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

May 2, 2018

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

Notice of Exempt Modification
310 Watertown Road, Bethlehem, CT – (aka 2579 Litchfield Rd.)
41 40 1.99 N
-73 10 13.86 W
Sprint #: CT33XC109

Dear Ms. Bachman:

Sprint currently maintains antennas at the 195-foot level of the existing 195' Monopole Tower at 310 Watertown Road (aka 2579 Litchfield Rd.) in Bethlehem, CT. The tower is owned by SBA Properties, LLC. The property is owned by the Gary J. & Amy Swingle. Sprint now intends to add (3) newer technology cell antennas at the 195' level of the tower. The proposed full scope of work is as follows:

Remove: n/a

Remove and Replace: n/a

Install:

- (3) Commscope DT465B-2XR- Panel Antennas
- (3) ALU 800MHz RRHs
- (3) ALU TD-RRH8x20-25- RRUs
- (1) Platform Reinforcement Kit
- (1) Handrail Kit
- (1) V-Brace Kit
- (1) 1-1/4" hybrid

Existing Equipment to Remain (Including entitlements):

- (3) RFS APXVSPP18-C-A20 – Panel Antennas
- (3) ALU 800MHz RRHs
- (4) RFS ACU-A20-N RETs
- (3) ALU 1900MHz RRHs
- (3) ALU 800MHz Filters
- (1) Low Profile Platform & RRH Collar Mount
- (3) 1-1/4" lines

This facility was originally approved prior to the Council's jurisdiction. On 8/25/2000, the Town of Bethlehem's Special Board of Selectmen approved the construction of a 195' monopole with several triangular antenna arrays at various height, capable of supporting up to five separate antenna systems. A fenced compound was to accommodate the base station equipment. Each additional carrier after Sprint was to make application to the Commission for permission to collocate. No changes to the location, height, color, or nature of the facility were to be made without further review and approval by the Board of Selectman. And tower access for Town emergency services was to be provided as requested. This modification complies with all 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 Bethlehem's First Selectman, Leonard Assard, and Land Use Coordinator, Norma Cary, as well as to the Property Owners. (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
kpelletier@sbasite.com

Attachments

cc: Leonard Assard, First Selectman / with attachments
Bethlehem Town Hall, 36 Main St South, Bethlehem, CT 06751
Norma Carey, Land Use Coordinator / with attachments
Bethlehem Town Hall, 36 Main St South, Bethlehem, CT 06751
Gary J. and Amy Swingle / with attachments
2579 Litchfield Road, Watertown, CT 06795

POWER DENSITY

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	6,662.27	ERP (W):	6,662.27	ERP (W):	6,662.27
Antenna A1 MPE%	**0.70 %**	Antenna B1 MPE%	**0.70 %**	Antenna C1 MPE%	**0.70 %**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts
ERP (W):	5,983.32	ERP (W):	5,983.32	ERP (W):	5,983.32
Antenna A2 MPE%	**0.67 %**	Antenna B2 MPE%	**0.67 %**	Antenna C2 MPE%	**0.67 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**1.37 %**
Nextel	0.18 %
AT&T	1.27 %
Verizon Wireless	0.98 %
T-Mobile	1.37 %
Site Total MPE %:	**5.17 %**

SPRINT Sector A Total:	1.37 %
SPRINT Sector B Total:	1.37 %
SPRINT Sector C Total:	1.37 %
Site Total:	5.17 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	195	0.44	850 MHz	567	0.08%
Sprint 1900 MHz (PCS) CDMA	5	622.47	195	3.13	1900 MHz (PCS)	1000	0.31%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	195	3.13	1900 MHz (PCS)	1000	0.31%
Sprint 2500 MHz (BRS) LTE	8	639.78	195	5.15	2500 MHz (BRS)	1000	0.52%
Sprint 850 MHz LTE	2	432.54	195	0.87	850 MHz	567	0.15%
						Total:	**1.37%**

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Owner and Parcel Information

Owner Name	SWINGLE GARY J & AMY	**Today's Date**	March 28, 2018
Mailing Address	2579 LITCHFIELD RD	**Parcel ID**	1343 (Account #: 101513)
	WATERTOWN, CT 06795		
Location Address	2579 LITCHFIELD RD WATERTOWN	**Census Tract**	3421000
Map / Block / Lot	12-7 / 006 /	**Acreage**	10.00
Use Class / Description	201 Commercial V	**Parcel Map**	Show Parcel Map / Owner List By Radius
Assessing Neighborhood	0001A	**Utilities**	

Current Appraised Value Information

Building Value	XF Value	OB Value	Land Value	Special Land Value	Total Appraised Value	Net Appraised Value	Current Assessment
$ 380,300	$ 0	$ 0	$ 376,710		$ 757,010	$ 757,010	$ 492,360

Assessment History

Year	Building	OB/Misc	Land	Total Assessment
Current	$ 266,200	0	$ 226,160	$ 492,360
2017	$ 266,200	0	$ 226,160	$ 492,360
2016	$ 266,200	0	$ 226,160	$ 492,360

Land Information

Use	Class	Zoning	Area	Value
Commercial V	C		1.5 AC	$ 182,930
Commercial C	C		0 SF	
Single Family	R		0 SF	
Mixed Use C	C		0 AC	
Commercial V	C		1.5 AC	$ 137,280
Farm Tillable C	S		7 AC	$ 56,500

Residential Building Information

Style	Year Built	Eff Year Built	Living Area	Stories	Grade	Exterior Wall	Interior Wall	Fireplaces Plain/Detached
Ranch	2016	2013	400	1	C+ A+10	Wood Shingle	Drywall	0 / 0
Roof Cover	**Roof Structure**	**Floor Type**	**Heat Type**	**Heat Fuel**	**AC**	**Bedrooms/Full Baths/Half Baths/Total Rooms**	**Finished Basement**	**Whirlpool Tubs**
Asphalt Shingl	Gable	Ceram Clay Til and Hardwood	Gas	Forced Air		1 / 1 / 0 / 2		0

Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	400	400	
	Totals	**400**	**400**	**400**

Building Sketch

NA

Building Photo Enlarge

Commercial Building Information

Style	Year Built	Eff Year Built	Gross Area	Stories	Grade	Exterior Wall	Interior Wall	Wall Height	# Units
Warehouse	1996	1999	17,302	1	Good	Minimum	Minimum	0	1
Roof Cover	**Roof Structure**	**Floor Type**	**Heat Type**	**Heat Fuel**	**AC Type**		**Construction**	**Plumbing**	
Asphalt Shingl	Gable	Minimum/Plywd	None	None	None		Wood Frame	None	

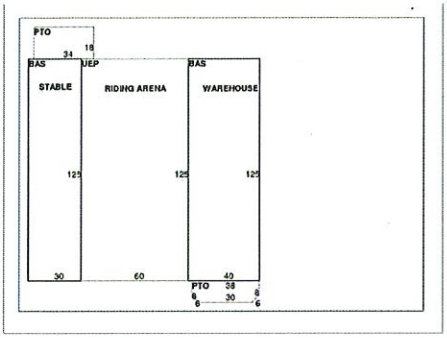
Building Sub Areas

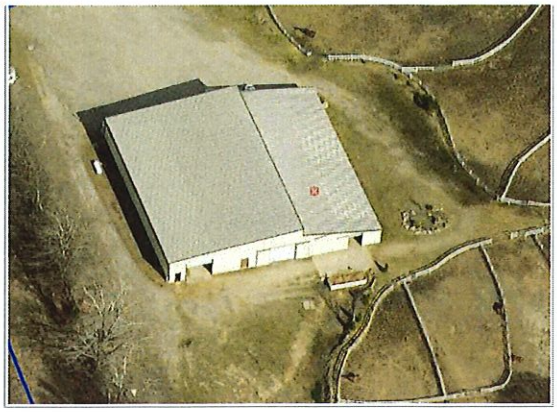
Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	8,750	8,750	
PTO	Patio	0	1,052	
UEP	Utility Enclosed Porch	0	7,500	

Building Sketch Enlarge

Building Photo Enlarge

	Totals	8,750	17,302	11,084





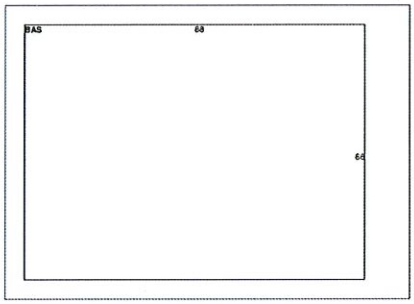
Commercial Building 2 Information

Style	Year Built	Eff Year Built	Gross Area	Stories	Grade	Exterior Wall	Interior Wall	Wall Height	# Units
Warehouse	2010	2010	5,808	1	Average	Single Siding	Typical	0	1
Roof Cover	**Roof Structure**	**Floor Type**	**Heat Type**	**Heat Fuel**	**AC Type**		**Construction**	**Plumbing**	
Asphalt Shingl	Gable	Concrete Dirt/None	Gas	Hot Air-No Duc	Heat/AC Pkg		Wood Frame	Average	

Building Sub Areas

Code	Description	Living Area	Gross Area	Effective Area
BAS	First Floor	5,808	5,808	
	Totals	**5,808**	**5,808**	**5,808**

Building Sketch Enlarge



Building Photo Enlarge

Out Buildings / Extra Features

Description	Sub Description	Area	Year Built	Value
No Out Building/Misc Information available for this parcel.				

