74.00	No Ice	1.10	0.01

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
			0.00			1/2"	1.24	0.44	0.02	
			2.00			Ice	1.38	0.54	0.03	
RRUS-11	A	From Leg	4.00		0.0000	74.00	1" Ice	2.79	1.19	0.05
			0.00				No Ice	3.00	1.34	0.07
			2.00				1/2"	3.21	1.50	0.09
							Ice			
RRUS-11	B	From Leg	4.00		0.0000	74.00	1" Ice	2.79	1.19	0.05
			0.00				No Ice	3.00	1.34	0.07
			2.00				1/2"	3.21	1.50	0.09
							Ice			
RRUS-11	C	From Leg	4.00		0.0000	74.00	1" Ice	2.79	1.19	0.05
			0.00				No Ice	3.00	1.34	0.07
			2.00				1/2"	3.21	1.50	0.09
							Ice			
DC6-48-60-18-8F	A	From Leg	4.00		0.0000	74.00	1" Ice	0.92	0.92	0.02
			0.00				No Ice	1.46	1.46	0.04
			2.00				1/2"	1.64	1.64	0.06
							Ice			
Platform Mount [LP 303-1]	C	None			0.0000	74.00	1" Ice	14.66	14.66	1.25
							No Ice	18.87	18.87	1.48
							1/2"	23.08	23.08	1.71
							Ice			
							1" Ice			
***										
(2) LPA-80063/6CFx2 w/ Mount Pipe	A	From Leg	4.00		0.0000	67.00	No Ice	9.83	10.22	0.05
			0.00				1/2"	10.40	11.38	0.14
			0.00				Ice	10.93	12.27	0.25
							1" Ice			
(2) LPA-80063/6CFx2 w/ Mount Pipe	B	From Leg	4.00		0.0000	67.00	No Ice	9.83	10.22	0.05
			0.00				1/2"	10.40	11.38	0.14
			0.00				Ice	10.93	12.27	0.25
							1" Ice			
(2) LPA-80063/6CFx2 w/ Mount Pipe	C	From Leg	4.00		0.0000	67.00	No Ice	9.83	10.22	0.05
			0.00				1/2"	10.40	11.38	0.14
			0.00				Ice	10.93	12.27	0.25
							1" Ice			
Platform Mount [LP 303-1]	C	None			0.0000	67.00	No Ice	14.66	14.66	1.25
							1/2"	18.87	18.87	1.48
							Ice	23.08	23.08	1.71
							1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00		0.0000	67.00	No Ice	8.40	7.07	0.07
			0.00				1/2"	8.96	8.26	0.14
			0.00				Ice	9.49	9.18	0.21
							1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00		0.0000	67.00	No Ice	8.40	7.07	0.07
			0.00				1/2"	8.96	8.26	0.14
			0.00				Ice	9.49	9.18	0.21
							1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00		0.0000	67.00	No Ice	8.40	7.07	0.07
			0.00				1/2"	8.96	8.26	0.14
			0.00				Ice	9.49	9.18	0.21
							1" Ice			
B13 RRH 4X30	A	From Leg	4.00		0.0000	67.00	No Ice	2.06	1.32	0.06
			0.00				1/2"	2.24	1.48	0.07
			0.00				Ice	2.43	1.64	0.09
							1" Ice			
B13 RRH 4X30	B	From Leg	4.00		0.0000	67.00	No Ice	2.06	1.32	0.06
			0.00				1/2"	2.24	1.48	0.07
			0.00				Ice	2.43	1.64	0.09
							1" Ice			
B13 RRH 4X30	C	From Leg	4.00		0.0000	67.00	No Ice	2.06	1.32	0.06
			0.00				1/2"	2.24	1.48	0.07
			0.00				Ice	2.43	1.64	0.09
							1" Ice			
B66A RRH4X45	A	From Leg	4.00		0.0000	67.00	No Ice	2.58	1.63	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			0.00		1/2"	2.79	1.81	0.09
			0.00		Ice	3.01	2.00	0.11
B66A RRH4X45	B	From Leg	4.00	0.0000	67.00	1" Ice No Ice	2.58 1.63	0.07
			0.00		1/2"	2.79	1.81	0.09
			0.00		Ice	3.01	2.00	0.11
B66A RRH4X45	C	From Leg	4.00	0.0000	67.00	1" Ice No Ice	2.58 1.63	0.07
			0.00		1/2"	2.79	1.81	0.09
			0.00		Ice	3.01	2.00	0.11
RC2DC-3315-PF-48	A	From Leg	4.00	0.0000	67.00	1" Ice No Ice	3.79 2.51	0.03
			0.00		1/2"	4.04	2.72	0.06
			0.00		Ice	4.30	2.94	0.10
RC2DC-3315-PF-48	B	From Leg	4.00	0.0000	67.00	1" Ice No Ice	3.79 2.51	0.03
			0.00		1/2"	4.04	2.72	0.06
			0.00		Ice	4.30	2.94	0.10
****					1" Ice			
KS24019-L112A	C	From Leg	4.00	0.0000	52.00	No Ice	0.14	0.01
			0.00		1/2"	0.20	0.20	0.01
			2.00		Ice	0.26	0.26	0.01
Side Arm Mount [SO 701-1]	C	None		0.0000	52.00	1" Ice No Ice	0.85 1.67	0.07
					1/2"	1.14	2.34	0.08
					Ice	1.43	3.01	0.09
					1" Ice			

**Tower Pressures - No Ice**

$G_H = 1.100$

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
L1 98.00-82.79	90.09	1.238	26	17.555	A	0.000	17.555	17.555	100.00	0.000	0.000
					B	0.000	17.555		100.00	0.000	0.000
					C	0.000	17.555		100.00	0.000	0.000
L2 82.79-45.29	63.01	1.148	24	59.905	A	0.000	59.905	59.905	100.00	0.000	0.000
					B	0.000	59.905		100.00	0.000	0.000
					C	0.000	59.905		100.00	0.000	11.132
L3 45.29-0.00	22.26	0.922	19	104.167	A	0.000	104.167	104.167	100.00	0.000	0.000
					B	0.000	104.167		100.00	0.000	0.000
					C	0.000	104.167		100.00	0.000	25.483

**Tower Pressure - With Ice**

$G_H = 1.100$

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	t <sub>z</sub> in	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
L1 98.00-82.79	90.09	1.238	8	2.2113	23.161	A	0.000	23.161	23.161	100.00	0.000	0.000
						B	0.000	23.161		100.00	0.000	0.000
						C	0.000	23.161		100.00	0.000	0.000
L2 82.79-45.29	63.01	1.148	7	2.1336	73.726	A	0.000	73.726	73.726	100.00	0.000	0.000
						B	0.000	73.726		100.00	0.000	0.000
						C	0.000	73.726		100.00	0.000	37.809



Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	t <sub>z</sub> in	A <sub>G</sub> ft <sup>2</sup>	F a c e A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	
L3 45.29-0.00	22.26	0.922	6	1.9227	120.273	A	0.000	120.273	120.273	100.00	0.000	0.000
						B	0.000	120.273	120.273	100.00	0.000	0.000
						C	0.000	120.273	120.273	100.00	0.000	85.610

**Tower Pressure - Service**

**G<sub>H</sub> = 1.100**

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	
L1 98.00-82.79	90.09	1.238	10	17.555	A	0.000	17.555	17.555	100.00	0.000	0.000
					B	0.000	17.555	17.555	100.00	0.000	0.000
					C	0.000	17.555	17.555	100.00	0.000	0.000
L2 82.79-45.29	63.01	1.148	9	59.905	A	0.000	59.905	59.905	100.00	0.000	0.000
					B	0.000	59.905	59.905	100.00	0.000	0.000
					C	0.000	59.905	59.905	100.00	0.000	11.132
L3 45.29-0.00	22.26	0.922	7	104.167	A	0.000	104.167	104.167	100.00	0.000	0.000
					B	0.000	104.167	104.167	100.00	0.000	0.000
					C	0.000	104.167	104.167	100.00	0.000	25.483

**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
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

Comb. No.	Description
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	98 - 82.79	Pole	Max Tension	14	0.00	-0.00	0.00
			Max. Compression	26	-10.75	0.07	-0.03
			Max. Mx	20	-3.41	37.18	0.00
			Max. My	14	-3.41	0.00	-37.18
			Max. Vy	20	-5.56	37.18	0.00
			Max. Vx	14	5.56	0.00	-37.18
			Max. Torque	38			0.00
L2	82.79 - 45.29	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.41	2.98	-1.02
			Max. Mx	20	-11.85	473.51	0.30
			Max. My	14	-11.85	-0.04	-473.70
			Max. Vy	20	-16.68	473.51	0.30
			Max. Vx	14	16.70	-0.04	-473.70
			Max. Torque	11			0.33
L3	45.29 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.31	12.49	-6.44
			Max. Mx	20	-21.18	1391.12	0.41
			Max. My	14	-21.18	0.49	-1391.77
			Max. Vy	20	-20.95	1391.12	0.41
			Max. Vx	14	20.98	0.49	-1391.77
			Max. Torque	24			0.93

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	56.31	-0.00	0.00
	Max. H <sub>x</sub>	21	15.92	20.91	0.02
	Max. H <sub>z</sub>	3	15.92	0.02	20.93
	Max. M <sub>x</sub>	2	1389.90	0.02	20.93
	Max. M <sub>z</sub>	8	1387.46	-20.91	-0.02
	Max. Torsion	24	0.93	10.47	18.14
	Min. Vert	15	15.92	-0.02	-20.93
	Min. H <sub>x</sub>	9	15.92	-20.91	-0.02
	Min. H <sub>z</sub>	15	15.92	-0.02	-20.93
	Min. M <sub>x</sub>	14	-1391.77	-0.02	-20.93
	Min. M <sub>z</sub>	20	-1391.12	20.91	0.02
	Min. Torsion	12	-0.93	-10.47	-18.14

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	17.69	0.00	-0.00	0.75	1.46	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	21.22	-0.02	-20.93	-1389.90	3.18	-0.87
0.9 Dead+1.6 Wind 0 deg - No Ice	15.92	-0.02	-20.93	-1369.79	2.69	-0.87
1.2 Dead+1.6 Wind 30 deg - No Ice	21.23	10.44	-18.12	-1203.09	-691.76	-0.57
0.9 Dead+1.6 Wind 30 deg - No Ice	15.92	10.44	-18.12	-1185.64	-682.04	-0.57
1.2 Dead+1.6 Wind 60 deg - No Ice	21.23	18.10	-10.45	-693.44	-1200.85	-0.12
0.9 Dead+1.6 Wind 60 deg - No Ice	15.92	18.10	-10.45	-683.47	-1183.65	-0.13
1.2 Dead+1.6 Wind 90 deg - No Ice	21.22	20.91	0.02	2.29	-1387.46	0.36
0.9 Dead+1.6 Wind 90 deg - No Ice	15.92	20.91	0.02	2.03	-1367.60	0.36
1.2 Dead+1.6 Wind 120 deg - No Ice	21.23	18.12	10.48	697.64	-1202.19	0.75
0.9 Dead+1.6 Wind 120 deg - No Ice	15.92	18.12	10.48	687.16	-1184.97	0.74
1.2 Dead+1.6 Wind 150 deg - No Ice	21.23	10.47	18.14	1206.30	-694.08	0.93
0.9 Dead+1.6 Wind 150 deg - No Ice	15.92	10.47	18.14	1188.35	-684.33	0.93
1.2 Dead+1.6 Wind 180 deg - No Ice	21.22	0.02	20.93	1391.77	0.49	0.87
0.9 Dead+1.6 Wind 180 deg - No Ice	15.92	0.02	20.93	1371.18	0.03	0.87
1.2 Dead+1.6 Wind 210 deg - No Ice	21.23	-10.44	18.12	1204.96	695.43	0.57
0.9 Dead+1.6 Wind 210 deg - No Ice	15.92	-10.44	18.12	1187.03	684.76	0.57
1.2 Dead+1.6 Wind 240 deg - No Ice	21.23	-18.10	10.45	695.31	1204.52	0.12
0.9 Dead+1.6 Wind 240 deg - No Ice	15.92	-18.10	10.45	684.86	1186.37	0.13
1.2 Dead+1.6 Wind 270 deg - No Ice	21.22	-20.91	-0.02	-0.41	1391.12	-0.36
0.9 Dead+1.6 Wind 270 deg - No Ice	15.92	-20.91	-0.02	-0.63	1370.31	-0.36
1.2 Dead+1.6 Wind 300 deg - No Ice	21.23	-18.12	-10.48	-695.76	1205.86	-0.75
0.9 Dead+1.6 Wind 300 deg - No Ice	15.92	-18.12	-10.48	-685.76	1187.69	-0.74
1.2 Dead+1.6 Wind 330 deg - No Ice	21.23	-10.47	-18.14	-1204.42	697.75	-0.93
0.9 Dead+1.6 Wind 330 deg - No Ice	15.92	-10.47	-18.14	-1186.95	687.05	-0.93
1.2 Dead+1.0 Ice+1.0 Temp	56.31	0.00	-0.00	6.44	12.49	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	56.31	-0.00	-7.11	-549.67	12.91	-0.65
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	56.31	3.55	-6.16	-474.98	-264.99	-0.41
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	56.31	6.15	-3.55	-271.28	-468.52	-0.06
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	56.31	7.11	0.00	6.84	-543.16	0.31
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	56.31	6.16	3.56	284.89	-468.96	0.59
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	56.31	3.56	6.16	488.27	-265.64	0.72
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	56.31	0.00	7.11	562.58	12.15	0.65
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	56.31	-3.55	6.16	487.94	290.07	0.41
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	56.31	-6.15	3.55	284.22	493.63	0.06
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	56.31	-7.11	-0.00	6.08	568.21	-0.31

