Filed by:
Kri Pelletier, Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3804 - kpelletier@sbasite.com

July 12, 2018

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

Notice of Exempt Modification
131 Bishop Crossing, Griswold CT
Sprint Site #: CT23XC405_DO Macro Upgrade
N 41 37 24.07
W -71 56 32.07

Dear Ms. Bachman:

Sprint currently maintains antennas at the 117-foot level of the existing 146-foot Monopole Tower at 131 Bishop Crossing in Griswold, CT. The tower is owned by SBA Towers, LLC. The property is owned by the Harvey Polinsky. Sprint now intends to replace (6) existing cell antennas with (6) newer technology cell antennas at the 117-foot level of the tower. The proposed full scope of work is as follows:

Remove: N/A

Remove and Replace:

- Remove:
  - (6) KMW - ETCR-654L12H6 – Panel Antennas
- Replace with:
  - (3) Commscope NNVV-65B-R4 - Panel Antennas
  - (3) RFS APXVTM14-C-I20 – Panel Antennas

Install:

- (3) ALU 1900 MHz RRUs (shown as previously run as well as proposed on Structural Analysis, but being added per drawings)
- (6) ALU 800 MHz RRUS (shown as previously run as well as proposed on Structural Analysis, but being added per drawings)
- (3) ALU TD RRH8x20-25 RRU (shown as previously run as well as proposed on Structural Analysis, but being added per drawings)
- (3) modified T-arms:
  - (1) SitePro PRK 1245L
  - (1) Sitepro PRK-SFS-H-L
  - (3) 8.5' horizontal rail
  - (3) 9' long corner braces
  - (12) sitepro SCXx-K

Existing Equipment to Remain (Including entitlements):

- (4) 1-1/4" Fiber

This facility was approved prior to the Council's jurisdiction, on April 13, 1998 by the Griswold Planning & Zoning Commission under Zoning Permit 9-98. A monopole tower was approved at a height of 150' with the condition that the tower be available for collocation and use by more than one licensed carrier. This modification complies with all known conditions.

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 the Town of Griswold's First Selectman, Town Planner, Mario J. Tristany, Jr. and to the property owner, Harvey Polinsky. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification 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 modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
203.446.7700 + C
kpelletier@sbasite.com
Attachments
cc: Kevin Skulczyck, First Selectman / with attachments
Town of Griswold, Griswold Town Hall, 28 Main Street, Jewett City, CT 06351
Mario J. Tristany, Jr., Town Planner / with attachments
Town of Griswold, Griswold Town Hall, 28 Main Street, Jewett City, CT 06351
Harvey Polinsky / with attachments
129 Bishop Crossing Road Jewett City CT 06351

POWER DENSITY

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**117 feet**	Height (AGL):	**117 feet**	Height (AGL):	**117 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**2.65 %**	Antenna B1 MPE%	**2.65 %**	Antenna C1 MPE%	**2.65 %**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**117 feet**	Height (AGL):	**117 feet**	Height (AGL):	**117 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.82 %**	Antenna B2 MPE%	**1.82 %**	Antenna C2 MPE%	**1.82 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**4.47 %**
AT&T	1.53 %
MetroPCS	0.26 %
Nextel	0.69 %
Verizon Wireless	1.60 %
Site Total MPE %:	**8.55 %**

SPRINT Sector A Total:	4.47 %
SPRINT Sector B Total:	4.47 %
SPRINT Sector C Total:	4.47 %
Site Total:	8.55 %

SPRINT _ Frequency Band / Technology Max Power 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	1	376.73	117	1.10	850 MHz	567	0.18%
Sprint 850 MHz LTE	2	941.82	117	5.50	850 MHz	567	0.97%
Sprint 1900 MHz (PCS) CDMA	5	511.82	117	7.47	1900 MHz (PCS)	1000	0.75%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	117	7.47	1900 MHz (PCS)	1000	0.75%
Sprint 2500 MHz (BRS) LTE	8	778.09	117	18.16	2500 MHz (BRS)	1000	1.82%
						Total:	**4.47%**

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Owner and Parcel Information			
Owner Name	POLINSKY HARVEY	**Today's Date**	May 7, 2018
Mailing Address	129 BISHOP CROSSING RD	**Parcel ID**	10800 (Account #: P0329501)
	GRISWOLD, CT 06351	**Subdivison**	TOWER COMPOUND
Location Address	131 BISHOP CROSSING RD	**Census Tract**	7091
Map / Block / Lot	20 / 54 / 35A	**Acreage**	0.18
Use Class / Description	4310 TEL REL TW	**Parcel Map**	
Assessing Neighborhood	0050A	**Utilities**	

Current Appraised Value Information

Building Value	XF Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
$ 0	$ 0	$ 96,600	$ 156,500		$ 253,100	$ 253,100	$ 177,170

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
Current	0	$ 67,620	$ 109,550	$ 177,170
2016	0	$ 67,620	$ 109,550	$ 177,170
2015	0	$ 67,620	$ 105,000	$ 172,620

Land Information

Use	Class	Zoning	Area	Value
TEL REL TW	I	R60	7744 SF	$ 156,500

Building Information

No Building Information available for this parcel.

Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
CELL TOWER		151 HEIGHT	1998	$ 68,000
CELL EQUIP SHELTER		240 S.F.	2007	$ 18,000
CELL EQUIP SHELTER		200 S.F.	2000	$ 10,000
CONC PAD/CELL SITES		96 S.F.	1999	$ 100
CONC PAD/CELL SITES		384 S.F.	2000	$ 500

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
01/13/1999						POLINSKY HARVEY

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
139-13	02/28/2013	AD	2 ANT/6 REMOTE RADIO	$ 25,000		100	07/23/2013	
374-07	05/23/2007	AD	POWERHOUSE	$ 52,750		100	04/02/2008	240-08 CC
291-07	04/05/2007	AD	ANTENNA	$ 50,000		100	04/02/2008	239-08 CC
518-01	06/26/2002		ANTENNA	$ 30,000		100	08/08/2002	22-03 CO
136-00	12/19/2000	AD	POWERHOUSE			100	10/01/2001	192-01 CO
123-98	07/15/1998		POWER HOUSE		12/09/1998	100	12/09/1998	79-98
260-97	05/13/1998		150' TOWER		12/09/1998	100	12/09/1998	79-98

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EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT23XC405

Griswold - Bishop Crossing
131 Bishop Crossing
Griswold, CT 06351

June 28, 2018

EBI Project Number: 6218004710

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	8.55 %

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

EBI Consulting
environmental | engineering | due diligence

June 28, 2018

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

Emissions Analysis for Site: **CT23XC405 – Griswold - Bishop Crossing**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **131 Bishop Crossing, Griswold, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **131 Bishop Crossing, Griswold, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

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

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

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

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

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

8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **117 feet** above ground level (AGL) for **Sector A**, **117 feet** above ground level (AGL) for **Sector B** and **117 feet** above ground level (AGL) for Sector C.

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

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**117 feet**	Height (AGL):	**117 feet**	Height (AGL):	**117 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**2.65 %**	Antenna B1 MPE%	**2.65 %**	Antenna C1 MPE%	**2.65 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**117 feet**	Height (AGL):	**117 feet**	Height (AGL):	**117 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.82 %**	Antenna B2 MPE%	**1.82 %**	Antenna C2 MPE%	**1.82 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**4.47 %**
AT&T	1.53 %
MetroPCS	0.26 %
Nextel	0.69 %
Verizon Wireless	1.60 %
Site Total MPE %:	**8.55 %**

SPRINT Sector A Total:	4.47 %
SPRINT Sector B Total:	4.47 %
SPRINT Sector C Total:	4.47 %
Site Total:	8.55 %

SPRINT _ Frequency Band / Technology Max Power 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	1	376.73	117	1.10	850 MHz	567	0.18%
Sprint 850 MHz LTE	2	941.82	117	5.50	850 MHz	567	0.97%
Sprint 1900 MHz (PCS) CDMA	5	511.82	117	7.47	1900 MHz (PCS)	1000	0.75%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	117	7.47	1900 MHz (PCS)	1000	0.75%
Sprint 2500 MHz (BRS) LTE	8	778.09	117	18.16	2500 MHz (BRS)	1000	1.82%
						Total:	**4.47%**

Summary

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

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

SPRINT Sector	Power Density Value (%)
Sector A:	4.47 %
Sector B:	4.47 %
Sector C:	4.47 %
SPRINT Maximum Total (per sector):	4.47 %
Site Total:	8.55 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.55 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 146 ft FWT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT00303-S

Customer Site Name: Griswold

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT23XC405 / Griswold

Site Location: 131 Bishop Crossing

Griswold, Connecticut

New London County

Latitude: 41.623352

Longitude: -71.942241

6/6/18

Analysis Result:

Max Structural Usage: 57.4% [Pass]

Max Foundation Usage: 47.0% [Pass]

Additional Usage Caused by Mount Modification: N/A

Report Prepared By : Manoj Kandel

Introduction

The purpose of this report is to summarize the analysis results on the 146 ft FWT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawing prepared by FWT, Job #16937 dated 5/11/98
Foundation Drawing	Foundation Drawing prepared by FWT, Job #16937 dated 5/11/98
Geotechnical Report	Geotechnical Report prepared by Sage, Project #M129 dated 4/30/98
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 135.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.168, S_1 = 0.06

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	151.0	6	Powerwave - 7770 - Panel	Low Profile Platform	(12) 1 5/8" (2) DC (1) Fiber	AT&T
2		3	KMW - AM-X-CD-16-65-00T - Panel			
3		6	Powerwave - LGP21401 - TMA/TTA			
4		6	Ericsson - RRUS-11 - RRU			
5		6	Powerwave - LGP21903 - Diplexer			
6		1	Raycap - DC6-48-60-18-8F - Surge Suppressor			
7	142.0	6	Kathrein - 742 351 - Panel	(3) T-Frames	(12) 1 5/8”	Metro PCS
-	117.0	3	KMW - ETCR-654L12H6 - Panel	(3) Modified T-Arms	(4) 1 1/4" Fiber	Sprint Nextel
-		3	ALU - 1900 MHz - RRU			
-		6	ALU - 800 MHz - RRU			
-		3	ALU - TD-RRH8x20-25 - RRU			

Proposed Carrier’s Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier’s final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
8	117.0	3	RFS APXVTM14-C-I20 - Panel	(3) Modified T-Arms: (SitePro PRK-1245L, Sitepro PRK-SFS-H-L, (3) 8.5' Horizontal Rail (3) 9' Long Corner Braces, (12) Sitepro SCXx-K)	(4) 1 1/4" Fiber	Sprint Nextel
9		3	Commscope NNVV-65B-R4 - Panel			
10		3	ALU 1900 Mhz			
11		6	ALU 800 Mhz			
12		3	ALU TD-RRH8x20-25			

All transmission lines are considered running inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**57.4%**	**54.0%**	**36.7%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4168.0	37.9
Analysis Reactions	3099.7	30.8
Factored Reactions*	5626.8	51.2
% of Design Reactions	55.1%	60.3%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

Two foundation design options were included in the referenced foundation design document. Since it is not known which option was installed, both designs were analyzed using the supplied documents and soils report and both were found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity)

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.8133 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 57.45% at 53.0ft

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

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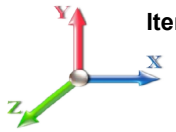
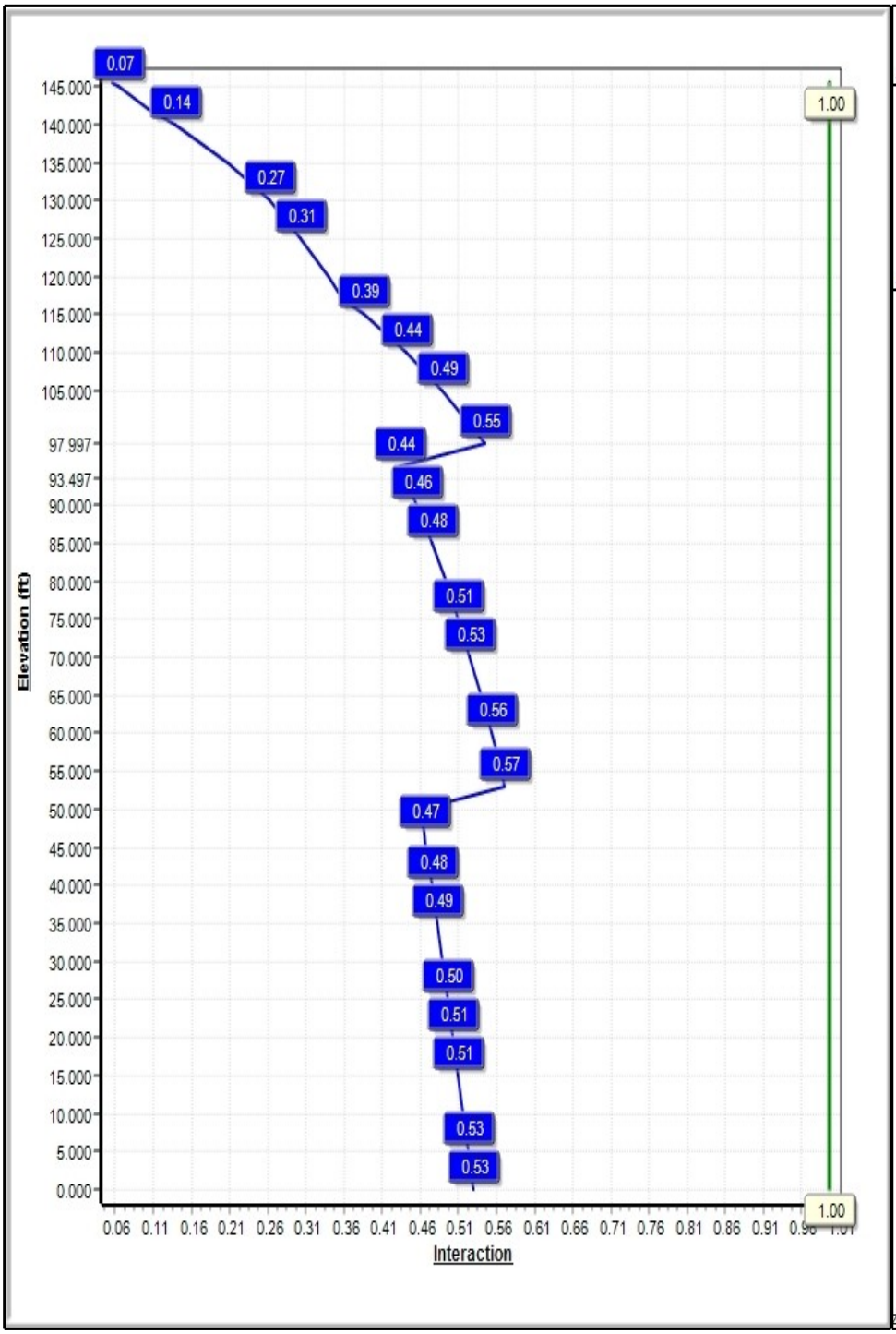
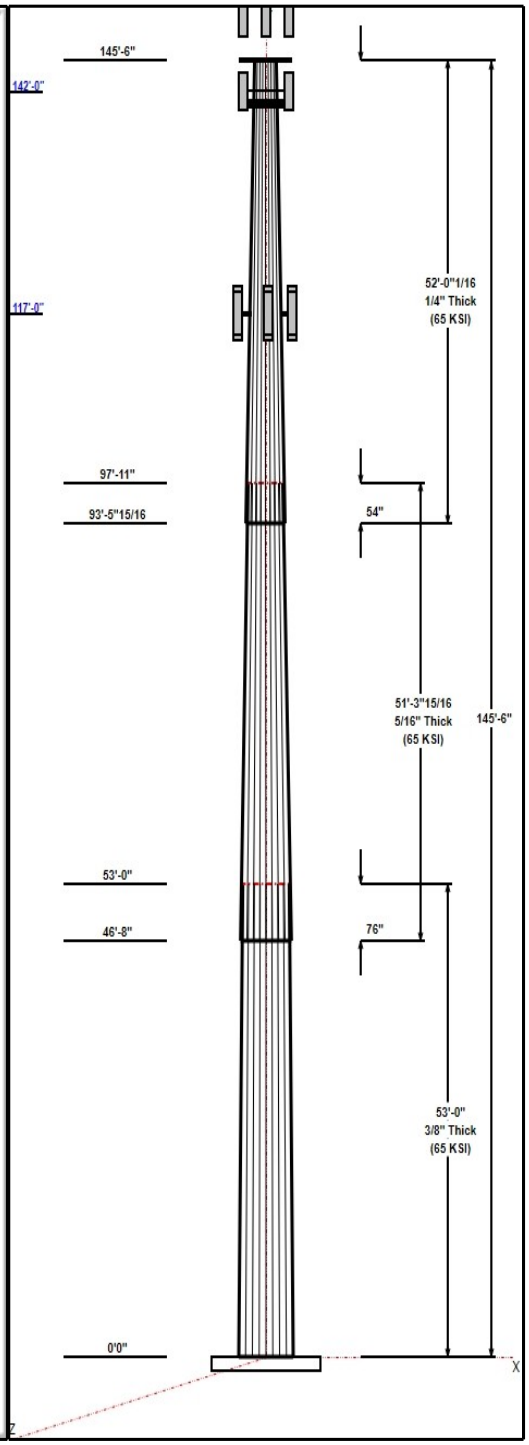
Dead Load Factor:	1.20	**Iterations:**	22
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 105 mph Wind







Structure: CT00303-S-SBA

Type: Tapered
Site Name: Griswold
Height: 145.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.31701

6/6/2018

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.00	46.20	63.00	0.375		0.31701	65
2	51.33	32.56	48.83	0.313	Slip	0.31701	65
3	52.00	18.00	34.49	0.250	Slip	0.31701	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
145.50	151.00	6	7770.00	AT&T
145.50	151.00	3	AM-X-CD-16-65-00T-RET	AT&T
145.50	151.00	6	LGP21401	AT&T
145.50	151.00	6	RRUS-11	AT&T
145.50	151.00	6	LGP21903	AT&T
145.50	151.00	1	DC6-48-60-18-8F	AT&T
145.50	145.50	1	Low Profile Platform	Sprint Nextel
142.00	142.00	6	742 351	Metro PCS
142.00	142.00	3	T-Frames	Metro PCS
117.00	117.00	3	RFS APXVTM14-C-I20	Sprint Nextel
117.00	117.00	3	Commscope	Sprint Nextel
117.00	117.00	3	Modified T-Arm	Sprint Nextel
117.00	117.00	1	SitePro PRK-1245L	Sprint Nextel
117.00	117.00	1	Sitepro PRK-SFS-H-L	Sprint Nextel
117.00	117.00	1	(3) 8.5' Horizontal Rail	Sprint Nextel
117.00	117.00	1	(3) 9' Long Corner Braces	Sprint Nextel
117.00	117.00	3	ALU 1900 Mhz	Sprint Nextel
117.00	117.00	6	ALU 800 Mhz	Sprint Nextel
117.00	117.00	3	ALU TD-RRH8x20-25	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	145.50	Inside	1 5/8" Coax	AT&T
0.00	145.50	Inside	DC	AT&T
0.00	145.50	Inside	Fiber	AT&T
0.00	142.00	Inside	1 5/8" Coax	Metro PCS
0.00	117.00	Inside	1 1/4" Fiber	Sprint Nextel

Anchor Bolts

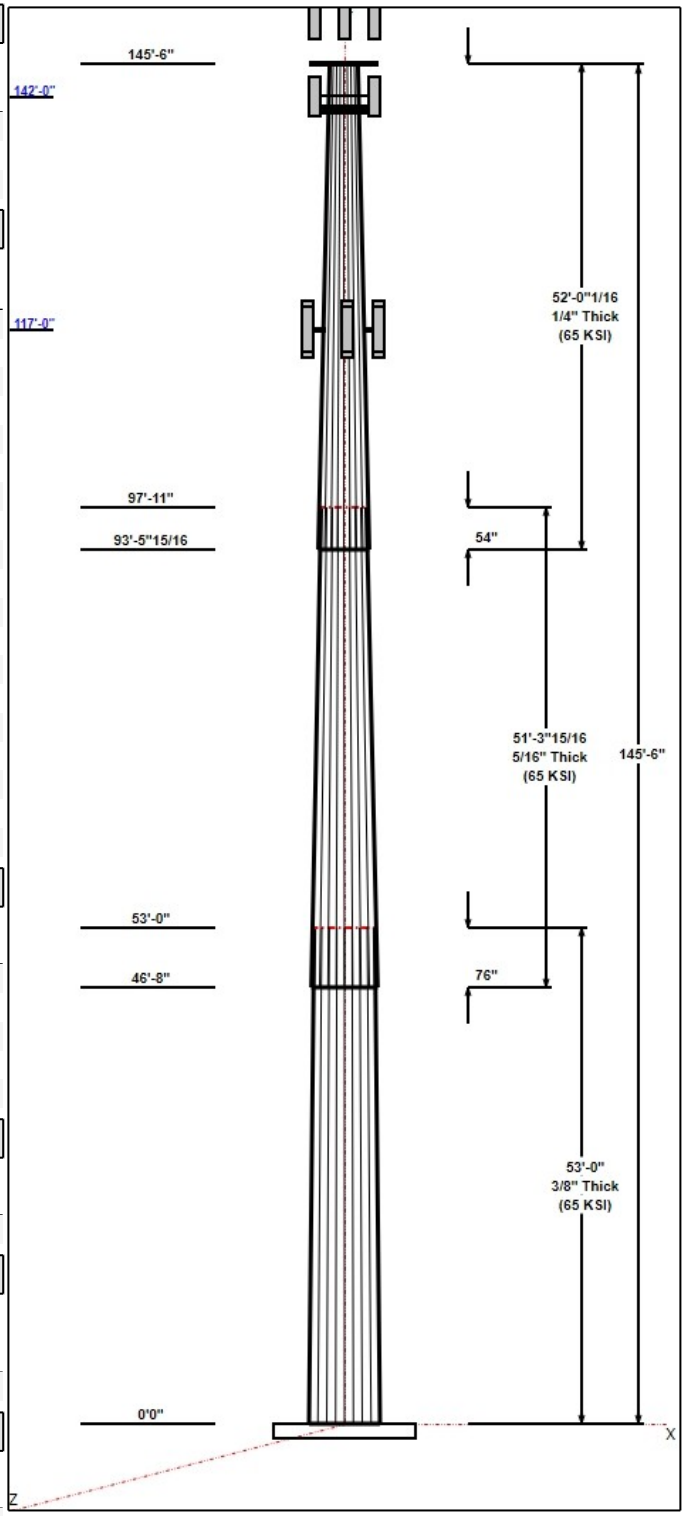
Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	76.0	60.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	3099.7	30.8	40.1
0.9D + 1.6W 105 mph Wind	3079.5	30.8	30.1
1.2D + 1.0Di + 1.0Wi 50 mph Wind	781.4	7.9	60.1
1.2D + 1.0E	127.1	1.1	40.1
0.9D + 1.0E	126.2	1.1	30.1



1.0D + 1.0W 60 mph Wind	630.3	6.3	33.5

Structure: CT00303-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Griswold
Height: 145.50 (ft)

6/6/2018

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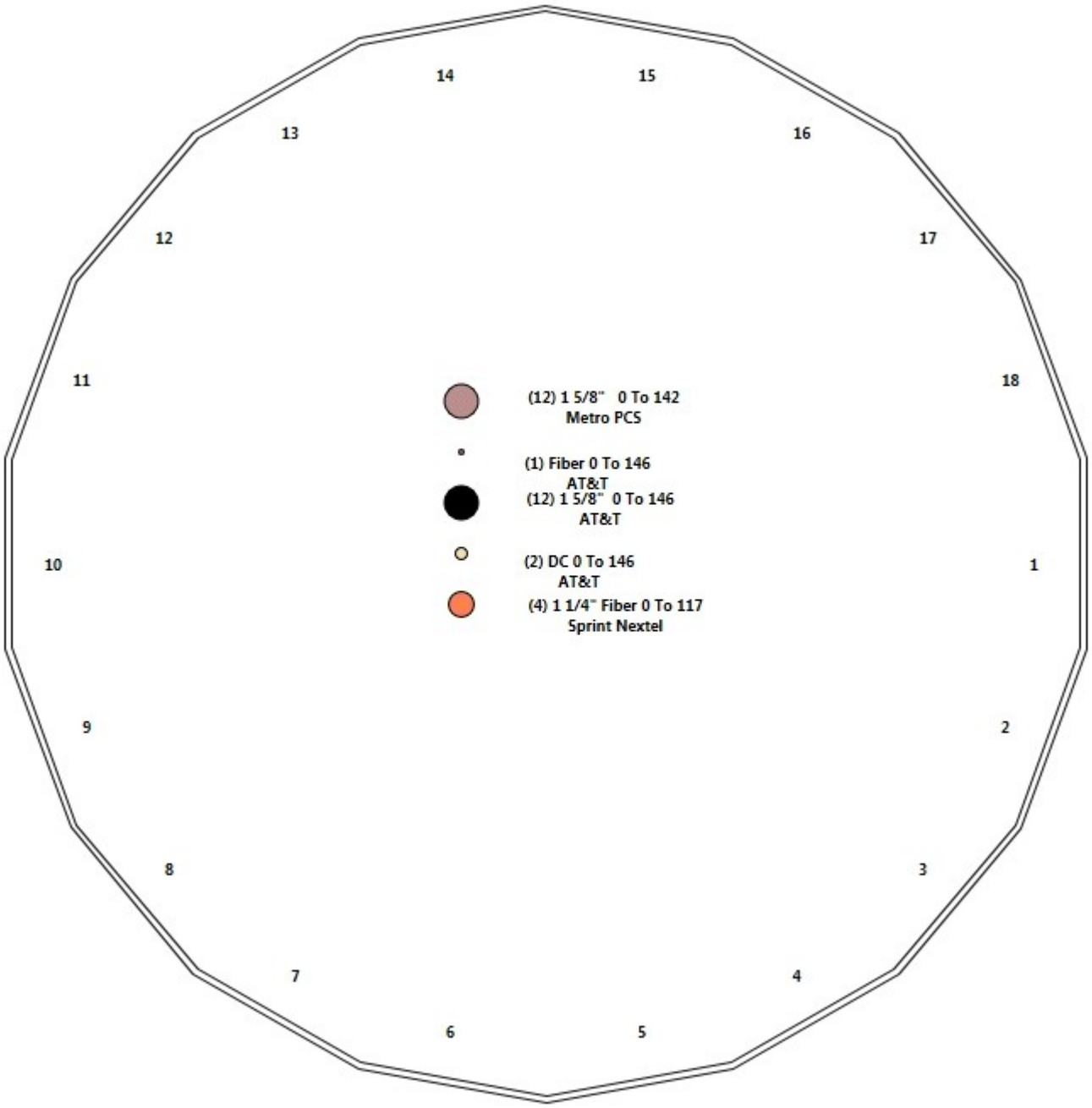

Shaft Properties

Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	6/6/2018
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.000	0.3750	65		0.00	11,639
2	18	51.330	0.3125	65	Slip	76.00	6,996
3	18	52.003	0.2500	65	Slip	54.00	3,650
					Total Shaft Weight:		**22,285**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	63.00	0.00	74.54	36933.36	28.21	168.00	46.20	53.00	54.54	14469.0	20.31	123.2	0.317010
2	48.83	46.67	48.12	14312.70	26.14	156.26	32.56	98.00	31.98	4201.88	16.96	104.1	0.317010
3	34.49	93.50	27.16	4022.70	22.91	137.94	18.00	145.50	14.08	560.63	11.28	72.00	0.317010

Load Summary

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	**Elev (ft)**	**Description**	**Qty**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Hor. Ecc. (ft)**	**Vert Ecc (ft)**
1	145.50	7770.00	6	35.00	5.50	0.73	169.67	6.562	0.73	0.00	5.50
2	145.50	AM-X-CD-16-65-00T-RET	3	48.50	8.02	0.75	210.28	10.805	0.75	0.00	5.50
3	145.50	LGP21401	6	14.10	1.29	1.00	39.03	2.123	1.00	0.00	5.50
4	145.50	RRUS-11	6	51.00	2.52	0.71	123.05	3.151	0.71	0.00	5.50
5	145.50	LGP21903	6	5.50	0.27	0.84	13.90	0.666	0.84	0.00	5.50
6	145.50	DC6-48-60-18-8F	1	31.80	0.92	1.00	93.44	1.357	1.00	0.00	5.50
7	145.50	Low Profile Platform	1	1200.00	28.00	1.00	2243.94	51.384	1.00	0.00	0.00
8	142.00	742 351	6	29.80	5.38	0.61	124.58	7.356	0.61	0.00	0.00
9	142.00	T-Frames	3	500.00	15.00	0.75	1020.70	34.440	0.75	0.00	0.00
10	117.00	RFS APXVTM14-C-I20	3	56.20	6.34	0.77	211.90	7.424	0.77	0.00	0.00
11	117.00	Commscope NNVV-65B-R4	3	77.40	12.27	0.75	355.95	13.690	0.75	0.00	0.00
12	117.00	Modified T-Arm	3	350.00	10.00	0.75	588.33	18.512	0.75	0.00	0.00
13	117.00	SitePro PRK-1245L	1	464.91	9.50	0.75	781.49	19.204	0.75	0.00	0.00
14	117.00	Sitepro PRK-SFS-H-L	1	230.00	6.70	0.75	543.24	13.544	0.75	0.00	0.00
15	117.00	(3) 8.5' Horizontal Rail	1	300.00	4.25	0.75	647.29	8.302	0.75	0.00	0.00
16	117.00	(3) 9' Long Corner Braces	1	350.00	6.75	0.75	755.17	13.185	0.75	0.00	0.00
17	117.00	ALU 1900 Mhz	3	44.00	3.80	0.67	150.49	5.156	0.67	0.00	0.00
18	117.00	ALU 800 Mhz	6	53.00	2.49	0.67	125.15	3.606	0.67	0.00	0.00
19	117.00	ALU TD-RRH8x20-25	3	70.00	4.05	0.67	177.20	4.842	0.67	0.00	0.00
		Totals:	**63**	**7,145.41**			**16,781.37**				

Linear Appurtenances

Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Exposed Width**	**Exposed**
0.00	145.50	(12) 1 5/8" Coax	0.00	Inside
0.00	145.50	(2) DC	0.00	Inside
0.00	145.50	(1) Fiber	0.00	Inside
0.00	142.00	(12) 1 5/8" Coax	0.00	Inside
0.00	117.00	(4) 1 1/4" Fiber	0.00	Inside

Shaft Section Properties

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	63.000	74.537	36933.4	28.21	168.00	68.2	1154.	0.0
5.00		0.3750	61.415	72.650	34199.4	27.47	163.77	69.1	1096.	1252.1
10.00		0.3750	59.830	70.764	31603.7	26.72	159.55	70.0	1040.	1220.0
15.00		0.3750	58.245	68.877	29142.9	25.98	155.32	70.8	985.5	1187.9
20.00		0.3750	56.660	66.991	26813.2	25.23	151.09	71.7	932.1	1155.8
25.00		0.3750	55.075	65.104	24611.1	24.49	146.87	72.6	880.2	1123.7
30.00		0.3750	53.490	63.217	22533.0	23.74	142.64	73.5	829.7	1091.6
35.00		0.3750	51.905	61.331	20575.3	23.00	138.41	74.4	780.8	1059.5
40.00		0.3750	50.320	59.444	18734.4	22.25	134.19	75.2	733.3	1027.4
45.00		0.3750	48.735	57.558	17006.8	21.50	129.96	76.1	687.3	995.3
46.67	Bot - Section 2	0.3750	48.206	56.929	16455.4	21.26	128.55	76.4	672.3	324.6
50.00		0.3750	47.149	55.671	15388.7	20.76	125.73	77.0	642.8	1178.5
53.00	Top - Section 1	0.3125	46.823	46.131	12608.4	25.01	149.84	0.0	0.0	1038.3
55.00		0.3125	46.189	45.503	12099.8	24.65	147.81	72.4	516.0	311.8
60.00		0.3125	44.604	43.930	10888.5	23.76	142.73	73.5	480.8	760.8
65.00		0.3125	43.019	42.358	9760.8	22.86	137.66	74.5	446.9	734.1
70.00		0.3125	41.434	40.786	8713.8	21.97	132.59	75.6	414.2	707.3
75.00		0.3125	39.849	39.214	7744.6	21.07	127.52	76.6	382.8	680.6
80.00		0.3125	38.264	37.642	6849.9	20.18	122.45	77.7	352.6	653.8
85.00		0.3125	36.679	36.070	6027.0	19.29	117.37	78.7	323.6	627.1
90.00		0.3125	35.094	34.498	5272.8	18.39	112.30	79.8	295.9	600.3
93.50	Bot - Section 3	0.3125	33.986	33.398	4784.6	17.77	108.75	80.5	277.3	403.9
95.00		0.3125	33.509	32.926	4584.3	17.50	107.23	80.8	269.5	307.6
98.00	Top - Section 2	0.2500	33.059	26.033	3540.5	21.91	132.24	0.0	0.0	600.2
100.00		0.2500	32.424	25.529	3338.9	21.46	129.70	76.2	202.8	175.7
105.00		0.2500	30.839	24.271	2869.3	20.34	123.36	77.5	183.3	423.7
110.00		0.2500	29.254	23.014	2446.0	19.22	117.02	78.8	164.7	402.3
115.00		0.2500	27.669	21.756	2066.5	18.10	110.68	80.1	147.1	380.9
117.00		0.2500	27.035	21.253	1926.4	17.66	108.14	80.6	140.3	146.4
120.00		0.2500	26.084	20.498	1728.4	16.99	104.34	81.4	130.5	213.1
125.00		0.2500	24.499	19.241	1429.4	15.87	97.99	82.5	114.9	338.1
130.00		0.2500	22.914	17.983	1167.0	14.75	91.65	82.5	100.3	316.7
135.00		0.2500	21.329	16.725	938.9	13.63	85.31	82.5	86.7	295.3
140.00		0.2500	19.744	15.468	742.6	12.51	78.97	82.5	74.1	273.9
142.00		0.2500	19.110	14.965	672.5	12.07	76.44	82.5	69.3	103.6
145.00		0.2500	18.159	14.210	575.8	11.40	72.63	82.5	62.5	148.9
145.50		0.2500	18.000	14.084	560.6	11.28	72.00	82.5	61.3	24.1
										22284.7

Wind Loading - Shaft

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

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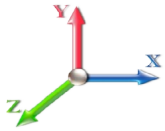
Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	22.791	25.07	516.07	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	503.08	0.650	0.000	5.00	26.320	17.11	686.2	0.0	1502.5
10.00		1.00	0.85	22.791	25.07	490.10	0.650	0.000	5.00	25.649	16.67	668.7	0.0	1464.0
15.00		1.00	0.85	22.791	25.07	477.12	0.650	0.000	5.00	24.978	16.24	651.3	0.0	1425.5
20.00		1.00	0.90	24.182	26.60	478.09	0.650	0.000	5.00	24.308	15.80	672.5	0.0	1387.0
25.00		1.00	0.95	25.345	27.88	475.76	0.650	0.000	5.00	23.637	15.36	685.4	0.0	1348.5
30.00		1.00	0.98	26.337	28.97	471.02	0.650	0.000	5.00	22.967	14.93	692.0	0.0	1309.9
35.00		1.00	1.01	27.206	29.93	464.54	0.650	0.000	5.00	22.296	14.49	693.9	0.0	1271.4
40.00		1.00	1.04	27.981	30.78	456.73	0.650	0.000	5.00	21.625	14.06	692.2	0.0	1232.9
45.00		1.00	1.07	28.684	31.55	447.86	0.650	0.000	5.00	20.955	13.62	687.6	0.0	1194.4
46.67	Bot - Section 2	1.00	1.08	28.904	31.79	444.70	0.650	0.000	1.67	6.836	4.44	226.0	0.0	389.6
50.00		1.00	1.09	29.327	32.26	438.12	0.650	0.000	3.33	13.624	8.86	457.1	0.0	1414.2
53.00	Top - Section 1	1.00	1.11	29.689	32.66	431.93	0.650	0.000	3.00	12.007	7.80	407.8	0.0	1245.9
55.00		1.00	1.12	29.922	32.91	433.53	0.650	0.000	2.00	7.871	5.12	269.4	0.0	374.2
60.00		1.00	1.14	30.475	33.52	422.51	0.650	0.000	5.00	19.207	12.48	669.6	0.0	913.0
65.00		1.00	1.16	30.993	34.09	410.94	0.650	0.000	5.00	18.537	12.05	657.2	0.0	880.9
70.00		1.00	1.17	31.480	34.63	398.90	0.650	0.000	5.00	17.866	11.61	643.4	0.0	848.8
75.00		1.00	1.19	31.941	35.13	386.44	0.650	0.000	5.00	17.195	11.18	628.3	0.0	816.7
80.00		1.00	1.21	32.377	35.62	373.59	0.650	0.000	5.00	16.525	10.74	612.1	0.0	784.6
85.00		1.00	1.22	32.793	36.07	360.41	0.650	0.000	5.00	15.854	10.31	594.8	0.0	752.5
90.00		1.00	1.24	33.190	36.51	346.92	0.650	0.000	5.00	15.183	9.87	576.5	0.0	720.4
93.50	Bot - Section 3	1.00	1.25	33.458	36.80	337.31	0.650	0.000	3.50	10.220	6.64	391.2	0.0	484.7
95.00		1.00	1.25	33.570	36.93	333.14	0.650	0.000	1.50	4.357	2.83	167.3	0.0	369.2
98.00	Top - Section 2	1.00	1.26	33.791	37.17	324.75	0.650	0.000	3.00	8.503	5.53	328.7	0.0	720.3
100.00		1.00	1.27	33.935	37.33	324.10	0.650	0.000	2.00	5.550	3.61	215.5	0.0	210.9
105.00		1.00	1.28	34.285	37.71	309.84	0.650	0.000	5.00	13.383	8.70	524.9	0.0	508.4
110.00		1.00	1.29	34.623	38.08	295.36	0.650	0.000	5.00	12.712	8.26	503.5	0.0	482.7
115.00		1.00	1.30	34.948	38.44	280.66	0.650	0.000	5.00	12.042	7.83	481.4	0.0	457.0
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	274.73	0.650	0.000	2.00	4.629	3.01	185.7	0.0	175.6
120.00		1.00	1.32	35.263	38.79	265.77	0.650	0.000	3.00	6.742	4.38	272.0	0.0	255.7
125.00		1.00	1.33	35.567	39.12	250.70	0.650	0.000	5.00	10.701	6.96	435.4	0.0	405.7
130.00		1.00	1.34	35.862	39.45	235.45	0.650	0.000	5.00	10.030	6.52	411.5	0.0	380.0
135.00		1.00	1.35	36.148	39.76	220.03	0.650	0.000	5.00	9.359	6.08	387.0	0.0	354.3
140.00		1.00	1.36	36.426	40.07	204.46	0.650	0.000	5.00	8.689	5.65	362.1	0.0	328.6
142.00	Appurtenance(s)	1.00	1.36	36.535	40.19	198.19	0.650	0.000	2.00	3.288	2.14	137.4	0.0	124.3
145.00		1.00	1.37	36.696	40.37	188.74	0.650	0.000	3.00	4.730	3.07	198.6	0.0	178.7
145.50	Appurtenance(s)	1.00	1.37	36.722	40.39	187.16	0.650	0.000	0.50	0.765	0.50	32.1	0.0	28.9
								Totals:	**145.50**			**16,906.4**		**26,741.7**

Discrete Appurtenance Forces

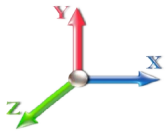
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	145.50	DC6-48-60-18-8F	1	37.010	40.712	1.00	1.00	0.92	38.16	0.000	5.500	59.93	0.00	329.60
2	145.50	LGP21903	6	37.010	40.712	0.84	1.00	1.36	39.60	0.000	5.500	88.64	0.00	487.52
3	145.50	RRUS-11	6	37.010	40.712	0.71	1.00	10.74	367.20	0.000	5.500	699.27	0.00	3846.01
4	145.50	LGP21401	6	37.010	40.712	1.00	1.00	7.74	101.52	0.000	5.500	504.17	0.00	2772.94
5	145.50	AM-X-CD-16-65-00T-RET	3	37.010	40.712	0.75	1.00	18.04	174.60	0.000	5.500	1175.42	0.00	6464.82
6	145.50	7770.00	6	37.010	40.712	0.73	1.00	24.09	252.00	0.000	5.500	1569.18	0.00	8630.51
7	145.50	Low Profile Platform	1	36.722	40.395	1.00	1.00	28.00	1440.00	0.000	0.000	1809.68	0.00	0.00
8	142.00	742 351	6	36.535	40.188	0.49	0.80	15.75	214.56	0.000	0.000	1012.91	0.00	0.00
9	142.00	T-Frames	3	36.535	40.188	0.56	0.75	25.31	1800.00	0.000	0.000	1627.62	0.00	0.00
10	117.00	RFS APXVTM14-C-I20	3	35.075	38.583	0.62	0.80	11.72	202.32	0.000	0.000	723.28	0.00	0.00
11	117.00	ALU TD-RRH8x20-25	3	35.075	38.583	0.54	0.80	6.51	252.00	0.000	0.000	402.03	0.00	0.00
12	117.00	ALU 800 Mhz	6	35.075	38.583	0.54	0.80	8.01	381.60	0.000	0.000	494.34	0.00	0.00
13	117.00	ALU 1900 Mhz	3	35.075	38.583	0.54	0.80	6.11	158.40	0.000	0.000	377.21	0.00	0.00
14	117.00	(3) 9' Long Corner Braces	1	35.075	38.583	0.56	0.75	3.80	420.00	0.000	0.000	234.39	0.00	0.00
15	117.00	(3) 8.5' Horizontal Rail	1	35.075	38.583	0.56	0.75	2.39	360.00	0.000	0.000	147.58	0.00	0.00
16	117.00	Sitepro PRK-SFS-H-L	1	35.075	38.583	0.56	0.75	3.77	276.00	0.000	0.000	232.65	0.00	0.00
17	117.00	SitePro PRK-1245L	1	35.075	38.583	0.56	0.75	5.34	557.89	0.000	0.000	329.88	0.00	0.00
18	117.00	Modified T-Arm	3	35.075	38.583	0.56	0.75	16.88	1260.00	0.000	0.000	1041.73	0.00	0.00
19	117.00	Commscope	3	35.075	38.583	0.60	0.80	22.09	278.64	0.000	0.000	1363.42	0.00	0.00
							Totals:		**8,574.49**			**13,893.35**		

Total Applied Force Summary

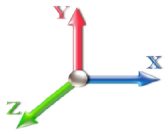
Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	6/6/2018
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		686.23	1673.29	0.00	0.00
10.00		668.74	1634.78	0.00	0.00
15.00		651.26	1596.26	0.00	0.00
20.00		672.46	1557.74	0.00	0.00
25.00		685.36	1519.23	0.00	0.00
30.00		691.97	1480.71	0.00	0.00
35.00		693.92	1442.19	0.00	0.00
40.00		692.24	1403.68	0.00	0.00
45.00		687.61	1365.16	0.00	0.00
46.67		226.04	446.49	0.00	0.00
50.00		457.10	1528.02	0.00	0.00
53.00		407.82	1348.38	0.00	0.00
55.00		269.41	442.48	0.00	0.00
60.00		669.62	1083.72	0.00	0.00
65.00		657.22	1051.62	0.00	0.00
70.00		643.41	1019.53	0.00	0.00
75.00		628.32	987.43	0.00	0.00
80.00		612.07	955.33	0.00	0.00
85.00		594.77	923.23	0.00	0.00
90.00		576.51	891.14	0.00	0.00
93.50		391.17	604.13	0.00	0.00
95.00		167.31	420.50	0.00	0.00
98.00		328.71	822.63	0.00	0.00
100.00		215.47	279.31	0.00	0.00
105.00		524.91	679.14	0.00	0.00
110.00		503.52	653.46	0.00	0.00
115.00		481.44	627.78	0.00	0.00
117.00	(25) attachments	5532.25	4390.78	0.00	0.00
120.00		271.99	348.68	0.00	0.00
125.00		435.39	560.59	0.00	0.00
130.00		411.49	534.91	0.00	0.00
135.00		387.04	509.23	0.00	0.00
140.00		362.07	483.56	0.00	0.00
142.00	(9) attachments	2777.95	2200.79	0.00	0.00
145.00		198.58	226.72	0.00	0.00
145.50	(29) attachments	5938.44	2449.97	0.00	22531.41
	Totals:	**30,799.80**	**40,142.60**	**0.00**	**22,531.41**