Sale Information

Sale Date	Sale Price	Deed Book/Page	Sale Qualification	Reason	Vacant or Improved	Owner
07/11/1985	$ 112,000	97/ 222				SWINGLE GARY J & AMY
12/04/1942		28/ 389	Unqualified		Improved	SYDORIK ROSE

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
3653	07/28/2015					0		NEW HOUSE
1753	09/22/2009					0		BARN
297	11/29/2005					0		
2831						0		SHEETROCK

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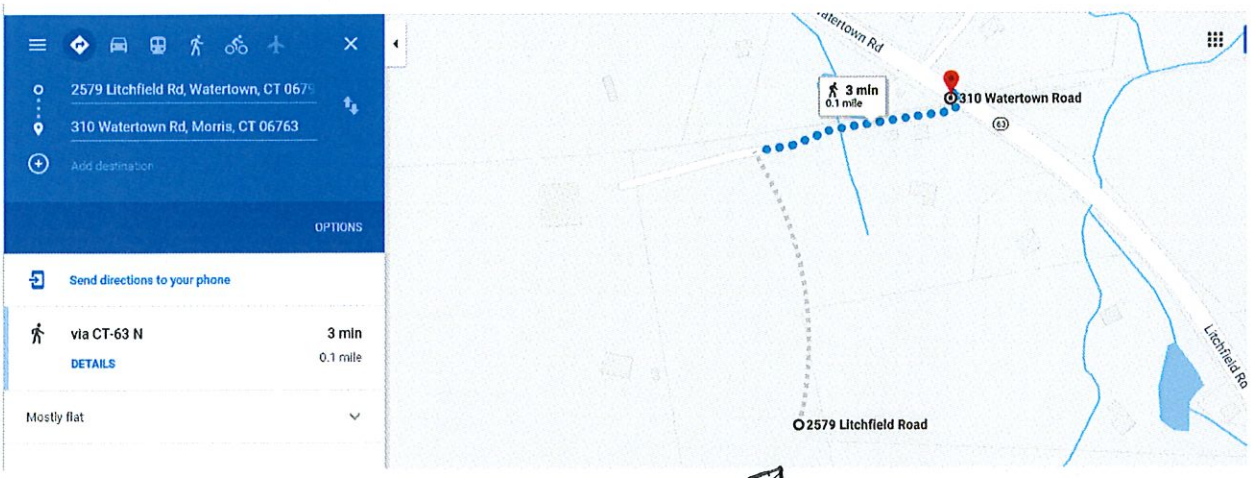


Walking route only

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

Structural Analysis Report

Existing 195 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01501-S

Customer Site Name: Morris

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT33XC109 / Sterling

Site Location: 310 Watertown Road

Bethlehem, Connecticut

Litchfield County

Latitude: 41.667219

Longitude: -73.170516

Analysis Result:

Max Structural Usage: 95.4% [Pass]

Max Foundation Usage: 84.6% [Pass]

Additional Usage Caused by New Mount: 7.5%

Report Prepared By: Mariana Franco

4/25/18

Introduction

The purpose of this report is to summarize the analysis results on the 195 ft Nudd Corporation 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	Fred A. Nudd Corporation (Drawing No. 00-7627-1) original design drawings dated May 8, 2000 o2wireless Solutions (Job No. 2230-043) Monopole Tower Structural Analysis Report dated September 4, 2002
Foundation Drawing	Fred A. Nudd Corporation (Drawing No. 00-7627-1) original design drawings dated May 8, 2000
Geotechnical Report	Jaworski Geotech, Inc., Project # 99290G, Dated 11/17/1999
Modification Drawings	N/A

Analysis Criteria

The feasibility 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} = 120.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Wind Speed with Ice:	40 mph (3-Sec. Gust) with 1" 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

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
-	195.0	3	RFS APXVSPP18-C-A20 - Panel	Low Profile Platform & RRH Collar Mount	(3) 1 1/4"	Sprint Nextel
-		3	ALU 800MHz RRH			
-		4	RFS ACU-A20-N			
-		3	ALU 1900MHz RRH			
-		3	ALU 800MHz Filter			
8	175.0	6	Commscope JAHH-65B-R3B - Panel	Low Profile Platform & [(3) Commscope BSAMNT-SDS-2-2]	(6) 1 5/8" (2) 1 5/8" Hybrid	Verizon
9		6	Antel LPA-80080/6CF - Panel			
10		3	Alcatel-Lucent B66A - RRU			
11		3	Alcatel-Lucent B13 RRH4X30-4R - RRU			
12		1	RFS DB-C1-12C-24AB-0Z			
13	165.0	6	Powerwave 7770.00 - Panel	Low Profile Platform	(12) 1 5/8" (2) 3/4" DC (1) 7/16" Fiber	AT&T
14		12	Powerwave LGP2140X TMA			
15		6	Ericsson RRUS-11			
16		1	KMW AM-X-CD-16-65-00T-RET - Panel			
17		1	Andrew ABT-DF-DMADBH			
18		1	Raycap DC6-48-60-18-8F			
19		2	Kathrein 800 10764 - Panel			
20	155.0	3	RFS APXV18-209014-CT2 - Panel	Low Profile Platform	(12) 1 5/8"	T-Mobile
21		3	Kathrein 782 11056 Bias T			
22		3	Commscope LNX-6565DS - Panel			
23		3	REMC S20057A1			
24		3	Ericsson KRY 112 144/1 TMA			

* (2) 3/4" DC and (1) 7/16" Fiber are inside (1) 3" Conduit.

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
1	195.0	3	RFS APXVSPP18-C-A20- Panel	(1) RRH Collar Mount and Low Profile Platform with: (1) Platform Reinforcement Kit (SitePro1 Part PRK-1245L); (1) Handrail Components- V-Brace Kit (SitePro1 Part PRK-SFS-L); (1) Handrail Components [(3) Pipe 2.0 STD x 12.5' Horiz. Rail; Pipe 2.0 STD x (3) 4' long corner braces; (6) Sitepro1 Part # Puck brackets; (9) Pipe 2.5 STD mount pipes; (18) Sitepro1 SCX x –K cross-over plates]	(4) 1-1/4" Hybrid	Sprint Nextel
2		6	ALU 800 Mhz- RRUs			
3		4	RFS ACU-A20-N RET- RETs			
4		3	ALU 1900 Mhz - RRUs			
5		3	ALU 800 Mhz Filter- Filters			
6		3	Commscope DT465B-2XR- Panel			
7		3	ALU TD-RRH8x20-25- RRUs			

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
Max. Usage:	**95.4%**	**66.5%**
Pass/Fail	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4878.0	35.6
Analysis Reactions	5570.0	39.3
Factored Reactions*	6585.3	48.1
% of Design Reactions	84.6%	81.8%

* 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.

Since the reactions calculated from the current analysis are less than those indicated on the original structural design drawing, the foundation is assumed to be adequate to resist the reactions from the current analysis if it was properly designed and constructed. 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 2.3940 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.

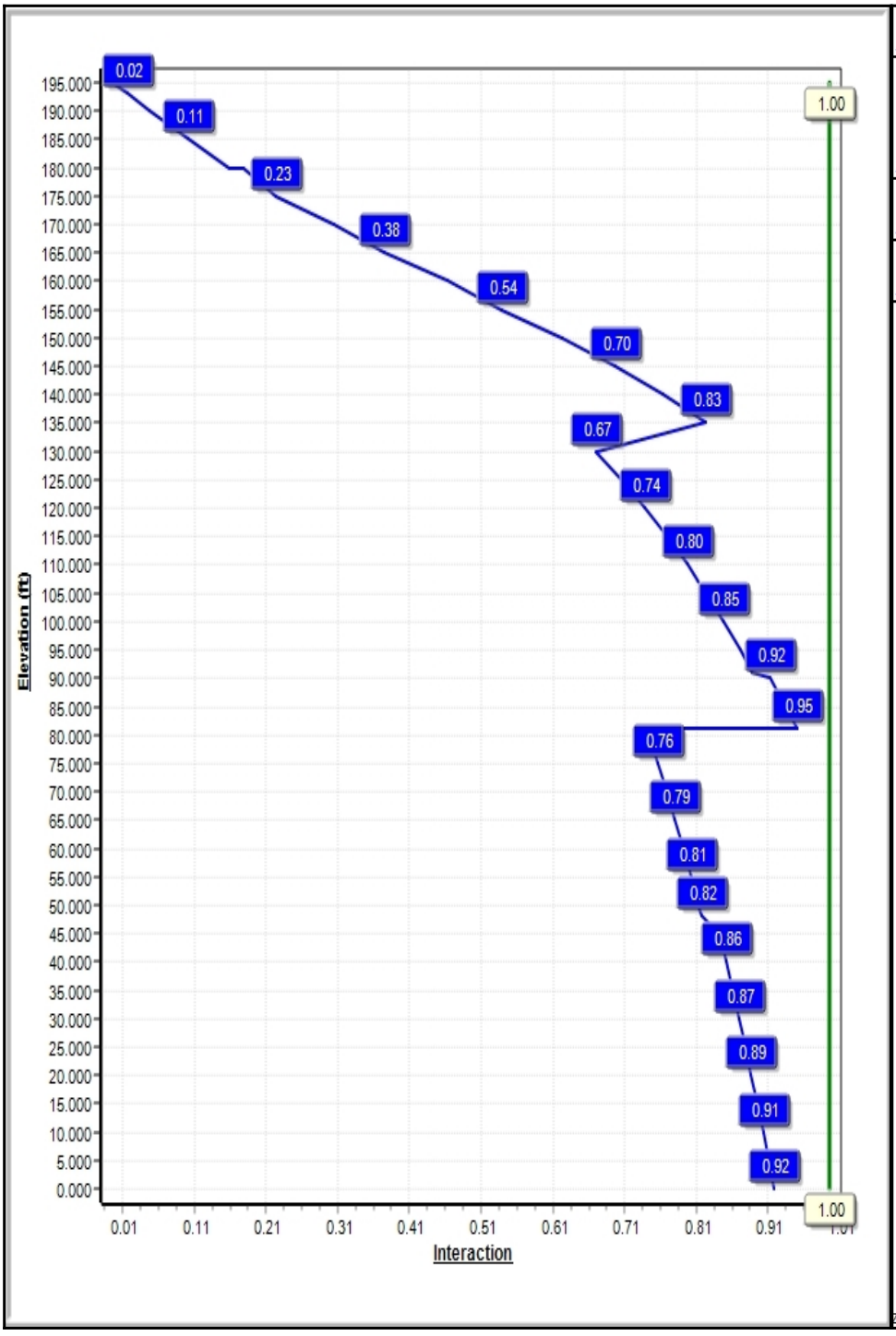
Usage Diagram - Max Ratio 95.43% at 81.0ft