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	56.31	-6.16	-3.56	-271.96	494.01	-0.59
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	56.31	-3.56	-6.16	-475.41	290.74	-0.72
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	17.69	-0.00	-4.87	-320.79	1.84	0.08
Dead+Wind 30 deg - Service	17.69	2.43	-4.22	-277.55	-158.81	0.03
Dead+Wind 60 deg - Service	17.69	4.21	-2.43	-159.74	-276.49	-0.03
Dead+Wind 90 deg - Service	17.69	4.87	0.00	1.09	-319.68	-0.08
Dead+Wind 120 deg - Service	17.69	4.22	2.44	161.83	-276.80	-0.11
Dead+Wind 150 deg - Service	17.69	2.44	4.22	279.42	-159.35	-0.11
Dead+Wind 180 deg - Service	17.69	0.00	4.87	322.34	1.21	-0.08
Dead+Wind 210 deg - Service	17.69	-2.43	4.22	279.11	161.86	-0.03
Dead+Wind 240 deg - Service	17.69	-4.21	2.43	161.29	279.54	0.03
Dead+Wind 270 deg - Service	17.69	-4.87	-0.00	0.47	322.73	0.08
Dead+Wind 300 deg - Service	17.69	-4.22	-2.44	-160.28	279.86	0.11
Dead+Wind 330 deg - Service	17.69	-2.44	-4.22	-277.86	162.40	0.11

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-17.69	0.00	-0.00	17.69	0.00	0.001%
2	-0.02	-21.23	-20.93	0.02	21.22	20.93	0.009%
3	-0.02	-15.92	-20.93	0.02	15.92	20.93	0.006%
4	10.44	-21.23	-18.12	-10.44	21.23	18.12	0.000%
5	10.44	-15.92	-18.12	-10.44	15.92	18.12	0.000%
6	18.10	-21.23	-10.45	-18.10	21.23	10.45	0.000%
7	18.10	-15.92	-10.45	-18.10	15.92	10.45	0.000%
8	20.91	-21.23	0.02	-20.91	21.22	-0.02	0.009%
9	20.91	-15.92	0.02	-20.91	15.92	-0.02	0.006%
10	18.12	-21.23	10.48	-18.12	21.23	-10.48	0.000%
11	18.12	-15.92	10.48	-18.12	15.92	-10.48	0.000%
12	10.47	-21.23	18.14	-10.47	21.23	-18.14	0.000%
13	10.47	-15.92	18.14	-10.47	15.92	-18.14	0.000%
14	0.02	-21.23	20.93	-0.02	21.22	-20.93	0.009%
15	0.02	-15.92	20.93	-0.02	15.92	-20.93	0.006%
16	-10.44	-21.23	18.12	10.44	21.23	-18.12	0.000%
17	-10.44	-15.92	18.12	10.44	15.92	-18.12	0.000%
18	-18.10	-21.23	10.45	18.10	21.23	-10.45	0.000%
19	-18.10	-15.92	10.45	18.10	15.92	-10.45	0.000%
20	-20.91	-21.23	-0.02	20.91	21.22	0.02	0.009%
21	-20.91	-15.92	-0.02	20.91	15.92	0.02	0.006%
22	-18.12	-21.23	-10.48	18.12	21.23	10.48	0.000%
23	-18.12	-15.92	-10.48	18.12	15.92	10.48	0.000%
24	-10.47	-21.23	-18.14	10.47	21.23	18.14	0.000%
25	-10.47	-15.92	-18.14	10.47	15.92	18.14	0.000%
26	0.00	-56.31	0.00	-0.00	56.31	0.00	0.001%
27	-0.00	-56.31	-7.11	0.00	56.31	7.11	0.002%
28	3.55	-56.31	-6.16	-3.55	56.31	6.16	0.002%
29	6.15	-56.31	-3.55	-6.15	56.31	3.55	0.002%
30	7.11	-56.31	0.00	-7.11	56.31	-0.00	0.002%
31	6.16	-56.31	3.56	-6.16	56.31	-3.56	0.001%
32	3.56	-56.31	6.16	-3.56	56.31	-6.16	0.002%
33	0.00	-56.31	7.11	-0.00	56.31	-7.11	0.002%
34	-3.55	-56.31	6.16	3.55	56.31	-6.16	0.001%
35	-6.15	-56.31	3.55	6.15	56.31	-3.55	0.001%
36	-7.11	-56.31	-0.00	7.11	56.31	0.00	0.002%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
37	-6.16	-56.31	-3.56	6.16	56.31	3.56	0.001%
38	-3.56	-56.31	-6.16	3.56	56.31	6.16	0.001%
39	-0.00	-17.69	-4.87	0.00	17.69	4.87	0.003%
40	2.43	-17.69	-4.22	-2.43	17.69	4.22	0.003%
41	4.21	-17.69	-2.43	-4.21	17.69	2.43	0.003%
42	4.87	-17.69	0.00	-4.87	17.69	-0.00	0.003%
43	4.22	-17.69	2.44	-4.22	17.69	-2.44	0.003%
44	2.44	-17.69	4.22	-2.44	17.69	-4.22	0.003%
45	0.00	-17.69	4.87	-0.00	17.69	-4.87	0.003%
46	-2.43	-17.69	4.22	2.43	17.69	-4.22	0.003%
47	-4.21	-17.69	2.43	4.21	17.69	-2.43	0.003%
48	-4.87	-17.69	-0.00	4.87	17.69	0.00	0.003%
49	-4.22	-17.69	-2.44	4.22	17.69	2.44	0.003%
50	-2.44	-17.69	-4.22	2.44	17.69	4.22	0.003%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	16	0.00009697	0.00012677
3	Yes	16	0.00006243	0.00009337
4	Yes	21	0.00000001	0.00009690
5	Yes	20	0.00000001	0.00013242
6	Yes	21	0.00000001	0.00009756
7	Yes	20	0.00000001	0.00013338
8	Yes	16	0.00009701	0.00012208
9	Yes	16	0.00006246	0.00009038
10	Yes	21	0.00000001	0.00009778
11	Yes	20	0.00000001	0.00013356
12	Yes	21	0.00000001	0.00009753
13	Yes	20	0.00000001	0.00013324
14	Yes	16	0.00009696	0.00012387
15	Yes	16	0.00006243	0.00009165
16	Yes	21	0.00000001	0.00009813
17	Yes	20	0.00000001	0.00013396
18	Yes	21	0.00000001	0.00009747
19	Yes	20	0.00000001	0.00013304
20	Yes	16	0.00009697	0.00012310
21	Yes	16	0.00006244	0.00009121
22	Yes	21	0.00000001	0.00009794
23	Yes	20	0.00000001	0.00013374
24	Yes	21	0.00000001	0.00009818
25	Yes	20	0.00000001	0.00013402
26	Yes	14	0.00000001	0.00000519
27	Yes	19	0.00013193	0.00002227
28	Yes	19	0.00013111	0.00014331
29	Yes	19	0.00013111	0.00014681
30	Yes	19	0.00013200	0.00001895
31	Yes	20	0.00007274	0.00008759
32	Yes	19	0.00013099	0.00014715
33	Yes	19	0.00013181	0.00002242
34	Yes	20	0.00007261	0.00009374
35	Yes	20	0.00007261	0.00009169
36	Yes	19	0.00013175	0.00001959
37	Yes	20	0.00007266	0.00008813
38	Yes	20	0.00007267	0.00009190
39	Yes	16	0.00000001	0.00004033
40	Yes	16	0.00000001	0.00005525
41	Yes	16	0.00000001	0.00005545
42	Yes	16	0.00000001	0.00004025
43	Yes	16	0.00000001	0.00005281
44	Yes	16	0.00000001	0.00005775
45	Yes	16	0.00000001	0.00004046
46	Yes	16	0.00000001	0.00005517
47	Yes	16	0.00000001	0.00005491
48	Yes	16	0.00000001	0.00004056

49	Yes	16	0.00000001	0.00005827
50	Yes	16	0.00000001	0.00005338

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 82.79	23.781	48	1.9670	0.0019
L2	85.21 - 45.29	18.544	48	1.9196	0.0019
L3	48.71 - 0	6.115	48	1.1860	0.0008

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
94.00	Platform Mount [LP 305-1]	48	22.131	1.9600	0.0019	20320
89.00	APXV18-209014-C w/ Mount Pipe	48	20.081	1.9436	0.0019	11284
74.00	(2) 7770.00 w/ Mount Pipe	48	14.158	1.7719	0.0017	3671
67.00	(2) LPA-80063/6CFx2 w/ Mount Pipe	48	11.614	1.6331	0.0015	2748
52.00	KS24019-L112A	48	6.953	1.2700	0.0009	1788

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	98 - 82.79	102.574	14	8.5099	0.0038
L2	85.21 - 45.29	80.005	14	8.3051	0.0037
L3	48.71 - 0	26.396	14	5.1276	0.0028

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
94.00	Platform Mount [LP 305-1]	14	95.466	8.4800	0.0039	4920
89.00	APXV18-209014-C w/ Mount Pipe	14	86.630	8.4088	0.0038	2731
74.00	(2) 7770.00 w/ Mount Pipe	14	61.096	7.6652	0.0036	877
67.00	(2) LPA-80063/6CFx2 w/ Mount Pipe	14	50.123	7.0639	0.0034	653
52.00	KS24019-L112A	14	30.013	5.4913	0.0030	420

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	KI/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L1	98 - 82.79 (1)	TP15.28x12x0.1875	15.21	0.00	0.0	8.6713	-3.41	644.24	0.005
L2	82.79 - 45.29 (2)	TP22.86x14.3831x0.25	39.92	0.00	0.0	17.3648	-11.85	1290.12	0.009
L3	45.29 - 0 (3)	TP32x21.6338x0.3125	48.71	0.00	0.0	31.4300	-21.18	2327.26	0.009

### Pole Bending Design Data

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	98 - 82.79 (1)	TP15.28x12x0.1875	37.19	192.07	0.194	0.00	192.07	0.000
L2	82.79 - 45.29 (2)	TP22.86x14.3831x0.25	474.05	578.51	0.819	0.00	578.51	0.000
L3	45.29 - 0 (3)	TP32x21.6338x0.3125	1392.18	1513.43	0.920	0.00	1513.43	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	98 - 82.79 (1)	TP15.28x12x0.1875	5.56	322.12	0.017	0.00	384.61	0.000
L2	82.79 - 45.29 (2)	TP22.86x14.3831x0.25	16.72	645.06	0.026	0.11	1158.43	0.000
L3	45.29 - 0 (3)	TP32x21.6338x0.3125	20.98	1163.63	0.018	0.75	3030.57	0.000

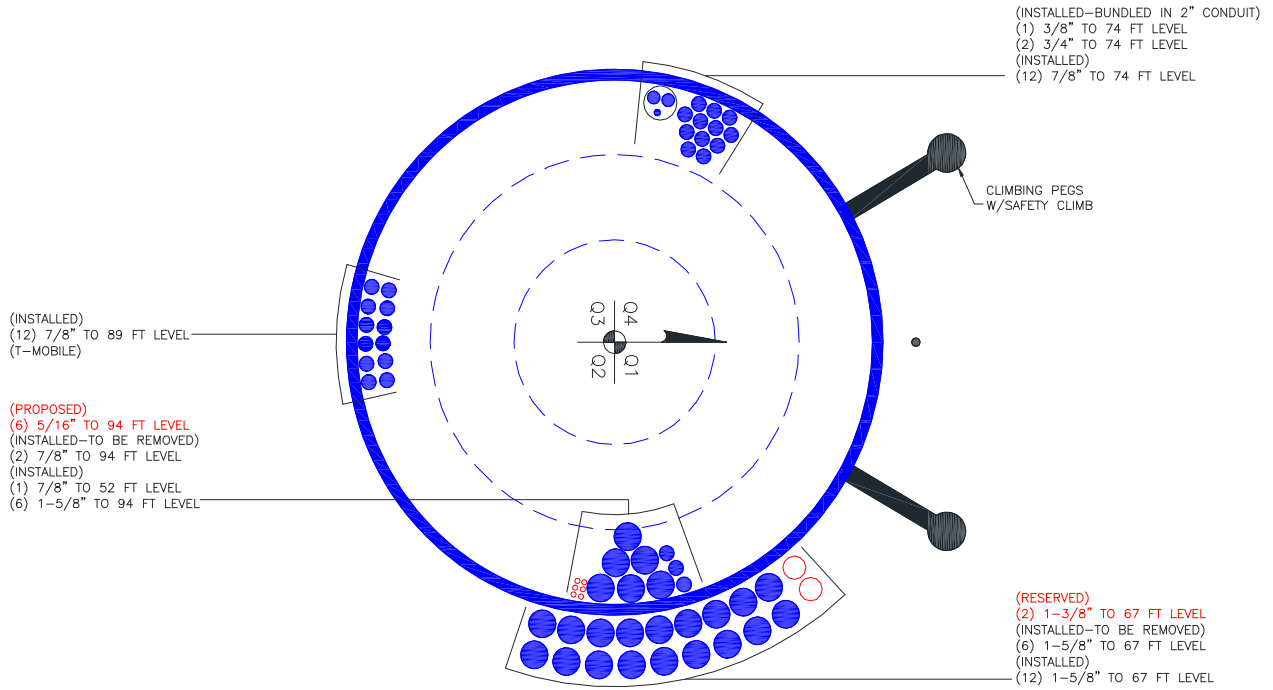
### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
L1	98 - 82.79 (1)	0.005	0.194	0.000	0.017	0.000	0.199	1.000	4.8.2 ✓
L2	82.79 - 45.29 (2)	0.009	0.819	0.000	0.026	0.000	0.829	1.000	4.8.2 ✓
L3	45.29 - 0 (3)	0.009	0.920	0.000	0.018	0.000	0.929	1.000	4.8.2 ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow}$ K	% Capacity	Pass Fail
L1	98 - 82.79	Pole	TP15.28x12x0.1875	1	-3.41	644.24	19.9	Pass
L2	82.79 - 45.29	Pole	TP22.86x14.3831x0.25	2	-11.85	1290.12	82.9	Pass
L3	45.29 - 0	Pole	TP32x21.6338x0.3125	3	-21.18	2327.26	92.9	Pass
Summary								
Pole (L3)							92.9	Pass
<b>RATING =</b>							<b>92.9</b>	<b>Pass</b>

