Tim Whalen, Site Acquisition
c/o Sprint Spectrum, LP (Sprint)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (781) 375- 8318
twhalen@clinellc.com

February 16, 2017

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

RE: Notice of Exempt Modification // Site Number: CT03XC151
118C Wintechog Hill Road, North Stonington CT 06359 (Site Name: North Stonington CT)
N 41º 27' 35" N // W 71º 55' 38"

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains (3) antennas at the (249) foot level of the existing (250) foot lattice tower at 118C Wintechog Hill Road. The tower and property is owned by American Towers LLC. Sprint now intends to replace (6) panel antennas for its 2.5 upgrade. These antennas would be installed at the (249) foot level of the tower. Sprint also intends to install (6) remote radio units, and (3) hybrid cables.

The current proposal involves a (6) antenna swap only. No antennas will be added.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to First Selectman of North Stonington Shawn P. Murphy, The North Stonington Planning and Zoning department as well as the tower and property owner, American Tower.

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

Attached to accommodate this filing are construction drawings dated 11/7/16 by AEG Advanced Engineering Group, a structural analysis dated 12/13/2016 by American Tower Corp. and an Emissions Analysis Report dated 3/2/2016, by Centerline Communications.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis dated 12/13/2016 by American Tower Corp.

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

Sincerely,

_____

Tim Whalen, Site Acquisition
c/o Sprint Spectrum, LP (Sprint)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (781) 375- 8318
twhalen@centerlincommunications.com

Attachments

cc: First Selectman of North Stonington Shawn P. Murphy- as elected official
American Tower Corp- as tower owner and Property Owner
The North Stonington Planning and Zoning department as well as the tower and property owner, American Tower

Radio Frequency Emissions Analysis Report

Sprint Wireless Rooftop Facility

February 13, 2017

Analysis Format: Theoretical Calculations

Site ID: CT03XC151

North Stonington CT
118C Wintechog Hill Road
North Stonington, CT 06359

February 13, 2017

Centerline Project Number: 950004-002

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.52 %

February 13, 2017

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

Emissions Analysis for Site: **CT03XC151 – North Stonington CT**

OVERVIEW

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following Sprint wireless facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations for all proposed and existing equipment for Sprint.

Analysis Site Data	
Site ID:	CT03XC151
Site Name:	North Stonington CT
Site Address:	118C Wintechog Hill Road, North Stonington, CT 06359
Site Latitude:	41.45972 N
Site Longitude:	-71.92833 W
Facility Type:	Self Support Tower
Compliance Summary	
Status:	within
Site Composite MPE% (General Public Limit):	10.52%
Sprint Max MPE% (General Public Limit):	0.99%
Is Access Locked or Controlled? :	Uncontrolled*
Lock or Control Measures if Present:	N/A

*Access is considered to be uncontrolled until verified on site

There are several additional system operators located on this facility and considered as part of this analysis.

FCC GUIDELINES

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety 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, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed Sprint Wireless antenna facility located at **118C Wintechog Hill Road, North Stonington, 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) 2 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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 Self Support 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 APXVSPP18-C-A20 and the Commscope LLPX310R-V1** for transmission in the 850 MHz, 1900 MHz and 2500 MHz 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 **249 feet** above ground level (AGL) for **Sector A**, **249 feet** above ground level (AGL) for **Sector B** and **249 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):	**249 feet**	Height (AGL):	**249 feet**	Height (AGL):	**249 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	7	Channel Count	7	Channel Count	7
Total TX Power(W):	300 Watts	Total TX Power(W):	300 Watts	Total TX Power(W):	300 Watts
ERP (W):	10,649.74	ERP (W):	10,649.74	ERP (W):	10,649.74
Antenna A1 MPE%	**0.71 %**	Antenna B1 MPE%	**0.71 %**	Antenna C1 MPE%	**0.71 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LLPX310R-V1	Make / Model:	Commscope LLPX310R-V1	Make / Model:	Commscope LLPX310R-V1
Gain:	15.85 dBd	Gain:	15.85 dBd	Gain:	15.85 dBd
Height (AGL):	**249 feet**	Height (AGL):	**249 feet**	Height (AGL):	**249 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	4,615.10	ERP (W):	4,615.10	ERP (W):	4,615.10
Antenna A2 MPE%	**0.28 %**	Antenna B2 MPE%	**0.28 %**	Antenna C2 MPE%	**0.28 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**0.99 %**
AT&T	1.20 %
MetroPCS	0.22 %
T-Mobile	0.86 %
State Police	0.01 %
State Police - Microwave	0.66 %
MobileComm	0.33 %
PageNet	0.11 %
Destineer	0.09 %
TSR Paging	0.10 %
AirTouch	3.47 %
Nextel	0.14 %
FM Broadcast	1.97 %
PageMart	0.37 %
Site Total MPE %:	**10.52 %**

SPRINT Sector A Total:	0.99 %
SPRINT Sector B Total:	0.99 %
SPRINT Sector C Total:	0.99 %
Site Total:	10.52 %

Sprint _ Frequency Band / Technology (Max Values Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	2	656.33	249	0.80	850 MHz	567	0.14%
Sprint 1900 MHz (PCS) CDMA	2	1,167.14	249	1.42	1900 MHz (PCS)	1000	0.14%
Sprint 1900 MHz (PCS) LTE	3	2,334.27	249	4.26	1900 MHz (PCS)	1000	0.43%
Sprint 2500 MHz (BRS) LTE	2	2,307.55	249	2.81	2500 MHz (BRS)	1000	0.28%
						Total:	0.99%

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:	0.99 %
Sector B:	0.99 %
Sector C:	0.99 %
Sprint Maximum Total (per sector):	0.99 %
Site Total:	10.52 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.52 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

Centerline Communications
21 B Street
Burlington, MA 01803

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Structural Analysis Report

Structure	:	**250 ft Self Supported Tower**
ATC Site Name	:	**North Stonington CT, CT**
ATC Site Number	:	**6260**
Engineering Number	:	**OAA691178_C3_01**
Proposed Carrier	:	**Sprint Nextel**
Carrier Site Name	:	**N. Stonington**
Carrier Site Number	:	**CT03XC151**
Site Location	:	**118C Wintechog Hill Rd., off of Rt. 2** **North Stonington, CT 06359-1228** **41.459839,-71.927338**
County	:	**New London**
Date	:	**December 13, 2016**
Max Usage	:	**97%**
Result	:	**Pass**

Prepared By:
Vivian Chung, E.I.
Structural Engineer I

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 250 ft self supported tower to reflect the change in loading by Sprint Nextel.

Supporting Documents

Tower Drawings	FWT Job #19240001, dated September 13, 1999
Foundation Drawing	FWT Job #19240001, dated September 13, 1999
Geotechnical Report	Clarence Welti Associates, dated August 31, 1999

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	105 mph (3-Second Gust, V_{asd}) / 135 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Spectral Response:	Ss = 0.16, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
250.0	250.0	2	10' Omni	Leg	(4) 1 5/8" Coax	Connecticut State Police Dept.
	250.0	-	-	Sector Frames	-	Sprint Nextel
237.0	237.0	3	Andrew LNX-6515DS-VTM	Sector Frames	(12) 1 5/8" Coax (2) 1 5/8" Hybriflex	T-Mobile
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson RRUS 11 (Band 12)			
		3	Ericsson KRY 112 144/1			
210.0	210.0	12	Andrew SMR08-09012-0D	Sector Frames	(12) 1 5/8" Coax	Sprint Nextel
189.0	189.0	1	Powerwave P65-17-XLH-RR	Sector Frames	(12) 1 5/8" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		1	Andrew SBNH-1D6565C			
		6	Allgon 7770.00			
		1	KMW AM-X-CD-14-65-00T-RET			
		3	Ericsson RRUS-11 1900MHz			
		6	Powerwave LGP17201			
		1	Raycap DC6-48-60-18-8F			
		6	LGP LGP21903			
155.0	160.0	6	Kathrein 800 10504	Sector Frames	(12) 1 5/8" Coax (6) 3/8" Coax	Metro PCS
	155.0	6	Kathrein 860 10025			
123.0	123.0	1	8' Omni	Side Arm	(1) 7/8" Coax	--
90.0	90.0	1	24" x 24" Ice Shield	Leg	-	Connecticut State Police Dept.
87.0	87.0	1	6' Dish w/ Radome	Leg	(1) 1/2" Coax (1) EW52	
75.0	75.0	1	2' x 4' Rectangular Grid Dish	Leg	(1) 7/8" Coax	--
61.0	61.0	1	4' Std. Dish	Leg	-	

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
250.0	250.0	9	Decibel DB980H90E-KL	-	(18) 1 5/8" Coax	Sprint Nextel

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
250.0	250.0	3	RFS APXVSPP18-C-A20	Sector Frames	(4) 0.21" Cat 5e (3) 1.25" Hybrid (2) 1" conduit (1) 0.88" 8 AWG 6	Sprint Nextel
		3	Commscope LLPX310R-V1			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Alcatel-Lucent RRH2x50-08			
		3	Nokia FWHR			
		1	Box Enclosures BEN-92P			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax in the place of the existing Sprint Nextel coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	57%	Pass
Diagonals	97%	Pass
Horizontals	5%	Pass
Anchor Bolts	41%	Pass
Leg Bolts	51%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Uplift (Kips)	556.7	751.5	520.3	69%
Axial (Kips)	673.9	909.8	608.3	67%
Shear (Kips)	63.2	85.3	62.2	73%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
250.0	Box Enclosures BEN-92P	Sprint Nextel	0.378	0.011	0.165
	Nokia FWHR				
	Alcatel-Lucent RRH2x50-08				
	Alcatel-Lucent 1900 MHz 4X45 RRH				
	Commscope LLPX310R-V1				
	RFS APXVSPP18-C-A20				
237.0	Ericsson RRUS 11 (Band 12)	T-Mobile	0.335	0.013	0.162
	Andrew LNX-6515DS-VTM				
87.0	6' Dish w/ Radome	Connecticut State Police Dept.	0.041	0.008	0.056
75.0	2' x 4' Rectangular Grid Dish	Unknown			
61.0	4' Std. Dish		0.025	0.006	0.042

***Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

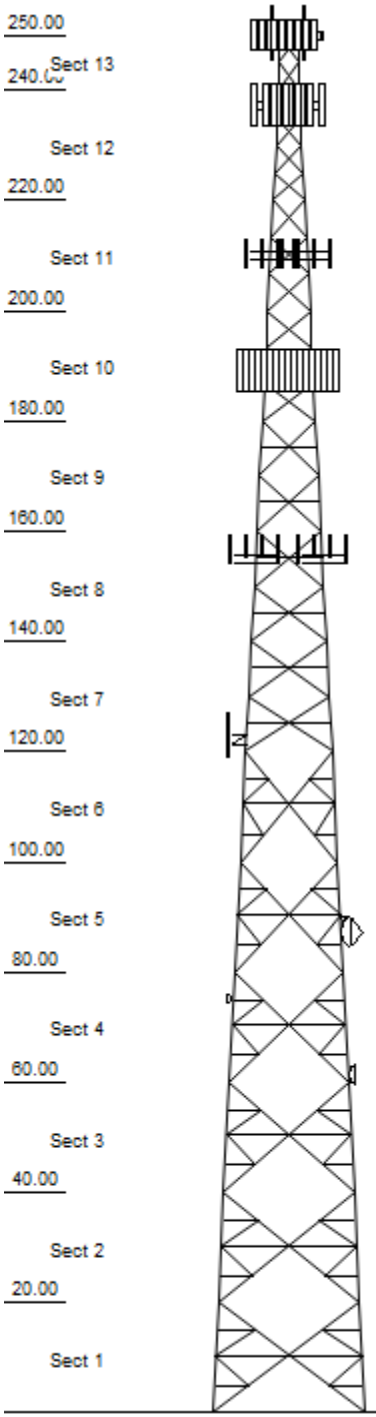
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Loads: 105 mph no ice
50 mph w/ 3/4" radial ice
Site Class: D Ss: 0.16 S1: 0.06
60 mph Serviceability

Job Information

Tower :	6260	Location :	North Stonington CT, CT
Code :	ANSI/TIA-222-G	Shape :	Triangle
Client :	Sprint Nextel	Base Width :	28.00 ft
		Top Width :	4.00 ft

Sections Properties

Section	Leg Members		Diagonal Members	Horizontal Members
1	SOL 50 ksi	5 3/4" SOLID	DAE 36 ksi 3X3X0.25	
2	SOL 50 ksi	5 1/2" SOLID	DAE 36 ksi 3X3X0.25	
3	SOL 50 ksi	5 1/4" SOLID	DAE 36 ksi 3X3X0.25	
4	SOL 50 ksi	5" SOLID	DAE 36 ksi 3X3X0.1875	
5	SOL 50 ksi	4 3/4" SOLID	DAE 36 ksi 3X3X0.1875	
6	SOL 50 ksi	4 1/2" SOLID	DAE 36 ksi 3X3X0.1875	
7	SOL 50 ksi	4 1/4" SOLID	DAE 36 ksi 2.5X2.5X0.1875	
8	SOL 50 ksi	4" SOLID	DAE 36 ksi 2.5X2.5X0.1875	
9	SOL 50 ksi	3 3/4" SOLID	SAE 36 ksi 3.5X3.5X0.25	
10	SOL 50 ksi	3 3/4" SOLID	SAE 36 ksi 3X3X0.1875	
11	SOL 50 ksi	3 1/4" SOLID	SAE 36 ksi 2.5X2.5X0.1875	
12	SOL 50 ksi	2 1/4" SOLID	SAE 36 ksi 1.75X1.75X0.1875	
13	SOL 50 ksi	2" SOLID	SAE 36 ksi 1.75X1.75X0.1875	SAE 36 ksi 2X2X0.1875

Discrete Appurtenance

Elev (ft)	Type	Qty	Description
250.01	Whip	2	10' Omni
250.00	Panel	3	RFS APXVSPP18-C-A20
250.00	Panel	3	Commscope LLPX310R-V1
250.00	Panel	3	Alcatel-Lucent 1900 MHz 4X45 R
250.00	Panel	3	Alcatel-Lucent RRH2x50-08
250.00	Panel	3	Nokia FWHR
250.00	Panel	1	Box Enclosures BEN-92P
250.00	Mounting Frame	3	Round Sector Frames
237.00	Mounting Frame	3	Round Sector Frames
237.00	Panel	3	Andrew LNX-6515DS-VTM
237.00	Panel	3	Ericsson AIR 21, 1.3M, B4A B2P
237.00	Panel	3	Ericsson AIR 21, 1.3 M, B2A B4
237.00	Panel	3	Ericsson RRUS 11 (Band 12)
237.00	Panel	3	Ericsson KRY 112 144/1
210.00	Mounting Frame	3	Round Sector Frames
210.00	Panel	12	Andrew SMR08-09012-0D
189.00	Mounting Frame	3	Round Sector Frames
189.00	Panel	1	Powerwave P65-17-XLH-RR
189.00	Panel	1	Andrew SBNH-1D6565C
189.00	Panel	6	Allgon 7770.00
189.00	Panel	1	KMW AM-X-CD-14-65-00T-RET
189.00	Panel	3	Ericsson RRUS-11 1900 MHz
189.00	Panel	6	Powerwave LGP17201
189.00	Panel	1	Raycap DC6-48-60-18-8F
189.00	Panel	6	LGP Allgon LGP21903
155.00	Mounting Frame	3	Round Sector Frame
155.00	Panel	6	Kathrein 800 10504
155.00	Panel	6	Kathrein 860 10025
123.00	Whip	1	8' Omni
123.00	Straight Arm	1	Side Arm
90.00	Panel	1	24" x 24" Ice Shield
87.00	Dish	1	6' Dish w/ Radome
75.00	Dish	1	2' x 4' Rectangular Grid Dish
61.00	Dish	1	4' Std. Dish

Linear Appurtenance

Elev (ft) From	To	Qty	Description
0.00	250.01	1	Climbing Ladder
0.00	250.01	4	1 5/8" Coax
0.00	250.00	2	Waveguide
0.00	250.00	3	1.25" (31.8mm) Hybri
0.00	250.00	2	1" conduit

Job Information

Tower :	**6260**	**Location :**	**North Stonington CT, CT**
Code :	**ANSI/TIA-222-G**	**Shape : Triangle**	**Base Width : 28.00 ft**
Client :	**Sprint Nextel**		**Top Width : 4.00 ft**

0.00	250.00	1	0.88" (22.4mm) 8 AWG
0.00	250.00	4	0.21" (5.3mm) Cat 5e
0.00	237.00	1	Waveguide
0.00	237.00	1	1 5/8" Hybriflex
0.00	237.00	1	1 5/8" Hybriflex
0.00	237.00	12	1 5/8" Coax
0.00	210.00	1	Waveguide
0.00	210.00	12	1 5/8" Coax
0.00	189.00	1	Waveguide
0.00	189.00	12	1 5/8" Coax
0.00	189.00	2	0.78" 8 AWG 6
0.00	189.00	1	0.39" (10mm) Fiber T
0.00	155.00	1	Waveguide
0.00	155.00	6	3/8" Coax
0.00	155.00	12	1 5/8" Coax
0.00	123.00	1	7/8" Coax
0.00	87.00	1	EW52
0.00	87.00	1	1/2" Coax
0.00	75.00	1	7/8" Coax

Global Base Foundation Design Loads

Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	13,876.99	107.99	104.71
DL + WL + IL	4,638.61	292.43	36.75

Individual Base Foundation Design Loads

Vertical (kip)	Uplift (kip)	Horizontal (kip)
608.27	520.31	62.24

Site Number:	6260	Code:	ANSI/TIA-222-G	
Site Name:	North Stonington CT, CT	Engineering Number:	OAA691178_C3_01	12/13/2016 10:24:03 AM
Customer:	Sprint Nextel			

Analysis Parameters

Location:	New London County, CT	Height (ft):	250
Code:	ANSI/TIA-222-G	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	28.00
Tower Manufacturer:	FWT	Top Face Width (ft):	4.00
Tower Type:	Self Support		

Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	105 mph
Exposure Category:	B	Design Windspeed With Ice:	50 mph
Topographic Category:	1	Operational Windspeed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	0.89				
T_L (sec):	6	p:	1.3	C_S:	0.036
S_S:	0.163	S_1:	0.059	C_S, Max:	0.036
F_a:	1.600	F_V:	2.400	C_S, Min:	0.030
S_{ds}:	0.174	S_{d1}:	0.094		

Load Cases

1.2D + 1.6W Normal	105 mph Normal to Face with No Ice
1.2D + 1.6W 60 deg	105 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	105 mph 90 degree with No Ice
1.2D + 1.6W 120 deg	105 mph 120 degree with No Ice
1.2D + 1.6W 180 deg	105 mph 180 degree with No Ice
1.2D + 1.6W 210 deg	105 mph 210 degree with No Ice
1.2D + 1.6W 240 deg	105 mph 240 degree with No Ice
1.2D + 1.6W 300 deg	105 mph 300 degree with No Ice
1.2D + 1.6W 330 deg	105 mph 330 degree with No Ice
0.9D + 1.6W Normal	105 mph Normal to Face with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	105 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	105 mph 90 deg with No Ice (Reduced DL)
0.9D + 1.6W 120 deg	105 mph 120 deg with No Ice (Reduced DL)
0.9D + 1.6W 180 deg	105 mph 180 deg with No Ice (Reduced DL)
0.9D + 1.6W 210 deg	105 mph 210 deg with No Ice (Reduced DL)
0.9D + 1.6W 240 deg	105 mph 240 deg with No Ice (Reduced DL)
0.9D + 1.6W 300 deg	105 mph 300 deg with No Ice (Reduced DL)
0.9D + 1.6W 330 deg	105 mph 330 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 0.75 in Radial Ice

Analysis Parameters

1.2D + 1.0Di + 1.0Wi 120 deg	50 mph 120 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 180 deg	50 mph 180 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 210 deg	50 mph 210 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 240 deg	50 mph 240 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 300 deg	50 mph 300 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 330 deg	50 mph 330 deg with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 deg
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 deg
(1.2 + 0.2Sds) * DL + E 120 deg	Seismic 120 deg
(1.2 + 0.2Sds) * DL + E 180 deg	Seismic 180 deg
(1.2 + 0.2Sds) * DL + E 210 deg	Seismic 210 deg
(1.2 + 0.2Sds) * DL + E 240 deg	Seismic 240 deg
(1.2 + 0.2Sds) * DL + E 300 deg	Seismic 300 deg
(1.2 + 0.2Sds) * DL + E 330 deg	Seismic 330 deg
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 deg
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 deg
(0.9 - 0.2Sds) * DL + E 120 deg	Seismic (Reduced DL) 120 deg
(0.9 - 0.2Sds) * DL + E 180 deg	Seismic (Reduced DL) 180 deg
(0.9 - 0.2Sds) * DL + E 210 deg	Seismic (Reduced DL) 210 deg
(0.9 - 0.2Sds) * DL + E 240 deg	Seismic (Reduced DL) 240 deg
(0.9 - 0.2Sds) * DL + E 300 deg	Seismic (Reduced DL) 300 deg
(0.9 - 0.2Sds) * DL + E 330 deg	Seismic (Reduced DL) 330 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg
1.0D + 1.0W Service 120 deg	Serviceability - 60 mph Wind 120 deg
1.0D + 1.0W Service 180 deg	Serviceability - 60 mph Wind 180 deg
1.0D + 1.0W Service 210 deg	Serviceability - 60 mph Wind 210 deg
1.0D + 1.0W Service 240 deg	Serviceability - 60 mph Wind 240 deg
1.0D + 1.0W Service 300 deg	Serviceability - 60 mph Wind 300 deg
1.0D + 1.0W Service 330 deg	Serviceability - 60 mph Wind 330 deg

Site Number: 6260 Code: ANSI/TIA-222-G

Site Name: North Stonington CT, CT Engineering Number: OAA691178_C3_01 12/13/2016 10:24:03 AM

Customer: Sprint Nextel

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
250.0	10' Omni	2	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.0	30.80	251	72
250.0	Box Enclosures BEN-	1	2	0.8	0.8	8.0	5.1	0.80	0.50	0.0	0.0	30.80	13	3
250.0	Nokia FWHR	3	27	1.0	1.1	9.7	6.3	0.80	0.50	0.0	0.0	30.80	52	114
250.0	Alcatel-Lucent	3	53	1.7	1.3	13.0	9.8	0.80	0.50	0.0	0.0	30.80	85	229
250.0	Alcatel-Lucent 1900	3	60	2.3	2.1	11.1	10.7	0.80	0.67	0.0	0.0	30.80	156	259
250.0	Commscope	3	28	4.3	3.5	11.8	4.5	0.80	0.63	0.0	0.0	30.80	275	119
250.0	RFS APXVSPP18-C-	3	57	8.0	6.0	11.8	7.0	0.80	0.69	0.0	0.0	30.80	556	246
250.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	30.80	1018	1296
237.0	Ericsson KRY 112	3	11	0.4	0.6	6.1	2.7	0.80	0.50	0.0	0.0	30.34	20	48
237.0	Ericsson RRUS 11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	30.34	171	216
237.0	Ericsson AIR 21, 1.3	3	83	6.1	4.7	12.0	8.0	0.80	0.83	0.0	0.0	30.34	497	359
237.0	Ericsson AIR 21,	3	82	6.1	4.7	12.1	7.9	0.80	0.83	0.0	0.0	30.34	501	352
237.0	Andrew LNX-	3	51	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	30.34	951	222
237.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	30.34	1003	1296
210.0	Andrew SMR08-	12	26	7.0	5.7	10.5	5.0	0.80	0.78	0.0	0.0	29.31	2083	449
210.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	29.31	969	1296
189.0	LGP Allgon	6	6	0.3	0.4	6.3	3.0	0.80	0.50	0.0	0.0	28.44	25	48
189.0	Raycap DC6-48-60-	1	20	1.1	2.0	9.7	9.7	0.80	1.00	0.0	0.0	28.44	34	29
189.0	Powerwave	6	31	1.7	1.2	14.4	3.7	0.80	0.50	0.0	0.0	28.44	155	268
189.0	Ericsson RRUS-11	3	44	2.5	1.5	17.0	7.2	0.80	0.50	0.0	0.0	28.44	117	190
189.0	KMW AM-X-CD-14-	1	36	5.0	4.0	11.8	5.9	0.80	0.76	0.0	0.0	28.44	117	52
189.0	Allgon 7770.00	6	35	5.5	4.6	11.0	5.0	0.80	0.75	0.0	0.0	28.44	767	302
189.0	Andrew SBNH-	1	61	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	28.44	297	88
189.0	Powerwave P65-17-	1	59	11.5	8.0	12.0	6.0	0.80	0.80	0.0	0.0	28.44	284	85
189.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	28.44	940	1296
155.0	Kathrein 860 10025	6	1	0.2	0.6	2.4	2.0	0.80	0.50	0.0	0.0	26.87	16	10
155.0	Kathrein 800 10504	6	18	3.3	4.5	6.1	2.7	0.80	0.78	5.0	2312.6	27.12	463	152
155.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	26.87	888	1296
123.0	8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	25.15	82	36
123.0	Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	25.15	178	216
90.00	24" x 24" Ice Shield	1	50	0.9	0.3	24.0	24.0	1.00	1.00	0.0	0.0	23.01	29	72
87.00	6' Dish w/ Radome	1	250	24.4	6.0	72.0	0.0	1.00	1.00	0.0	0.0	22.78	756	360
75.00	2' x 4' Rectangular	1	40	4.8	2.0	0.0	0.0	1.00	1.00	0.0	0.0	21.84	141	58
61.00	4' Std. Dish	1	188	20.9	4.0	0.0	0.0	1.00	1.00	0.0	0.0	20.59	585	271
	Totals	103	7920	599.5										

Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
250.0	10' Omni	2	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.0	30.80	251	41
250.0	Box Enclosures BEN-	1	2	0.8	0.8	8.0	5.1	0.80	0.50	0.0	0.0	30.80	13	2
250.0	Nokia FWHR	3	27	1.0	1.1	9.7	6.3	0.80	0.50	0.0	0.0	30.80	52	64
250.0	Alcatel-Lucent	3	53	1.7	1.3	13.0	9.8	0.80	0.50	0.0	0.0	30.80	85	129
250.0	Alcatel-Lucent 1900	3	60	2.3	2.1	11.1	10.7	0.80	0.67	0.0	0.0	30.80	156	146
250.0	Commscope	3	28	4.3	3.5	11.8	4.5	0.80	0.63	0.0	0.0	30.80	275	67
250.0	RFS APXVSPP18-C-	3	57	8.0	6.0	11.8	7.0	0.80	0.69	0.0	0.0	30.80	556	139
250.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	30.80	1018	729
237.0	Ericsson KRY 112	3	11	0.4	0.6	6.1	2.7	0.80	0.50	0.0	0.0	30.34	20	27
237.0	Ericsson RRUS 11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	30.34	171	122
237.0	Ericsson AIR 21, 1.3	3	83	6.1	4.7	12.0	8.0	0.80	0.83	0.0	0.0	30.34	497	202
237.0	Ericsson AIR 21,	3	82	6.1	4.7	12.1	7.9	0.80	0.83	0.0	0.0	30.34	501	198

Tower Loading

237.0	Andrew LNX-	3	51	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	30.34	951	125
237.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	30.34	1003	729
210.0	Andrew SMR08-	12	26	7.0	5.7	10.5	5.0	0.80	0.78	0.0	0.0	29.31	2083	253
210.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	29.31	969	729
189.0	LGP Allgon	6	6	0.3	0.4	6.3	3.0	0.80	0.50	0.0	0.0	28.44	25	27
189.0	Raycap DC6-48-60-	1	20	1.1	2.0	9.7	9.7	0.80	1.00	0.0	0.0	28.44	34	16
189.0	Powerwave	6	31	1.7	1.2	14.4	3.7	0.80	0.50	0.0	0.0	28.44	155	151
189.0	Ericsson RRUS-11	3	44	2.5	1.5	17.0	7.2	0.80	0.50	0.0	0.0	28.44	117	107
189.0	KMW AM-X-CD-14-	1	36	5.0	4.0	11.8	5.9	0.80	0.76	0.0	0.0	28.44	117	29
189.0	Allgon 7770.00	6	35	5.5	4.6	11.0	5.0	0.80	0.75	0.0	0.0	28.44	767	170
189.0	Andrew SBNH-	1	61	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	28.44	297	49
189.0	Powerwave P65-17-	1	59	11.5	8.0	12.0	6.0	0.80	0.80	0.0	0.0	28.44	284	48
189.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	28.44	940	729
155.0	Kathrein 860 10025	6	1	0.2	0.6	2.4	2.0	0.80	0.50	0.0	0.0	26.87	16	6
155.0	Kathrein 800 10504	6	18	3.3	4.5	6.1	2.7	0.80	0.78	5.0	2312.6	27.12	463	86
155.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	26.87	888	729
123.0	8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	25.15	82	20
123.0	Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	25.15	178	122
90.00	24" x 24" Ice Shield	1	50	0.9	0.3	24.0	24.0	1.00	1.00	0.0	0.0	23.01	29	41
87.00	6' Dish w/ Radome	1	250	24.4	6.0	72.0	0.0	1.00	1.00	0.0	0.0	22.78	756	203
75.00	2' x 4' Rectangular	1	40	4.8	2.0	0.0	0.0	1.00	1.00	0.0	0.0	21.84	141	32
61.00	4' Std. Dish	1	188	20.9	4.0	0.0	0.0	1.00	1.00	0.0	0.0	20.59	585	152
	Totals	103	7920	599.5										

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
250.0	10' Omni	2	168	6.0	10.0	3.0	3.0	1.00	1.00	0.0	0.0	6.98	72	415
250.0	Box Enclosures BEN-	1	34	1.0	0.8	8.0	5.1	0.80	0.50	0.0	0.0	6.98	2	42
250.0	Nokia FWHR	3	72	1.5	1.1	9.7	6.3	0.80	0.50	0.0	0.0	6.98	11	279
250.0	Alcatel-Lucent	3	129	2.3	1.3	13.0	9.8	0.80	0.50	0.0	0.0	6.98	16	502
250.0	Alcatel-Lucent 1900	3	161	3.0	2.1	11.1	10.7	0.80	0.67	0.0	0.0	6.98	29	623
250.0	Commscope	3	143	5.3	3.5	11.8	4.5	0.80	0.63	0.0	0.0	6.98	47	535
250.0	RFS APXVSPP18-C-	3	269	9.4	6.0	11.8	7.0	0.80	0.69	0.0	0.0	6.98	92	1009
250.0	Round Sector	3	687	31.8	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.98	319	2690
237.0	Ericsson KRY 112	3	29	0.6	0.6	6.1	2.7	0.80	0.50	0.0	0.0	6.88	5	111
237.0	Ericsson RRUS 11	3	136	3.3	1.5	17.3	7.2	0.80	0.67	0.0	0.0	6.88	31	525
237.0	Ericsson AIR 21, 1.3	3	261	7.2	4.7	12.0	8.0	0.80	0.83	0.0	0.0	6.88	84	999
237.0	Ericsson AIR 21,	3	259	7.2	4.7	12.1	7.9	0.80	0.83	0.0	0.0	6.88	84	992
237.0	Andrew LNX-	3	328	13.2	8.0	11.9	7.1	0.80	0.84	0.0	0.0	6.88	155	1219
237.0	Round Sector	3	685	31.7	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.88	313	2681
210.0	Andrew SMR08-	12	193	8.1	5.7	10.5	5.0	0.80	0.78	0.0	0.0	6.65	344	2856
210.0	Round Sector	3	681	31.6	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.65	301	2668
189.0	LGP Allgon	6	20	0.5	0.4	6.3	3.0	0.80	0.50	0.0	0.0	6.45	6	149
189.0	Raycap DC6-48-60-	1	103	2.5	2.0	9.7	9.7	0.80	1.00	0.0	0.0	6.45	11	128
189.0	Powerwave	6	81	2.2	1.2	14.4	3.7	0.80	0.50	0.0	0.0	6.45	29	628
189.0	Ericsson RRUS-11	3	127	3.2	1.5	17.0	7.2	0.80	0.50	0.0	0.0	6.45	21	488
189.0	KMW AM-X-CD-14-	1	172	6.0	4.0	11.8	5.9	0.80	0.76	0.0	0.0	6.45	20	215
189.0	Allgon 7770.00	6	174	6.6	4.6	11.0	5.0	0.80	0.75	0.0	0.0	6.45	130	1304
189.0	Andrew SBNH-	1	332	13.1	8.0	11.9	7.1	0.80	0.84	0.0	0.0	6.45	48	413
189.0	Powerwave P65-17-	1	316	13.2	8.0	12.0	6.0	0.80	0.80	0.0	0.0	6.45	46	394
189.0	Round Sector	3	677	31.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.45	290	2655
155.0	Kathrein 860 10025	6	12	0.4	0.6	2.4	2.0	0.80	0.50	0.0	0.0	6.09	5	86
155.0	Kathrein 800 10504	6	99	4.3	4.5	6.1	2.7	0.80	0.78	5.0	420.6	6.15	84	741
155.0	Round Sector Frame	3	669	31.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.09	271	2623

Tower Loading

123.0	8' Omni	1	128	4.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	5.70	21	160
123.0	Side Arm	1	221	7.8	0.0	0.0	0.0	1.00	1.00	0.0	0.0	5.70	38	301
90.00	24" x 24" Ice Shield	1	82	1.5	0.3	24.0	24.0	1.00	1.00	0.0	0.0	5.22	7	111
87.00	6' Dish w/ Radome	1	868	27.7	6.0	72.0	0.0	1.00	1.00	0.0	0.0	5.17	122	1101
75.00	2' x 4' Rectangular	1	180	34.7	2.0	0.0	0.0	1.00	1.00	0.0	0.0	4.95	146	225
61.00	4' Std. Dish	1	379	23.7	4.0	0.0	0.0	1.00	1.00	0.0	0.0	4.67	94	500
	Totals	103	23723	970.2										

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
250.0	10' Omni	2	25	3.0	10.0	3.0	3.0	1.00	1.00	0.0	0.0	10.06	51	50
250.0	Box Enclosures BEN-	1	2	0.8	0.8	8.0	5.1	0.80	0.50	0.0	0.0	10.06	3	2
250.0	Nokia FWHR	3	27	1.0	1.1	9.7	6.3	0.80	0.50	0.0	0.0	10.06	11	80
250.0	Alcatel-Lucent	3	53	1.7	1.3	13.0	9.8	0.80	0.50	0.0	0.0	10.06	17	159
250.0	Alcatel-Lucent 1900	3	60	2.3	2.1	11.1	10.7	0.80	0.67	0.0	0.0	10.06	32	180
250.0	Commscope	3	28	4.3	3.5	11.8	4.5	0.80	0.63	0.0	0.0	10.06	56	83
250.0	RFS APXVSPP18-C-	3	57	8.0	6.0	11.8	7.0	0.80	0.69	0.0	0.0	10.06	114	171
250.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	10.06	208	900
237.0	Ericsson KRY 112	3	11	0.4	0.6	6.1	2.7	0.80	0.50	0.0	0.0	9.91	4	33
237.0	Ericsson RRUS 11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	9.91	35	150
237.0	Ericsson AIR 21, 1.3	3	83	6.1	4.7	12.0	8.0	0.80	0.83	0.0	0.0	9.91	101	249
237.0	Ericsson AIR 21,	3	82	6.1	4.7	12.1	7.9	0.80	0.83	0.0	0.0	9.91	102	245
237.0	Andrew LNX-	3	51	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	9.91	194	154
237.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	9.91	205	900
210.0	Andrew SMR08-	12	26	7.0	5.7	10.5	5.0	0.80	0.78	0.0	0.0	9.57	425	312
210.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	9.57	198	900
189.0	LGP Allgon	6	6	0.3	0.4	6.3	3.0	0.80	0.50	0.0	0.0	9.29	5	33
189.0	Raycap DC6-48-60-	1	20	1.1	2.0	9.7	9.7	0.80	1.00	0.0	0.0	9.29	7	20
189.0	Powerwave	6	31	1.7	1.2	14.4	3.7	0.80	0.50	0.0	0.0	9.29	32	186
189.0	Ericsson RRUS-11	3	44	2.5	1.5	17.0	7.2	0.80	0.50	0.0	0.0	9.29	24	132
189.0	KMW AM-X-CD-14-	1	36	5.0	4.0	11.8	5.9	0.80	0.76	0.0	0.0	9.29	24	36
189.0	Allgon 7770.00	6	35	5.5	4.6	11.0	5.0	0.80	0.75	0.0	0.0	9.29	157	210
189.0	Andrew SBNH-	1	61	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	9.29	61	61
189.0	Powerwave P65-17-	1	59	11.5	8.0	12.0	6.0	0.80	0.80	0.0	0.0	9.29	58	59
189.0	Round Sector	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	9.29	192	900
155.0	Kathrein 860 10025	6	1	0.2	0.6	2.4	2.0	0.80	0.50	0.0	0.0	8.77	3	7
155.0	Kathrein 800 10504	6	18	3.3	4.5	6.1	2.7	0.80	0.78	5.0	472.0	8.85	94	106
155.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.77	181	900
123.0	8' Omni	1	25	2.4	8.0	3.0	3.0	1.00	1.00	0.0	0.0	8.21	17	25
123.0	Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	8.21	36	150
90.00	24" x 24" Ice Shield	1	50	0.9	0.3	24.0	24.0	1.00	1.00	0.0	0.0	7.51	6	50
87.00	6' Dish w/ Radome	1	250	24.4	6.0	72.0	0.0	1.00	1.00	0.0	0.0	7.44	154	250
75.00	2' x 4' Rectangular	1	40	4.8	2.0	0.0	0.0	1.00	1.00	0.0	0.0	7.13	29	40
61.00	4' Std. Dish	1	188	20.9	4.0	0.0	0.0	1.00	1.00	0.0	0.0	6.72	119	188
	Totals	103	7920	599.5										

Tower Loading

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	250.0	1 5/8" Coax	4	1.98	0.82	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	250.0	Climbing Ladder	1	2.00	6.90	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	250.0	0.21" (5.3mm) Cat	4	0.21	0.02	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	250.0	0.88" (22.4mm) 8	1	0.88	0.68	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	250.0	1" conduit	2	1.32	1.68	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	250.0	1.25" (31.8mm)	3	1.25	1.21	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	250.0	Waveguide	2	2.00	6.00	0	2,3	Individual	0.00	N	1.00	1.00	0.00
0.00	237.0	1 5/8" Coax	12	1.98	0.82	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	237.0	1 5/8" Hybriflex	1	1.98	1.30	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	237.0	1 5/8" Hybriflex	1	1.98	1.30	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	237.0	Waveguide	1	2.00	6.00	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	210.0	1 5/8" Coax	12	1.98	0.82	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	210.0	Waveguide	1	2.00	6.00	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	189.0	0.39" (10mm) Fiber	1	0.39	0.07	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	189.0	0.78" 8 AWG 6	2	0.78	0.59	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	189.0	1 5/8" Coax	12	1.98	0.82	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	189.0	Waveguide	1	2.00	6.00	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	155.0	1 5/8" Coax	12	1.98	0.82	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	155.0	3/8" Coax	6	0.44	0.08	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	155.0	Waveguide	1	2.00	6.00	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	123.0	7/8" Coax	1	1.09	0.33	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	87.00	1/2" Coax	1	0.63	0.15	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	87.00	EW52	1	2.25	0.59	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	75.00	7/8" Coax	1	1.09	0.33	0	1	Individual	0.00	N	1.00	1.00	0.00

Force/Stress Summary

Section: 1 Base Bot Elev (ft): 0.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5 3/4" SOLID	-583.35	1.2D + 1.6W	20.03	25	25	25	41.8	50.0	1,028.3	0	0	0.00	0.00	56	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.25	-22.00	1.2D + 1.6W 90	33.60	25	50	13	170.0	36.0	22.53	4	2	49.72	69.60	97	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5 3/4" SOLID	493.31	1.2D + 1.6W 60	50	65	1,168.5	0	0	0.00	0.00	42	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.25	20.71	1.2D + 1.6W 90	36	58	81.73	4	2	49.72	55.68	41	Bolt Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	478.15	0.9D + 1.6W 180	0.00	0	0	
Top Compression	559.49	1.2D + 1.6W	0.00	0		
Bot Tension	524.27	0.9D + 1.6W 180	1287.78	41	6	2 3/4" A36
Bot Compression	608.58	1.2D + 1.6W	0.00	0		

Section: 2 1 Bot Elev (ft): 20.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5 1/2" SOLID	-533.03	1.2D + 1.6W	20.03	25	25	25	43.7	50.0	929.73	0	0	0.00	0.00	57	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.25	-22.36	1.2D + 1.6W 90	32.02	25	50	13	161.9	36.0	24.81	4	2	49.72	69.60	90	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5 1/2" SOLID	449.56	1.2D + 1.6W 60	50	65	1,069.1	0	0	0.00	0.00	42	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.25	22.27	1.2D + 1.6W 90	36	58	81.73	4	2	49.72	55.68	44	Bolt Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	432.02	0.9D + 1.6W 180	0.00	0	0	
Top Compression	507.14	1.2D + 1.6W	0.00	0		
Bot Tension	478.15	0.9D + 1.6W 180	1438.98	33	6	2" A325
Bot Compression	559.49	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 3 2 Bot Elev (ft): 40.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5 1/4" SOLID	-477.11	1.2D + 1.6W	20.03	25	25	25	45.8	50.0	835.70	0	0	0.00	0.00	57	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.25	-22.71	1.2D + 1.6W 90	30.48	25	50	13	154.2	36.0	27.37	4	2	49.72	69.60	82	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5 1/4" SOLID	411.32	0.9D + 1.6W 60	50	65	974.16	0	0	0.00	0.00	42	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.25	21.64	1.2D + 1.6W 90	36	58	81.73	4	2	49.72	55.68	43	Bolt Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	385.46	0.9D + 1.6W 180	0.00	0	0	
Top Compression	450.46	1.2D + 1.6W	0.00	0		
Bot Tension	432.02	0.9D + 1.6W 180	1438.98	30	6	2" A325
Bot Compression	507.14	1.2D + 1.6W	0.00	0		

Section: 4 3 Bot Elev (ft): 60.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5" SOLID	-419.74	1.2D + 1.6W	20.03	25	25	25	48.1	50.0	746.17	0	0	0.00	0.00	56	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-21.70	1.2D + 1.6W 90	29.00	25	50	13	147.2	36.0	22.73	4	2	49.72	52.20	95	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 5" SOLID	363.70	0.9D + 1.6W 60	50	65	883.58	0	0	0.00	0.00	41	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	21.14	1.2D + 1.6W 90	36	58	61.95	4	2	49.72	41.76	50	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	338.08	0.9D + 1.6W 180	0.00	0	0	
Top Compression	393.44	1.2D + 1.6W	0.00	0		
Bot Tension	385.46	0.9D + 1.6W 180	758.82	51	6	1 1/2 A325
Bot Compression	450.46	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 5 4 Bot Elev (ft): 80.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4 3/4" SOLID	-363.72	1.2D + 1.6W	20.03	25	25	25	50.6	50.0	661.25	0	0	0.00	0.00	55	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-20.57	1.2D + 1.6W 90	27.59	25	50	13	140.0	36.0	25.12	4	2	49.72	52.20	81	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4 3/4" SOLID	311.62	1.2D + 1.6W 60	50	65	797.45	0	0	0.00	0.00	39	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	20.08	1.2D + 1.6W 90	36	58	61.95	4	2	49.72	41.76	48	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	290.42	0.9D + 1.6W 180	0.00	0	0	
Top Compression	336.94	1.2D + 1.6W	0.00	0		
Bot Tension	338.08	0.9D + 1.6W 180	758.82	45	6	1 1/2 A325
Bot Compression	393.44	1.2D + 1.6W	0.00	0		

Section: 6 5 Bot Elev (ft): 100.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4 1/2" SOLID	-306.44	1.2D + 1.6W	20.03	25	25	25	53.4	50.0	580.89	0	0	0.00	0.00	52	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-20.08	1.2D + 1.6W 90	26.25	25	50	13	133.2	36.0	27.74	4	2	49.72	52.20	72	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4 1/2" SOLID	267.00	0.9D + 1.6W 60	50	65	715.68	0	0	0.00	0.00	37	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	19.18	1.2D + 1.6W 90	36	58	61.95	4	2	49.72	41.76	45	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	241.54	0.9D + 1.6W 180	0.00	0	0	
Top Compression	280.61	1.2D + 1.6W	0.00	0		
Bot Tension	290.42	0.9D + 1.6W 180	758.82	38	6	1 1/2 A325
Bot Compression	336.94	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 7 6 Bot Elev (ft): 120.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4 1/4" SOLID	-265.80	1.2D + 1.6W	10.02	50	50	50	56.6	50.0	505.21	0	0	0.00	0.00	52	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 2.5X2.5X0.1875	-12.93	1.2D + 1.6W 90	18.44	50	50	25	145.9	36.0	19.09	4	2	49.72	52.20	67	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4 1/4" SOLID	232.00	0.9D + 1.6W 60	50	65	638.37	0	0	0.00	0.00	36	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 2.5X2.5X0.1875	13.02	1.2D + 1.6W 90	36	58	49.55	4	2	49.72	41.76	31	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	196.58	0.9D + 1.6W 180	0.00	0	0	
Top Compression	226.26	1.2D + 1.6W	0.00	0		
Bot Tension	241.54	0.9D + 1.6W 180	623.64	39	6	1 3/8 A325
Bot Compression	280.61	1.2D + 1.6W	0.00	0		

Section: 8 7 Bot Elev (ft): 140.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4" SOLID	-212.79	1.2D + 1.6W	10.02	50	50	50	60.1	50.0	434.22	0	0	0.00	0.00	49	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 2.5X2.5X0.1875	-11.75	1.2D + 1.6W 90	16.80	50	50	25	132.9	36.0	23.01	4	2	49.72	52.20	51	Member Y

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 4" SOLID	183.17	1.2D + 1.6W 60	50	65	565.47	0	0	0.00	0.00	32	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 2.5X2.5X0.1875	11.71	1.2D + 1.6W 90	36	58	49.55	4	2	49.72	41.76	28	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	151.72	0.9D + 1.6W 60	0.00	0	0	
Top Compression	174.38	1.2D + 1.6W 240	0.00	0		
Bot Tension	196.58	0.9D + 1.6W 180	523.32	38	6	1 1/4 A325
Bot Compression	226.26	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 9 8 Bot Elev (ft): 160.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 3 3/4" SOLID	-161.72	1.2D + 1.6W	10.02	50	50	50	64.1	50.0	368.03	0	0	0.00	0.00	43	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3.5X3.5X0.25	-10.17	1.2D + 1.6W 90	15.24	50	50	50	132.9	36.0	21.60	2	1	24.86	34.80	47	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 3 3/4" SOLID	139.77	1.2D + 1.6W 60	50	65	497.02	0	0	0.00	0.00	28	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3.5X3.5X0.25	10.11	1.2D + 1.6W 90	36	58	49.02	2	1	24.86	27.84	40	Bolt Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	107.55	0.9D + 1.6W 180	0.00	0	0	
Top Compression	124.56	1.2D + 1.6W	0.00	0		
Bot Tension	151.72	0.9D + 1.6W 60	412.14	37	6	1 1/8 A325
Bot Compression	174.38	1.2D + 1.6W 240	0.00	0		

Section: 10 10 Bot Elev (ft): 180.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 3 3/4" SOLID	-116.11	1.2D + 1.6W	6.68	100	100	100	85.5	50.0	291.33	0	0	0.00	0.00	39	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.1875	-7.70	1.2D + 1.6W 90	11.74	50	50	50	118.7	36.0	16.83	2	1	24.86	26.10	45	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 3 3/4" SOLID	99.69	1.2D + 1.6W 60	50	65	497.02	0	0	0.00	0.00	20	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.1875	7.68	1.2D + 1.6W 90	36	58	30.97	2	1	24.86	20.88	36	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	68.70	0.9D + 1.6W 180	0.00	0	0	
Top Compression	79.32	1.2D + 1.6W	0.00	0		
Bot Tension	107.55	0.9D + 1.6W 180	412.14	26	6	1 1/8 A325
Bot Compression	124.56	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 11 11 Bot Elev (ft): 200.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 3 1/4" SOLID	-71.81	1.2D + 1.6W	6.68	100	100	100	98.6	50.0	183.32	0	0	0.00	0.00	39	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.1875	-5.86	1.2D + 1.6W 90	10.16	50	50	50	123.2	36.0	13.15	2	1	24.86	26.10	44	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 3 1/4" SOLID	61.58	1.2D + 1.6W 60	50	65	373.32	0	0	0.00	0.00	16	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.1875	5.77	1.2D + 1.6W 90	36	58	24.84	2	1	24.86	20.88	27	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	36.53	0.9D + 1.6W 180	0.00	0	0	
Top Compression	42.62	1.2D + 1.6W	0.00	0		
Bot Tension	68.70	0.9D + 1.6W 180	327.12	21	6	1 A325
Bot Compression	79.32	1.2D + 1.6W	0.00	0		

Section: 12 12 Bot Elev (ft): 220.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	-38.21	1.2D + 1.6W	5.01	100	100	100	106.8	50.0	77.66	0	0	0.00	0.00	49	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 1.75X1.75X0.18	-3.39	1.2D + 1.6W 90	7.621	50	50	50	133.3	36.0	7.89	2	1	15.90	20.88	42	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2 1/4" SOLID	32.48	1.2D + 1.6W 60	50	65	178.92	0	0	0.00	0.00	18	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 1.75X1.75X0.18	3.37	1.2D + 1.6W 90	36	58	16.44	2	1	15.90	16.64	21	Bolt Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	8.75	0.9D + 1.6W 180	0.00	0	0	
Top Compression	11.02	1.2D + 1.6W	0.00	0		
Bot Tension	36.53	0.9D + 1.6W 180	122.04	30	6	5/8 A325
Bot Compression	42.62	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 13 13 Bot Elev (ft): 240.0 Height (ft): 10.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	-8.14	1.2D + 1.6W	5.00	100	100	100	120.0	50.0	49.29	0	0	0.00	0.00	16	Member X
HORIZ SAE - 2X2X0.1875	-0.47	1.2D + 1.6W 60	4.000	100	100	100	121.8	36.0	10.61	1	1	12.43	13.05	4	Member Z
DIAG SAE - 1.75X1.75X0.18	-1.99	1.2D + 1.6W 90	6.403	50	50	50	114.0	36.0	10.15	2	1	15.90	20.88	19	Member Z

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG SOL - 2" SOLID	6.15	1.2D + 1.6W 60	50	65	141.37	0	0	0.00	0.00	4	Member
HORIZ SAE - 2X2X0.1875	0.47	1.2D + 1.6W	36	58	18.74	1	1	12.43	7.83	5	Bolt Bear
DIAG SAE - 1.75X1.75X0.18	1.95	1.2D + 1.6W 90	36	58	16.44	2	1	15.90	16.64	12	Bolt Shear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	2.21	1.2D + 1.0Di +	0.00	0		
Bot Tension	8.75	0.9D + 1.6W 180	81.36	11	4	5/8 A325
Bot Compression	11.02	1.2D + 1.6W	0.00	0		