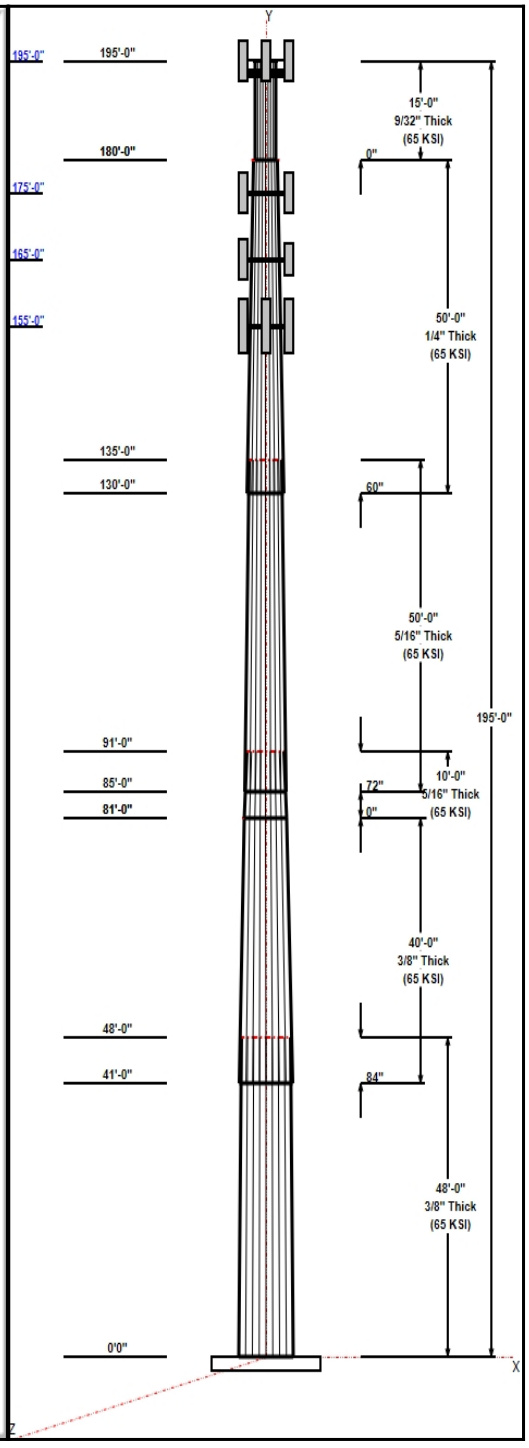
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	27
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT01501-S-SBA

Type: Custom
Site Name: Morris
Height: 195.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

4/25/2018

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	53.20	64.50	0.375		0.23542	65
2	40.00	46.18	55.60	0.375	Slip	0.23542	65
3	10.00	43.83	46.18	0.313	Butt	0.23542	65
4	50.00	34.09	45.86	0.313	Slip	0.23542	65
5	50.00	24.00	35.77	0.250	Slip	0.23542	65
6	15.00	24.00	24.00	0.281	Butt	0.00000	65

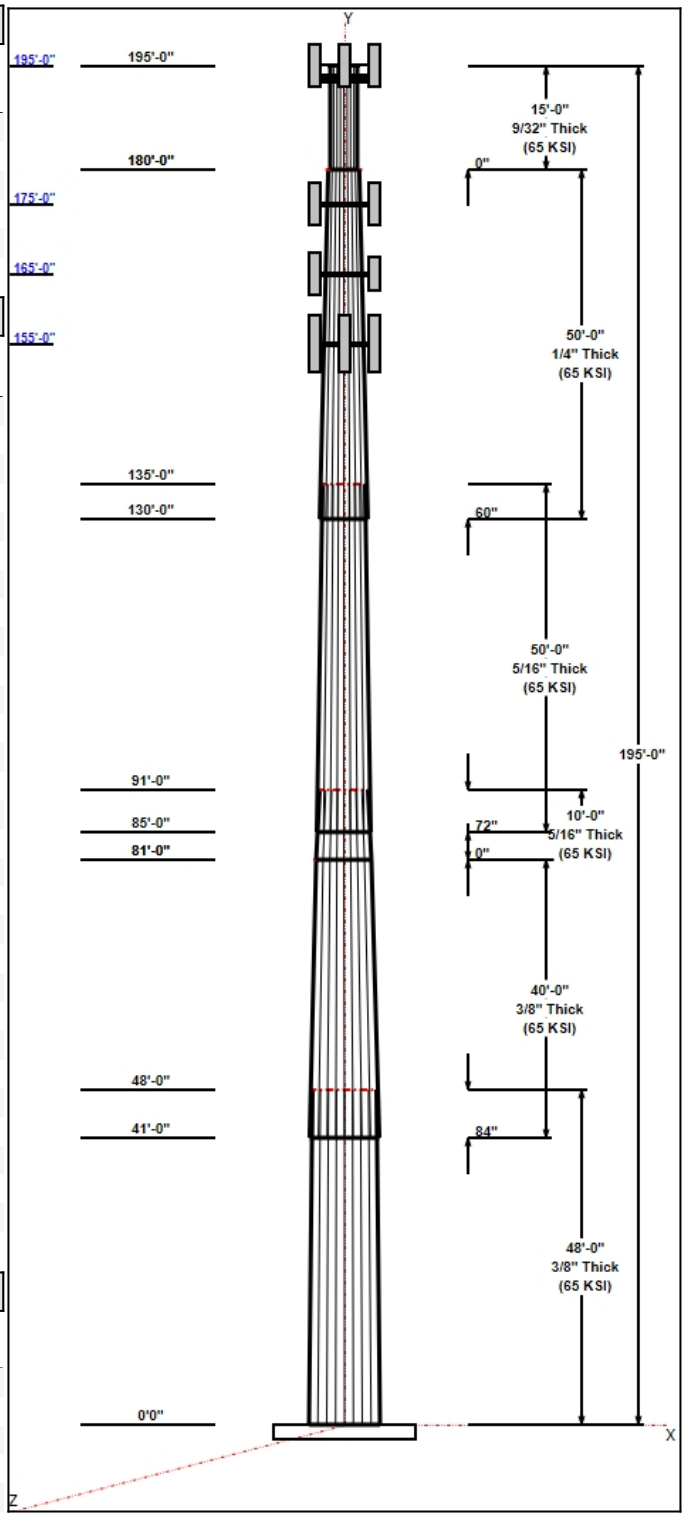
Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
195.00	195.00	3	APXVSPP18-C-A20	Sprint Nextel
195.00	195.00	6	800 Mhz	Sprint Nextel
195.00	195.00	4	ACU-A20-N	Sprint Nextel
195.00	195.00	3	1900MHz RRH	Sprint Nextel
195.00	195.00	3	800 Mhz Filter	Sprint Nextel
195.00	195.00	3	Commscope DT465B-2XR	Sprint Nextel
195.00	195.00	3	TD-RRH8x20-25	Sprint Nextel
195.00	195.00	1	Modified Platform + HR &	Sprint Nextel
193.00	193.00	1	Collar Mount	Sprint Nextel
175.00	175.00	1	Low Profile Platform	Verizon
175.00	175.00	1	(3) mounting kit	Verizon
175.00	175.00	6	JAHH-65B-R3B	Verizon
175.00	175.00	6	LPA-80080/6CF	Verizon
175.00	175.00	3	B66A	Verizon
175.00	175.00	3	B13 RRH4X30-4R	Verizon
175.00	175.00	1	DB-C1-12C-24AB-0Z	Verizon
165.00	165.00	6	7770.00	AT&T
165.00	165.00	12	LGP2140X TMA	AT&T
165.00	165.00	6	RRUS-11	AT&T
165.00	165.00	1	AM-X-CD-16-65-00T-RET	AT&T
165.00	165.00	1	ABT-DF-DMADBH	AT&T
165.00	165.00	1	DC6-48-60-18-8F	AT&T
165.00	165.00	2	800 10764	AT&T
165.00	165.00	1	Low Profile Platform	AT&T
155.00	155.00	3	APXV18-209014-CT2	T-Mobile
155.00	155.00	3	782 11056	T-Mobile
155.00	155.00	3	LNX-6565DS	T-Mobile
155.00	155.00	3	S20057A1	T-Mobile
155.00	155.00	3	KRY 112 144/1	T-Mobile
155.00	155.00	1	Low Profile Platform	T-Mobile

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	195.00	Inside	1-1/4" Hybrid	Sprint Nextel
0.00	175.00	Inside	1 5/8" Coax	Verizon
0.00	175.00	Inside	1 5/8" Hybrid	Verizon
0.00	165.00	Inside	1 5/8" Coax	AT&T
0.00	165.00	Inside	3" Conduit	AT&T
0.00	165.00	Inside	3/4" DC	AT&T
0.00	165.00	Inside	7/16" Fiber	AT&T
0.00	155.00	Inside	1 5/8" Coax	T-Mobile

Anchor Bolts



Qty	Specifications	Grade (ksi)	Arrangement
24	2.00" A687	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	77.0	45.0	Round

Reactions

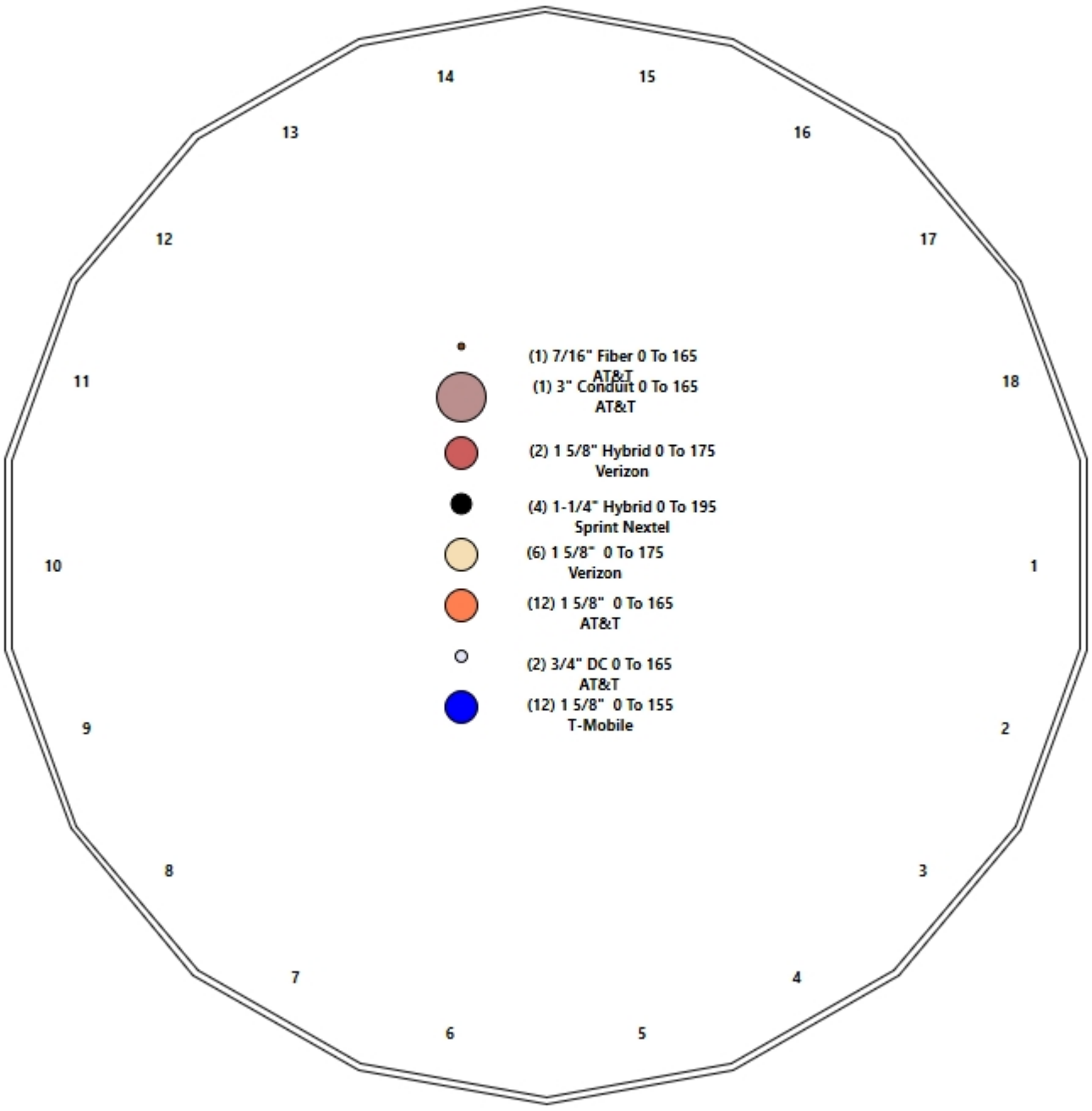
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	5569.9	39.3	60.1
0.9D + 1.6W 93 mph Wind	5482.2	39.3	45.0
1.2D + 1.0Di + 1.0Wi 40 mph Wind	1234.7	8.4	101.7
1.0D + 1.0W 60 mph Wind	1438.1	10.2	50.1