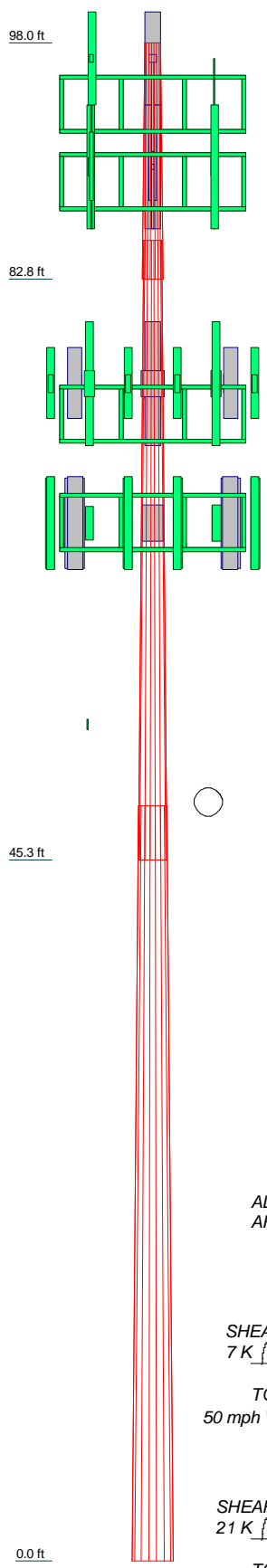
**APPENDIX B**  
**BASE LEVEL DRAWING**





**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

Section	1	2	3
Length (ft)	15.21	39.92	48.71
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Socket Length (ft)	2.42	3.42	
Top Dia (in)	12.0000	14.3831	21.6338
Bot Dia (in)	15.2800	22.8600	32.0000
Grade		A572-65	
Weight (K)	0.4	2.0	4.4



### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 305-1]	94	P65-17-XLH-RR w/ Mount Pipe	74
2.375" OD x 6' Mount Pipe	94	P65-17-XLH-RR w/ Mount Pipe	74
2.375" OD x 6' Mount Pipe	94	(2) LGP21903	74
2.375" OD x 6' Mount Pipe	94	(2) LGP21903	74
APXVSP18-C-A20 w/ Mount Pipe	94	(2) LGP21903	74
APXVSP18-C-A20 w/ Mount Pipe	94	(2) LGP21401	74
APXVSP18-C-A20 w/ Mount Pipe	94	(2) LGP21401	74
FD9R6004/1C-3L	94	(2) LGP21401	74
FD9R6004/1C-3L	94	RRUS-11	74
FD9R6004/1C-3L	94	RRUS-11	74
APXV18-209014-C w/ Mount Pipe	89	RRUS-11	74
APXV18-209014-C w/ Mount Pipe	89	DC6-48-60-18-8F	74
APXV18-209014-C w/ Mount Pipe	89	Platform Mount [LP 303-1]	74
LNX-6515DS-VTM w/ Mount Pipe	89	(2) LPA-80063/6CFx2 w/ Mount Pipe	67
LNX-6515DS-VTM w/ Mount Pipe	89	(2) LPA-80063/6CFx2 w/ Mount Pipe	67
LNX-6515DS-VTM w/ Mount Pipe	89	(2) LPA-80063/6CFx2 w/ Mount Pipe	67
ATBT-BOTTOM-24V	89	Platform Mount [LP 303-1]	67
ATBT-BOTTOM-24V	89	(2) SBNHH-1D65B w/ Mount Pipe	67
ATBT-BOTTOM-24V	89	(2) SBNHH-1D65B w/ Mount Pipe	67
ATMPP1412D-1CWA	89	(2) SBNHH-1D65B w/ Mount Pipe	67
ATMPP1412D-1CWA	89	B13 RRH 4X30	67
ATMPP1412D-1CWA	89	B13 RRH 4X30	67
Platform Mount [LP 305-1]	89	B13 RRH 4X30	67
2.375" OD x 6' Mount Pipe	89	B66A RRH4X45	67
2.375" OD x 6' Mount Pipe	89	B66A RRH4X45	67
2.375" OD x 6' Mount Pipe	89	B66A RRH4X45	67
(2) 7770.00 w/ Mount Pipe	74	RC2DC-3315-PF-48	67
(2) 7770.00 w/ Mount Pipe	74	RC2DC-3315-PF-48	67
(2) 7770.00 w/ Mount Pipe	74	KS24019-L112A	52
P65-17-XLH-RR w/ Mount Pipe	74	Side Arm Mount [SO 701-1]	52

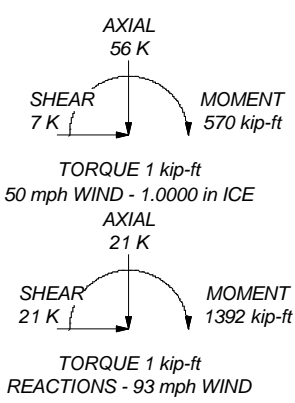
### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 92.9%

ALL REACTIONS ARE FACTORED



 <b>Paul J. Ford and Company</b> 250 East Broad St., Suite 600 Columbus, Ohio Phone: 614.221.6679 FAX:	<b>Job: 98ft Monopole / (F) E. Granby 4Q2000 / Galasso</b> <b>Project: 37517-0117 / BU 876399</b>	
	Client: Crown Castle Code: TIA-222-G Path:	Drawn by: jjohnson Date: 01/09/17 Scale: NTS Dwg No. E-1
	<small>G:\TOWER\375 Crown Castle\2017\37517-0117_876399 (F) E. GRANBY 4Q2000\37517-0117-001-7805_S3_1346671\37517-0117-001-7805.dwg</small>	

v4.4 - Effective 7-12-13

**Asymmetric Anchor Rod Analysis**

Moment =	1392	k-ft	TIA Ref.	G	Location =	Base Plate
Axial =	21.0	kips	ASIF =	1.0000	η =	0.55 for BP, Rev. G Sect. 4.9.9
Shear =	21.0	kips	Max Ratio =	105.0%	Threads =	N/A for FP, Rev. G
Anchor Qty =	12					

**\*\* For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. \*\***

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in <sup>2</sup>	Area, in <sup>2</sup>	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	40.00	0.00	3.98	135.95	132.46	139.13	0.00	260.00	53.5%
2	2.250	#18J A615 Gr 75	75	100	45.0	40.00	0.00	3.98	124.96	121.47	128.14	0.00	260.00	49.3%
3	2.250	#18J A615 Gr 75	75	100	90.0	40.00	0.00	3.98	123.25	119.76	126.42	0.00	260.00	48.6%
4	2.250	#18J A615 Gr 75	75	100	135.0	40.00	0.00	3.98	136.78	133.28	139.95	0.00	260.00	53.8%
5	2.250	#18J A615 Gr 75	75	100	180.0	40.00	0.00	3.98	142.06	138.57	145.24	0.00	260.00	55.9%
6	2.250	#18J A615 Gr 75	75	100	225.0	40.00	0.00	3.98	132.29	128.80	135.47	0.00	260.00	52.1%
7	2.250	#18J A615 Gr 75	75	100	270.0	40.00	0.00	3.98	127.11	123.62	130.28	0.00	260.00	50.1%
8	2.250	#18J A615 Gr 75	75	100	315.0	40.00	0.00	3.98	134.86	131.37	138.04	0.00	260.00	53.1%
9	0.000				0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0%
10	2.500	Williams R71	127.7	150	10.0	44.00	0.00	5.35	198.44	193.75	202.71	0.00	622.80	32.5%
11	2.500	Williams R71	127.7	150	116.0	44.00	0.00	5.35	192.88	188.19	197.14	0.00	622.80	31.7%
12	2.500	Williams R71	127.7	150	249.0	44.00	0.00	5.35	187.91	183.22	192.17	0.00	622.80	30.9%

47.89

## Stiffened or Unstiffened, UngROUTed, Circular Base Plate - Any Rod Material

**TIA Rev G**

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

Site Data	
BU#:	
Site Name:	
App #:	
Pole Manufacturer:	<i>Other</i>

Anchor Rod Data	
Qty:	8
Diam:	2.25 in
Rod Material:	A615-J
Strength (Fu):	100 ksi
Yield (Fy):	75 ksi
Bolt Circle:	40 in

Plate Data	
Diam:	46 in
Thick:	1.5 in
Grade:	60 ksi
Single-Rod B-eff:	12.70 in

Stiffener Data (Welding at both sides)	
Config:	3 *
Weld Type:	Fillet
Groove Depth:	<-- Disregard
Groove Angle:	<-- Disregard
Fillet H. Weld:	0.375 in
Fillet V. Weld:	0.375 in
Width:	6 in
Height:	18 in
Thick:	0.5 in
Notch:	0.5 in
Grade:	50 ksi
Weld str.:	70 ksi
Clear Space between Stiffeners (b):	10.4 in

Pole Data	
Diam:	32 in
Thick:	0.3125 in
Grade:	65 ksi
# of Sides:	18 "0" IF Round
Fu	80 ksi
Reinf. Fillet Weld	0 "0" if None

Reactions	
Mu:	933.26667 ft-kips
Axial, Pu:	14 kips
Shear, Vu:	14 kips
Eta Factor, η	0.5 TIA G (Fig. 4-4)

If No stiffeners, Criteria: **AISC LRFD** <-Only Applicable to Unstiffened Cases

**Anchor Rod Results**  
 Max Rod (Cu+ Vu/r): 145.2 Kips  
 Allowable Axial,  $\Phi * Fu * Anet$ : 260.0 Kips  
 Anchor Rod Stress Ratio: 55.9% **Pass**

Stiffened
AISC LRFD
$\phi * T_n$

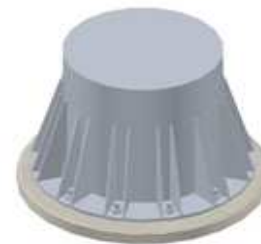
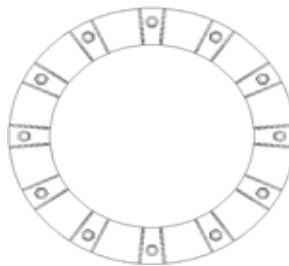
**Base Plate Results**  
 Base Plate Stress: 38.6 ksi  
 Allowable Plate Stress: 54.0 ksi  
 Base Plate Stress Ratio: 71.5% **Pass**

Flexural Check  
 38.6 ksi  
 54.0 ksi  
 71.5% **Pass**

Stiffened
AISC LRFD
$\phi * F_y$
Y.L. Length: N/A, Roark

**Stiffener Results**  
 Horizontal Weld : 55.4% **Pass**  
 Vertical Weld: 19.0% **Pass**  
 Plate Flex+Shear,  $f_b/F_b + (f_v/F_v)^2$ : 10.9% **Pass**  
 Plate Tension+Shear,  $f_t/F_t + (f_v/F_v)^2$ : 42.9% **Pass**  
 Plate Comp. (AISC Bracket): 46.2% **Pass**

**Pole Results**  
 Pole Punching Shear Check: 6.7% **Pass**



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

**Factored Foundation Loads:**

	LC1	LC2
Factored Axial Load (+Comp, -Ten) =	<b>72.54</b>	<b>54.405</b> kips
Factored Horiz. Load at Top of Pier =	<b>21</b>	<b>21</b> kips
Factored OTM at Top of Pier =	<b>1392</b>	<b>1392</b> kips

**LRFD Resistance and Load Factors:**

	$\Phi$	Dead Load Factors	
Soil Bearing =	<b>0.75</b>		
Soil Weight =	<b>0.75</b>	1.2	0.9
Concrete Weight =	<b>0.75</b>	1.2	0.9

**Soil Properties:**

Depth to Water Table = **9** ft  
 Uplift Cone from **Top** of footing

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
<b>5</b>	<b>120</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>5.00</b>