Detailed Reactions

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal	**1**	**0.00**	**608.27**	**-62.24**	
	1a	**20.75**	**-250.14**	**-21.23**	
	1b	**-20.75**	**-250.14**	**-21.23**	
1.2D + 1.6W 60 deg	**1**	**-7.99**	**309.92**	**-30.24**	
	1a	**-30.18**	**309.77**	**8.20**	
	1b	**-48.08**	**-511.70**	**-27.75**	
1.2D + 1.6W 90 deg	**1**	**-9.12**	**36.00**	**-1.44**	
	1a	**-47.53**	**515.56**	**21.94**	
	1b	**-44.21**	**-443.57**	**-20.50**	
1.2D + 1.6W 120 deg	**1**	**-8.03**	**-250.14**	**28.59**	
	1a	**-53.90**	**608.13**	**31.11**	
	1b	**-28.76**	**-250.00**	**-7.34**	
1.2D + 1.6W 180 deg	**1**	**0.00**	**-511.84**	**55.52**	
	1a	**-22.21**	**309.92**	**22.03**	
	1b	**22.21**	**309.92**	**22.03**	
1.2D + 1.6W 210 deg	**1**	**4.35**	**-443.74**	**48.55**	
	1a	**3.30**	**36.08**	**8.61**	
	1b	**42.78**	**515.64**	**30.19**	
1.2D + 1.6W 240 deg	**1**	**8.03**	**-250.14**	**28.59**	
	1a	**28.76**	**-250.00**	**-7.34**	
	1b	**53.90**	**608.13**	**31.11**	
1.2D + 1.6W 300 deg	**1**	**7.99**	**309.92**	**-30.24**	
	1a	**48.08**	**-511.70**	**-27.75**	
	1b	**30.18**	**309.77**	**8.20**	
1.2D + 1.6W 330 deg	**1**	**4.77**	**515.72**	**-52.14**	
	1a	**39.86**	**-443.65**	**-28.03**	
	1b	**5.80**	**35.92**	**-7.18**	
0.9D + 1.6W Normal	**1**	**0.00**	**598.72**	**-61.75**	
	1a	**21.18**	**-258.87**	**-21.48**	
	1b	**-21.18**	**-258.87**	**-21.48**	
0.9D + 1.6W 60 deg	**1**	**-7.97**	**300.65**	**-29.76**	
	1a	**-29.75**	**300.51**	**7.97**	
	1b	**-48.52**	**-520.17**	**-28.01**	
0.9D + 1.6W 90 deg	**1**	**-9.11**	**27.00**	**-0.95**	
	1a	**-47.10**	**506.10**	**21.70**	
	1b	**-44.65**	**-452.11**	**-20.75**	
0.9D + 1.6W 120 deg	**1**	**-8.02**	**-258.87**	**29.09**	
	1a	**-53.47**	**598.58**	**30.86**	
	1b	**-29.19**	**-258.72**	**-7.60**	
0.9D + 1.6W 180 deg	**1**	**0.00**	**-520.31**	**56.04**	
	1a	**-21.79**	**300.65**	**21.77**	
	1b	**21.79**	**300.65**	**21.77**	
0.9D + 1.6W 210 deg	**1**	**4.35**	**-452.27**	**49.06**	
	1a	**3.72**	**27.08**	**8.36**	

	1b	42.36	506.18	29.93
0.9D + 1.6W 240 deg	1	8.02	-258.87	29.09
	1a	29.19	-258.72	-7.60
	1b	53.47	598.58	30.86
0.9D + 1.6W 300 deg	1	7.97	300.65	-29.76
	1a	48.52	-520.17	-28.01
	1b	29.75	300.51	7.97
0.9D + 1.6W 330 deg	1	4.76	506.26	-51.65
	1a	40.31	-452.19	-28.29
	1b	5.37	26.92	-7.41
1.2D + 1.0Di + 1.0Wi Normal	1	0.00	288.77	-25.97
	1a	3.38	1.83	-5.39
	1b	-3.38	1.83	-5.39
1.2D + 1.0Di + 1.0Wi 60 deg	1	-2.99	192.67	-15.32
	1a	-14.76	192.64	5.07
	1b	-13.78	-92.89	-7.96
1.2D + 1.0Di + 1.0Wi 90 deg	1	-3.44	97.48	-4.88
	1a	-20.81	262.52	10.00
	1b	-12.25	-67.57	-5.12
1.2D + 1.0Di + 1.0Wi 120 deg	1	-2.98	1.83	5.62
	1a	-22.49	288.74	12.98
	1b	-6.35	1.86	-0.23
1.2D + 1.0Di + 1.0Wi 180 deg	1	0.00	-92.92	15.92
	1a	-11.78	192.67	10.25
	1b	11.78	192.67	10.25
1.2D + 1.0Di + 1.0Wi 210 deg	1	1.69	-67.60	13.17
	1a	-2.51	97.49	5.41
	1b	19.07	262.54	13.02
1.2D + 1.0Di + 1.0Wi 240 deg	1	2.98	1.83	5.62
	1a	6.35	1.86	-0.23
	1b	22.49	288.74	12.98
1.2D + 1.0Di + 1.0Wi 300 deg	1	2.99	192.67	-15.32
	1a	13.78	-92.89	-7.96
	1b	14.76	192.64	5.07
1.2D + 1.0Di + 1.0Wi 330 deg	1	1.74	262.55	-23.02
	1a	10.56	-67.59	-8.05
	1b	5.94	97.46	-0.53
(1.2 + 0.2Sds) * DL + E Normal M1	1	0.00	62.62	-4.53
	1a	-0.83	20.86	0.20
	1b	0.83	20.86	0.20
(1.2 + 0.2Sds) * DL + E Normal M2	1	0.00	51.26	-3.44
	1a	-1.24	26.54	0.58
	1b	1.24	26.54	0.58
(1.2 + 0.2Sds) * DL + E 60 deg M1	1	-0.24	48.70	-3.29
	1a	-2.97	48.70	1.44
	1b	-0.36	6.93	-0.21
(1.2 + 0.2Sds) * DL + E 60 deg M2	1	-0.12	43.02	-2.75
	1a	-2.44	43.02	1.27
	1b	0.58	18.29	0.33

(1.2 + 0.2Sds) * DL + E 90 deg M1	**1**	**-0.28**	**34.78**	**-2.05**
	1a	**-3.70**	**58.89**	**1.98**
	1b	**-0.14**	**10.66**	**0.08**
(1.2 + 0.2Sds) * DL + E 90 deg M2	**1**	**-0.14**	**34.78**	**-2.06**
	1a	**-2.86**	**49.06**	**1.57**
	1b	**0.71**	**20.50**	**0.49**
(1.2 + 0.2Sds) * DL + E 120 deg M1	**1**	**-0.24**	**20.86**	**-0.82**
	1a	**-3.92**	**62.62**	**2.26**
	1b	**0.59**	**20.86**	**0.61**
(1.2 + 0.2Sds) * DL + E 120 deg M2	**1**	**-0.12**	**26.54**	**-1.36**
	1a	**-2.98**	**51.26**	**1.72**
	1b	**1.12**	**26.54**	**0.78**
(1.2 + 0.2Sds) * DL + E 180 deg M1	**1**	**0.00**	**6.93**	**0.42**
	1a	**-2.73**	**48.70**	**1.85**
	1b	**2.73**	**48.70**	**1.85**
(1.2 + 0.2Sds) * DL + E 180 deg M2	**1**	**0.00**	**18.29**	**-0.67**
	1a	**-2.32**	**43.02**	**1.48**
	1b	**2.32**	**43.02**	**1.48**
(1.2 + 0.2Sds) * DL + E 210 deg M1	**1**	**0.14**	**10.66**	**0.09**
	1a	**-1.64**	**34.78**	**1.27**
	1b	**3.57**	**58.89**	**2.22**
(1.2 + 0.2Sds) * DL + E 210 deg M2	**1**	**0.07**	**20.50**	**-0.85**
	1a	**-1.71**	**34.78**	**1.15**
	1b	**2.79**	**49.06**	**1.69**
(1.2 + 0.2Sds) * DL + E 240 deg M1	**1**	**0.24**	**20.86**	**-0.82**
	1a	**-0.59**	**20.86**	**0.61**
	1b	**3.92**	**62.62**	**2.26**
(1.2 + 0.2Sds) * DL + E 240 deg M2	**1**	**0.12**	**26.54**	**-1.36**
	1a	**-1.12**	**26.54**	**0.78**
	1b	**2.98**	**51.26**	**1.72**
(1.2 + 0.2Sds) * DL + E 300 deg M1	**1**	**0.24**	**48.70**	**-3.29**
	1a	**0.36**	**6.93**	**-0.21**
	1b	**2.97**	**48.70**	**1.44**
(1.2 + 0.2Sds) * DL + E 300 deg M2	**1**	**0.12**	**43.02**	**-2.75**
	1a	**-0.58**	**18.29**	**0.33**
	1b	**2.44**	**43.02**	**1.27**
(1.2 + 0.2Sds) * DL + E 330 deg M1	**1**	**0.14**	**58.89**	**-4.20**
	1a	**0.01**	**10.66**	**-0.16**
	1b	**1.92**	**34.78**	**0.79**
(1.2 + 0.2Sds) * DL + E 330 deg M2	**1**	**0.07**	**49.06**	**-3.26**
	1a	**-0.77**	**20.50**	**0.37**
	1b	**1.85**	**34.78**	**0.91**
(0.9 - 0.2Sds) * DL + E Normal M1	**1**	**0.00**	**52.18**	**-3.92**
	1a	**-0.30**	**10.47**	**-0.10**
	1b	**0.30**	**10.47**	**-0.10**
(0.9 - 0.2Sds) * DL + E Normal M2	**1**	**0.00**	**40.83**	**-2.83**
	1a	**-0.71**	**16.14**	**0.27**
	1b	**0.71**	**16.14**	**0.27**

(0.9 - 0.2Sds) * DL + E 60 deg M1	**1**	**-0.24**	**38.28**	**-2.68**
	1a	**-2.44**	**38.28**	**1.13**
	1b	**-0.89**	**-3.44**	**-0.52**
(0.9 - 0.2Sds) * DL + E 60 deg M2	**1**	**-0.12**	**32.60**	**-2.14**
	1a	**-1.91**	**32.60**	**0.96**
	1b	**0.05**	**7.91**	**0.03**
(0.9 - 0.2Sds) * DL + E 90 deg M1	**1**	**-0.27**	**24.37**	**-1.44**
	1a	**-3.17**	**48.45**	**1.67**
	1b	**-0.68**	**0.29**	**-0.23**
(0.9 - 0.2Sds) * DL + E 90 deg M2	**1**	**-0.14**	**24.37**	**-1.44**
	1a	**-2.32**	**38.63**	**1.26**
	1b	**0.17**	**10.11**	**0.18**
(0.9 - 0.2Sds) * DL + E 120 deg M1	**1**	**-0.24**	**10.47**	**-0.20**
	1a	**-3.39**	**52.18**	**1.96**
	1b	**0.06**	**10.47**	**0.31**
(0.9 - 0.2Sds) * DL + E 120 deg M2	**1**	**-0.12**	**16.14**	**-0.75**
	1a	**-2.45**	**40.83**	**1.42**
	1b	**0.59**	**16.14**	**0.48**
(0.9 - 0.2Sds) * DL + E 180 deg M1	**1**	**0.00**	**-3.44**	**1.03**
	1a	**-2.20**	**38.28**	**1.55**
	1b	**2.20**	**38.28**	**1.55**
(0.9 - 0.2Sds) * DL + E 180 deg M2	**1**	**0.00**	**7.91**	**-0.05**
	1a	**-1.79**	**32.60**	**1.17**
	1b	**1.79**	**32.60**	**1.17**
(0.9 - 0.2Sds) * DL + E 210 deg M1	**1**	**0.14**	**0.29**	**0.70**
	1a	**-1.11**	**24.37**	**0.96**
	1b	**3.04**	**48.45**	**1.91**
(0.9 - 0.2Sds) * DL + E 210 deg M2	**1**	**0.07**	**10.11**	**-0.24**
	1a	**-1.18**	**24.37**	**0.84**
	1b	**2.26**	**38.63**	**1.38**
(0.9 - 0.2Sds) * DL + E 240 deg M1	**1**	**0.24**	**10.47**	**-0.20**
	1a	**-0.06**	**10.47**	**0.31**
	1b	**3.39**	**52.18**	**1.96**
(0.9 - 0.2Sds) * DL + E 240 deg M2	**1**	**0.12**	**16.14**	**-0.75**
	1a	**-0.59**	**16.14**	**0.48**
	1b	**2.45**	**40.83**	**1.42**
(0.9 - 0.2Sds) * DL + E 300 deg M1	**1**	**0.24**	**38.28**	**-2.68**
	1a	**0.89**	**-3.44**	**-0.52**
	1b	**2.44**	**38.28**	**1.13**
(0.9 - 0.2Sds) * DL + E 300 deg M2	**1**	**0.12**	**32.60**	**-2.14**
	1a	**-0.05**	**7.91**	**0.03**
	1b	**1.91**	**32.60**	**0.96**
(0.9 - 0.2Sds) * DL + E 330 deg M1	**1**	**0.14**	**48.45**	**-3.58**
	1a	**0.54**	**0.29**	**-0.47**
	1b	**1.38**	**24.37**	**0.48**
(0.9 - 0.2Sds) * DL + E 330 deg M2	**1**	**0.07**	**38.63**	**-2.64**
	1a	**-0.24**	**10.11**	**0.06**
	1b	**1.32**	**24.37**	**0.60**
1.0D + 1.0W Service Normal	**1**	**0.00**	**148.22**	**-14.17**

	1a	**3.14**	**-29.12**	**-3.77**
	1b	**-3.14**	**-29.12**	**-3.77**
1.0D + 1.0W Service 60 deg	**1**	**-1.62**	**86.53**	**-7.60**
	1a	**-7.39**	**86.50**	**2.40**
	1b	**-8.87**	**-83.04**	**-5.12**
1.0D + 1.0W Service 90 deg	**1**	**-1.88**	**30.00**	**-1.64**
	1a	**-10.96**	**129.11**	**5.23**
	1b	**-8.08**	**-69.12**	**-3.59**
1.0D + 1.0W Service 120 deg	**1**	**-1.69**	**-29.03**	**4.60**
	1a	**-12.26**	**148.02**	**7.08**
	1b	**-4.83**	**-29.00**	**-0.84**
1.0D + 1.0W Service 180 deg	**1**	**0.00**	**-83.25**	**10.26**
	1a	**-5.78**	**86.62**	**5.20**
	1b	**5.78**	**86.62**	**5.20**
1.0D + 1.0W Service 210 deg	**1**	**0.93**	**-69.00**	**8.78**
	1a	**-0.48**	**30.01**	**2.45**
	1b	**10.00**	**128.98**	**6.87**
1.0D + 1.0W Service 240 deg	**1**	**1.69**	**-29.03**	**4.60**
	1a	**4.83**	**-29.00**	**-0.84**
	1b	**12.26**	**148.02**	**7.08**
1.0D + 1.0W Service 300 deg	**1**	**1.62**	**86.53**	**-7.60**
	1a	**8.87**	**-83.04**	**-5.12**
	1b	**7.39**	**86.50**	**2.40**
1.0D + 1.0W Service 330 deg	**1**	**0.95**	**129.00**	**-12.10**
	1a	**7.14**	**-68.99**	**-5.20**
	1b	**2.36**	**29.98**	**-0.81**

Max Uplift:	520.31 (kip)	Moment Ice:	4,638.61 (kip-ft)	Moment:	13,876.99 (kip-ft)	1.2D + 1.6W Normal
Max Down:	608.27 (kip)	Total Down Ice:	292.43 (kip)	Total Down:	107.99 (kip)	
Max Shear:	62.24 (kip)	Total Shear Ice:	36.75 (kip)	Total Shear:	104.71 (kip)	

Sprint

PROJECT:	NV COMPLETION & 2.5 EQUIPMENT DEPLOYMENT
SITE NAME:	NORTH STONINGTON CT
SITE CASCADE:	CT03XC151
MARKET:	NORTHERN CONNECTICUT
SITE ADDRESS:	118C WINTECHOG HILL ROAD
SITE TYPE:	LATTICE TOWER

SPECIAL CONSTRUCTION NOTE:
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE–MENTIONED ANALYSIS AND ASSESSMENT.
* AMERICAN TOWER CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP–DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

SITE INFORMATION

PROPERTY OWNER:
AMERICAN TOWERS, LLC
10 PRESIDENTIAL WAY
WOBURN, MA 01801

TOWER OWNER:
AMERICAN TOWERS, LLC
10 PRESIDENTIAL WAY
WOBURN, MA 01801

LATITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
41° 27' 35" N

LONGITUDE (NAD83):
GOOGLE EARTH 2-C CONFIRMATION
71° 55' 38" W

COUNTY:
NEW LONDON COUNTY

ZONING JURISDICTION:
CITY OF NORTH STONINGTON

ZONING DISTRICT:
RURAL PRESERVATION RESIDENTIAL (R80)

POWER COMPANY:
NORTHEAST UTILITIES

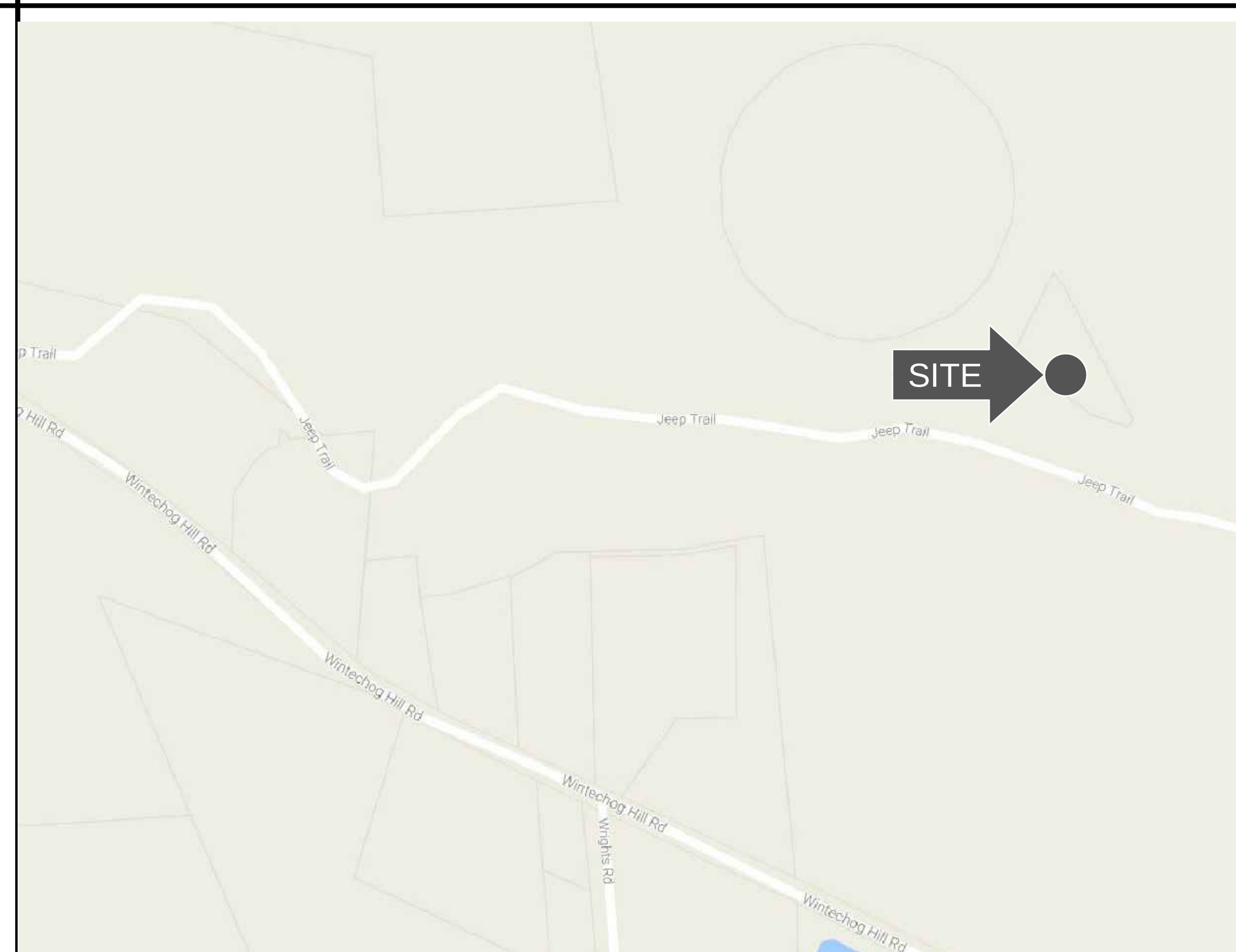
AAV PROVIDER:
AT&T

SPRINT CONSTRUCTION MANAGER:
JONATHAN HULL
PHONE: 617–233–2920
Jonathan.B.Hull@sprint.com

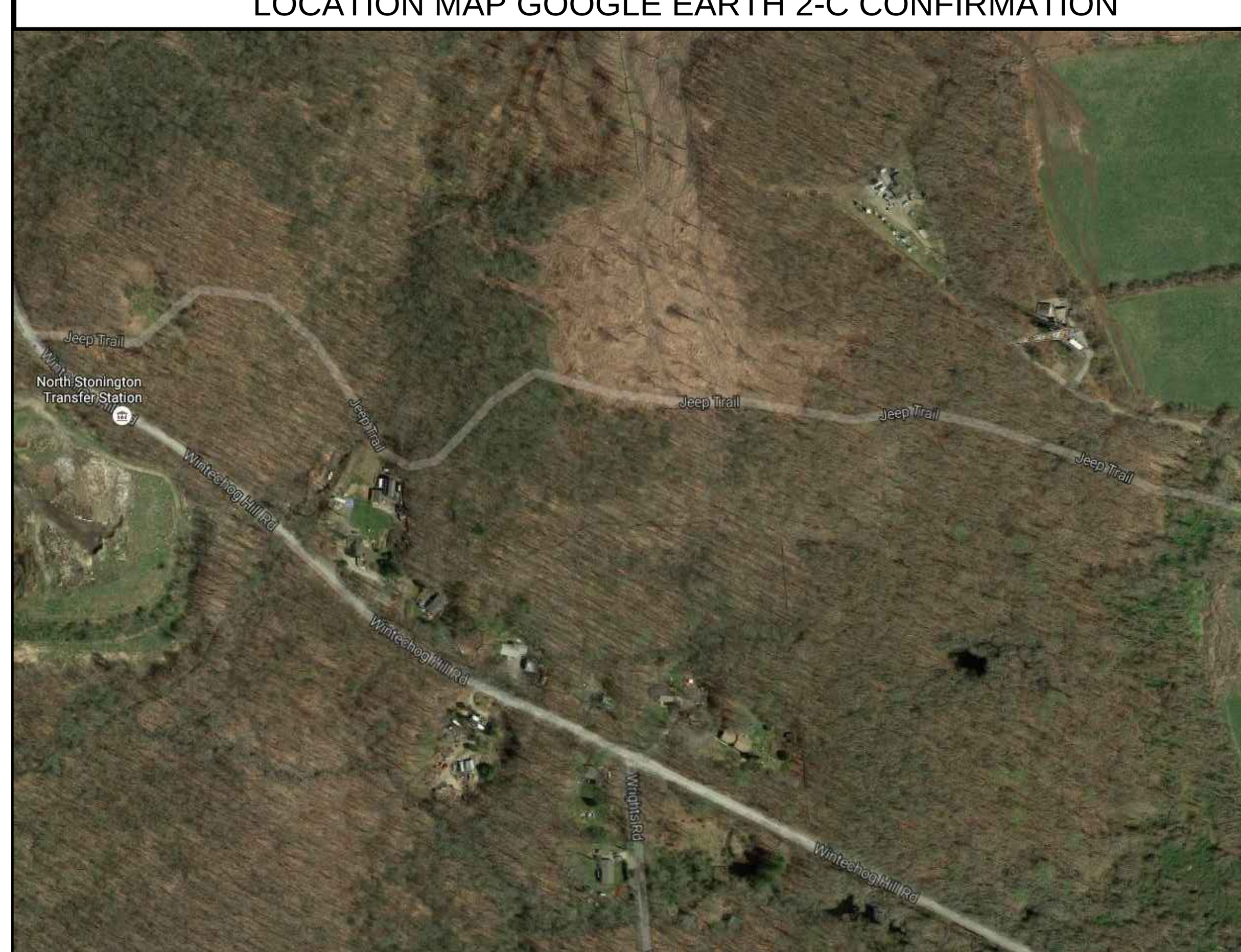
EQUIPMENT SUPPLIER:
ALCATEL–LUCENT
600 MOUNTAIN AVENUE
MURRAY HILL, NJ 07974

811
Know what's below.
Call before you dig.
www.cbyd.com

AREA MAP



LOCATION MAP GOOGLE EARTH 2-C CONFIRMATION



PROJECT DESCRIPTION

SPRINT EQUIPMENT MODIFICATIONS REQUIRED TO SUPPORT MODERNIZATION OF AN EXISTING WIRELESS COMMUNICATIONS FACILITY AND UTILIZATION OF FCC BROADBAND SPECTRUM LICENSE FOR 2.5GHz FREQUENCY, INCLUDING INSTALLATION OF:

GROUND–LEVEL RAN EQUIPMENT, CONSISTING OF
* RETROFIT EXISTING MMBTS CABINET WITH 2.5 RADIO ACCESS NETWORK (RAN) EQUIPMENT
* (1) ADDITIONAL BATTERY STRING(S) INSIDE EXISTING BATTERY BACKUP (BBU) CABINET
* (1) ADDITIONAL RECTIFIER SHELF, (3)RECTIFIERS, & LTE 2.5 BBU RETROFIT IN EXISTING SPRINT MMBTS CABINET

TOWER–TOP EQUIPMENT, INCLUDING INSTALLATION OF:
* (6) PANEL ANTENNAS
* (6) REMOTE RADIO HEADS (RRH)
* (3) MICRO BTS
* (3) HYBRID CABLE (AND ASSOCIATED FIBER, DC POWER, COAXIAL CABLE JUMPERS AND ANTENNA REMOTE ELECTRICAL–TILT (RET) CABLE

SPECIAL ZONING NOTE:
BASED ON INFORMATION PROVIDE BY SPRINT REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AND ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE–EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW, ADMINISTRATIVE REVIEW).

DRAWING INDEX

SHEET NO:	SHEET TITLE	REV	CHK	BY
T–1	TITLE SHEET	1	MRC	AAB
SP–1	OUTLINE SPECIFICATIONS	1	MRC	AAB
SP–2	OUTLINE SPECIFICATIONS	1	MRC	AAB
SP–3	OUTLINE SPECIFICATIONS	1	MRC	AAB
A–1	COMPOUND & EQUIPMENT PLANS	1	MRC	AAB
A–2	ELEVATION	1	MRC	AAB
A–3	ANTENNA PLANS	1	MRC	AAB
A–4	RF DATA SHEET & BILL OF MATERIALS & DETAILS	1	MRC	AAB
A–5	WIRING DIAGRAM	1	MRC	AAB
S–1	STRUCTURAL DETAILS	1	MRC	AAB
S–2	STRUCTURAL DETAILS	1	MRC	AAB
E–1	ONE LINE DIAGRAM & DETAILS	1	MRC	AAB
E–2	GROUNDING DETAILS AND NOTES	1	MRC	AAB

GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
– ADA COMPLIANCE NOT REQUIRED.
– POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
– NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
BUILDING CODE: MAINE UNIFORM BUILDING & ENERGY CODE (MUBEC):
2009 INTERNATIONAL RESIDENTIAL CODE (IRC)
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE
LOCAL CODE AS REQUIRED
ELECTRICAL CODE: 2005 NATIONAL ELECTRICAL CODE
STRUCTURAL CODE: TIA/EIA–222–G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.
4. ALL DESIGN AND WORK SHALL BE IN COMPLIANCE WITH HALEY AND WARD STANDARDS FOR DESIGN AND APPROVAL TO MOUNT OR MODIFY COMMUNICATIONS EQUIPMENT ON MASHPEE WATER DISTRICT WATER STORAGE TANKS.