Structure: CT01501-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Morris
Height: 195.00 (ft)

4/25/2018

Tower Engineering Solutions



Shaft Properties

Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.3750	65		0.00	11,368
2	18	40.000	0.3750	65	Slip	84.00	8,183
3	18	10.000	0.3125	65	Flange	0.00	1,508
4	18	50.000	0.3125	65	Slip	72.00	6,694
5	18	50.000	0.2500	65	Slip	60.00	4,001
6	18	15.000	0.2810	65	Flange	0.00	1,080
					Total Shaft Weight:		**32,834**

	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	64.50	0.00	76.32	39651.33	28.92	172.00	53.20	48.00	62.87	22166.3	23.60	141.8	0.235417
2	55.60	41.00	65.73	25324.08	24.73	148.26	46.18	81.00	54.52	14452.7	20.30	123.1	0.235417
3	46.18	81.00	45.49	12093.31	24.65	147.78	43.83	91.00	43.16	10325.2	23.32	140.2	0.235417
4	45.86	85.00	45.18	11844.57	24.47	146.77	34.09	135.00	33.51	4830.83	17.83	109.1	0.235417
5	35.77	130.0	28.18	4492.97	23.82	143.08	24.00	180.00	18.84	1343.00	15.52	96.00	0.235417
6	24.00	180.0	21.15	1503.63	13.65	85.41	24.00	195.00	21.15	1503.63	13.65	85.41	0.000000

Load Summary

Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
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	195.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	293.60	11.844	0.83	0.00	0.00
2	195.00	800 Mhz	6	68.30	3.46	0.67	192.10	5.258	0.67	0.00	0.00
3	195.00	ACU-A20-N	4	1.00	0.14	0.79	6.88	0.546	0.79	0.00	0.00
4	195.00	1900MHz RRH	3	44.00	3.80	0.88	193.42	5.703	0.88	0.00	0.00
5	195.00	800 Mhz Filter	3	10.00	0.49	0.70	31.97	1.258	0.70	0.00	0.00
6	195.00	Commscope DT465B-2XR	3	58.00	9.10	0.83	393.43	10.977	0.83	0.00	0.00
7	195.00	TD-RRH8x20-25	3	70.00	4.05	0.69	233.09	5.195	0.69	0.00	0.00
8	195.00	Modified Platform + HR & Kicker	1	2246.00	51.70	1.00	5465.16	04.065	1.00	0.00	0.00
9	193.00	Collar Mount	1	350.00	5.00	1.00	750.91	9.773	1.00	0.00	0.00
10	175.00	Low Profile Platform	1	1500.00	22.00	1.00	3272.33	45.915	1.00	0.00	0.00
11	175.00	(3) mounting kit	1	350.00	5.00	1.00	747.00	9.726	1.00	0.00	0.00
12	175.00	JAHH-65B-R3B	6	63.30	9.11	0.83	394.71	10.972	0.83	0.00	0.00
13	175.00	LPA-80080/6CF	6	21.00	4.33	1.70	303.47	5.980	1.70	0.00	0.00
14	175.00	B66A	3	56.80	2.54	0.82	180.75	3.509	0.82	0.00	0.00
15	175.00	B13 RRH4X30-4R	3	57.20	2.16	0.88	141.55	2.987	0.88	0.00	0.00
16	175.00	DB-C1-12C-24AB-0Z	1	32.00	3.79	1.00	187.32	5.083	1.00	0.00	0.00
17	165.00	7770.00	6	35.00	5.50	0.73	231.52	6.966	0.73	0.00	0.00
18	165.00	LGP2140X TMA	12	19.00	1.30	0.67	52.48	2.450	0.67	0.00	0.00
19	165.00	RRUS-11	6	51.00	2.52	0.71	148.29	3.373	0.71	0.00	0.00
20	165.00	AM-X-CD-16-65-00T-RET	1	48.50	8.02	1.00	266.94	11.781	1.00	0.00	0.00
21	165.00	ABT-DF-DMADBH	1	1.10	0.05	1.00	4.10	0.309	1.00	0.00	0.00
22	165.00	DC6-48-60-18-8F	1	31.80	0.92	1.00	115.02	1.510	1.00	0.00	0.00
23	165.00	800 10764	2	40.80	5.88	0.90	212.45	8.764	0.90	0.00	0.00
24	165.00	Low Profile Platform	1	1500.00	22.00	1.00	3261.93	45.774	1.00	0.00	0.00
25	155.00	APXV18-209014-CT2	3	18.70	3.58	0.74	150.00	4.865	0.74	0.00	0.00
26	155.00	782 11056	3	5.30	0.28	0.87	17.94	0.817	0.87	0.00	0.00
27	155.00	LNX-6565DS	3	50.80	11.46	0.80	358.06	15.816	0.80	0.00	0.00
28	155.00	S20057A1	3	11.00	0.82	0.73	36.25	1.753	0.73	0.00	0.00
29	155.00	KRY 112 144/1	3	11.00	0.41	0.70	25.42	1.046	0.70	0.00	0.00
30	155.00	Low Profile Platform	1	1500.00	22.00	1.00	3250.95	45.626	1.00	0.00	0.00
		Totals:	**94**	**10,654.00**			**32,190.74**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	195.00	(4) 1-1/4" Hybrid	0.00	Inside
0.00	175.00	(6) 1 5/8" Coax	0.00	Inside
0.00	175.00	(2) 1 5/8" Hybrid	0.00	Inside
0.00	165.00	(12) 1 5/8" Coax	0.00	Inside
0.00	165.00	(1) 3" Conduit	0.00	Inside
0.00	165.00	(2) 3/4" DC	0.00	Inside
0.00	165.00	(1) 7/16" Fiber	0.00	Inside
0.00	155.00	(12) 1 5/8" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

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	64.500	76.322	39651.3	28.92	172.00	67.4	1210.	0.0
5.00		0.3750	63.323	74.921	37507.6	28.36	168.86	68.0	1166.	1286.6
10.00		0.3750	62.146	73.520	35442.6	27.81	165.72	68.7	1123.	1262.8
15.00		0.3750	60.969	72.119	33454.9	27.26	162.58	69.3	1080.	1238.9
20.00		0.3750	59.792	70.718	31542.8	26.70	159.44	70.0	1039.	1215.1
25.00		0.3750	58.615	69.317	29705.1	26.15	156.31	70.6	998.2	1191.3
30.00		0.3750	57.437	67.916	27940.1	25.60	153.17	71.3	958.1	1167.4
35.00		0.3750	56.260	66.515	26246.5	25.04	150.03	71.9	918.9	1143.6
40.00		0.3750	55.083	65.114	24622.7	24.49	146.89	72.6	880.4	1119.8
41.00	Bot - Section 2	0.3750	54.848	64.834	24306.2	24.38	146.26	72.7	872.8	221.1
45.00		0.3750	53.906	63.713	23067.4	23.94	143.75	73.2	842.8	1761.8
48.00	Top - Section 1	0.3750	53.950	63.765	23124.0	23.96	143.87	0.0	0.0	1301.3
50.00		0.3750	53.479	63.205	22519.6	23.74	142.61	73.5	829.4	432.1
55.00		0.3750	52.302	61.804	21055.1	23.18	139.47	74.1	792.9	1063.4
60.00		0.3750	51.125	60.403	19655.5	22.63	136.33	74.8	757.2	1039.6
65.00		0.3750	49.948	59.002	18319.3	22.08	133.19	75.4	722.4	1015.8
70.00		0.3750	48.771	57.601	17045.1	21.52	130.06	76.1	688.4	991.9
75.00		0.3750	47.594	56.200	15831.4	20.97	126.92	76.7	655.2	968.1
80.00		0.3750	46.417	54.799	14676.7	20.41	123.78	77.4	622.8	944.3
81.00	Top - Section 2	0.3750	46.181	54.519	14452.7	20.30	123.15	77.5	616.4	186.0
81.00	Bot - Section 3	0.3125	46.181	45.494	12093.3	24.36	147.78	72.4	515.8	
85.00	Bot - Section 4	0.3125	45.240	44.560	11363.7	24.12	144.77	73.0	494.7	612.9
90.00		0.3125	44.062	43.393	10493.7	23.45	141.00	73.8	469.1	1507.0
91.00	Top - Section 3	0.3125	44.452	43.779	10776.5	23.67	142.25	0.0	0.0	296.6
95.00		0.3125	43.510	42.845	10101.4	23.14	139.23	74.2	457.3	589.5
100.00		0.3125	42.333	41.678	9298.0	22.48	135.47	75.0	432.6	719.0
105.00		0.3125	41.156	40.510	8538.3	21.81	131.70	75.7	408.6	699.2
110.00		0.3125	39.979	39.343	7821.2	21.15	127.93	76.5	385.3	679.3
115.00		0.3125	38.802	38.175	7145.4	20.48	124.17	77.3	362.7	659.4
120.00		0.3125	37.625	37.008	6509.6	19.82	120.40	78.1	340.8	639.6
125.00		0.3125	36.448	35.841	5912.8	19.15	116.63	78.9	319.5	619.7
130.00	Bot - Section 5	0.3125	35.271	34.673	5353.6	18.49	112.87	79.7	299.0	599.9
135.00	Top - Section 4	0.2500	34.594	27.251	4060.9	22.99	138.37	0.0	0.0	1051.6
140.00		0.2500	33.417	26.317	3657.5	22.16	133.67	75.3	215.6	455.7
145.00		0.2500	32.240	25.383	3281.8	21.33	128.96	76.3	200.5	439.8
150.00		0.2500	31.062	24.449	2932.7	20.50	124.25	77.3	186.0	423.9
155.00		0.2500	29.885	23.515	2609.3	19.67	119.54	78.3	172.0	408.0
160.00		0.2500	28.708	22.581	2310.5	18.84	114.83	79.2	158.5	392.1
165.00		0.2500	27.531	21.647	2035.5	18.01	110.12	80.2	145.6	376.2
170.00		0.2500	26.354	20.713	1783.3	17.18	105.42	81.2	133.3	360.4
175.00		0.2500	25.177	19.779	1552.7	16.35	100.71	82.2	121.5	344.5
180.00	Top - Section 5	0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	328.6
180.00	Bot - Section 6	0.2810	24.000	21.154	1503.6	13.80	85.41	82.5	123.4	
185.00		0.2810	24.000	21.154	1503.6	13.65	85.41	82.5	123.4	359.9
190.00		0.2810	24.000	21.154	1503.6	13.65	85.41	82.5	123.4	359.9
193.00		0.2810	24.000	21.154	1503.6	13.65	85.41	82.5	123.4	215.9
195.00		0.2810	24.000	21.154	1503.6	13.65	85.41	82.5	123.4	144.0
										32833.6