**Dimensions:**

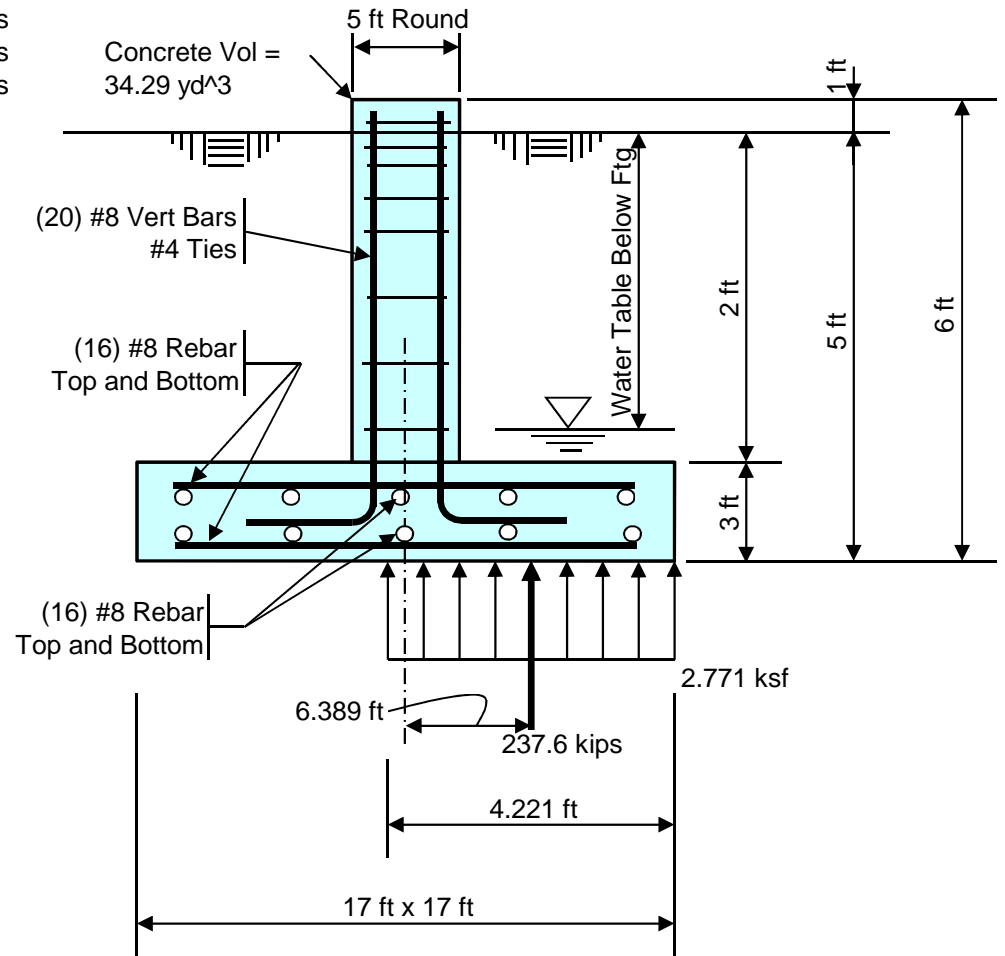
Pier Shape = **Round**  
 Pier Width = **5** ft Diameter  
 Pier Height above Grade = **1** ft  
 Depth to Bottom of Footing = **5** ft  
 Footing Thickness = **3** ft  
 Footing Width, B = **17** ft  
 Footing Length, L = **17** ft

**Concrete:**

Concrete Strength = **3** ksi  
 Rebar Strength = **60** ksi

**Summary Results:**

	Required	Available
Maximum Net Soil Bearing =	<b>2.790</b> ksf	<b>6.000</b> ksf
Uplift =	<b>0.0</b> kips	<b>152.7</b> kips
Punching Shear Stress =	<b>0.030</b> ksi	<b>0.164</b> ksi
Bending Shear Stress =	<b>150.1</b> kips	<b>527.9</b> kips
Bending Moment =	<b>734.08</b> k-ft	<b>1750.3</b> k-ft
Conc Pier Reinforcing Steel =	<b>1455.0</b> k-ft	<b>1962.1</b> k-ft



Total Pad Reinf Stl = **25.28** in<sup>2</sup> >= 13.22 in<sup>2</sup> = Min Stl, OK  
 Total Pier Reinf Stl = **15.80** in<sup>2</sup> >= 14.14 in<sup>2</sup> = Min Stl, OK  
 Footing Thickness = **3.00** ft >= 1.53 ft = Min Ftg Thk, OK

Stress Ratio = **46.5%** in Soil Bearing  
 Stress Ratio = **0.0%** in Uplift  
 Stress Ratio = **18.5%** in Punching Shear  
 Stress Ratio = **28.4%** in Bending Shear  
 Stress Ratio = **41.9%** in Bending Moment  
 Stress Ratio = **74.2%** in Pier Rebar

# 60 SOUTH MAIN STREET

**Location** 60 SOUTH MAIN STREET

**Mblu** 11/ 11/ //

**Acct#** 100819

**Owner** GALASSO HOLDINGS LLC

**Assessment** \$1,281,200

**Appraisal** \$1,830,100

**PID** 341

**Building Count** 3

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2013	\$1,293,500	\$536,600	\$1,830,100

Assessment			
Valuation Year	Improvements	Land	Total
2013	\$905,600	\$375,600	\$1,281,200

## Owner of Record

**Owner** GALASSO HOLDINGS LLC  
**Co-Owner**  
**Address** PO BOX 1776  
EAST GRANBY, CT 06026

**Sale Price** \$0  
**Certificate**  
**Book & Page** 0112/0814  
**Sale Date** 03/06/1997

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
GALASSO HOLDINGS LLC	\$0		0112/0814	03/06/1997

## Building Information

### Building 1 : Section 1

**Year Built:** 1969  
**Living Area:** 43,230  
**Replacement Cost:** \$933,768  
**Building Percent** 80  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$747,000

Building Attributes	
Field	Description

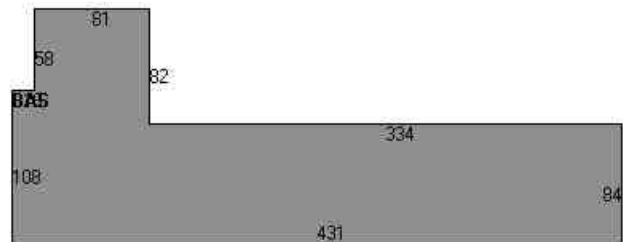
STYLE	Garage
MODEL	Commercial
Grade	Average
Stories:	1
Occupancy	1
Exterior Wall A	Concr/Cinder
Exterior Wall B	
Roof Structure	Gable/Hip
Roof Cover	Tar & Gravel
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr-Finished
Interior Floor B	
Heating Fuel	Oil
Heating Type	Steam
AC Type	None
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3-1C
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	0

### Building Photo



(<http://images.vgsi.com/photos/EastGranbyCTPhotos//\00\00\20>)

### Building Layout



Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	43,230	43,230
		43,230	43,230

### Building 2 : Section 1

**Year Built:** 1969  
**Living Area:** 5,720  
**Replacement Cost:** \$242,083  
**Building Percent Good:** 80  
**Replacement Cost Less Depreciation:** \$193,700

Building Attributes : Bldg 2 of 3	
Field	Description
STYLE	Light Indust
MODEL	Industrial
Grade	Average
Stories:	1

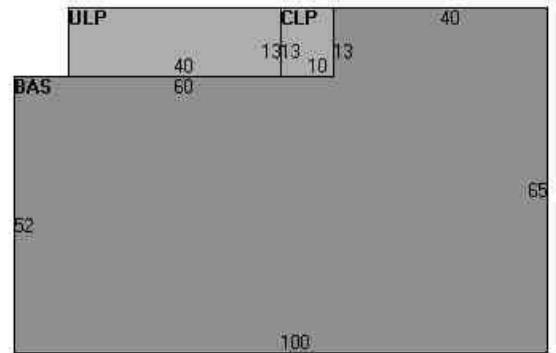
Occupancy	1
Exterior Wall A	Concr/Cinder
Exterior Wall B	
Roof Structure	Gable/Hip
Roof Cover	Asphalt
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr-Finished
Interior Floor B	Minimum/Plywd
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	Industrial MDL-96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	3-1
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	0

### Building Photo



(<http://images.vgsi.com/photos/EastGranbyCTPhotos//\00\00\20>)

### Building Layout



Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
BAS	First Floor	5,720	5,720	
CLP	Loading Platform, Finished	130	0	
ULP	Loading Platform, Unfinished	520	0	
		6,370	5,720	

### Building 3 : Section 1

**Year Built:** 1972  
**Living Area:** 8,000  
**Replacement Cost:** \$347,440  
**Building Percent Good:** 80  
**Replacement Cost Less Depreciation:** \$278,000

Building Attributes : Bldg 3 of 3	
Field	Description
STYLE	Light Indust
MODEL	Industrial



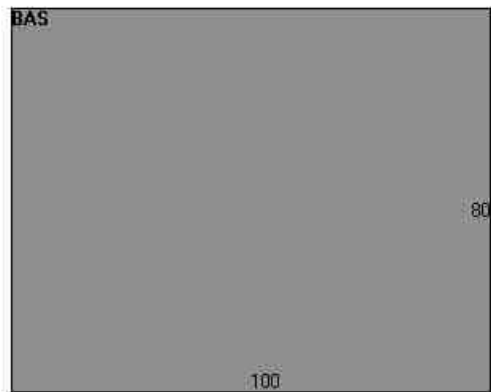
Grade	Average
Stories:	1
Occupancy	1
Exterior Wall A	Concr/Cinder
Exterior Wall B	
Roof Structure	Flat
Roof Cover	Rolled Compos
Interior Wall A	Unfin/Minimum
Interior Wall B	
Interior Floor A	Concr-Finished
Interior Floor B	
Heating Fuel	Oil
Heating Type	Steam
AC Type	None
Bldg Use	Industrial MDL-96
Total Rooms	0
Total Bedrms	0
Total Baths	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	16
% Comn Wall	0

### Building Photo



(<http://images.vgsi.com/photos/EastGranbyCTPhotos//default.jpg>)

### Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	8,000	8,000
		8,000	8,000

### Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
MEZ	Mezzanine	960 S.F.	\$11,500	3

### Land

#### Land Use

<b>Use Code</b>	3-1C
<b>Description</b>	Industrial MDL-94
<b>Zone</b>	I
<b>Neighborhood</b>	

#### Land Line Valuation

<b>Size (Acres)</b>	89.97
<b>Frontage</b>	0
<b>Depth</b>	0
<b>Assessed Value</b>	\$375,600

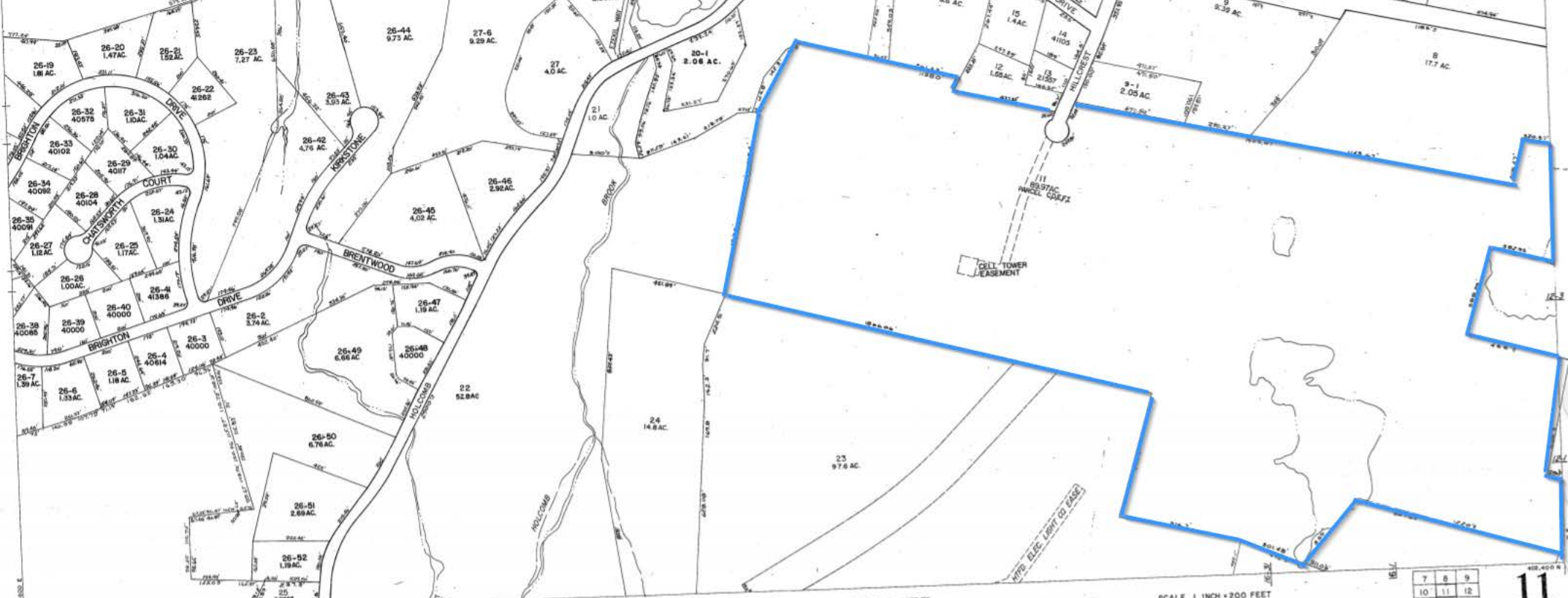
**Outbuildings**

<b>Outbuildings</b>						<b>Legend</b>
<b>Code</b>	<b>Description</b>	<b>Sub Code</b>	<b>Sub Description</b>	<b>Size</b>	<b>Value</b>	<b>Bldg #</b>
SHED	Shed	A	Average	180 S.F.	\$1,300	1
SHED	Shed	A	Average	640 S.F.	\$3,500	2
LNT	Lean-To			350 S.F.	\$1,400	1
SHED	Shed	A	Average	100 S.F.	\$500	2
SHED	Shed	A	Average	200 S.F.	\$3,600	3
LNT	Lean-To			240 S.F.	\$1,000	2
SHED	Shed	A	Average	1250 S.F.	\$11,300	1
GAR1	Garage	A	Average	1280 S.F.	\$19,200	2
LNT	Lean-To			1472 S.F.	\$8,800	1
SHED	Shed	A	Average	160 S.F.	\$1,700	1
SHED	Shed	A	Average	252 S.F.	\$1,400	2
SHED	Shed	A	Average	140 S.F.	\$1,000	2
SHED	Shed	G	Good	360 S.F.	\$8,600	1