Calculated Forces

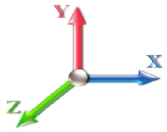
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.11	-30.84	0.00	-3099.7	0.00	3099.73	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.534
5.00	-38.38	-30.23	0.00	-2945.5	0.00	2945.53	4517.77	2258.89	11350.5	5683.71	0.06	-0.116	0.000	0.527
10.00	-36.68	-29.64	0.00	-2794.3	0.00	2794.37	4456.28	2228.14	10903.5	5459.88	0.25	-0.236	0.000	0.520
15.00	-35.02	-29.05	0.00	-2646.1	0.00	2646.19	4391.82	2195.91	10457.5	5236.55	0.56	-0.358	0.000	0.513
20.00	-33.41	-28.44	0.00	-2500.9	0.00	2500.93	4324.38	2162.19	10013.1	5014.00	1.01	-0.484	0.000	0.507
25.00	-31.83	-27.82	0.00	-2358.7	0.00	2358.72	4253.96	2126.98	9570.83	4792.53	1.58	-0.613	0.000	0.500
30.00	-30.30	-27.18	0.00	-2219.6	0.00	2219.64	4180.57	2090.28	9131.30	4572.43	2.30	-0.745	0.000	0.493
35.00	-28.80	-26.53	0.00	-2083.7	0.00	2083.76	4104.19	2052.10	8695.09	4354.01	3.15	-0.881	0.000	0.486
40.00	-27.35	-25.88	0.00	-1951.1	0.00	1951.10	4024.85	2012.42	8262.80	4137.54	4.15	-1.020	0.000	0.479
45.00	-25.95	-25.21	0.00	-1821.6	0.00	1821.69	3942.52	1971.26	7835.01	3923.33	5.29	-1.164	0.000	0.471
46.67	-25.48	-25.01	0.00	-1779.6	0.00	1779.66	3914.42	1957.21	7693.52	3852.48	5.71	-1.214	0.000	0.469
50.00	-23.92	-24.56	0.00	-1696.2	0.00	1696.29	3857.22	1928.61	7412.31	3711.67	6.59	-1.314	0.000	0.463
53.00	-22.55	-24.15	0.00	-1622.6	0.00	1622.61	2988.70	1494.35	5718.32	2863.41	7.45	-1.406	0.000	0.574
55.00	-22.06	-23.92	0.00	-1574.3	0.00	1574.30	2965.19	1482.60	5595.48	2801.90	8.05	-1.469	0.000	0.570
60.00	-20.92	-23.29	0.00	-1454.7	0.00	1454.71	2904.34	1452.17	5290.00	2648.93	9.69	-1.647	0.000	0.557
65.00	-19.82	-22.66	0.00	-1338.2	0.00	1338.28	2840.50	1420.25	4987.29	2497.35	11.51	-1.829	0.000	0.543
70.00	-18.75	-22.05	0.00	-1224.9	0.00	1224.98	2773.69	1386.84	4687.92	2347.44	13.53	-2.016	0.000	0.529
75.00	-17.71	-21.44	0.00	-1114.7	0.00	1114.75	2703.90	1351.95	4392.49	2199.51	15.74	-2.207	0.000	0.514
80.00	-16.71	-20.85	0.00	-1007.5	0.00	1007.55	2631.14	1315.57	4101.58	2053.84	18.16	-2.402	0.000	0.497
85.00	-15.74	-20.27	0.00	-903.30	0.00	903.30	2555.39	1277.70	3815.78	1910.73	20.78	-2.600	0.000	0.479
90.00	-14.82	-19.70	0.00	-801.96	0.00	801.96	2476.68	1238.34	3535.67	1770.46	23.61	-2.802	0.000	0.459
93.50	-14.20	-19.30	0.00	-733.09	0.00	733.09	2419.86	1209.93	3343.48	1674.23	25.72	-2.947	0.000	0.444
95.00	-13.76	-19.13	0.00	-704.07	0.00	704.07	2394.98	1197.49	3261.85	1633.35	26.66	-3.011	0.000	0.437
98.00	-12.92	-18.79	0.00	-646.73	0.00	646.73	1772.11	886.06	2389.60	1196.58	28.59	-3.136	0.000	0.548
100.00	-12.60	-18.59	0.00	-609.10	0.00	609.10	1749.91	874.96	2313.65	1158.54	29.92	-3.222	0.000	0.533
105.00	-11.88	-18.08	0.00	-516.14	0.00	516.14	1692.43	846.21	2126.56	1064.86	33.43	-3.461	0.000	0.492
110.00	-11.19	-17.58	0.00	-425.75	0.00	425.75	1631.96	815.98	1943.46	973.18	37.18	-3.695	0.000	0.445
115.00	-10.55	-17.09	0.00	-337.86	0.00	337.86	1568.52	784.26	1764.96	883.79	41.17	-3.917	0.000	0.389
117.00	-6.53	-11.27	0.00	-303.69	0.00	303.69	1542.31	771.16	1694.98	848.75	42.83	-4.005	0.000	0.362
120.00	-6.17	-11.00	0.00	-269.86	0.00	269.86	1502.10	751.05	1591.63	797.00	45.38	-4.132	0.000	0.343
125.00	-5.61	-10.54	0.00	-214.88	0.00	214.88	1429.48	714.74	1420.86	711.49	49.82	-4.332	0.000	0.306
130.00	-5.07	-10.10	0.00	-162.18	0.00	162.18	1336.04	668.02	1240.29	621.07	54.45	-4.519	0.000	0.265
135.00	-4.57	-9.69	0.00	-111.66	0.00	111.66	1242.60	621.30	1071.99	536.79	59.28	-4.686	0.000	0.212
140.00	-4.11	-9.29	0.00	-63.21	0.00	63.21	1149.16	574.58	915.96	458.66	64.25	-4.819	0.000	0.142
142.00	-2.14	-6.34	0.00	-44.62	0.00	44.62	1111.79	555.89	856.98	429.13	66.28	-4.860	0.000	0.106
145.00	-1.93	-6.13	0.00	-25.59	0.00	25.59	1055.72	527.86	772.20	386.67	69.35	-4.905	0.000	0.068
145.50	0.00	-5.94	0.00	-22.53	0.00	22.53	1046.38	523.19	758.49	379.81	69.86	-4.910	0.000	0.059

Wind Loading - Shaft

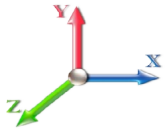
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	22.791	25.07	516.07	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	503.08	0.650	0.000	5.00	26.320	17.11	686.2	0.0	1126.9
10.00		1.00	0.85	22.791	25.07	490.10	0.650	0.000	5.00	25.649	16.67	668.7	0.0	1098.0
15.00		1.00	0.85	22.791	25.07	477.12	0.650	0.000	5.00	24.978	16.24	651.3	0.0	1069.1
20.00		1.00	0.90	24.182	26.60	478.09	0.650	0.000	5.00	24.308	15.80	672.5	0.0	1040.2
25.00		1.00	0.95	25.345	27.88	475.76	0.650	0.000	5.00	23.637	15.36	685.4	0.0	1011.3
30.00		1.00	0.98	26.337	28.97	471.02	0.650	0.000	5.00	22.967	14.93	692.0	0.0	982.5
35.00		1.00	1.01	27.206	29.93	464.54	0.650	0.000	5.00	22.296	14.49	693.9	0.0	953.6
40.00		1.00	1.04	27.981	30.78	456.73	0.650	0.000	5.00	21.625	14.06	692.2	0.0	924.7
45.00		1.00	1.07	28.684	31.55	447.86	0.650	0.000	5.00	20.955	13.62	687.6	0.0	895.8
46.67	Bot - Section 2	1.00	1.08	28.904	31.79	444.70	0.650	0.000	1.67	6.836	4.44	226.0	0.0	292.2
50.00		1.00	1.09	29.327	32.26	438.12	0.650	0.000	3.33	13.624	8.86	457.1	0.0	1060.6
53.00	Top - Section 1	1.00	1.11	29.689	32.66	431.93	0.650	0.000	3.00	12.007	7.80	407.8	0.0	934.4
55.00		1.00	1.12	29.922	32.91	433.53	0.650	0.000	2.00	7.871	5.12	269.4	0.0	280.6
60.00		1.00	1.14	30.475	33.52	422.51	0.650	0.000	5.00	19.207	12.48	669.6	0.0	684.7
65.00		1.00	1.16	30.993	34.09	410.94	0.650	0.000	5.00	18.537	12.05	657.2	0.0	660.6
70.00		1.00	1.17	31.480	34.63	398.90	0.650	0.000	5.00	17.866	11.61	643.4	0.0	636.6
75.00		1.00	1.19	31.941	35.13	386.44	0.650	0.000	5.00	17.195	11.18	628.3	0.0	612.5
80.00		1.00	1.21	32.377	35.62	373.59	0.650	0.000	5.00	16.525	10.74	612.1	0.0	588.4
85.00		1.00	1.22	32.793	36.07	360.41	0.650	0.000	5.00	15.854	10.31	594.8	0.0	564.4
90.00		1.00	1.24	33.190	36.51	346.92	0.650	0.000	5.00	15.183	9.87	576.5	0.0	540.3
93.50	Bot - Section 3	1.00	1.25	33.458	36.80	337.31	0.650	0.000	3.50	10.220	6.64	391.2	0.0	363.5
95.00		1.00	1.25	33.570	36.93	333.14	0.650	0.000	1.50	4.357	2.83	167.3	0.0	276.9
98.00	Top - Section 2	1.00	1.26	33.791	37.17	324.75	0.650	0.000	3.00	8.503	5.53	328.7	0.0	540.2
100.00		1.00	1.27	33.935	37.33	324.10	0.650	0.000	2.00	5.550	3.61	215.5	0.0	158.2
105.00		1.00	1.28	34.285	37.71	309.84	0.650	0.000	5.00	13.383	8.70	524.9	0.0	381.3
110.00		1.00	1.29	34.623	38.08	295.36	0.650	0.000	5.00	12.712	8.26	503.5	0.0	362.0
115.00		1.00	1.30	34.948	38.44	280.66	0.650	0.000	5.00	12.042	7.83	481.4	0.0	342.8
117.00	Appurtenance(s)	1.00	1.31	35.075	38.58	274.73	0.650	0.000	2.00	4.629	3.01	185.7	0.0	131.7
120.00		1.00	1.32	35.263	38.79	265.77	0.650	0.000	3.00	6.742	4.38	272.0	0.0	191.8
125.00		1.00	1.33	35.567	39.12	250.70	0.650	0.000	5.00	10.701	6.96	435.4	0.0	304.3
130.00		1.00	1.34	35.862	39.45	235.45	0.650	0.000	5.00	10.030	6.52	411.5	0.0	285.0
135.00		1.00	1.35	36.148	39.76	220.03	0.650	0.000	5.00	9.359	6.08	387.0	0.0	265.7
140.00		1.00	1.36	36.426	40.07	204.46	0.650	0.000	5.00	8.689	5.65	362.1	0.0	246.5
142.00	Appurtenance(s)	1.00	1.36	36.535	40.19	198.19	0.650	0.000	2.00	3.288	2.14	137.4	0.0	93.2
145.00		1.00	1.37	36.696	40.37	188.74	0.650	0.000	3.00	4.730	3.07	198.6	0.0	134.0
145.50	Appurtenance(s)	1.00	1.37	36.722	40.39	187.16	0.650	0.000	0.50	0.765	0.50	32.1	0.0	21.7
								Totals:	**145.50**			**16,906.4**		**20,056.3**

Discrete Appurtenance Forces

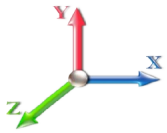
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	145.50	DC6-48-60-18-8F	1	37.010	40.712	1.00	1.00	0.92	28.62	0.000	5.500	59.93	0.00	329.60
2	145.50	LGP21903	6	37.010	40.712	0.84	1.00	1.36	29.70	0.000	5.500	88.64	0.00	487.52
3	145.50	RRUS-11	6	37.010	40.712	0.71	1.00	10.74	275.40	0.000	5.500	699.27	0.00	3846.01
4	145.50	LGP21401	6	37.010	40.712	1.00	1.00	7.74	76.14	0.000	5.500	504.17	0.00	2772.94
5	145.50	AM-X-CD-16-65-00T-RET	3	37.010	40.712	0.75	1.00	18.04	130.95	0.000	5.500	1175.42	0.00	6464.82
6	145.50	7770.00	6	37.010	40.712	0.73	1.00	24.09	189.00	0.000	5.500	1569.18	0.00	8630.51
7	145.50	Low Profile Platform	1	36.722	40.395	1.00	1.00	28.00	1080.00	0.000	0.000	1809.68	0.00	0.00
8	142.00	742 351	6	36.535	40.188	0.49	0.80	15.75	160.92	0.000	0.000	1012.91	0.00	0.00
9	142.00	T-Frames	3	36.535	40.188	0.56	0.75	25.31	1350.00	0.000	0.000	1627.62	0.00	0.00
10	117.00	RFS APXVTM14-C-I20	3	35.075	38.583	0.62	0.80	11.72	151.74	0.000	0.000	723.28	0.00	0.00
11	117.00	ALU TD-RRH8x20-25	3	35.075	38.583	0.54	0.80	6.51	189.00	0.000	0.000	402.03	0.00	0.00
12	117.00	ALU 800 Mhz	6	35.075	38.583	0.54	0.80	8.01	286.20	0.000	0.000	494.34	0.00	0.00
13	117.00	ALU 1900 Mhz	3	35.075	38.583	0.54	0.80	6.11	118.80	0.000	0.000	377.21	0.00	0.00
14	117.00	(3) 9' Long Corner Braces	1	35.075	38.583	0.56	0.75	3.80	315.00	0.000	0.000	234.39	0.00	0.00
15	117.00	(3) 8.5' Horizontal Rail	1	35.075	38.583	0.56	0.75	2.39	270.00	0.000	0.000	147.58	0.00	0.00
16	117.00	Sitepro PRK-SFS-H-L	1	35.075	38.583	0.56	0.75	3.77	207.00	0.000	0.000	232.65	0.00	0.00
17	117.00	SitePro PRK-1245L	1	35.075	38.583	0.56	0.75	5.34	418.42	0.000	0.000	329.88	0.00	0.00
18	117.00	Modified T-Arm	3	35.075	38.583	0.56	0.75	16.88	945.00	0.000	0.000	1041.73	0.00	0.00
19	117.00	Commscope	3	35.075	38.583	0.60	0.80	22.09	208.98	0.000	0.000	1363.42	0.00	0.00
							Totals:		**6,430.87**			**13,893.35**		

Total Applied Force Summary

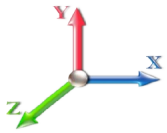
Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	6/6/2018
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		686.23	1254.97	0.00	0.00
10.00		668.74	1226.08	0.00	0.00
15.00		651.26	1197.19	0.00	0.00
20.00		672.46	1168.31	0.00	0.00
25.00		685.36	1139.42	0.00	0.00
30.00		691.97	1110.53	0.00	0.00
35.00		693.92	1081.64	0.00	0.00
40.00		692.24	1052.76	0.00	0.00
45.00		687.61	1023.87	0.00	0.00
46.67		226.04	334.87	0.00	0.00
50.00		457.10	1146.01	0.00	0.00
53.00		407.82	1011.29	0.00	0.00
55.00		269.41	331.86	0.00	0.00
60.00		669.62	812.79	0.00	0.00
65.00		657.22	788.72	0.00	0.00
70.00		643.41	764.65	0.00	0.00
75.00		628.32	740.57	0.00	0.00
80.00		612.07	716.50	0.00	0.00
85.00		594.77	692.43	0.00	0.00
90.00		576.51	668.35	0.00	0.00
93.50		391.17	453.10	0.00	0.00
95.00		167.31	315.38	0.00	0.00
98.00		328.71	616.97	0.00	0.00
100.00		215.47	209.49	0.00	0.00
105.00		524.91	509.36	0.00	0.00
110.00		503.52	490.10	0.00	0.00
115.00		481.44	470.84	0.00	0.00
117.00	(25) attachments	5532.25	3293.08	0.00	0.00
120.00		271.99	261.51	0.00	0.00
125.00		435.39	420.44	0.00	0.00
130.00		411.49	401.18	0.00	0.00
135.00		387.04	381.92	0.00	0.00
140.00		362.07	362.67	0.00	0.00
142.00	(9) attachments	2777.95	1650.59	0.00	0.00
145.00		198.58	170.04	0.00	0.00
145.50	(29) attachments	5938.44	1837.48	0.00	22531.41
	Totals:	**30,799.80**	**30,106.95**	**0.00**	**22,531.41**

Calculated Forces

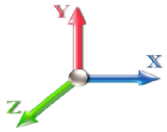
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-30.07	-30.83	0.00	-3079.5	0.00	3079.50	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.528
5.00	-28.76	-30.20	0.00	-2925.3	0.00	2925.35	4517.77	2258.89	11350.5	5683.71	0.06	-0.116	0.000	0.521
10.00	-27.47	-29.59	0.00	-2774.3	0.00	2774.35	4456.28	2228.14	10903.5	5459.88	0.25	-0.234	0.000	0.514
15.00	-26.22	-28.99	0.00	-2626.4	0.00	2626.41	4391.82	2195.91	10457.5	5236.55	0.56	-0.356	0.000	0.508
20.00	-24.99	-28.36	0.00	-2481.4	0.00	2481.48	4324.38	2162.19	10013.1	5014.00	1.00	-0.480	0.000	0.501
25.00	-23.80	-27.72	0.00	-2339.6	0.00	2339.69	4253.96	2126.98	9570.83	4792.53	1.57	-0.608	0.000	0.494
30.00	-22.63	-27.07	0.00	-2201.1	0.00	2201.10	4180.57	2090.28	9131.30	4572.43	2.28	-0.740	0.000	0.487
35.00	-21.50	-26.41	0.00	-2065.7	0.00	2065.77	4104.19	2052.10	8695.09	4354.01	3.13	-0.874	0.000	0.480
40.00	-20.39	-25.75	0.00	-1933.7	0.00	1933.74	4024.85	2012.42	8262.80	4137.54	4.12	-1.012	0.000	0.473
45.00	-19.34	-25.07	0.00	-1805.0	0.00	1805.00	3942.52	1971.26	7835.01	3923.33	5.25	-1.154	0.000	0.465
46.67	-18.98	-24.87	0.00	-1763.2	0.00	1763.21	3914.42	1957.21	7693.52	3852.48	5.67	-1.204	0.000	0.463
50.00	-17.80	-24.41	0.00	-1680.3	0.00	1680.32	3857.22	1928.61	7412.31	3711.67	6.54	-1.303	0.000	0.457
53.00	-16.77	-24.00	0.00	-1607.0	0.00	1607.09	2988.70	1494.35	5718.32	2863.41	7.39	-1.395	0.000	0.567
55.00	-16.39	-23.76	0.00	-1559.0	0.00	1559.08	2965.19	1482.60	5595.48	2801.90	7.99	-1.457	0.000	0.562
60.00	-15.53	-23.12	0.00	-1440.2	0.00	1440.28	2904.34	1452.17	5290.00	2648.93	9.61	-1.633	0.000	0.549
65.00	-14.69	-22.48	0.00	-1324.6	0.00	1324.69	2840.50	1420.25	4987.29	2497.35	11.42	-1.814	0.000	0.536
70.00	-13.87	-21.86	0.00	-1212.2	0.00	1212.27	2773.69	1386.84	4687.92	2347.44	13.42	-1.999	0.000	0.522
75.00	-13.08	-21.25	0.00	-1102.9	0.00	1102.97	2703.90	1351.95	4392.49	2199.51	15.61	-2.188	0.000	0.507
80.00	-12.32	-20.65	0.00	-996.72	0.00	996.72	2631.14	1315.57	4101.58	2053.84	18.01	-2.380	0.000	0.490
85.00	-11.59	-20.07	0.00	-893.47	0.00	893.47	2555.39	1277.70	3815.78	1910.73	20.61	-2.577	0.000	0.472
90.00	-10.89	-19.49	0.00	-793.13	0.00	793.13	2476.68	1238.34	3535.67	1770.46	23.41	-2.776	0.000	0.453
93.50	-10.42	-19.10	0.00	-724.97	0.00	724.97	2419.86	1209.93	3343.48	1674.23	25.50	-2.919	0.000	0.438
95.00	-10.08	-18.93	0.00	-696.26	0.00	696.26	2394.98	1197.49	3261.85	1633.35	26.43	-2.982	0.000	0.431
98.00	-9.45	-18.59	0.00	-639.53	0.00	639.53	1772.11	886.06	2389.60	1196.58	28.34	-3.107	0.000	0.540
100.00	-9.20	-18.39	0.00	-602.29	0.00	602.29	1749.91	874.96	2313.65	1158.54	29.66	-3.191	0.000	0.526
105.00	-8.65	-17.87	0.00	-510.36	0.00	510.36	1692.43	846.21	2126.56	1064.86	33.13	-3.428	0.000	0.485
110.00	-8.12	-17.37	0.00	-421.01	0.00	421.01	1631.96	815.98	1943.46	973.18	36.85	-3.659	0.000	0.438
115.00	-7.64	-16.88	0.00	-334.16	0.00	334.16	1568.52	784.26	1764.96	883.79	40.80	-3.878	0.000	0.383
117.00	-4.71	-11.14	0.00	-300.41	0.00	300.41	1542.31	771.16	1694.98	848.75	42.44	-3.966	0.000	0.357
120.00	-4.44	-10.86	0.00	-266.99	0.00	266.99	1502.10	751.05	1591.63	797.00	44.97	-4.091	0.000	0.338
125.00	-4.02	-10.41	0.00	-212.66	0.00	212.66	1429.48	714.74	1420.86	711.49	49.36	-4.289	0.000	0.302
130.00	-3.62	-9.98	0.00	-160.60	0.00	160.60	1336.04	668.02	1240.29	621.07	53.95	-4.475	0.000	0.262
135.00	-3.24	-9.58	0.00	-110.68	0.00	110.68	1242.60	621.30	1071.99	536.79	58.73	-4.640	0.000	0.209
140.00	-2.90	-9.19	0.00	-62.80	0.00	62.80	1149.16	574.58	915.96	458.66	63.66	-4.771	0.000	0.140
142.00	-1.48	-6.28	0.00	-44.42	0.00	44.42	1111.79	555.89	856.98	429.13	65.67	-4.812	0.000	0.105
145.00	-1.33	-6.07	0.00	-25.57	0.00	25.57	1055.72	527.86	772.20	386.67	68.70	-4.857	0.000	0.068
145.50	0.00	-5.94	0.00	-22.53	0.00	22.53	1046.38	523.19	758.49	379.81	69.21	-4.863	0.000	0.059

Wind Loading - Shaft

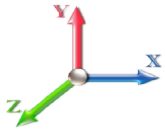
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	27.355	32.83	186.6	487.5	1990.1
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	26.758	32.11	182.5	510.0	1974.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	26.134	31.36	178.3	517.8	1943.3
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	25.497	30.60	184.5	519.1	1906.1
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.853	29.82	188.5	516.7	1865.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	24.205	29.05	190.8	511.7	1821.6
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.553	28.26	191.8	504.8	1776.3
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.900	27.48	191.8	496.6	1729.5
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.244	26.69	191.0	487.3	1681.7
46.67	Bot - Section 2	1.00	1.08	6.554	7.21	0.00	1.200	1.553	1.67	7.267	8.72	62.9	161.3	550.9
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	3.33	14.493	17.39	127.2	322.1	1736.3
53.00	Top - Section 1	1.00	1.11	6.732	7.41	0.00	1.200	1.573	3.00	12.794	15.35	113.7	286.1	1532.0
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	2.00	8.397	10.08	75.2	188.9	563.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.534	24.64	187.3	460.8	1373.7
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	19.874	23.85	184.4	448.6	1329.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.214	23.06	181.0	436.0	1284.8
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	18.552	22.26	177.4	423.0	1239.7
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	17.890	21.47	173.4	409.6	1194.1
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	17.228	20.67	169.1	395.8	1148.3
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	16.565	19.88	164.6	381.7	1102.0
93.50	Bot - Section 3	1.00	1.25	7.587	8.35	0.00	1.200	1.665	3.50	11.190	13.43	112.1	259.9	744.6
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	1.50	4.774	5.73	48.0	112.0	481.2
98.00	Top - Section 2	1.00	1.26	7.662	8.43	0.00	1.200	1.672	3.00	9.339	11.21	94.5	218.0	938.3
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	2.00	6.110	7.33	62.1	143.4	354.3
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	14.786	17.74	151.7	343.0	851.3
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	14.122	16.95	146.4	327.8	810.5
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	13.458	16.15	140.8	312.5	769.5
117.00	Appurtenance(s)	1.00	1.31	7.954	8.75	0.00	1.200	1.702	2.00	5.196	6.24	54.6	122.5	298.1
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	3.00	7.596	9.11	80.2	178.2	433.9
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	12.129	14.55	129.1	281.2	686.9
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	11.464	13.76	123.1	265.3	645.3
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	10.798	12.96	116.8	249.2	603.5
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	5.00	10.133	12.16	110.5	233.0	561.6
142.00	Appurtenance(s)	1.00	1.36	8.285	9.11	0.00	1.200	1.736	2.00	3.866	4.64	42.3	90.6	214.8
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	3.00	5.600	6.72	61.5	130.0	308.6
145.50	Appurtenance(s)	1.00	1.37	8.327	9.16	0.00	1.200	1.740	0.50	0.910	1.09	10.0	21.5	50.4
								Totals:	**145.50**			**4,785.5**		**38,495.3**

Discrete Appurtenance Forces

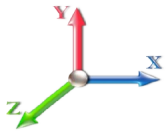
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	145.50	DC6-48-60-18-8F	1	8.392	9.232	1.00	1.00	1.36	82.10	0.000	5.500	12.52	0.00	68.88
2	145.50	LGP21903	6	8.392	9.232	0.84	1.00	3.36	75.61	0.000	5.500	31.01	0.00	170.56
3	145.50	RRUS-11	6	8.392	9.232	0.71	1.00	13.42	703.52	0.000	5.500	123.93	0.00	681.63
4	145.50	LGP21401	6	8.392	9.232	1.00	1.00	12.74	208.47	0.000	5.500	117.60	0.00	646.81
5	145.50	AM-X-CD-16-65-00T-RET	3	8.392	9.232	0.75	1.00	24.31	520.45	0.000	5.500	224.44	0.00	1234.41
6	145.50	7770.00	6	8.392	9.232	0.73	1.00	28.74	1060.02	0.000	5.500	265.32	0.00	1459.26
7	145.50	Low Profile Platform	1	8.327	9.160	1.00	1.00	51.38	2183.94	0.000	0.000	470.67	0.00	0.00
8	142.00	742 351	6	8.285	9.113	0.49	0.80	21.54	619.42	0.000	0.000	196.28	0.00	0.00
9	142.00	T-Frames	3	8.285	9.113	0.56	0.75	58.12	2912.11	0.000	0.000	529.62	0.00	0.00
10	117.00	RFS APXVTM14-C-I20	3	7.954	8.749	0.62	0.80	13.72	669.42	0.000	0.000	120.04	0.00	0.00
11	117.00	ALU TD-RRH8x20-25	3	7.954	8.749	0.54	0.80	7.79	573.60	0.000	0.000	68.11	0.00	0.00
12	117.00	ALU 800 Mhz	6	7.954	8.749	0.54	0.80	11.60	687.87	0.000	0.000	101.45	0.00	0.00
13	117.00	ALU 1900 Mhz	3	7.954	8.749	0.54	0.80	8.29	384.26	0.000	0.000	72.53	0.00	0.00
14	117.00	(3) 9' Long Corner Braces	1	7.954	8.749	0.56	0.75	7.42	1175.17	0.000	0.000	64.89	0.00	0.00
15	117.00	(3) 8.5' Horizontal Rail	1	7.954	8.749	0.56	0.75	4.67	1007.29	0.000	0.000	40.85	0.00	0.00
16	117.00	Sitepro PRK-SFS-H-L	1	7.954	8.749	0.56	0.75	7.62	488.24	0.000	0.000	66.65	0.00	0.00
17	117.00	SitePro PRK-1245L	1	7.954	8.749	0.56	0.75	10.80	779.38	0.000	0.000	94.51	0.00	0.00
18	117.00	Modified T-Arm	3	7.954	8.749	0.56	0.75	31.24	1765.00	0.000	0.000	273.31	0.00	0.00
19	117.00	Commscope	3	7.954	8.749	0.60	0.80	24.64	916.89	0.000	0.000	215.60	0.00	0.00
							Totals:		**16,812.76**			**3,089.33**		

Total Applied Force Summary

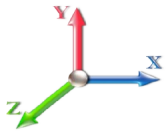
Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	6/6/2018
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		186.61	2160.83	0.00	0.00
10.00		182.54	2144.82	0.00	0.00
15.00		178.28	2114.11	0.00	0.00
20.00		184.55	2076.89	0.00	0.00
25.00		188.54	2035.89	0.00	0.00
30.00		190.81	1992.36	0.00	0.00
35.00		191.80	1947.02	0.00	0.00
40.00		191.79	1900.30	0.00	0.00
45.00		190.98	1852.47	0.00	0.00
46.67		62.87	607.83	0.00	0.00
50.00		127.22	1850.17	0.00	0.00
53.00		113.69	1634.44	0.00	0.00
55.00		75.20	631.40	0.00	0.00
60.00		187.31	1544.48	0.00	0.00
65.00		184.37	1500.27	0.00	0.00
70.00		181.04	1455.57	0.00	0.00
75.00		177.37	1410.42	0.00	0.00
80.00		173.38	1364.89	0.00	0.00
85.00		169.11	1319.01	0.00	0.00
90.00		164.57	1272.81	0.00	0.00
93.50		112.06	864.02	0.00	0.00
95.00		47.97	532.50	0.00	0.00
98.00		94.45	1040.64	0.00	0.00
100.00		62.06	422.69	0.00	0.00
105.00		151.74	1022.10	0.00	0.00
110.00		146.35	981.30	0.00	0.00
115.00		140.78	940.28	0.00	0.00
117.00	(25) attachments	1172.50	8813.56	0.00	0.00
120.00		80.17	526.85	0.00	0.00
125.00		129.12	841.81	0.00	0.00
130.00		123.05	800.22	0.00	0.00
135.00		116.84	758.46	0.00	0.00
140.00		110.48	716.54	0.00	0.00
142.00	(9) attachments	768.17	3808.34	0.00	0.00
145.00		61.51	356.67	0.00	0.00
145.50	(29) attachments	1255.50	4892.49	0.00	4261.54
	Totals:	**7,874.78**	**60,134.44**	**0.00**	**4,261.54**

Calculated Forces

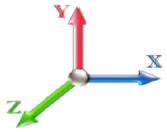
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 21

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-60.13	-7.89	0.00	-781.41	0.00	781.41	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.145
5.00	-57.97	-7.73	0.00	-741.96	0.00	741.96	4517.77	2258.89	11350.5	5683.71	0.02	-0.029	0.000	0.143
10.00	-55.82	-7.58	0.00	-703.30	0.00	703.30	4456.28	2228.14	10903.5	5459.88	0.06	-0.059	0.000	0.141
15.00	-53.70	-7.43	0.00	-665.41	0.00	665.41	4391.82	2195.91	10457.5	5236.55	0.14	-0.090	0.000	0.139
20.00	-51.62	-7.27	0.00	-628.28	0.00	628.28	4324.38	2162.19	10013.1	5014.00	0.25	-0.122	0.000	0.137
25.00	-49.58	-7.10	0.00	-591.94	0.00	591.94	4253.96	2126.98	9570.83	4792.53	0.40	-0.154	0.000	0.135
30.00	-47.59	-6.93	0.00	-556.44	0.00	556.44	4180.57	2090.28	9131.30	4572.43	0.58	-0.187	0.000	0.133
35.00	-45.63	-6.76	0.00	-521.77	0.00	521.77	4104.19	2052.10	8695.09	4354.01	0.79	-0.221	0.000	0.131
40.00	-43.73	-6.59	0.00	-487.96	0.00	487.96	4024.85	2012.42	8262.80	4137.54	1.04	-0.256	0.000	0.129
45.00	-41.88	-6.41	0.00	-455.02	0.00	455.02	3942.52	1971.26	7835.01	3923.33	1.33	-0.292	0.000	0.127
46.67	-41.27	-6.35	0.00	-444.34	0.00	444.34	3914.42	1957.21	7693.52	3852.48	1.44	-0.305	0.000	0.126
50.00	-39.42	-6.23	0.00	-423.16	0.00	423.16	3857.22	1928.61	7412.31	3711.67	1.66	-0.330	0.000	0.124
53.00	-37.78	-6.12	0.00	-404.46	0.00	404.46	2988.70	1494.35	5718.32	2863.41	1.87	-0.353	0.000	0.154
55.00	-37.15	-6.06	0.00	-392.22	0.00	392.22	2965.19	1482.60	5595.48	2801.90	2.02	-0.368	0.000	0.153
60.00	-35.60	-5.89	0.00	-361.91	0.00	361.91	2904.34	1452.17	5290.00	2648.93	2.43	-0.413	0.000	0.149
65.00	-34.09	-5.72	0.00	-332.44	0.00	332.44	2840.50	1420.25	4987.29	2497.35	2.89	-0.458	0.000	0.145
70.00	-32.64	-5.56	0.00	-303.82	0.00	303.82	2773.69	1386.84	4687.92	2347.44	3.39	-0.504	0.000	0.141
75.00	-31.22	-5.39	0.00	-276.03	0.00	276.03	2703.90	1351.95	4392.49	2199.51	3.95	-0.552	0.000	0.137
80.00	-29.85	-5.23	0.00	-249.06	0.00	249.06	2631.14	1315.57	4101.58	2053.84	4.55	-0.600	0.000	0.133
85.00	-28.53	-5.07	0.00	-222.91	0.00	222.91	2555.39	1277.70	3815.78	1910.73	5.21	-0.649	0.000	0.128
90.00	-27.26	-4.91	0.00	-197.54	0.00	197.54	2476.68	1238.34	3535.67	1770.46	5.91	-0.698	0.000	0.123
93.50	-26.39	-4.80	0.00	-180.36	0.00	180.36	2419.86	1209.93	3343.48	1674.23	6.44	-0.734	0.000	0.119
95.00	-25.86	-4.76	0.00	-173.14	0.00	173.14	2394.98	1197.49	3261.85	1633.35	6.67	-0.750	0.000	0.117
98.00	-24.82	-4.66	0.00	-158.88	0.00	158.88	1772.11	886.06	2389.60	1196.58	7.15	-0.781	0.000	0.147
100.00	-24.39	-4.61	0.00	-149.54	0.00	149.54	1749.91	874.96	2313.65	1158.54	7.48	-0.802	0.000	0.143
105.00	-23.37	-4.47	0.00	-126.49	0.00	126.49	1692.43	846.21	2126.56	1064.86	8.36	-0.860	0.000	0.133
110.00	-22.39	-4.33	0.00	-104.15	0.00	104.15	1631.96	815.98	1943.46	973.18	9.29	-0.918	0.000	0.121
115.00	-21.45	-4.19	0.00	-82.51	0.00	82.51	1568.52	784.26	1764.96	883.79	10.28	-0.972	0.000	0.107
117.00	-12.65	-2.87	0.00	-74.14	0.00	74.14	1542.31	771.16	1694.98	848.75	10.69	-0.994	0.000	0.096
120.00	-12.13	-2.79	0.00	-65.54	0.00	65.54	1502.10	751.05	1591.63	797.00	11.33	-1.024	0.000	0.090
125.00	-11.28	-2.65	0.00	-51.60	0.00	51.60	1429.48	714.74	1420.86	711.49	12.43	-1.073	0.000	0.080
130.00	-10.48	-2.52	0.00	-38.35	0.00	38.35	1336.04	668.02	1240.29	621.07	13.57	-1.117	0.000	0.070
135.00	-9.73	-2.40	0.00	-25.74	0.00	25.74	1242.60	621.30	1071.99	536.79	14.77	-1.156	0.000	0.056
140.00	-9.01	-2.27	0.00	-13.77	0.00	13.77	1149.16	574.58	915.96	458.66	16.00	-1.186	0.000	0.038
142.00	-5.22	-1.43	0.00	-9.22	0.00	9.22	1111.79	555.89	856.98	429.13	16.50	-1.195	0.000	0.026
145.00	-4.87	-1.36	0.00	-4.94	0.00	4.94	1055.72	527.86	772.20	386.67	17.25	-1.204	0.000	0.017
145.50	0.00	-1.26	0.00	-4.26	0.00	4.26	1046.38	523.19	758.49	379.81	17.38	-1.205	0.000	0.011

Seismic Segment Forces (Factored)

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E					**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.13	**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.07	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.49	**SA**	0.03	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1252.1	0.00	0.03	0.02	13.29	
10.00		1220.0	0.01	0.05	0.03	19.36	
15.00		1187.9	0.02	0.06	0.04	22.06	
20.00		1155.8	0.04	0.07	0.04	23.14	
25.00		1123.7	0.06	0.07	0.04	23.48	
30.00		1091.6	0.08	0.07	0.04	23.54	
35.00		1059.5	0.11	0.07	0.04	23.50	
40.00		1027.4	0.14	0.07	0.03	23.36	
45.00		995.33	0.18	0.07	0.03	22.98	
46.67	Bot - Section 2	324.64	0.19	0.06	0.02	7.51	
50.00		1178.4	0.22	0.06	0.02	27.09	
53.00	Top - Section 1	1038.2	0.25	0.06	0.02	23.43	
55.00		311.81	0.27	0.05	0.02	6.89	
60.00		760.80	0.32	0.04	0.01	15.24	
65.00		734.05	0.38	0.03	0.01	12.10	
70.00		707.31	0.44	0.01	0.01	8.00	
75.00		680.56	0.50	-0.02	0.01	3.25	
80.00		653.81	0.57	-0.04	0.01	-1.58	
85.00		627.06	0.65	-0.07	0.02	-5.74	
90.00		600.31	0.72	-0.09	0.03	-8.54	
93.50	Bot - Section 3	403.93	0.78	-0.11	0.05	-6.55	
95.00		307.64	0.81	-0.11	0.06	-5.11	
98.00	Top - Section 2	600.24	0.86	-0.12	0.07	-9.88	
100.00		175.75	0.89	-0.12	0.08	-2.75	
105.00		423.65	0.98	-0.11	0.12	-4.67	
110.00		402.25	1.08	-0.08	0.17	-1.03	
115.00		380.85	1.18	-0.01	0.24	3.72	
117.00	Appurtenance(s)	3602.0	1.22	0.03	0.27	56.88	
120.00		213.11	1.29	0.10	0.32	5.54	
125.00		338.06	1.39	0.27	0.43	15.61	
130.00		316.66	1.51	0.52	0.55	22.28	
135.00		295.26	1.63	0.86	0.71	29.11	
140.00		273.86	1.75	1.32	0.89	35.85	
142.00	Appurtenance(s)	1782.3	1.80	1.54	0.98	258.50	
145.00		148.91	1.88	1.91	1.12	24.94	
145.50	Appurtenance(s)	2034.9	1.89	1.98	1.14	348.69	
	Totals:	**29,430.2**				**1,053.5**	**Total Wind:** **30,799.8**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Iterations 20

Gust Response Factor	1.10			**Sds**	0.13			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.07			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.49	**SA**	0.03	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-40.14	-1.10	0.00	-127.12	0.00	127.12	4576.28	2288.14	11797.9	5907.74		0.00	0.00	0.030
5.00	-38.47	-1.09	0.00	-121.62	0.00	121.62	4517.77	2258.89	11350.5	5683.71		0.00	0.00	0.030
10.00	-36.83	-1.07	0.00	-116.17	0.00	116.17	4456.28	2228.14	10903.5	5459.88		0.01	-0.01	0.030
15.00	-35.24	-1.05	0.00	-110.80	0.00	110.80	4391.82	2195.91	10457.5	5236.55		0.02	-0.01	0.029
20.00	-33.68	-1.03	0.00	-105.52	0.00	105.52	4324.38	2162.19	10013.1	5014.00		0.04	-0.02	0.029
25.00	-32.16	-1.01	0.00	-100.35	0.00	100.35	4253.96	2126.98	9570.83	4792.53		0.07	-0.03	0.028
30.00	-30.68	-0.99	0.00	-95.28	0.00	95.28	4180.57	2090.28	9131.30	4572.43		0.10	-0.03	0.028
35.00	-29.24	-0.97	0.00	-90.32	0.00	90.32	4104.19	2052.10	8695.09	4354.01		0.13	-0.04	0.028
40.00	-27.83	-0.95	0.00	-85.46	0.00	85.46	4024.85	2012.42	8262.80	4137.54		0.17	-0.04	0.028
45.00	-26.47	-0.93	0.00	-80.72	0.00	80.72	3942.52	1971.26	7835.01	3923.33		0.22	-0.05	0.027
46.67	-26.02	-0.92	0.00	-79.17	0.00	79.17	3914.42	1957.21	7693.52	3852.48		0.24	-0.05	0.027
50.00	-24.49	-0.89	0.00	-76.10	0.00	76.10	3857.22	1928.61	7412.31	3711.67		0.28	-0.06	0.027
53.00	-23.15	-0.87	0.00	-73.42	0.00	73.42	2988.70	1494.35	5718.32	2863.41		0.31	-0.06	0.033
55.00	-22.70	-0.87	0.00	-71.67	0.00	71.67	2965.19	1482.60	5595.48	2801.90		0.34	-0.06	0.033
60.00	-21.62	-0.85	0.00	-67.34	0.00	67.34	2904.34	1452.17	5290.00	2648.93		0.41	-0.07	0.033
65.00	-20.57	-0.84	0.00	-63.08	0.00	63.08	2840.50	1420.25	4987.29	2497.35		0.49	-0.08	0.033
70.00	-19.55	-0.84	0.00	-58.87	0.00	58.87	2773.69	1386.84	4687.92	2347.44		0.58	-0.09	0.032
75.00	-18.56	-0.83	0.00	-54.69	0.00	54.69	2703.90	1351.95	4392.49	2199.51		0.68	-0.10	0.032
80.00	-17.60	-0.84	0.00	-50.52	0.00	50.52	2631.14	1315.57	4101.58	2053.84		0.78	-0.11	0.031
85.00	-16.68	-0.84	0.00	-46.34	0.00	46.34	2555.39	1277.70	3815.78	1910.73		0.90	-0.12	0.031
90.00	-15.79	-0.84	0.00	-42.16	0.00	42.16	2476.68	1238.34	3535.67	1770.46		1.03	-0.13	0.030
93.50	-15.19	-0.84	0.00	-39.23	0.00	39.23	2419.86	1209.93	3343.48	1674.23		1.13	-0.14	0.030
95.00	-14.77	-0.84	0.00	-37.97	0.00	37.97	2394.98	1197.49	3261.85	1633.35		1.17	-0.14	0.029
98.00	-13.94	-0.84	0.00	-35.46	0.00	35.46	1772.11	886.06	2389.60	1196.58		1.26	-0.15	0.038
100.00	-13.66	-0.84	0.00	-33.79	0.00	33.79	1749.91	874.96	2313.65	1158.54		1.32	-0.15	0.037
105.00	-12.98	-0.84	0.00	-29.60	0.00	29.60	1692.43	846.21	2126.56	1064.86		1.49	-0.16	0.035
110.00	-12.33	-0.84	0.00	-25.40	0.00	25.40	1631.96	815.98	1943.46	973.18		1.67	-0.18	0.034
115.00	-11.70	-0.84	0.00	-21.19	0.00	21.19	1568.52	784.26	1764.96	883.79		1.86	-0.19	0.031
117.00	-7.31	-0.77	0.00	-19.52	0.00	19.52	1542.31	771.16	1694.98	848.75		1.94	-0.20	0.028
120.00	-6.96	-0.76	0.00	-17.22	0.00	17.22	1502.10	751.05	1591.63	797.00		2.07	-0.21	0.026
125.00	-6.40	-0.74	0.00	-13.42	0.00	13.42	1429.48	714.74	1420.86	711.49		2.29	-0.22	0.023
130.00	-5.87	-0.72	0.00	-9.70	0.00	9.70	1336.04	668.02	1240.29	621.07		2.53	-0.23	0.020
135.00	-5.36	-0.69	0.00	-6.09	0.00	6.09	1242.60	621.30	1071.99	536.79		2.77	-0.24	0.016
140.00	-4.87	-0.65	0.00	-2.64	0.00	2.64	1149.16	574.58	915.96	458.66		3.03	-0.25	0.010
142.00	-2.68	-0.39	0.00	-1.34	0.00	1.34	1111.79	555.89	856.98	429.13		3.13	-0.25	0.006
145.00	-2.45	-0.36	0.00	-0.18	0.00	0.18	1055.72	527.86	772.20	386.67		3.29	-0.25	0.003
145.50	0.00	-0.35	0.00	0.00	0.00	0.00	1046.38	523.19	758.49	379.81		3.31	-0.25	0.000

Seismic Segment Forces (Factored)