Wind Loading - Shaft

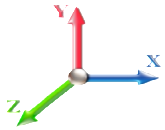
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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	17.879	19.67	467.97	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	459.43	0.650	0.000	5.00	27.041	17.58	553.1	0.0	1543.9
10.00		1.00	0.85	17.879	19.67	450.89	0.650	0.000	5.00	26.543	17.25	542.9	0.0	1515.3
15.00		1.00	0.85	17.879	19.67	442.35	0.650	0.000	5.00	26.045	16.93	532.7	0.0	1486.7
20.00		1.00	0.90	18.971	20.87	446.85	0.650	0.000	5.00	25.547	16.61	554.4	0.0	1458.1
25.00		1.00	0.95	19.883	21.87	448.47	0.650	0.000	5.00	25.049	16.28	569.8	0.0	1429.5
30.00		1.00	0.98	20.661	22.73	447.98	0.650	0.000	5.00	24.550	15.96	580.3	0.0	1400.9
35.00		1.00	1.01	21.343	23.48	445.98	0.650	0.000	5.00	24.052	15.63	587.3	0.0	1372.3
40.00		1.00	1.04	21.951	24.15	442.83	0.650	0.000	5.00	23.554	15.31	591.5	0.0	1343.7
41.00	Bot - Section 2	1.00	1.05	22.065	24.27	442.08	0.650	0.000	1.00	4.651	3.02	117.4	0.0	265.3
45.00		1.00	1.07	22.502	24.75	438.77	0.650	0.000	4.00	18.659	12.13	480.3	0.0	2114.2
48.00	Top - Section 1	1.00	1.08	22.810	25.09	435.97	0.650	0.000	3.00	13.785	8.96	359.7	0.0	1561.6
50.00		1.00	1.09	23.007	25.31	440.15	0.650	0.000	2.00	9.091	5.91	239.3	0.0	518.5
55.00		1.00	1.12	23.473	25.82	434.80	0.650	0.000	5.00	22.378	14.55	600.9	0.0	1276.1
60.00		1.00	1.14	23.907	26.30	428.93	0.650	0.000	5.00	21.880	14.22	598.4	0.0	1247.5
65.00		1.00	1.16	24.313	26.74	422.60	0.650	0.000	5.00	21.382	13.90	594.7	0.0	1218.9
70.00		1.00	1.17	24.696	27.17	415.87	0.650	0.000	5.00	20.884	13.57	590.0	0.0	1190.3
75.00		1.00	1.19	25.057	27.56	408.79	0.650	0.000	5.00	20.386	13.25	584.4	0.0	1161.7
80.00		1.00	1.21	25.400	27.94	401.40	0.650	0.000	5.00	19.888	12.93	577.9	0.0	1133.1
81.00	Top - Section 2	1.00	1.21	25.466	28.01	399.88	0.650	0.000	1.00	3.918	2.55	114.1	0.0	223.2
85.00	Bot - Section 4	1.00	1.22	25.726	28.30	393.72	0.650	0.000	4.00	15.472	10.06	455.3	0.0	735.4
90.00		1.00	1.24	26.037	28.64	385.79	0.650	0.000	5.00	19.156	12.45	570.6	0.0	1808.4
91.00	Top - Section 3	1.00	1.24	26.098	28.71	384.18	0.650	0.000	1.00	3.771	2.45	112.6	0.0	356.0
95.00		1.00	1.25	26.336	28.97	383.13	0.650	0.000	4.00	14.887	9.68	448.5	0.0	707.4
100.00		1.00	1.27	26.621	29.28	374.79	0.650	0.000	5.00	18.160	11.80	553.1	0.0	862.8
105.00		1.00	1.28	26.896	29.59	366.24	0.650	0.000	5.00	17.662	11.48	543.4	0.0	839.0
110.00		1.00	1.29	27.161	29.88	357.51	0.650	0.000	5.00	17.164	11.16	533.3	0.0	815.2
115.00		1.00	1.30	27.416	30.16	348.61	0.650	0.000	5.00	16.666	10.83	522.7	0.0	791.3
120.00		1.00	1.32	27.663	30.43	339.56	0.650	0.000	5.00	16.168	10.51	511.7	0.0	767.5
125.00		1.00	1.33	27.902	30.69	330.35	0.650	0.000	5.00	15.670	10.19	500.2	0.0	743.7
130.00	Bot - Section 5	1.00	1.34	28.133	30.95	321.00	0.650	0.000	5.00	15.172	9.86	488.3	0.0	719.8
135.00	Top - Section 4	1.00	1.35	28.358	31.19	311.53	0.650	0.000	5.00	14.885	9.68	482.9	0.0	1261.9
140.00		1.00	1.36	28.576	31.43	306.51	0.650	0.000	5.00	14.387	9.35	470.3	0.0	546.8
145.00		1.00	1.37	28.788	31.67	296.81	0.650	0.000	5.00	13.889	9.03	457.4	0.0	527.8
150.00		1.00	1.38	28.994	31.89	286.99	0.650	0.000	5.00	13.391	8.70	444.2	0.0	508.7
155.00	Appurtenance(s)	1.00	1.39	29.195	32.11	277.07	0.650	0.000	5.00	12.893	8.38	430.6	0.0	489.6
160.00		1.00	1.40	29.390	32.33	267.05	0.650	0.000	5.00	12.395	8.06	416.8	0.0	470.6
165.00	Appurtenance(s)	1.00	1.41	29.581	32.54	256.93	0.650	0.000	5.00	11.897	7.73	402.6	0.0	451.5
170.00		1.00	1.42	29.768	32.74	246.72	0.650	0.000	5.00	11.399	7.41	388.2	0.0	432.4
175.00	Appurtenance(s)	1.00	1.42	29.950	32.95	236.42	0.650	0.000	5.00	10.901	7.09	373.5	0.0	413.4
180.00	Top - Section 5	1.00	1.43	30.128	33.14	226.04	0.650	0.000	5.00	10.403	6.76	358.6	0.0	394.3
185.00		1.00	1.44	30.303	33.33	226.69	0.650	0.000	5.00	10.154	6.60	352.0	0.0	431.9
190.00		1.00	1.45	30.473	33.52	227.33	0.650	0.000	5.00	10.154	6.60	354.0	0.0	431.9
193.00	Appurtenance(s)	1.00	1.45	30.574	33.63	227.70	0.650	0.000	3.00	6.093	3.96	213.1	0.0	259.1
195.00	Appurtenance(s)	1.00	1.46	30.640	33.70	227.95	0.650	0.000	2.00	4.062	2.64	142.4	0.0	172.8
								Totals:	**195.00**			**19,895.4**		**39,400.3**

Discrete Appurtenance Forces

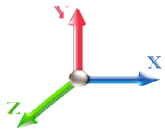
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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	195.00	1900MHz RRH	3	30.640	33.704	0.79	0.90	9.03	158.40	0.000	0.000	486.89	0.00	0.00
2	195.00	APXVSPP18-C-A20	3	30.640	33.704	0.75	0.90	17.97	205.20	0.000	0.000	969.22	0.00	0.00
3	195.00	800 Mhz	6	30.640	33.704	0.60	0.90	12.52	491.76	0.000	0.000	675.07	0.00	0.00
4	195.00	ACU-A20-N	4	30.640	33.704	0.71	0.90	0.40	4.80	0.000	0.000	21.47	0.00	0.00
5	195.00	Modified Platform + HR &	1	30.640	33.704	1.00	1.00	51.70	2695.20	0.000	0.000	2788.02	0.00	0.00
6	195.00	800 Mhz Filter	3	30.640	33.704	0.63	0.90	0.93	36.00	0.000	0.000	49.94	0.00	0.00
7	195.00	Commscope DT465B-2XR	3	30.640	33.704	0.75	0.90	20.39	208.80	0.000	0.000	1099.74	0.00	0.00
8	195.00	TD-RRH8x20-25	3	30.640	33.704	0.62	0.90	7.55	252.00	0.000	0.000	406.89	0.00	0.00
9	193.00	Collar Mount	1	30.574	33.631	1.00	1.00	5.00	420.00	0.000	0.000	269.05	0.00	0.00
10	175.00	DB-C1-12C-24AB-0Z	1	29.950	32.945	1.00	1.00	3.79	38.40	0.000	0.000	199.78	0.00	0.00
11	175.00	B13 RRH4X30-4R	3	29.950	32.945	0.70	0.80	4.56	205.92	0.000	0.000	240.47	0.00	0.00
12	175.00	B66A	3	29.950	32.945	0.66	0.80	5.00	204.48	0.000	0.000	263.49	0.00	0.00
13	175.00	LPA-80080/6CF	6	29.950	32.945	1.36	0.80	35.33	151.20	0.000	0.000	1862.47	0.00	0.00
14	175.00	JAHH-65B-R3B	6	29.950	32.945	0.66	0.80	36.29	455.76	0.000	0.000	1913.15	0.00	0.00
15	175.00	(3) mounting kit	1	29.950	32.945	1.00	1.00	5.00	420.00	0.000	0.000	263.56	0.00	0.00
16	175.00	Low Profile Platform	1	29.950	32.945	1.00	1.00	22.00	1800.00	0.000	0.000	1159.67	0.00	0.00
17	165.00	AM-X-CD-16-65-00T-RET	1	29.581	32.540	1.00	1.00	8.02	58.20	0.000	0.000	417.55	0.00	0.00
18	165.00	7770.00	6	29.581	32.540	0.58	0.80	19.27	252.00	0.000	0.000	1003.36	0.00	0.00
19	165.00	LGP2140X TMA	12	29.581	32.540	0.54	0.80	8.36	273.60	0.000	0.000	435.33	0.00	0.00
20	165.00	RRUS-11	6	29.581	32.540	0.57	0.80	8.59	367.20	0.000	0.000	447.13	0.00	0.00
21	165.00	Low Profile Platform	1	29.581	32.540	1.00	1.00	22.00	1800.00	0.000	0.000	1145.39	0.00	0.00
22	165.00	ABT-DF-DMADBH	1	29.581	32.540	1.00	1.00	0.05	1.32	0.000	0.000	2.60	0.00	0.00
23	165.00	DC6-48-60-18-8F	1	29.581	32.540	1.00	1.00	0.92	38.16	0.000	0.000	47.90	0.00	0.00
24	165.00	800 10764	2	29.581	32.540	0.72	0.80	8.47	97.92	0.000	0.000	440.83	0.00	0.00
25	155.00	Low Profile Platform	1	29.195	32.114	1.00	1.00	22.00	1800.00	0.000	0.000	1130.41	0.00	0.00
26	155.00	KRY 112 144/1	3	29.195	32.114	0.56	0.80	0.69	39.60	0.000	0.000	35.39	0.00	0.00
27	155.00	S20057A1	3	29.195	32.114	0.58	0.80	1.44	39.60	0.000	0.000	73.82	0.00	0.00
28	155.00	LNX-6565DS	3	29.195	32.114	0.64	0.80	22.00	182.88	0.000	0.000	1130.58	0.00	0.00
29	155.00	782 11056	3	29.195	32.114	0.70	0.80	0.58	19.08	0.000	0.000	30.04	0.00	0.00
30	155.00	APXV18-209014-CT2	3	29.195	32.114	0.59	0.80	6.36	67.32	0.000	0.000	326.69	0.00	0.00
							Totals:		**12,784.80**			**19,335.90**		