**Valuation History**

<b>Appraisal</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2012	\$1,409,400	\$359,400	\$1,768,800
2007	\$818,700	\$429,800	\$1,248,500
2003	\$1,010,400	\$367,100	\$1,377,500

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2012	\$986,700	\$251,600	\$1,238,300
2007	\$573,100	\$300,900	\$874,000
2003	\$707,300	\$256,900	\$964,200



# EAST GRANBY

SCALE 1 INCH = 200 FEET

7	8	9
10	11	12
15	16	17



PROJECT: DO ESS GROUND MOUNT OPTION 2  
 SITE NAME: (R2E) CT4993 TO CT43-804/  
 GALASSO MATERIALS (SSUSA)  
 SITE CASCADE: CT43XC804  
 SITE ADDRESS: 60 SOUTH MAIN STREET EAST  
 GRANBY, CT 06026  
 SITE TYPE: MONOPOLE TOWER  
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:

PLANS PREPARED BY:

**INFINIGY**  
 FROM ZERO TO INFINIGY  
 the solutions are endless  
 1033 Watervliet Shaker Rd | Albany, NY 12205  
 Phone: 518-690-0790 | Fax: 518-690-0793  
 www.infinigy.com  
 JOB NUMBER: 514-000

PROJECT MANAGER:

**AIROSMITH**  
 DEVELOPMENT  
 32 CLINTON ST.  
 SARATOGA SPRINGS, NY 12866  
 OFFICE#: (518) 306-3740

ENGINEERING LICENSE:

**SITE INFORMATION**

**TOWER OWNER:**  
 CROWN ATLANTIC COMPANY LLC.  
 2000 CORPORATE DRIVE  
 CANONSBURG, PA 15317  
 (704) 405-6555

**LATITUDE (NAD83):**  
 41° 56' 29.6" N  
 41.94155555°

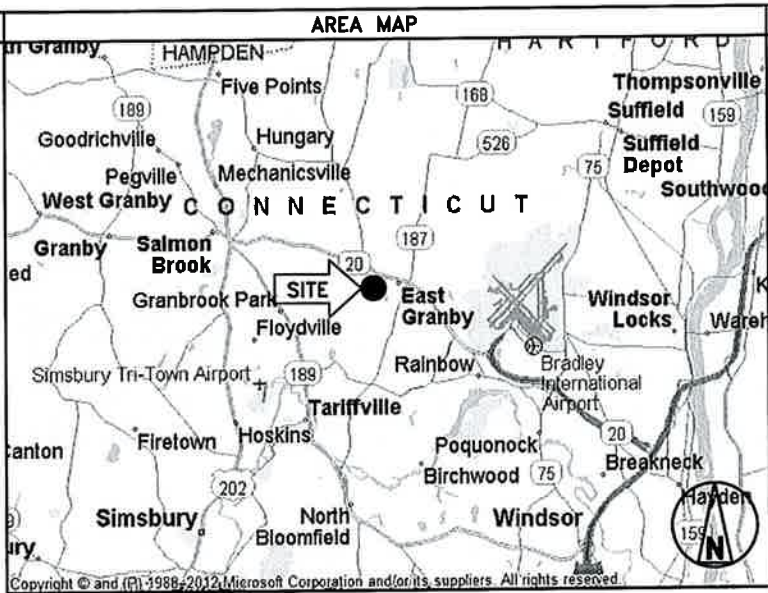
**LONGITUDE (NAD83):**  
 72° 44' 19.2" W  
 -72.73866666°

**COUNTY:**  
 HARTFORD

**ZONING JURISDICTION:**  
 CONNECTICUT SITING COUNCIL

**ZONING DISTRICT:**  
 B

**PROJECT MANAGER:**  
 AIROSMITH DEVELOPMENT  
 TERRI BURKHOLDER  
 (315) 719-2928  
 TBURKHOLDER@AIROSMITHDEVELOPMENT.COM



**PROJECT DESCRIPTION**

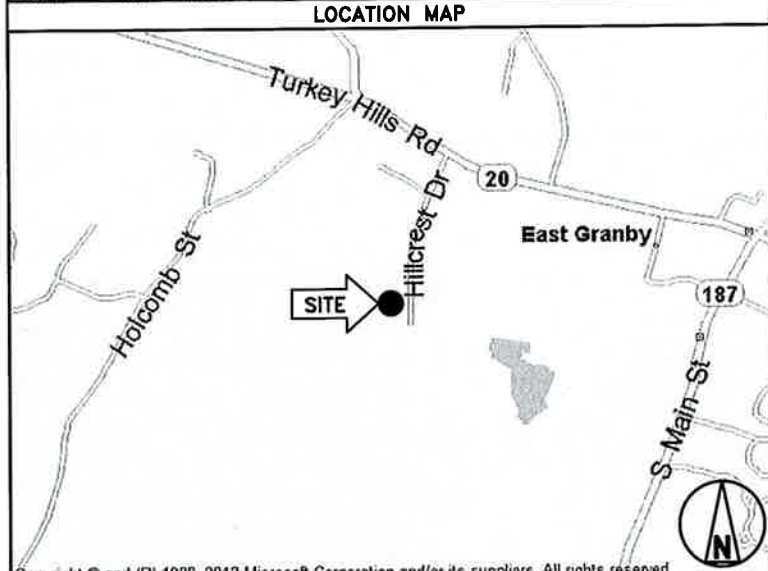
SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE (6) PANEL ANTENNAS
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) DIPLEXERS TO TOWER TOP
- INSTALL (3) DIPLEXERS TO EXISTING H-FRAME
- INSTALL (3) RRH'S TO EXISTING H-FRAME
- INSTALL (6) RET CABLES

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

**DRAWING INDEX**

SHEET NO:	SHEET TITLE	REV
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	OVERALL SITE PLAN	0
A-2	SITE PLAN	0
A-3	TOWER ELEVATION & ANTENNA LAYOUT	0
A-4	ANTENNA LOADING AND COLOR CODING CHART	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	SCENARIO 354 V2.5 SPECIFICATIONS	0
A-7	SCENARIO 354 V2.5 SPECIFICATIONS	0
E-1	ELECTRICAL & GROUNDING PLAN	0



**APPLICABLE CODES**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF 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 (2012 IBC)
2. TIA-EIA-222-F OR LATEST EDITION
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. CITY/COUNTY ORDINANCES



**DRAWING NOTICE:**

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:	DESCRIPTION	DATE	BY	REV

ISSUED FOR PERMIT: 02/02/17 MPS 0  
 ISSUED FOR REVIEW: 1/24/17 MPS A

**SITE NAME:**  
 (R2E)CT4993 TO CT43-804/  
 GALASSO MATERIALS  
 (SSUSA)

**SITE NUMBER:**  
 CT43XC804

**SITE ADDRESS:**  
 60 SOUTH MAIN STREET  
 EAST GRANBY, CT 06026

**SHEET DESCRIPTION:**  
 TITLE SHEET  
 & PROJECT DATA

**SHEET NUMBER:**  
 T-1

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

**SECTION 01 100 – SCOPE OF WORK**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:
  - A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
    - 1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
    - 5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
    - 3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
    - 4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
    - 5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
    - 6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
    - 7. AMERICAN CONCRETE INSTITUTE (ACI)
    - 8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
    - 9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
    - 10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
    - 11. PORTLAND CEMENT ASSOCIATION (PCA)
    - 12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
    - 13. BRICK INDUSTRY ASSOCIATION (BIA)
    - 14. AMERICAN WELDING SOCIETY (AWS)
    - 15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
    - 16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
    - 17. DOOR AND HARDWARE INSTITUTE (DHI)
    - 18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
    - 19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

**1.5 DEFINITIONS:**

- A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
- B. COMPANY: SPRINT CORPORATION
- C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
- D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
- E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
- G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

- 1.6 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.
- 1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.
- 1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
  - A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN 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. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
  - C. 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.
- 1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
- 1.11 UTILITIES 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.
- 1.12 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.
- 1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.
- 1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.
 

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193
- 1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

- 3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HERewith, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.
- 3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 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**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

- 3.1 RECEIPT OF MATERIAL AND EQUIPMENT:
  - A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.
  - B. 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.
    - 4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
    - 5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
    - 6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.
- 3.2 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.
  - C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

**SECTION 01 300 – CELL SITE CONSTRUCTION CO.**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 NOTICE TO PROCEED
  - A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE 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.

**TOWER OWNER NOTIFICATION**  
 ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

- 3.1 FUNCTIONAL REQUIREMENTS:
  - A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND 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:

PLANS PREPARED FOR:



PLANS PREPARED BY:



PROJECT MANAGER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT		02/02/17	MPS	0
ISSUED FOR REVIEW		1/24/17	MPS	A

SITE NAME:  
 (R2E)CT4993 TO CT43-804/  
 GALASSO MATERIALS  
 (SSUSA)

SITE NUMBER:  
 CT43XC804

SITE ADDRESS:  
 60 SOUTH MAIN STREET  
 EAST GRANBY, CT 06026

SHEET DESCRIPTION:  
 SPRINT SPECIFICATIONS

SHEET NUMBER:  
 SP-1

**CONTINUE FROM SP-1**

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 TELCO BACKHAUL.
  4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
  5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
  6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
  7. INSTALL "H-FRAMES", CABINETS AND SHELTERS 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. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
  19. PERFORM ANTENNA AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
  20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."
- 3.2 GENERAL REQUIREMENTS FOR CIVL 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
  - E. CONDUCT TESTING AS REQUIRED HEREIN.
- 3.3 DELIVERABLES:**
- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
  - B. PROVIDE 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. CIVL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
    4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

**SECTION 01 400 - SUBMITTALS & TESTS**

**PART 1 - GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 SUBMITTALS:
  - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
  - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
    1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
    2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
    3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
    4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
    5. CHEMICAL GROUNDING DESIGN
  - D. 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.
- 1.4 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 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
    2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
    3. 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.
  - C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
    1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
    2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
    3. ALL AVAILABLE JURISDICTIONAL INFORMATION
    4. PDF SCAN OF REDLINES PRODUCED IN FIELD

5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

**3.1 REQUIREMENTS FOR TESTING:**

**A. THIRD PARTY TESTING AGENCY:**

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, AND OTHER METHODS IS NEEDED.

**3.2 REQUIRED TESTS:**

**A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:**

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

**3.3 REQUIRED INSPECTIONS**

**A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.**

**B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:**

1. GROUNDING SYSTEM 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.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH, DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:



PLANS PREPARED BY:

**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless  
1033 Watervliet Shaker Rd | Albany, NY 12205  
Phone: 518-690-0790 | Fax: 518-690-0793  
www.infinigy.com  
JOB NUMBER 514-000

PROJECT MANAGER:

**AIRSMITH**  
DEVELOPMENT  
32 CLINTON ST.  
SARATOGA SPRINGS, NY 12866  
OFFICE: (518) 306-3740

ENGINEERING LICENSE:



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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT		02/02/17	MPS	0
ISSUED FOR REVIEW		1/24/17	MPS	A

SITE NAME:  
**(R2E)CT4993 TO CT43-804/  
GALASSO MATERIALS  
(SSUSA)**

SITE NUMBER:  
**CT43XC804**

SITE ADDRESS:  
**60 SOUTH MAIN STREET  
EAST GRANBY, CT 06026**

SHEET DESCRIPTION:  
**SPRINT SPECIFICATIONS**

SHEET NUMBER:  
**SP-2**

**CONTINUE FROM SP-2**

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
  8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
  9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
  10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
  11. ALL AVAILABLE JURISDICTIONAL INFORMATION
  12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- C. THE 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.
- D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.
- 3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.
- A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
  2. STRUCTURAL BACKFILL COMPACTION REPORTS.
  3. SITE RESISTANCE TO EARTH TEST.
  4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
  5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
  6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
- B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING:
1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
  2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
  3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS - PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
  4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX 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.
  5. 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;
  6. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
  7. 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
  8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
  9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

**SECTION 01 400 - SUBMITTALS & TESTS**

**PART 1 - GENERAL**

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

1.2 RELATED DOCUMENTS:

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

3.1 WEEKLY REPORTS:

- A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
- B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

- A. SPRINT MAY HOLD WEEKLY 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.