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E					**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.13	**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.07	**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.49	**SA**	0.03	**Seismic Importance Factor**	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1252.1	0.00	0.03	0.02	13.29	
10.00		1220.0	0.01	0.05	0.03	19.36	
15.00		1187.9	0.02	0.06	0.04	22.06	
20.00		1155.8	0.04	0.07	0.04	23.14	
25.00		1123.7	0.06	0.07	0.04	23.48	
30.00		1091.6	0.08	0.07	0.04	23.54	
35.00		1059.5	0.11	0.07	0.04	23.50	
40.00		1027.4	0.14	0.07	0.03	23.36	
45.00		995.33	0.18	0.07	0.03	22.98	
46.67	Bot - Section 2	324.64	0.19	0.06	0.02	7.51	
50.00		1178.4	0.22	0.06	0.02	27.09	
53.00	Top - Section 1	1038.2	0.25	0.06	0.02	23.43	
55.00		311.81	0.27	0.05	0.02	6.89	
60.00		760.80	0.32	0.04	0.01	15.24	
65.00		734.05	0.38	0.03	0.01	12.10	
70.00		707.31	0.44	0.01	0.01	8.00	
75.00		680.56	0.50	-0.02	0.01	3.25	
80.00		653.81	0.57	-0.04	0.01	-1.58	
85.00		627.06	0.65	-0.07	0.02	-5.74	
90.00		600.31	0.72	-0.09	0.03	-8.54	
93.50	Bot - Section 3	403.93	0.78	-0.11	0.05	-6.55	
95.00		307.64	0.81	-0.11	0.06	-5.11	
98.00	Top - Section 2	600.24	0.86	-0.12	0.07	-9.88	
100.00		175.75	0.89	-0.12	0.08	-2.75	
105.00		423.65	0.98	-0.11	0.12	-4.67	
110.00		402.25	1.08	-0.08	0.17	-1.03	
115.00		380.85	1.18	-0.01	0.24	3.72	
117.00	Appurtenance(s)	3602.0	1.22	0.03	0.27	56.88	
120.00		213.11	1.29	0.10	0.32	5.54	
125.00		338.06	1.39	0.27	0.43	15.61	
130.00		316.66	1.51	0.52	0.55	22.28	
135.00		295.26	1.63	0.86	0.71	29.11	
140.00		273.86	1.75	1.32	0.89	35.85	
142.00	Appurtenance(s)	1782.3	1.80	1.54	0.98	258.50	
145.00		148.91	1.88	1.91	1.12	24.94	
145.50	Appurtenance(s)	2034.9	1.89	1.98	1.14	348.69	
	Totals:	**29,430.2**				**1,053.5**	**Total Wind:** **30,799.8**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.13			**Iterations**	20
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.07			**Ss**	0.17
Wind Load Factor	0.00	**Structure Frequency**	0.49	**SA**	0.03			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-30.11	-1.10	0.00	-126.20	0.00	126.20	4576.28	2288.14	11797.9	5907.74		0.00	0.00	0.028
5.00	-28.85	-1.09	0.00	-120.70	0.00	120.70	4517.77	2258.89	11350.5	5683.71		0.00	0.00	0.028
10.00	-27.63	-1.07	0.00	-115.25	0.00	115.25	4456.28	2228.14	10903.5	5459.88		0.01	-0.01	0.027
15.00	-26.43	-1.05	0.00	-109.89	0.00	109.89	4391.82	2195.91	10457.5	5236.55		0.02	-0.01	0.027
20.00	-25.26	-1.03	0.00	-104.63	0.00	104.63	4324.38	2162.19	10013.1	5014.00		0.04	-0.02	0.027
25.00	-24.12	-1.01	0.00	-99.47	0.00	99.47	4253.96	2126.98	9570.83	4792.53		0.07	-0.03	0.026
30.00	-23.01	-0.99	0.00	-94.43	0.00	94.43	4180.57	2090.28	9131.30	4572.43		0.09	-0.03	0.026
35.00	-21.93	-0.97	0.00	-89.49	0.00	89.49	4104.19	2052.10	8695.09	4354.01		0.13	-0.04	0.026
40.00	-20.88	-0.94	0.00	-84.66	0.00	84.66	4024.85	2012.42	8262.80	4137.54		0.17	-0.04	0.026
45.00	-19.85	-0.92	0.00	-79.94	0.00	79.94	3942.52	1971.26	7835.01	3923.33		0.22	-0.05	0.025
46.67	-19.52	-0.91	0.00	-78.40	0.00	78.40	3914.42	1957.21	7693.52	3852.48		0.24	-0.05	0.025
50.00	-18.37	-0.89	0.00	-75.35	0.00	75.35	3857.22	1928.61	7412.31	3711.67		0.28	-0.06	0.025
53.00	-17.36	-0.86	0.00	-72.69	0.00	72.69	2988.70	1494.35	5718.32	2863.41		0.31	-0.06	0.031
55.00	-17.03	-0.86	0.00	-70.96	0.00	70.96	2965.19	1482.60	5595.48	2801.90		0.34	-0.06	0.031
60.00	-16.21	-0.85	0.00	-66.66	0.00	66.66	2904.34	1452.17	5290.00	2648.93		0.41	-0.07	0.031
65.00	-15.43	-0.83	0.00	-62.44	0.00	62.44	2840.50	1420.25	4987.29	2497.35		0.49	-0.08	0.030
70.00	-14.66	-0.83	0.00	-58.27	0.00	58.27	2773.69	1386.84	4687.92	2347.44		0.57	-0.09	0.030
75.00	-13.92	-0.83	0.00	-54.13	0.00	54.13	2703.90	1351.95	4392.49	2199.51		0.67	-0.10	0.030
80.00	-13.20	-0.83	0.00	-50.00	0.00	50.00	2631.14	1315.57	4101.58	2053.84		0.78	-0.11	0.029
85.00	-12.51	-0.83	0.00	-45.87	0.00	45.87	2555.39	1277.70	3815.78	1910.73		0.89	-0.12	0.029
90.00	-11.84	-0.83	0.00	-41.73	0.00	41.73	2476.68	1238.34	3535.67	1770.46		1.02	-0.13	0.028
93.50	-11.39	-0.83	0.00	-38.84	0.00	38.84	2419.86	1209.93	3343.48	1674.23		1.12	-0.13	0.028
95.00	-11.07	-0.83	0.00	-37.59	0.00	37.59	2394.98	1197.49	3261.85	1633.35		1.16	-0.14	0.028
98.00	-10.46	-0.83	0.00	-35.11	0.00	35.11	1772.11	886.06	2389.60	1196.58		1.25	-0.14	0.035
100.00	-10.25	-0.83	0.00	-33.45	0.00	33.45	1749.91	874.96	2313.65	1158.54		1.31	-0.15	0.035
105.00	-9.74	-0.83	0.00	-29.31	0.00	29.31	1692.43	846.21	2126.56	1064.86		1.48	-0.16	0.033
110.00	-9.25	-0.83	0.00	-25.16	0.00	25.16	1631.96	815.98	1943.46	973.18		1.65	-0.18	0.032
115.00	-8.78	-0.83	0.00	-21.01	0.00	21.01	1568.52	784.26	1764.96	883.79		1.85	-0.19	0.029
117.00	-5.48	-0.76	0.00	-19.35	0.00	19.35	1542.31	771.16	1694.98	848.75		1.93	-0.20	0.026
120.00	-5.22	-0.75	0.00	-17.08	0.00	17.08	1502.10	751.05	1591.63	797.00		2.05	-0.20	0.025
125.00	-4.80	-0.74	0.00	-13.31	0.00	13.31	1429.48	714.74	1420.86	711.49		2.27	-0.22	0.022
130.00	-4.40	-0.71	0.00	-9.62	0.00	9.62	1336.04	668.02	1240.29	621.07		2.50	-0.23	0.019
135.00	-4.02	-0.68	0.00	-6.04	0.00	6.04	1242.60	621.30	1071.99	536.79		2.75	-0.24	0.014
140.00	-3.66	-0.65	0.00	-2.62	0.00	2.62	1149.16	574.58	915.96	458.66		3.00	-0.24	0.009
142.00	-2.01	-0.38	0.00	-1.32	0.00	1.32	1111.79	555.89	856.98	429.13		3.10	-0.24	0.005
145.00	-1.84	-0.36	0.00	-0.18	0.00	0.18	1055.72	527.86	772.20	386.67		3.26	-0.25	0.002
145.50	0.00	-0.35	0.00	0.00	0.00	0.00	1046.38	523.19	758.49	379.81		3.28	-0.25	0.000

Wind Loading - Shaft

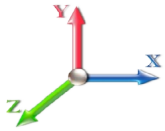
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	294.90	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	287.48	0.650	0.000	5.00	26.320	17.11	140.0	0.0	1252.1
10.00		1.00	0.85	7.442	8.19	280.06	0.650	0.000	5.00	25.649	16.67	136.5	0.0	1220.0
15.00		1.00	0.85	7.442	8.19	272.64	0.650	0.000	5.00	24.978	16.24	132.9	0.0	1187.9
20.00		1.00	0.90	7.896	8.69	273.19	0.650	0.000	5.00	24.308	15.80	137.2	0.0	1155.8
25.00		1.00	0.95	8.276	9.10	271.86	0.650	0.000	5.00	23.637	15.36	139.9	0.0	1123.7
30.00		1.00	0.98	8.600	9.46	269.15	0.650	0.000	5.00	22.967	14.93	141.2	0.0	1091.6
35.00		1.00	1.01	8.883	9.77	265.45	0.650	0.000	5.00	22.296	14.49	141.6	0.0	1059.5
40.00		1.00	1.04	9.137	10.05	260.99	0.650	0.000	5.00	21.625	14.06	141.3	0.0	1027.4
45.00		1.00	1.07	9.366	10.30	255.92	0.650	0.000	5.00	20.955	13.62	140.3	0.0	995.3
46.67	Bot - Section 2	1.00	1.08	9.438	10.38	254.12	0.650	0.000	1.67	6.836	4.44	46.1	0.0	324.6
50.00		1.00	1.09	9.576	10.53	250.36	0.650	0.000	3.33	13.624	8.86	93.3	0.0	1178.5
53.00	Top - Section 1	1.00	1.11	9.694	10.66	246.82	0.650	0.000	3.00	12.007	7.80	83.2	0.0	1038.3
55.00		1.00	1.12	9.770	10.75	247.73	0.650	0.000	2.00	7.871	5.12	55.0	0.0	311.8
60.00		1.00	1.14	9.951	10.95	241.43	0.650	0.000	5.00	19.207	12.48	136.7	0.0	760.8
65.00		1.00	1.16	10.120	11.13	234.82	0.650	0.000	5.00	18.537	12.05	134.1	0.0	734.1
70.00		1.00	1.17	10.279	11.31	227.94	0.650	0.000	5.00	17.866	11.61	131.3	0.0	707.3
75.00		1.00	1.19	10.430	11.47	220.82	0.650	0.000	5.00	17.195	11.18	128.2	0.0	680.6
80.00		1.00	1.21	10.572	11.63	213.48	0.650	0.000	5.00	16.525	10.74	124.9	0.0	653.8
85.00		1.00	1.22	10.708	11.78	205.95	0.650	0.000	5.00	15.854	10.31	121.4	0.0	627.1
90.00		1.00	1.24	10.838	11.92	198.24	0.650	0.000	5.00	15.183	9.87	117.7	0.0	600.3
93.50	Bot - Section 3	1.00	1.25	10.925	12.02	192.75	0.650	0.000	3.50	10.220	6.64	79.8	0.0	403.9
95.00		1.00	1.25	10.962	12.06	190.36	0.650	0.000	1.50	4.357	2.83	34.1	0.0	307.6
98.00	Top - Section 2	1.00	1.26	11.034	12.14	185.57	0.650	0.000	3.00	8.503	5.53	67.1	0.0	600.2
100.00		1.00	1.27	11.081	12.19	185.20	0.650	0.000	2.00	5.550	3.61	44.0	0.0	175.7
105.00		1.00	1.28	11.195	12.31	177.05	0.650	0.000	5.00	13.383	8.70	107.1	0.0	423.7
110.00		1.00	1.29	11.305	12.44	168.78	0.650	0.000	5.00	12.712	8.26	102.8	0.0	402.3
115.00		1.00	1.30	11.412	12.55	160.38	0.650	0.000	5.00	12.042	7.83	98.3	0.0	380.9
117.00	Appurtenance(s)	1.00	1.31	11.453	12.60	156.99	0.650	0.000	2.00	4.629	3.01	37.9	0.0	146.4
120.00		1.00	1.32	11.514	12.67	151.87	0.650	0.000	3.00	6.742	4.38	55.5	0.0	213.1
125.00		1.00	1.33	11.614	12.78	143.26	0.650	0.000	5.00	10.701	6.96	88.9	0.0	338.1
130.00		1.00	1.34	11.710	12.88	134.54	0.650	0.000	5.00	10.030	6.52	84.0	0.0	316.7
135.00		1.00	1.35	11.803	12.98	125.73	0.650	0.000	5.00	9.359	6.08	79.0	0.0	295.3
140.00		1.00	1.36	11.894	13.08	116.84	0.650	0.000	5.00	8.689	5.65	73.9	0.0	273.9
142.00	Appurtenance(s)	1.00	1.36	11.930	13.12	113.25	0.650	0.000	2.00	3.288	2.14	28.0	0.0	103.6
145.00		1.00	1.37	11.982	13.18	107.85	0.650	0.000	3.00	4.730	3.07	40.5	0.0	148.9
145.50	Appurtenance(s)	1.00	1.37	11.991	13.19	106.95	0.650	0.000	0.50	0.765	0.50	6.6	0.0	24.1
								Totals:	**145.50**			**3,450.3**		**22,284.7**

Discrete Appurtenance Forces

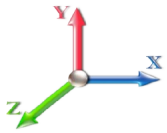
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	145.50	DC6-48-60-18-8F	1	12.085	13.294	1.00	1.00	0.92	31.80	0.000	5.500	12.23	0.00	67.27
2	145.50	LGP21903	6	12.085	13.294	0.84	1.00	1.36	33.00	0.000	5.500	18.09	0.00	99.49
3	145.50	RRUS-11	6	12.085	13.294	0.71	1.00	10.74	306.00	0.000	5.500	142.71	0.00	784.90
4	145.50	LGP21401	6	12.085	13.294	1.00	1.00	7.74	84.60	0.000	5.500	102.89	0.00	565.91
5	145.50	AM-X-CD-16-65-00T-RET	3	12.085	13.294	0.75	1.00	18.04	145.50	0.000	5.500	239.88	0.00	1319.35
6	145.50	7770.00	6	12.085	13.294	0.73	1.00	24.09	210.00	0.000	5.500	320.24	0.00	1761.33
7	145.50	Low Profile Platform	1	11.991	13.190	1.00	1.00	28.00	1200.00	0.000	0.000	369.32	0.00	0.00
8	142.00	742 351	6	11.930	13.123	0.49	0.80	15.75	178.80	0.000	0.000	206.72	0.00	0.00
9	142.00	T-Frames	3	11.930	13.123	0.56	0.75	25.31	1500.00	0.000	0.000	332.17	0.00	0.00
10	117.00	RFS APXVTM14-C-I20	3	11.453	12.598	0.62	0.80	11.72	168.60	0.000	0.000	147.61	0.00	0.00
11	117.00	ALU TD-RRH8x20-25	3	11.453	12.598	0.54	0.80	6.51	210.00	0.000	0.000	82.05	0.00	0.00
12	117.00	ALU 800 Mhz	6	11.453	12.598	0.54	0.80	8.01	318.00	0.000	0.000	100.89	0.00	0.00
13	117.00	ALU 1900 Mhz	3	11.453	12.598	0.54	0.80	6.11	132.00	0.000	0.000	76.98	0.00	0.00
14	117.00	(3) 9' Long Corner Braces	1	11.453	12.598	0.56	0.75	3.80	350.00	0.000	0.000	47.83	0.00	0.00
15	117.00	(3) 8.5' Horizontal Rail	1	11.453	12.598	0.56	0.75	2.39	300.00	0.000	0.000	30.12	0.00	0.00
16	117.00	Sitepro PRK-SFS-H-L	1	11.453	12.598	0.56	0.75	3.77	230.00	0.000	0.000	47.48	0.00	0.00
17	117.00	SitePro PRK-1245L	1	11.453	12.598	0.56	0.75	5.34	464.91	0.000	0.000	67.32	0.00	0.00
18	117.00	Modified T-Arm	3	11.453	12.598	0.56	0.75	16.88	1050.00	0.000	0.000	212.60	0.00	0.00
19	117.00	Commscope	3	11.453	12.598	0.60	0.80	22.09	232.20	0.000	0.000	278.25	0.00	0.00
							Totals:		**7,145.41**			**2,835.38**		

Total Applied Force Summary

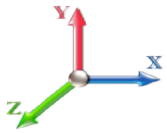
Structure:	CT00303-S-SBA		**Code:**	EIA/TIA-222-G	6/6/2018
Site Name:	Griswold		**Exposure:**	C	
Height:	145.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		140.05	1394.41	0.00	0.00
10.00		136.48	1362.31	0.00	0.00
15.00		132.91	1330.22	0.00	0.00
20.00		137.24	1298.12	0.00	0.00
25.00		139.87	1266.02	0.00	0.00
30.00		141.22	1233.92	0.00	0.00
35.00		141.62	1201.83	0.00	0.00
40.00		141.27	1169.73	0.00	0.00
45.00		140.33	1137.63	0.00	0.00
46.67		46.13	372.08	0.00	0.00
50.00		93.29	1273.35	0.00	0.00
53.00		83.23	1123.65	0.00	0.00
55.00		54.98	368.73	0.00	0.00
60.00		136.66	903.10	0.00	0.00
65.00		134.13	876.35	0.00	0.00
70.00		131.31	849.61	0.00	0.00
75.00		128.23	822.86	0.00	0.00
80.00		124.91	796.11	0.00	0.00
85.00		121.38	769.36	0.00	0.00
90.00		117.66	742.61	0.00	0.00
93.50		79.83	503.44	0.00	0.00
95.00		34.15	350.42	0.00	0.00
98.00		67.08	685.53	0.00	0.00
100.00		43.97	232.76	0.00	0.00
105.00		107.13	565.95	0.00	0.00
110.00		102.76	544.55	0.00	0.00
115.00		98.25	523.15	0.00	0.00
117.00	(25) attachments	1129.03	3658.98	0.00	0.00
120.00		55.51	290.57	0.00	0.00
125.00		88.86	467.16	0.00	0.00
130.00		83.98	445.76	0.00	0.00
135.00		78.99	424.36	0.00	0.00
140.00		73.89	402.96	0.00	0.00
142.00	(9) attachments	566.93	1833.99	0.00	0.00
145.00		40.53	188.93	0.00	0.00
145.50	(29) attachments	1211.93	2041.64	0.00	4598.25
	Totals:	**6,285.67**	**33,452.16**	**0.00**	**4,598.25**

Calculated Forces

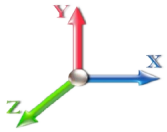
Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-33.45	-6.29	0.00	-630.27	0.00	630.27	4576.28	2288.14	11797.9	5907.74	0.00	0.000	0.000	0.114
5.00	-32.05	-6.17	0.00	-598.81	0.00	598.81	4517.77	2258.89	11350.5	5683.71	0.01	-0.024	0.000	0.112
10.00	-30.69	-6.04	0.00	-567.98	0.00	567.98	4456.28	2228.14	10903.5	5459.88	0.05	-0.048	0.000	0.111
15.00	-29.36	-5.92	0.00	-537.77	0.00	537.77	4391.82	2195.91	10457.5	5236.55	0.11	-0.073	0.000	0.109
20.00	-28.06	-5.79	0.00	-508.18	0.00	508.18	4324.38	2162.19	10013.1	5014.00	0.20	-0.098	0.000	0.108
25.00	-26.79	-5.66	0.00	-479.21	0.00	479.21	4253.96	2126.98	9570.83	4792.53	0.32	-0.125	0.000	0.106
30.00	-25.55	-5.53	0.00	-450.89	0.00	450.89	4180.57	2090.28	9131.30	4572.43	0.47	-0.151	0.000	0.105
35.00	-24.35	-5.40	0.00	-423.24	0.00	423.24	4104.19	2052.10	8695.09	4354.01	0.64	-0.179	0.000	0.103
40.00	-23.18	-5.26	0.00	-396.25	0.00	396.25	4024.85	2012.42	8262.80	4137.54	0.84	-0.207	0.000	0.102
45.00	-22.04	-5.13	0.00	-369.92	0.00	369.92	3942.52	1971.26	7835.01	3923.33	1.08	-0.236	0.000	0.100
46.67	-21.66	-5.09	0.00	-361.38	0.00	361.38	3914.42	1957.21	7693.52	3852.48	1.16	-0.247	0.000	0.099
50.00	-20.39	-4.99	0.00	-344.43	0.00	344.43	3857.22	1928.61	7412.31	3711.67	1.34	-0.267	0.000	0.098
53.00	-19.26	-4.91	0.00	-329.45	0.00	329.45	2988.70	1494.35	5718.32	2863.41	1.51	-0.286	0.000	0.122
55.00	-18.89	-4.86	0.00	-319.63	0.00	319.63	2965.19	1482.60	5595.48	2801.90	1.64	-0.298	0.000	0.120
60.00	-17.99	-4.73	0.00	-295.32	0.00	295.32	2904.34	1452.17	5290.00	2648.93	1.97	-0.335	0.000	0.118
65.00	-17.11	-4.60	0.00	-271.67	0.00	271.67	2840.50	1420.25	4987.29	2497.35	2.34	-0.372	0.000	0.115
70.00	-16.26	-4.48	0.00	-248.65	0.00	248.65	2773.69	1386.84	4687.92	2347.44	2.75	-0.410	0.000	0.112
75.00	-15.43	-4.35	0.00	-226.27	0.00	226.27	2703.90	1351.95	4392.49	2199.51	3.20	-0.448	0.000	0.109
80.00	-14.64	-4.23	0.00	-204.51	0.00	204.51	2631.14	1315.57	4101.58	2053.84	3.69	-0.488	0.000	0.105
85.00	-13.86	-4.11	0.00	-183.35	0.00	183.35	2555.39	1277.70	3815.78	1910.73	4.22	-0.528	0.000	0.101
90.00	-13.12	-4.00	0.00	-162.79	0.00	162.79	2476.68	1238.34	3535.67	1770.46	4.80	-0.569	0.000	0.097
93.50	-12.62	-3.92	0.00	-148.81	0.00	148.81	2419.86	1209.93	3343.48	1674.23	5.23	-0.598	0.000	0.094
95.00	-12.26	-3.88	0.00	-142.92	0.00	142.92	2394.98	1197.49	3261.85	1633.35	5.42	-0.611	0.000	0.093
98.00	-11.58	-3.81	0.00	-131.29	0.00	131.29	1772.11	886.06	2389.60	1196.58	5.81	-0.637	0.000	0.116
100.00	-11.34	-3.77	0.00	-123.65	0.00	123.65	1749.91	874.96	2313.65	1158.54	6.08	-0.654	0.000	0.113
105.00	-10.78	-3.67	0.00	-104.79	0.00	104.79	1692.43	846.21	2126.56	1064.86	6.79	-0.703	0.000	0.105
110.00	-10.23	-3.57	0.00	-86.46	0.00	86.46	1631.96	815.98	1943.46	973.18	7.55	-0.750	0.000	0.095
115.00	-9.71	-3.47	0.00	-68.62	0.00	68.62	1568.52	784.26	1764.96	883.79	8.36	-0.795	0.000	0.084
117.00	-6.06	-2.29	0.00	-61.69	0.00	61.69	1542.31	771.16	1694.98	848.75	8.70	-0.813	0.000	0.077
120.00	-5.77	-2.23	0.00	-54.83	0.00	54.83	1502.10	751.05	1591.63	797.00	9.22	-0.839	0.000	0.073
125.00	-5.30	-2.14	0.00	-43.67	0.00	43.67	1429.48	714.74	1420.86	711.49	10.12	-0.880	0.000	0.065
130.00	-4.86	-2.05	0.00	-32.97	0.00	32.97	1336.04	668.02	1240.29	621.07	11.06	-0.918	0.000	0.057
135.00	-4.43	-1.97	0.00	-22.71	0.00	22.71	1242.60	621.30	1071.99	536.79	12.04	-0.952	0.000	0.046
140.00	-4.03	-1.89	0.00	-12.87	0.00	12.87	1149.16	574.58	915.96	458.66	13.06	-0.979	0.000	0.032
142.00	-2.21	-1.29	0.00	-9.09	0.00	9.09	1111.79	555.89	856.98	429.13	13.47	-0.987	0.000	0.023
145.00	-2.02	-1.25	0.00	-5.22	0.00	5.22	1055.72	527.86	772.20	386.67	14.09	-0.996	0.000	0.015
145.50	0.00	-1.21	0.00	-4.60	0.00	4.60	1046.38	523.19	758.49	379.81	14.20	-0.997	0.000	0.012

Final Analysis Summary

Structure:	CT00303-S-SBA	**Code:**	EIA/TIA-222-G	6/6/2018	
Site Name:	Griswold	**Exposure:**	C		
Height:	145.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	30.8	0.00	40.11	0.00	0.00	3099.73
0.9D + 1.6W 105 mph Wind	30.8	0.00	30.07	0.00	0.00	3079.50
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.9	0.00	60.13	0.00	0.00	781.41
1.2D + 1.0E	1.1	0.00	40.14	0.00	0.00	127.12
0.9D + 1.0E	1.1	0.00	30.11	0.00	0.00	126.20
1.0D + 1.0W 60 mph Wind	6.3	0.00	33.45	0.00	0.00	630.27

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 105 mph Wind	-22.55	-24.15	0.00	-1622.6	0.00	-1622.6	2988.70	1494.3	5718.32	2863.41	53.00	0.574
0.9D + 1.6W 105 mph Wind	-16.77	-24.00	0.00	-1607.0	0.00	-1607.0	2988.70	1494.3	5718.32	2863.41	53.00	0.567
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-37.78	-6.12	0.00	-404.46	0.00	-404.46	2988.70	1494.3	5718.32	2863.41	53.00	0.154
1.2D + 1.0E	-13.94	-0.84	0.00	-35.46	0.00	-35.46	1772.11	886.06	2389.60	1196.58	98.00	0.038
0.9D + 1.0E	-10.46	-0.83	0.00	-35.11	0.00	-35.11	1772.11	886.06	2389.60	1196.58	98.00	0.035
1.0D + 1.0W 60 mph Wind	-19.26	-4.91	0.00	-329.45	0.00	-329.45	2988.70	1494.3	5718.32	2863.41	53.00	0.122

Last revised on 11/28/2017

Monopole Mat Foundation Design

			Date 6/6/2018
Customer Name:	Sprint Nextel	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	145.5
Site Number:	CT00303-S-SBA	**Engineer Name:**	M. Kandel
Engr. Number:	53993	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

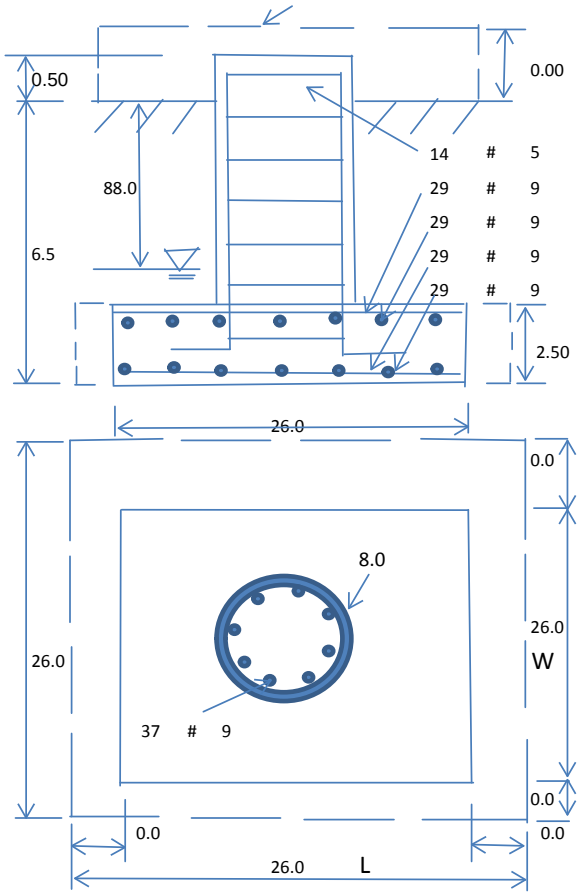
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	40.1	Shear Force (Kips):	30.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3099.7
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	6.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	26	Width of Pad (ft.):	26
Final Length of pad (ft)	26.0	Final width of pad (ft):	26.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	37	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	29	Qty. of Rebar in Pad (W):	29	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	29	Qty. of Rebar in Pad (W):	29	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	145.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	88.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	20000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	2502.94	Total Dry Soil Weight (Kips):	362.93
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	362.93	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1916.19	Total Dry Concrete Weight (Kips):	287.43
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	287.43	Total Vertical Load on Base (Kips):	690.46

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2020	<	Allowable Factored Soil Bearing (psf):	15000	0.13	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8130.5	>	Design Factored Momont (kips-ft):	3315	0.41	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.45	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	6859.7	>	Design Factored Moment (Mu, Kips-Ft	3238.3	0.47	OK!
Calculated Shear Capacity (Kips):	1070.8	>	Design Factored Shear (Kips):	30.8	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	1998.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9548.8	>	Design Factored Axial Load (Pu Kips):	40.1	0.00	OK!
Moment & Axial Strength Combination:	0.47	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	677.7	>	One-Way Factored Shear (L-D. Kips):	204.1	0.30	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	677.7	>	One-Way Factored Shear (W-D., Kips)	204.1	0.30	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	635.0	>	One-Way Factored Shear (C-C, Kips):	196.4	0.31	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0035	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0035		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3307.4	>	Moment at Bottom (L-Dir. K-Ft):	1079.9	0.33	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3307.4	>	Moment at Bottom (W-Dir. K-Ft):	1079.9	0.33	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4621.2	>	Moment at Bottom (C-C Dir. K-Ft):	1527.2	0.33	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0035	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0035		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3307.4	>	Moment at the top (L-Dir K-Ft):	492.1	0.15	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3307.4	>	Moment at the top (W-Dir K-Ft):	492.1	0.15	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4621.2	>	Moment at the top (C-C Dir. K-Ft):	463.6	0.10	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1239.9	k-ft.	Max. factored shear stress v_{u_CD}:		2.0	Psi
Max. factored shear stress v_{u_AB}:	8.5	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	8.5	Psi	Check Usage of Punching Shear Capacity:		0.05	OK!

Pier Foundation Design For Monopole

Customer Name:	Sprint Nextel	IA TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft):	145.5
Site Number:	CT00303-S-SBA	Engineer Name:	M. Kandel
Engr Number:	53993	Engineer Login ID:	

Date: 6/6/2018

Foundation Info Obtained from: Drawings /Calculations

Structure Type: Monopole

Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	40.1	Shear Force (Kips):	30.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3099.7

Foundation Geometries:

Mods required -Yes/No ?:	No			ft.
Diameter of Pier (ft.):	8.0	Depth of Base B. G. S. :	23.0	ft.
Pier Height A. G. (ft.):	0.50			

Material Properties and Reabr Info:

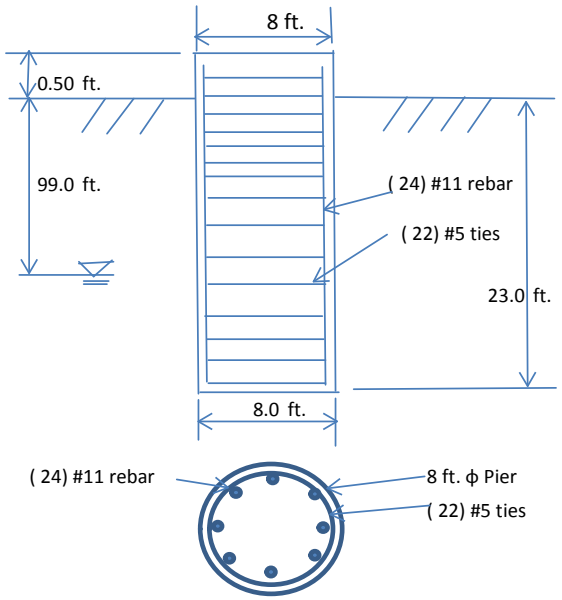
Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield strength:	60	ksi
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	24	Tie Spacing:	18.0	in.
Concrete Cover (in.):	4	Concrete unit weight:	150.0	pcf

Soil Design Parameters:

Water Table B.G.S. (ft):	99.0	Unit weight of water:	62.4	psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30	(°)

Skin Frictions are to be obtained from: Soil Report

Acceptable overstress (5.0%



Monopole Pier Foundation

Depth of Layers (ft) Top	Depth of Layers (ft) Bottom	γ_{soil} (pcf)	ϕ (°)	Cohesion (psf)	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types
0.0	3.0	145	0	0		0	Sand
3.0	30.0	145	33	0		0	Sand
30.0	35.0	145	33	0		0	Sand

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75	
Total Dry Soil Volume from Conical Failure (cu. Ft.):	8060	Dry Soil Weight from Conical Failure:	1169	Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	0	Buoyant Soil Weight from Conical Failure (Ki	0	Kips
Total Dry Concrete Volume (cu. Ft.):	1181	Total Dry Concrete Weight:	177.2	Kips
Total Buoyant Concrete Volume (cu. Ft.):	0.0	Total Buoyant Concrete Weight:	0.00	Kips
Total Effective Concrete Weight (Kips):	177.2	Total Effective Soil Weight:	1168.7	Kips
Total Effective Vertical Load on Base (Kips):	49.7			

Check Soil Capacities:

					Usage	
Allowable Foundation Overturning Resistance (kips-ft.):	8378.3	>	Design Factored Momont (kips-ft):	3597	0.43	OK!
Factor of Safety of Passive Soil Resistance against Moment:	2.33	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75	
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00	

Reinforcing Concrete Pier:

					Usage	
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	7178.0	>	Design Factored Moment (Mu, K-Ft):	3222.9	0.45	OK!
Calculated Shear Capacity (Kips):	1274.2	>	Design Factored Shear (Kips):	340.6	0.27	OK!
Calculated Tension Capacity (Tn, Kips):	2021.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9548	>	Design Factored Axial Load (Pu Kips):	40.1	0.00	OK!
Moment & Axial Strength Combination:	0.45	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.	
Pier Reinforcement Ratio:	0.005		Reinforcement Ratio is too small			

Antenna Mount Structural Analysis

Source: SBA Date: 11.12.2017

SBA Site:	CT00303-S Griswold
Sprint Site Number:	CT23XC405
Project:	Sprint DO Macro Upgrade
Prepared For:	Sprint
Mount Description:	(3) T-Arms
Site Location:	131 Bishop Crossing, Griswold, CT New London County 41.623352°, -71.942241°
Design Codes:	ANSI/TIA-222-G IBC 2015 w/ 2016 CT State Amend.
Analysis Load Case:	Sprint Final Configuration
Analysis Result:	**Adequate @ 91%** - Once Augmented See Conclusion

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

Revision 0
March 15, 2018

GeoStructural • P.O. Box 2621, Boise, ID 83701 • Office: (530) 539-4787
Professional Engineers | Tower Technicians | Climbers | sUAS Mapping

1.0 Introduction

An antenna mount structural analysis has been performed on Sprint's existing mount assembly located at the CT00303-S Griswold communications site in New London County, CT considering the final equipment loading configuration listed in Section 3.0.

2.0 Analysis Criteria

An elastic three-dimensional model of the mount structure has been analyzed pursuant to the following criteria:

- IBC 2015 – International Building Code.
- ANSI/TIA-222-G – Structural Standard for Antenna Supporting Structures and Antennas.
- AISC – Steel Construction Manual.
- ANSI/AWS D1.1 – Structural Welding Code.

Wind w/o ice = 135 mph (3-sec gust Ultimate Wind Speed) Wind w/o ice = 105 mph (3-sec gust Equivalent per TIA-222-G Tower Code)	
Wind with ice = 50 mph (3-sec gust, 3/4" Ice) Exposure Category C	Topographic Category 1 Structure Class II

The following documents were provided:

- Tower Structural Analysis
  TES, 12/7/17.
- Mount and Tower Record Documents
  SBA
- Mount Assessment
  Westchester, 12/21/17.
- RF Design
  Sprint DOMU Project

The results of the analysis are illustrated in Section 4.0. If any of the existing or proposed conditions reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

3.0 Appurtenance Information

Table 3.1 – Sprint Final Configuration[1]

COR	(Quantity) Appurtenance Make/Model	Mount Description
117.0'±	(3) RFS APXVTM14-ALU-I20	*(3) T-Arms*
	(3) COMMSCOPE NNVV-65B-R4	
	(6) ALU 800MHz RRH	
	(3) ALU 1900MHz RRH	
	(3) ALU 2500MHz RRH	

1. *Refer to antenna installation Construction Drawings (by others, when applicable) for additional information regarding final antenna and equipment orientations.*
2. *Panel antennas to be installed in Positions 2 and 3 with a horizontal separation not to exceed 5.5'. RRH units to be installed on dual RRH swivel brackets on new mount pipe to standoff member.*

4.0 Analysis Results

Table 4.1 – Existing Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final Sprint Configuration	Collar Mount	125%	**Inadequate[3]**
	Standoff Member	122%	

1. *Refer to the Calculations & Software Output portion of this report for mount component and structural information.*
2. *Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.3. 105% is an acceptable allowable stress percentage for mount components.*
3. *Structural augments to the existing mount structure are required to obtain a mount structure capable of supporting the currently proposed final loading configuration in Table 3.1.*

Table 4.2 – Augmented Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final Sprint Configuration	Collar Mount	91%	**Adequate Once Augmented[3]**

1. *Refer to the Calculations & Software Output portion of this report for mount component and structural information.*
2. *Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.3. 105% is an acceptable allowable stress percentage for mount components.*
3. *Refer to GeoStructural Mount Augmentation Drawings and Section 5.0 for information regarding required mount augments.*

Table 4.3 – Structural Component Material Strengths

Structural Component	Nominal Strength/Material[1]
Pipe	F_y = 35 ksi (A53, Gr. B)
Tube	F_y = 46 ksi (A500, Gr. B)
Structural Shapes (L, C, W, etc.), Plate / Bar	F_y = 36 ksi (A36)
Uni-Strut	F_y = 33 ksi (A570, Gr. 33)
Connection Bolts	A325
Stainless Steel Bolts	18-8 Stainless, Grade 316/304 F_y = 74 ksi (Yield) & F_u = 29 ksi (Tension)
U-Bolts / Threaded Rod	SAE J429 Grade 2 (Substitution: ASTM A449) F_y = 57 ksi (Yield) & F_u = 74 ksi (Tension)
Welds	E70XX Electrodes

1. *Strengths listed were assumed for this analysis and are based upon ASTM, AISC, RCSC, AWS and ACI preferred specification values. Values and materials are consistent with industry standards. Material strengths were taken from original design documents when available.*

5.0 Conclusion & Recommendations

Based on Sprint's final equipment loading configuration, the existing mount assembly does not have sufficient capacity to support the loading considered in this analysis pursuant to the listed standards. Structural augments (reinforcements) will be required and are briefly summarized below:

- Install Platform Reinforcement Kit; located 4.0' below the existing standoff centerline and attaching to the existing tube steel standoff members 4.0' from collar interface.
  - Sitepro1 PRK-1245L, (1) total.
- Existing mount face pipe rails (booms) will need to be field-cut to a total length not to exceed 6.5'.
- Install V-Brace Kit; located 2.75' above the existing mount face rail centerline.
  - Sitepro1 PRK-SFS-H-L, (1) total. Attach kit ring mount in kit to monopole shaft.
    - If the PRK-SFS-H-L kit is not available, provide (6) total L2-1/2x2-1/2x3/16 x ~8' long replacement angles, field-cut and drill to suit.
  - Pipe2.5STD x 8.5' Horizontal Rail, (3) total. Attach SFS-L kit angles to new horizontal rail.
  - Pipe2.5STD x ~9' long corner braces, (3) total. Attach to new horizontal rail w/ Sitepro1 PUCK brackets, (6) total.
  - Sitepro1 SCX x -K, (12) total. Attach all mount pipes to new and existing rails. (6) new Pipe2.0STD mount pipes will be required to span between existing rail and new rail.
- RRH units are to be installed to existing standoff member close to the collar attachment on new Pipe2.0STD x ~6' tall mount pipes with Sitepro1 BBPM-K1 mount clamps, (3) total pipes and clamp kits.
- Panel antennas to be installed in Positions 2 and 3 (closest to the standoff arm) with a horizontal separation not to exceed 5.5'.

Once the recommended augments are successfully implemented, the augmented mount assembly has sufficient capacity to support the loading considered in this analysis pursuant to the listed standards.

Augmentation Requirements:

- **In order to obtain a mount structure capable of supporting the currently proposed final loading configuration, upgrade augments must be installed in accordance with GeoStructural's *Mount Augmentation Drawings*.**
- **Antennas and equipment shall be installed centered vertically on the mount front face rails. If this assumption is incorrect, the results of this analysis will be affected.**
- **In order for the specified modifications to perform as designed and to "fit-up" the existing T-Arm mounts must be appropriately rotated on standoff member such that they are perpendicular to the face of the. Panel antenna azimuths will need to be adjusted to obtain desired azimuths.**

This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If any of the existing or proposed conditions (appurtenance loading, member sizes, etc.) reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

Prepared by:

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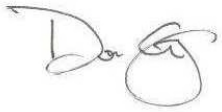
Reviewed and Approved by:



Don George, PE, SE, MLSE
208.602.6569
don.george@geostructural.com

6.0 Standard Conditions

- All data required to complete our structural analysis was furnished by our client and provided record data. GeoStructural has not conducted a site visit or independent study to verify existing conditions and the results of this analysis are based solely on the information provided. It has been assumed that the tower, antenna support structure and foundation have been constructed according to the provided existing drawings, previous structural analysis reports, mapping documents, etc.

- The default Structure Classification is Class II in accordance with ANSI/TIA-222-G §A.2.2 & §A.15.3 and has been assumed for this analysis. The owner shall verify this classification conforms with original or desired reliability criteria.

- This analysis assumes that the structure has been properly installed and maintained in accordance with ANSI/TIA-222-G §15.5 and that no physical deterioration has occurred in any of the components of the structure. Damaged, missing, or rusted members were not considered.

- This analysis verifies the adequacy of the main components of the structure. Not all connections, welds, bolts, plates, etc. were individually detailed and analyzed. Where not specifically analyzed, the existing connection plates, welds, bolts, etc. were assumed adequate to develop the full capacity of the main structural members.

- No consideration has been made for unusual or extreme wind events, rime/in-cloud ice loadings, harmonic or nodal vibration, vortex shedding or other similar conditions.

- It is the owner's responsibility to determine the appropriate design wind speed and amount of ice accumulation beyond code minimum values that should be considered in the analysis.

- This analysis report does not constitute a maintenance and condition assessment. No certifications regarding maintenance and condition are expressed or implied. If desired, GeoStructural can provide these services under a subsequent contract.

- This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If desired, GeoStructural can provide these services under a subsequent contract.