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

SPRINT:	____________	DATE:	________
CONSTRUCTION MANAGER:	____________	DATE:	________
LEASING/ SITE ACQUISITION:	____________	DATE:	________
RF ENGINEER:	____________	DATE:	________
LANDLORD/ TOWER OWNER:	____________	DATE:	________

Sprint VISION
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
(201) 684–4000

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development
Surveying - Telecommunications
500 North Broadway
East Providence, RI 02914
Tel: (401) 354-2403
Fax: (401) 633-6354

CENTERLINE COMMUNICATIONS
CENTERLINE COMMUNICATIONS
95 RYAN DRIVE, SUITE 1
RAYNHAM, MA 02767

AEG PROJECT #: 2016–0617

DRAWN BY: AAB

CHECKED BY: MRC

SUBMITTALS

REV#	DATE	DESCRIPTION
0	11/07/16	ISSUED FOR REVIEW
1	11/16/16	REVISION

CT03XC151
NORTH STONINGTON CT
118C WINTECHOG HILL ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

SHEET TITLE
TITLE SHEET

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-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
2. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
3. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
4. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
5. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
6. AMERICAN CONCRETE INSTITUTE (ACI)
7. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
8. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
9. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
10. PORTLAND CEMENT ASSOCIATION (PCA)
11. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
12. BRICK INDUSTRY ASSOCIATION (BIA)
13. AMERICAN WELDING SOCIETY (AWS)
14. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
15. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
16. DOOR AND HARDWARE INSTITUTE (DHI)
17. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
18. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5DEFINITIONS:

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...

1.6SITE 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.

A. TOP HAT
B. HOW TO INSTALL A NEW CABINET
C. BASE BAND UNIT IN EXISTING UNIT
D. INSTALLATION OF BATTERIES
E. INSTALLATION OF HYBRID CABLE
F. INSTALLATION OF RRH'S
G. CABLING
H. TS-0200 REV 4 – ANTENNA LINE ACCEPTANCE STANDARDS
I. SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.
J. COMMISSIONING MOPS
K. SPRINT CELL SITE ENGINEERING NOTICE – EN-2013-002
L. SPRINT ENGINEERING LETTER – EL-0504
M. SPRINT ENGINEERING LETTER – EL-0568
N. SPRINT TECHNICAL SPECIFICATION – TS-0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

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

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. 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

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.

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:

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 ANTENNAL 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 CIVIL 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. CIVIL 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. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

CONTINUE SHEET SP-2

Sprint VISION
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MAHWAH, NJ 07495
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CENTERLINE COMMUNICATIONS
CENTERLINE COMMUNICATIONS
95 RYAN DRIVE, SUITE 1
RAYNHAM, MA 02767

AEG PROJECT #: 2016-0617

DRAWN BY: AAB

CHECKED BY: MRC

SUBMITTALS

REV#	DATE	DESCRIPTION
0	11/07/16	ISSUED FOR REVIEW
1	11/16/16	REVISION

CT03XC151
NORTH STONINGTON CT
118C WINTECHOG HILL ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-1

CONTINUED FROM SP-1:

SECTION 01 400 – SUBMITTALS, TESTS, AND INSPECTIONS

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.

C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

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 SPRINT TS-0200 CURRENT VERSION 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: 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.

1. 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.
2. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, 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)
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

E. 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.

F. 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 01 500 – PROJECT REPORTING

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.

SECTION 07 500 – ROOF CUTTING, PATCHING AND REPAIR

SUMMARY:
THIS SECTION SPECIFIES CUTTING AND PATCHING EXISTING ROOFING SYSTEMS WHERE CONDUIT OR CABLES EXIT THE BUILDING ONTO THE ROOF OR BUILDING-MOUNTED ANTENNAS, AND AS REQUIRED FOR WATERTIGHT PERFORMANCE. ROOFTOP ENTRY OPENINGS IN MEMBRANE ROOFTOPS SHALL BE CONSTRUCTED TO COMPLY WITH LANDLORD, ANY EXISTING WARRANTY, AND LOCAL JURISDICTIONAL STANDARDS.

1.4 SUBMITTALS:

A. PRE-CONSTRUCTION ROOF PHOTOS: COMPLETE A ROOF INSPECTION PRIOR TO THE INSTALLATION OF SPRINT EQUIPMENT ON ANY ROOFTOP BUILD. AT A MINIMUM INSPECT AND PHOTOGRAPH (MINIMUM 3 EA.) ALL AREAS IMPACTED BY THE ADDITION OF THE SPRINT EQUIPMENT.

B. PROVIDE SIMILAR PHOTOGRAPHS SHOWING ROOF CONDITIONS AFTER CONSTRUCTION (MINIMUM 3 EA.)

C. ROOF INSPECTION PHOTOGRAPHS SHOULD BE UPLOADED WITH CLOSEOUT PHOTOGRAPHS.

SECTION 09 900 – PAINTING

QUALITY ASSURANCE:

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR THREE YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. COMPLY WITH ALL ENVIRONMENTAL REGULATIONS FOR VOLATILE ORGANIC COMPOUNDS.

CONTINUE SHEET SP-3

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STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED
PROFESSIONAL ENGINEER

AEG PROJECT #: 2016-0617

DRAWN BY: AAB

CHECKED BY: MRC

SUBMITTALS

REV#	DATE	DESCRIPTION
0	11/07/16	ISSUED FOR REVIEW
1	11/16/16	REVISION

CT03XC151
NORTH STONINGTON CT
118C WINTECHOG HILL ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER

CONTINUED FROM SP-2:

MATERIALS:

A. MANUFACTURERS: BENJAMIN MOORE, ICI DEVOE COATINGS, PPG, SHERWIN WILLIAMS OR APPROVED EQUAL. PROVIDE PREMIUM GRADE, PROFESSIONAL-QUALITY PRODUCTS FOR COATING SYSTEMS.

PAINT SCHEDULE:

A. EXTERIOR ANTENNAE AND ANTENNA MOUNTING HARDWARE: ONE COAT OF PRIMER AND TWO FINISH COATS. PAINT FOR ANTENNAE SHALL BE NON-METALLIC BASED AND CONTAIN NO METALLIC PARTICLES. PROVIDE COLORS AND PATTERNS AS REQUIRED TO MASK APPEARANCE OF ANTENNAE ON ADJACENT BUILDING SURFACES AND AS ACCEPTABLE TO THE OWNER. REFER TO ANTENNA MANUFACTURER'S INSTRUCTIONS WHENEVER POSSIBLE.

B. ROOF TOP CONSTRUCTION: TOUCH UP - PREPARE SURFACES TO BE REPAIRED. FOLLOW INDUSTRY STANDARDS AND REQUIREMENTS OF OWNER TO MATCH EXISTING COATING AND FINISH.

PAINTING APPLICATION:

1. INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
2. COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
3. MATCH APPROVED MOCK-UPS FOR COLOR, TEXTURE, AND PATTERN. RE-COAT OR REMOVE AND REPLACE WORK WHICH DOES NOT MATCH OR SHOWS LOSS OF ADHESION.
4. CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

1. GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
2. FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. ALL METAL COMPONENTS SHALL BE HANDLED WITH CARE TO PREVENT DAMAGE TO THE COMPONENTS, THEIR PRESERVATIVE TREATMENT, OR THEIR PROTECTIVE COATINGS.

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

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

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

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

JUMPERS AND CONNECTORS:
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRH'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRH'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE. DO NOT USE SUPERFLEX OUTDOORS. JUMPERS SHALL BE FACTORY FABRICATED IN APPROPRIATE LENGTHS WITH A MAXIMUM OF 4 FEET EXCESS PER JUMPER AND HAVE CONNECTORS AT EACH END, MANUFACTURED BY SUPPLIER. IF JUMPERS ARE FIELD FABRICATED, FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION OF CONNECTORS

REMOTE ELECTRICAL TILT (RET) CABLES:

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

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

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

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

HYBRID CABLES INSTALLATION:

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

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

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

1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.
2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBTS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
   a. FIBER: SUPPORT FIBER BUNDLES USING ½" VELCRO STRAPS OF THE REQUIRED LENGTH @ 18" OC. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
   b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
4. CABLE INSTALLATION:
   a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
   b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
   c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURES RECOMMENDED MAXIMUM BEND RADIUS.
5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED PER SPRINT TS-0200 CURRENT VERSION.
7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

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

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.

1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

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

SUMMARY:

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

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

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

DC CIRCUIT BREAKER LABELING

A. LABEL CIRCUIT BREAKERS ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1.

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

SUMMARY:

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

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

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

SUPPORTING DEVICES:

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

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

SUPPORTING DEVICES:

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

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

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

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

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

ELECTRICAL IDENTIFICATION:

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

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

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

CONDUIT:

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

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

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

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

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

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

HUBS AND BOXES:

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

B. CABLE TERMINATION FITTINGS FOR CONDUIT
1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL.
2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.

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

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

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

SUPPLEMENTAL GROUNDING SYSTEM

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

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

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

EXISTING STRUCTURE:

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

CONDUIT AND CONDUCTOR INSTALLATION:

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

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

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STATE OF CONNECTICUT
MARC R. CHRETIEN
PROFESSIONAL ENGINEER

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SHEET TITLE
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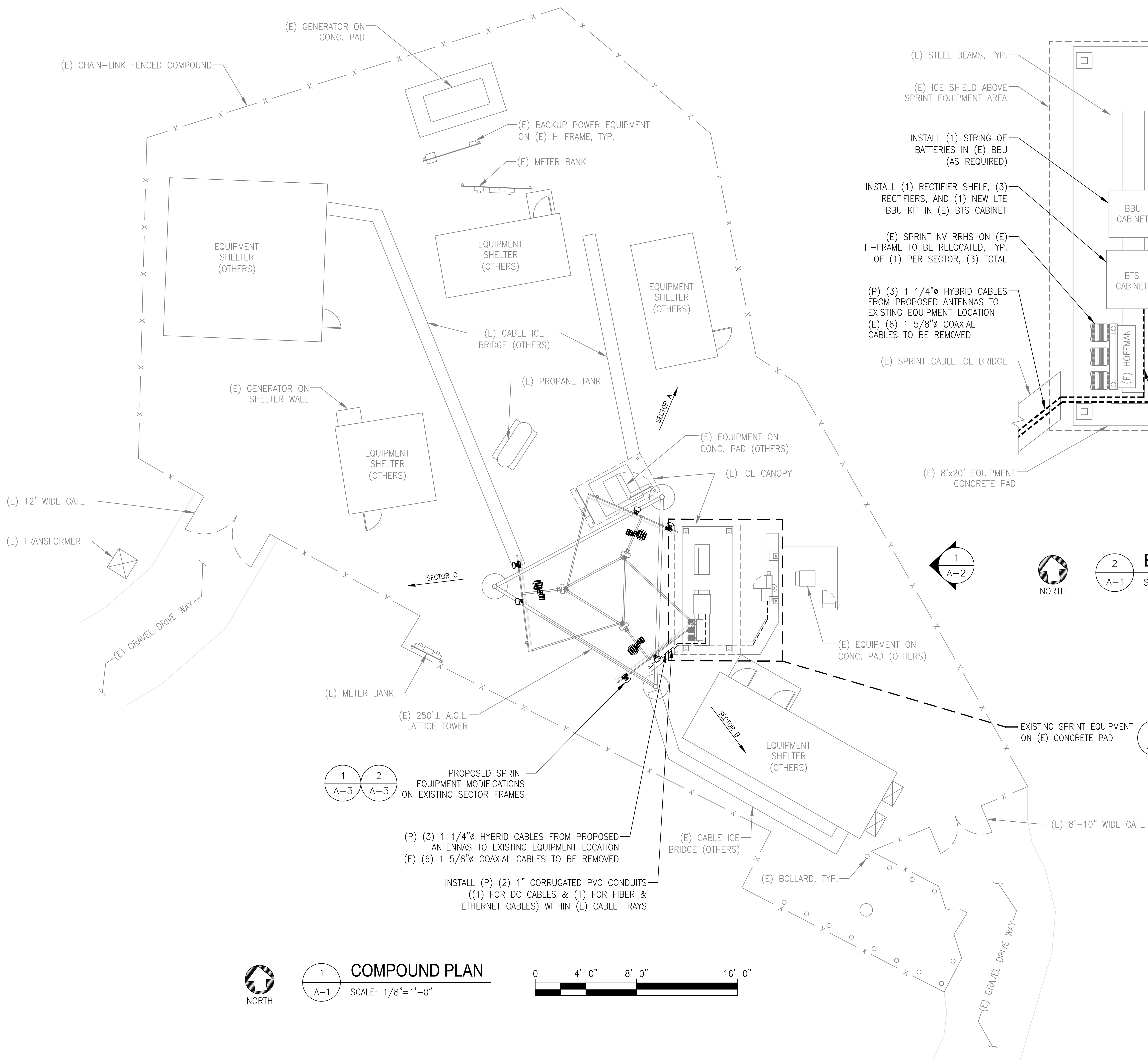
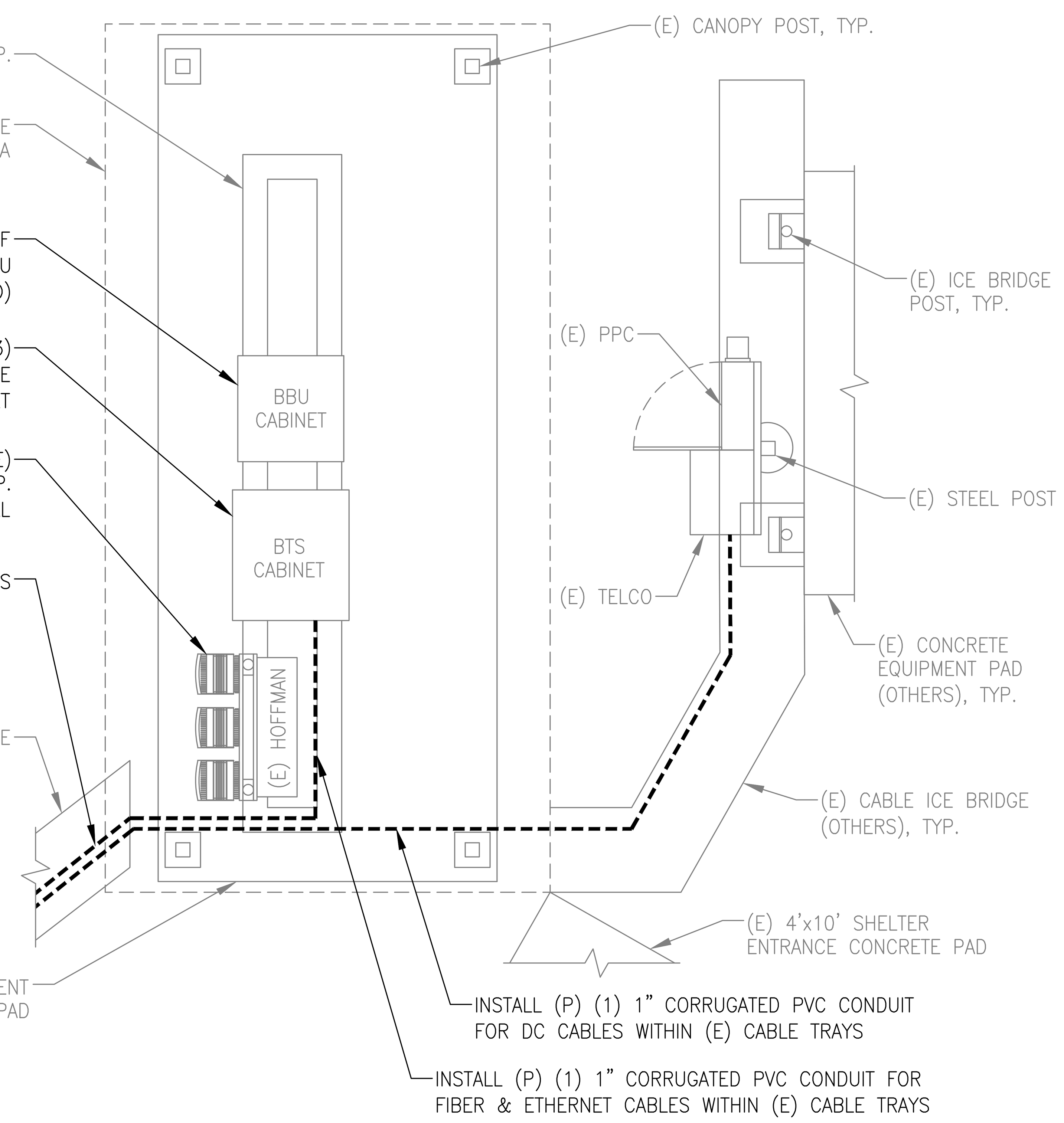
SHEET NUMBER
SP-3



1 A-1 COMPOUND PLAN

SCALE: 1/8"=1'-0"



2 A-1 EQUIPMENT PLAN

SCALE: 3/8"=1'-0"

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SHEET TITLE

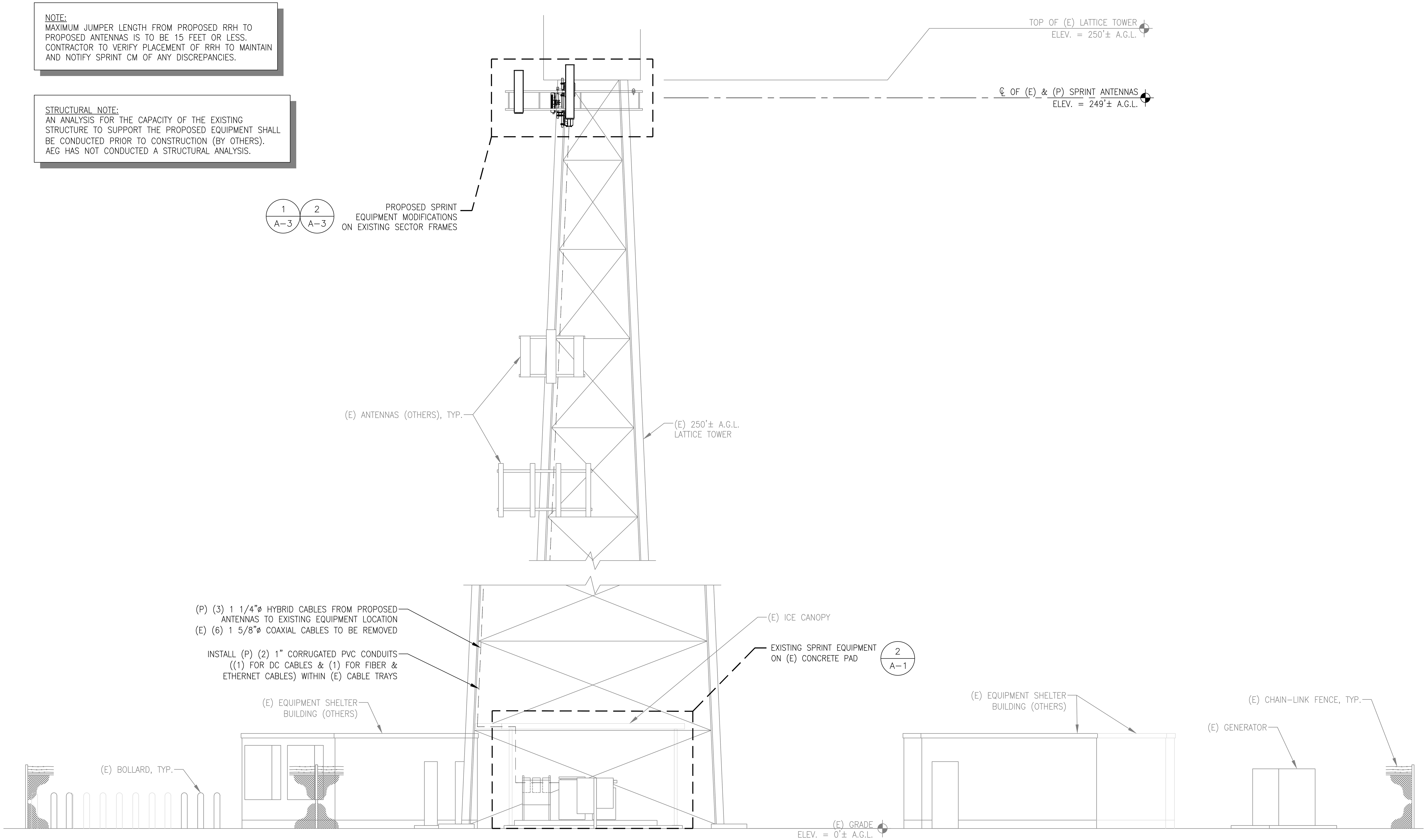
COMPOUND & EQUIPMENT PLANS

SHEET NUMBER

A-1

NOTE:
MAXIMUM JUMPER LENGTH FROM PROPOSED RRH TO PROPOSED ANTENNAS IS TO BE 15 FEET OR LESS. CONTRACTOR TO VERIFY PLACEMENT OF RRH TO MAINTAIN AND NOTIFY SPRINT CM OF ANY DISCREPANCIES.

STRUCTURAL NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE CONDUCTED PRIOR TO CONSTRUCTION (BY OTHERS). AEG HAS NOT CONDUCTED A STRUCTURAL ANALYSIS.



1 A-2 **ELEVATION**
SCALE: 3/16"=1'-0"

0 2'-8" 5'-4" 10'-8"

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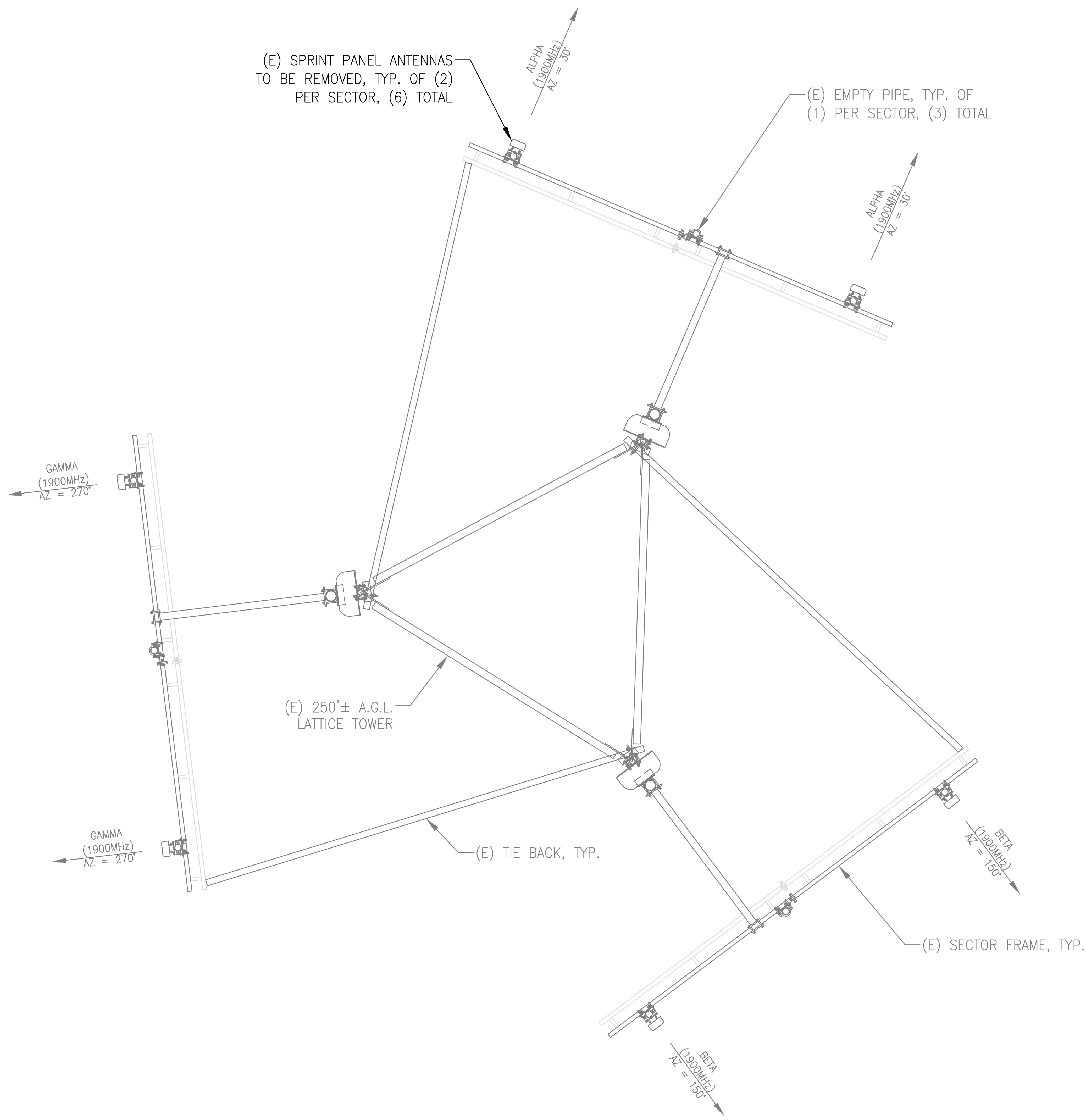
A-2



NORTH

1
A-3

EXISTING ANTENNA PLAN

SCALE: 3/8"=1'-0"