3.3 PROJECT TRACKING IN SMS:

- A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

- A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

- A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING --TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING - WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

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ISSUED FOR REVIEW		1/24/17	MPS	A

SITE NAME:  
**(R2E)CT4993 TO CT43-804/  
GALASSO MATERIALS  
(SSUSA)**

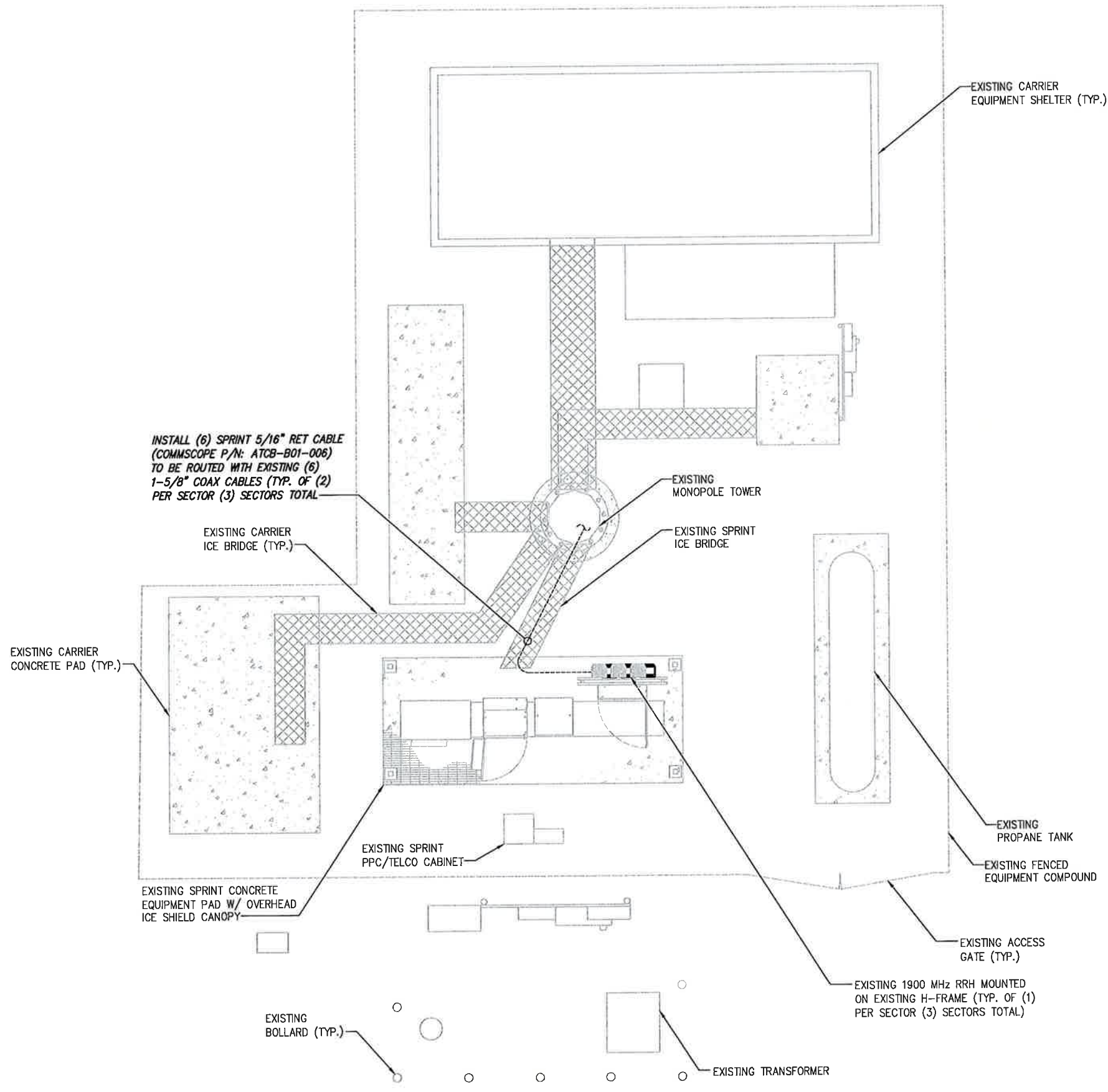
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**CT43XC804**

SITE ADDRESS:  
**60 SOUTH MAIN STREET  
EAST GRANBY, CT 06026**

SHEET DESCRIPTION:  
**SPRINT SPECIFICATIONS**

SHEET NUMBER:  
**SP-3**

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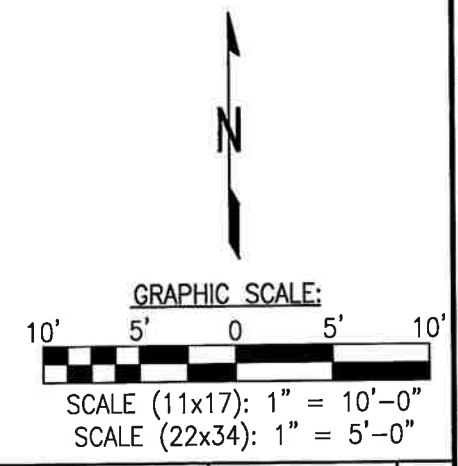
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 GALASSO MATERIALS  
 (SSUSA)

SITE NUMBER:  
 CT43XC804

SITE ADDRESS:  
 60 SOUTH MAIN STREET  
 EAST GRANBY, CT 06026

SHEET DESCRIPTION:  
 OVERALL SITE PLAN

SHEET NUMBER:  
 A-1



OVERALL SITE PLAN



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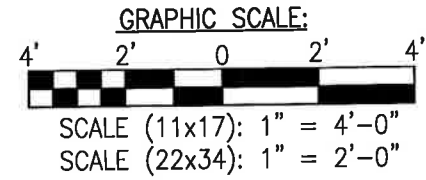
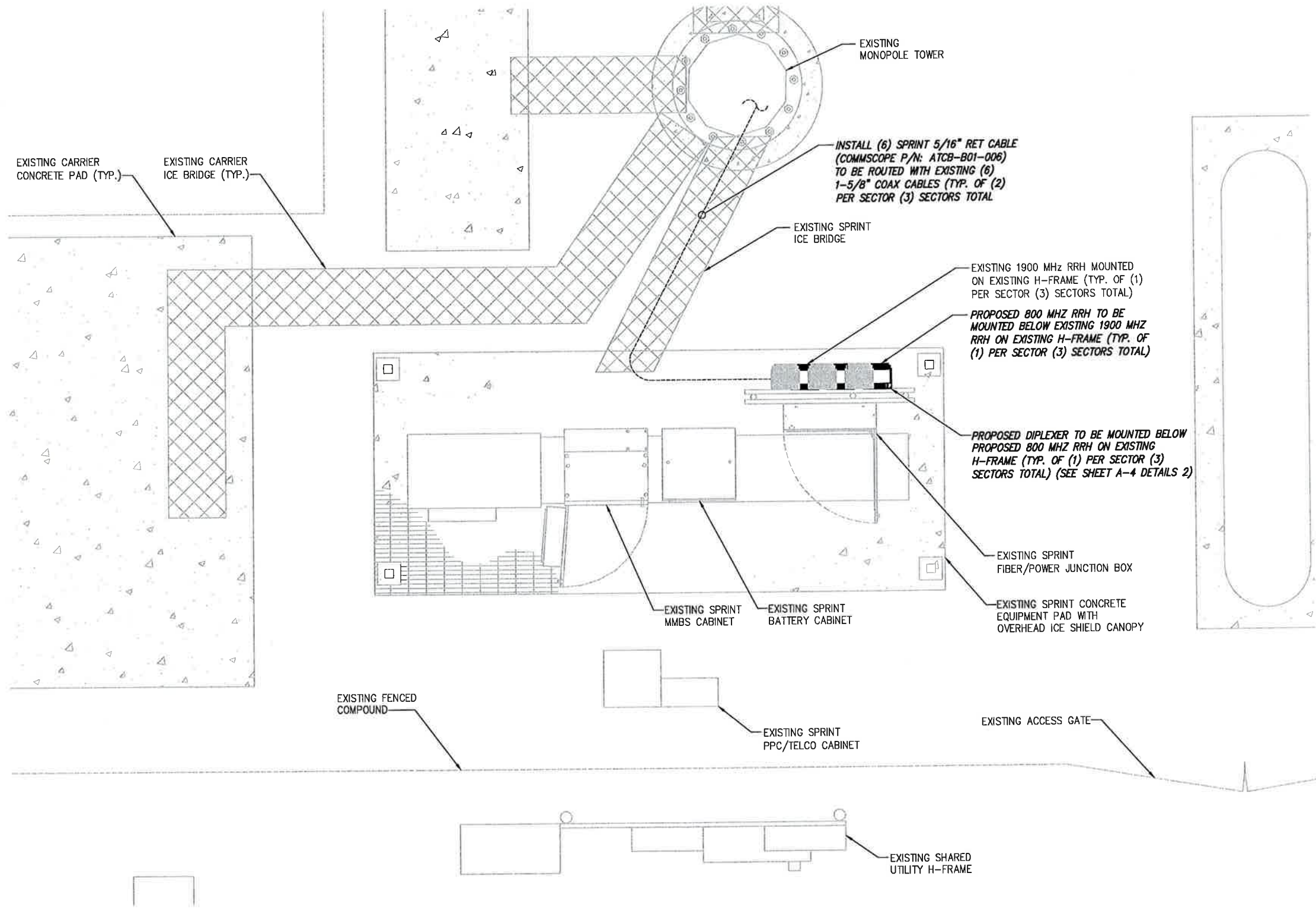
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SHEET DESCRIPTION:  
 SITE PLAN

SHEET NUMBER:  
 A-2



STRUCTURAL ANALYSIS NOT COMPLETED AT TIME OF ISSUANCE OF THESE DRAWINGS. THE STRUCTURAL ANALYSIS MUST BE COMPLETED PRIOR TO CONSTRUCTION.

PROPOSED SPRINT 800/1900 DUAL PANEL ANTENNA TO REPLACE EXISTING PANEL ANTENNA MOUNTED ON EXISTING PIPE MOUNT (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL) (SEE SHEET A-5 DETAILS 1,2)

TOP OF EXISTING TOWER  
ELEV. = ±98'-0" A.G.L.

PROPOSED SPRINT DIPLEXER MOUNTED BEHIND PROPOSED ANTENNA (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL) (SEE SHEET A-4 DETAILS 2)

PROPOSED SPRINT HANDRAIL KIT (SEE SHEET A-4 DETAIL 3)

FUTURE SPRINT PANEL ANTENNA (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL)

Ø OF EXISTING/TO BE INSTALLED SPRINT ANTENNAS ELEV. = ±97'-0" A.G.L.

EXISTING CARRIER PANEL ANTENNA (TYP.)

INSTALL (6) SPRINT 5/16" RET CABLE (COMMSCOPE P/N: ATCB-801-006) TO BE ROUTED WITH EXISTING (6) 1-5/8" COAX CABLES (TYP. OF (2) PER SECTOR (3) SECTORS TOTAL)

EXISTING MONOPOLE TOWER

EXISTING FENCED EQUIPMENT COMPOUND

GROUND LEVEL

EXISTING 1900 MHz RRH MOUNTED ON EXISTING H-FRAME (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL)  
EXISTING SPRINT EQUIPMENT CABINETS (TYP.)

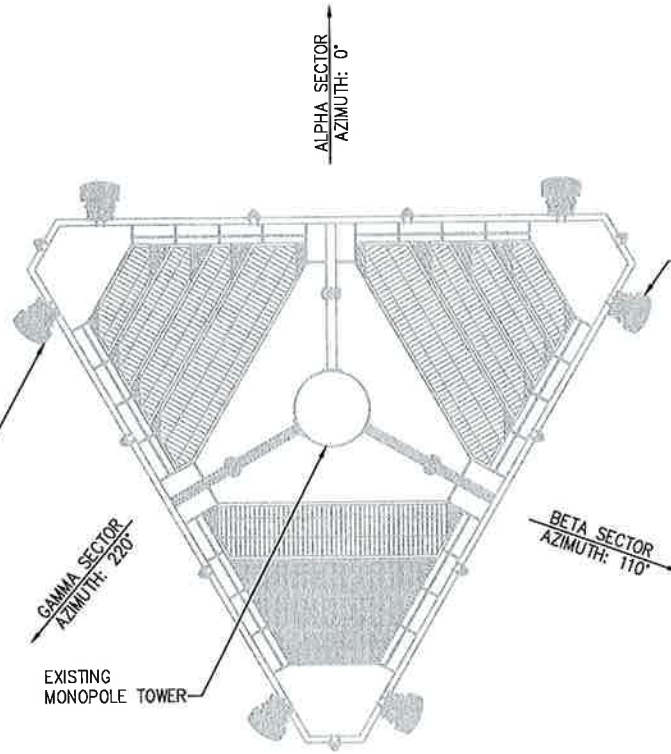
PROPOSED 800 MHz RRH TO BE MOUNTED BELOW EXISTING 1900 MHz RRH ON EXISTING H-FRAME (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL) (SEE SHEET A-5 DETAILS 3,4)

TOWER ELEVATION

NO SCALE

1

EXISTING SPRINT PANEL ANTENNA TO BE REMOVED AND REPLACED (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL)

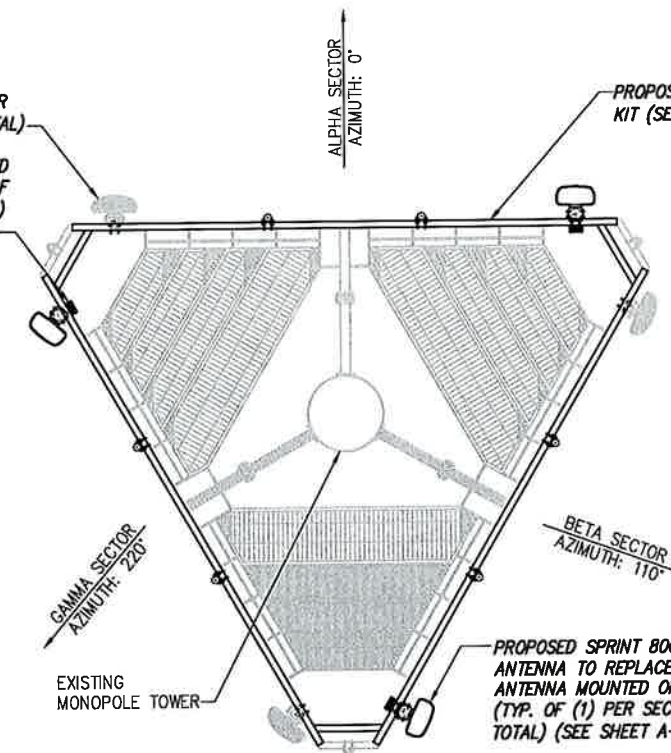


EXISTING ANTENNA LAYOUT

NO SCALE

2

FUTURE SPRINT PANEL ANTENNA (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL)  
PROPOSED SPRINT DIPLEXER MOUNTED BEHIND PROPOSED ANTENNA (TYP. OF (1) PER SECTOR (3) SECTORS TOTAL) (SEE SHEET A-4 DETAILS 2)