7.0 Calculations & Software Output

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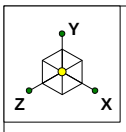

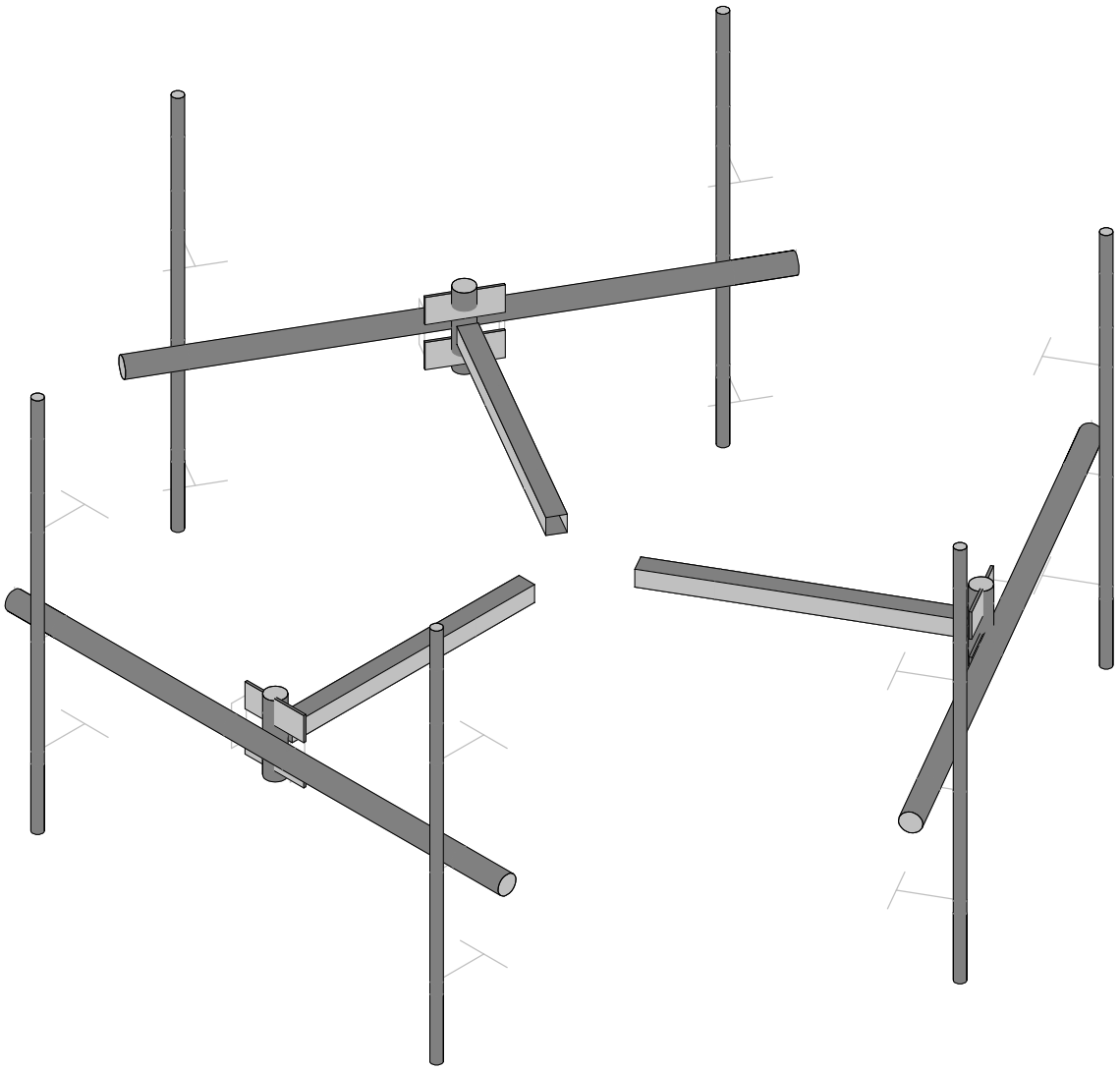

Envelope Only Solution

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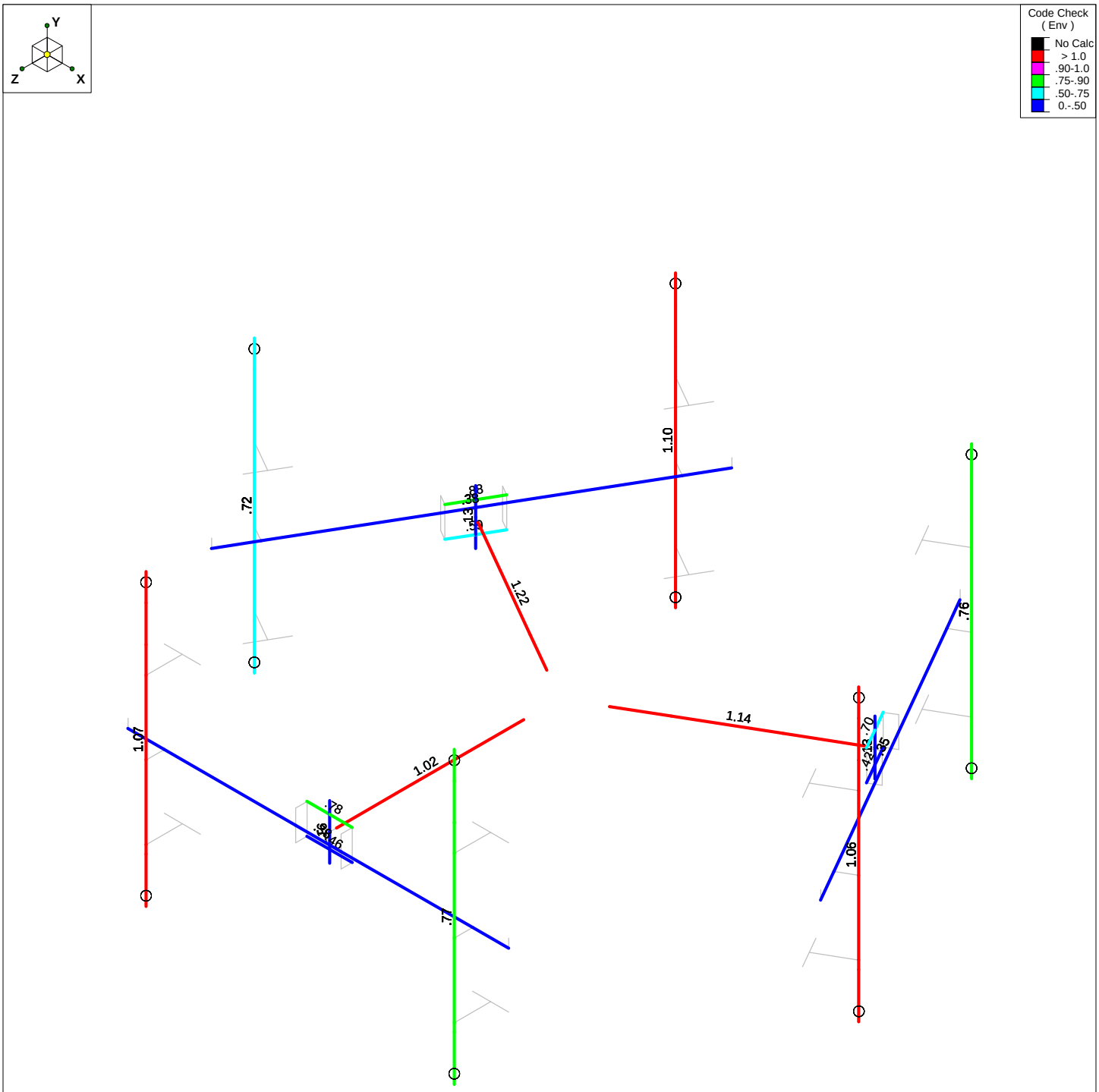

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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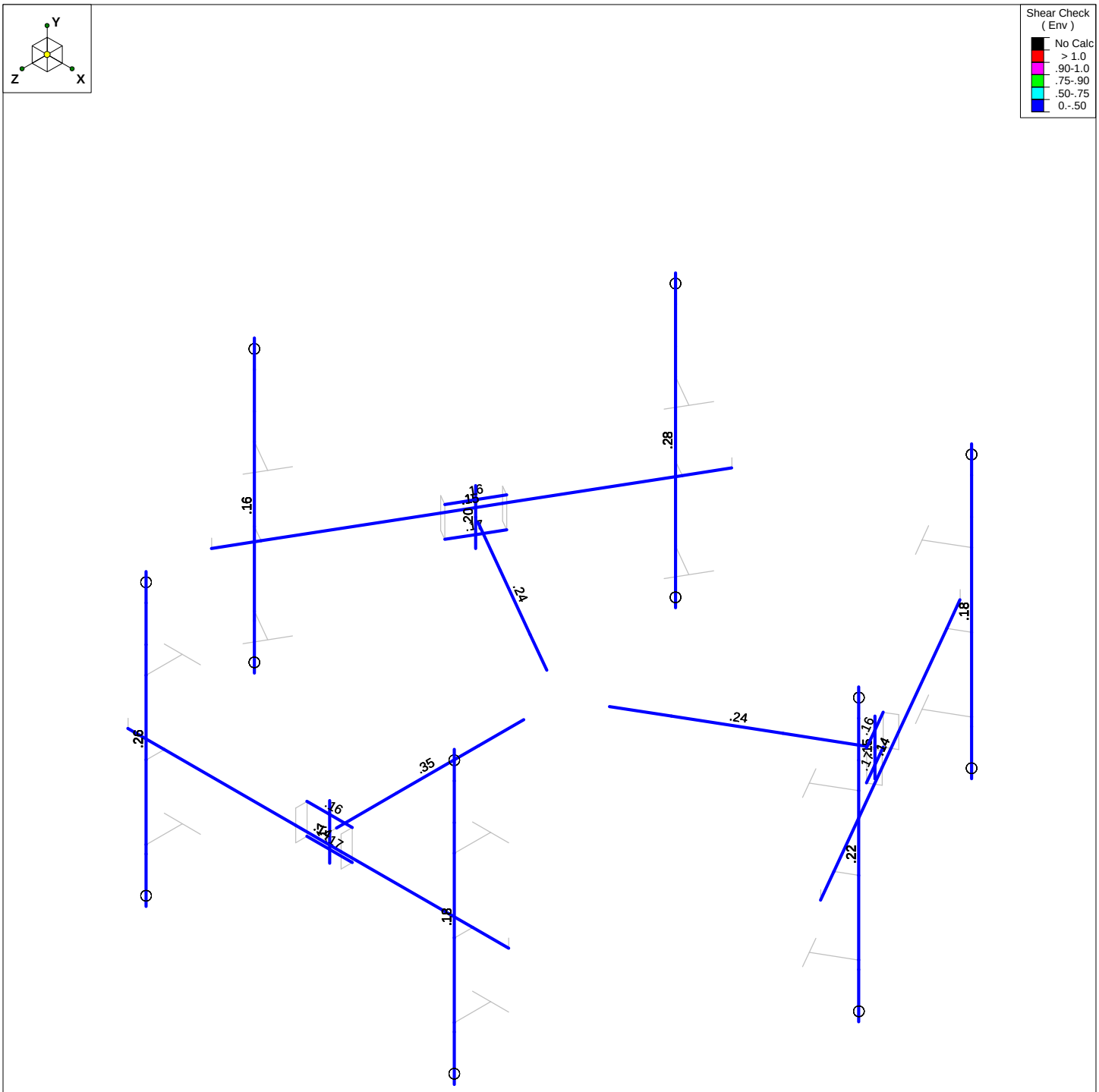

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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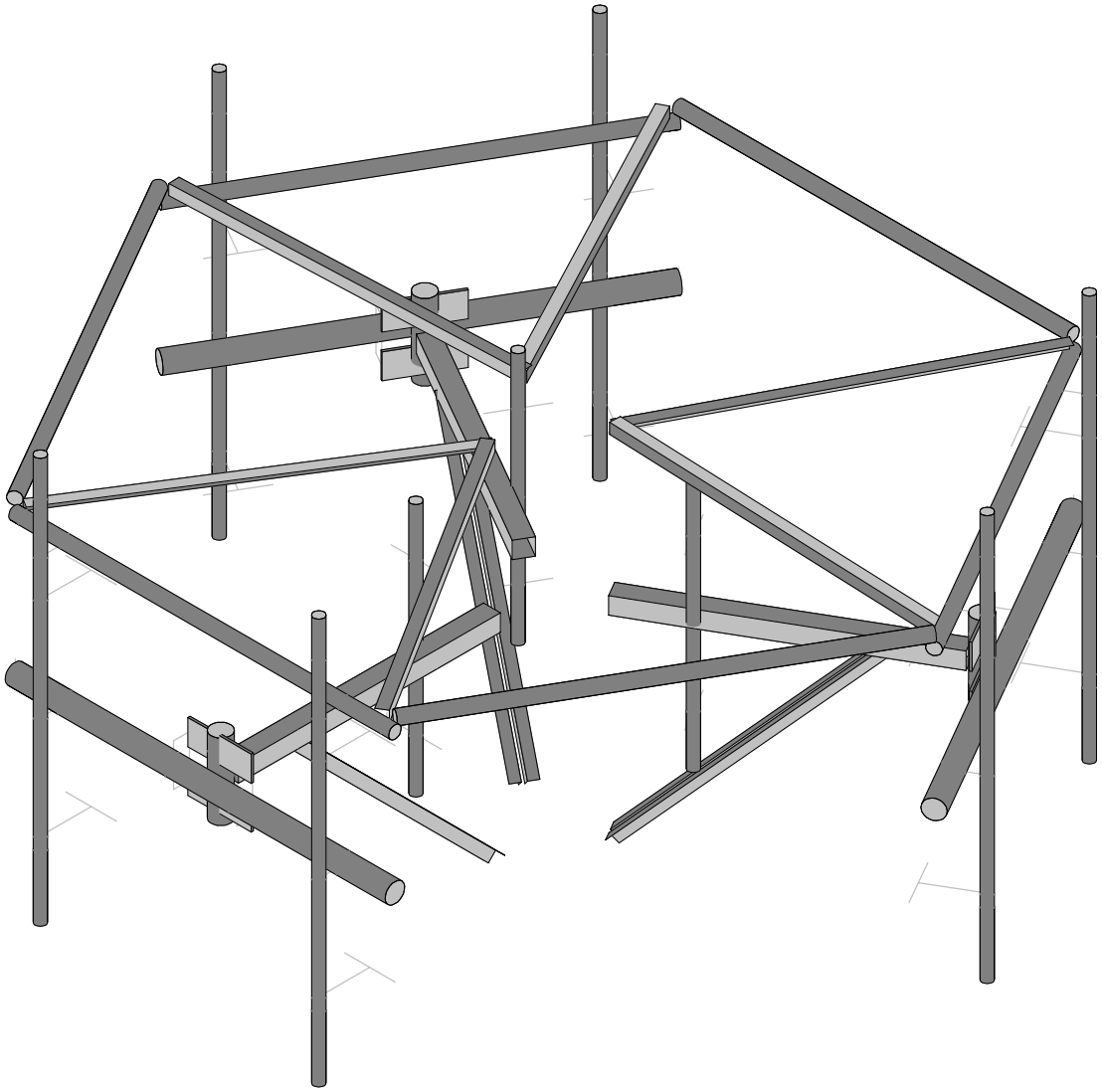

Envelope Only Solution

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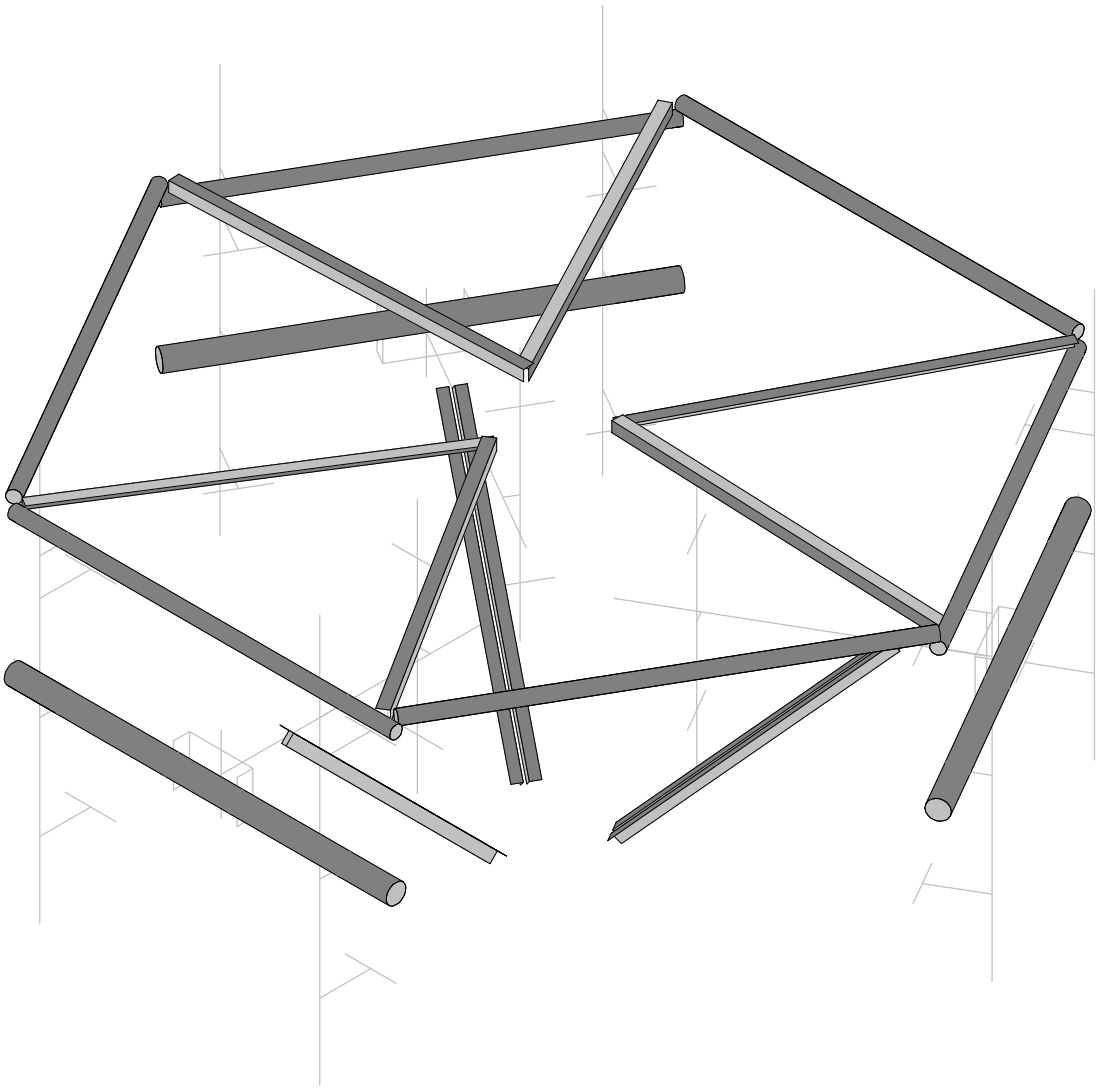

Envelope Only Solution

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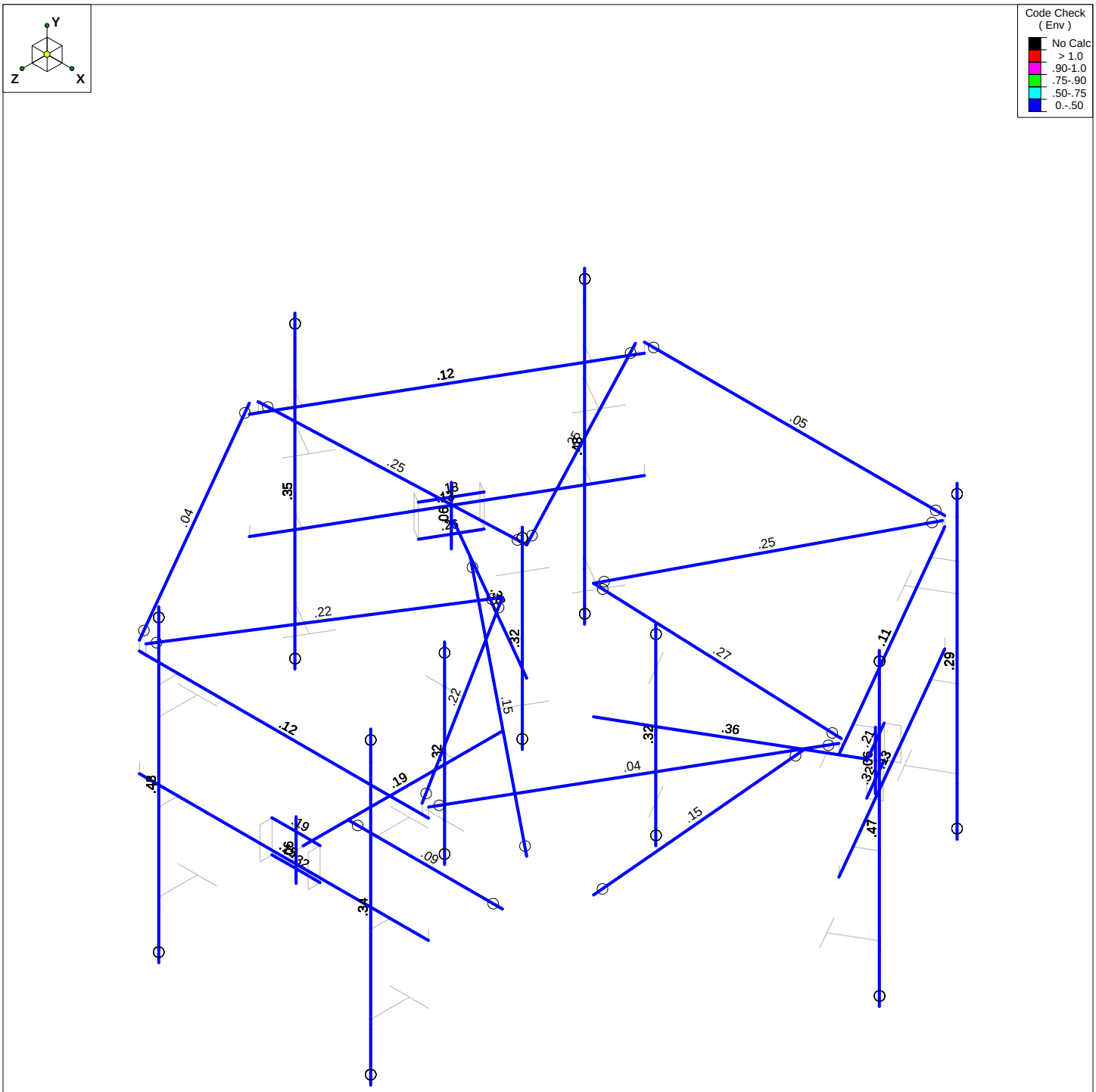

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

GeoStructural, LLC	CT23XC405	SK - 2
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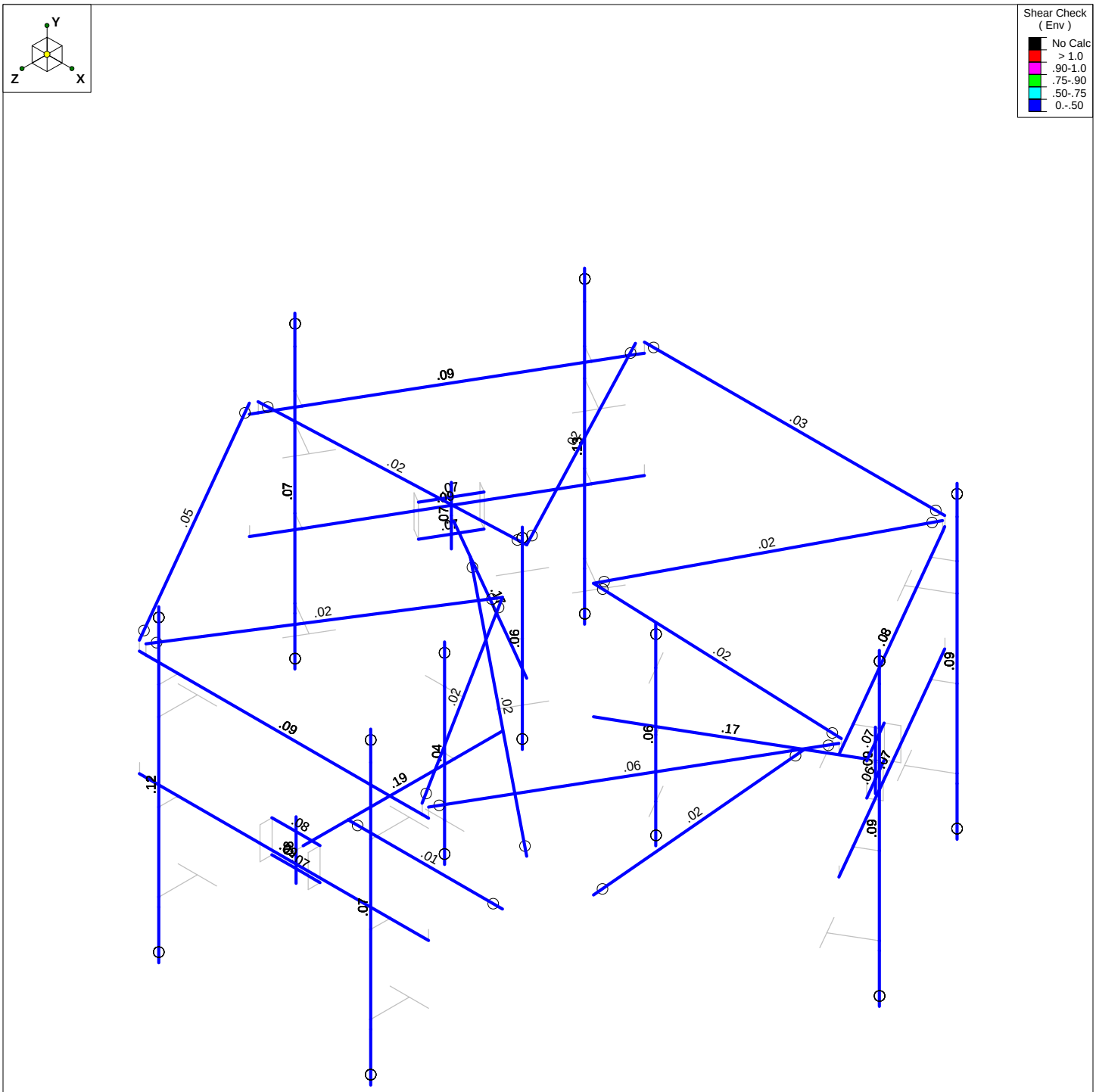

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

GeoStructural, LLC	CT23XC405	SK - 3
Jesse Drennen, PE		Mar 14, 2018 at 4:20 PM
		CT23XC405_Mount Analysis_R0 1...

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	D	DL		-1		25				
2	Di	SL				25		33		
3	Lm [500]	LL				1				
4	Lv [250]	LL				2				
5	Woz	WL				25		39		
6	Wox	WL				25		39		
7	Wiz	WL				25		39		
8	Wix	WL				25		39		
9	Ez	EL				25				
10	Ex	EL				25				

Load Combination Design

	Description	ASIF	CD	ABIF	Service	Hot Rolled	Cold For...	Wood	Concrete	Masonry	Footings	Aluminum	Connecti...
1	1) 1.4D					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	2) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	3) 0.9D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	4) 1.2D+1.0...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	ASIF	CD	ABIF	Service	Hot Rolled	Cold For...	Wood	Concrete	Masonry	Footings	Aluminum	Connecti...
42	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	5) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	6) 1.2D+1.5...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	7) (1.2+0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
71	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
72	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
73	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
74	8) (0.9-0.2S...					Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N22	max	1.087	17	.305	8	.9	14	.575	38	1.948	5	1.323	17
2		min	-1.097	11	-.398	38	-2.39	32	-.281	20	-1.952	11	-1.573	11
3	N46	max	.527	5	.106	32	1.286	14	0	2	0	1	.002	17
4		min	-.519	23	.015	24	-1.506	8	0	20	0	1	-.002	11
5	N49	max	1.134	17	.286	12	1.77	2	.942	21	4.267	10	.652	2
6		min	-2.357	11	-.224	18	-1.058	20	-1.213	3	-4.296	4	-.622	20
7	N50	max	1.076	17	.106	35	.763	13	.001	21	0	1	0	2
8		min	-1.276	11	.016	15	-.665	19	-.002	3	0	1	0	8
9	N51	max	2.329	5	.288	4	1.837	2	1.077	7	4.527	12	.672	8
10		min	-1.1	23	-.226	22	-1.138	20	-.915	25	-4.501	6	-.452	14
11	N52	max	1.09	4	.106	28	.802	3	.001	7	0	1	0	8
12		min	-.9	22	.016	20	-.687	21	-.001	25	0	1	0	14
13	N91	max	.067	17	2.441	26	2.366	26	0	1	.001	17	.001	17
14		min	-.067	23	.397	20	.285	20	0	1	-.001	11	-.001	11
15	N93	max	2.049	30	2.439	30	-.131	25	.002	21	.002	21	.001	3
16		min	.245	24	.416	24	-1.184	31	-.002	3	-.002	3	0	21
17	N95	max	-.242	17	2.439	34	-.132	15	.002	7	.002	24	.001	7
18		min	-2.05	34	.414	16	-1.184	33	-.002	24	-.002	7	-.001	24
19	Totals:	max	7.734	5	7.203	35	7.553	14						

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
20		min	-7.734	23	2.127	17	-7.553	8						