Total Applied Force Summary

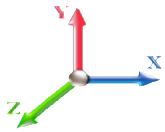
Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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		553.08	1782.18	0.00	0.00
10.00		542.90	1753.57	0.00	0.00
15.00		532.71	1724.97	0.00	0.00
20.00		554.42	1696.37	0.00	0.00
25.00		569.76	1667.76	0.00	0.00
30.00		580.28	1639.16	0.00	0.00
35.00		587.26	1610.56	0.00	0.00
40.00		591.50	1581.95	0.00	0.00
41.00		117.41	312.96	0.00	0.00
45.00		480.33	2304.78	0.00	0.00
48.00		359.72	1704.55	0.00	0.00
50.00		239.26	613.76	0.00	0.00
55.00		600.92	1514.37	0.00	0.00
60.00		598.40	1485.77	0.00	0.00
65.00		594.72	1457.16	0.00	0.00
70.00		590.00	1428.56	0.00	0.00
75.00		584.36	1399.96	0.00	0.00
80.00		577.88	1371.35	0.00	0.00
81.00		114.14	270.84	0.00	0.00
85.00		455.35	926.04	0.00	0.00
90.00		570.60	2046.61	0.00	0.00
91.00		112.60	403.60	0.00	0.00
95.00		448.50	898.02	0.00	0.00
100.00		553.06	1101.08	0.00	0.00
105.00		543.45	1077.24	0.00	0.00
110.00		533.32	1053.41	0.00	0.00
115.00		522.72	1029.57	0.00	0.00
120.00		511.66	1005.73	0.00	0.00
125.00		500.18	981.90	0.00	0.00
130.00		488.30	958.06	0.00	0.00
135.00		482.90	1500.13	0.00	0.00
140.00		470.33	785.07	0.00	0.00
145.00		457.42	766.00	0.00	0.00
150.00		444.18	746.93	0.00	0.00
155.00	(16) attachments	3157.56	2876.35	0.00	0.00
160.00		416.76	633.92	0.00	0.00
165.00	(30) attachments	4342.71	3503.25	0.00	0.00
170.00		388.20	505.96	0.00	0.00
175.00	(21) attachments	6276.10	3762.65	0.00	0.00
180.00		358.57	417.18	0.00	0.00
185.00		352.01	454.79	0.00	0.00
190.00		353.99	454.79	0.00	0.00
193.00	(1) attachments	482.15	692.87	0.00	0.00
195.00	(26) attachments	6639.61	4234.08	0.00	0.00
	Totals:	**39,231.28**	**60,135.80**	**0.00**	**0.00**

Calculated Forces

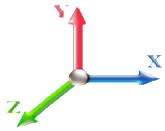
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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	-60.07	-39.34	0.00	-5569.9	0.00	5569.93	4628.91	2314.46	12221.1	6119.66	0.00	0.000	0.000	0.923
5.00	-58.15	-38.98	0.00	-5373.2	0.00	5373.26	4587.84	2293.92	11889.0	5953.37	0.11	-0.196	0.000	0.916
10.00	-56.26	-38.63	0.00	-5178.3	0.00	5178.35	4545.12	2272.56	11556.8	5787.00	0.42	-0.396	0.000	0.907
15.00	-54.41	-38.28	0.00	-4985.2	0.00	4985.22	4500.76	2250.38	11224.6	5620.67	0.94	-0.600	0.000	0.899
20.00	-52.58	-37.89	0.00	-4793.8	0.00	4793.84	4454.76	2227.38	10892.7	5454.49	1.68	-0.808	0.000	0.891
25.00	-50.78	-37.49	0.00	-4604.3	0.00	4604.37	4407.12	2203.56	10561.4	5288.58	2.64	-1.020	0.000	0.882
30.00	-49.01	-37.06	0.00	-4416.9	0.00	4416.94	4357.84	2178.92	10230.9	5123.07	3.83	-1.236	0.000	0.874
35.00	-47.27	-36.62	0.00	-4231.6	0.00	4231.64	4306.92	2153.46	9901.44	4958.08	5.24	-1.456	0.000	0.865
40.00	-45.62	-36.09	0.00	-4048.5	0.00	4048.54	4254.35	2127.17	9573.22	4793.73	6.89	-1.681	0.000	0.856
41.00	-45.24	-36.06	0.00	-4012.4	0.00	4012.44	4243.64	2121.82	9507.75	4760.94	7.24	-1.727	0.000	0.854
45.00	-42.85	-35.63	0.00	-3868.2	0.00	3868.21	4200.14	2100.07	9246.51	4630.13	8.77	-1.912	0.000	0.846
48.00	-41.09	-35.29	0.00	-3761.3	0.00	3761.34	4202.19	2101.09	9258.62	4636.19	10.02	-2.053	0.000	0.821
50.00	-40.39	-35.15	0.00	-3690.7	0.00	3690.75	4180.07	2090.03	9128.39	4570.98	10.90	-2.149	0.000	0.817
55.00	-38.76	-34.64	0.00	-3515.0	0.00	3515.03	4123.62	2061.81	8804.12	4408.60	13.27	-2.376	0.000	0.807
60.00	-37.16	-34.13	0.00	-3341.8	0.00	3341.82	4065.54	2032.77	8481.93	4247.27	15.88	-2.608	0.000	0.796
65.00	-35.59	-33.62	0.00	-3171.1	0.00	3171.17	4005.81	2002.90	8162.06	4087.10	18.74	-2.843	0.000	0.785
70.00	-34.06	-33.10	0.00	-3003.1	0.00	3003.10	3944.44	1972.22	7844.75	3928.21	21.84	-3.083	0.000	0.773
75.00	-32.55	-32.57	0.00	-2837.6	0.00	2837.62	3881.43	1940.71	7530.24	3770.72	25.20	-3.327	0.000	0.761
80.00	-31.14	-32.00	0.00	-2674.7	0.00	2674.75	3816.78	1908.39	7218.77	3614.75	28.82	-3.575	0.000	0.748
81.00	-30.80	-31.93	0.00	-2642.7	0.00	2642.76	3803.65	1901.82	7156.86	3583.75	29.57	-3.626	0.000	0.746
81.00	-30.80	-31.93	0.00	-2642.7	0.00	2642.76	2964.89	1482.44	5593.90	2801.11	29.57	-3.626	0.000	0.954
85.00	-29.77	-31.55	0.00	-2515.0	0.00	2515.03	2929.08	1464.54	5412.12	2710.08	32.69	-3.829	0.000	0.939
90.00	-27.67	-30.93	0.00	-2357.2	0.00	2357.27	2882.85	1441.42	5186.17	2596.94	36.86	-4.134	0.000	0.918
91.00	-27.19	-30.86	0.00	-2326.3	0.00	2326.34	2898.33	1449.17	5260.79	2634.30	37.74	-4.198	0.000	0.893
95.00	-26.18	-30.47	0.00	-2202.9	0.00	2202.90	2860.60	1430.30	5080.74	2544.15	41.36	-4.447	0.000	0.875
100.00	-24.97	-29.97	0.00	-2050.5	0.00	2050.53	2811.95	1405.98	4857.28	2432.25	46.17	-4.747	0.000	0.852
105.00	-23.79	-29.46	0.00	-1900.7	0.00	1900.71	2761.66	1380.83	4635.80	2321.34	51.30	-5.049	0.000	0.828
110.00	-22.63	-28.95	0.00	-1753.4	0.00	1753.42	2709.73	1354.87	4416.54	2211.55	56.74	-5.353	0.000	0.802
115.00	-21.51	-28.45	0.00	-1608.6	0.00	1608.66	2656.16	1328.08	4199.76	2103.00	62.51	-5.659	0.000	0.773
120.00	-20.41	-27.95	0.00	-1466.4	0.00	1466.42	2600.95	1300.48	3985.68	1995.80	68.59	-5.965	0.000	0.743
125.00	-19.34	-27.45	0.00	-1326.6	0.00	1326.69	2544.10	1272.05	3774.55	1890.08	74.99	-6.270	0.000	0.710
130.00	-18.30	-26.95	0.00	-1189.4	0.00	1189.45	2485.60	1242.80	3566.61	1785.96	81.70	-6.573	0.000	0.674
135.00	-16.73	-26.38	0.00	-1054.6	0.00	1054.69	1823.78	911.89	2575.19	1289.51	88.73	-6.871	0.000	0.828
140.00	-15.87	-25.91	0.00	-922.78	0.00	922.78	1784.40	892.20	2432.60	1218.11	96.07	-7.162	0.000	0.767
145.00	-15.02	-25.44	0.00	-793.24	0.00	793.24	1743.38	871.69	2291.70	1147.55	103.73	-7.496	0.000	0.701
150.00	-14.21	-24.98	0.00	-666.04	0.00	666.04	1700.71	850.36	2152.72	1077.96	111.73	-7.812	0.000	0.627
155.00	-11.70	-21.51	0.00	-541.15	0.00	541.15	1656.41	828.20	2015.90	1009.45	120.05	-8.105	0.000	0.544
160.00	-11.04	-21.05	0.00	-433.60	0.00	433.60	1610.46	805.23	1881.48	942.14	128.65	-8.371	0.000	0.468
165.00	-8.15	-16.27	0.00	-328.33	0.00	328.33	1562.88	781.44	1749.71	876.15	137.52	-8.605	0.000	0.380
170.00	-7.66	-15.84	0.00	-246.96	0.00	246.96	1513.65	756.82	1620.81	811.61	146.61	-8.806	0.000	0.310
175.00	-4.89	-9.07	0.00	-167.78	0.00	167.78	1462.77	731.39	1495.04	748.63	155.89	-8.972	0.000	0.228
180.00	-4.52	-8.66	0.00	-122.44	0.00	122.44	1400.09	700.04	1362.73	682.38	165.32	-9.105	0.000	0.183
180.00	-4.52	-8.66	0.00	-122.44	0.00	122.44	1571.64	785.82	1525.71	763.99	165.32	-9.105	0.000	0.163
185.00	-4.11	-8.24	0.00	-79.15	0.00	79.15	1571.64	785.82	1525.71	763.99	174.88	-9.212	0.000	0.106
190.00	-3.71	-7.82	0.00	-37.94	0.00	37.94	1571.64	785.82	1525.71	763.99	184.51	-9.267	0.000	0.052
193.00	-3.11	-7.24	0.00	-14.47	0.00	14.47	1571.64	785.82	1525.71	763.99	190.32	-9.282	0.000	0.021
195.00	0.00	-6.64	0.00	0.00	0.00	0.00	1571.64	785.82	1525.71	763.99	194.19	-9.285	0.000	0.000