PROPOSED ANTENNA LAYOUT

NO SCALE

3

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**AIRSMITH DEVELOPMENT**  
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SITE NAME:  
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(SSUSA)**

SITE NUMBER:  
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SITE ADDRESS:  
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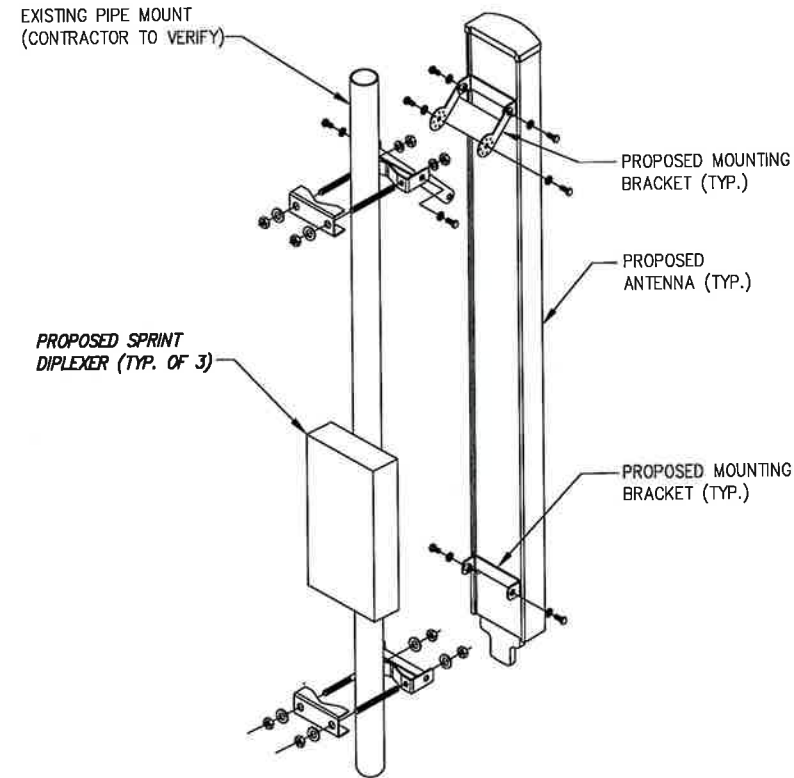
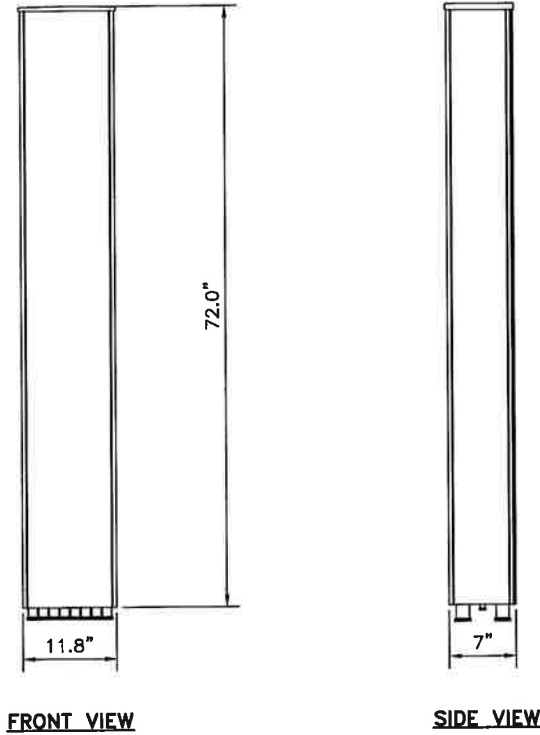
SHEET DESCRIPTION:  
**TOWER ELEVATION  
& ANTENNA LAYOUT**

SHEET NUMBER:  
**A-3**



**ANTENNA: RFS/CELWAVE APXVSPP18-C-A20**

RADOME MATERIAL: ASA  
 RADOME COLOR: LIGHT GRAY  
 DIMENSIONS, HxWxD.in(mim): 72.0"x11.8"x7" (1829x302x178mm)  
 WEIGHT: 25.8 lbs  
 CONNECTORS: (6) 7/16" DIN FEMALE/BOTTOM

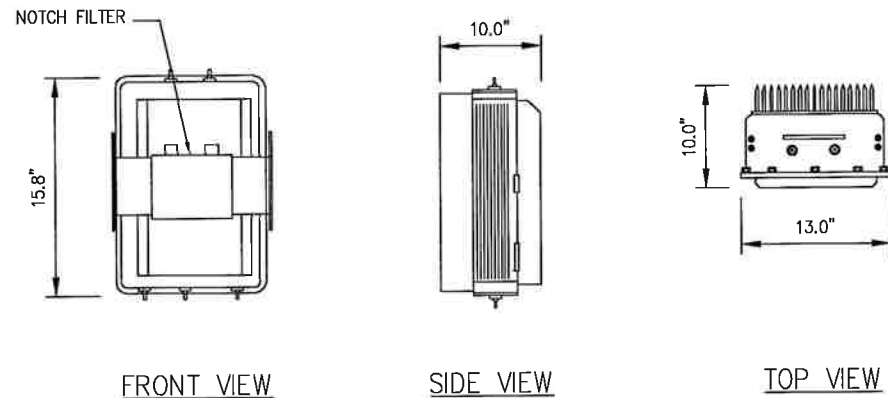


**PANEL ANTENNA DETAIL**

NO SCALE      1

**PANEL ANTENNA MOUNTING DETAIL**

NO SCALE      2

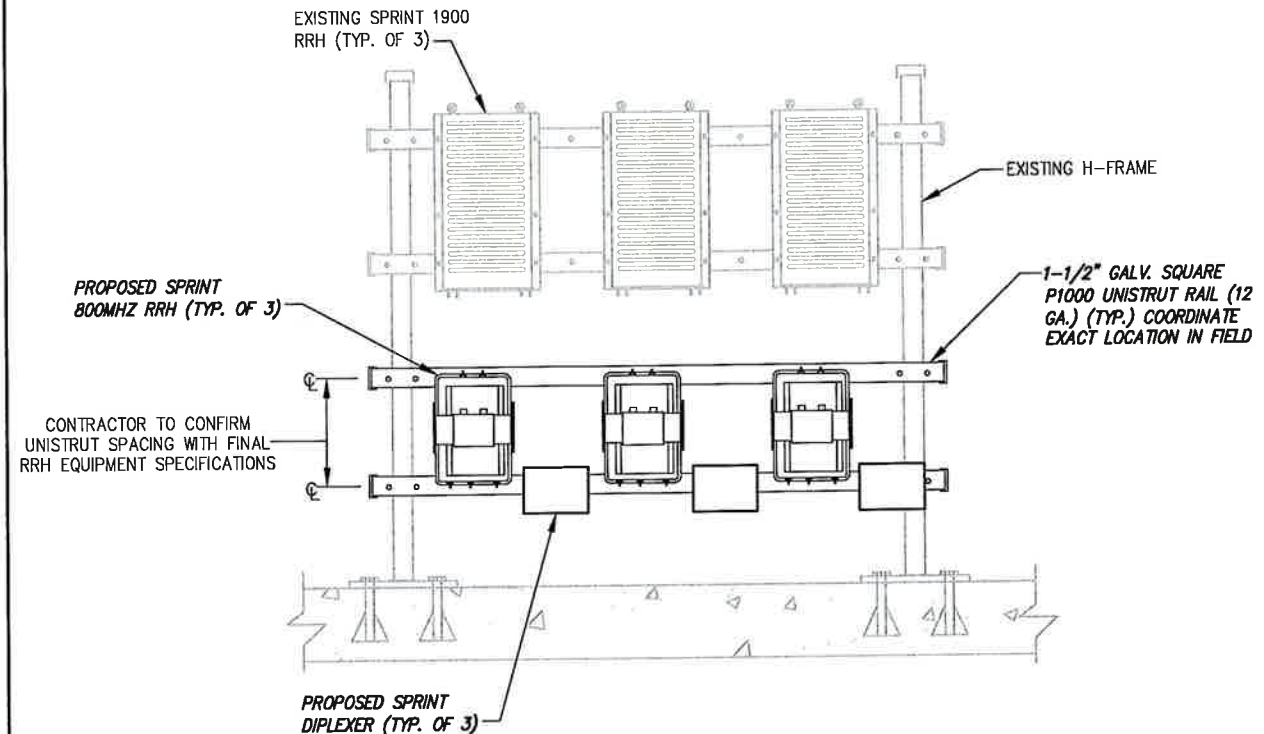


800 MHz RRH (ALU)  
 WEIGHT = 53 LBS.

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

**RRH DETAIL**

NO SCALE      3



**RRH MOUNTING DETAILS**

NO SCALE      4

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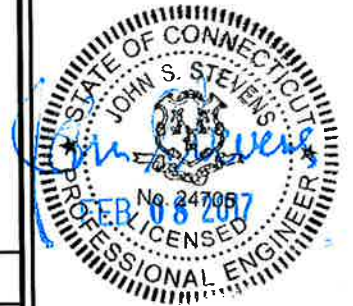
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SITE NAME:  
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SITE NUMBER:  
 CT43XC804

SITE ADDRESS:  
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SHEET DESCRIPTION:  
 EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:  
 A-5



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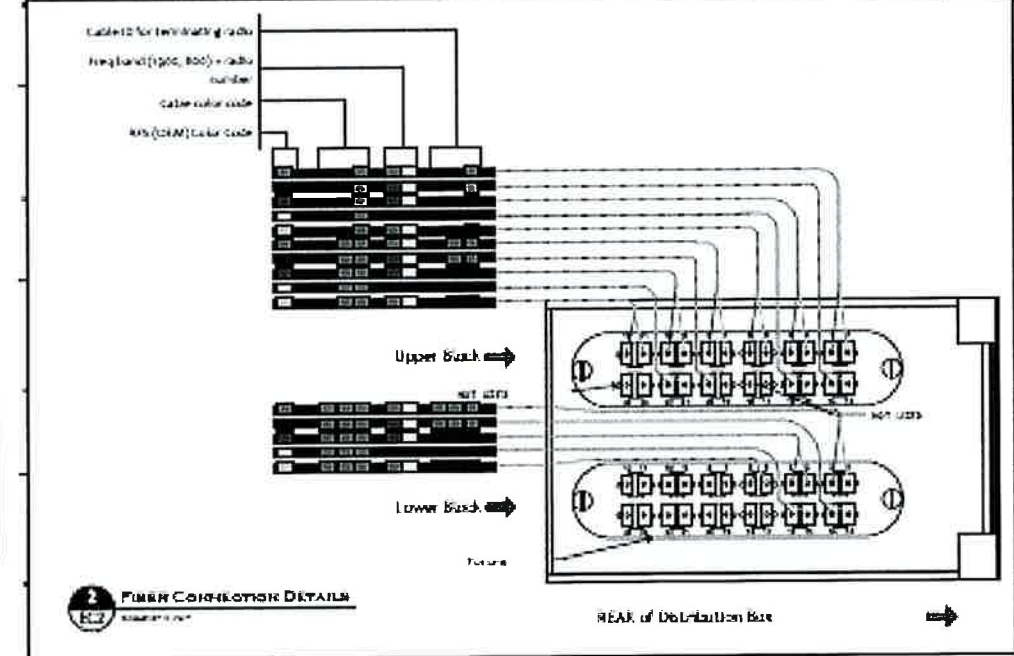
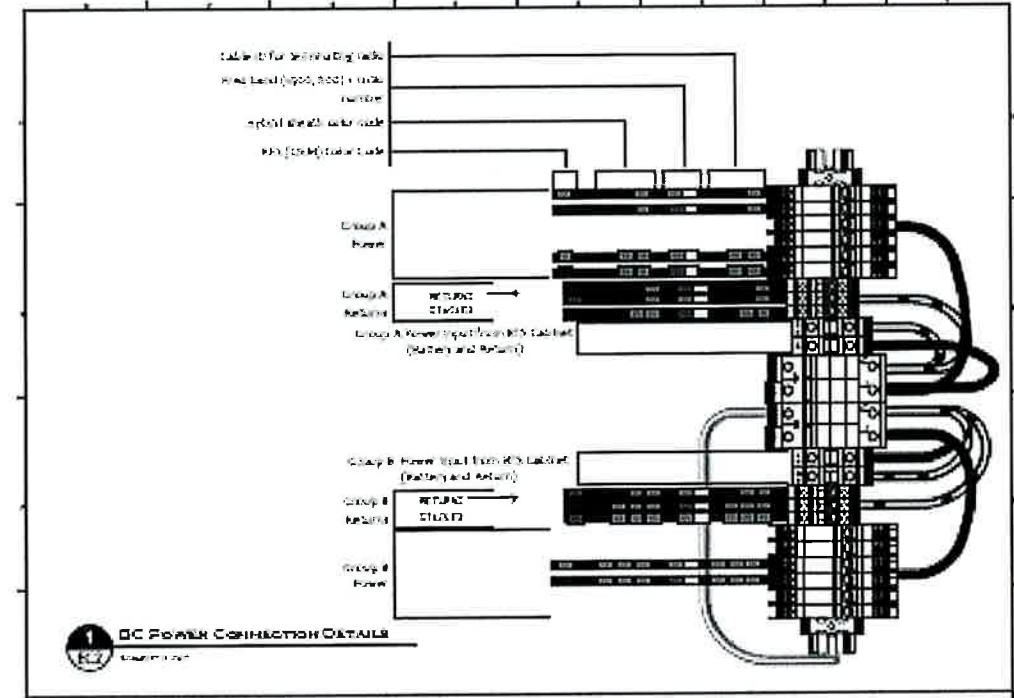
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 GALASSO MATERIALS  
 (SSUSA)