Envelope Member Section Deflections

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1	M1	1	max	.148	17	.05	22	.022	3	1.904e-03	20	NC	1	NC	1
2			min	-.151	11	-.114	40	-.011	21	-4.841e-03	26	124.68	17	904.034	17
3		2	max	.148	17	.021	22	.019	26	1.273e-03	20	NC	14	NC	1
4			min	-.151	11	-.087	40	-.007	20	-4.441e-03	26	166.335	17	1568.237	17
5		3	max	.148	17	.002	20	.019	26	6.422e-04	20	NC	20	NC	1
6			min	-.151	11	-.066	26	-.005	20	-4.041e-03	26	224.443	11	1621.788	23
7		4	max	.148	17	.018	18	.03	2	1.367e-03	20	NC	20	NC	1
8			min	-.151	11	-.076	36	-.017	20	-4.457e-03	26	149.524	11	940.586	12
9		5	max	.148	17	.044	18	.045	2	2.091e-03	20	NC	3	NC	4
10			min	-.151	11	-.091	12	-.029	20	-4.873e-03	26	112.062	11	464.385	13
11	M2	1	max	.091	12	.078	4	.006	24	2.304e-03	13	NC	1	NC	1
12			min	-.044	18	-.071	22	-.02	42	-1.953e-03	19	NC	1	NC	1
13		2	max	.091	12	.095	4	.013	25	2.304e-03	13	NC	1	NC	1
14			min	-.044	18	-.09	22	-.018	7	-1.953e-03	19	NC	1	NC	1
15		3	max	.091	12	.112	4	.023	13	2.304e-03	13	NC	1	NC	1
16			min	-.044	18	-.109	22	-.021	19	-1.953e-03	19	NC	1	NC	1
17		4	max	.091	12	.128	4	.034	13	2.304e-03	13	NC	1	NC	1
18			min	-.044	18	-.129	10	-.025	19	-1.953e-03	19	NC	1	NC	1
19		5	max	.091	12	.148	17	.045	2	2.304e-03	13	NC	1	NC	1
20			min	-.044	18	-.151	11	-.029	20	-1.953e-03	19	NC	1	NC	1
21	M3	1	max	.114	40	.078	4	.014	19	2.1e-03	13	NC	1	NC	1
22			min	-.05	22	-.071	22	-.03	13	-1.776e-03	19	NC	1	NC	1
23		2	max	.114	40	.095	4	.01	19	2.1e-03	13	NC	1	NC	1
24			min	-.05	22	-.09	22	-.019	13	-1.776e-03	19	NC	1	NC	1
25		3	max	.114	40	.112	4	.008	17	2.1e-03	13	NC	1	NC	1
26			min	-.05	22	-.109	22	-.011	12	-1.776e-03	19	NC	1	NC	1
27		4	max	.114	40	.129	4	.013	4	2.1e-03	13	NC	1	NC	1
28			min	-.05	22	-.129	10	-.009	22	-1.776e-03	19	NC	1	NC	1
29		5	max	.114	40	.148	17	.022	3	2.1e-03	13	NC	1	NC	1
30			min	-.05	22	-.151	11	-.011	21	-1.776e-03	19	NC	1	NC	1
31	M4	1	max	.105	36	.077	4	.006	24	2.304e-03	13	NC	1	NC	1
32			min	-.045	18	-.069	22	-.02	42	-1.953e-03	19	NC	1	NC	1
33		2	max	.105	36	.094	4	.013	25	2.304e-03	13	NC	1	NC	1
34			min	-.045	18	-.088	22	-.018	7	-1.953e-03	19	NC	1	NC	1
35		3	max	.105	36	.111	4	.023	13	2.304e-03	13	NC	1	NC	1
36			min	-.045	18	-.107	22	-.021	19	-1.953e-03	19	NC	1	NC	1
37		4	max	.105	36	.128	4	.034	13	2.304e-03	13	NC	1	NC	1
38			min	-.045	18	-.127	10	-.025	19	-1.953e-03	19	NC	1	NC	1
39		5	max	.105	36	.145	4	.045	2	2.304e-03	13	NC	1	NC	1
40			min	-.045	18	-.146	10	-.029	20	-1.953e-03	19	NC	1	NC	1
41	M5	1	max	.13	40	.076	4	.014	19	2.1e-03	13	NC	1	NC	1
42			min	-.051	22	-.069	22	-.03	13	-1.776e-03	19	NC	1	NC	1
43		2	max	.13	40	.093	4	.01	19	2.1e-03	13	NC	1	NC	1
44			min	-.051	22	-.088	22	-.019	13	-1.776e-03	19	NC	1	NC	1
45		3	max	.13	40	.11	4	.008	17	2.1e-03	13	NC	1	NC	1
46			min	-.051	22	-.107	22	-.011	12	-1.776e-03	19	NC	1	NC	1
47		4	max	.13	40	.127	4	.013	4	2.1e-03	13	NC	1	NC	1
48			min	-.051	22	-.126	10	-.009	22	-1.776e-03	19	NC	1	NC	1
49		5	max	.13	40	.144	4	.022	3	2.1e-03	13	NC	1	NC	1
50			min	-.051	22	-.146	10	-.011	21	-1.776e-03	19	NC	1	NC	1
51	M6	1	max	.029	20	.044	18	.148	17	8.937e-03	11	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
52			min	-.045	2	-.091	12	-.151	11	-8.015e-03	17	NC	1	NC	1
53		2	max	.029	20	.044	18	.147	17	8.937e-03	11	NC	1	NC	1
54			min	-.045	2	-.094	12	-.149	11	-8.015e-03	17	NC	1	NC	1
55		3	max	.029	20	.045	18	.146	5	8.937e-03	11	NC	1	NC	1
56			min	-.045	2	-.096	12	-.148	11	-8.015e-03	17	NC	1	NC	1
57		4	max	.029	20	.045	18	.145	4	8.937e-03	11	NC	1	NC	1
58			min	-.045	2	-.101	36	-.147	10	-8.015e-03	17	NC	1	NC	1
59		5	max	.029	20	.045	18	.145	4	8.937e-03	11	NC	1	NC	1
60			min	-.045	2	-.105	36	-.146	10	-8.015e-03	17	NC	1	NC	1
61	M7	1	max	.011	21	.05	22	.148	17	8.913e-03	11	NC	1	NC	1
62			min	-.022	3	-.114	40	-.151	11	-8.029e-03	17	NC	1	NC	1
63		2	max	.011	21	.05	22	.147	5	8.913e-03	11	NC	1	NC	1
64			min	-.022	3	-.118	40	-.149	11	-8.029e-03	17	NC	1	NC	1
65		3	max	.011	21	.051	22	.146	5	8.913e-03	11	NC	1	NC	1
66			min	-.022	3	-.122	40	-.148	11	-8.029e-03	17	NC	1	NC	1
67		4	max	.011	21	.051	22	.145	5	8.913e-03	11	NC	1	NC	1
68			min	-.022	3	-.126	40	-.146	10	-8.029e-03	17	NC	1	NC	1
69		5	max	.011	21	.051	22	.144	4	8.913e-03	11	NC	1	NC	1
70			min	-.022	3	-.13	40	-.146	10	-8.029e-03	17	NC	1	NC	1
71	M8	1	max	.02	42	.044	18	.078	4	8.937e-03	11	NC	1	NC	1
72			min	-.006	24	-.091	12	-.071	22	-8.015e-03	17	NC	1	NC	1
73		2	max	.02	42	.044	18	.077	4	8.937e-03	11	NC	1	NC	1
74			min	-.006	24	-.094	12	-.07	22	-8.015e-03	17	NC	1	NC	1
75		3	max	.02	42	.045	18	.077	4	8.937e-03	11	NC	1	NC	1
76			min	-.006	24	-.096	12	-.07	22	-8.015e-03	17	NC	1	NC	1
77		4	max	.02	42	.045	18	.077	4	8.937e-03	11	NC	1	NC	1
78			min	-.006	24	-.101	36	-.069	22	-8.015e-03	17	NC	1	NC	1
79		5	max	.02	42	.045	18	.077	4	8.937e-03	11	NC	1	NC	1
80			min	-.006	24	-.105	36	-.069	22	-8.015e-03	17	NC	1	NC	1
81	M9	1	max	.03	13	.05	22	.078	4	8.913e-03	11	NC	1	NC	1
82			min	-.014	19	-.114	40	-.071	22	-8.029e-03	17	NC	1	NC	1
83		2	max	.03	13	.05	22	.077	4	8.913e-03	11	NC	1	NC	1
84			min	-.014	19	-.118	40	-.07	22	-8.029e-03	17	NC	1	NC	1
85		3	max	.03	13	.051	22	.077	4	8.913e-03	11	NC	1	NC	1
86			min	-.014	19	-.122	40	-.07	22	-8.029e-03	17	NC	1	NC	1
87		4	max	.03	13	.051	22	.077	4	8.913e-03	11	NC	1	NC	1
88			min	-.014	19	-.126	40	-.069	22	-8.029e-03	17	NC	1	NC	1
89		5	max	.03	13	.051	22	.076	4	8.913e-03	11	NC	1	NC	1
90			min	-.014	19	-.13	40	-.069	22	-8.029e-03	17	NC	1	NC	1
91	M10	1	max	.071	22	.091	12	.006	24	4.873e-03	26	NC	3	NC	1
92			min	-.078	4	-.044	18	-.02	42	-2.091e-03	20	112.062	11	578.018	18
93		2	max	.071	22	.076	36	-.002	22	4.444e-03	26	NC	20	NC	1
94			min	-.078	4	-.018	18	-.02	26	-1.322e-03	20	149.528	11	877.886	18
95		3	max	.071	22	.066	26	0	20	4.014e-03	26	NC	20	NC	1
96			min	-.078	4	-.002	20	-.022	26	-5.525e-04	20	224.44	11	1026.536	13
97		4	max	.071	22	.087	40	.006	20	4.427e-03	26	NC	14	NC	8
98			min	-.078	4	-.021	22	-.025	26	-1.228e-03	20	166.339	17	704.271	13
99		5	max	.071	22	.114	40	.014	19	4.841e-03	26	NC	1	NC	4
100			min	-.078	4	-.05	22	-.03	13	-1.904e-03	20	124.68	17	477.516	13
101	M11	1	max	0	14	.002	20	.109	22	7.872e-03	17	NC	1	NC	1
102			min	-.002	32	-.066	26	-.112	4	-8.763e-03	11	NC	1	NC	1
103		2	max	0	14	.002	20	.108	22	7.872e-03	17	NC	1	NC	1
104			min	-.002	32	-.064	26	-.111	4	-8.763e-03	11	NC	1	NC	1
105		3	max	0	14	.001	20	.108	22	7.872e-03	17	NC	1	NC	1
106			min	-.002	32	-.061	26	-.11	4	-8.763e-03	11	NC	1	NC	1
107		4	max	0	14	.001	20	.107	22	7.872e-03	17	NC	1	NC	1
108			min	-.002	32	-.059	26	-.109	4	-8.763e-03	11	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
109		5	max	0	14	0	20	.106	22	7.872e-03	17	NC	1	NC	1
110			min	-.002	32	-.057	26	-.108	4	-8.763e-03	11	NC	1	NC	1
111	M12	1	max	.002	20	.18	17	.008	20	1.491e-03	22	NC	1	NC	1
112			min	-.066	26	-.186	11	-.035	26	-1.807e-03	40	112.22	11	334.271	2
113		2	max	.002	20	.144	5	.005	20	1.5e-03	22	NC	1	NC	1
114			min	-.066	26	-.146	11	-.017	26	-1.815e-03	40	149.663	11	448.506	2
115		3	max	.002	20	.112	4	.002	32	1.583e-03	22	NC	1	NC	1
116			min	-.066	26	-.109	22	0	14	-1.889e-03	40	224.556	11	576.484	32
117		4	max	.002	20	.081	4	.02	26	1.491e-03	22	NC	1	NC	1
118			min	-.066	26	-.075	22	0	20	-1.816e-03	40	448.812	11	384.252	32
119		5	max	.002	20	.052	3	.038	26	1.481e-03	22	NC	1	NC	1
120			min	-.066	26	-.041	21	-.003	20	-1.808e-03	40	831.059	31	288.143	32
121	M17	1	max	.141	12	.361	23	.105	18	3.438e-03	4	NC	1	NC	1
122			min	-.118	18	-.426	41	-.138	12	-3.028e-03	22	NC	1	NC	1
123		2	max	.141	12	.328	23	.095	18	3.438e-03	4	NC	1	NC	1
124			min	-.118	18	-.409	41	-.127	12	-3.028e-03	22	NC	1	NC	1
125		3	max	.141	12	.296	23	.085	18	3.438e-03	4	NC	1	NC	1
126			min	-.118	18	-.391	41	-.117	12	-3.028e-03	22	NC	1	NC	1
127		4	max	.141	12	.263	23	.075	18	3.438e-03	4	NC	1	NC	1
128			min	-.118	18	-.374	41	-.106	12	-3.028e-03	22	NC	1	NC	1
129		5	max	.141	12	.233	22	.065	18	3.438e-03	4	NC	1	NC	1
130			min	-.118	18	-.357	40	-.096	12	-3.028e-03	22	NC	1	NC	1
131	M18	1	max	.117	12	.296	23	.141	12	1.101e-02	11	NC	1	NC	1
132			min	-.085	18	-.391	41	-.118	18	-1.003e-02	17	NC	1	NC	1
133		2	max	.117	12	.288	23	.151	12	1.101e-02	11	NC	1	NC	1
134			min	-.085	18	-.384	41	-.128	18	-1.003e-02	17	NC	1	NC	1
135		3	max	.117	12	.281	23	.161	12	1.101e-02	11	NC	1	NC	1
136			min	-.085	18	-.376	41	-.139	18	-1.003e-02	17	NC	1	NC	1
137		4	max	.117	12	.274	23	.172	12	1.101e-02	11	NC	1	NC	1
138			min	-.085	18	-.369	41	-.149	18	-1.003e-02	17	NC	1	NC	1
139		5	max	.117	12	.267	23	.182	12	1.101e-02	11	NC	1	NC	1
140			min	-.085	18	-.362	41	-.159	18	-1.003e-02	17	NC	1	NC	1
141	M25	1	max	.362	41	.463	11	.175	16	4.005e-03	12	NC	3	NC	1
142			min	-.267	23	-.413	17	-.177	10	-3.969e-03	18	308.29	35	498.234	11
143		2	max	.362	41	.236	12	.099	17	3.82e-03	12	NC	29	NC	5
144			min	-.267	23	-.207	17	-.126	11	-3.766e-03	18	415.014	35	629.653	11
145		3	max	.362	41	.062	3	.059	18	2.342e-03	12	NC	1	NC	32
146			min	-.267	23	-.054	21	-.081	12	-2.144e-03	18	195.047	11	608.339	4
147		4	max	.362	41	.293	5	.116	3	1.972e-03	12	NC	1	NC	8
148			min	-.267	23	-.294	11	-.078	21	-1.738e-03	18	126.719	11	951.679	13
149		5	max	.362	41	.599	17	.351	2	1.972e-03	12	NC	1	NC	5
150			min	-.267	23	-.607	11	-.251	20	-1.738e-03	18	89.709	11	296.961	13
151	M26	1	max	.061	12	.277	23	.11	4	9.57e-03	11	NC	1	NC	1
152			min	-.052	18	-.338	41	-.107	22	-9.27e-03	17	NC	1	NC	1
153		2	max	.061	12	.274	23	.109	4	9.57e-03	11	NC	1	NC	1
154			min	-.052	18	-.344	41	-.105	22	-9.27e-03	17	NC	1	NC	1
155		3	max	.061	12	.272	23	.107	4	9.57e-03	11	NC	1	NC	1
156			min	-.052	18	-.35	41	-.104	22	-9.27e-03	17	NC	1	NC	1
157		4	max	.061	12	.269	23	.106	4	9.57e-03	11	NC	1	NC	1
158			min	-.052	18	-.356	41	-.102	22	-9.27e-03	17	NC	1	NC	1
159		5	max	.061	12	.267	23	.104	4	9.57e-03	11	NC	1	NC	1
160			min	-.052	18	-.362	41	-.1	22	-9.27e-03	17	NC	1	NC	1
161	M31	1	max	.107	22	.36	17	.116	19	5.948e-03	2	NC	3	NC	4
162			min	-.111	4	-.472	11	-.135	13	-3.345e-03	20	104.843	11	434.796	12
163		2	max	.107	22	.162	17	.056	19	5.48e-03	2	NC	29	NC	4
164			min	-.111	4	-.237	11	-.065	13	-2.829e-03	20	144.137	11	630.173	12
165		3	max	.107	22	.009	20	.008	8	4.857e-03	26	NC	8	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
166			min	-.111	4	-.084	26	-.008	14	-1.998e-03	20	216.747	11	1011.517	12
167		4	max	.107	22	.179	23	.041	12	4.797e-03	26	NC	1	NC	1
168			min	-.11	4	-.249	41	-.034	18	-2.055e-03	20	158.17	17	983.181	17
169		5	max	.107	22	.391	23	.085	12	4.782e-03	2	NC	1	NC	1
170			min	-.11	4	-.439	41	-.073	18	-2.16e-03	20	116.054	17	705.318	17
171	M32	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
172			min	0	1	0	1	0	1	0	1	NC	1	NC	1
173		2	max	0	32	.005	38	.016	5	2.605e-03	11	NC	1	NC	1
174			min	0	14	-.002	20	-.016	11	-2.196e-03	17	NC	1	3854.988	11
175		3	max	.001	32	.009	38	.046	5	4.657e-03	11	NC	1	NC	1
176			min	0	14	-.003	20	-.046	11	-4.088e-03	17	6928.524	38	1346.458	5
177		4	max	.002	32	0	14	.079	5	6.709e-03	11	NC	1	NC	1
178			min	0	14	-.006	32	-.078	23	-5.979e-03	17	9797.877	32	788.876	5
179		5	max	.002	32	0	20	.108	4	8.763e-03	11	NC	8	NC	1
180			min	0	14	-.057	26	-.106	22	-7.872e-03	17	1087.51	26	575.258	4
181	M19	1	max	.121	18	.331	17	.114	17	2.274e-03	17	NC	1	NC	1
182			min	-.142	12	-.452	11	-.115	12	-3.078e-03	11	NC	1	NC	1
183		2	max	.121	18	.301	17	.108	6	2.274e-03	17	NC	1	NC	1
184			min	-.142	12	-.42	11	-.106	24	-3.078e-03	11	NC	1	NC	1
185		3	max	.121	18	.27	17	.102	6	2.274e-03	17	NC	1	NC	1
186			min	-.142	12	-.388	11	-.098	24	-3.078e-03	11	NC	1	NC	1
187		4	max	.121	18	.24	17	.095	6	2.274e-03	17	NC	1	NC	1
188			min	-.142	12	-.356	11	-.089	24	-3.078e-03	11	NC	1	NC	1
189		5	max	.121	18	.21	17	.089	6	2.274e-03	17	NC	1	NC	1
190			min	-.142	12	-.324	11	-.081	24	-3.078e-03	11	NC	1	NC	1
191	M20	1	max	.102	6	.27	17	.142	12	1.071e-02	11	NC	1	NC	1
192			min	-.098	24	-.388	11	-.121	18	-1.002e-02	17	NC	1	NC	1
193		2	max	.102	6	.264	17	.151	12	1.071e-02	11	NC	1	NC	1
194			min	-.098	24	-.379	11	-.128	18	-1.002e-02	17	NC	1	NC	1
195		3	max	.102	6	.257	17	.16	12	1.071e-02	11	NC	1	NC	1
196			min	-.098	24	-.37	11	-.134	18	-1.002e-02	17	NC	1	NC	1
197		4	max	.102	6	.25	17	.169	12	1.071e-02	11	NC	1	NC	1
198			min	-.098	24	-.36	11	-.141	17	-1.002e-02	17	NC	1	NC	1
199		5	max	.102	6	.243	17	.178	11	1.071e-02	11	NC	1	NC	1
200			min	-.098	24	-.351	11	-.149	17	-1.002e-02	17	NC	1	NC	1
201	M21	1	max	.351	11	.453	11	.227	12	3.835e-03	11	NC	1	NC	1
202			min	-.243	17	-.401	17	-.191	18	-2.926e-03	17	2380.926	14	547.943	17
203		2	max	.351	11	.238	11	.117	12	3.658e-03	11	NC	1	NC	38
204			min	-.243	17	-.204	17	-.115	18	-2.792e-03	17	447.408	11	711.511	17
205		3	max	.351	11	.069	3	.075	24	2.876e-03	12	NC	2	NC	5
206			min	-.243	17	-.055	21	-.074	18	-2.331e-03	18	201.3	11	629.206	12
207		4	max	.351	11	.303	17	.282	2	3.11e-03	13	NC	1	NC	5
208			min	-.243	17	-.325	11	-.222	20	-2.639e-03	19	123.431	11	521.7	4
209		5	max	.351	11	.637	17	.656	2	3.11e-03	13	NC	1	NC	5
210			min	-.243	17	-.696	11	-.534	20	-2.639e-03	19	83.564	11	185.301	3
211	M22	1	max	.084	19	.253	17	.111	4	1.051e-02	11	NC	1	NC	1
212			min	-.097	13	-.345	11	-.107	22	-8.958e-03	17	NC	1	NC	1
213		2	max	.084	19	.251	17	.111	4	1.051e-02	11	NC	1	NC	1
214			min	-.097	13	-.347	11	-.107	22	-8.958e-03	17	NC	1	NC	1
215		3	max	.084	19	.248	17	.111	4	1.051e-02	11	NC	1	NC	1
216			min	-.097	13	-.348	11	-.106	22	-8.958e-03	17	NC	1	NC	1
217		4	max	.084	19	.246	17	.111	4	1.051e-02	11	NC	1	NC	1
218			min	-.097	13	-.35	11	-.105	22	-8.958e-03	17	NC	1	NC	1
219		5	max	.084	19	.243	17	.111	4	1.051e-02	11	NC	1	NC	1
220			min	-.097	13	-.351	11	-.105	22	-8.958e-03	17	NC	1	NC	1
221	M41	1	max	.131	11	.278	23	.245	11	9.919e-03	11	NC	1	NC	1
222			min	-.107	17	-.378	41	-.214	17	-8.993e-03	17	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
223		2	max	.131	11	.275	23	.25	11	9.919e-03	11	NC	1	NC	1
224			min	-.107	17	-.374	41	-.219	17	-8.993e-03	17	NC	1	NC	1
225		3	max	.131	11	.272	23	.255	11	9.919e-03	11	NC	1	NC	1
226			min	-.107	17	-.37	41	-.225	17	-8.993e-03	17	NC	1	NC	1
227		4	max	.131	11	.27	23	.26	11	9.919e-03	11	NC	1	NC	1
228			min	-.107	17	-.366	41	-.23	17	-8.993e-03	17	NC	1	NC	1
229		5	max	.131	11	.267	23	.266	11	9.919e-03	11	NC	1	NC	1
230			min	-.107	17	-.362	41	-.235	17	-8.993e-03	17	NC	1	NC	1
231	M42	1	max	.214	17	.359	17	.155	17	2.596e-03	18	NC	1	NC	1
232			min	-.245	11	-.484	11	-.172	11	-4.118e-03	12	118.12	12	NC	1
233		2	max	.214	17	.164	18	.098	6	2.276e-03	19	NC	1	NC	1
234			min	-.245	11	-.272	12	-.096	24	-3.641e-03	13	159.564	12	2153.649	8
235		3	max	.214	17	.017	20	.051	8	2.022e-03	20	NC	1	NC	1
236			min	-.245	11	-.149	26	-.034	14	-3.273e-03	2	228.938	17	1746.918	8
237		4	max	.214	17	.178	22	.093	11	2.631e-03	21	NC	1	NC	1
238			min	-.245	11	-.307	40	-.07	17	-3.75e-03	3	152.774	17	2696.058	8
239		5	max	.214	17	.394	23	.177	11	3.128e-03	22	NC	1	NC	1
240			min	-.245	11	-.452	41	-.153	17	-4.143e-03	4	113.952	17	NC	1
241	M43	1	max	.122	18	.253	17	.245	11	9.572e-03	11	NC	1	NC	1
242			min	-.128	12	-.37	11	-.214	17	-8.82e-03	17	NC	1	NC	1
243		2	max	.122	18	.251	17	.25	11	9.572e-03	11	NC	1	NC	1
244			min	-.128	12	-.365	11	-.219	17	-8.82e-03	17	NC	1	NC	1
245		3	max	.122	18	.248	17	.256	11	9.572e-03	11	NC	1	NC	1
246			min	-.128	12	-.36	11	-.223	17	-8.82e-03	17	NC	1	NC	1
247		4	max	.122	18	.246	17	.262	11	9.572e-03	11	NC	1	NC	1
248			min	-.128	12	-.356	11	-.227	17	-8.82e-03	17	NC	1	NC	1
249		5	max	.122	18	.243	17	.268	11	9.572e-03	11	NC	1	NC	1
250			min	-.128	12	-.351	11	-.232	17	-8.82e-03	17	NC	1	NC	1
251	M46	1	max	.465	11	.273	11	.174	11	4.452e-03	10	NC	1	NC	1
252			min	-.341	17	-.241	17	-.154	17	-3.499e-03	16	NC	1	NC	1
253		2	max	.465	11	.266	11	.171	11	4.452e-03	10	NC	1	NC	1
254			min	-.341	17	-.234	17	-.153	17	-3.499e-03	16	NC	1	NC	1
255		3	max	.465	11	.259	11	.169	11	4.452e-03	10	NC	1	NC	1
256			min	-.341	17	-.227	17	-.151	17	-3.499e-03	16	NC	1	NC	1
257		4	max	.465	11	.252	11	.166	11	4.452e-03	10	NC	1	NC	1
258			min	-.341	17	-.221	17	-.15	17	-3.499e-03	16	NC	1	NC	1
259		5	max	.465	11	.245	11	.164	11	4.452e-03	10	NC	1	NC	1
260			min	-.341	17	-.214	17	-.148	17	-3.499e-03	16	NC	1	NC	1
261	M47	1	max	.44	41	.274	11	.154	17	4.397e-03	24	NC	1	NC	1
262			min	-.375	23	-.241	17	-.175	11	-4.396e-03	6	NC	1	NC	1
263		2	max	.44	41	.267	11	.151	17	4.397e-03	24	NC	1	NC	1
264			min	-.375	23	-.234	17	-.174	11	-4.396e-03	6	NC	1	NC	1
265		3	max	.44	41	.259	11	.149	17	4.397e-03	24	NC	1	NC	1
266			min	-.375	23	-.228	17	-.172	11	-4.396e-03	6	NC	1	NC	1
267		4	max	.44	41	.252	11	.147	17	4.397e-03	24	NC	1	NC	1
268			min	-.375	23	-.221	17	-.17	11	-4.396e-03	6	NC	1	NC	1
269		5	max	.44	41	.245	11	.145	17	4.397e-03	24	NC	1	NC	1
270			min	-.375	23	-.214	17	-.169	11	-4.396e-03	6	NC	1	NC	1
271	M48	1	max	.003	25	.286	17	.465	11	8.459e-03	17	NC	1	NC	1
272			min	-.004	7	-.324	11	-.341	17	-9.864e-03	11	144.24	11	1762.776	2
273		2	max	.002	25	.147	18	.426	11	6.344e-03	17	NC	1	NC	2
274			min	-.003	7	-.16	12	-.306	17	-7.398e-03	11	203.912	11	574.351	10
275		3	max	.002	25	.091	8	.34	11	4.23e-03	17	NC	1	NC	7
276			min	-.002	7	-.087	14	-.241	17	-4.932e-03	11	320.074	12	409.225	10
277		4	max	0	25	.066	9	.193	11	2.115e-03	17	NC	1	NC	7
278			min	0	7	-.059	15	-.135	17	-2.466e-03	11	662.847	12	574.351	10
279		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
280			min	0	1	0	1	0	1	0	1	NC	1	NC	1
281	M49	1	max	.003	15	.44	41	.325	11	9.232e-03	16	NC	1	NC	1
282			min	-.003	9	-.375	23	-.286	17	-9.342e-03	10	162.392	5	651.84	2
283		2	max	.002	15	.392	5	.152	11	6.924e-03	16	NC	1	NC	9
284			min	-.002	9	-.331	23	-.106	17	-7.007e-03	10	231.328	5	574.353	6
285		3	max	.001	15	.318	5	.102	32	4.616e-03	16	NC	1	NC	9
286			min	-.002	9	-.258	23	-.043	39	-4.671e-03	10	375.36	5	409.226	6
287		4	max	0	15	.182	5	.066	31	2.308e-03	16	NC	1	NC	2
288			min	0	9	-.144	23	-.026	25	-2.336e-03	10	803.926	5	574.353	6
289		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
290			min	0	1	0	1	0	1	0	1	NC	1	NC	1
291	M160	1	max	.391	17	.364	23	.171	3	7.562e-03	20	NC	1	NC	1
292			min	-.397	11	-.379	5	-.117	21	-1.018e-02	2	NC	1	NC	1
293		2	max	.391	17	.325	23	.171	3	7.562e-03	20	NC	1	NC	1
294			min	-.397	11	-.341	41	-.116	21	-1.018e-02	2	NC	1	NC	1
295		3	max	.391	17	.286	23	.17	3	7.562e-03	20	NC	1	NC	1
296			min	-.397	11	-.315	41	-.115	21	-1.018e-02	2	NC	1	NC	1
297		4	max	.391	17	.247	23	.172	2	7.562e-03	20	NC	1	NC	1
298			min	-.397	11	-.289	41	-.117	20	-1.018e-02	2	NC	1	NC	1
299		5	max	.391	17	.208	23	.174	2	7.562e-03	20	NC	1	NC	1
300			min	-.397	11	-.263	41	-.119	20	-1.018e-02	2	NC	1	NC	1
301	M161	1	max	.115	21	.286	23	.391	17	1.3e-02	11	NC	1	NC	1
302			min	-.17	3	-.315	41	-.397	11	-1.27e-02	17	NC	1	NC	1
303		2	max	.115	21	.281	23	.386	17	1.3e-02	11	NC	1	NC	1
304			min	-.17	3	-.326	41	-.391	11	-1.27e-02	17	NC	1	NC	1
305		3	max	.115	21	.277	23	.382	17	1.3e-02	11	NC	1	NC	1
306			min	-.17	3	-.338	41	-.386	11	-1.27e-02	17	NC	1	NC	1
307		4	max	.115	21	.272	23	.377	17	1.3e-02	11	NC	1	NC	1
308			min	-.17	3	-.35	41	-.38	11	-1.27e-02	17	NC	1	NC	1
309		5	max	.115	21	.267	23	.372	5	1.3e-02	11	NC	1	NC	1
310			min	-.17	3	-.362	41	-.375	11	-1.27e-02	17	NC	1	NC	1
311	M162	1	max	.443	11	.353	16	.314	20	1.559e-02	2	NC	1	NC	1
312			min	-.406	17	-.439	10	-.393	2	-1.299e-02	20	NC	1	NC	1
313		2	max	.443	11	.317	16	.308	20	1.559e-02	2	NC	1	NC	1
314			min	-.406	17	-.398	10	-.385	2	-1.299e-02	20	NC	1	NC	1
315		3	max	.443	11	.281	16	.301	20	1.559e-02	2	NC	1	NC	1
316			min	-.406	17	-.357	10	-.377	2	-1.299e-02	20	NC	1	NC	1
317		4	max	.443	11	.244	16	.295	20	1.559e-02	2	NC	1	NC	1
318			min	-.406	17	-.317	10	-.369	2	-1.299e-02	20	NC	1	NC	1
319		5	max	.443	11	.208	16	.288	20	1.559e-02	2	NC	1	NC	1
320			min	-.406	17	-.276	10	-.362	2	-1.299e-02	20	NC	1	NC	1
321	M163	1	max	.301	20	.281	16	.406	17	1.544e-02	11	NC	1	NC	1
322			min	-.377	2	-.357	10	-.443	11	-1.389e-02	17	NC	1	NC	1
323		2	max	.301	20	.258	17	.402	17	1.544e-02	11	NC	1	NC	1
324			min	-.377	2	-.343	11	-.438	11	-1.389e-02	17	NC	1	NC	1
325		3	max	.301	20	.253	17	.398	17	1.544e-02	11	NC	1	NC	1
326			min	-.377	2	-.345	11	-.432	11	-1.389e-02	17	NC	1	NC	1
327		4	max	.301	20	.248	17	.393	17	1.544e-02	11	NC	1	NC	1
328			min	-.377	2	-.348	11	-.426	11	-1.389e-02	17	NC	1	NC	1
329		5	max	.301	20	.243	17	.389	17	1.544e-02	11	NC	1	NC	1
330			min	-.377	2	-.351	11	-.421	11	-1.389e-02	17	NC	1	NC	1
331	M151	1	max	.015	11	.009	40	.005	10	1.226e-04	20	NC	1	NC	1
332			min	-.015	5	-.007	10	-.005	16	-4.052e-04	38	NC	1	NC	1
333		2	max	.015	11	.008	40	.004	10	1.226e-04	20	NC	1	NC	1
334			min	-.015	5	-.006	22	-.004	16	-4.052e-04	38	NC	1	NC	1
335		3	max	.015	11	.007	40	.003	10	1.226e-04	20	NC	1	NC	1
336			min	-.015	5	-.004	22	-.002	16	-4.052e-04	38	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
337		4	max	.015	11	.005	39	.002	10	1.226e-04	20	NC	1	NC	1
338			min	-.015	5	-.003	21	-.001	16	-4.052e-04	38	NC	1	NC	1
339		5	max	.015	11	.004	38	0	32	1.226e-04	20	NC	1	NC	1
340			min	-.015	5	-.002	20	0	14	-4.052e-04	38	NC	1	NC	1
341	M152	1	max	.007	10	.048	54	.069	2	1.599e-03	5	NC	1	NC	1
342			min	-.009	40	-.036	72	-.064	20	-1.595e-03	11	2095.8	31	2523.883	38
343		2	max	.007	10	.022	54	.028	2	1.599e-03	5	NC	1	NC	1
344			min	-.009	40	-.016	72	-.026	20	-1.595e-03	11	2254.61	54	1558.256	20
345		3	max	.007	10	.015	5	.005	16	1.599e-03	5	NC	2	NC	1
346			min	-.009	40	-.015	11	-.005	10	-1.595e-03	11	1342.242	41	958.126	20
347		4	max	.007	10	.088	17	.022	14	1.598e-03	5	NC	2	NC	1
348			min	-.009	40	-.095	11	-.025	8	-1.596e-03	11	638.676	11	1532.927	20
349		5	max	.007	10	.186	17	.06	14	1.597e-03	5	NC	2	NC	1
350			min	-.009	40	-.201	11	-.066	8	-1.597e-03	11	299.662	11	3047.207	30
351	M153	1	max	.02	72	.018	40	.038	21	2.551e-03	20	NC	1	NC	1
352			min	-.027	54	-.01	54	-.041	3	-2.735e-03	2	NC	1	NC	1
353		2	max	.02	72	.013	40	.034	21	2.551e-03	20	NC	1	NC	1
354			min	-.027	54	-.007	10	-.037	3	-2.735e-03	2	NC	1	NC	1
355		3	max	.02	72	.009	40	.033	20	2.551e-03	20	NC	1	NC	1
356			min	-.027	54	-.007	10	-.036	2	-2.735e-03	2	NC	1	NC	1
357		4	max	.02	72	.008	4	.032	20	2.551e-03	20	NC	1	NC	1
358			min	-.027	54	-.007	22	-.035	2	-2.735e-03	2	NC	1	NC	1
359		5	max	.02	72	.011	54	.031	20	2.551e-03	20	NC	1	NC	1
360			min	-.027	54	-.009	72	-.034	2	-2.735e-03	2	NC	1	NC	1
361	M154A	1	max	.116	11	.046	17	.036	9	2.479e-03	14	NC	1	NC	1
362			min	-.107	17	-.05	11	-.033	15	-2.659e-03	8	NC	1	NC	1
363		2	max	.116	11	.026	17	.034	9	2.479e-03	14	NC	1	NC	1
364			min	-.107	17	-.028	11	-.03	15	-2.659e-03	8	NC	1	NC	1
365		3	max	.116	11	.009	40	.033	8	2.479e-03	14	NC	1	NC	1
366			min	-.107	17	-.007	10	-.03	14	-2.659e-03	8	NC	1	NC	1
367		4	max	.116	11	.014	11	.033	8	2.479e-03	14	NC	1	NC	1
368			min	-.107	17	-.013	17	-.03	14	-2.659e-03	8	NC	1	NC	1
369		5	max	.116	11	.035	11	.033	8	2.479e-03	14	NC	1	NC	1
370			min	-.107	17	-.032	17	-.03	14	-2.659e-03	8	NC	1	NC	1
371	M155A	1	max	.036	4	.006	20	.013	4	9.472e-05	23	NC	1	NC	1
372			min	-.036	10	-.006	2	-.012	22	-3.572e-04	29	NC	1	NC	1
373		2	max	.036	4	.005	8	.01	4	9.472e-05	23	NC	1	NC	1
374			min	-.036	10	-.004	14	-.009	22	-3.572e-04	29	NC	1	NC	1
375		3	max	.036	4	.004	7	.006	4	9.472e-05	23	NC	1	NC	1
376			min	-.036	10	-.003	25	-.006	22	-3.572e-04	29	NC	1	NC	1
377		4	max	.036	4	.003	7	.003	3	9.472e-05	23	NC	1	NC	1
378			min	-.036	10	-.002	25	-.003	21	-3.572e-04	29	NC	1	NC	1
379		5	max	.036	4	.003	29	0	36	9.472e-05	23	NC	1	NC	1
380			min	-.036	10	-.001	23	0	18	-3.572e-04	29	NC	1	NC	1
381	M156A	1	max	.006	2	.063	18	.038	63	4.261e-03	10	NC	1	NC	1
382			min	-.006	20	-.065	12	-.051	57	-4.289e-03	4	1389.508	13	1449.009	30
383		2	max	.006	2	.027	18	.029	15	4.261e-03	10	NC	1	NC	1
384			min	-.006	20	-.028	12	-.035	9	-4.289e-03	4	1709.877	11	2141.405	57
385		3	max	.006	2	.007	16	.038	4	4.261e-03	10	NC	1	NC	3
386			min	-.006	20	-.007	10	-.038	22	-4.289e-03	4	1075.437	11	1323.265	57
387		4	max	.006	2	.038	4	.101	3	4.624e-03	10	NC	1	NC	11
388			min	-.006	20	-.037	22	-.094	21	-4.653e-03	4	1376.404	2	865.687	3
389		5	max	.006	2	.084	4	.19	2	4.697e-03	10	NC	1	NC	11
390			min	-.006	20	-.081	22	-.174	20	-4.726e-03	4	1013.16	3	377.723	2
391	M157A	1	max	.034	16	.007	64	.039	14	2.534e-03	24	NC	1	NC	1
392			min	-.041	10	-.01	58	-.042	8	-2.717e-03	6	NC	1	NC	1
393		2	max	.034	16	.005	19	.031	25	2.534e-03	24	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
394			min	-.041	10	-.006	13	-.034	7	-2.717e-03	6	NC	1	NC	1
395		3	max	.034	16	.006	20	.029	25	2.534e-03	24	NC	1	NC	1
396			min	-.041	10	-.006	2	-.032	7	-2.717e-03	6	NC	1	NC	1
397		4	max	.034	16	.008	8	.032	24	2.534e-03	24	NC	1	NC	1
398			min	-.041	10	-.007	14	-.035	6	-2.717e-03	6	NC	1	NC	1
399		5	max	.034	16	.011	58	.038	23	2.534e-03	24	NC	1	NC	1
400			min	-.041	10	-.009	64	-.041	5	-2.717e-03	6	NC	1	NC	1
401	M158A	1	max	.123	3	.039	21	.056	2	2.947e-03	18	NC	1	NC	1
402			min	-.114	21	-.043	3	-.053	20	-3.127e-03	12	NC	1	NC	1
403		2	max	.123	3	.022	20	.047	2	2.947e-03	18	NC	1	NC	1
404			min	-.114	21	-.024	2	-.043	20	-3.127e-03	12	NC	1	NC	1
405		3	max	.123	3	.006	20	.041	13	2.947e-03	18	NC	1	NC	1
406			min	-.114	21	-.006	2	-.037	19	-3.127e-03	12	NC	1	NC	1
407		4	max	.123	3	.014	3	.039	12	2.947e-03	18	NC	1	NC	1
408			min	-.114	21	-.012	21	-.035	18	-3.127e-03	12	NC	1	NC	1
409		5	max	.123	3	.032	3	.043	12	2.947e-03	18	NC	1	NC	1
410			min	-.114	21	-.029	21	-.04	18	-3.127e-03	12	NC	1	NC	1
411	M159A	1	max	.038	6	.006	25	.014	6	9.812e-05	17	NC	1	NC	1
412			min	-.039	12	-.006	7	-.014	24	-3.577e-04	35	NC	1	NC	1
413		2	max	.038	6	.005	12	.011	6	9.812e-05	17	NC	1	NC	1
414			min	-.039	12	-.005	18	-.01	24	-3.577e-04	35	NC	1	NC	1
415		3	max	.038	6	.004	12	.007	6	9.812e-05	17	NC	1	NC	1
416			min	-.039	12	-.004	18	-.007	24	-3.577e-04	35	NC	1	NC	1
417		4	max	.038	6	.003	12	.004	6	9.812e-05	17	NC	1	NC	1
418			min	-.039	12	-.002	18	-.003	24	-3.577e-04	35	NC	1	NC	1
419		5	max	.038	6	.003	35	0	28	9.812e-05	17	NC	1	NC	1
420			min	-.039	12	-.002	17	0	22	-3.577e-04	35	NC	1	NC	1
421	M160A	1	max	.006	7	.072	17	.046	51	4.583e-03	12	NC	1	NC	1
422			min	-.006	25	-.082	11	-.039	69	-4.544e-03	6	1361.835	33	2482.018	28
423		2	max	.006	7	.041	17	.025	13	4.583e-03	12	NC	1	NC	1
424			min	-.006	25	-.046	11	-.021	19	-4.544e-03	6	1655.678	11	2235.977	51
425		3	max	.006	7	.031	6	.027	12	4.583e-03	12	NC	2	NC	1
426			min	-.006	25	-.031	24	-.026	18	-4.544e-03	6	1032.917	11	1396.226	51
427		4	max	.006	7	.065	6	.083	25	4.219e-03	12	NC	2	NC	10
428			min	-.006	25	-.06	24	-.087	7	-4.182e-03	6	1321.417	8	1014.324	7
429		5	max	.006	7	.114	6	.162	14	4.146e-03	12	NC	2	NC	11
430			min	-.006	25	-.102	24	-.173	8	-4.109e-03	6	917.872	7	417.29	7
431	M161A	1	max	.035	18	.007	68	.06	17	2.536e-03	16	NC	1	NC	1
432			min	-.043	12	-.01	62	-.063	11	-2.718e-03	10	NC	1	NC	1
433		2	max	.035	18	.003	24	.049	17	2.536e-03	16	NC	1	NC	1
434			min	-.043	12	-.005	6	-.052	11	-2.718e-03	10	NC	1	NC	1
435		3	max	.035	18	.006	25	.038	17	2.536e-03	16	NC	1	NC	1
436			min	-.043	12	-.006	7	-.042	11	-2.718e-03	10	NC	1	NC	1
437		4	max	.035	18	.009	13	.032	16	2.536e-03	16	NC	1	NC	1
438			min	-.043	12	-.008	19	-.035	10	-2.718e-03	10	NC	1	NC	1
439		5	max	.035	18	.012	13	.029	15	2.536e-03	16	NC	1	NC	1
440			min	-.043	12	-.01	19	-.032	9	-2.718e-03	10	NC	1	NC	1
441	M162A	1	max	.123	7	.039	25	.058	5	2.947e-03	21	NC	1	NC	1
442			min	-.114	25	-.043	7	-.055	23	-3.126e-03	3	NC	1	NC	1
443		2	max	.123	7	.022	25	.049	5	2.947e-03	21	NC	1	NC	1
444			min	-.114	25	-.024	7	-.045	23	-3.126e-03	3	NC	1	NC	1
445		3	max	.123	7	.006	25	.043	4	2.947e-03	21	NC	1	NC	1
446			min	-.114	25	-.006	7	-.04	22	-3.126e-03	3	NC	1	NC	1
447		4	max	.123	7	.013	8	.039	4	2.947e-03	21	NC	1	NC	1
448			min	-.114	25	-.011	14	-.035	22	-3.126e-03	3	NC	1	NC	1
449		5	max	.123	7	.03	7	.04	3	2.947e-03	21	NC	1	NC	1
450			min	-.114	25	-.027	25	-.036	21	-3.126e-03	3	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
451	M112A	1	max	.005	26	-.001	14	.081	23	5.714e-03	17	NC	1	NC	1
452			min	0	20	-.008	32	-.082	5	-6.202e-03	11	NC	1	1063.968	49
453		2	max	.004	26	.012	14	.067	23	4.285e-03	17	NC	1	NC	1
454			min	0	20	-.023	32	-.068	5	-4.651e-03	11	3495.803	8	1425.666	49
455		3	max	.003	26	.018	14	.05	23	2.857e-03	17	NC	1	NC	1
456			min	0	20	-.029	8	-.051	5	-3.101e-03	11	2490.759	8	2150.295	49
457		4	max	.001	26	.013	14	.027	23	1.428e-03	17	NC	1	NC	1
458			min	0	20	-.02	8	-.027	5	-1.55e-03	11	3495.803	8	4319.882	49
459		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
460			min	0	1	0	1	0	1	0	1	NC	1	NC	1
461	M113A	1	max	.005	30	-.001	18	.262	16	8.762e-03	21	NC	1	NC	1
462			min	0	24	-.008	36	-.261	10	-9.263e-03	3	NC	1	1969.735	43
463		2	max	.004	30	.026	18	.21	16	6.572e-03	21	NC	1	NC	1
464			min	0	24	-.036	12	-.209	10	-6.947e-03	3	2064.646	12	2647.846	43
465		3	max	.003	30	.037	18	.15	16	4.381e-03	21	NC	1	NC	1
466			min	0	24	-.048	12	-.149	10	-4.631e-03	3	1471.06	12	3553.024	22
467		4	max	.001	30	.027	18	.079	16	2.191e-03	21	NC	1	NC	1
468			min	0	24	-.034	12	-.079	10	-2.316e-03	3	2064.646	12	4986.701	22
469		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
470			min	0	1	0	1	0	1	0	1	NC	1	NC	1
471	M114A	1	max	.005	34	-.001	22	.28	18	9.132e-03	24	NC	1	NC	1
472			min	0	16	-.008	28	-.283	12	-9.59e-03	7	NC	1	1966.641	39
473		2	max	.004	34	.026	22	.223	18	6.849e-03	24	NC	1	NC	1
474			min	0	16	-.036	4	-.226	12	-7.192e-03	7	2064.646	4	2643.652	39
475		3	max	.003	34	.037	22	.159	18	4.566e-03	24	NC	1	NC	1
476			min	0	16	-.048	4	-.161	12	-4.795e-03	7	1471.06	4	3553.024	18
477		4	max	.001	34	.026	22	.084	18	2.283e-03	24	NC	1	NC	1
478			min	0	16	-.034	4	-.084	12	-2.397e-03	7	2064.646	4	4986.701	18
479		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
480			min	0	1	0	1	0	1	0	1	NC	1	NC	1
481	M115	1	max	.472	11	.088	4	.119	13	3.114e-03	13	NC	1	NC	1
482			min	-.36	17	-.08	22	-.108	19	-2.642e-03	19	NC	1	NC	1
483		2	max	.472	11	.094	4	.123	13	3.114e-03	13	NC	1	NC	1
484			min	-.36	17	-.087	22	-.11	19	-2.642e-03	19	NC	1	NC	1
485		3	max	.472	11	.099	4	.127	13	3.114e-03	13	NC	1	NC	1
486			min	-.36	17	-.094	22	-.112	19	-2.642e-03	19	NC	1	NC	1
487		4	max	.472	11	.105	4	.131	13	3.114e-03	13	NC	1	NC	1
488			min	-.36	17	-.101	22	-.114	19	-2.642e-03	19	NC	1	NC	1
489		5	max	.472	11	.111	4	.135	13	3.114e-03	13	NC	1	NC	1
490			min	-.36	17	-.107	22	-.116	19	-2.642e-03	19	NC	1	NC	1
491	M119A	1	max	.439	41	.087	4	.076	18	1.97e-03	12	NC	1	NC	1
492			min	-.391	23	-.083	22	-.096	12	-1.736e-03	18	NC	1	NC	1
493		2	max	.439	41	.093	4	.075	18	1.97e-03	12	NC	1	NC	1
494			min	-.391	23	-.089	22	-.093	12	-1.736e-03	18	NC	1	NC	1
495		3	max	.439	41	.099	4	.074	18	1.97e-03	12	NC	1	NC	1
496			min	-.391	23	-.095	22	-.09	12	-1.736e-03	18	NC	1	NC	1
497		4	max	.439	41	.105	4	.074	18	1.97e-03	12	NC	1	NC	1
498			min	-.391	23	-.101	22	-.088	12	-1.736e-03	18	NC	1	NC	1
499		5	max	.439	41	.11	4	.073	18	1.97e-03	12	NC	1	NC	1
500			min	-.391	23	-.107	22	-.085	12	-1.736e-03	18	NC	1	NC	1
501	M51	1	max	.418	22	.041	14	.064	5	1.566e-03	24	NC	1	NC	1
502			min	-.424	4	-.074	8	-.053	23	-4.795e-03	30	152.671	21	184.592	10
503		2	max	.418	22	.014	14	.041	5	9.988e-04	24	NC	38	NC	1
504			min	-.424	4	-.061	32	-.03	23	-4.403e-03	30	203.684	21	251.413	10
505		3	max	.418	22	0	24	.019	30	4.317e-04	24	NC	38	NC	1
506			min	-.424	4	-.066	30	-.004	24	-4.012e-03	30	268.71	3	451.886	10
507		4	max	.418	22	.013	22	.024	32	1.048e-03	24	NC	38	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
508			min	-.424	4	-.075	28	-.01	15	-4.413e-03	30	178.974	3	640.961	8
509		5	max	.419	22	.036	21	.035	9	1.665e-03	24	NC	6	NC	2
510			min	-.425	4	-.087	27	-.02	15	-4.814e-03	30	134.122	3	467.116	8
511	M52	1	max	.087	27	.141	16	.342	4	5.236e-03	10	NC	1	NC	1
512			min	-.036	21	-.153	10	-.339	10	-4.963e-03	16	NC	1	NC	1
513		2	max	.087	27	.155	16	.351	16	5.236e-03	10	NC	1	NC	1
514			min	-.036	21	-.16	10	-.349	10	-4.963e-03	16	NC	1	NC	1
515		3	max	.087	27	.169	4	.359	16	5.236e-03	10	NC	1	NC	1
516			min	-.036	21	-.167	22	-.359	10	-4.963e-03	16	NC	1	NC	1
517		4	max	.087	27	.183	4	.368	16	5.236e-03	10	NC	1	NC	1
518			min	-.036	21	-.174	22	-.369	10	-4.963e-03	16	NC	1	NC	1
519		5	max	.087	27	.198	4	.377	16	5.236e-03	10	NC	1	NC	1
520			min	-.036	21	-.182	22	-.379	10	-4.963e-03	16	NC	1	NC	1
521	M53	1	max	.074	8	.207	16	.304	4	5.343e-03	10	NC	1	NC	1
522			min	-.041	14	-.223	10	-.299	22	-5.095e-03	16	NC	1	NC	1
523		2	max	.074	8	.221	16	.312	4	5.343e-03	10	NC	1	NC	1
524			min	-.041	14	-.23	10	-.309	22	-5.095e-03	16	NC	1	NC	1
525		3	max	.074	8	.235	16	.321	16	5.343e-03	10	NC	1	NC	1
526			min	-.041	14	-.237	10	-.319	10	-5.095e-03	16	NC	1	NC	1
527		4	max	.074	8	.25	4	.329	16	5.343e-03	10	NC	1	NC	1
528			min	-.041	14	-.244	22	-.329	10	-5.095e-03	16	NC	1	NC	1
529		5	max	.074	8	.264	4	.338	16	5.343e-03	10	NC	1	NC	1
530			min	-.041	14	-.252	22	-.338	10	-5.095e-03	16	NC	1	NC	1
531	M54	1	max	.104	28	.15	16	.358	16	5.236e-03	10	NC	1	NC	1
532			min	-.034	22	-.163	10	-.356	10	-4.963e-03	16	NC	1	NC	1
533		2	max	.104	28	.164	16	.367	16	5.236e-03	10	NC	1	NC	1
534			min	-.034	22	-.17	10	-.366	10	-4.963e-03	16	NC	1	NC	1
535		3	max	.104	28	.178	4	.375	16	5.236e-03	10	NC	1	NC	1
536			min	-.034	22	-.176	10	-.376	10	-4.963e-03	16	NC	1	NC	1
537		4	max	.104	28	.192	4	.384	16	5.236e-03	10	NC	1	NC	1
538			min	-.034	22	-.184	22	-.386	10	-4.963e-03	16	NC	1	NC	1
539		5	max	.104	28	.207	4	.393	16	5.236e-03	10	NC	1	NC	1
540			min	-.034	22	-.192	22	-.396	10	-4.963e-03	16	NC	1	NC	1
541	M55	1	max	.083	8	.217	16	.32	4	5.343e-03	10	NC	1	NC	1
542			min	-.039	14	-.233	10	-.316	22	-5.095e-03	16	NC	1	NC	1
543		2	max	.083	8	.231	16	.329	4	5.343e-03	10	NC	1	NC	1
544			min	-.039	14	-.24	10	-.326	10	-5.095e-03	16	NC	1	NC	1
545		3	max	.083	8	.245	16	.337	16	5.343e-03	10	NC	1	NC	1
546			min	-.039	14	-.247	10	-.336	10	-5.095e-03	16	NC	1	NC	1
547		4	max	.083	8	.259	4	.346	16	5.343e-03	10	NC	1	NC	1
548			min	-.039	14	-.254	22	-.346	10	-5.095e-03	16	NC	1	NC	1
549		5	max	.083	8	.274	4	.354	16	5.343e-03	10	NC	1	NC	1
550			min	-.039	14	-.262	22	-.356	10	-5.095e-03	16	NC	1	NC	1
551	M56	1	max	.02	15	.036	21	.419	22	7.468e-03	3	NC	1	NC	1
552			min	-.035	9	-.087	27	-.425	4	-6.544e-03	21	NC	1	NC	1
553		2	max	.02	15	.035	21	.423	22	7.468e-03	3	NC	1	NC	1
554			min	-.035	9	-.091	27	-.429	4	-6.544e-03	21	NC	1	NC	1
555		3	max	.02	15	.035	21	.428	22	7.468e-03	3	NC	1	NC	1
556			min	-.035	9	-.095	27	-.434	4	-6.544e-03	21	NC	1	NC	1
557		4	max	.02	15	.034	21	.433	22	7.468e-03	3	NC	1	NC	1
558			min	-.035	9	-.099	28	-.438	4	-6.544e-03	21	NC	1	NC	1
559		5	max	.02	15	.034	22	.438	22	7.468e-03	3	NC	1	NC	1
560			min	-.035	9	-.104	28	-.443	4	-6.544e-03	21	NC	1	NC	1
561	M57	1	max	.053	23	.041	14	.418	22	7.444e-03	3	NC	1	NC	1
562			min	-.064	5	-.074	8	-.424	4	-6.557e-03	21	NC	1	NC	1
563		2	max	.053	23	.04	14	.423	22	7.444e-03	3	NC	1	NC	1
564			min	-.064	5	-.076	8	-.429	4	-6.557e-03	21	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
565		3	max	.053	23	.04	14	.428	22	7.444e-03	3	NC	1	NC	1
566			min	-.064	5	-.078	8	-.434	4	-6.557e-03	21	NC	1	NC	1
567		4	max	.053	23	.039	14	.433	22	7.444e-03	3	NC	1	NC	1
568			min	-.064	5	-.081	8	-.438	4	-6.557e-03	21	NC	1	NC	1
569		5	max	.053	23	.039	14	.438	22	7.444e-03	3	NC	1	NC	1
570			min	-.064	5	-.083	8	-.443	4	-6.557e-03	21	NC	1	NC	1
571	M58	1	max	.051	4	.036	21	.371	10	7.468e-03	3	NC	1	NC	1
572			min	-.039	22	-.087	27	-.367	16	-6.544e-03	21	NC	1	NC	1
573		2	max	.051	4	.035	21	.375	10	7.468e-03	3	NC	1	NC	1
574			min	-.039	22	-.091	27	-.371	16	-6.544e-03	21	NC	1	NC	1
575		3	max	.051	4	.035	21	.38	10	7.468e-03	3	NC	1	NC	1
576			min	-.039	22	-.095	27	-.376	16	-6.544e-03	21	NC	1	NC	1
577		4	max	.051	4	.034	21	.385	10	7.468e-03	3	NC	1	NC	1
578			min	-.039	22	-.099	28	-.381	16	-6.544e-03	21	NC	1	NC	1
579		5	max	.051	4	.034	22	.39	10	7.468e-03	3	NC	1	NC	1
580			min	-.039	22	-.104	28	-.385	16	-6.544e-03	21	NC	1	NC	1
581	M59	1	max	.043	10	.041	14	.37	10	7.444e-03	3	NC	1	NC	1
582			min	-.028	16	-.074	8	-.367	16	-6.557e-03	21	NC	1	NC	1
583		2	max	.043	10	.04	14	.375	10	7.444e-03	3	NC	1	NC	1
584			min	-.028	16	-.076	8	-.371	16	-6.557e-03	21	NC	1	NC	1
585		3	max	.043	10	.04	14	.38	10	7.444e-03	3	NC	1	NC	1
586			min	-.028	16	-.078	8	-.376	16	-6.557e-03	21	NC	1	NC	1
587		4	max	.043	10	.039	14	.385	10	7.444e-03	3	NC	1	NC	1
588			min	-.028	16	-.081	8	-.381	16	-6.557e-03	21	NC	1	NC	1
589		5	max	.043	10	.039	14	.39	10	7.444e-03	3	NC	1	NC	1
590			min	-.028	16	-.083	8	-.386	16	-6.557e-03	21	NC	1	NC	1
591	M60	1	max	.367	16	.087	27	.039	22	4.814e-03	30	NC	6	NC	1
592			min	-.371	10	-.036	21	-.051	4	-1.665e-03	24	134.122	3	195.634	16
593		2	max	.367	16	.075	28	.021	22	4.4e-03	30	NC	38	NC	1
594			min	-.37	10	-.013	22	-.034	4	-1.009e-03	24	178.993	3	251.097	16
595		3	max	.367	16	.066	30	0	24	3.986e-03	30	NC	38	NC	1
596			min	-.37	10	0	24	-.021	30	-3.537e-04	24	268.706	3	398.775	23
597		4	max	.367	16	.061	32	.012	16	4.39e-03	30	NC	38	NC	12
598			min	-.37	10	-.014	14	-.026	33	-9.598e-04	24	203.709	21	298.707	9
599		5	max	.367	16	.074	8	.028	16	4.795e-03	30	NC	1	NC	2
600			min	-.37	10	-.041	14	-.043	10	-1.566e-03	24	152.671	21	235.956	9
601	M61	1	max	0	18	0	24	.395	16	6.428e-03	21	NC	1	NC	1
602			min	-.002	36	-.066	30	-.394	10	-7.321e-03	3	NC	1	NC	1
603		2	max	0	18	0	24	.391	16	6.428e-03	21	NC	1	NC	1
604			min	-.002	36	-.063	30	-.39	10	-7.321e-03	3	NC	1	NC	1
605		3	max	0	18	0	24	.386	16	6.428e-03	21	NC	1	NC	1
606			min	-.002	36	-.061	30	-.385	10	-7.321e-03	3	NC	1	NC	1
607		4	max	0	18	-.001	24	.382	16	6.428e-03	21	NC	1	NC	1
608			min	-.002	36	-.059	30	-.381	10	-7.321e-03	3	NC	1	NC	1
609		5	max	0	18	-.001	24	.377	16	6.428e-03	21	NC	1	NC	1
610			min	-.002	36	-.057	30	-.376	10	-7.321e-03	3	NC	1	NC	1
611	M62	1	max	0	24	.243	4	.38	10	7.879e-03	16	NC	1	NC	4
612			min	-.066	30	-.22	22	-.378	16	-7.926e-03	10	192.824	3	160.154	8
613		2	max	0	24	.22	4	.36	10	7.892e-03	16	NC	1	NC	4
614			min	-.066	30	-.209	22	-.36	16	-7.938e-03	10	257.349	3	213.729	8
615		3	max	0	24	.198	16	.341	10	8.013e-03	16	NC	1	NC	4
616			min	-.066	30	-.198	10	-.342	16	-8.05e-03	10	386.979	3	321.213	8
617		4	max	0	24	.177	16	.321	10	7.889e-03	16	NC	1	NC	1
618			min	-.066	30	-.189	10	-.324	4	-7.935e-03	10	326.901	36	641.513	8
619		5	max	0	24	.157	16	.302	22	7.875e-03	16	NC	1	NC	1
620			min	-.066	30	-.18	10	-.307	4	-7.922e-03	10	245.146	36	769.021	46
621	M63	1	max	.276	11	.303	14	.146	17	3.069e-03	8	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
622			min	-.256	17	-.351	8	-.178	11	-2.652e-03	14	NC	1	NC	1
623		2	max	.276	11	.277	14	.136	17	3.069e-03	8	NC	1	NC	1
624			min	-.256	17	-.328	8	-.167	11	-2.652e-03	14	NC	1	NC	1
625		3	max	.276	11	.251	14	.125	17	3.069e-03	8	NC	1	NC	1