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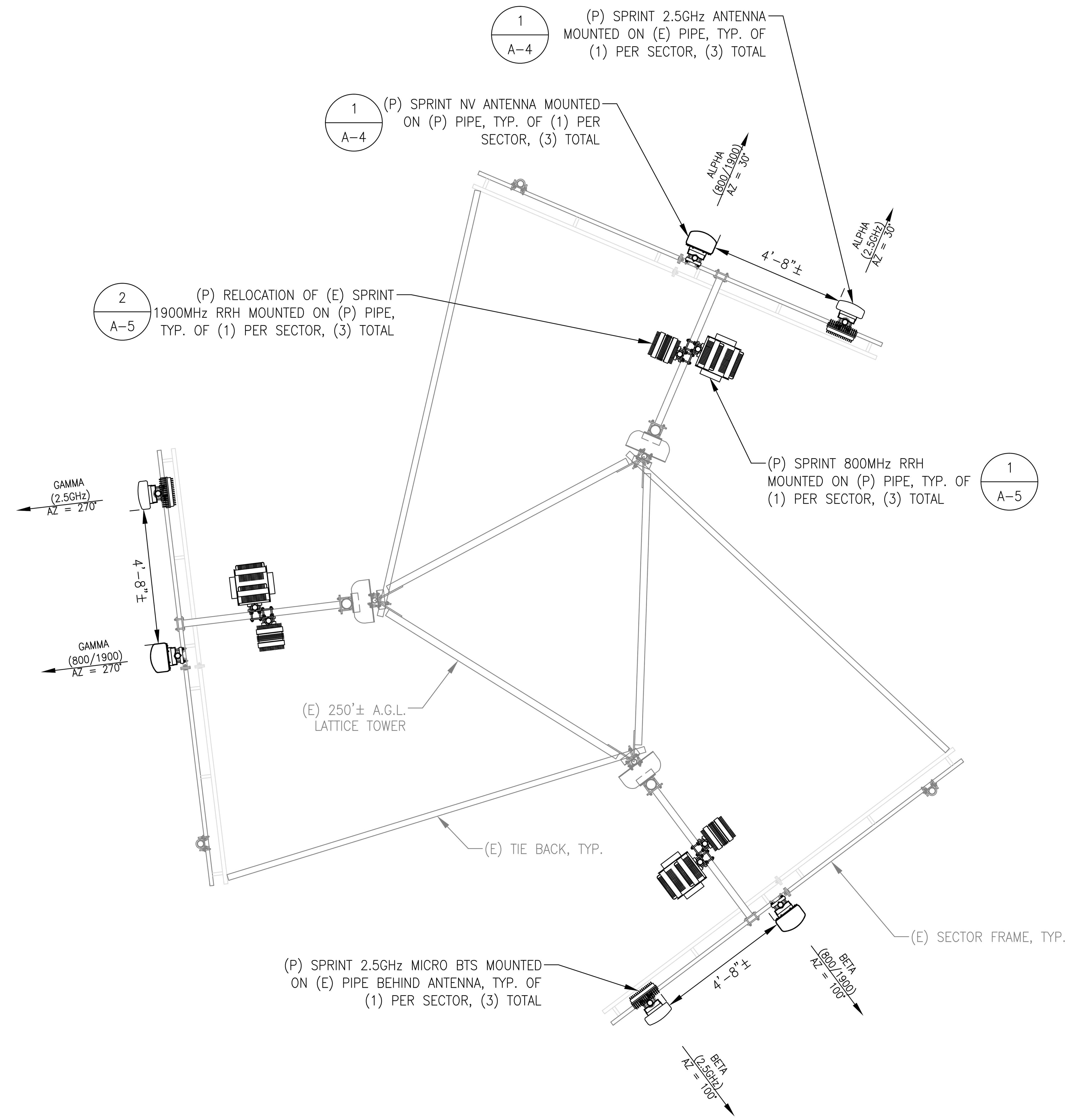

NORTH

2
A-3

PROPOSED ANTENNA PLAN

SCALE: 3/8"=1'-0"

0 1'-0" 2'-0" 4'-0"

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CENTERLINE COMMUNICATIONS
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95 RYAN DRIVE, SUITE 1
RAYNHAM, MA 02767

AEG PROJECT #: 2016-0617

DRAWN BY: AAB

CHECKED BY: MRC

SUBMITTALS

REV#	DATE	DESCRIPTION
0	11/07/16	ISSUED FOR REVIEW
1	11/16/16	REVISION

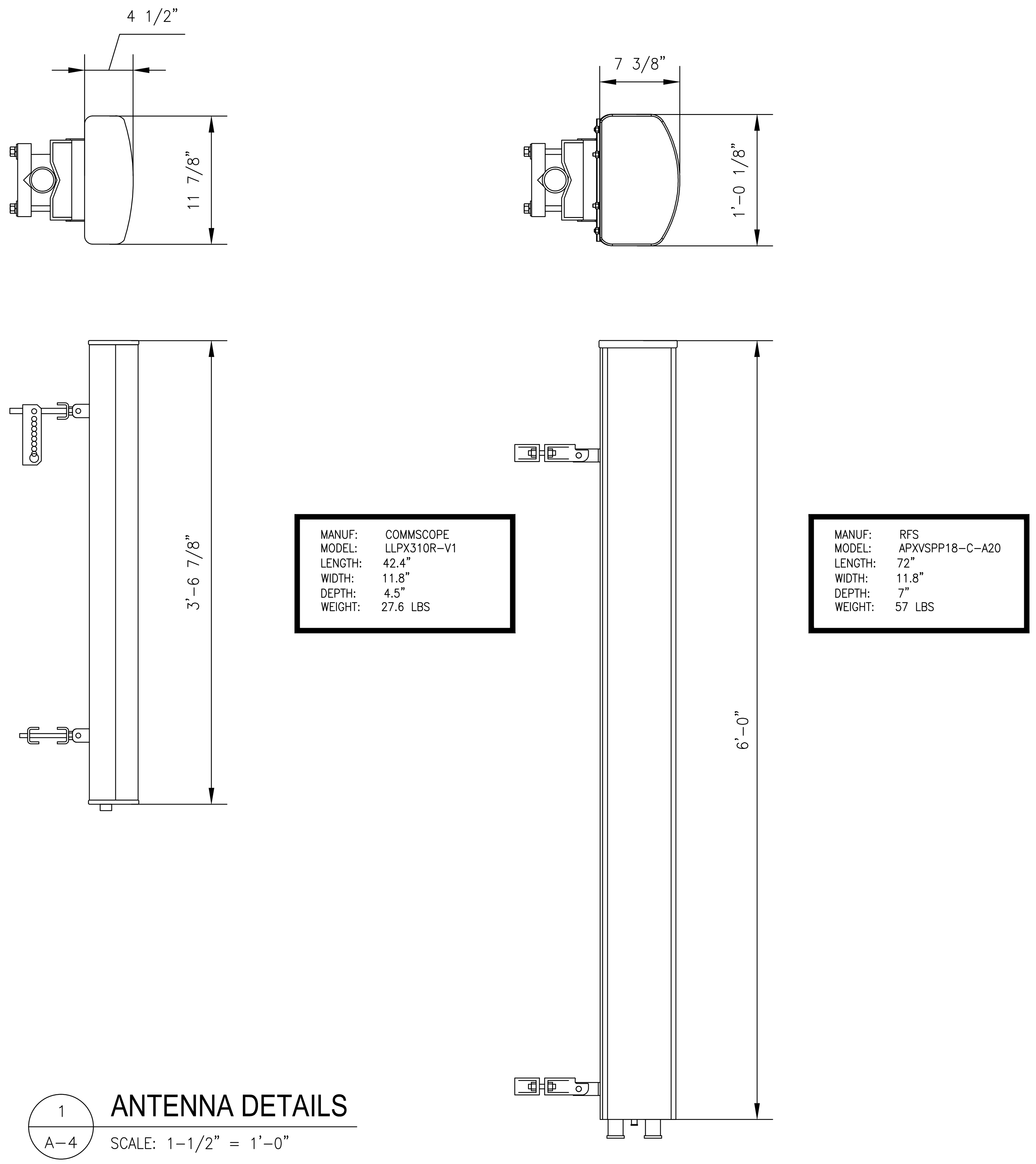
CT03XC151
NORTH STONINGTON CT
118C WINTECHOG HILL ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

SHEET TITLE
ANTENNA PLANS

SHEET NUMBER
A-3

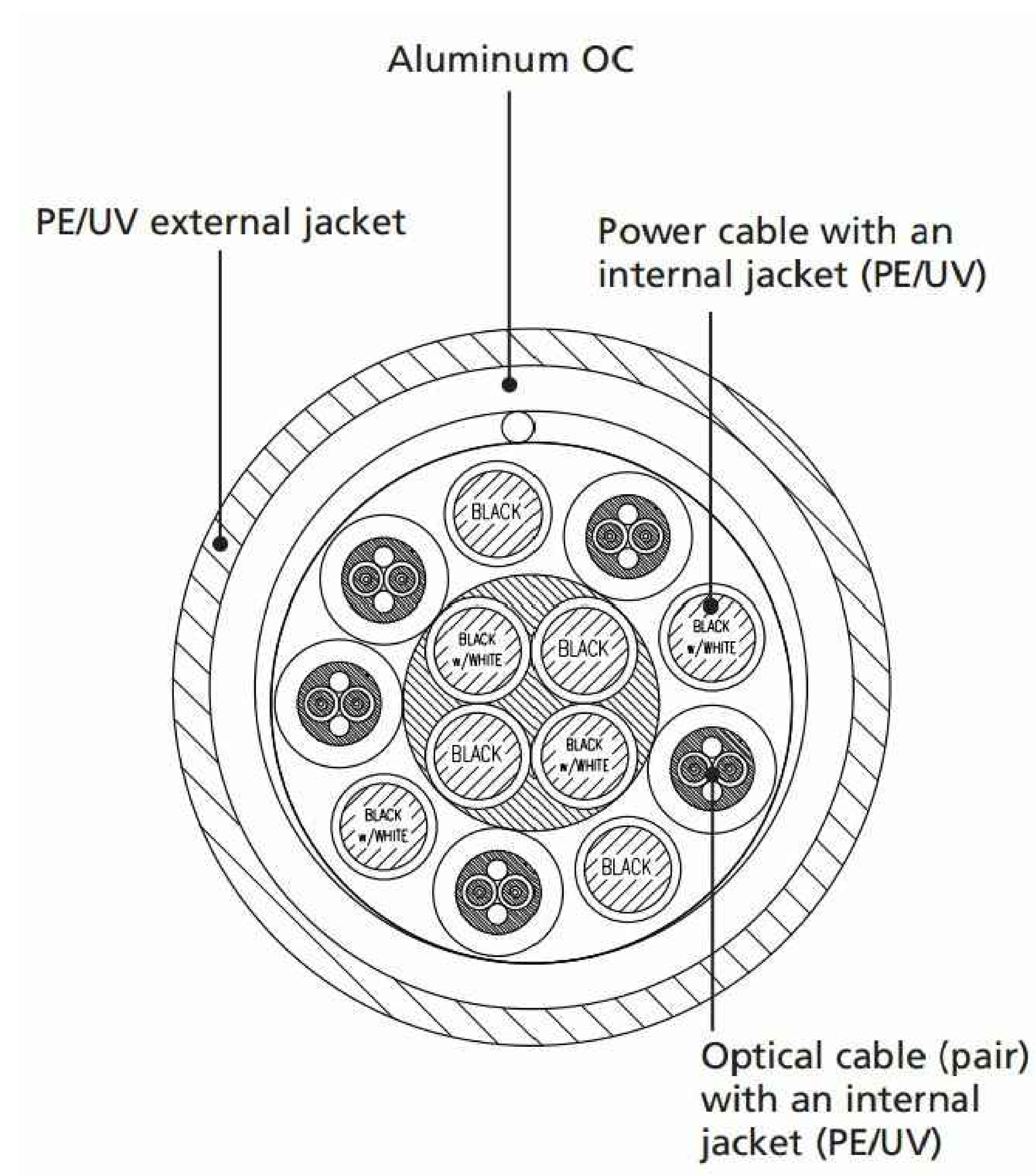
800MHz/1900MHz TOWER TOP EQUIPMENT

ITEM	QUANTITY	MODEL	DIMENSIONS & WEIGHT
ANTENNAS	3	RFS APXVSPP18-C-A20	72"x11.8"x7" – 57 LBS
ANTENNAS	3	COMMSCOPE LLPX310R-V1	42.4"x11.8"x4.5" – 27.6 LBS
MICRO BTS	3	NOKIA FWHR 2.5GHz 2 x 20W	12.8"x9.7"x5.7"
RRH'S	3	RRH 2X50 -800	18.8"x13"x10.8" – 57.5 LBS
RRH'S	3	RRH 4X40 -1900	25.1"x11.1"x10.7" – 64 LBS
FIBER	3	RFS HB114-1-08U4-M5F	200'L – 1.3 LBS/FT
CORRUGATED PVC CONDUIT	2	SCHD-40 CARLON	1"ø x 200'L
SMALL SPLICE ENCLOSURE	3	NEMA 4X PN:BEN-92P	9.84"x7.88"x5.12" – 1 LBS
TERMINAL BARRIER STRIP	3	600V, 30A IDEAL PN:89-610	--



1/A-4 ANTENNA DETAILS
SCALE: 1-1/2" = 1'-0"

0 4" 8" 1'-4"



4/A-4 CABLE SECTION DETAIL
SCALE: N.T.S.

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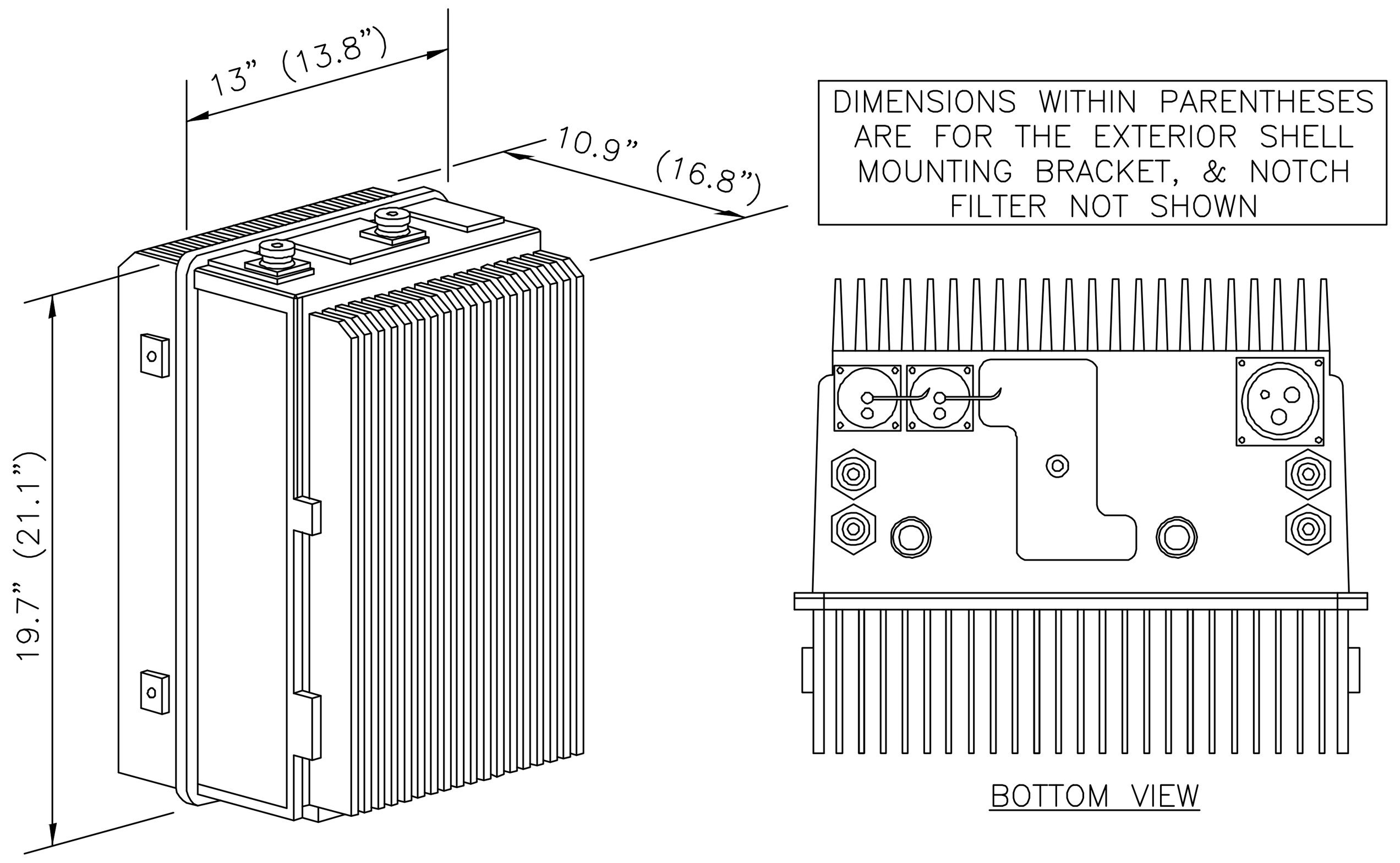
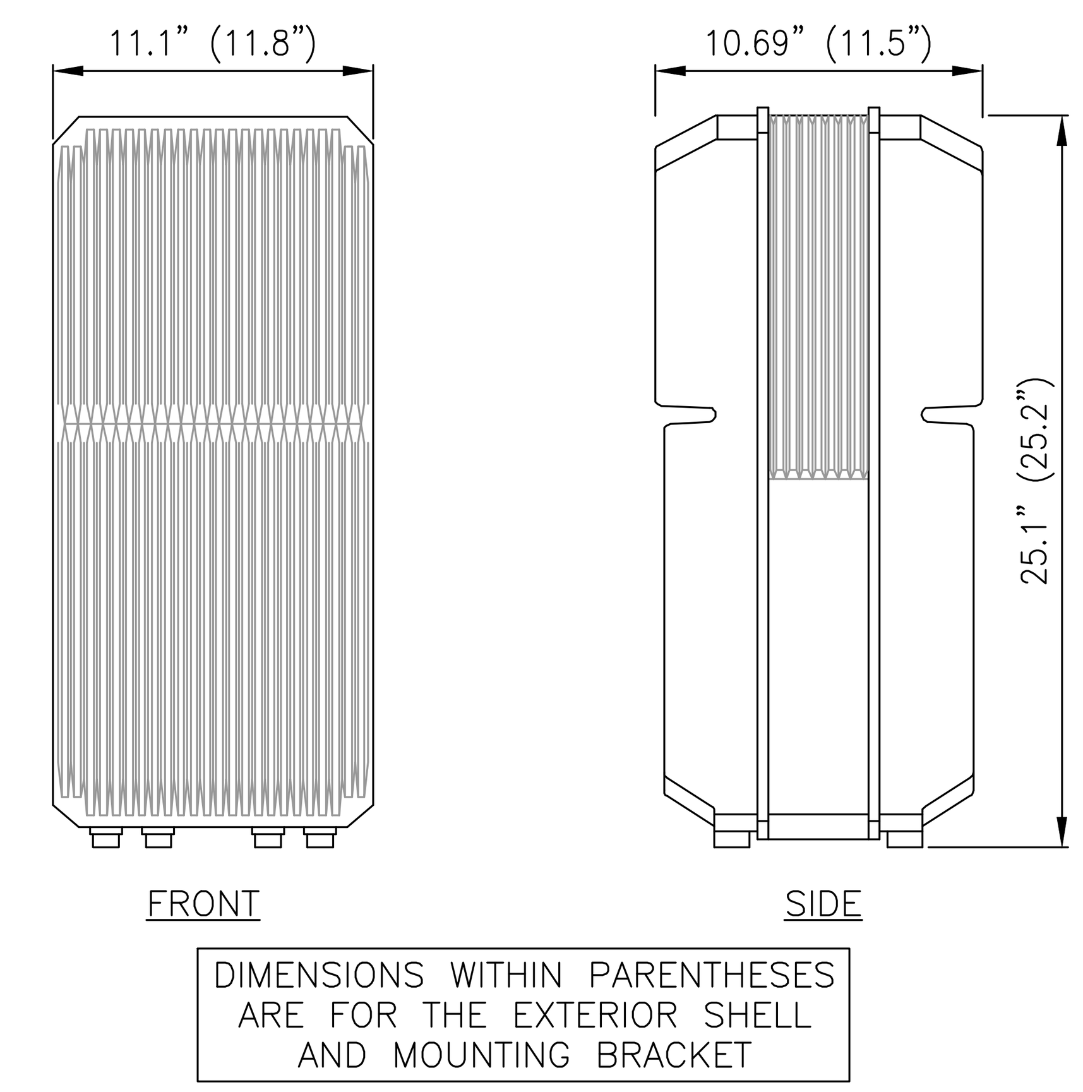
SHEET TITLE
RF DATA SHEET & BILL OF MATERIALS AND EQUIPMENT DETAILS

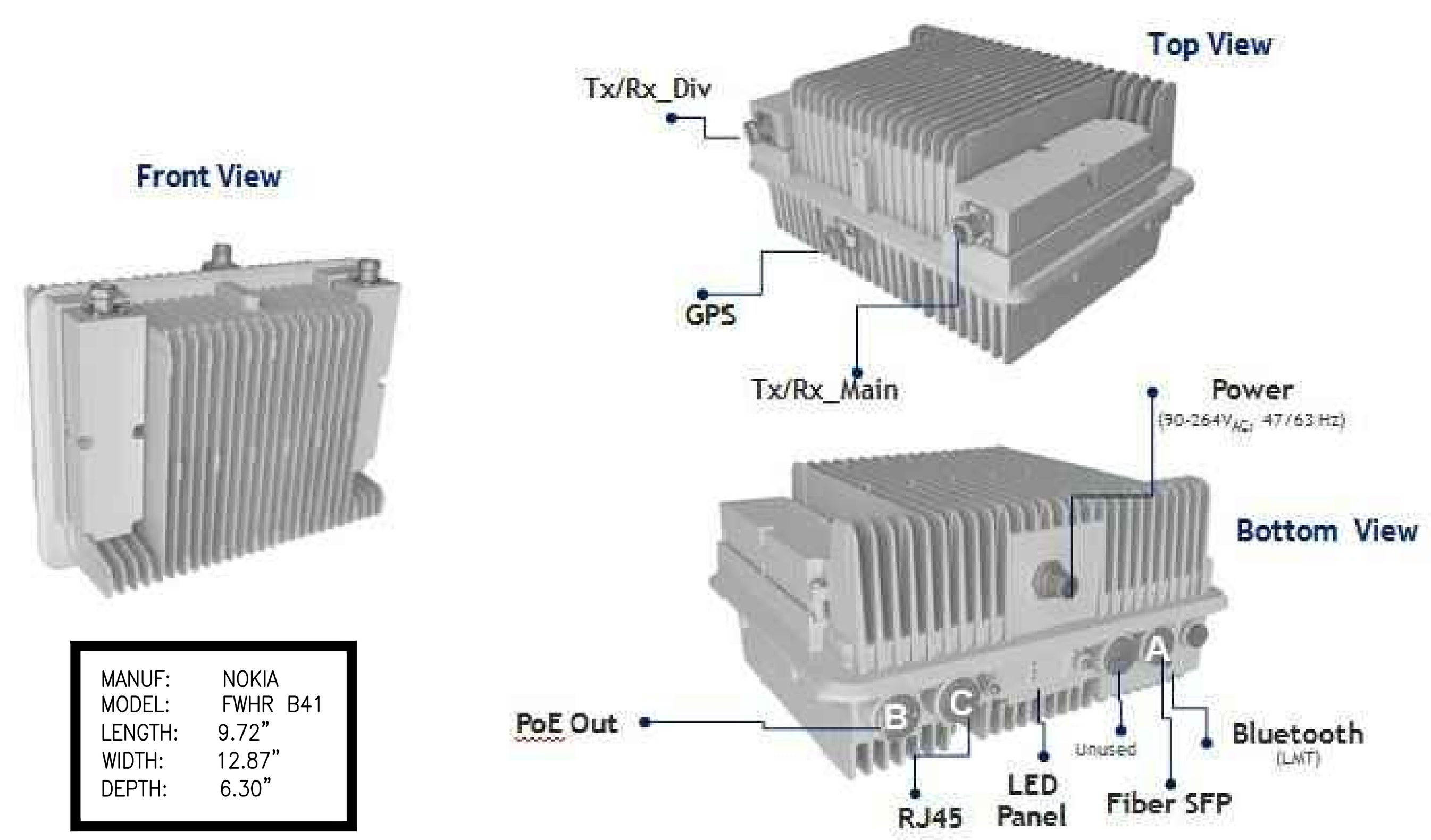
SHEET NUMBER
A-4



1 / A-5 **FD-RRH-2x50-800**
SCALE: N.T.S.



2 / A-5 **FR-RRH-4x40-1900**
SCALE: N.T.S.



MANUF: NOKIA
MODEL: FWHR B41
LENGTH: 9.72"
WIDTH: 12.87"
DEPTH: 6.30"

3 / A-5 **2.5GHz MICRO BTS DETAIL**
SCALE: N.T.S.

MANUF: NEMA
MODEL: 4X PN:BEN-92P
LENGTH: 9.84"
WIDTH: 7.88"
DEPTH: 5.12"
WEIGHT: 1 LB

MANUF: IDEAL
MODEL: 600V, 30A PN:89-610

4 / A-5 **SPLICE BOX AND TERMINAL STRIP**
SCALE: N.T.S.