SITE NUMBER:  
 CT43XC804

SITE ADDRESS:  
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SHEET DESCRIPTION:  
 SCENARIO 354 V2.5  
 SPECIFICATIONS

SHEET NUMBER:  
 A-6



SCENARIO 354 V2.5 VSD  
 BACK TO TITLE SHEET

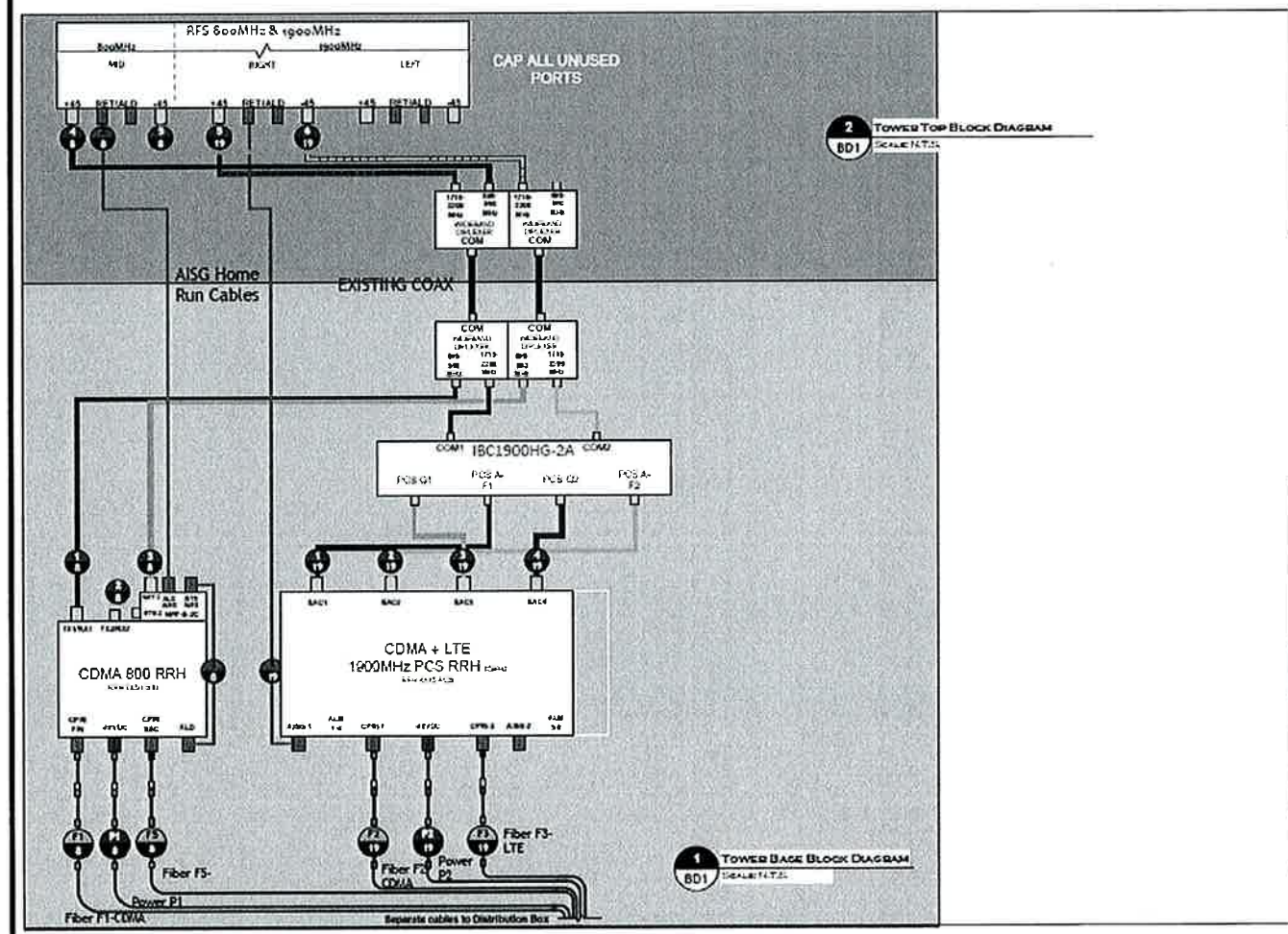
Sprint NETWORK VISION  
 Alcatel-Lucent

J. Travis Wilson  
 Project Manager  
 #0112240007

SCENARIO 354 V2.5 VSD  
 BACK TO TITLE SHEET

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J. Travis Wilson  
 Project Manager  
 #0112240007



J. Travis Wilson  
 Project Manager  
 #0112240007

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Legend:  
 1 AISG COAX FIBER POWER NOTES  
 2 FREQ  
 3 DIAGRAM LEGEND  
 BD1 SCALE: N.T.S.

BACK TO TITLE SHEET

SCENARIO 354 V2.5 VSD

SHEET DESCRIPTION:  
 GROUND MOUNTED BLOCK DIAGRAM

SHEET NUMBER:  
 BD1





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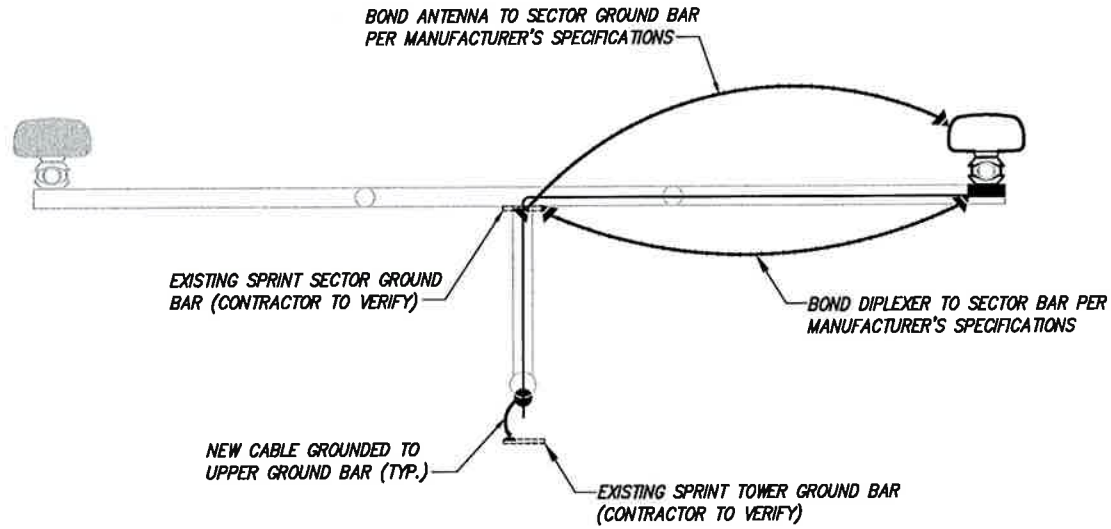
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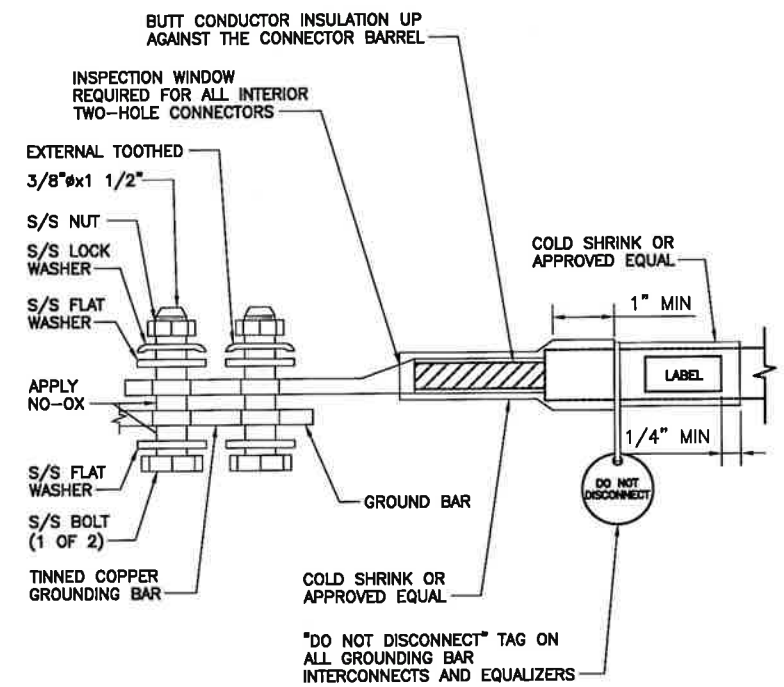
SHEET DESCRIPTION:  
 ELECTRICAL &  
 GROUNDING PLAN

SHEET NUMBER:  
 E-1



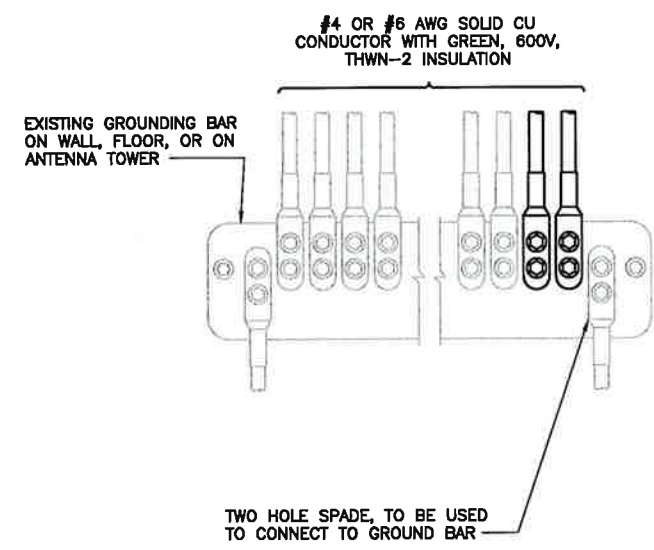
TYPICAL ANTENNA TOP GROUNDING PLAN

NO SCALE 1



TWO HOLE LUG

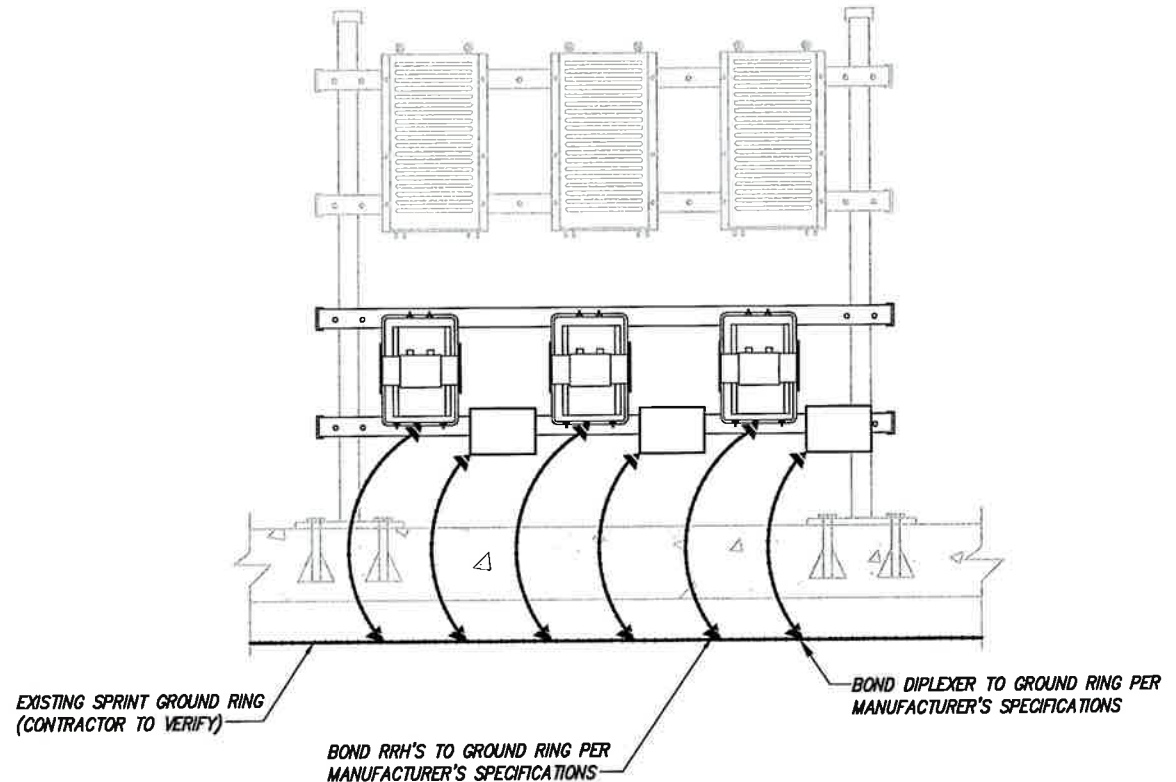
NO SCALE 2



- NOTES**
1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
  2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

NO SCALE 3



TYPICAL RRH GROUNDING PLAN

NO SCALE 4