626			min	-.256	17	-.305	8	-.156	11	-2.652e-03	14	NC	1	NC	1
627		4	max	.276	11	.226	14	.115	17	3.069e-03	8	NC	1	NC	1
628			min	-.256	17	-.282	8	-.146	11	-2.652e-03	14	NC	1	NC	1
629		5	max	.276	11	.2	14	.104	17	3.069e-03	8	NC	1	NC	1
630			min	-.256	17	-.259	8	-.135	11	-2.652e-03	14	NC	1	NC	1
631	M64	1	max	.156	11	.251	14	.276	11	8.849e-03	3	NC	1	NC	1
632			min	-.125	17	-.305	8	-.256	17	-7.872e-03	21	NC	1	NC	1
633		2	max	.156	11	.243	14	.287	11	8.849e-03	3	NC	1	NC	1
634			min	-.125	17	-.296	8	-.267	17	-7.872e-03	21	NC	1	NC	1
635		3	max	.156	11	.235	14	.298	11	8.849e-03	3	NC	1	NC	1
636			min	-.125	17	-.287	8	-.277	17	-7.872e-03	21	NC	1	NC	1
637		4	max	.156	11	.228	14	.308	11	8.849e-03	3	NC	1	NC	1
638			min	-.125	17	-.277	8	-.288	17	-7.872e-03	21	NC	1	NC	1
639		5	max	.156	11	.22	14	.319	11	8.849e-03	3	NC	1	NC	1
640			min	-.125	17	-.268	8	-.298	17	-7.872e-03	21	NC	1	NC	1
641	M65	1	max	.268	8	.315	18	.154	18	2.861e-03	11	NC	1	NC	1
642			min	-.22	14	-.344	12	-.197	12	-2.861e-03	17	372.034	13	774.633	37
643		2	max	.268	8	.253	17	.18	17	3.101e-03	11	NC	1	NC	4
644			min	-.22	14	-.29	11	-.19	11	-3.085e-03	17	767.136	13	650.031	3
645		3	max	.268	8	.338	16	.276	4	5.022e-03	11	NC	1	NC	4
646			min	-.22	14	-.357	10	-.269	22	-4.875e-03	17	350.94	3	320.07	3
647		4	max	.268	8	.539	4	.41	15	5.503e-03	11	NC	6	NC	4
648			min	-.22	14	-.502	22	-.428	9	-5.323e-03	17	211.856	3	206.403	2
649		5	max	.268	8	.812	4	.618	15	5.503e-03	11	NC	2	NC	1
650			min	-.22	14	-.717	22	-.661	9	-5.323e-03	17	143.242	3	137.833	8
651	M66	1	max	.184	11	.224	14	.414	10	7.959e-03	3	NC	1	NC	1
652			min	-.176	17	-.256	8	-.414	16	-7.661e-03	21	NC	1	NC	1
653		2	max	.184	11	.223	14	.422	10	7.959e-03	3	NC	1	NC	1
654			min	-.176	17	-.259	8	-.422	16	-7.661e-03	21	NC	1	NC	1
655		3	max	.184	11	.222	14	.431	10	7.959e-03	3	NC	1	NC	1
656			min	-.176	17	-.262	8	-.43	16	-7.661e-03	21	NC	1	NC	1
657		4	max	.184	11	.221	14	.439	10	7.959e-03	3	NC	1	NC	1
658			min	-.176	17	-.265	8	-.438	16	-7.661e-03	21	NC	1	NC	1
659		5	max	.184	11	.22	14	.447	10	7.959e-03	3	NC	1	NC	1
660			min	-.176	17	-.268	8	-.446	16	-7.661e-03	21	NC	1	NC	1
661	M67	1	max	.414	16	.298	21	.199	16	5.219e-03	6	NC	6	NC	3
662			min	-.414	10	-.41	3	-.214	10	-2.634e-03	24	125.003	3	543.875	8
663		2	max	.414	16	.134	21	.102	16	4.871e-03	6	NC	23	NC	7
664			min	-.414	10	-.211	3	-.109	10	-2.235e-03	24	172.771	3	757.822	8
665		3	max	.414	16	.005	24	.007	12	4.804e-03	30	NC	23	NC	1
666			min	-.414	10	-.084	30	-.007	18	-1.615e-03	24	260.61	3	410.774	10
667		4	max	.414	16	.146	14	.127	10	4.768e-03	29	NC	1	NC	1
668			min	-.414	10	-.182	8	-.121	16	-1.902e-03	23	193.018	21	264.191	10
669		5	max	.414	16	.314	15	.25	11	4.777e-03	5	NC	1	NC	1
670			min	-.414	10	-.343	8	-.24	17	-2.151e-03	23	141.336	21	194.571	10
671	M68	1	max	.253	17	.285	21	.17	17	2.873e-03	22	NC	1	NC	1
672			min	-.272	11	-.407	3	-.169	11	-3.709e-03	4	NC	1	NC	1
673		2	max	.253	17	.262	21	.156	5	2.873e-03	22	NC	1	NC	1
674			min	-.272	11	-.382	3	-.153	23	-3.709e-03	4	NC	1	NC	1
675		3	max	.253	17	.239	21	.142	5	2.873e-03	22	NC	1	NC	1
676			min	-.272	11	-.357	3	-.137	23	-3.709e-03	4	NC	1	NC	1
677		4	max	.253	17	.216	21	.129	5	2.873e-03	22	NC	1	NC	1
678			min	-.272	11	-.332	3	-.121	23	-3.709e-03	4	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
679		5	max	.253	17	.193	21	.115	5	2.873e-03	22	NC	1	NC	1
680			min	-.272	11	-.307	3	-.105	23	-3.709e-03	4	NC	1	NC	1
681	M69	1	max	.142	5	.239	21	.272	11	8.486e-03	2	NC	1	NC	1
682			min	-.137	23	-.357	3	-.253	17	-7.82e-03	20	NC	1	NC	1
683		2	max	.142	5	.23	21	.289	11	8.486e-03	2	NC	1	NC	1
684			min	-.137	23	-.346	3	-.267	17	-7.82e-03	20	NC	1	NC	1
685		3	max	.142	5	.222	21	.305	11	8.486e-03	2	NC	1	NC	1
686			min	-.137	23	-.335	3	-.281	17	-7.82e-03	20	NC	1	NC	1
687		4	max	.142	5	.213	21	.322	11	8.486e-03	2	NC	1	NC	1
688			min	-.137	23	-.324	3	-.295	17	-7.82e-03	20	NC	1	NC	1
689		5	max	.142	5	.204	21	.338	11	8.486e-03	2	NC	1	NC	1
690			min	-.137	23	-.313	3	-.309	17	-7.82e-03	20	NC	1	NC	1
691	M70	1	max	.313	3	.127	6	.25	18	5.853e-03	11	NC	1	NC	2
692			min	-.204	21	-.122	24	-.315	12	-4.923e-03	17	2632.155	13	340.163	26
693		2	max	.313	3	.041	17	.317	17	5.716e-03	11	NC	3	NC	38
694			min	-.204	21	-.057	11	-.347	11	-4.835e-03	17	997.961	6	492.895	26
695		3	max	.313	3	.066	15	.426	16	4.727e-03	10	NC	1	NC	1
696			min	-.205	21	-.073	9	-.435	10	-4.241e-03	16	735.515	7	237.544	3
697		4	max	.313	3	.293	4	.567	15	4.698e-03	10	NC	24	NC	1
698			min	-.205	21	-.231	22	-.575	9	-4.309e-03	16	421.749	3	156.511	3
699		5	max	.313	3	.653	4	.835	15	4.699e-03	10	NC	8	NC	1
700			min	-.205	21	-.518	22	-.842	9	-4.309e-03	16	167.548	4	105.722	2
701	M71	1	max	.147	16	.21	21	.414	10	8.954e-03	3	NC	1	NC	1
702			min	-.158	10	-.302	3	-.414	16	-7.39e-03	21	NC	1	NC	1
703		2	max	.147	16	.208	21	.421	10	8.954e-03	3	NC	1	NC	1
704			min	-.158	10	-.305	3	-.421	16	-7.39e-03	21	NC	1	NC	1
705		3	max	.147	16	.207	21	.428	10	8.954e-03	3	NC	1	NC	1
706			min	-.158	10	-.307	3	-.427	16	-7.39e-03	21	NC	1	NC	1
707		4	max	.147	16	.206	21	.435	10	8.954e-03	3	NC	1	NC	1
708			min	-.158	10	-.31	3	-.434	16	-7.39e-03	21	NC	1	NC	1
709		5	max	.147	16	.205	21	.442	10	8.954e-03	3	NC	1	NC	1
710			min	-.158	10	-.313	3	-.44	16	-7.39e-03	21	NC	1	NC	1
711	M72	1	max	.6	21	.315	15	.395	5	6.852e-03	24	NC	1	NC	1
712			min	-.606	3	-.329	9	-.34	23	-9.467e-03	6	NC	1	NC	1
713		2	max	.6	21	.279	15	.38	5	6.852e-03	24	NC	1	NC	1
714			min	-.606	3	-.295	9	-.324	23	-9.467e-03	6	NC	1	NC	1
715		3	max	.6	21	.244	15	.364	5	6.852e-03	24	NC	1	NC	1
716			min	-.606	3	-.26	9	-.307	23	-9.467e-03	6	NC	1	NC	1
717		4	max	.6	21	.208	15	.348	5	6.852e-03	24	NC	1	NC	1
718			min	-.606	3	-.226	9	-.291	23	-9.467e-03	6	NC	1	NC	1
719		5	max	.6	21	.173	15	.332	5	6.852e-03	24	NC	1	NC	1
720			min	-.606	3	-.191	9	-.274	23	-9.467e-03	6	NC	1	NC	1
721	M73	1	max	.307	23	.244	15	.6	21	1.188e-02	3	NC	1	NC	1
722			min	-.364	5	-.26	9	-.606	3	-1.158e-02	21	NC	1	NC	1
723		2	max	.307	23	.234	15	.612	21	1.188e-02	3	NC	1	NC	1
724			min	-.364	5	-.258	9	-.617	3	-1.158e-02	21	NC	1	NC	1
725		3	max	.307	23	.224	15	.623	21	1.188e-02	3	NC	1	NC	1
726			min	-.364	5	-.256	9	-.628	3	-1.158e-02	21	NC	1	NC	1
727		4	max	.307	23	.216	14	.635	21	1.188e-02	3	NC	1	NC	1
728			min	-.364	5	-.257	8	-.641	4	-1.158e-02	21	NC	1	NC	1
729		5	max	.307	23	.22	14	.649	22	1.188e-02	3	NC	1	NC	1
730			min	-.364	5	-.268	8	-.657	4	-1.158e-02	21	NC	1	NC	1
731	M74	1	max	.666	3	.301	20	.124	25	1.368e-02	6	NC	1	NC	1
732			min	-.628	21	-.386	2	-.201	7	-1.11e-02	24	NC	1	NC	1
733		2	max	.666	3	.267	20	.126	25	1.368e-02	6	NC	1	NC	1
734			min	-.628	21	-.348	2	-.202	7	-1.11e-02	24	NC	1	NC	1
735		3	max	.666	3	.233	20	.128	25	1.368e-02	6	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
736			min	-.628	21	-.309	2	-.203	7	-1.11e-02	24	NC	1	NC	1
737		4	max	.666	3	.199	20	.13	25	1.368e-02	6	NC	1	NC	1
738			min	-.628	21	-.271	2	-.203	7	-1.11e-02	24	NC	1	NC	1
739		5	max	.666	3	.168	19	.132	25	1.368e-02	6	NC	1	NC	1
740			min	-.628	21	-.235	13	-.204	7	-1.11e-02	24	NC	1	NC	1
741	M75	1	max	.128	25	.233	20	.628	21	1.506e-02	3	NC	1	NC	1
742			min	-.203	7	-.309	2	-.666	3	-1.35e-02	21	NC	1	NC	1
743		2	max	.128	25	.217	20	.639	21	1.506e-02	3	NC	1	NC	1
744			min	-.203	7	-.301	2	-.676	3	-1.35e-02	21	NC	1	NC	1
745		3	max	.128	25	.201	20	.651	21	1.506e-02	3	NC	1	NC	1
746			min	-.203	7	-.293	2	-.686	3	-1.35e-02	21	NC	1	NC	1
747		4	max	.128	25	.201	21	.662	21	1.506e-02	3	NC	1	NC	1
748			min	-.203	7	-.301	3	-.698	4	-1.35e-02	21	NC	1	NC	1
749		5	max	.128	25	.205	21	.674	22	1.506e-02	3	NC	1	NC	1
750			min	-.203	7	-.313	3	-.711	4	-1.35e-02	21	NC	1	NC	1
751	M76	1	max	.41	3	.039	2	.445	16	4.696e-03	10	NC	1	NC	1
752			min	-.298	21	-.035	20	-.453	10	-4.306e-03	16	NC	1	NC	1
753		2	max	.41	3	.042	2	.448	16	4.696e-03	10	NC	1	NC	1
754			min	-.298	21	-.036	20	-.456	10	-4.306e-03	16	NC	1	NC	1
755		3	max	.41	3	.045	2	.452	16	4.696e-03	10	NC	1	NC	1
756			min	-.298	21	-.037	20	-.459	10	-4.306e-03	16	NC	1	NC	1
757		4	max	.41	3	.048	2	.455	16	4.696e-03	10	NC	1	NC	1
758			min	-.298	21	-.038	20	-.463	10	-4.306e-03	16	NC	1	NC	1
759		5	max	.41	3	.051	2	.458	16	4.696e-03	10	NC	1	NC	1
760			min	-.298	21	-.038	20	-.466	10	-4.306e-03	16	NC	1	NC	1
761	M77	1	max	.343	8	.395	16	.23	4	5.506e-03	11	NC	1	NC	1
762			min	-.314	15	-.411	10	-.222	22	-5.326e-03	17	NC	1	NC	1
763		2	max	.343	8	.4	16	.232	4	5.506e-03	11	NC	1	NC	1
764			min	-.314	15	-.414	10	-.225	22	-5.326e-03	17	NC	1	NC	1
765		3	max	.343	8	.405	16	.235	4	5.506e-03	11	NC	1	NC	1
766			min	-.314	15	-.416	10	-.228	22	-5.326e-03	17	NC	1	NC	1
767		4	max	.343	8	.409	16	.237	4	5.506e-03	11	NC	1	NC	1
768			min	-.314	15	-.419	10	-.232	22	-5.326e-03	17	NC	1	NC	1
769		5	max	.343	8	.414	16	.24	4	5.506e-03	11	NC	1	NC	1
770			min	-.314	15	-.422	10	-.235	21	-5.326e-03	17	NC	1	NC	1
771	M78	1	max	.458	24	.038	18	.045	7	1.536e-03	16	NC	1	NC	1
772			min	-.456	6	-.073	12	-.034	25	-4.79e-03	34	168.063	25	360.602	20
773		2	max	.458	24	.017	18	.027	7	9.904e-04	16	NC	4	NC	1
774			min	-.456	6	-.061	36	-.016	25	-4.402e-03	34	224.205	25	486.196	20
775		3	max	.458	24	0	16	.019	34	4.446e-04	16	NC	41	NC	1
776			min	-.456	6	-.066	34	-.004	16	-4.014e-03	34	292.394	7	335.184	12
777		4	max	.458	24	.007	14	.048	11	1.098e-03	17	NC	40	NC	1
778			min	-.456	6	-.075	32	-.035	17	-4.42e-03	34	194.713	7	190.045	12
779		5	max	.458	24	.026	14	.079	11	1.763e-03	17	NC	2	NC	2
780			min	-.456	6	-.085	32	-.063	17	-4.826e-03	34	145.915	7	136.853	12
781	M79	1	max	.085	32	.245	6	.333	12	7.198e-03	12	NC	1	NC	1
782			min	-.026	14	-.24	24	-.319	18	-6.842e-03	18	NC	1	NC	1
783		2	max	.085	32	.253	6	.339	12	7.198e-03	12	NC	1	NC	1
784			min	-.026	14	-.253	24	-.33	18	-6.842e-03	18	NC	1	NC	1
785		3	max	.085	32	.262	18	.345	12	7.198e-03	12	NC	1	NC	1
786			min	-.026	14	-.267	12	-.341	18	-6.842e-03	18	NC	1	NC	1
787		4	max	.085	32	.272	18	.352	24	7.198e-03	12	NC	1	NC	1
788			min	-.026	14	-.281	12	-.353	6	-6.842e-03	18	NC	1	NC	1
789		5	max	.085	32	.281	18	.359	24	7.198e-03	12	NC	1	NC	1
790			min	-.026	14	-.295	12	-.365	6	-6.842e-03	18	NC	1	NC	1
791	M80	1	max	.073	12	.158	6	.386	12	7.047e-03	12	NC	1	NC	1
792			min	-.038	18	-.148	24	-.37	18	-6.715e-03	18	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
793		2	max	.073	12	.166	6	.393	12	7.047e-03	12	NC	1	NC	1
794			min	-.038	18	-.161	24	-.381	18	-6.715e-03	18	NC	1	NC	1
795		3	max	.073	12	.174	6	.4	12	7.047e-03	12	NC	1	NC	1
796			min	-.038	18	-.174	24	-.393	18	-6.715e-03	18	NC	1	NC	1
797		4	max	.073	12	.182	18	.406	24	7.047e-03	12	NC	1	NC	1
798			min	-.038	18	-.187	12	-.405	6	-6.715e-03	18	NC	1	NC	1
799		5	max	.073	12	.191	18	.414	24	7.047e-03	12	NC	1	NC	1
800			min	-.038	18	-.201	12	-.417	6	-6.715e-03	18	NC	1	NC	1
801	M81	1	max	.102	32	.257	6	.357	12	7.198e-03	12	NC	1	NC	1
802			min	-.024	14	-.253	24	-.341	18	-6.842e-03	18	NC	1	NC	1
803		2	max	.102	32	.266	6	.363	12	7.198e-03	12	NC	1	NC	1
804			min	-.024	14	-.267	24	-.352	18	-6.842e-03	18	NC	1	NC	1
805		3	max	.102	32	.275	18	.369	12	7.198e-03	12	NC	1	NC	1
806			min	-.024	14	-.281	12	-.364	18	-6.842e-03	18	NC	1	NC	1
807		4	max	.102	32	.285	18	.375	24	7.198e-03	12	NC	1	NC	1
808			min	-.024	14	-.295	12	-.375	6	-6.842e-03	18	NC	1	NC	1
809		5	max	.102	32	.294	18	.382	24	7.198e-03	12	NC	1	NC	1
810			min	-.024	14	-.309	12	-.388	6	-6.842e-03	18	NC	1	NC	1
811	M82	1	max	.085	12	.17	6	.409	12	7.047e-03	12	NC	1	NC	1
812			min	-.041	18	-.161	24	-.391	18	-6.715e-03	18	NC	1	NC	1
813		2	max	.085	12	.178	6	.416	12	7.047e-03	12	NC	1	NC	1
814			min	-.041	18	-.174	24	-.403	18	-6.715e-03	18	NC	1	NC	1
815		3	max	.085	12	.186	6	.422	12	7.047e-03	12	NC	1	NC	1
816			min	-.041	18	-.187	24	-.415	18	-6.715e-03	18	NC	1	NC	1
817		4	max	.085	12	.195	18	.429	12	7.047e-03	12	NC	1	NC	1
818			min	-.041	18	-.2	12	-.427	6	-6.715e-03	18	NC	1	NC	1
819		5	max	.085	12	.203	18	.436	24	7.047e-03	12	NC	1	NC	1
820			min	-.041	18	-.214	12	-.439	6	-6.715e-03	18	NC	1	NC	1
821	M83	1	max	.063	17	.026	14	.458	24	6.86e-03	7	NC	1	NC	1
822			min	-.079	11	-.085	32	-.456	6	-5.938e-03	25	NC	1	NC	1
823		2	max	.063	17	.025	14	.464	24	6.86e-03	7	NC	1	NC	1
824			min	-.079	11	-.09	32	-.463	6	-5.938e-03	25	NC	1	NC	1
825		3	max	.063	17	.025	14	.471	24	6.86e-03	7	NC	1	NC	1
826			min	-.079	11	-.094	32	-.469	6	-5.938e-03	25	NC	1	NC	1
827		4	max	.063	17	.025	14	.478	24	6.86e-03	7	NC	1	NC	1
828			min	-.079	11	-.098	32	-.475	6	-5.938e-03	25	NC	1	NC	1
829		5	max	.063	17	.024	14	.484	12	6.86e-03	7	NC	1	NC	1
830			min	-.079	11	-.102	32	-.482	6	-5.938e-03	25	NC	1	NC	1
831	M84	1	max	.034	25	.038	18	.458	24	6.835e-03	7	NC	1	NC	1
832			min	-.045	7	-.073	12	-.456	6	-5.95e-03	25	NC	1	NC	1
833		2	max	.034	25	.039	18	.464	24	6.835e-03	7	NC	1	NC	1
834			min	-.045	7	-.076	12	-.463	6	-5.95e-03	25	NC	1	NC	1
835		3	max	.034	25	.04	18	.471	24	6.835e-03	7	NC	1	NC	1
836			min	-.045	7	-.079	12	-.469	6	-5.95e-03	25	NC	1	NC	1
837		4	max	.034	25	.04	18	.478	12	6.835e-03	7	NC	1	NC	1
838			min	-.045	7	-.082	12	-.475	6	-5.95e-03	25	NC	1	NC	1
839		5	max	.034	25	.041	18	.484	12	6.835e-03	7	NC	1	NC	1
840			min	-.045	7	-.085	12	-.481	6	-5.95e-03	25	NC	1	NC	1
841	M85	1	max	.053	6	.026	14	.408	12	6.86e-03	7	NC	1	NC	1
842			min	-.042	24	-.085	32	-.398	18	-5.938e-03	25	NC	1	NC	1
843		2	max	.053	6	.025	14	.415	12	6.86e-03	7	NC	1	NC	1
844			min	-.042	24	-.09	32	-.404	18	-5.938e-03	25	NC	1	NC	1
845		3	max	.053	6	.025	14	.421	12	6.86e-03	7	NC	1	NC	1
846			min	-.042	24	-.094	32	-.411	18	-5.938e-03	25	NC	1	NC	1
847		4	max	.053	6	.025	14	.428	12	6.86e-03	7	NC	1	NC	1
848			min	-.042	24	-.098	32	-.417	18	-5.938e-03	25	NC	1	NC	1
849		5	max	.053	6	.024	14	.435	12	6.86e-03	7	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
850			min	-.042	24	-.102	32	-.423	18	-5.938e-03	25	NC	1	NC	1
851	M86	1	max	.066	12	.038	18	.408	12	6.835e-03	7	NC	1	NC	1
852			min	-.05	18	-.073	12	-.398	18	-5.95e-03	25	NC	1	NC	1
853		2	max	.066	12	.039	18	.415	12	6.835e-03	7	NC	1	NC	1
854			min	-.05	18	-.076	12	-.404	18	-5.95e-03	25	NC	1	NC	1
855		3	max	.066	12	.04	18	.421	12	6.835e-03	7	NC	1	NC	1
856			min	-.05	18	-.079	12	-.411	18	-5.95e-03	25	NC	1	NC	1
857		4	max	.066	12	.04	18	.428	12	6.835e-03	7	NC	1	NC	1
858			min	-.05	18	-.082	12	-.417	18	-5.95e-03	25	NC	1	NC	1
859		5	max	.066	12	.041	18	.435	12	6.835e-03	7	NC	1	NC	1
860			min	-.05	18	-.085	12	-.423	18	-5.95e-03	25	NC	1	NC	1
861	M87	1	max	.398	18	.085	32	.042	24	4.826e-03	34	NC	2	NC	1
862			min	-.408	12	-.026	14	-.053	6	-1.763e-03	17	145.915	7	184.018	7
863		2	max	.398	18	.075	32	.018	24	4.407e-03	34	NC	40	NC	1
864			min	-.408	12	-.007	14	-.03	6	-1.061e-03	17	194.738	7	236.137	7
865		3	max	.398	18	.066	34	0	17	3.988e-03	34	NC	41	NC	1
866			min	-.408	12	0	16	-.021	34	-3.668e-04	16	292.391	7	289.104	12
867		4	max	.398	18	.061	36	.026	18	4.389e-03	34	NC	4	NC	4
868			min	-.408	12	-.017	18	-.041	12	-9.514e-04	16	224.237	25	185.331	12
869		5	max	.398	18	.073	12	.05	18	4.79e-03	34	NC	1	NC	3
870			min	-.408	12	-.038	18	-.066	12	-1.536e-03	16	168.063	25	141.118	12
871	M88	1	max	0	22	0	16	.427	18	5.835e-03	25	NC	1	NC	1
872			min	-.002	28	-.066	34	-.433	12	-6.725e-03	7	NC	1	NC	1
873		2	max	0	22	0	16	.422	18	5.835e-03	25	NC	1	NC	1
874			min	-.002	28	-.063	34	-.428	12	-6.725e-03	7	NC	1	NC	1
875		3	max	0	22	0	17	.417	18	5.835e-03	25	NC	1	NC	1
876			min	-.002	28	-.061	34	-.422	12	-6.725e-03	7	NC	1	NC	1
877		4	max	0	22	-.001	17	.412	18	5.835e-03	25	NC	1	NC	1
878			min	-.002	28	-.059	34	-.417	12	-6.725e-03	7	NC	1	NC	1
879		5	max	0	22	-.001	17	.407	18	5.835e-03	25	NC	1	NC	1
880			min	-.002	28	-.057	34	-.412	12	-6.725e-03	7	NC	1	NC	1
881	M89	1	max	0	16	.241	18	.416	6	8.857e-03	18	NC	1	NC	1
882			min	-.066	34	-.258	12	-.404	24	-9.049e-03	12	219.969	12	155.778	7
883		2	max	0	16	.228	18	.393	6	8.866e-03	18	NC	1	NC	1
884			min	-.066	34	-.237	12	-.389	24	-9.057e-03	12	294.068	12	207.801	7
885		3	max	0	16	.214	6	.369	18	8.948e-03	18	NC	1	NC	1
886			min	-.066	34	-.216	12	-.375	12	-9.132e-03	12	443.738	12	312.108	7
887		4	max	0	16	.203	6	.347	18	8.852e-03	18	NC	1	NC	1
888			min	-.066	34	-.197	24	-.361	12	-9.043e-03	12	640.069	28	623.083	7
889		5	max	0	16	.191	6	.324	18	8.842e-03	18	NC	1	NC	1
890			min	-.066	34	-.178	24	-.347	12	-9.033e-03	12	480.029	28	1822.323	52
891	M90	1	max	.305	12	.289	19	.175	18	4.269e-03	12	NC	1	NC	1
892			min	-.282	18	-.336	13	-.208	12	-3.831e-03	18	NC	1	NC	1
893		2	max	.305	12	.266	19	.16	18	4.269e-03	12	NC	1	NC	1
894			min	-.282	18	-.316	13	-.193	12	-3.831e-03	18	NC	1	NC	1
895		3	max	.305	12	.243	19	.146	18	4.269e-03	12	NC	1	NC	1
896			min	-.282	18	-.295	13	-.178	12	-3.831e-03	18	NC	1	NC	1
897		4	max	.305	12	.22	19	.131	18	4.269e-03	12	NC	1	NC	1
898			min	-.282	18	-.277	12	-.163	12	-3.831e-03	18	NC	1	NC	1
899		5	max	.305	12	.2	18	.116	18	4.269e-03	12	NC	1	NC	1
900			min	-.282	18	-.261	12	-.148	12	-3.831e-03	18	NC	1	NC	1
901	M91	1	max	.178	12	.243	19	.305	12	7.772e-03	7	NC	1	NC	1
902			min	-.146	18	-.295	13	-.282	18	-6.804e-03	25	NC	1	NC	1
903		2	max	.178	12	.233	19	.32	12	7.772e-03	7	NC	1	NC	1
904			min	-.146	18	-.285	13	-.297	18	-6.804e-03	25	NC	1	NC	1
905		3	max	.178	12	.223	19	.336	12	7.772e-03	7	NC	1	NC	1
906			min	-.146	18	-.274	13	-.312	18	-6.804e-03	25	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
907		4	max	.178	12	.214	19	.351	12	7.772e-03	7	NC	1	NC	1
908			min	-.146	18	-.263	13	-.327	18	-6.804e-03	25	NC	1	NC	1
909		5	max	.178	12	.204	19	.366	12	7.772e-03	7	NC	1	NC	1
910			min	-.146	18	-.252	13	-.342	18	-6.804e-03	25	NC	1	NC	1
911	M92	1	max	.252	13	.083	16	.238	11	4.893e-03	11	NC	1	NC	1
912			min	-.204	19	-.106	10	-.196	17	-4.888e-03	17	2216.654	3	1126.182	49
913		2	max	.252	13	.047	6	.366	12	4.964e-03	11	NC	3	NC	6
914			min	-.204	19	-.037	24	-.326	18	-4.936e-03	17	1161.284	10	549.891	7
915		3	max	.252	13	.065	7	.513	12	5.998e-03	12	NC	6	NC	40
916			min	-.204	19	-.051	25	-.493	18	-5.782e-03	18	754.232	9	257.888	7
917		4	max	.252	13	.17	18	.622	24	6.313e-03	12	NC	1	NC	1
918			min	-.204	19	-.204	12	-.637	6	-6.054e-03	18	637.364	13	168.227	7
919		5	max	.252	13	.361	18	.813	25	6.313e-03	12	NC	3	NC	1
920			min	-.204	19	-.446	12	-.869	7	-6.054e-03	18	258.787	12	118.495	7
921	M93	1	max	.215	12	.211	19	.459	12	7.218e-03	7	NC	1	NC	1
922			min	-.205	18	-.243	13	-.452	18	-6.923e-03	25	NC	1	NC	1
923		2	max	.215	12	.209	19	.469	12	7.218e-03	7	NC	1	NC	1
924			min	-.205	18	-.245	13	-.461	18	-6.923e-03	25	NC	1	NC	1
925		3	max	.215	12	.207	19	.478	12	7.218e-03	7	NC	1	NC	1
926			min	-.205	18	-.247	13	-.47	18	-6.923e-03	25	NC	1	NC	1
927		4	max	.215	12	.206	19	.488	12	7.218e-03	7	NC	1	NC	1
928			min	-.205	18	-.25	13	-.479	18	-6.923e-03	25	NC	1	NC	1
929		5	max	.215	12	.204	19	.497	12	7.218e-03	7	NC	1	NC	1
930			min	-.205	18	-.252	13	-.489	18	-6.923e-03	25	NC	1	NC	1
931	M94	1	max	.453	18	.257	25	.319	18	5.838e-03	11	NC	2	NC	2
932			min	-.46	12	-.368	7	-.337	12	-3.245e-03	17	136.134	7	143.178	12
933		2	max	.453	18	.107	25	.161	18	5.273e-03	11	NC	16	NC	27
934			min	-.46	12	-.183	7	-.169	12	-2.635e-03	17	189.037	7	195.577	12
935		3	max	.452	18	.006	16	.007	4	4.808e-03	34	NC	4	NC	1
936			min	-.46	12	-.084	34	-.007	22	-1.641e-03	16	286.207	7	304.482	12
937		4	max	.452	18	.137	19	.149	12	4.737e-03	34	NC	1	NC	1
938			min	-.459	12	-.172	13	-.142	18	-1.615e-03	16	212.257	25	480.103	2
939		5	max	.452	18	.297	19	.291	12	4.699e-03	34	NC	1	NC	1
940			min	-.459	12	-.326	13	-.278	18	-1.671e-03	16	155.661	25	356.77	2
941	M95	1	max	.28	18	.231	25	.181	18	2.538e-03	25	NC	1	NC	1
942			min	-.302	12	-.353	7	-.182	12	-3.339e-03	7	NC	1	NC	1
943		2	max	.28	18	.21	25	.169	6	2.538e-03	25	NC	1	NC	1
944			min	-.302	12	-.33	7	-.168	24	-3.339e-03	7	NC	1	NC	1
945		3	max	.28	18	.19	25	.158	6	2.538e-03	25	NC	1	NC	1
946			min	-.302	12	-.307	7	-.154	24	-3.339e-03	7	NC	1	NC	1
947		4	max	.28	18	.169	25	.147	6	2.538e-03	25	NC	1	NC	1
948			min	-.302	12	-.285	7	-.14	24	-3.339e-03	7	NC	1	NC	1
949		5	max	.28	18	.148	25	.135	6	2.538e-03	25	NC	1	NC	1
950			min	-.302	12	-.262	7	-.127	24	-3.339e-03	7	NC	1	NC	1
951	M96	1	max	.158	6	.19	25	.302	12	7.611e-03	7	NC	1	NC	1
952			min	-.154	24	-.307	7	-.28	18	-6.917e-03	25	NC	1	NC	1
953		2	max	.158	6	.182	25	.316	12	7.611e-03	7	NC	1	NC	1
954			min	-.154	24	-.297	7	-.292	18	-6.917e-03	25	NC	1	NC	1
955		3	max	.158	6	.174	25	.33	12	7.611e-03	7	NC	1	NC	1
956			min	-.154	24	-.287	7	-.303	18	-6.917e-03	25	NC	1	NC	1
957		4	max	.158	6	.167	25	.344	12	7.611e-03	7	NC	1	NC	1
958			min	-.154	24	-.277	7	-.315	18	-6.917e-03	25	NC	1	NC	1
959		5	max	.158	6	.159	25	.358	12	7.611e-03	7	NC	1	NC	1
960			min	-.154	24	-.267	7	-.326	18	-6.917e-03	25	NC	1	NC	1
961	M97	1	max	.267	7	.27	17	.146	11	3.681e-03	12	NC	1	NC	1
962			min	-.159	25	-.325	11	-.121	17	-2.728e-03	18	858.826	31	1788.666	38
963		2	max	.267	7	.27	18	.211	12	4.026e-03	12	NC	2	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
964			min	-.159	25	-.29	12	-.181	18	-3.118e-03	18	696.729	9	935.357	13
965		3	max	.267	7	.414	18	.297	12	6.791e-03	12	NC	52	NC	38
966			min	-.159	25	-.424	12	-.282	18	-6.236e-03	18	344.727	7	420.126	7
967		4	max	.267	7	.632	18	.423	25	7.482e-03	12	NC	26	NC	38
968			min	-.159	25	-.675	12	-.471	7	-7.016e-03	18	222.011	7	219.485	7
969		5	max	.267	7	.968	18	.634	25	7.482e-03	12	NC	2	NC	4
970			min	-.159	25	-1.047	12	-.745	7	-7.016e-03	18	122.334	12	133.701	8
971	M98	1	max	.234	18	.176	25	.46	12	8.329e-03	7	NC	1	NC	1
972			min	-.248	12	-.268	7	-.453	18	-6.768e-03	25	NC	1	NC	1
973		2	max	.234	18	.172	25	.471	12	8.329e-03	7	NC	1	NC	1
974			min	-.248	12	-.268	7	-.463	18	-6.768e-03	25	NC	1	NC	1
975		3	max	.234	18	.168	25	.482	12	8.329e-03	7	NC	1	NC	1
976			min	-.248	12	-.268	7	-.474	18	-6.768e-03	25	NC	1	NC	1
977		4	max	.234	18	.163	25	.493	12	8.329e-03	7	NC	1	NC	1
978			min	-.248	12	-.267	7	-.484	18	-6.768e-03	25	NC	1	NC	1
979		5	max	.234	18	.159	25	.505	12	8.329e-03	7	NC	1	NC	1
980			min	-.248	12	-.267	7	-.495	18	-6.768e-03	25	NC	1	NC	1
981	M99	1	max	.623	24	.274	19	.223	7	6.581e-03	16	NC	1	NC	1
982			min	-.626	7	-.289	13	-.171	25	-9.185e-03	10	NC	1	NC	1
983		2	max	.623	24	.24	19	.208	7	6.581e-03	16	NC	1	NC	1
984			min	-.626	7	-.256	13	-.156	25	-9.185e-03	10	NC	1	NC	1
985		3	max	.623	24	.207	19	.193	7	6.581e-03	16	NC	1	NC	1
986			min	-.626	7	-.224	13	-.14	25	-9.185e-03	10	NC	1	NC	1
987		4	max	.623	24	.178	20	.179	8	6.581e-03	16	NC	1	NC	1
988			min	-.626	7	-.195	2	-.124	25	-9.185e-03	10	NC	1	NC	1
989		5	max	.623	24	.15	20	.171	8	6.581e-03	16	NC	1	NC	1
990			min	-.626	7	-.168	2	-.115	14	-9.185e-03	10	NC	1	NC	1
991	M100	1	max	.14	25	.207	19	.623	24	1.114e-02	7	NC	1	NC	1
992			min	-.193	7	-.224	13	-.626	7	-1.084e-02	25	NC	1	NC	1
993		2	max	.14	25	.206	19	.642	24	1.114e-02	7	NC	1	NC	1
994			min	-.193	7	-.231	13	-.641	6	-1.084e-02	25	NC	1	NC	1
995		3	max	.14	25	.206	19	.661	24	1.114e-02	7	NC	1	NC	1
996			min	-.193	7	-.238	13	-.659	6	-1.084e-02	25	NC	1	NC	1
997		4	max	.14	25	.205	19	.679	24	1.114e-02	7	NC	1	NC	1
998			min	-.193	7	-.245	13	-.677	6	-1.084e-02	25	NC	1	NC	1
999		5	max	.14	25	.204	19	.698	24	1.114e-02	7	NC	1	NC	1
1000			min	-.193	7	-.252	13	-.695	6	-1.084e-02	25	NC	1	NC	1
1001	M101	1	max	.689	6	.307	24	.475	17	1.418e-02	11	NC	1	NC	1
1002			min	-.657	24	-.391	6	-.554	11	-1.16e-02	17	NC	1	NC	1
1003		2	max	.689	6	.271	24	.454	17	1.418e-02	11	NC	1	NC	1
1004			min	-.657	24	-.35	6	-.532	11	-1.16e-02	17	NC	1	NC	1
1005		3	max	.689	6	.234	24	.434	17	1.418e-02	11	NC	1	NC	1
1006			min	-.657	24	-.309	6	-.51	11	-1.16e-02	17	NC	1	NC	1
1007		4	max	.689	6	.197	24	.414	17	1.418e-02	11	NC	1	NC	1
1008			min	-.657	24	-.268	6	-.488	11	-1.16e-02	17	NC	1	NC	1
1009		5	max	.689	6	.16	24	.393	17	1.418e-02	11	NC	1	NC	1
1010			min	-.657	24	-.227	6	-.466	11	-1.16e-02	17	NC	1	NC	1
1011	M102	1	max	.434	17	.234	24	.657	24	1.443e-02	7	NC	1	NC	1
1012			min	-.51	11	-.309	6	-.689	6	-1.288e-02	25	NC	1	NC	1
1013		2	max	.434	17	.202	24	.679	24	1.443e-02	7	NC	1	NC	1
1014			min	-.51	11	-.287	7	-.71	6	-1.288e-02	25	NC	1	NC	1
1015		3	max	.434	17	.188	25	.701	24	1.443e-02	7	NC	1	NC	1
1016			min	-.51	11	-.281	7	-.731	6	-1.288e-02	25	NC	1	NC	1
1017		4	max	.434	17	.174	25	.724	24	1.443e-02	7	NC	1	NC	1
1018			min	-.51	11	-.274	7	-.751	6	-1.288e-02	25	NC	1	NC	1
1019		5	max	.434	17	.159	25	.746	24	1.443e-02	7	NC	1	NC	1
1020			min	-.51	11	-.267	7	-.772	6	-1.288e-02	25	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1021	M103	1	max	.368	7	.485	18	.225	13	7.484e-03	12	NC	1	NC	1
1022			min	-.257	25	-.501	12	-.222	19	-7.018e-03	18	NC	1	NC	1
1023		2	max	.368	7	.49	18	.228	13	7.484e-03	12	NC	1	NC	1
1024			min	-.257	25	-.506	12	-.227	7	-7.018e-03	18	NC	1	NC	1
1025		3	max	.368	7	.494	18	.231	25	7.484e-03	12	NC	1	NC	1
1026			min	-.257	25	-.511	12	-.232	7	-7.018e-03	18	NC	1	NC	1
1027		4	max	.368	7	.498	18	.235	25	7.484e-03	12	NC	1	NC	1
1028			min	-.257	25	-.517	12	-.238	7	-7.018e-03	18	NC	1	NC	1
1029		5	max	.368	7	.502	18	.238	25	7.484e-03	12	NC	1	NC	1
1030			min	-.257	25	-.522	12	-.243	7	-7.018e-03	18	NC	1	NC	1
1031	M104	1	max	.326	13	.06	10	.533	12	6.311e-03	12	NC	1	NC	1
1032			min	-.297	19	-.046	16	-.515	18	-6.052e-03	18	NC	1	NC	1
1033		2	max	.326	13	.057	10	.535	12	6.311e-03	12	NC	1	NC	1
1034			min	-.297	19	-.045	16	-.519	18	-6.052e-03	18	NC	1	NC	1
1035		3	max	.326	13	.055	10	.538	12	6.311e-03	12	NC	1	NC	1
1036			min	-.297	19	-.044	16	-.523	18	-6.052e-03	18	NC	1	NC	1
1037		4	max	.326	13	.052	10	.541	12	6.311e-03	12	NC	1	NC	1
1038			min	-.297	19	-.043	16	-.527	18	-6.052e-03	18	NC	1	NC	1
1039		5	max	.326	13	.049	10	.543	12	6.311e-03	12	NC	1	NC	1
1040			min	-.297	19	-.042	16	-.531	18	-6.052e-03	18	NC	1	NC	1
1041	M105	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
1042			min	0	1	0	1	0	1	0	1	NC	1	NC	1
1043		2	max	0	36	.003	29	.038	10	2.18e-03	3	NC	1	NC	1
1044			min	0	18	-.002	23	-.039	4	-1.772e-03	21	NC	1	1605.798	4
1045		3	max	.001	36	.008	30	.129	10	3.893e-03	3	NC	1	NC	1
1046			min	0	18	-.003	23	-.13	16	-3.323e-03	21	7723.245	30	478.444	16
1047		4	max	.002	36	0	18	.248	10	5.605e-03	3	NC	1	NC	1
1048			min	0	18	-.006	36	-.25	16	-4.874e-03	21	9820.465	36	248.444	16
1049		5	max	.002	36	-.001	24	.376	10	7.321e-03	3	NC	22	NC	1
1050			min	0	18	-.057	30	-.377	16	-6.428e-03	21	1093.147	30	164.398	16
1051	M106	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
1052			min	0	1	0	1	0	1	0	1	NC	1	NC	1
1053		2	max	0	28	.003	35	.041	12	2.031e-03	7	NC	1	NC	1
1054			min	0	22	-.002	17	-.041	6	-1.623e-03	25	NC	1	1514.295	12
1055		3	max	.001	28	.008	35	.139	12	3.595e-03	7	NC	1	NC	1
1056			min	0	22	-.003	17	-.137	6	-3.026e-03	25	7714.262	35	447.259	12
1057		4	max	.002	28	0	22	.269	12	5.158e-03	7	NC	1	NC	1
1058			min	0	22	-.006	28	-.266	18	-4.429e-03	25	9820.868	28	230.123	12
1059		5	max	.002	28	-.001	17	.412	12	6.725e-03	7	NC	4	NC	1
1060			min	0	22	-.057	34	-.407	18	-5.835e-03	25	1092.806	34	150.435	12
1061	M107	1	max	.157	11	.233	14	.289	11	8.341e-03	2	NC	1	NC	1
1062			min	-.133	17	-.287	8	-.258	17	-7.438e-03	20	NC	1	NC	1
1063		2	max	.157	11	.229	14	.293	11	8.341e-03	2	NC	1	NC	1
1064			min	-.133	17	-.283	8	-.263	17	-7.438e-03	20	NC	1	NC	1
1065		3	max	.157	11	.226	14	.297	11	8.341e-03	2	NC	1	NC	1
1066			min	-.133	17	-.278	8	-.267	17	-7.438e-03	20	NC	1	NC	1
1067		4	max	.157	11	.223	14	.301	11	8.341e-03	2	NC	1	NC	1
1068			min	-.133	17	-.273	8	-.271	17	-7.438e-03	20	NC	1	NC	1
1069		5	max	.157	11	.22	14	.306	11	8.341e-03	2	NC	1	NC	1
1070			min	-.133	17	-.268	8	-.276	17	-7.438e-03	20	NC	1	NC	1
1071	M108	1	max	.257	17	.305	21	.172	17	2.852e-03	22	NC	1	NC	1
1072			min	-.287	11	-.43	3	-.189	11	-4.414e-03	4	155.47	4	781.031	3
1073		2	max	.258	17	.144	21	.062	5	2.42e-03	22	NC	1	NC	1
1074			min	-.288	11	-.253	3	-.059	23	-3.806e-03	4	208.508	4	1094.605	3
1075		3	max	.258	17	.014	23	.047	11	1.693e-03	23	NC	1	NC	1
1076			min	-.288	11	-.148	29	-.029	17	-2.946e-03	5	278.301	21	1753.041	3
1077		4	max	.258	17	.147	14	.126	11	1.967e-03	25	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1078			min	-.288	11	-.212	8	-.102	17	-3.076e-03	7	184.701	21	2801.3	11
1079		5	max	.258	17	.333	14	.188	11	2.382e-03	14	NC	1	NC	1
1080			min	-.289	11	-.378	8	-.164	17	-3.4e-03	8	138.286	21	NC	1
1081	M109	1	max	.112	17	.219	21	.287	11	7.765e-03	3	NC	1	NC	1
1082			min	-.117	11	-.336	3	-.257	17	-7.012e-03	21	NC	1	NC	1
1083		2	max	.112	17	.215	21	.296	11	7.765e-03	3	NC	1	NC	1
1084			min	-.117	11	-.33	3	-.265	17	-7.012e-03	21	NC	1	NC	1
1085		3	max	.112	17	.212	21	.305	11	7.765e-03	3	NC	1	NC	1
1086			min	-.117	11	-.324	3	-.272	17	-7.012e-03	21	NC	1	NC	1
1087		4	max	.112	17	.208	21	.314	11	7.765e-03	3	NC	1	NC	1
1088			min	-.117	11	-.318	3	-.28	17	-7.012e-03	21	NC	1	NC	1
1089		5	max	.112	17	.204	21	.323	11	7.765e-03	3	NC	1	NC	1
1090			min	-.117	11	-.313	3	-.287	17	-7.012e-03	21	NC	1	NC	1
1091	M110	1	max	.414	3	.01	11	.288	17	5.978e-03	11	NC	1	NC	1
1092			min	-.29	21	-.009	17	-.326	11	-4.985e-03	17	NC	1	NC	1
1093		2	max	.414	3	.01	12	.292	17	5.978e-03	11	NC	1	NC	1
1094			min	-.29	21	-.01	18	-.329	11	-4.985e-03	17	NC	1	NC	1
1095		3	max	.414	3	.011	24	.296	17	5.978e-03	11	NC	1	NC	1
1096			min	-.29	21	-.011	6	-.332	11	-4.985e-03	17	NC	1	NC	1
1097		4	max	.414	3	.011	24	.3	17	5.978e-03	11	NC	1	NC	1
1098			min	-.29	21	-.012	6	-.334	11	-4.985e-03	17	NC	1	NC	1
1099		5	max	.414	3	.012	24	.304	17	5.978e-03	11	NC	1	NC	1
1100			min	-.29	21	-.014	6	-.337	11	-4.985e-03	17	NC	1	NC	1
1101	M111	1	max	.363	8	.268	17	.139	17	2.525e-03	23	NC	1	NC	1
1102			min	-.316	14	-.303	11	-.156	11	-2.554e-03	5	NC	1	NC	1
1103		2	max	.363	8	.268	17	.14	17	2.525e-03	23	NC	1	NC	1
1104			min	-.316	14	-.303	11	-.157	11	-2.554e-03	5	NC	1	NC	1
1105		3	max	.363	8	.267	17	.141	17	2.525e-03	23	NC	1	NC	1
1106			min	-.316	14	-.303	11	-.157	11	-2.554e-03	5	NC	1	NC	1
1107		4	max	.363	8	.267	17	.143	17	2.525e-03	23	NC	1	NC	1
1108			min	-.316	14	-.303	11	-.158	11	-2.554e-03	5	NC	1	NC	1
1109		5	max	.363	8	.267	17	.144	17	2.525e-03	23	NC	1	NC	1
1110			min	-.316	14	-.303	11	-.158	11	-2.554e-03	5	NC	1	NC	1
1111	M112	1	max	.003	17	.288	17	.414	3	7.49e-03	21	NC	1	NC	1
1112			min	-.004	11	-.326	11	-.29	21	-8.895e-03	3	253.092	13	255.929	23
1113		2	max	.002	17	.246	16	.401	3	5.618e-03	21	NC	1	NC	43
1114			min	-.003	11	-.258	10	-.281	21	-6.671e-03	3	385.483	13	361.601	23
1115		3	max	.002	17	.23	3	.333	3	3.745e-03	21	NC	1	8945.37	44
1116			min	-.002	11	-.226	21	-.234	21	-4.448e-03	3	686.158	13	321.561	2
1117		4	max	0	17	.154	3	.193	3	1.873e-03	21	NC	1	NC	6
1118			min	0	11	-.148	21	-.136	21	-2.224e-03	3	1595.058	12	451.313	2
1119		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
1120			min	0	1	0	1	0	1	0	1	NC	1	NC	1
1121	M113	1	max	.002	19	.363	8	.341	11	8.285e-03	20	NC	1	NC	1
1122			min	-.003	12	-.316	14	-.301	17	-8.388e-03	2	289.414	8	997.496	7
1123		2	max	.002	19	.319	9	.376	11	6.214e-03	20	NC	1	NC	43
1124			min	-.002	12	-.258	15	-.33	17	-6.291e-03	2	393.906	8	557.961	10
1125		3	max	.001	19	.261	9	.339	11	4.143e-03	20	NC	1	NC	19
1126			min	-.001	12	-.2	15	-.297	17	-4.194e-03	2	604.751	8	397.547	10
1127		4	max	0	19	.15	9	.206	11	2.071e-03	20	NC	1	NC	7
1128			min	0	12	-.112	15	-.179	17	-2.097e-03	2	1232.97	8	557.961	10
1129		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
1130			min	0	1	0	1	0	1	0	1	NC	1	NC	1
1131	M114	1	max	.138	12	.219	19	.291	11	7.456e-03	7	NC	1	NC	1
1132			min	-.113	18	-.273	13	-.26	17	-6.529e-03	25	NC	1	NC	1
1133		2	max	.138	12	.215	19	.298	11	7.456e-03	7	NC	1	NC	1
1134			min	-.113	18	-.268	13	-.267	17	-6.529e-03	25	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1135		3	max	.138	12	.211	19	.306	11	7.456e-03	7	NC	1	NC	1
1136			min	-.113	18	-.263	13	-.275	17	-6.529e-03	25	NC	1	NC	1
1137		4	max	.138	12	.208	19	.313	11	7.456e-03	7	NC	1	NC	1
1138			min	-.113	18	-.257	13	-.282	17	-6.529e-03	25	NC	1	NC	1
1139		5	max	.138	12	.204	19	.32	11	7.456e-03	7	NC	1	NC	1
1140			min	-.113	18	-.252	13	-.289	17	-6.529e-03	25	NC	1	NC	1
1141	M115A	1	max	.261	17	.243	25	.169	17	1.74e-03	14	NC	1	NC	1
1142			min	-.292	11	-.369	8	-.187	11	-3.276e-03	8	151.395	8	1708.393	8
1143		2	max	.261	17	.105	14	.118	5	1.489e-03	15	NC	1	NC	1
1144			min	-.292	11	-.214	8	-.115	23	-2.852e-03	9	204.841	8	1395.992	13
1145		3	max	.261	17	.005	16	.042	4	1.618e-03	17	NC	1	NC	1
1146			min	-.291	11	-.147	34	-.025	22	-2.861e-03	11	309.7	25	669.246	13
1147		4	max	.26	17	.142	18	.09	12	2.747e-03	17	NC	1	NC	1
1148			min	-.291	11	-.208	12	-.066	18	-3.889e-03	11	204.958	25	439.928	13
1149		5	max	.26	17	.308	19	.194	11	3.432e-03	18	NC	1	NC	1
1150			min	-.291	11	-.352	13	-.17	17	-4.473e-03	12	153.048	25	333.824	13
1151	M116	1	max	.147	17	.167	14	.292	11	7.007e-03	7	NC	1	NC	1
1152			min	-.152	11	-.285	8	-.261	17	-6.258e-03	25	NC	1	NC	1
1153		2	max	.147	17	.165	14	.297	11	7.007e-03	7	NC	1	NC	1
1154			min	-.152	11	-.28	8	-.265	17	-6.258e-03	25	NC	1	NC	1
1155		3	max	.147	17	.163	25	.302	11	7.007e-03	7	NC	1	NC	1
1156			min	-.152	11	-.275	8	-.269	17	-6.258e-03	25	NC	1	NC	1
1157		4	max	.147	17	.161	25	.307	11	7.007e-03	7	NC	1	NC	1
1158			min	-.152	11	-.271	7	-.272	17	-6.258e-03	25	NC	1	NC	1
1159		5	max	.147	17	.159	25	.312	12	7.007e-03	7	NC	1	NC	1
1160			min	-.152	11	-.267	7	-.276	17	-6.258e-03	25	NC	1	NC	1
1161	M117	1	max	.355	8	.27	17	.157	11	2.917e-03	12	NC	1	NC	1
1162			min	-.23	25	-.303	11	-.139	17	-1.912e-03	18	NC	1	NC	1
1163		2	max	.355	8	.271	17	.158	11	2.917e-03	12	NC	1	NC	1
1164			min	-.23	25	-.303	11	-.14	17	-1.912e-03	18	NC	1	NC	1
1165		3	max	.355	8	.272	17	.16	11	2.917e-03	12	NC	1	NC	1
1166			min	-.23	25	-.303	11	-.141	17	-1.912e-03	18	NC	1	NC	1
1167		4	max	.355	8	.273	17	.161	11	2.917e-03	12	NC	1	NC	1
1168			min	-.23	25	-.303	11	-.142	17	-1.912e-03	18	NC	1	NC	1
1169		5	max	.355	8	.274	17	.163	12	2.917e-03	12	NC	1	NC	1
1170			min	-.23	25	-.303	11	-.144	18	-1.912e-03	18	NC	1	NC	1
1171	M118	1	max	.339	13	.011	12	.327	11	4.664e-03	23	NC	1	NC	1
1172			min	-.293	19	-.009	18	-.288	17	-4.7e-03	5	NC	1	NC	1
1173		2	max	.339	13	.012	11	.331	11	4.664e-03	23	NC	1	NC	1
1174			min	-.293	19	-.009	17	-.292	17	-4.7e-03	5	NC	1	NC	1
1175		3	max	.339	13	.013	11	.336	11	4.664e-03	23	NC	1	NC	1
1176			min	-.293	19	-.009	17	-.297	17	-4.7e-03	5	NC	1	NC	1
1177		4	max	.339	13	.014	11	.34	11	4.664e-03	23	NC	1	NC	1
1178			min	-.293	19	-.009	17	-.301	17	-4.7e-03	5	NC	1	NC	1
1179		5	max	.339	13	.015	11	.344	11	4.664e-03	23	NC	1	NC	1
1180			min	-.293	19	-.009	17	-.305	17	-4.7e-03	5	NC	1	NC	1
1181	M119	1	max	.003	21	.303	17	.355	8	6.367e-03	14	NC	1	NC	1
1182			min	-.003	3	-.341	11	-.23	25	-7.803e-03	8	355.785	8	778.351	9
1183		2	max	.002	21	.345	17	.331	7	4.776e-03	14	NC	1	9235.634	48
1184			min	-.002	3	-.358	11	-.211	25	-5.852e-03	8	486.56	8	557.959	6
1185		3	max	.001	21	.318	5	.268	7	3.184e-03	14	NC	1	6580.389	48
1186			min	-.002	3	-.314	23	-.169	25	-3.901e-03	8	751.158	8	397.546	6
1187		4	max	0	21	.195	5	.154	7	1.592e-03	14	NC	1	NC	21
1188			min	0	3	-.188	23	-.096	25	-1.951e-03	8	1538.698	8	557.959	6
1189		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
1190			min	0	1	0	1	0	1	0	1	NC	1	NC	1
1191	M120	1	max	.002	23	.339	13	.327	11	7.805e-03	24	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1192			min	-.003	5	-.293	19	-.288	17	-7.854e-03	6	557.632	3	239	17
1193		2	max	.002	23	.344	13	.319	12	5.854e-03	24	NC	1	8024.836	40
1194			min	-.002	5	-.283	19	-.272	18	-5.89e-03	6	1024.832	3	336.354	17
1195		3	max	.001	23	.295	13	.3	13	3.902e-03	24	NC	1	NC	41
1196			min	-.001	5	-.235	19	-.257	19	-3.927e-03	6	1981.707	4	321.562	2
1197		4	max	0	23	.174	13	.189	13	1.951e-03	24	NC	1	NC	10
1198			min	0	5	-.136	19	-.163	19	-1.963e-03	6	3389.999	6	451.315	2
1199		5	max	0	1	0	1	0	1	0	1	NC	1	NC	1
1200			min	0	1	0	1	0	1	0	1	NC	1	NC	1
1201	M121	1	max	.352	13	.019	11	.331	11	4.636e-03	23	NC	1	NC	1
1202			min	-.308	19	-.017	17	-.292	17	-4.669e-03	5	NC	1	NC	1
1203		2	max	.352	13	.02	11	.336	11	4.636e-03	23	NC	1	NC	1
1204			min	-.308	19	-.017	17	-.297	17	-4.669e-03	5	NC	1	NC	1
1205		3	max	.352	13	.021	11	.34	11	4.636e-03	23	NC	1	NC	1
1206			min	-.308	19	-.017	17	-.301	17	-4.669e-03	5	NC	1	NC	1
1207		4	max	.352	13	.022	11	.345	11	4.636e-03	23	NC	1	NC	1
1208			min	-.308	19	-.017	17	-.306	17	-4.669e-03	5	NC	1	NC	1
1209		5	max	.352	13	.023	11	.349	11	4.636e-03	23	NC	1	NC	1
1210			min	-.308	19	-.017	17	-.31	17	-4.669e-03	5	NC	1	NC	1
1211	M122	1	max	.484	11	.273	11	.183	11	4.466e-03	10	NC	1	NC	1
1212			min	-.359	17	-.241	17	-.161	17	-3.516e-03	16	NC	1	NC	1
1213		2	max	.484	11	.266	11	.18	11	4.466e-03	10	NC	1	NC	1
1214			min	-.359	17	-.234	17	-.16	17	-3.516e-03	16	NC	1	NC	1
1215		3	max	.484	11	.259	11	.178	11	4.466e-03	10	NC	1	NC	1
1216			min	-.359	17	-.227	17	-.158	17	-3.516e-03	16	NC	1	NC	1
1217		4	max	.484	11	.252	11	.175	11	4.466e-03	10	NC	1	NC	1
1218			min	-.359	17	-.221	17	-.157	17	-3.516e-03	16	NC	1	NC	1
1219		5	max	.484	11	.245	11	.172	11	4.466e-03	10	NC	1	NC	1
1220			min	-.359	17	-.214	17	-.155	17	-3.516e-03	16	NC	1	NC	1
1221	M123	1	max	.295	11	.359	17	.128	17	6.572e-03	5	NC	1	NC	1
1222			min	-.26	17	-.484	11	-.145	11	-6.395e-03	23	364.547	40	825.462	40
1223		2	max	.295	11	.324	18	.041	17	5.7e-03	5	NC	14	NC	1
1224			min	-.26	17	-.45	12	-.049	11	-5.294e-03	23	517.163	40	1114.48	40
1225		3	max	.296	11	.308	18	.034	12	5.336e-03	6	NC	6	NC	1
1226			min	-.261	17	-.423	12	-.034	18	-4.681e-03	24	834.781	40	1695.324	40
1227		4	max	.296	11	.299	18	.098	11	5.021e-03	6	NC	6	NC	1
1228			min	-.261	17	-.386	12	-.089	17	-4.128e-03	24	630.655	8	3429.852	40
1229		5	max	.296	11	.308	19	.149	11	5.249e-03	7	NC	1	NC	1
1230			min	-.261	17	-.352	13	-.131	17	-4.065e-03	25	438.757	8	NC	1
1231	M124	1	max	.452	41	.274	11	.162	17	4.41e-03	24	NC	1	NC	1
1232			min	-.394	23	-.241	17	-.183	11	-4.405e-03	6	NC	1	NC	1
1233		2	max	.452	41	.266	11	.16	17	4.41e-03	24	NC	1	NC	1
1234			min	-.394	23	-.234	17	-.182	11	-4.405e-03	6	NC	1	NC	1
1235		3	max	.452	41	.259	11	.157	17	4.41e-03	24	NC	1	NC	1
1236			min	-.394	23	-.228	17	-.18	11	-4.405e-03	6	NC	1	NC	1
1237		4	max	.452	41	.252	11	.155	17	4.41e-03	24	NC	1	NC	1
1238			min	-.394	23	-.221	17	-.179	11	-4.405e-03	6	NC	1	NC	1
1239		5	max	.452	41	.245	11	.153	17	4.41e-03	24	NC	1	NC	1
1240			min	-.394	23	-.214	17	-.177	11	-4.405e-03	6	NC	1	NC	1
1241	M125	1	max	.43	3	.02	11	.293	17	5.948e-03	11	NC	1	NC	1
1242			min	-.305	21	-.017	17	-.331	11	-4.959e-03	17	NC	1	NC	1
1243		2	max	.43	3	.02	12	.297	17	5.948e-03	11	NC	1	NC	1
1244			min	-.305	21	-.018	18	-.334	11	-4.959e-03	17	NC	1	NC	1
1245		3	max	.43	3	.021	12	.301	17	5.948e-03	11	NC	1	NC	1
1246			min	-.305	21	-.019	18	-.337	11	-4.959e-03	17	NC	1	NC	1
1247		4	max	.43	3	.021	12	.305	17	5.948e-03	11	NC	1	NC	1
1248			min	-.305	21	-.02	18	-.34	11	-4.959e-03	17	NC	1	NC	1