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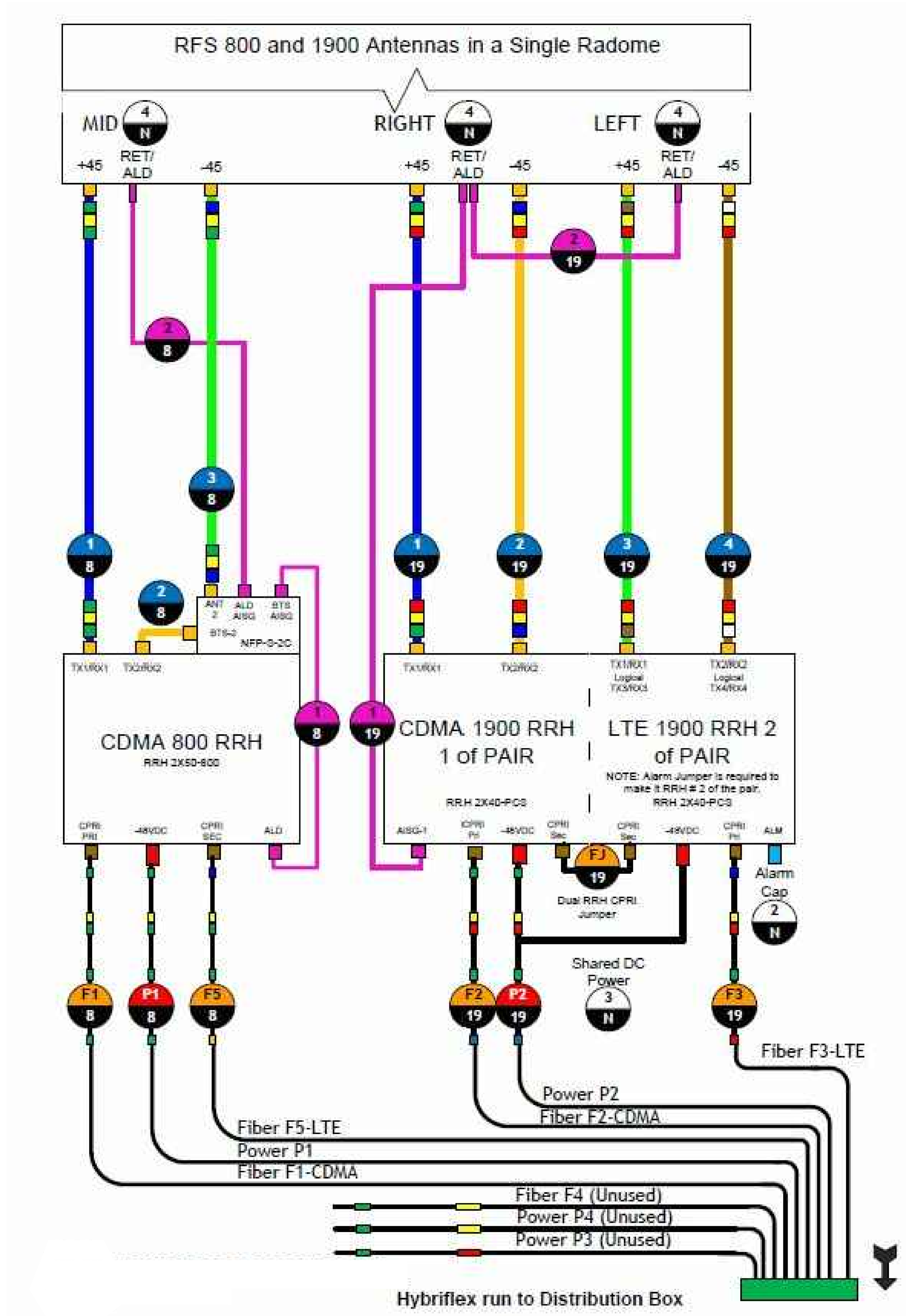
SHEET TITLE
RF DATA SHEET & BILL OF MATERIALS AND EQUIPMENT DETAILS

SHEET NUMBER
A-5



1 / A-6 **TOWER TOP BLOCK DIAGRAM**

SCALE: N.T.S.

Power Feed Polarity Definition:
IF wires are BLACK AND BLACK/ WHITE STRIPE:
- Black= -48VDC Feed (Battery)
- Black/White Stripe= Return

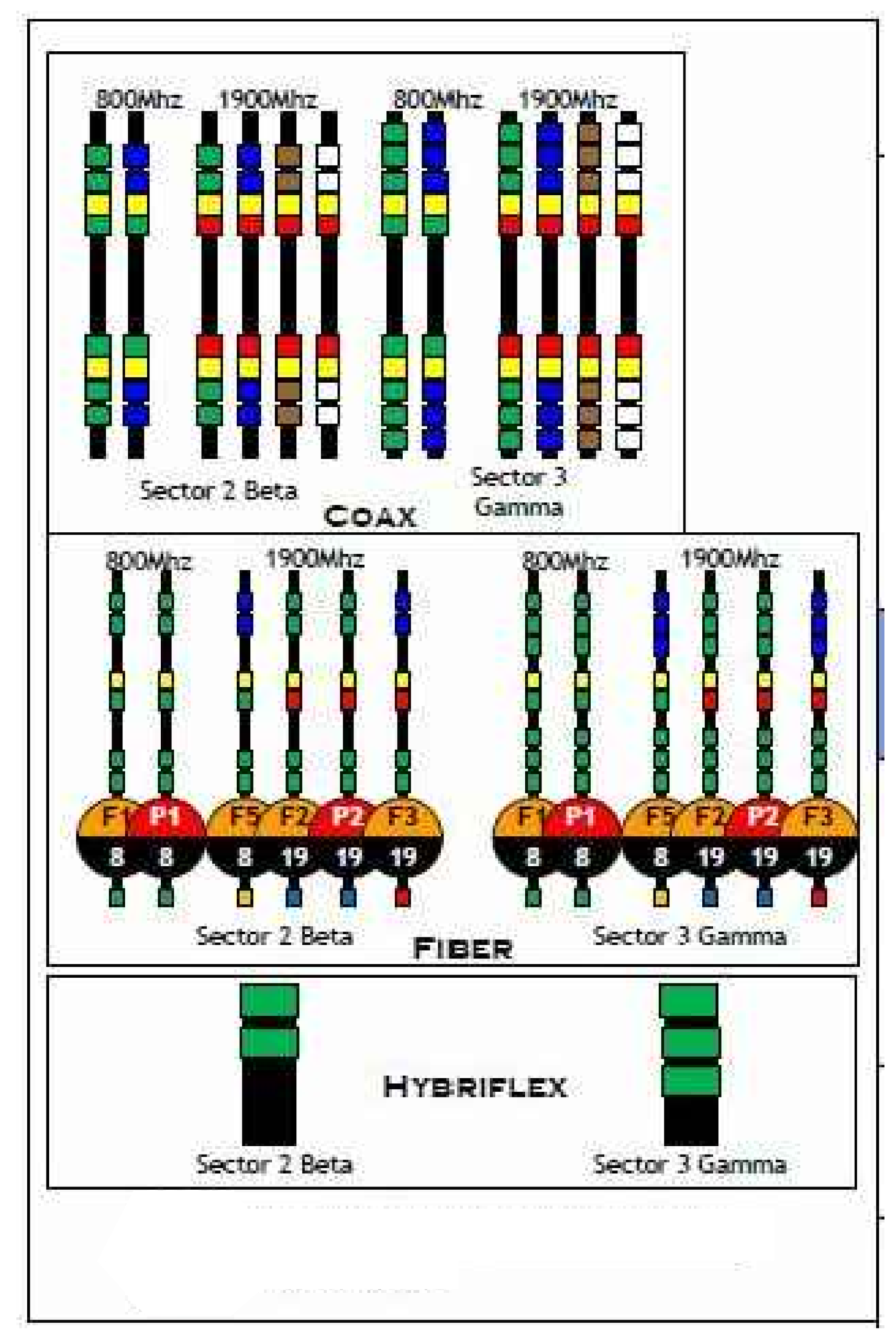
IF wires are RED AND BLACK:
- Red= -48VDC Feed (Battery)
- Black= Return

NOTE: For power feed use the same Hybriflex OEM color designator as the fiber.

- MM Pair 1= F1= Green= P1(Green)
- MM Pair 2= F2= Blue= P2(Blue)
- MM Pair 3= F3= Red= P3(Red)
- MM Pair 4= F4= Yellow= P4(Yellow)
- MM Pair 5= F5= Orange= (No P5 power feed)

2 / A-6 **HYBRIFLEX OEM COLOR CODE**

SCALE: N.T.S.



3 / A-6 **SPRINT COLOR CODE DETAIL**

SCALE: N.T.S.

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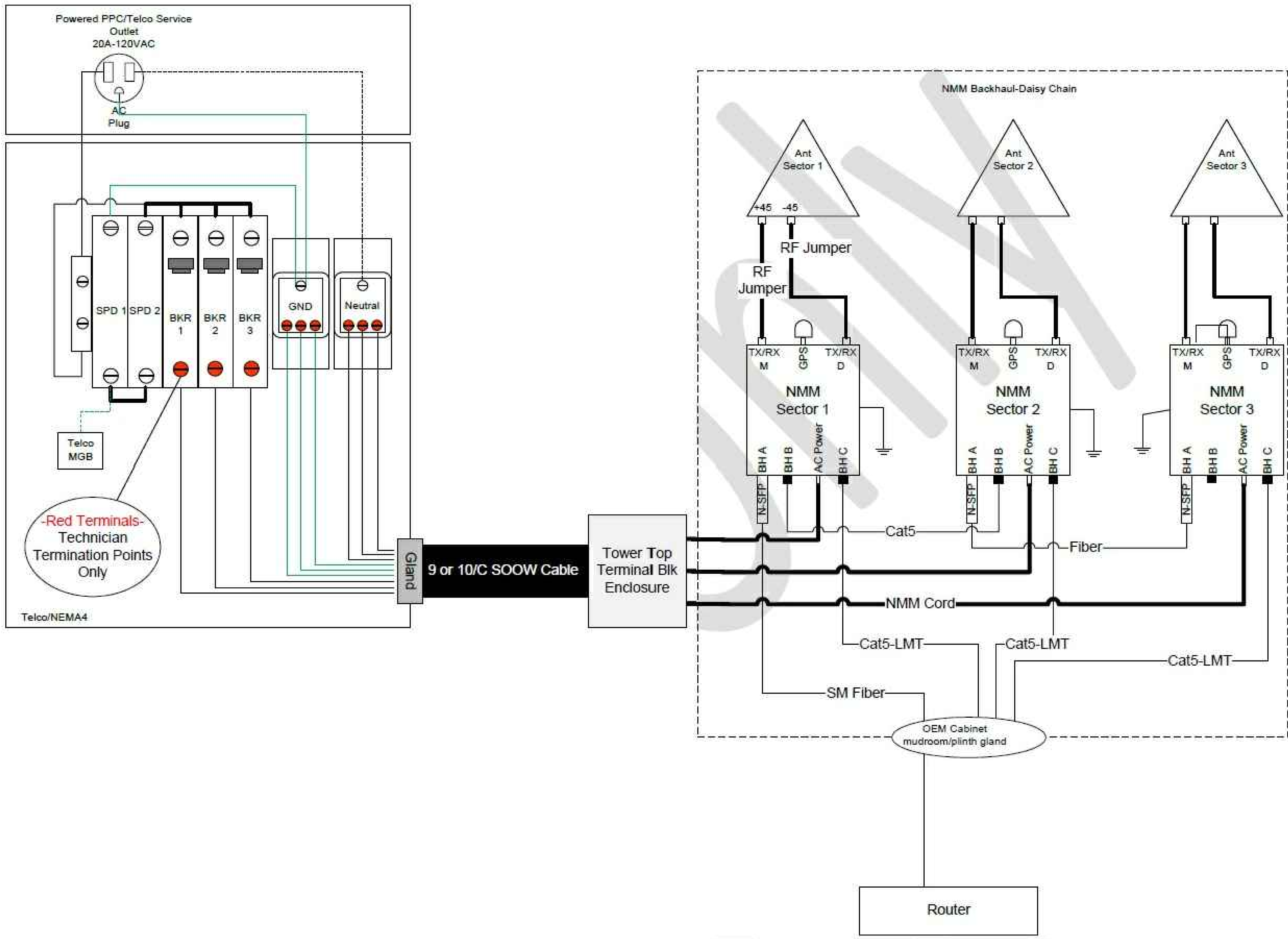
NEW LONDON COUNTY

SHEET TITLE

NV WIRING DIAGRAMS

SHEET NUMBER

A-6



1 / A-7

2500MHz WIRING DIAGRAM

SCALE: N.T.S.

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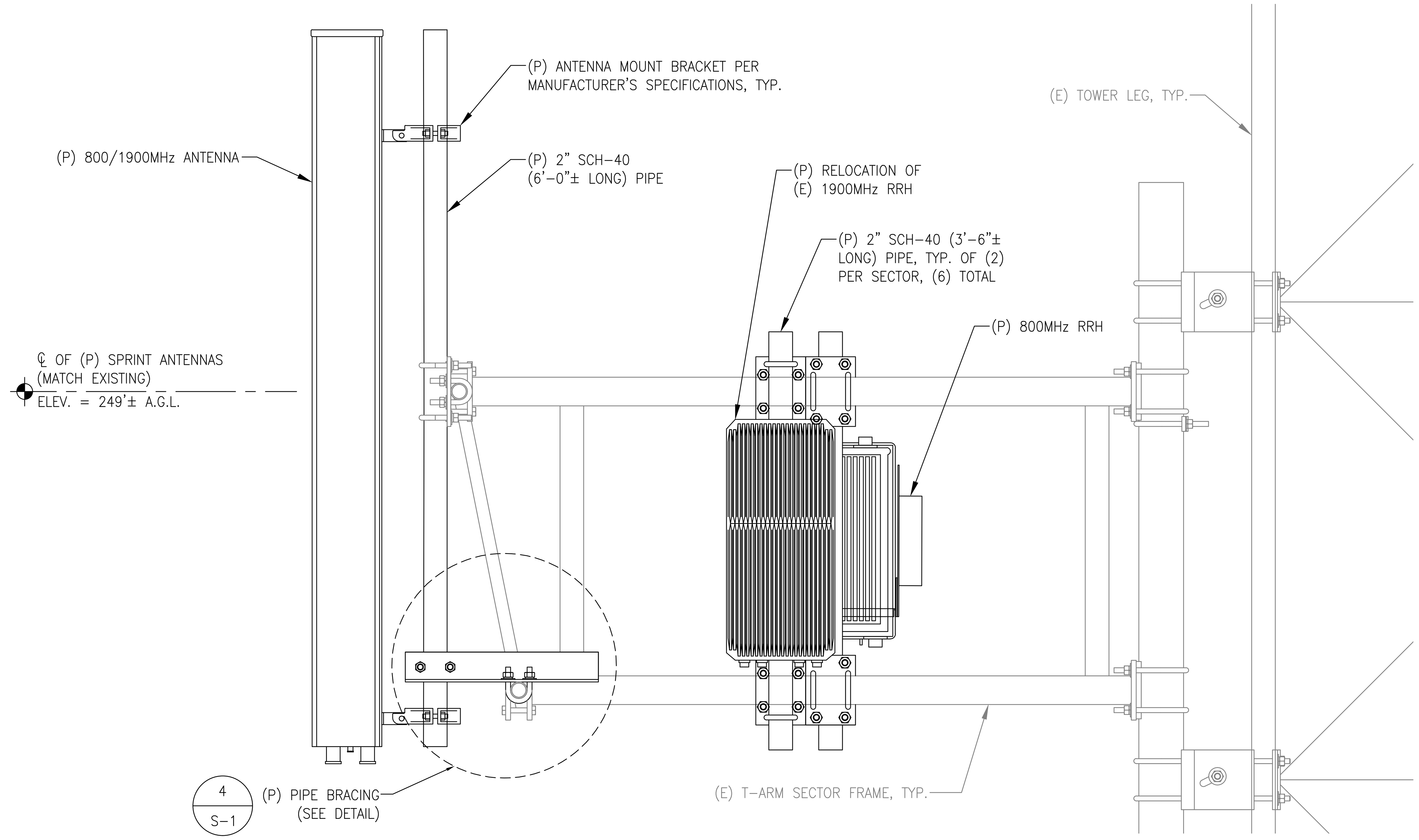
SHEET TITLE

2.5 WIRING DIAGRAM

SHEET NUMBER

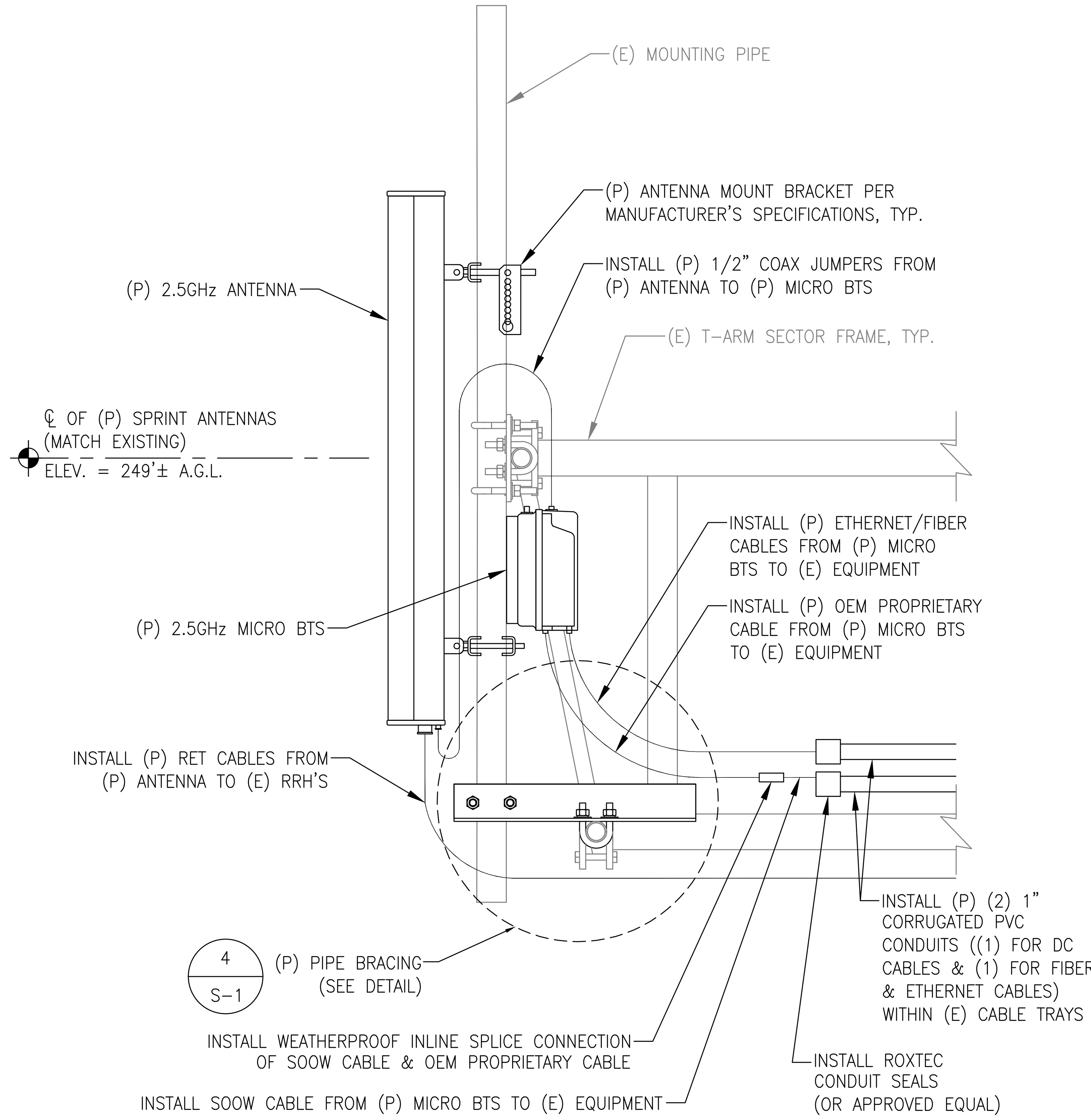
A-7



1 S-1

TYPICAL 800/1900MHz ANTENNA & RRH MOUNTING DETAIL

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



2 S-1

TYPICAL 2.5GHz ANTENNA & MICRO BTS MOUNTING DETAIL

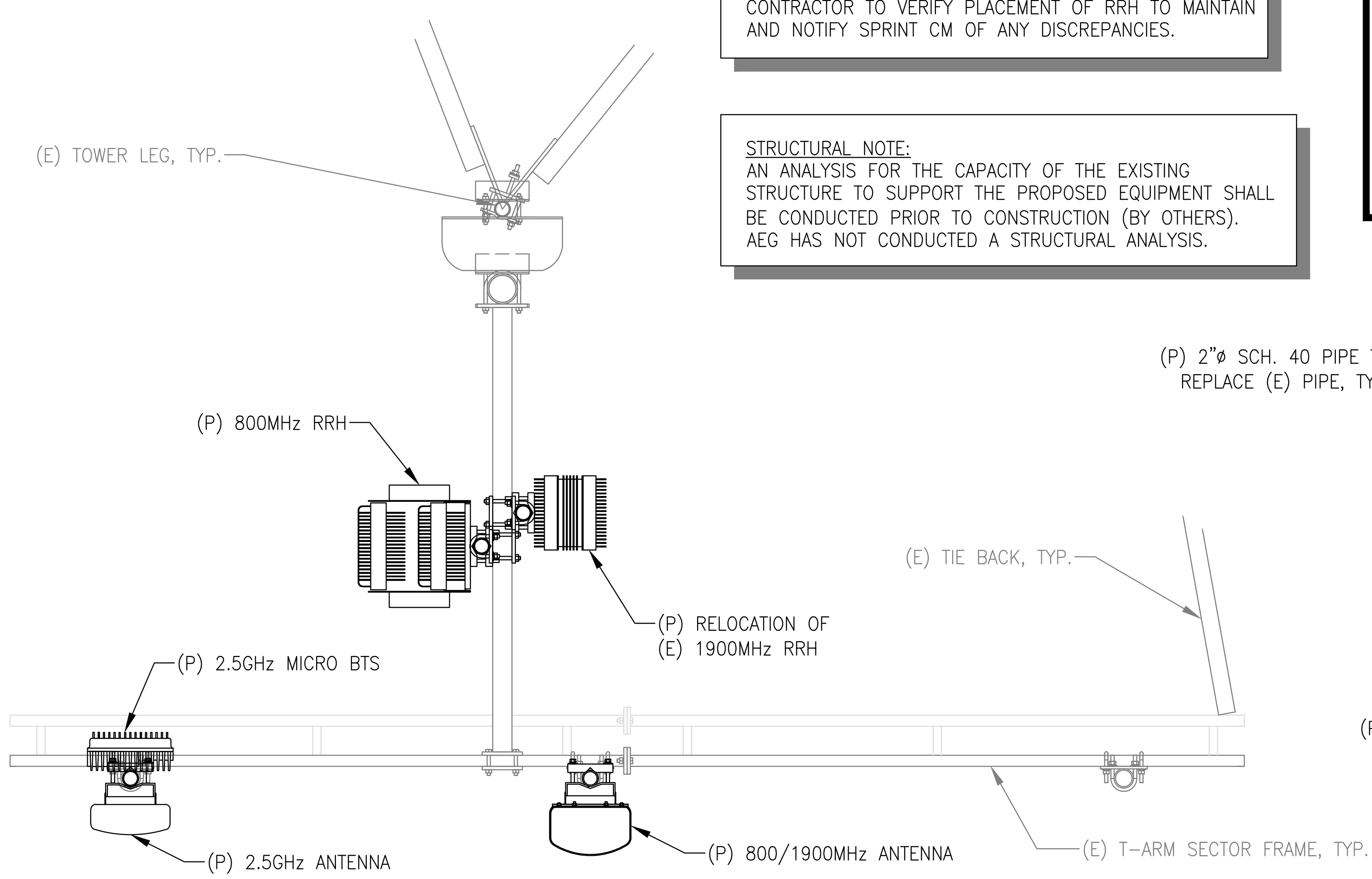
SCALE: 1 1/2"=1'-0"

0 4" 8" 1'-4"

NOTE:
MAXIMUM JUMPER LENGTH FROM PROPOSED RRH TO PROPOSED ANTENNAS IS TO BE 15 FEET OR LESS. CONTRACTOR TO VERIFY PLACEMENT OF RRH TO MAINTAIN AND NOTIFY SPRINT CM OF ANY DISCREPANCIES.

STRUCTURAL NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE CONDUCTED PRIOR TO CONSTRUCTION (BY OTHERS). AEG HAS NOT CONDUCTED A STRUCTURAL ANALYSIS.