Calculated Forces

Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 12

Wind Loading - Shaft

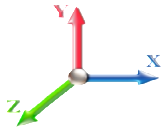
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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	17.879	19.67	467.97	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	459.43	0.650	0.000	5.00	27.041	17.58	553.1	0.0	1158.0
10.00		1.00	0.85	17.879	19.67	450.89	0.650	0.000	5.00	26.543	17.25	542.9	0.0	1136.5
15.00		1.00	0.85	17.879	19.67	442.35	0.650	0.000	5.00	26.045	16.93	532.7	0.0	1115.1
20.00		1.00	0.90	18.971	20.87	446.85	0.650	0.000	5.00	25.547	16.61	554.4	0.0	1093.6
25.00		1.00	0.95	19.883	21.87	448.47	0.650	0.000	5.00	25.049	16.28	569.8	0.0	1072.1
30.00		1.00	0.98	20.661	22.73	447.98	0.650	0.000	5.00	24.550	15.96	580.3	0.0	1050.7
35.00		1.00	1.01	21.343	23.48	445.98	0.650	0.000	5.00	24.052	15.63	587.3	0.0	1029.2
40.00		1.00	1.04	21.951	24.15	442.83	0.650	0.000	5.00	23.554	15.31	591.5	0.0	1007.8
41.00	Bot - Section 2	1.00	1.05	22.065	24.27	442.08	0.650	0.000	1.00	4.651	3.02	117.4	0.0	199.0
45.00		1.00	1.07	22.502	24.75	438.77	0.650	0.000	4.00	18.659	12.13	480.3	0.0	1585.6
48.00	Top - Section 1	1.00	1.08	22.810	25.09	435.97	0.650	0.000	3.00	13.785	8.96	359.7	0.0	1171.2
50.00		1.00	1.09	23.007	25.31	440.15	0.650	0.000	2.00	9.091	5.91	239.3	0.0	388.8
55.00		1.00	1.12	23.473	25.82	434.80	0.650	0.000	5.00	22.378	14.55	600.9	0.0	957.1
60.00		1.00	1.14	23.907	26.30	428.93	0.650	0.000	5.00	21.880	14.22	598.4	0.0	935.6
65.00		1.00	1.16	24.313	26.74	422.60	0.650	0.000	5.00	21.382	13.90	594.7	0.0	914.2
70.00		1.00	1.17	24.696	27.17	415.87	0.650	0.000	5.00	20.884	13.57	590.0	0.0	892.7
75.00		1.00	1.19	25.057	27.56	408.79	0.650	0.000	5.00	20.386	13.25	584.4	0.0	871.3
80.00		1.00	1.21	25.400	27.94	401.40	0.650	0.000	5.00	19.888	12.93	577.9	0.0	849.8
81.00	Top - Section 2	1.00	1.21	25.466	28.01	399.88	0.650	0.000	1.00	3.918	2.55	114.1	0.0	167.4
85.00	Bot - Section 4	1.00	1.22	25.726	28.30	393.72	0.650	0.000	4.00	15.472	10.06	455.3	0.0	551.6
90.00		1.00	1.24	26.037	28.64	385.79	0.650	0.000	5.00	19.156	12.45	570.6	0.0	1356.3
91.00	Top - Section 3	1.00	1.24	26.098	28.71	384.18	0.650	0.000	1.00	3.771	2.45	112.6	0.0	267.0
95.00		1.00	1.25	26.336	28.97	383.13	0.650	0.000	4.00	14.887	9.68	448.5	0.0	530.6
100.00		1.00	1.27	26.621	29.28	374.79	0.650	0.000	5.00	18.160	11.80	553.1	0.0	647.1
105.00		1.00	1.28	26.896	29.59	366.24	0.650	0.000	5.00	17.662	11.48	543.4	0.0	629.3
110.00		1.00	1.29	27.161	29.88	357.51	0.650	0.000	5.00	17.164	11.16	533.3	0.0	611.4
115.00		1.00	1.30	27.416	30.16	348.61	0.650	0.000	5.00	16.666	10.83	522.7	0.0	593.5
120.00		1.00	1.32	27.663	30.43	339.56	0.650	0.000	5.00	16.168	10.51	511.7	0.0	575.6
125.00		1.00	1.33	27.902	30.69	330.35	0.650	0.000	5.00	15.670	10.19	500.2	0.0	557.7
130.00	Bot - Section 5	1.00	1.34	28.133	30.95	321.00	0.650	0.000	5.00	15.172	9.86	488.3	0.0	539.9
135.00	Top - Section 4	1.00	1.35	28.358	31.19	311.53	0.650	0.000	5.00	14.885	9.68	482.9	0.0	946.4
140.00		1.00	1.36	28.576	31.43	306.51	0.650	0.000	5.00	14.387	9.35	470.3	0.0	410.1
145.00		1.00	1.37	28.788	31.67	296.81	0.650	0.000	5.00	13.889	9.03	457.4	0.0	395.8
150.00		1.00	1.38	28.994	31.89	286.99	0.650	0.000	5.00	13.391	8.70	444.2	0.0	381.5
155.00	Appurtenance(s)	1.00	1.39	29.195	32.11	277.07	0.650	0.000	5.00	12.893	8.38	430.6	0.0	367.2
160.00		1.00	1.40	29.390	32.33	267.05	0.650	0.000	5.00	12.395	8.06	416.8	0.0	352.9
165.00	Appurtenance(s)	1.00	1.41	29.581	32.54	256.93	0.650	0.000	5.00	11.897	7.73	402.6	0.0	338.6
170.00		1.00	1.42	29.768	32.74	246.72	0.650	0.000	5.00	11.399	7.41	388.2	0.0	324.3
175.00	Appurtenance(s)	1.00	1.42	29.950	32.95	236.42	0.650	0.000	5.00	10.901	7.09	373.5	0.0	310.0
180.00	Top - Section 5	1.00	1.43	30.128	33.14	226.04	0.650	0.000	5.00	10.403	6.76	358.6	0.0	295.7
185.00		1.00	1.44	30.303	33.33	226.69	0.650	0.000	5.00	10.154	6.60	352.0	0.0	323.9
190.00		1.00	1.45	30.473	33.52	227.33	0.650	0.000	5.00	10.154	6.60	354.0	0.0	323.9
193.00	Appurtenance(s)	1.00	1.45	30.574	33.63	227.70	0.650	0.000	3.00	6.093	3.96	213.1	0.0	194.4
195.00	Appurtenance(s)	1.00	1.46	30.640	33.70	227.95	0.650	0.000	2.00	4.062	2.64	142.4	0.0	129.6
								Totals:	**195.00**			**19,895.4**		**29,550.2**