Envelope Member Section Deflections (Continued)

	Member	Sec		x [in]	LC	y [in]	LC	z [in]	LC	x Rotate [r...	LC	(n) L/y Ratio	LC	(n) L/z Ratio	LC
1249		5	max	.43	3	.022	24	.309	17	5.948e-03	11	NC	1	NC	1
1250			min	-.305	21	-.022	6	-.343	11	-4.959e-03	17	NC	1	NC	1
1251	M126	1	max	.297	11	.305	21	.131	17	5.066e-03	9	NC	1	NC	1
1252			min	-.262	17	-.43	3	-.148	11	-4.883e-03	15	485.014	20	NC	1
1253		2	max	.297	11	.284	21	.089	17	4.852e-03	9	NC	14	NC	1
1254			min	-.262	17	-.41	3	-.097	11	-4.425e-03	15	687.969	20	4083.732	10
1255		3	max	.296	11	.307	22	.034	4	5.28e-03	10	NC	9	NC	1
1256			min	-.261	17	-.422	4	-.034	22	-4.625e-03	16	578.17	12	2909.659	10
1257		4	max	.296	11	.34	22	.053	12	5.935e-03	11	NC	9	NC	1
1258			min	-.261	17	-.426	4	-.044	18	-5.025e-03	17	366.147	12	4083.732	10
1259		5	max	.296	11	.394	23	.145	11	7.259e-03	11	NC	1	NC	1
1260			min	-.261	17	-.452	41	-.128	17	-6.084e-03	17	262.71	12	NC	1
1261	M127	1	max	.378	8	.272	17	.136	17	2.533e-03	23	NC	1	NC	1
1262			min	-.333	14	-.307	11	-.154	11	-2.558e-03	5	NC	1	NC	1
1263		2	max	.378	8	.272	17	.138	17	2.533e-03	23	NC	1	NC	1
1264			min	-.333	14	-.307	11	-.154	11	-2.558e-03	5	NC	1	NC	1
1265		3	max	.378	8	.272	17	.139	17	2.533e-03	23	NC	1	NC	1
1266			min	-.333	14	-.307	11	-.155	11	-2.558e-03	5	NC	1	NC	1
1267		4	max	.378	8	.272	17	.14	17	2.533e-03	23	NC	1	NC	1
1268			min	-.333	14	-.307	11	-.155	11	-2.558e-03	5	NC	1	NC	1
1269		5	max	.378	8	.271	17	.142	17	2.533e-03	23	NC	1	NC	1
1270			min	-.333	14	-.308	11	-.156	11	-2.558e-03	5	NC	1	NC	1
1271	M128	1	max	.369	8	.272	17	.155	11	2.895e-03	12	NC	1	NC	1
1272			min	-.243	25	-.307	11	-.138	17	-1.894e-03	18	NC	1	NC	1
1273		2	max	.369	8	.274	17	.156	11	2.895e-03	12	NC	1	NC	1
1274			min	-.243	25	-.308	11	-.139	17	-1.894e-03	18	NC	1	NC	1
1275		3	max	.369	8	.275	17	.157	11	2.895e-03	12	NC	1	NC	1
1276			min	-.243	25	-.308	11	-.14	17	-1.894e-03	18	NC	1	NC	1
1277		4	max	.369	8	.276	17	.158	11	2.895e-03	12	NC	1	NC	1
1278			min	-.243	25	-.308	11	-.141	17	-1.894e-03	18	NC	1	NC	1
1279		5	max	.369	8	.277	17	.16	12	2.895e-03	12	NC	1	NC	1
1280			min	-.243	25	-.308	11	-.142	18	-1.894e-03	18	NC	1	NC	1
1281	M129	1	max	.307	11	.243	25	.138	17	4.939e-03	13	NC	1	NC	1
1282			min	-.272	17	-.369	8	-.155	11	-4.752e-03	19	2094.502	24	NC	1
1283		2	max	.307	11	.256	14	.081	18	5.197e-03	2	NC	13	NC	1
1284			min	-.272	17	-.383	8	-.09	12	-4.786e-03	20	2793.422	16	3162.853	8
1285		3	max	.307	11	.275	14	.044	8	5.571e-03	2	NC	12	NC	1
1286			min	-.272	17	-.39	8	-.044	14	-4.908e-03	20	1267.117	4	2253.533	8
1287		4	max	.307	11	.301	14	.077	10	5.944e-03	2	NC	12	NC	1
1288			min	-.272	17	-.387	8	-.068	16	-5.03e-03	20	757.268	4	3162.853	8
1289		5	max	.307	11	.333	14	.154	11	6.317e-03	2	NC	1	NC	1
1290			min	-.272	17	-.378	8	-.136	17	-5.152e-03	20	519.297	4	NC	1

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M97	PIPE_2.0	.482	4.5	11	.134	4.5		5	14.916	32.13	1.872	1.872	2...	H1-1b
2	M21	PIPE_2.0	.479	4.5	2	.119	4.5		9	14.916	32.13	1.872	1.872	1...	H1-1b
3	M70	PIPE_2.0	.475	4.5	11	.091	4.5		12	14.916	32.13	1.872	1.872	2...	H1-1b
4	M106	HSS4x4x3	.380	0	12	.167	0	z	7	95.934	106.812	12.662	12.662	1...	H1-1b
5	M105	HSS4x4x3	.361	0	4	.174	0	z	3	95.934	106.812	12.662	12.662	1...	H1-1b
6	M92	PIPE_2.0	.346	4.5	11	.068	1.75		13	14.916	32.13	1.872	1.872	1...	H1-1b
7	M25	PIPE_2.0	.336	4.5	38	.074	4.5		41	14.916	32.13	1.872	1.872	1...	H1-1b
8	M152	PIPE_2.0	.324	2.5	11	.045	2.5		16	23.809	32.13	1.872	1.872	1...	H1-1b
9	M160A	PIPE_2.0	.324	2.5	8	.057	2.5		25	23.809	32.13	1.872	1.872	1...	H1-1b
10	M156A	PIPE_2.0	.324	2.5	2	.057	2.5		15	23.809	32.13	1.872	1.872	1...	H1-1b

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
11	M51	1/2"x6"	.317	.625	4	.061	.612	y	6	55.048	97.2	1.012	12.15	1...	H1-1b
12	M1	1/2"x6"	.315	.625	13	.068	.625	y	2	55.048	97.2	1.012	12.15	1...	H1-1b
13	M65	PIPE_2.0	.289	4.5	5	.086	4.5		10	14.916	32.13	1.872	1.872	1...	H1-1b
14	M112	L2.5x2.5x3	.272	3.352	15	.021	6.704	y	2	7.306	29.192	.873	1.523	1...	H2-1
15	M78	1/2"x6"	.256	.625	9	.069	.625	y	11	55.048	97.2	1.012	12.15	1...	H1-1b
16	M120	L2.5x2.5x3	.255	3.352	2	.019	6.704	z	7	7.306	29.192	.873	1.523	1...	H2-1
17	M113	L2.5x2.5x3	.249	3.422	17	.016	0	z	3	7.306	29.192	.873	1.523	1...	H2-1
18	M119	L2.5x2.5x3	.246	3.422	23	.016	0	y	6	7.306	29.192	.873	1.523	1...	H2-1
19	M48	L2.5x2.5x3	.224	3.422	23	.020	0	y	11	7.306	29.192	.873	1.523	1...	H2-1
20	M49	L2.5x2.5x3	.221	3.422	17	.019	0	z	11	7.306	29.192	.873	1.523	1...	H2-1
21	M60	1/2"x6"	.211	.625	3	.067	.625	y	6	55.048	97.2	1.012	12.15	1...	H1-1b
22	M32	HSS4x4x3	.189	3.982	37	.186	0	z	11	95.934	106.812	12.662	12.662	1...	H1-1b
23	M10	1/2"x6"	.188	.625	11	.077	.625	y	2	55.048	97.2	1.012	12.15	1...	H1-1b
24	M87	1/2"x6"	.180	.625	7	.075	.625	y	11	55.048	97.2	1.012	12.15	1...	H1-1b
25	M114A	LL2.5x2.5x...	.153	2.828	11	.020	0	z	6	38.384	58.32	3.954	1.593	1...	H1-1b
26	M113A	LL2.5x2.5x...	.153	2.828	5	.019	0	z	3	38.384	58.32	3.954	1.593	1...	H1-1b
27	M31	PIPE_4.0	.151	4.375	40	.085	3.125		8	77.886	93.24	10.631	10.631	2...	H1-1b
28	M67	PIPE_4.0	.132	3.125	28	.070	3.125		12	77.886	93.24	10.631	10.631	2...	H1-1b
29	M94	PIPE_4.0	.131	3.125	31	.094	3.125		6	77.886	93.24	10.631	10.631	2...	H1-1b
30	M115A	PIPE_2.5	.118	.938	5	.086	.234		5	32.005	50.715	3.596	3.596	2...	H1-1b
31	M42	PIPE_2.5	.116	.938	9	.093	7.344		10	32.005	50.715	3.596	3.596	2...	H1-1b
32	M108	PIPE_2.5	.109	.938	12	.083	.234		12	32.005	50.715	3.596	3.596	2...	H1-1b
33	M112A	LL2.5x2.5x...	.089	5.657	26	.012	0	z	11	38.384	58.32	3.954	2.55	1	H1-1b*
34	M12	PIPE_4.0	.063	.75	13	.080	.75		12	92.571	93.24	10.631	10.631	1...	H1-1b
35	M62	PIPE_4.0	.062	.75	4	.086	.75		4	92.571	93.24	10.631	10.631	1...	H1-1b
36	M89	PIPE_4.0	.060	.75	11	.075	.75		7	92.571	93.24	10.631	10.631	1...	H1-1b
37	M129	PIPE_2.5	.047	3.898	2	.034	0		4	30.84	50.715	3.596	3.596	1...	H1-1b
38	M126	PIPE_2.5	.041	3.898	10	.065	0		12	30.84	50.715	3.596	3.596	1...	H1-1b
39	M123	PIPE_2.5	.041	3.898	6	.054	7.796		10	30.84	50.715	3.596	3.596	1...	H1-1b

SPECIAL CONSTRUCTION NOTE:
SPRINT WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.
* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT.
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

Sprint

PROGRAM: DO MACRO UPGRADE EQUIPMENT DEPLOYMENT

SITE NUMBER: CT23XC405

SITE ADDRESS: 131 BISHOP CROSSING GRISWOLD, CT 06351

SITE TYPE: MONOPOLE

SITE INFORMATION

SITE INFORMATION:

LATITUDE: 41° 37' 24.1" N
(PER SBA RECORDS) 41.62335278°

LONGITUDE: -71° 56' 32.0" W
(PER SBA RECORDS) -71.94224167°

STRUCTURE HEIGHT: 147'±

STRUCTURE TYPE: MONOPOLE

APPLICANT:

SPRINT
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495

TOWER OWNER:

SBA TOWERS LLC.
8501 CONGRESS AVENUE
BOCA RATON, FL 33487

SBA SITE ID: CT00303-S

SBA SITE NAME: GRISWOLD

SBA CONTACT: STEPHEN ROTH
(800) 539-4920
sroth@sbasite.com

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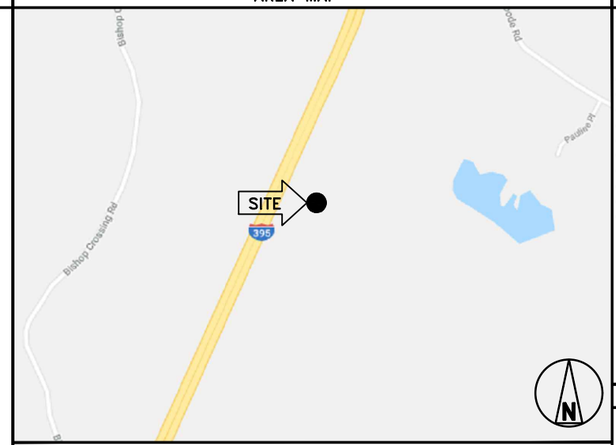
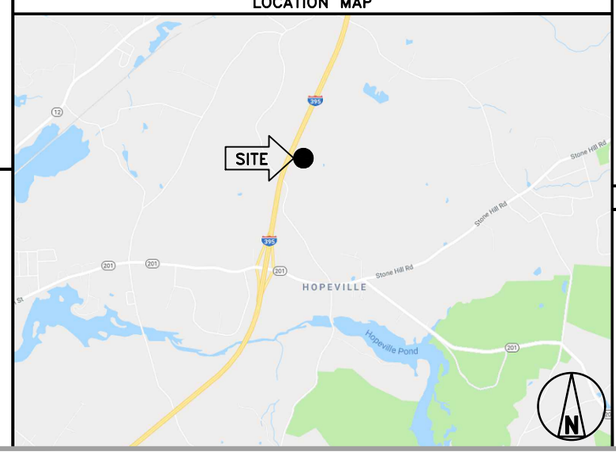
AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE (3) EXISTING ANTENNAS
- REMOVE (6) 1 5/8" COAX
- RELOCATE (3) EXISTING ANTENNAS
- INSTALL (3) ANTENNAS
- INSTALL STRUCTURAL AUGMENTS
- INSTALL (3) 2.5 GHz RRH'S ON PROPOSED PIPE MOUNT
- RELOCATE (3) 1900 MHz RRH'S ON PROPOSED PIPE MOUNT
- INSTALL (6) 800 MHz RRH'S ON PROPOSED PIPE MOUNT
- INSTALL (4) HYBRID CABLES
- INSTALL RAN EQUIPMENT INSIDE EXISTING MMBTS CABINET

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

APPLICABLE CODES

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

1. INTERNATIONAL BUILDING CODE (2012 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
4. 2014 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

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.

DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	OUTLINE SPECIFICATIONS	0
SP-2	OUTLINE SPECIFICATIONS	0
SP-3	OUTLINE SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	DETAILS	0
E-1	ELECTRICAL & GROUNDING DETAILS	0
RF-1	RF DATA SHEET	0
RF-2	PLUMBING DIAGRAM	0

APPROVALS

TITLE	SIGNATURE	DATE
PROJECT MANAGER:		
CONSTRUCTION:		
RF ENGINEER:		
ZONING/SITE ACQ:		
OPERATIONS:		
TOWER OWNER:		

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.

PLANS PREPARED FOR:
Sprint
INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:
SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:
STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
3-26-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:
CT23XC405

SITE ADDRESS:
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:
TITLE SHEET
& PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

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

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

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

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

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

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

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

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

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

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

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

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:

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MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

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ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
3-26-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM 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.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

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

1.4 TESTS AND INSPECTIONS:

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

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

1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE F R ANY A ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;

1. AZIMUTH, DOWNTILT, AGL – UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

PLANS PREPARED FOR:

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PROJECT MANAGER:

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ENGINEERING LICENSE:

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CHRISTOPHER J. WARREN
No. 23544
3-26-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.

8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.

9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.

10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.

2. STRUCTURAL BACKFILL COMPACTION REPORTS.

3. SITE RESISTANCE TO EARTH TEST.

4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION

5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.

6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.

2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;

3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.

4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;

6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.

7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.

9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

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

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

1. 1SHELTER 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.

PLANS PREPARED FOR:

Sprint

INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

SBA

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:

INFINIGY

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1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
3-26-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

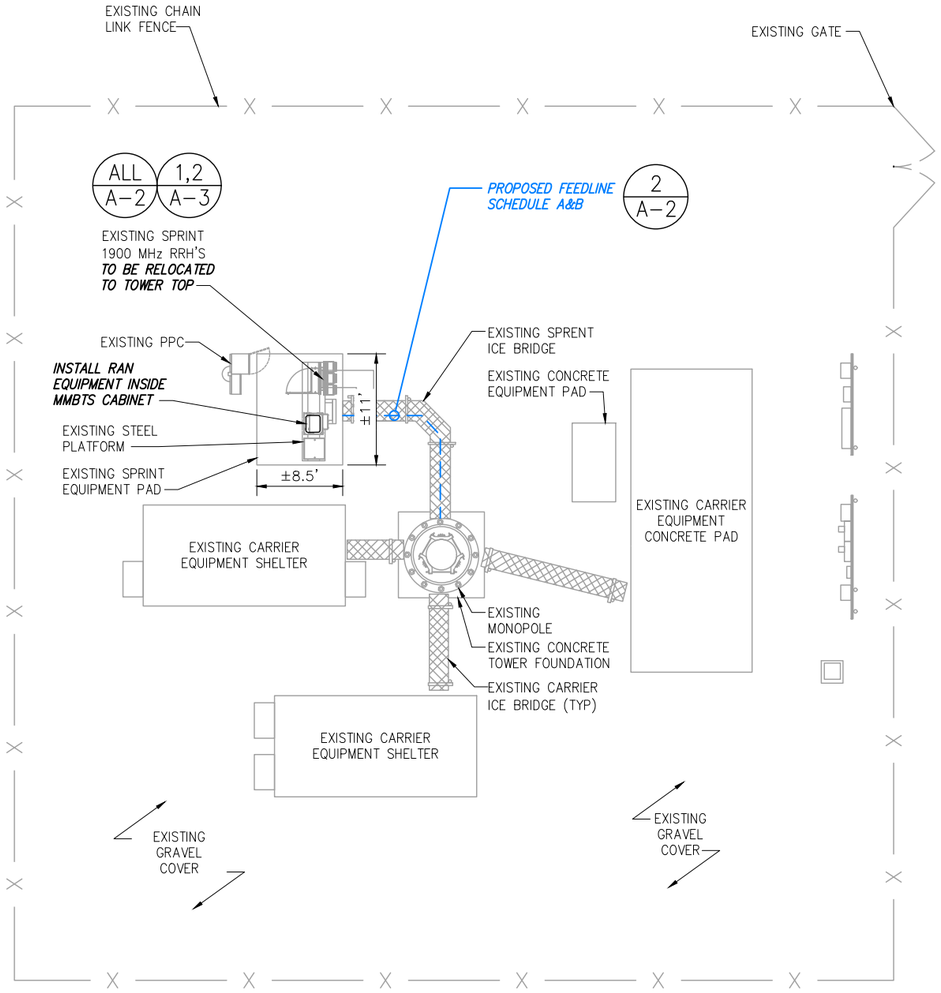
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3



INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

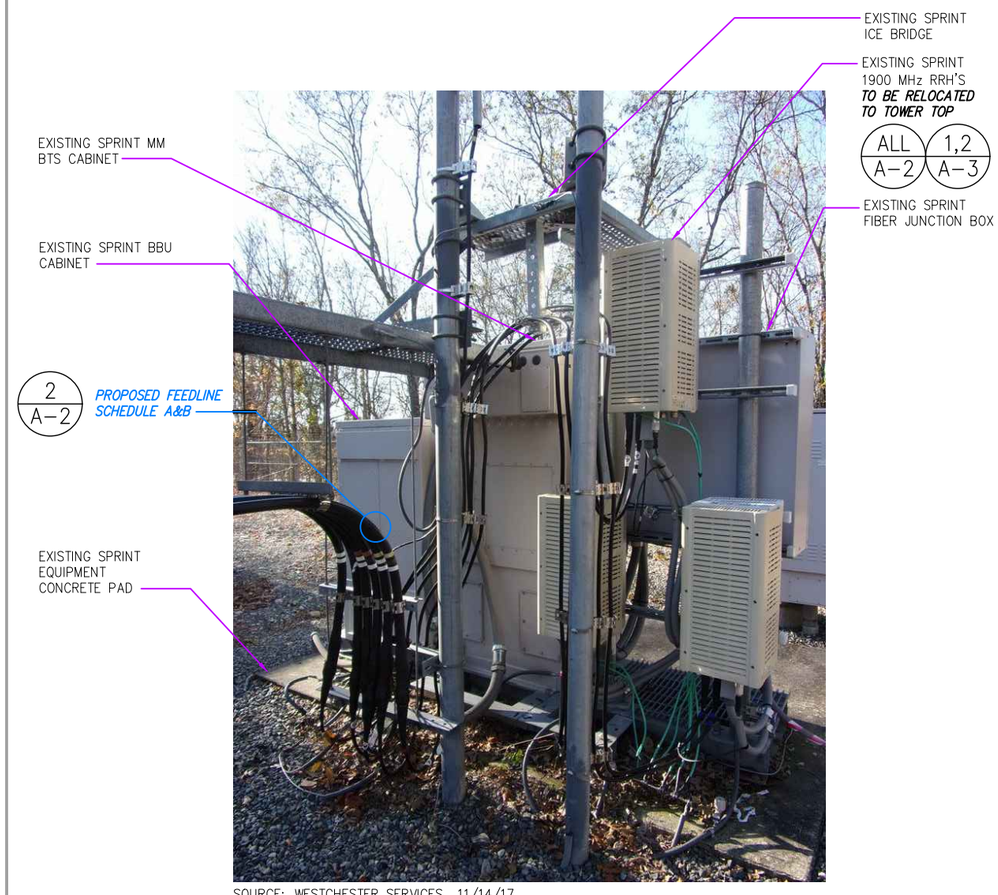
N

GRAPHIC SCALE:

20' 10' 0 10' 20'

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

OVERALL SITE PLAN | SCALE: AS NOTED | 1



SOURCE: WESTCHESTER SERVICES 11/14/17

SPRINT EQUIPMENT PHOTO DETAIL | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint

INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

SBA

SBA COMMUNICATIONS CORP.
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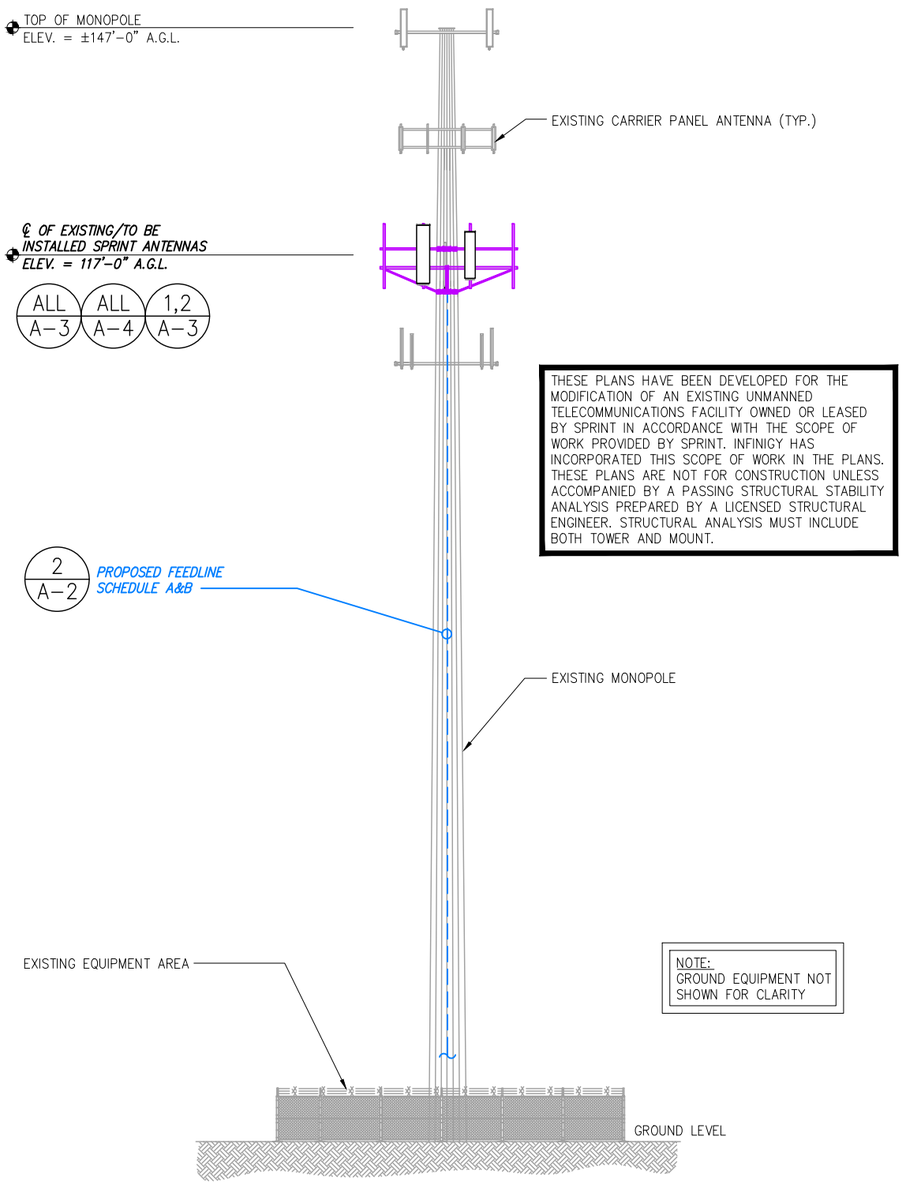
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1



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

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

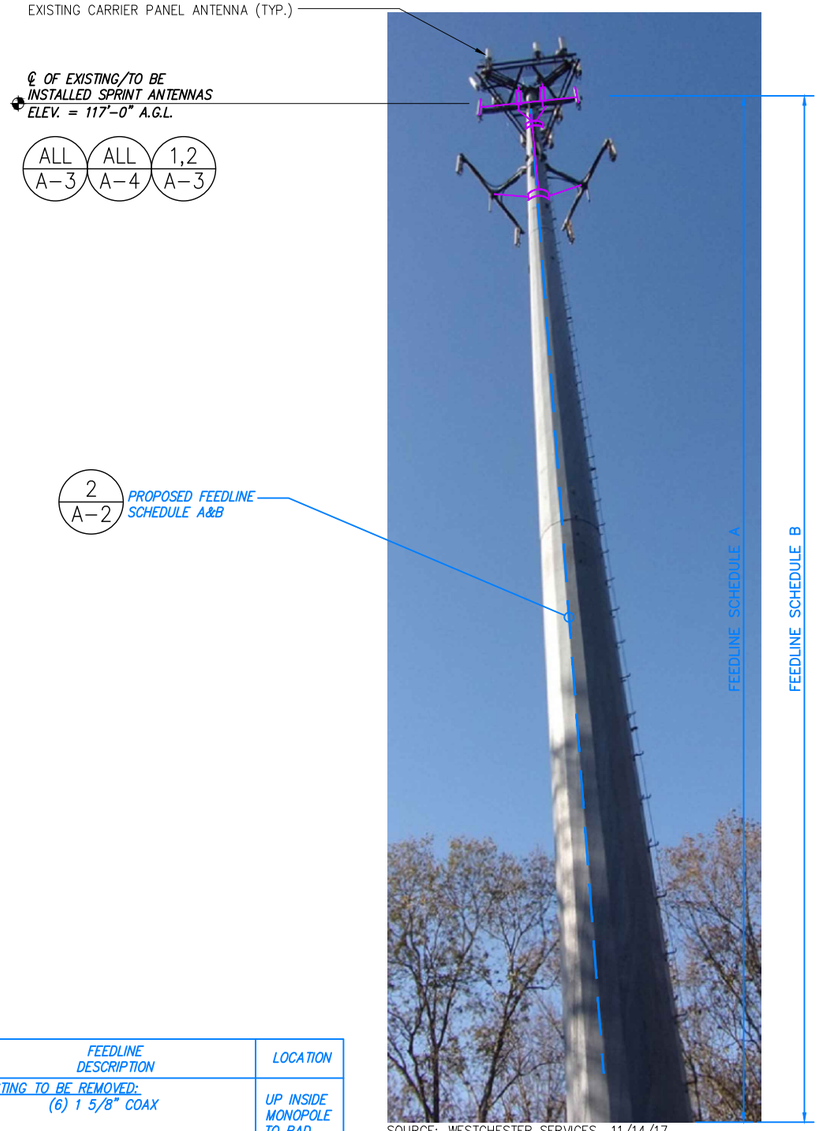
SPECIAL INSTALLATION NOTE:
JUMPERS FROM RRHs TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

NOTE:
FOR DETAILS OF MOUNT AUGMENT, REFER TO MOUNT AUGMENT CD'S DONE BY OTHERS.

TOWER ELEVATION | NO SCALE | 1

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).