SPECIAL CONSTRUCTION NOTE:
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
- COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
- COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
- GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.
- AMERICAN TOWER CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

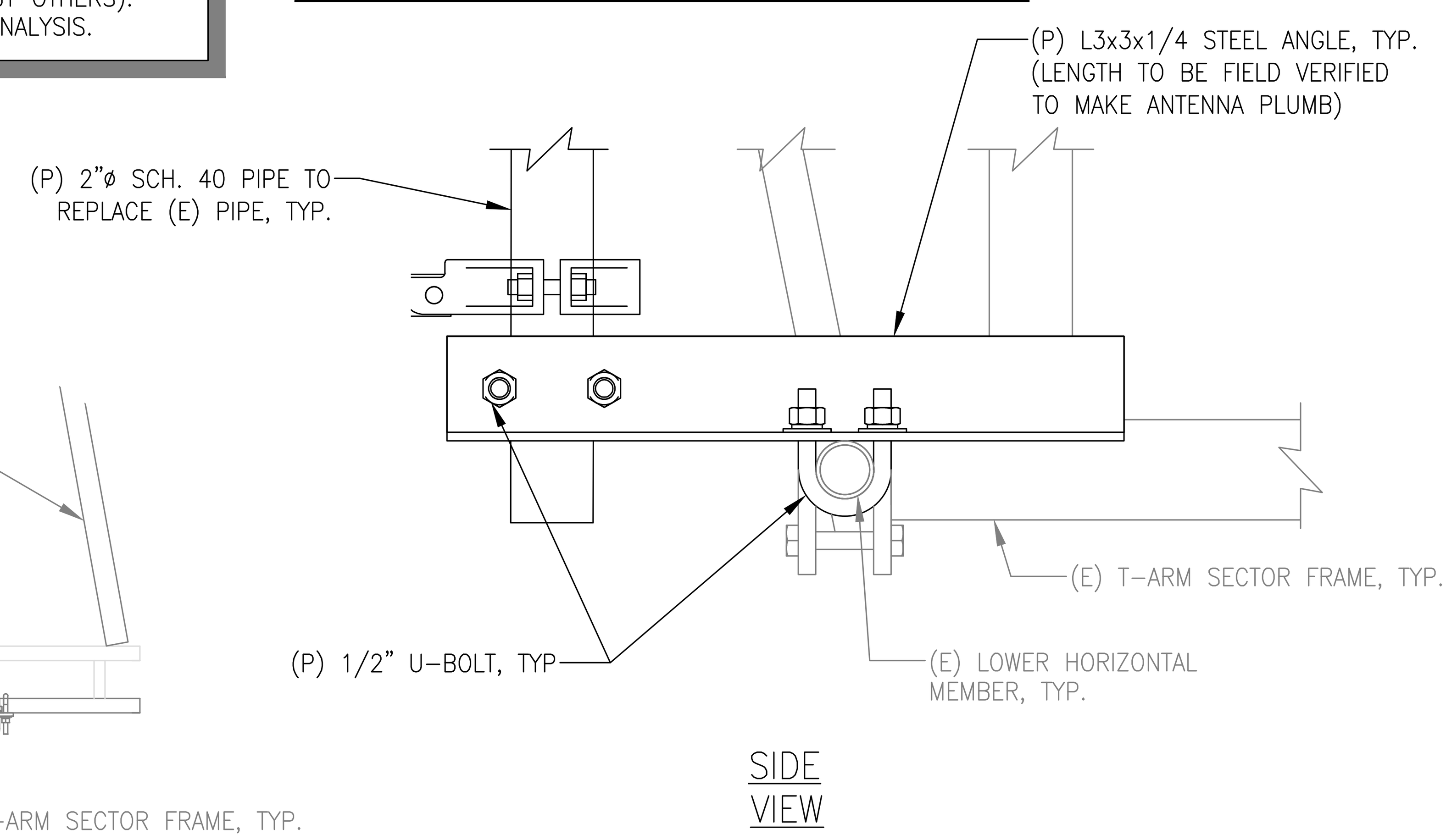


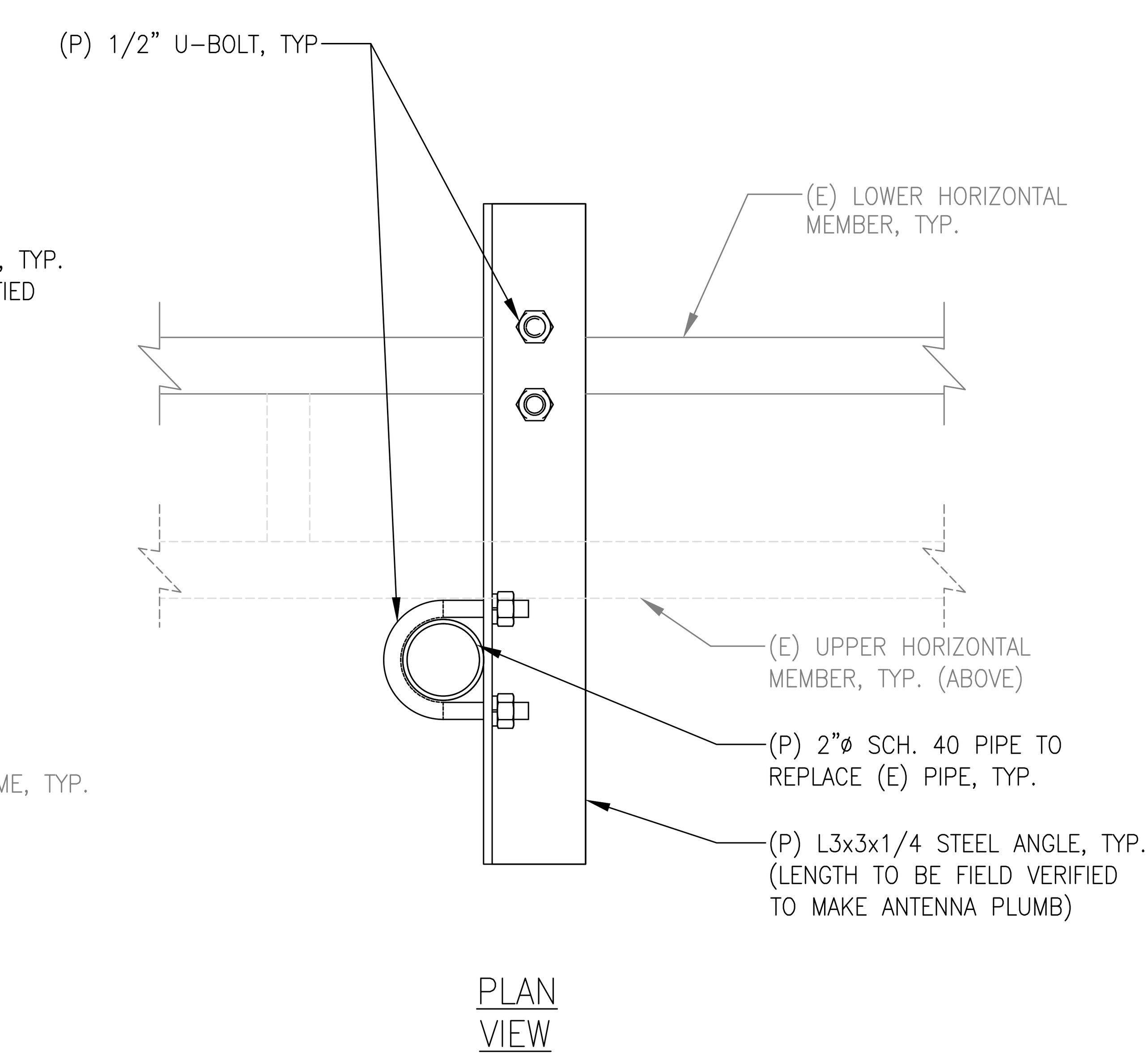
3 S-1

TYPICAL ANTENNA & RRH MOUTNING PLAN DETAIL

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

0 8" 1'-4" 2'-8"





4 S-1

PIPE BRACING DETAILS

SCALE: 3"=1'-0"

0 6" 1'

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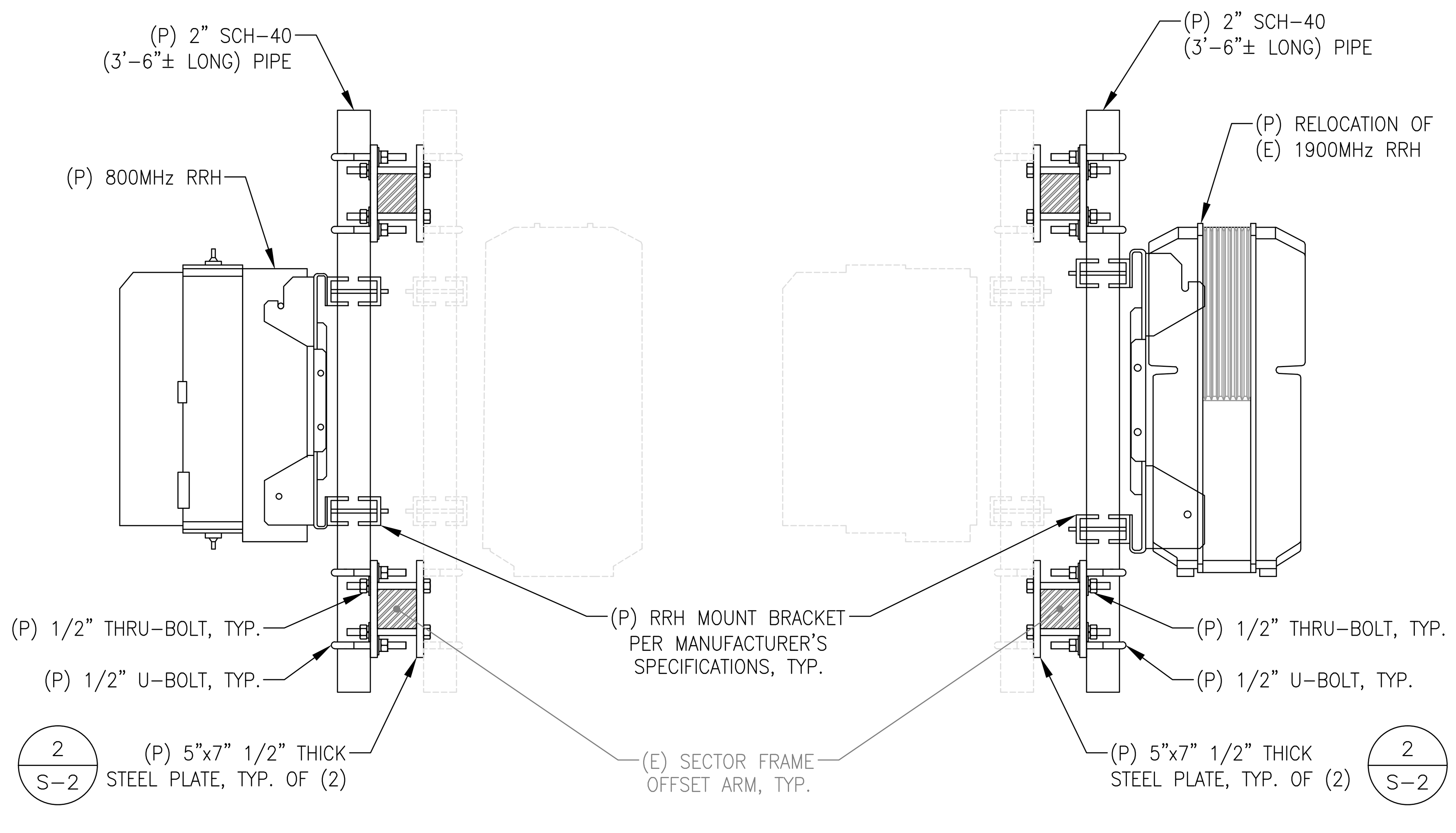
SHEET TITLE

STRUCTURAL DETAILS

SHEET NUMBER

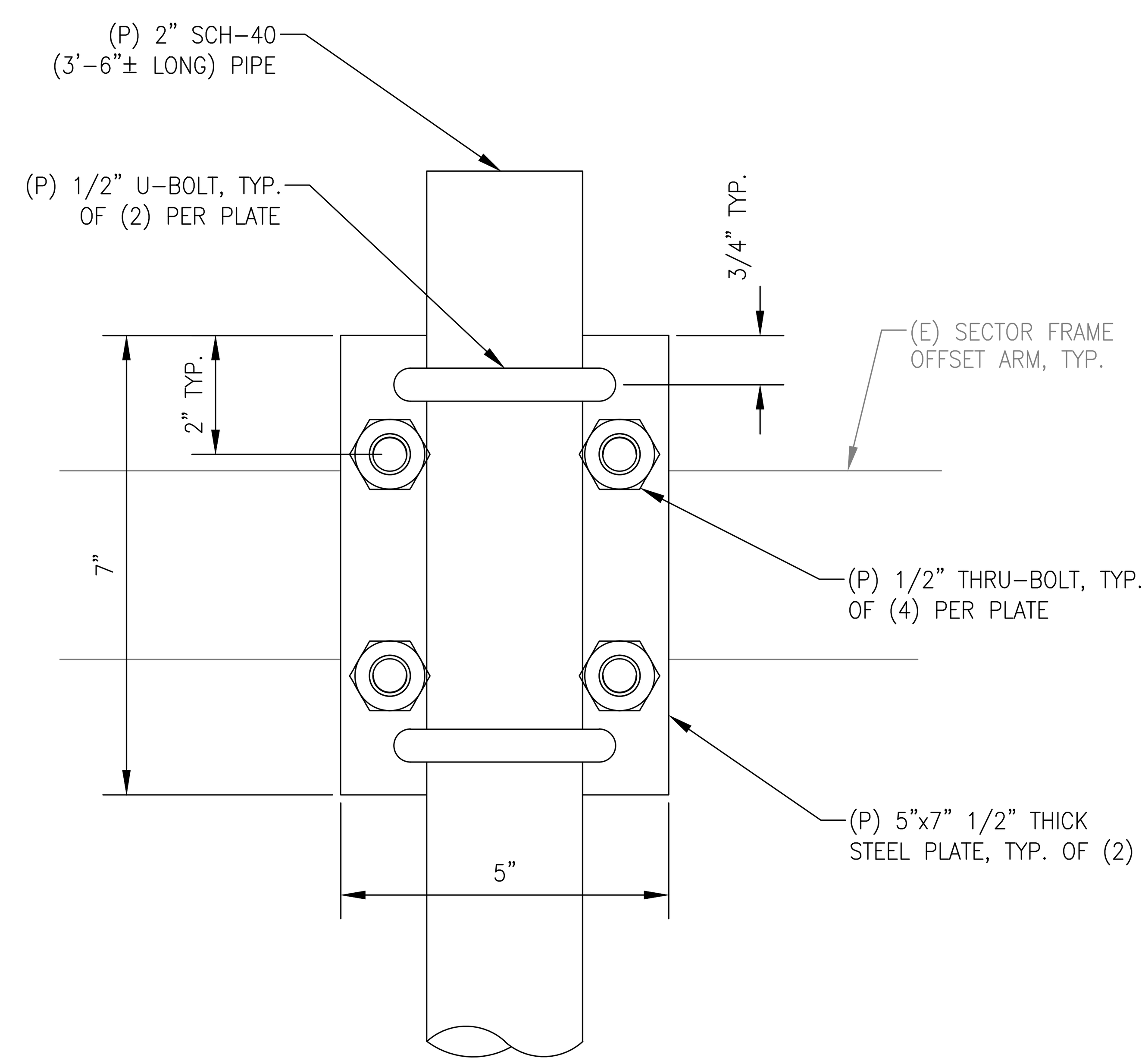
S-1



1 S-2 TYPICAL RRH MOUTNING DETAILS

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

0 4" 8" 1'-4"



2 S-2 PLATE DETAIL

SCALE: 6"=1'-0"

0 1" 2" 4"

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STRUCTURAL DETAILS

SHEET NUMBER

S-2

NOTES TO CONTRACTOR:

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE ENGINEER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS REQUIRED WITH LOCAL AUTHORITY.
3. UTILITY SERVICES SHOWN ARE PROPOSED, THE ELECTRIC CONTRACTOR SHALL COORDINATE EXACT TELEPHONE AND ELECTRIC SERVICE CONNECTION POINTS, ROUTING AND ASSOCIATED REQUIREMENTS WITH LOCAL UTILITY COMPANIES & NEXTEL CONSTRUCTION MANAGER.
4. THE CONTRACTOR SHALL PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED FOR THE WORK.
5. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROUGH–IN.
6. THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
7. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
8. ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH NEC TABLE 346–10. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
9. ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
10. ALL WIRE SHALL BE TYPE THWN, SOLID, ANNEALED COPPER UP TO SIZE #10 AWG (#8 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C, (167 DEGREES F), 98% CONDUCTIVITY, MINIMUM #12.
11. ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES, J–BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY, OR APPROVED EQUAL.
12. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
13. CONDUIT ROUGH–IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
14. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN NOT HAND WRITTEN.
15. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, AND ALL DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.
16. THE CONTRACTOR SHALL PREPARE AS–BUILT DRAWINGS, DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
17. ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL LOCATIONS FED FROM (NO EXCEPTIONS.)
18. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTION MANAGERS APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

   NOTE: ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH–IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT (THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY NOT BE CORRECT AS SHOWN ON THESE DRAWINGS). LOCATION OF OUTLETS, BOXES, ETC. AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH–IN.
19. ALL UNDERGROUND CONDUIT ROUTING SHALL BE COORDINATED IN FIELD BETWEEN NEXTEL WIE, CONTRACTOR, AND RESPECTIVE UTILITY COMPANIES.
20. ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE
21. CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH 6" WIDE. 6 MIL THICK ALUMINIZED PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
22. ELECTRICAL CONTRACTOR SHALL PROVIDE A SECTION OF SEALTITE CONDUIT FOR TELCO CONNECTION TO THE PRIMARY RADIO CABINET. COORDINATE EXACT CONNECTION TYPE WITH LUCENT.
23. ELECTRICAL CONTRACTOR SHALL PROVIDE A SECTION OF SEALTITE CONDUIT FOR POWER CONNECTION TO THE PRIMARY RADIO CABINET. THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL 6'–0" COIL OF WIRE AT THE END OF THE SEALTITE.
24. GROUND IN ACCORD W/LOCAL CODE & SHEET E–2.
25. PROVIDE (2) 4" GALVANIZED RIGID STEEL CONDUIT RISER WITH 1/4" NYLON DRAG LINE INCLUDING 90° GRC SWEEP AT POLE (UP TO 20'–0" AFG.) SECURE TO POLE PER UTILITY COMPANY REQUIREMENTS. PRIMARY CABLES BY UTILITY COMPANY

ELECTRICAL SPECIFICATIONS

SECTION 16010 – GENERAL PROVISIONS

A. REQUIREMENTS: FURNISH ALL LABOR, MATERIALS, SERVICE, EQUIPMENT, AND APPLIANCES REQUIRED TO COMPLETE THE INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS AND CONTRACT DRAWINGS.

B. REQUIREMENTS OF REGULATORY AGENCIES AND STANDARDS: INSTALLATION, MATERIAL, EQUIPMENT AND WORKMANSHIP SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL CODE (NEC) – APPLICABLE STATE ELECTRIC CODES, THE NATIONAL ELECTRICAL SAFETY CODE (NESC), AND THE TERMS AND THE CONDITIONS OF THE AUTHORITIES HAVING LAWFUL JURISDICTION PERTAINING TO THE WORK REQUIRED. ALL MODIFICATIONS REQUIRED BY THESE CODES, RULES, REGULATIONS, AND AUTHORITIES SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL CHARGE TO THE OWNER.

C. UNDERWRITER'S LABORATORIES (UL): ALL MATERIALS, APPLIANCES, EQUIPMENT, OR OR DEVICES SHALL CONFORM TO THE APPLICABLE STANDARDS OF UNDERWRITER'S LABORATORIES, INC. THE LABEL OF, OR LISTING BY. UL, IS REQUIRED.

SECTION 16110 – RACEWAYS, BOXES AND FITTINGS

A. CONDUIT FITTINGS, CONNECTORS AND COUPLINGS, EMT COUPLINGS AND CONNECTORS EITHER STEEL OR MALLEABLE IRON ONLY. "CONCRETE TIGHT" OR "RAIN TIGHT" AND EITHER THE GLAND AND RING COMPRESSION TYPE OR STAINLESS STEEL MULTIPLE POINT LOCKING TYPE. CONNECTORS TO HAVE INSULATED THROATS. EMT FITTINGS USING SET SCREWS OR INDENTATIONS AS A MEANS OF ATTACHMENT ARE NOT PERMITTED.

B. BUSHINGS: INSULATED TYPE, DESIGNED TO PREVENT ABRASION OF WIRES WITHOUT IMPAIRING THE CONTINUITY OF THE CONDUIT GROUNDING SYSTEM, FOR RIGID STEEL CONDUIT, IMC AND RIGID ALUMINUM CONDUIT.

C. CONDUIT INSTALLATIONS: CONDUIT SYSTEMS, EMT, OR RIGID NON–METALLIC CONDUIT UNLESS NOTED. INSTALL CONCEALED CONDUIT AND EMT IN AS DIRECT LINES AS POSSIBLE. INSTALL EXPOSED CONDUITS AND EMT PARALLEL TO OR AT RIGHT ANGLES TO THE LINES OF THE BUILDING. RIGHT ANGLE BENDS IN EXPOSED CONDUIT AND EMT RUNS SHALL BE MADE WITH STANDARD ELBOWS, SCREW JOINTED CONDUIT FITTINGS OR CONDUIT BENT TO RADIUS NO LESS THAN THOSE OF STANDARD ELBOWS.

D. CONDUIT SUPPORTS: PROVIDE SUPPORTS FOR HORIZONTAL CONDUITS AND EMT NOT MORE THAN 8 FEET APART WITH NOT LESS THAN TWO SUPPORTS FOR EACH 10 FOOT STRAIGHT LENGTH AND ONE SUPPORT NEAR EACH ELBOW OR BEND INCLUDING RUNS ABOVE SUSPENDED CEILINGS AND WITHIN 3 FEET OF ALL JUNCTION BOXES, SWITCHES, FITTINGS, ETC. INSTALL ONE HOLE PIPE STRAPS ON CONDUITS 1 INCH OR SMALLER INSTALL INDIVIDUAL PIPE HANGERS FOR CONDUITS LARGER THAN 1 INCH. SPRING STEEL FASTENERS WITH HANGER RODS MAY BE USED IN DRY LOCATIONS IN LIEU OF PIPE STRAPS.

SECTION 16120 – CONDUCTORS

A. WIRES AND CABLES (600 VOLTS): CONFORM TO THE APPLICABLE UL AND ICEA STANDARDS FOR THE USE INTENDED. USE COPPER CONDUCTORS WITH 600 VOLTS INSULATION UNLESS OTHERWISE SPECIFIED OR NOTED ON THE DRAWINGS. USE STRANDED CONDUCTORS FOR NO. 8 OR LARGER WHERE ELSEWHERE SPECIFIED OR NOTED OTHERWISE ON THE DRAWINGS. USE OF ALUMINUM CONDUCTORS WILL NOT BE PERMITTED. INSULATION SHALL BE TYPE THHN/THWN, 75°C, FOR ALL CONDUCTORS, USELESS OTHERWISE SPECIFIED OR NOTED ON THE DRAWINGS.

B. COLOR CODING. PHASE, NEUTRAL, AND GROUND CONDUCTORS COLOR–CODED IN ACCORDANCE WITH NEC. CONNECT ALL CONDUCTORS OF THE SAME COLOR TO THE SAME PHASE CONDUCTOR, COLOR CODING SHALL BE BLACK, RED, BLUE, WHITE (120/208) OR BROWN ORANGE, YELLOW, GRAY (277/480) WITH GREEN FOR ALL GROUND CONDUCTORS.

C. CONNECTORS AND LUGS: FOR COPPER CONDUCTORS NO. 6 AND SMALLER: 3M SCOTCH–LOK OR T & B STA–KON COMPRESSION OR INDENT TYPE CONNECTORS WITH INTEGRAL OR SEPARATE INSULATING CAPS. FOR COPPER CONDUCTORS LARGER THAN NO. 6 SOLDERLESS, INDENT, HEX SCREW OR BOLT TYPE PRESSURE CONNECTORS, PROPERLY TAPED OR INSULATED.

D. SPLICES: (480 VOLTS AND UNDER): ; CONDUCTOR LENGTHS SHALL BE CONTINUOUS FROM TERMINATION TO TERMINATION WITHOUT SPLICES UNLESS APPROVED BY THE BUILDING INSPECTOR.

SECTION 16220 – CIRCUIT BREAKERS

A. PROVIDE MOLDED CASE, BOLT–ON , THERMAL MAGNETIC TRIP, SINGLE, TWO OR THREE POLE BRANCH CIRCUIT BREAKERS AS SHOWN ON DRAWINGS. MULTIPLE POLE BREAKERS SHALL BE SINGLE HANDLE, COMMON TRIP. AIC RATING TO MATCH EXISTING OR AS REQUIRED FOR AVAILABLE FAULT CURRENTS.