SOURCE: WESTCHESTER SERVICES 11/14/17

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (6) 1 5/8" COAX	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 117' RAD	UP INSIDE MONOPOLE TO RAD

NOTE:
EXISTING SPRINT EQUIPMENT FEEDLINE INVENTORY BASED ON COLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

TOWER ELEVATION PHOTO DETAIL | NO SCALE | 2

PLANS PREPARED FOR:
Sprint
INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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CT23XC405

SITE ADDRESS:
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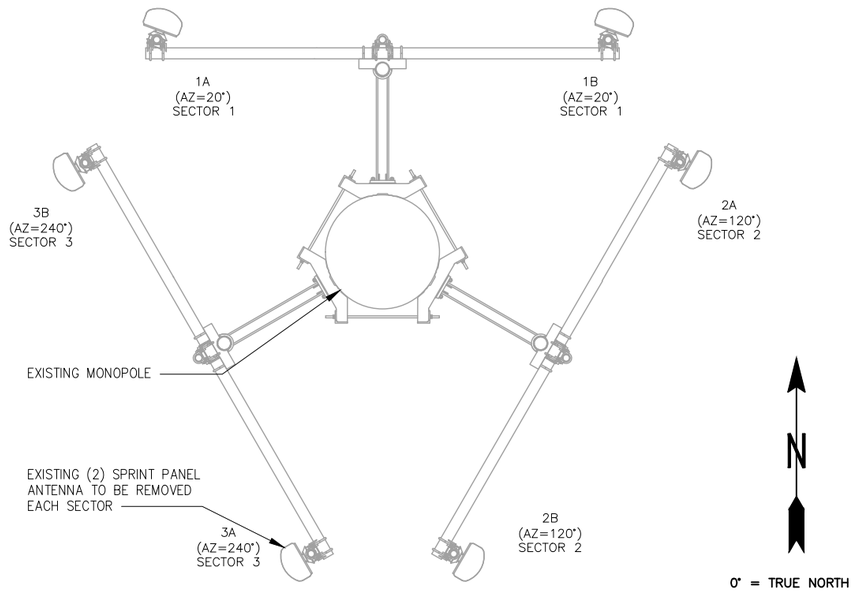
GRISWOLD, CT 06351

SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

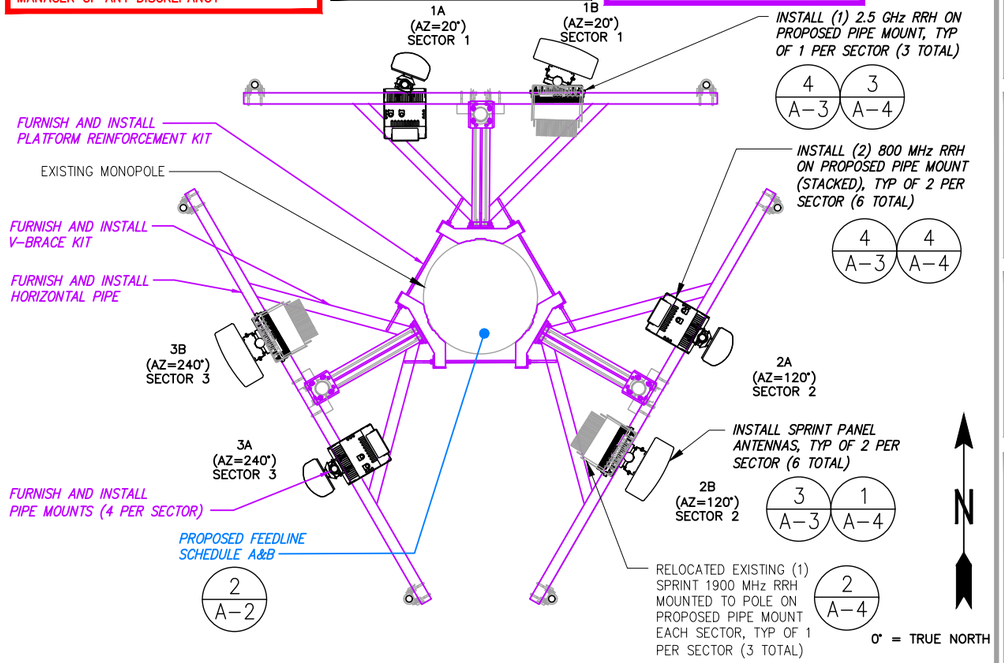


EXISTING ANTENNA & RRH LAYOUT | NO SCALE | 1

SPECIAL INSTALLATION NOTE:
JUMPERS FROM RRHs TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

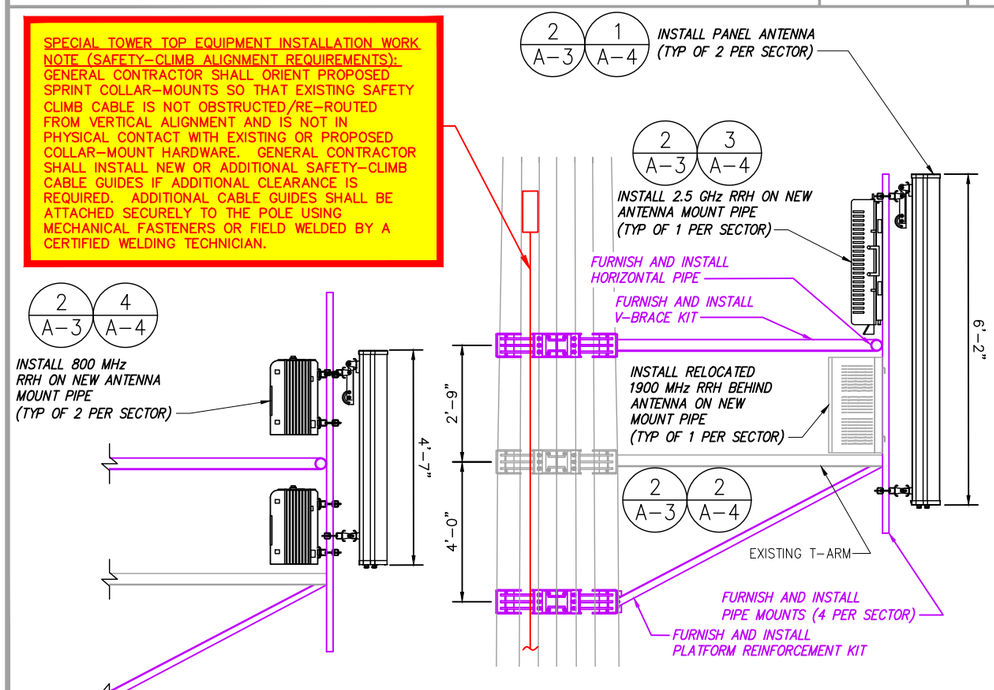
NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

NOTE:
FOR DETAILS OF MOUNT AUGMENT, REFER TO MOUNT AUGMENT CD'S DONE BY OTHERS.

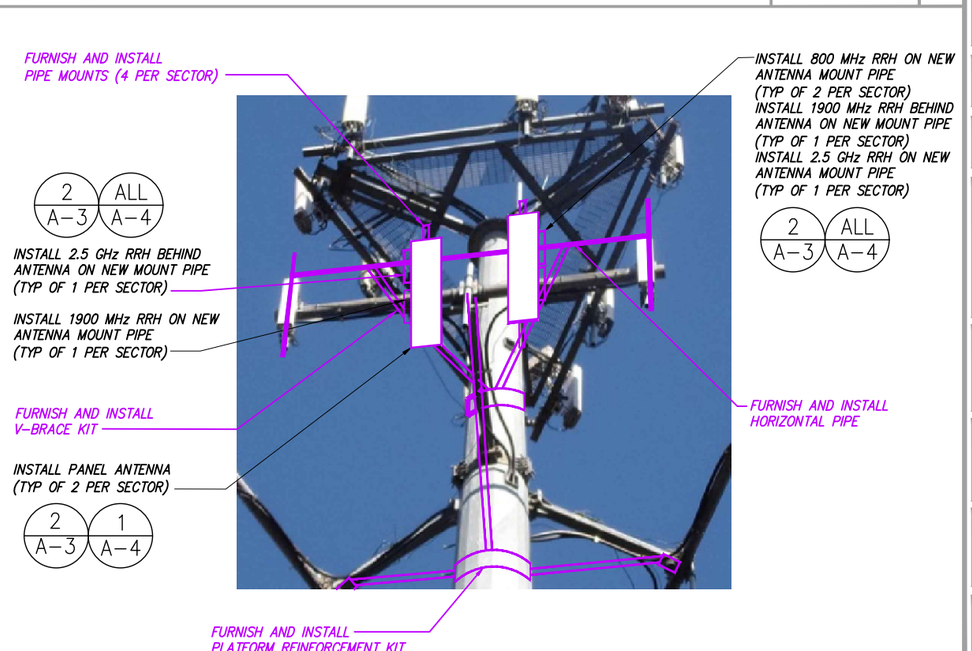


FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):
GENERAL CONTRACTOR SHALL ORIENT PROPOSED SPRINT COLLAR-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED COLLAR-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.



TYPICAL MOUNTING DETAIL | NO SCALE | 3



ANTENNA & RRH MOUNT PHOTO DETAIL | NO SCALE | 4

PLANS PREPARED FOR:
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MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:
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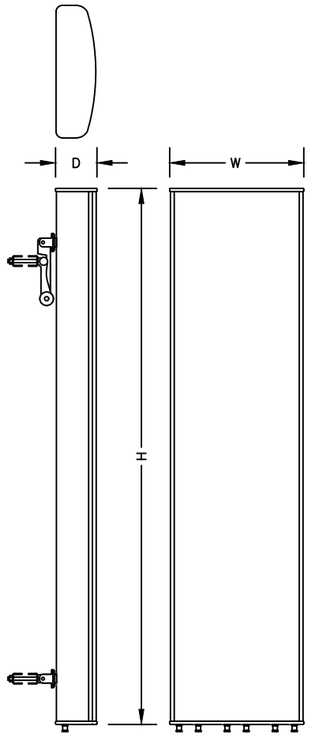
GRISWOLD, CT 06351

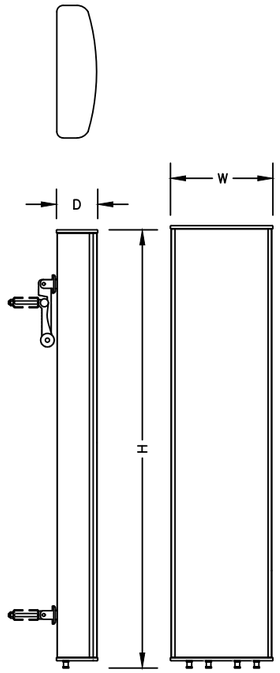
SHEET DESCRIPTION:
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:
A-3



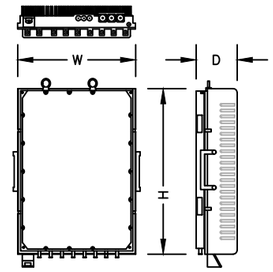
ANTENNA SPECIFICATIONS	
MANUF.	COMMSCOPE
MODEL #	NNVV-65B-R4
HEIGHT	72"
WIDTH	19.6"
DEPTH	7.8"
WEIGHT	84.7± LBS.

ANTENNA DETAIL | NO SCALE | 1



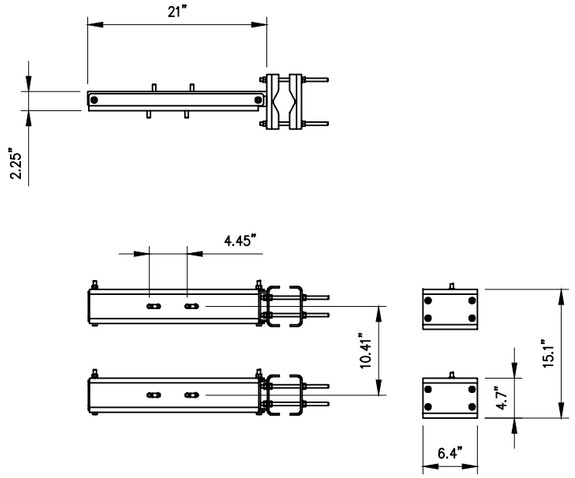
ANTENNA SPECIFICATIONS	
MANUF.	RFS
MODEL #	APXVTM14-ALU-I20
HEIGHT	56.3"
WIDTH	12.6"
DEPTH	6.3"
WEIGHT	56.2± LBS.

ANTENNA DETAIL | NO SCALE | 2

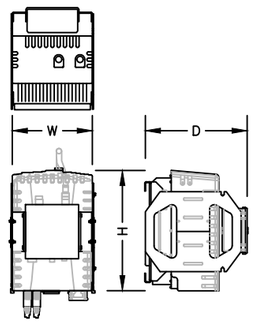


2.5 GHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	TD-RRH8X20-25
HEIGHT	26.1"
WIDTH	18.6"
DEPTH	6.7"
WEIGHT	70± LBS

2.5 RRH | NO SCALE | 3

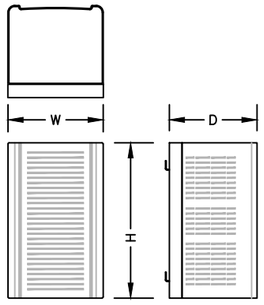


DUAL RRH MOUNT DETAIL | NO SCALE | 4



800 MHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	800MHZ 2X50W
HEIGHT	19.7"
WIDTH	13"
DEPTH	10.8"
WEIGHT	53± LBS

800 MHz RRH | NO SCALE | 5



1900 MHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	1900 4X45 65MHZ
HEIGHT	25"
WIDTH	11.1"
DEPTH	11.4"
WEIGHT	60± LBS

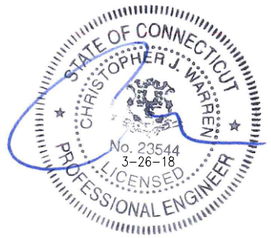
1900 MHz RRH (EXISTING TO BE RELOCATED) | NO SCALE | 6

PLANS PREPARED FOR:
Sprint
INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:
SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:



CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:
CT23XC405

SITE ADDRESS:
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

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

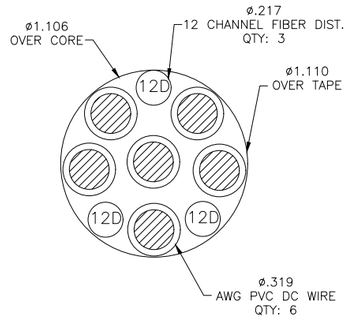
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	**Hybrid Jumper cable** MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	**Hybrid Jumper cable** MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

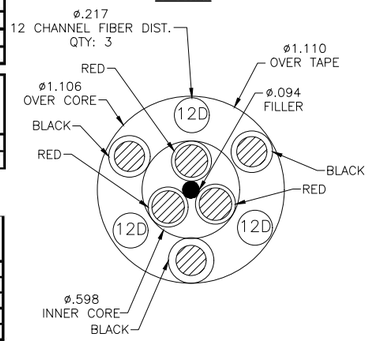
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.

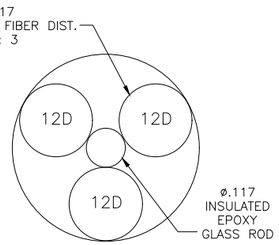
* SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG



8 & 6 AWG



FIBER ONLY

800/1900/2500 CROSS SECTION DATA | NO SCALE | 1

NOT USED | NO SCALE | 2

NOT USED | NO SCALE | 3

PLANS PREPARED FOR:

Sprint

INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

SBA

SBA COMMUNICATIONS CORP.
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1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
3-26-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

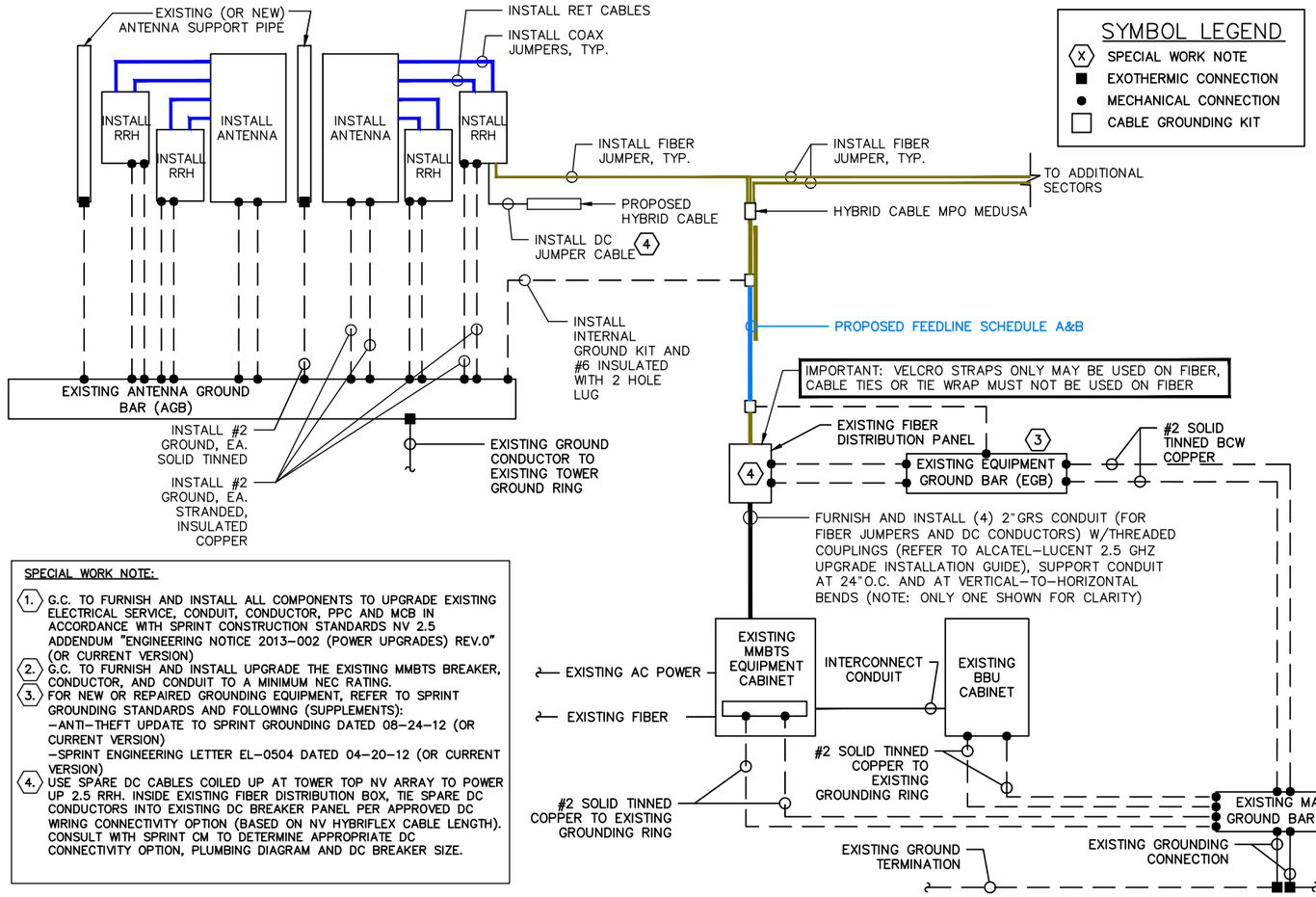
131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

DETAILS

SHEET NUMBER:

A-5



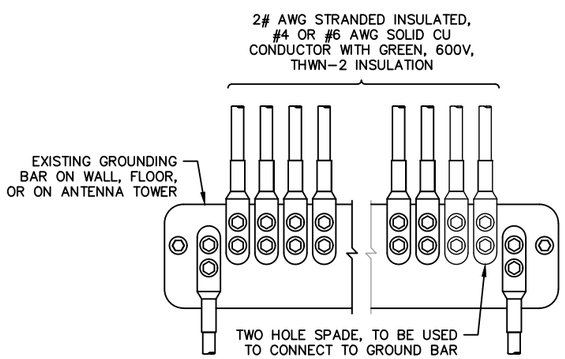
TYPICAL POWER AND GROUNDING ONE LINE DIAGRAMS

1 / E-1

SCALE: N.T.S.

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.
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.

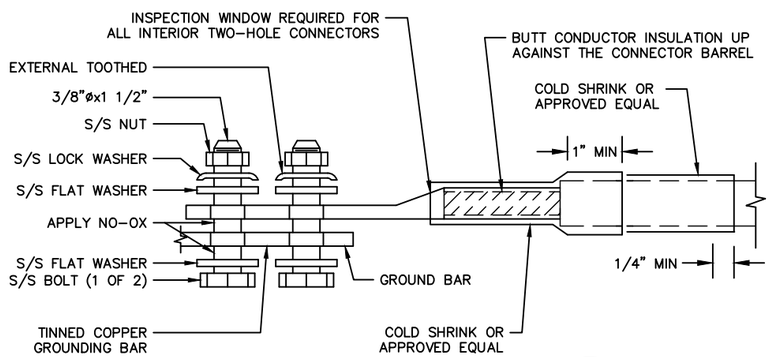


1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

2 / E-1

SCALE: N.T.S.



TWO HOLE LUG

3 / E-1

SCALE: N.T.S.

SYMBOL LEGEND

- (X) SPECIAL WORK NOTE
- ■ EXOTHERMIC CONNECTION
- ● MECHANICAL CONNECTION
- □ CABLE GROUNDING KIT

ELECTRICAL NOTES

1) ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2) THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
3) ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
4) ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
5) GENERAL CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
6) ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
7) THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
8) GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
9) ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
10) BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
11) ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
12) RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
13) RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
14) FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
15) COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.

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 (OR CURRENT VERSION)
    -SPRINT ENGINEERING LETTER EL-0504 DATED 04-20-12 (OR CURRENT VERSION)

PLANS PREPARED FOR:
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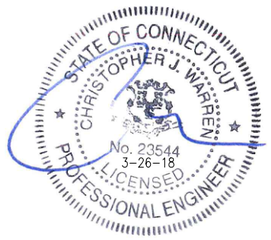

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-1

SprintVision

RF Design Sheet

Site Identification	
Cascade	CT23XC405
SMS Schedule ID	12323156
SMS Schedule Name	DO Macro Upgrade
PID	
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	2017-08-15 00:00:00.0
RFDS Revision Date	2017-10-20 09:47:10.0
RFDS Revision	3

Filter Analysis Complete	YES
RFDS - Issue Date	08/15/2017
Design Status	Complete
Project Description	DO Macro Upgrade - Add 800MHz (3G + 4G) and 2500 MHz

Contact Information	
Engineer Email	Bill.M.Hastings@sprint.com
Sprint Badged RF Engineer	Bill Hastings
RF Engineer Email	Bill.M.Hastings@sprint.com
RF Engineer Phone	978-590-9700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.B.Hull@Sprint.com
RF Manager Phone	617-233-2920

Carrier Count	
2500 LTE	3
1900 LTE	1
1900 EVDO	
1900 Voice	1
800 LTE	1
800 Voice	1

Location Details	
Latitude	41.62336
Longitude	-71.94222
Market	Northern Connecticut
Region	Northeast
City	Jewett City
State	CT
Zip Code	CT/06351
County	New London

2500MHz	3
1900MHz	3
800MHz	3

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	TD-RRH8x20-25	TD-RRH8x20-25	TD-RRH8x20-25	N/A	N/A	N/A
Weight (lbs)	76.2	76.2	76.2	N/A	N/A	N/A
Dimensions	26 x 18.6 x 6.7	26 x 18.6 x 6.7	26 x 18.6 x 6.7	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Trunk Cable 1						
Model Number	Hybriflex	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	1	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.54	N/A	N/A	N/A	N/A	N/A
Manufacturer	ALU	N/A	N/A	N/A	N/A	N/A

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-2x50-800	RRH-2x50-800	RRH-2x50-800	N/A	N/A	N/A
Weight (lbs)	69.1	69.1	69.1	N/A	N/A	N/A
Dimensions	16 x 13 x 10	16 x 13 x 10	16 x 13 x 10	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	2	2	2	0	0	0

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	APXVTM14-ALU-I20	APXVTM14-ALU-I20	APXVTM14-ALU-I20			
Weight (lbs)	56.2	56.2	56.2	N/A	N/A	N/A
Dimensions	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	N/A	N/A	N/A
Manufacturer	RFS	RFS	RFS	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qty	2.5 Jumper | 8	2.5 Jumper | 8	2.5 Jumper | 8	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	20	120	240	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	116.961946	116.961946	116.961946	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	NNVV-65B-R4	NNVV-65B-R4	NNVV-65B-R4			
Weight (lbs)	84.7	84.7	84.7	N/A	N/A	N/A
Dimensions	72 x 19.6 x 7.8	72 x 19.6 x 7.8	72 x 19.6 x 7.8	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant1 Top Jumper Make/Mode/Qty	800/1900 Jumper | 4	800/1900 Jumper | 4	800/1900 Jumper | 4	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	20	120	240	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	116.961946	116.961946	116.961946	N/A	N/A	N/A
Antenna 1 Electrical DT	3	3	3	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

PLANS PREPARED FOR:

Sprint

INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

PROJECT MANAGER:

SBA

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:

INFINIGY

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1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
3-26-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

131 BISHOP CROSSING
GRISWOLD, CT 06351

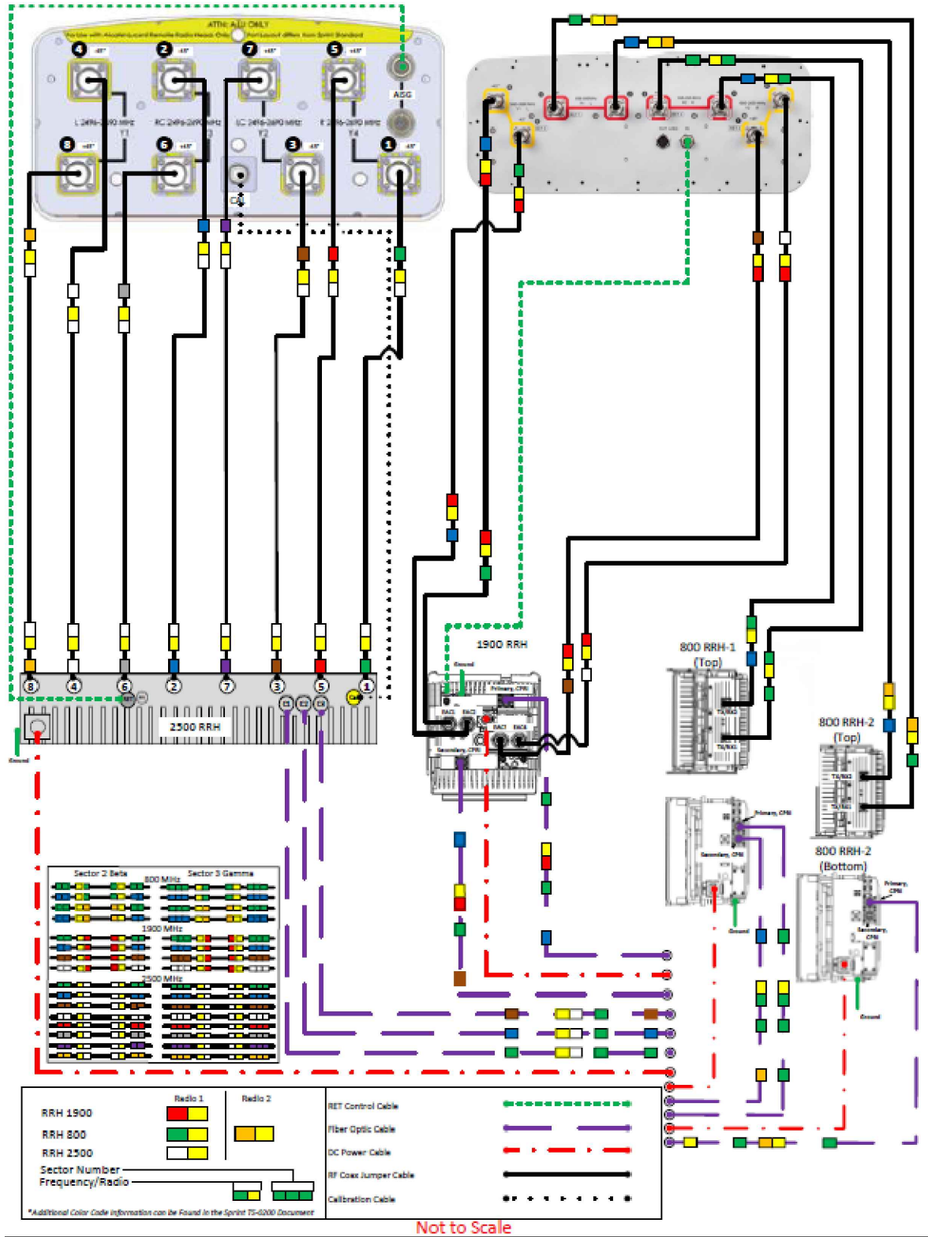
SHEET DESCRIPTION:

RF DATA SHEET

SHEET NUMBER:

RF-1

ALU 211 APXVTM14-ALU-I20 & NNVV-65B-R4 wo Filters



Not to Scale

PLANS PREPARED FOR:

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DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/23/18	RWF	0

SITE NUMBER:

CT23XC405

SITE ADDRESS:

131 BISHOP CROSSING
GRISWOLD, CT 06351

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

RF-2

CT23XC405
DO MACRO EQUIPMENT DEPLOYMENT

MOUNT AUGMENTATION @ 117'

MONOPOLE TOWER

GRISWOLD, CT
NEW LONDON COUNTY

SITE INFORMATION

STRUCTURE TYPE:	MONOPOLE
MOUNT TYPE:	T-ARMS
LATITUDE:	41.623352 (NAD 83)
LONGITUDE:	-71.942241 (NAD 83)
CITY, STATE:	GRISWOLD, CT
COUNTY:	NEW LONDON
SBA SITE:	CT00303-S Griswold

COORDINATES ARE FOR NAVIGATIONAL PURPOSES ONLY, NOT TO 1A ACCURACY.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE LABOR & MATERIALS FOR THE DISCREPANCIES.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE AND DESIGN STANDARD: 2012 IBC / TIA-222-G / 2016 CT

RIGGING PLAN REQUIRED

THIS SET OF PLANS DOES "NOT" CONSTITUTE A RIGGING PLAN.

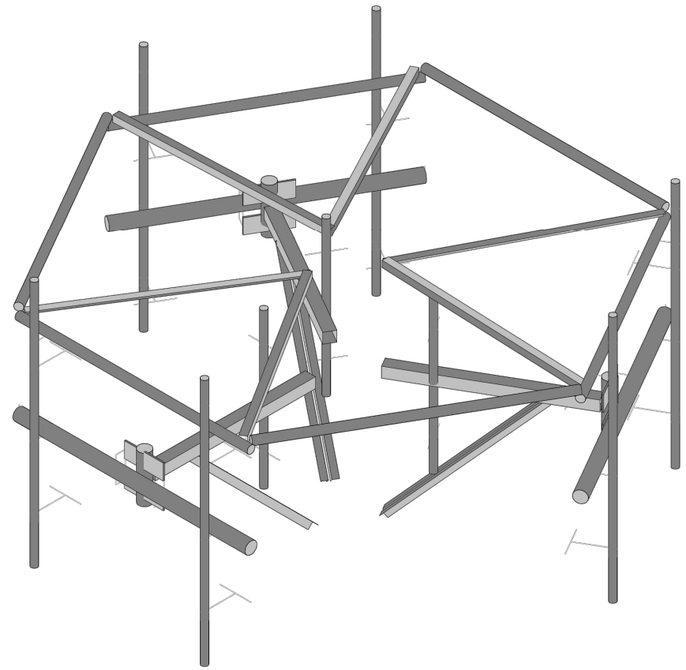
A PROPER RIGGING PLAN SHALL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO PROCEEDING ON ANY AUGMENTATIONS SHOWN HEREIN.

GENERAL DESIGN NOTES

1. THIS PLAN HAS BEEN DESIGNED UTILIZING THE CORRESPONDING MOUNT STRUCTURAL ANALYSIS.
2. THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
3. ALL STRUCTURE INFORMATION OBTAINED IN THE FORM OF FROM INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED DOCUMENTS. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) IN THE EVENT ANY DISCREPANCIES ARE DISCOVERED BETWEEN THESE DOCUMENTS AND THE AS-BUILT CONDITIONS IN THE FIELD IN A SITE VISIT THAT SHALL BE PERFORMED PRIOR TO STARTING FABRICATION OR CONSTRUCTION.
4. ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
5. ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
6. PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION (ONLY IF SPECIFICALLY REQUESTED BY ENGINEER).
7. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
8. ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

SHEET INDEX

MOUNT AUGMENTATION CONFIGURATION



AUGMENTATION SCOPE

AUGMENT ALL SECTORS OF CARRIER'S EXISTING MOUNT INSTALLATION AS REQUIRED (UNLESS NOTED OTHERWISE)

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1 INTERNATIONAL BLVD., SUITE 800
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REVISIONS:

0	04/15/18	ISSUE FOR CONSTRUCTION	JAD

CHECKED BY: DWG

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32156
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT23XC405

GRISWOLD, CT

LATITUDE: 41.623352
LONGITUDE: -71.942241

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

S1

CONTRACTOR NOTES

1. PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED AUGMENTATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE AUGMENTATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED AUGMENTATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "AUGMENTATION INSPECTION NOTES" SHEET.
4. THE CONTRACTOR SHALL NOTIFY THE TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED AUGMENTATION INSPECTIONS & TESTING (WHEN APPLICABLE).
5. IT IS ASSUMED THAT ANY STRUCTURAL AUGMENTATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, ET CETERA.
6. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
7. CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS

1. THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
2. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION TO ENSURE STABILITY. DESIGN AND SEQUENCING OF CONSTRUCTION SHORING AND BRACING IS OUTSIDE THE SCOPE OF THIS WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.

BOLTS

1. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED GALVANIZED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED FROM SHEAR PLANE.
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES, WITH BOLT HEADS FACING DOWN WHERE APPLICABLE.
3. ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG-TIGHT UNTIL THE SECTION IS FULLY COMPACTED AND ALL PLIES ARE JOINED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
4. BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG-TIGHT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1½ TURNS BEYOND SNUG-TIGHT.
5. ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND SECTION 4 OF THE TIA CODE.
2. PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES UNLESS OTHERWISE NOTED:
   - CHANNELS & ANGLES ..... ASTM A36, (Fy = 36 KSI)
   - PLATES ..... ASTM A36, (Fy = 36 KSI)
   - PIPES ..... ASTM A53 GR.B, (Fy = 35 KSI)
   - HSS ROUND ..... ASTM A500 GR.B, (Fy = 42 KSI)
   - HSS RECTANGULAR ..... ASTM A500 GR.B, (Fy = 46 KSI)
   - STRUCTURAL BOLTS ..... ASTM A325
   - U-BOLTS ..... ASTM A307 GR.A
   - NUTS FOR BOLTS ..... ASTM A563 (THREADING TO MATCH BOLT)
   - WASHERS FOR BOLTS ..... ASTM F436
   - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
3. NON PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS PER THE TIA CODE:
   - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
   - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
   - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
   - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH AND COLD GALVANIZED.
5. ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 STRUCTURAL WELDING CODE. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY. WELDING ELECTRODES SHALL BE E70XX.
6. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC SPECS AND CODES, LATEST EDITION.
7. UPON REQUEST, THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ENGINEER OF RECORD TO REVIEW FOR COMPLIANCE WITH DESIGN INTENT PRIOR TO THE START OF FABRICATION AND/OR ERECTION.
8. TORCH-CUTTING OF ANY KIND SHALL NOT BE PERMITTED.
9. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
10. ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN ½" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZINC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
11. MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)
√	FABRICATION INSPECTION
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

NOMINAL HOLE DIMENSIONS

BOLT Ø	STANDARD HOLE Ø
1/2"Ø	9/16"Ø
5/8"Ø	11/16"Ø
3/4"Ø	13/16"Ø
7/8"Ø	15/16"Ø
1"Ø	1 1/16"Ø

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REVISIONS:

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CHECKED BY: DWG

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT23XC405

GRISWOLD, CT

LATITUDE: 41.623352
LONGITUDE: -71.942241

SHEET TITLE:

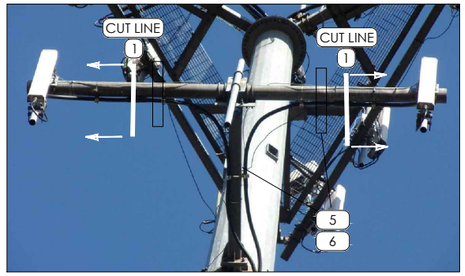
NOTES AND SPECIFICATIONS

SHEET NUMBER:

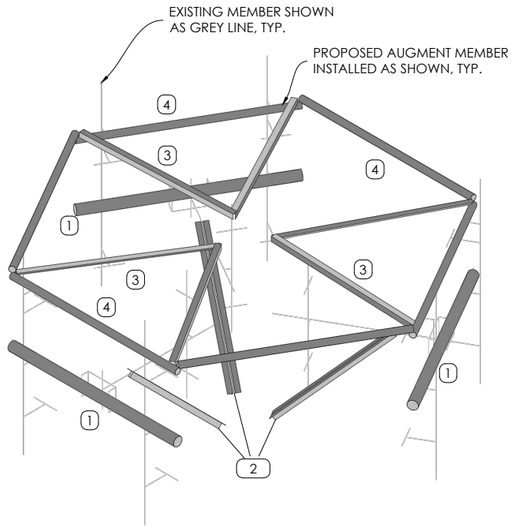
S2

NEW MOUNT AUGMENTATIONS

1	CONTRACTOR TO MODIFY STEEL PIPE FACE WIDTH OF EXISTING T-ARM BOOM TO 6.5' WIDE. APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS. [TYP. (3) SECTORS]
2	PLATFORM REINFORCEMENT KIT SITEPRO1 PART# PRK-1245L. ATTACH PRK COLLAR TO MONOPOLE SHAFT ~4.0' BELOW EXISTING STANDOFF CENTERLINE AND DOUBLE ANGLE KICKER BRACKET TO STANDOFF MEMBER END NEAR THE FACE RAIL OF THE MOUNT AS SHOWN PER MANUF. SPECS. [(1) KIT TOTAL]
3	HANDRAIL COMPONENTS - V-BRACE KIT SITEPRO1 PART# PRK-SFS-H-L. ATTACH COLLAR MOUNT TO MONOPOLE SHAFT ~2.75' ABOVE EXISTING STANDOFF CENTERLINE. NOTE: IF THE PRK-SFS-H-L KIT IS NOT AVAILABLE, PROVIDE (6) TOTAL L2½x2½x3/16 x ~8' LONG REPLACEMENT ANGLES, FIELD-CUT AND DRILL TO SUIT. [(1) KIT TOTAL]
4	HANDRAIL COMPONENTS ▪ PIPE2.5STD X 8.5' HORIZ. RAIL. [(3) TOTAL]. ATTACH SFS-H-L KIT ANGLES TO NEW HORIZ. RAIL. ▪ PIPE2.5STD X ~9' LONG CORNER BRACES, (3) TOTAL. ATTACH TO NEW HORIZONTAL RAIL W/ SITEPRO1 PUCK BRACKETS, (6) TOTAL. ▪ SITEPRO1 SCX**x**-K, [(12) TOTAL] CROSS-OVER PLATES. ATTACH ALL MOUNT PIPES TO NEW & EXISTING HORIZ. RAIL. ▪ PIPE2.0STD X 8' MOUNT PIPES, [(6) TOTAL].
5	· PANEL ANTENNAS TO BE INSTALLED IN POSITIONS 2 AND 3 (CLOSEST TO THE STANDOFF ARM) WITH A HORIZONTAL SEPARATION NOT TO EXCEED 5.5'. · RRH UNITS ARE TO BE INSTALLED TO EXISTING STANDOFF MEMBER CLOSE TO THE COLLAR ATTACHMENT ON NEW PIPE2.0STD X ~6' TALL MOUNT PIPES WITH SITEPRO1 BBPM-K1 MOUNT CLAMPS, (3) TOTAL PIPES AND CLAMP KITS.
6	· IN ORDER FOR THE SPECIFIED MODIFICATIONS TO PERFORM AS DESIGNED AND TO "FIT-UP" THE EXISTING T-ARM MOUNTS MUST BE APPROPRIATELY ROTATED ON STANDOFF MEMBER SUCH THAT THEY ARE PERPENDICULAR TO THE FACE OF THE. PANEL ANTENNA AZIMUTHS WILL NEED TO BE ADJUSTED TO OBTAIN DESIRED AZIMUTHS.
	AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.



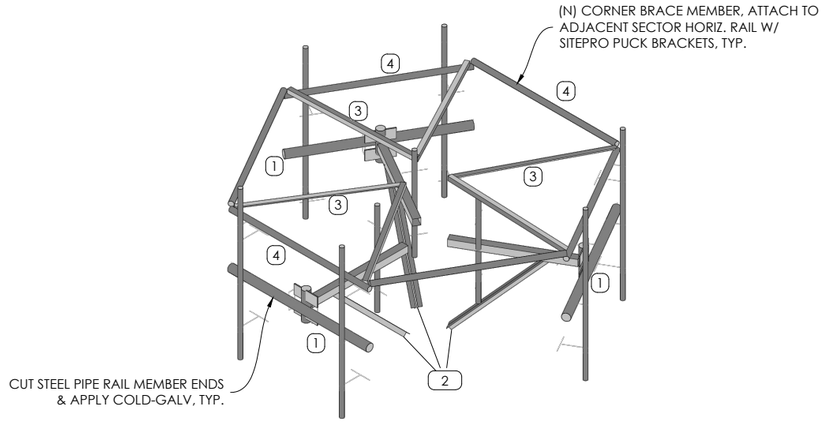
T-ARMS @ 117' AUGMENTATION



MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.

CONSTRUCTION NOTES

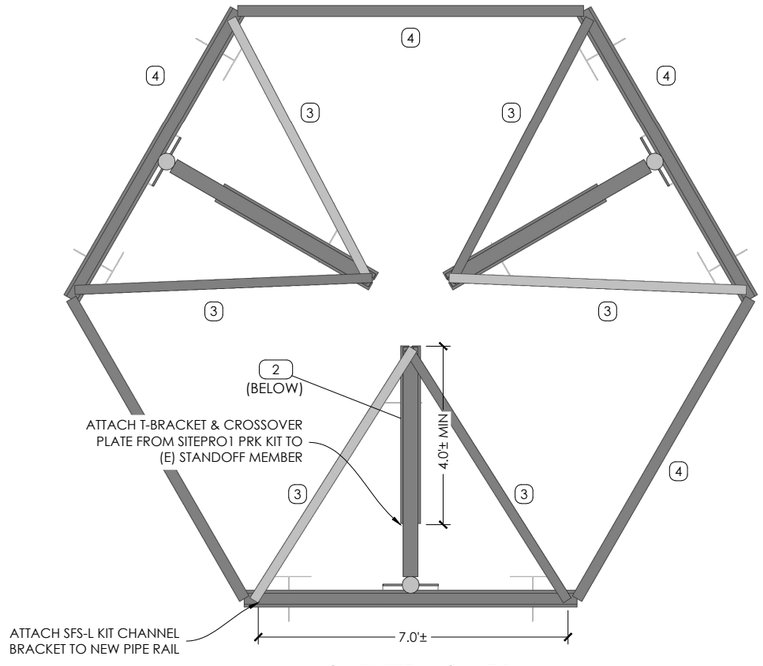
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF ELEMENTS (E.G. COAX, CLIPS, TMAs, ETC.) CONNECTED TO, OR IN THE DIRECT PATH, OF NEW AUGMENTATION MEMBERS.



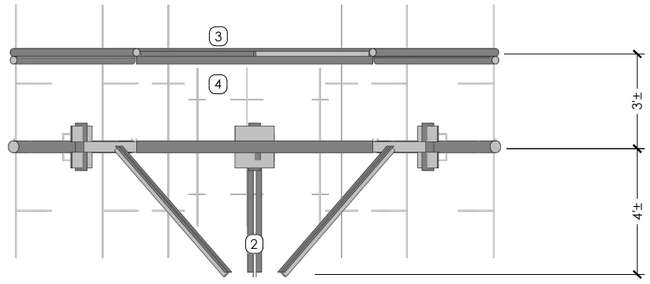
AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

INSTALLATION NOTES

1. AUGMENT MEMBER(S) MAY NEED TO BE FIELD-CUT TO LENGTH TO ACCOMMODATE THIS INSTALLATION. CONTRACTOR TO CUT AND DRILL TO SUIT AS REQUIRED AND APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
2. CONTRACTOR TO CHECK ALL EXISTING MEMBER CONNECTION BOLTS, PARTICULARLY STANDOFF TO TOWER BOLTS, FOR PROPER INSTALLATION AND TIGHTNESS.
3. COORDINATE PLACEMENT OF NEW AUGMENT MEMBERS WITH EXISTING TOWER AND CLIMBING FACILITY ELEMENTS (E.G. STEP PEGS, COAX PORTS, ETC.)
4. REFER TO CONSTRUCTION DRAWINGS (BY OTHERS) AND MOUNT STRUCTURAL ANALYSIS FOR APPROVED INSTALLATION LOCATIONS AND QUANTITIES OF APPURTENANCES.



AUGMENTED MOUNT PLAN
SCALE: N.T.S.



AUGMENTED MOUNT FRONT ELEVATION
SCALE: N.T.S.

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STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
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PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT23XC405

GRISWOLD, CT

LATITUDE: 41.623352
LONGITUDE: -71.942241

SHEET TITLE:

AUGMENTATIONS, SECTIONS & DETAILS

SHEET NUMBER:

S3