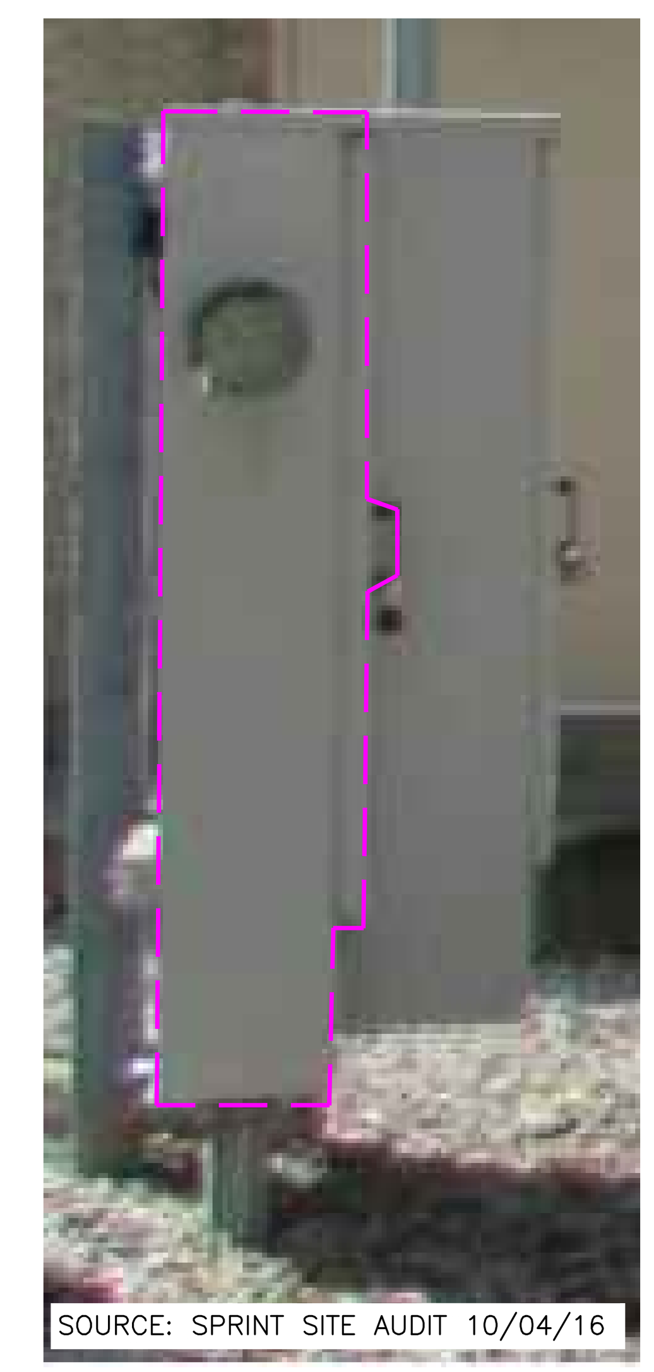
ELECTRICAL LEGEND

SYMBOLS

SYMBOL	DESCRIPTION
—○	CONDUIT TURNING UP
—●	CONDUIT TURNING DOWN
——	CONDUIT RUN UNDERGROUND
——	CONDUIT RUN ABOVE GROUND
(M)	METER ON METER/BREAKER UNIT
—⊗	5/8" x 10'–0" COPPER CLAD GROUND ROD
■	EXOTHERMIC TYPE CONNECTION
●	COMPRESSION TYPE CONNECTION
— G — G —	GROUND RING. #2 AWG SOLID TINNED BARE COPPER GROUND CONDUCTOR 6" BELOW FROST LINE AND 24" OFF CONCRETE PLATFORM
XXX / XXX	REPRESENTS DETAIL NUMBER / REF. DRAWING NUMBER
XXX	DETAIL NUMBER

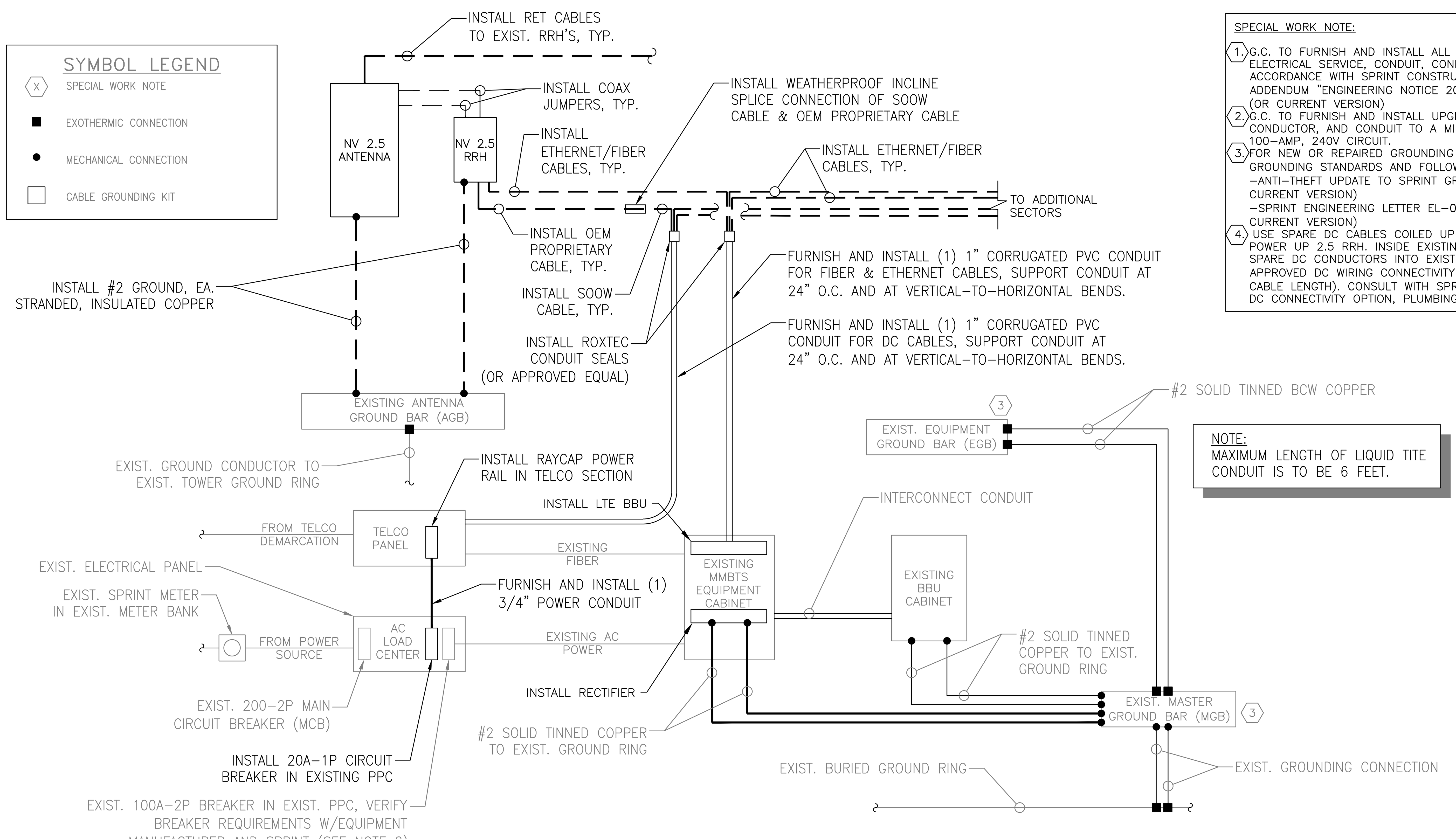
ABBREVIATIONS

ACCA	ANTENNA CABLE COVER ASSEMBLY
AGB	COPPER ANTENNA GROUND BAR
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BTS	BASE TRANSMISSION SYSTEM
CIBGE	COAX ISOLATED GROUND BAR EXTERNAL
DWG	DRAWING
EMT	ELECTRICAL METALLIC TUBING
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GR	GROWTH
IGR	INTERIOR GROUND RING (HALO)
LAGB	LOWER ANTENNA COPPER GROUND BAR
MIGB	MASTER ISOLATED GROUND BAR
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
PRC	PRIMARY RADIO CABINET
RGS	RIGID GALVANIZED STEEL
RWY	RACEWAY
TYP	TYPICAL
SSLP	NEXTEL SPECTRUM LIMITED PARTNERSHIP
UAGB	UPPER ANTENNA COPPER GROUND BAR
EXIST.	EXISTING
(P)	PROPOSED

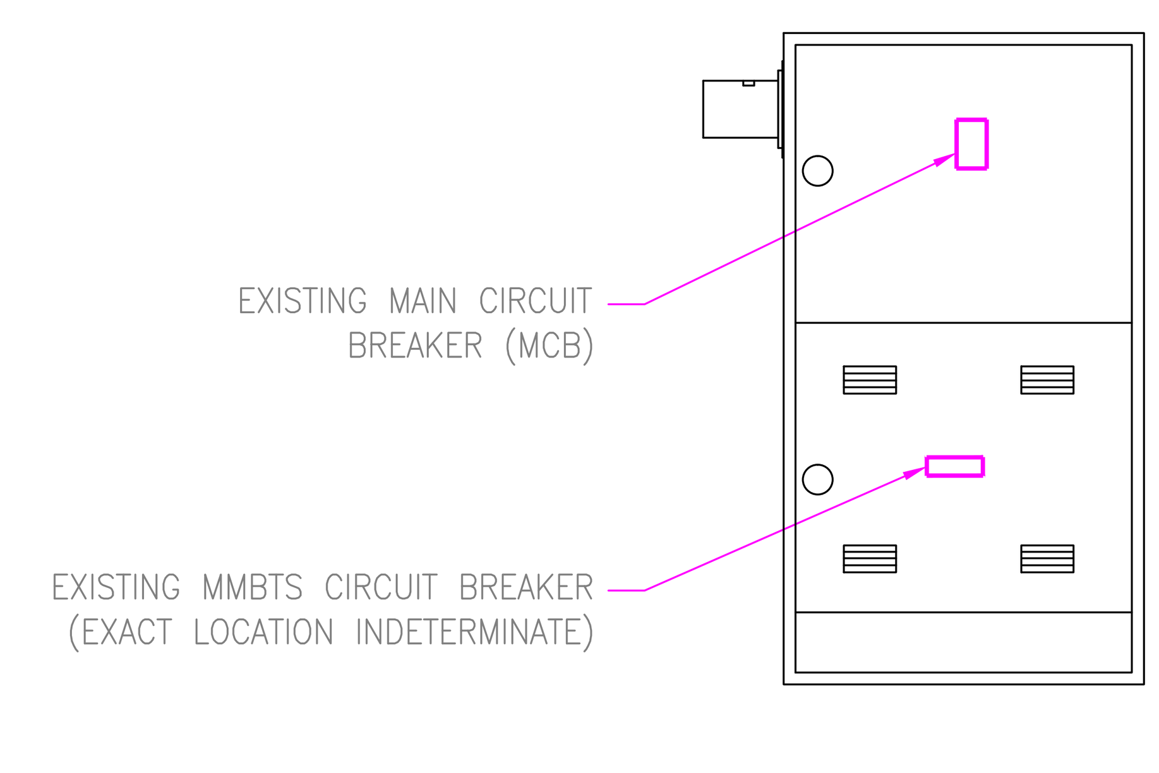


SPECIAL WORK NOTE:

1. G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013–002 (POWER UPGRADES) REV.0" (OR CURRENT VERSION)
2. G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMBTS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING FOR A 100–AMP, 240V CIRCUIT.
3. FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
   –ANTI–THEFT UPDATE TO SPRINT GROUNDING DATED 08–24–12 (OR CURRENT VERSION)
   –SPRINT ENGINEERING LETTER EL–0504 DATED 04–20–12 (OR CURRENT VERSION)
4. USE SPARE DC CABLES COILED UP AT TOWER TOP NV ARRAY TO POWER UP 2.5 RRH. INSIDE EXISTING FIBER DISTRIBUTION BOX, TIE SPARE DC CONDUCTORS INTO EXISTING DC BREAKER PANEL PER APPROVED DC WIRING CONNECTIVITY OPTION (BASED ON NV HYBRIFLEX CABLE LENGTH). CONSULT WITH SPRINT CM TO DETERMINE APPROPRIATE DC CONNECTIVITY OPTION, PLUMBING DIAGRAM AND DC BREAKER SIZE.



1 / E–1 TYPICAL POWER & GROUNDING ONE-LINE
SCALE: N.T.S.



2 / E–1 EXISTING PPC BREAKER PANEL
SCALE: N.T.S.

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AEG PROJECT #: 2016–0617

DRAWN BY: AAB

CHECKED BY: MRC

SUBMITTALS

REV#	DATE	DESCRIPTION
0	11/07/16	ISSUED FOR REVIEW
1	11/16/16	REVISION

CT03XC151

NORTH STONINGTON CT

118C WINTECHOG HILL ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

SHEET TITLE

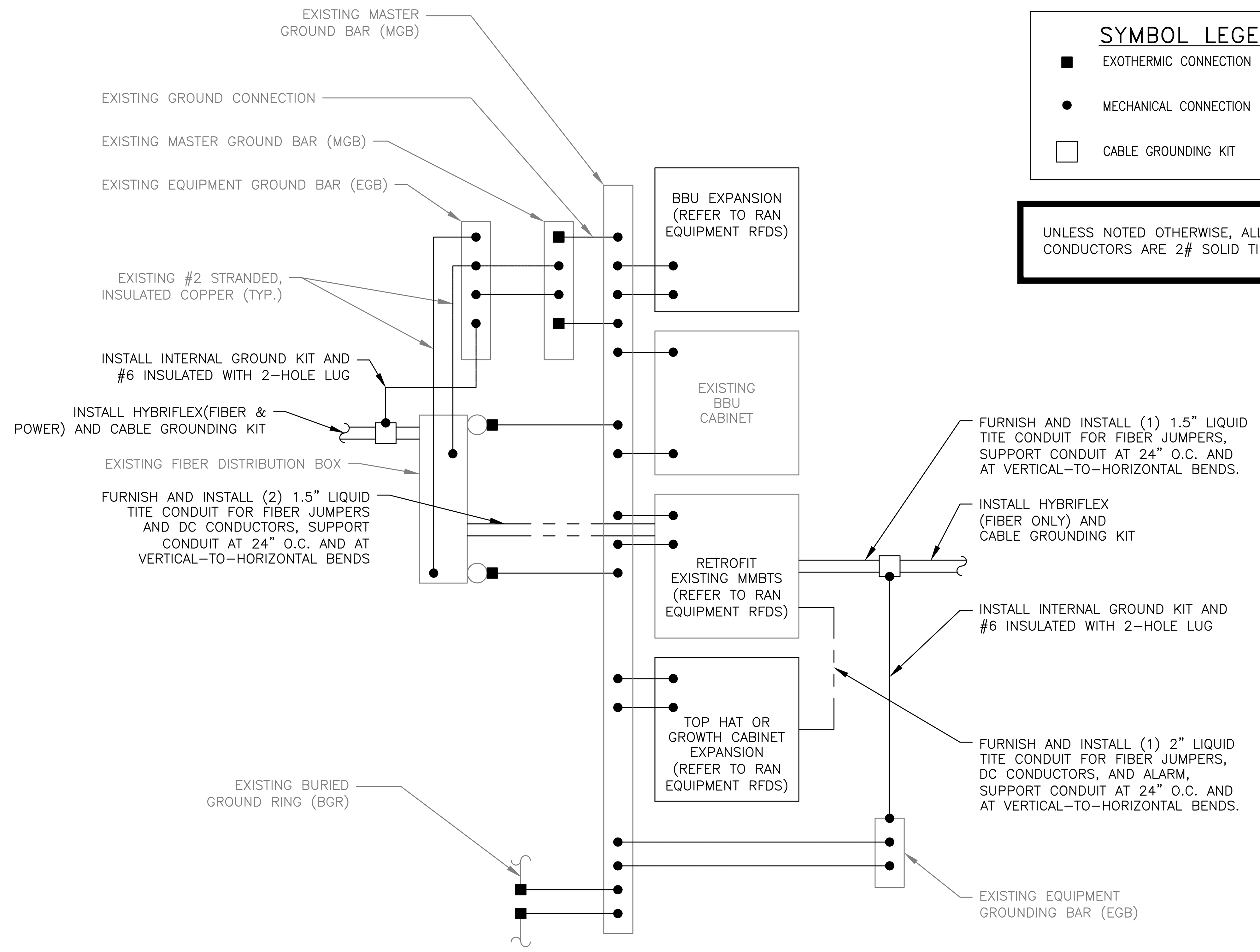
ONE LINE DIAGRAM & DETAILS

SHEET NUMBER

E-1

PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250–GROUNDING AND BONDING.
2. GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT SSEO DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES" AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING".
3. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
4. GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING, APPLY A NON–CORROSIVE APPROVED COMPOUND TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX" OR EQUAL.
5. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
6. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
7. ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
8. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
9. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
10. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
11. GROUND HYBRIFLEX SHIELD AT TOP, BOTTOM AND AT TRANSITION TO HYBRIFLEX JUMPER CABLES AT EQUIPMENT CABINET ENTRANCE USING MANUFACTURER'S GUIDELINES. WHEN HYBRIFLEX CABLE EXCEEDS 200', GROUND AT INTERVALS NOT EXCEEDING 100'.
12. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
13. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE. THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE–2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH AN ANTI–OXIDANT (THOMAS BETTS KOPR–SHILD) BEFORE MAKING THE CRIMP CONNECTIONS THE CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED TORQUES ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS.
14. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF–TAPPING SCREWS.
15. THE MASTER GROUND BAR (MGB) SHALL BE MADE OF BARE 1/4"x2" COPPER (FOR OUTDOOR APPLICATIONS IT SHALL BE TINNED COPPER) AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICAL INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
16. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
17. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI–CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH SPRINT CONSTRUCTION MANAGER.
18. FOR NEW OR REPAIRED GROUNDING EQUIPMENT. REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
–ANTI–THEFT UPDATE TO SPRINT GROUNDING DATED 08–24–12
–SPRINT ENGINEERING LETTER EL–0504 DATED 04–20–12



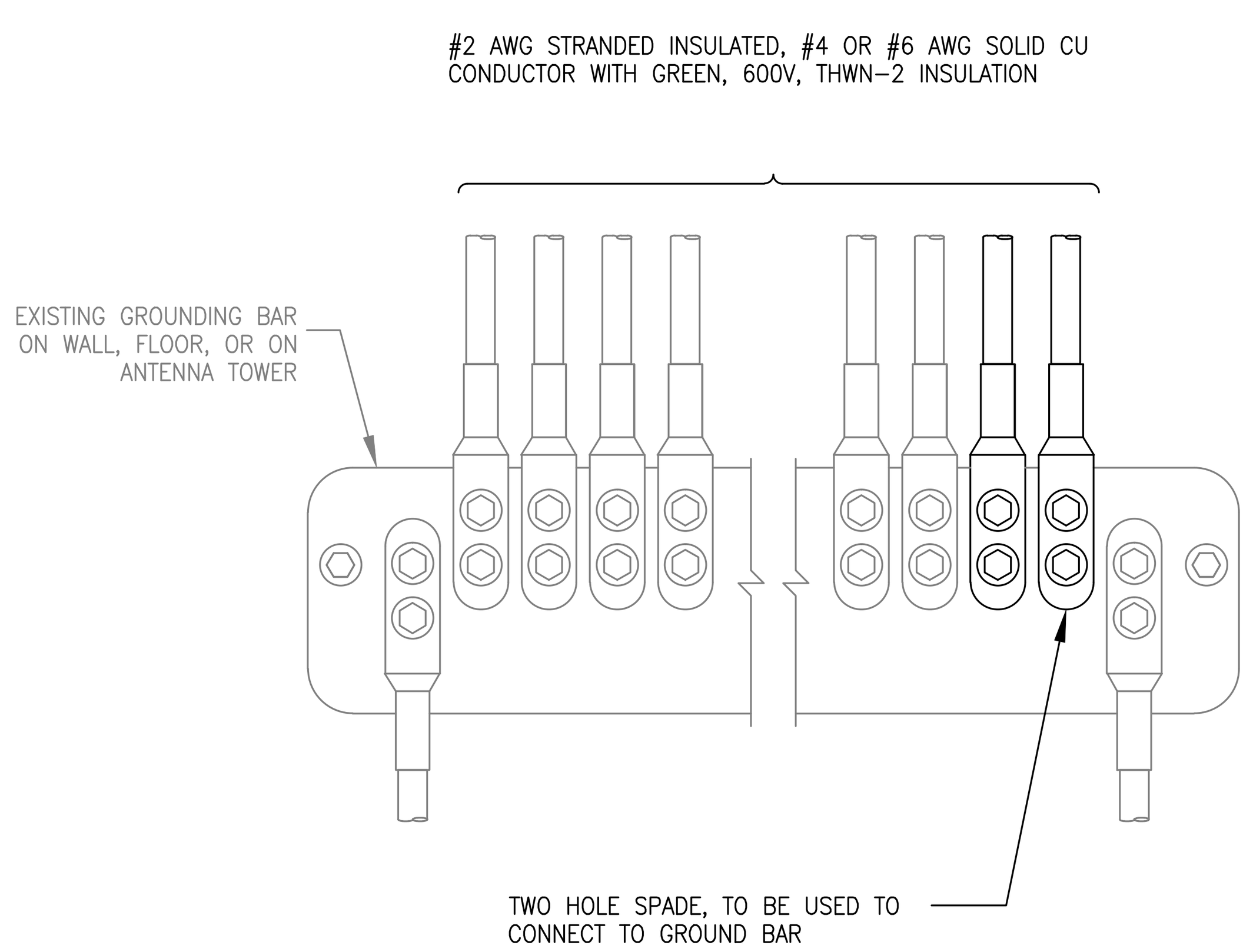
SYMBOL LEGEND

- ■ EXOTHERMIC CONNECTION
- ● MECHANICAL CONNECTION
- □ CABLE GROUNDING KIT

UNLESS NOTED OTHERWISE, ALL BONDING CONDUCTORS ARE 2# SOLID TINNED BCW.

NOTE: HYBRIFLEX (FIBER & POWER) AND HYBRIFLEX (FIBER–ONLY) SHOWN. REFER TO RAN EQUIPMENT RFDS FOR SITE–SPECIFIC SCENARIO.

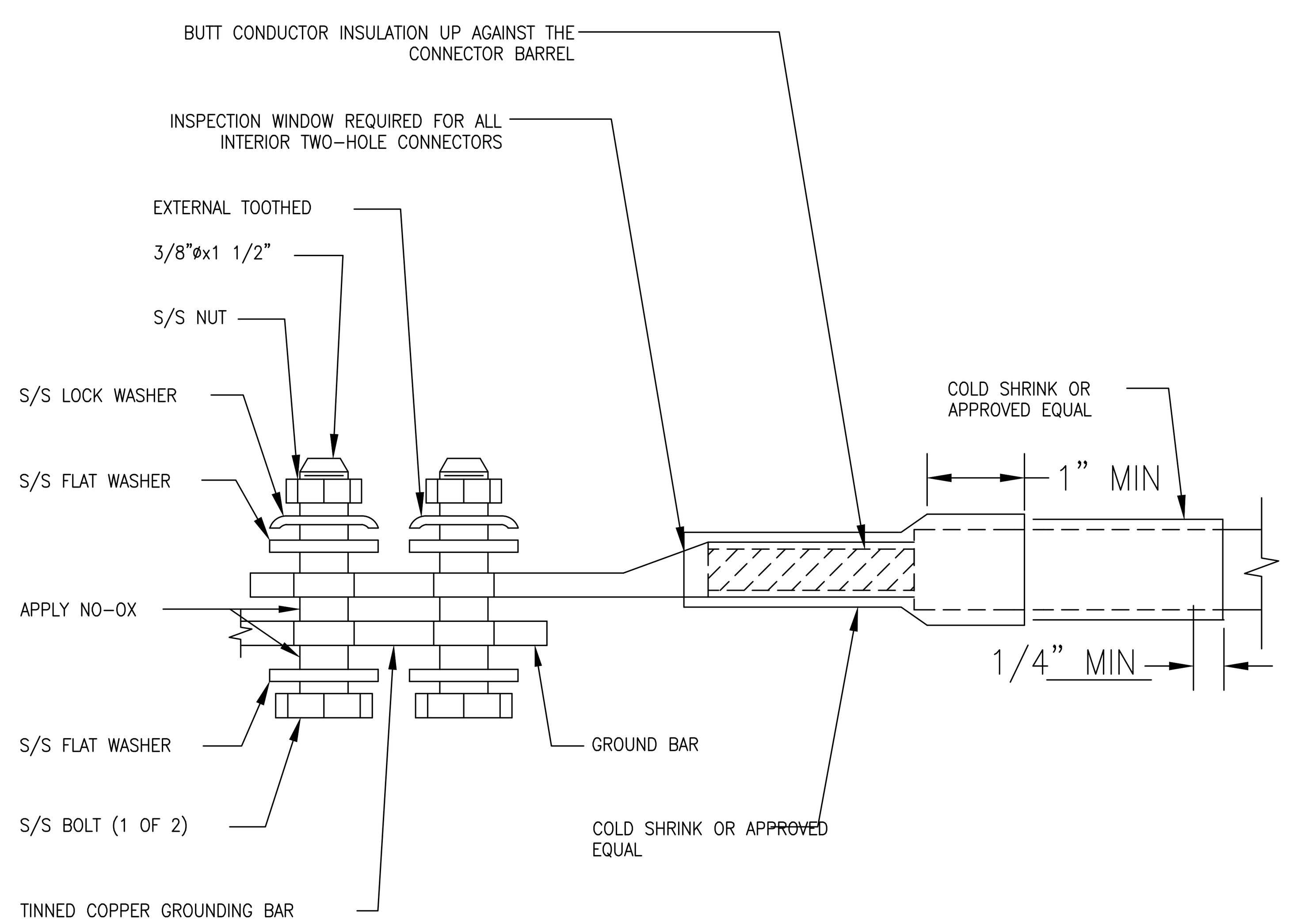
1 / E–2 — **2.5GHz RAN EQUIPMENT GROUNDING SCHEMATIC**
SCALE: N.T.S.



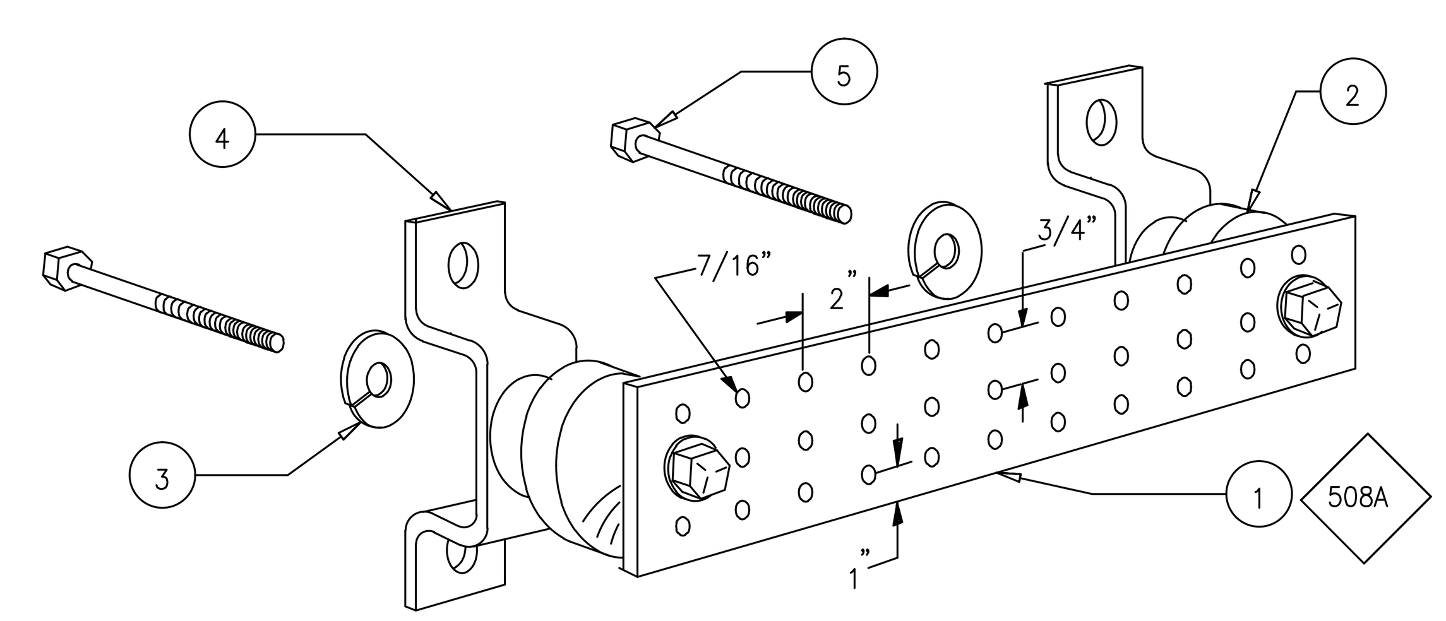
NOTES

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.

2 / E–2 — **INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR**
SCALE: N.T.S.



3 / E–2 — **TWO HOLE LUG**
SCALE: N.T.S.



LEGEND

1– TINNED COPPER GROUND BAR, ¼"x4"X 20", NEWTON INSTRUMENT CO. CAT. NO. B–6142. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2– INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4
3– 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015–8
4– WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056
5– 5/8–11 X 1" H.H.C.S.BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012–1

4 / E–2 — **GROUND BAR**
SCALE: N.T.S.

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