Discrete Appurtenance Forces

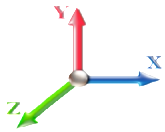
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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	195.00	1900MHz RRH	3	30.640	33.704	0.79	0.90	9.03	118.80	0.000	0.000	486.89	0.00	0.00
2	195.00	APXVSPP18-C-A20	3	30.640	33.704	0.75	0.90	17.97	153.90	0.000	0.000	969.22	0.00	0.00
3	195.00	800 Mhz	6	30.640	33.704	0.60	0.90	12.52	368.82	0.000	0.000	675.07	0.00	0.00
4	195.00	ACU-A20-N	4	30.640	33.704	0.71	0.90	0.40	3.60	0.000	0.000	21.47	0.00	0.00
5	195.00	Modified Platform + HR &	1	30.640	33.704	1.00	1.00	51.70	2021.40	0.000	0.000	2788.02	0.00	0.00
6	195.00	800 Mhz Filter	3	30.640	33.704	0.63	0.90	0.93	27.00	0.000	0.000	49.94	0.00	0.00
7	195.00	Commscope DT465B-2XR	3	30.640	33.704	0.75	0.90	20.39	156.60	0.000	0.000	1099.74	0.00	0.00
8	195.00	TD-RRH8x20-25	3	30.640	33.704	0.62	0.90	7.55	189.00	0.000	0.000	406.89	0.00	0.00
9	193.00	Collar Mount	1	30.574	33.631	1.00	1.00	5.00	315.00	0.000	0.000	269.05	0.00	0.00
10	175.00	DB-C1-12C-24AB-0Z	1	29.950	32.945	1.00	1.00	3.79	28.80	0.000	0.000	199.78	0.00	0.00
11	175.00	B13 RRH4X30-4R	3	29.950	32.945	0.70	0.80	4.56	154.44	0.000	0.000	240.47	0.00	0.00
12	175.00	B66A	3	29.950	32.945	0.66	0.80	5.00	153.36	0.000	0.000	263.49	0.00	0.00
13	175.00	LPA-80080/6CF	6	29.950	32.945	1.36	0.80	35.33	113.40	0.000	0.000	1862.47	0.00	0.00
14	175.00	JAHH-65B-R3B	6	29.950	32.945	0.66	0.80	36.29	341.82	0.000	0.000	1913.15	0.00	0.00
15	175.00	(3) mounting kit	1	29.950	32.945	1.00	1.00	5.00	315.00	0.000	0.000	263.56	0.00	0.00
16	175.00	Low Profile Platform	1	29.950	32.945	1.00	1.00	22.00	1350.00	0.000	0.000	1159.67	0.00	0.00
17	165.00	AM-X-CD-16-65-00T-RET	1	29.581	32.540	1.00	1.00	8.02	43.65	0.000	0.000	417.55	0.00	0.00
18	165.00	7770.00	6	29.581	32.540	0.58	0.80	19.27	189.00	0.000	0.000	1003.36	0.00	0.00
19	165.00	LGP2140X TMA	12	29.581	32.540	0.54	0.80	8.36	205.20	0.000	0.000	435.33	0.00	0.00
20	165.00	RRUS-11	6	29.581	32.540	0.57	0.80	8.59	275.40	0.000	0.000	447.13	0.00	0.00
21	165.00	Low Profile Platform	1	29.581	32.540	1.00	1.00	22.00	1350.00	0.000	0.000	1145.39	0.00	0.00
22	165.00	ABT-DF-DMADBH	1	29.581	32.540	1.00	1.00	0.05	0.99	0.000	0.000	2.60	0.00	0.00
23	165.00	DC6-48-60-18-8F	1	29.581	32.540	1.00	1.00	0.92	28.62	0.000	0.000	47.90	0.00	0.00
24	165.00	800 10764	2	29.581	32.540	0.72	0.80	8.47	73.44	0.000	0.000	440.83	0.00	0.00
25	155.00	Low Profile Platform	1	29.195	32.114	1.00	1.00	22.00	1350.00	0.000	0.000	1130.41	0.00	0.00
26	155.00	KRY 112 144/1	3	29.195	32.114	0.56	0.80	0.69	29.70	0.000	0.000	35.39	0.00	0.00
27	155.00	S20057A1	3	29.195	32.114	0.58	0.80	1.44	29.70	0.000	0.000	73.82	0.00	0.00
28	155.00	LNX-6565DS	3	29.195	32.114	0.64	0.80	22.00	137.16	0.000	0.000	1130.58	0.00	0.00
29	155.00	782 11056	3	29.195	32.114	0.70	0.80	0.58	14.31	0.000	0.000	30.04	0.00	0.00
30	155.00	APXV18-209014-CT2	3	29.195	32.114	0.59	0.80	6.36	50.49	0.000	0.000	326.69	0.00	0.00
							Totals:		**9,588.60**			**19,335.90**		

Total Applied Force Summary

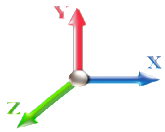
Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 15

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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		553.08	1336.63	0.00	0.00
10.00		542.90	1315.18	0.00	0.00
15.00		532.71	1293.73	0.00	0.00
20.00		554.42	1272.27	0.00	0.00
25.00		569.76	1250.82	0.00	0.00
30.00		580.28	1229.37	0.00	0.00
35.00		587.26	1207.92	0.00	0.00
40.00		591.50	1186.47	0.00	0.00
41.00		117.41	234.72	0.00	0.00
45.00		480.33	1728.58	0.00	0.00
48.00		359.72	1278.42	0.00	0.00
50.00		239.26	460.32	0.00	0.00
55.00		600.92	1135.78	0.00	0.00
60.00		598.40	1114.32	0.00	0.00
65.00		594.72	1092.87	0.00	0.00
70.00		590.00	1071.42	0.00	0.00
75.00		584.36	1049.97	0.00	0.00
80.00		577.88	1028.51	0.00	0.00
81.00		114.14	203.13	0.00	0.00
85.00		455.35	694.53	0.00	0.00
90.00		570.60	1534.96	0.00	0.00
91.00		112.60	302.70	0.00	0.00
95.00		448.50	673.52	0.00	0.00
100.00		553.06	825.81	0.00	0.00
105.00		543.45	807.93	0.00	0.00
110.00		533.32	790.05	0.00	0.00
115.00		522.72	772.18	0.00	0.00
120.00		511.66	754.30	0.00	0.00
125.00		500.18	736.42	0.00	0.00
130.00		488.30	718.55	0.00	0.00
135.00		482.90	1125.10	0.00	0.00
140.00		470.33	588.80	0.00	0.00
145.00		457.42	574.50	0.00	0.00
150.00		444.18	560.20	0.00	0.00
155.00	(16) attachments	3157.56	2157.26	0.00	0.00
160.00		416.76	475.44	0.00	0.00
165.00	(30) attachments	4342.71	2627.44	0.00	0.00
170.00		388.20	379.47	0.00	0.00
175.00	(21) attachments	6276.10	2821.99	0.00	0.00
180.00		358.57	312.89	0.00	0.00
185.00		352.01	341.09	0.00	0.00
190.00		353.99	341.09	0.00	0.00
193.00	(1) attachments	482.15	519.66	0.00	0.00
195.00	(26) attachments	6639.61	3175.56	0.00	0.00
	Totals:	**39,231.28**	**45,101.85**	**0.00**	**0.00**

Calculated Forces

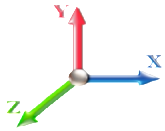
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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	-45.03	-39.31	0.00	-5482.1	0.00	5482.17	4628.91	2314.46	12221.1	6119.66	0.00	0.000	0.000	0.906
5.00	-43.57	-38.90	0.00	-5285.6	0.00	5285.63	4587.84	2293.92	11889.0	5953.37	0.10	-0.193	0.000	0.898
10.00	-42.12	-38.50	0.00	-5091.1	0.00	5091.13	4545.12	2272.56	11556.8	5787.00	0.41	-0.390	0.000	0.889
15.00	-40.70	-38.10	0.00	-4898.6	0.00	4898.64	4500.76	2250.38	11224.6	5620.67	0.93	-0.590	0.000	0.881
20.00	-39.30	-37.67	0.00	-4708.1	0.00	4708.15	4454.76	2227.38	10892.7	5454.49	1.66	-0.795	0.000	0.872
25.00	-37.92	-37.22	0.00	-4519.8	0.00	4519.80	4407.12	2203.56	10561.4	5288.58	2.60	-1.003	0.000	0.864
30.00	-36.56	-36.75	0.00	-4333.7	0.00	4333.70	4357.84	2178.92	10230.9	5123.07	3.76	-1.215	0.000	0.855
35.00	-35.23	-36.27	0.00	-4149.9	0.00	4149.93	4306.92	2153.46	9901.44	4958.08	5.15	-1.431	0.000	0.845
40.00	-33.98	-35.73	0.00	-3968.5	0.00	3968.57	4254.35	2127.17	9573.22	4793.73	6.77	-1.651	0.000	0.836
41.00	-33.68	-35.67	0.00	-3932.8	0.00	3932.85	4243.64	2121.82	9507.75	4760.94	7.12	-1.696	0.000	0.834
45.00	-31.87	-35.23	0.00	-3790.1	0.00	3790.17	4200.14	2100.07	9246.51	4630.13	8.62	-1.877	0.000	0.826
48.00	-30.53	-34.88	0.00	-3684.4	0.00	3684.49	4202.19	2101.09	9258.62	4636.19	9.84	-2.015	0.000	0.802
50.00	-29.98	-34.71	0.00	-3614.7	0.00	3614.73	4180.07	2090.03	9128.39	4570.98	10.71	-2.109	0.000	0.798
55.00	-28.74	-34.18	0.00	-3441.1	0.00	3441.17	4123.62	2061.81	8804.12	4408.60	13.03	-2.332	0.000	0.788
60.00	-27.52	-33.64	0.00	-3270.2	0.00	3270.27	4065.54	2032.77	8481.93	4247.27	15.60	-2.559	0.000	0.777
65.00	-26.32	-33.11	0.00	-3102.0	0.00	3102.05	4005.81	2002.90	8162.06	4087.10	18.40	-2.789	0.000	0.766
70.00	-25.14	-32.57	0.00	-2936.5	0.00	2936.52	3944.44	1972.22	7844.75	3928.21	21.45	-3.024	0.000	0.754
75.00	-23.99	-32.03	0.00	-2773.6	0.00	2773.69	3881.43	1940.71	7530.24	3770.72	24.74	-3.262	0.000	0.742
80.00	-22.92	-31.45	0.00	-2613.5	0.00	2613.55	3816.78	1908.39	7218.77	3614.75	28.28	-3.504	0.000	0.729
81.00	-22.66	-31.37	0.00	-2582.1	0.00	2582.11	3803.65	1901.82	7156.86	3583.75	29.02	-3.554	0.000	0.727
81.00	-22.66	-31.37	0.00	-2582.1	0.00	2582.11	2964.89	1482.44	5593.90	2801.11	29.02	-3.554	0.000	0.930
85.00	-21.86	-30.97	0.00	-2456.6	0.00	2456.63	2929.08	1464.54	5412.12	2710.08	32.08	-3.753	0.000	0.914
90.00	-20.27	-30.36	0.00	-2301.7	0.00	2301.79	2882.85	1441.42	5186.17	2596.94	36.17	-4.051	0.000	0.894
91.00	-19.90	-30.28	0.00	-2271.4	0.00	2271.43	2898.33	1449.17	5260.79	2634.30	37.03	-4.113	0.000	0.870
95.00	-19.12	-29.87	0.00	-2150.3	0.00	2150.33	2860.60	1430.30	5080.74	2544.15	40.57	-4.356	0.000	0.852
100.00	-18.19	-29.35	0.00	-2000.9	0.00	2000.99	2811.95	1405.98	4857.28	2432.25	45.29	-4.649	0.000	0.830
105.00	-17.28	-28.83	0.00	-1854.2	0.00	1854.25	2761.66	1380.83	4635.80	2321.34	50.31	-4.943	0.000	0.805
110.00	-16.39	-28.31	0.00	-1710.1	0.00	1710.12	2709.73	1354.87	4416.54	2211.55	55.64	-5.240	0.000	0.780
115.00	-15.53	-27.80	0.00	-1568.5	0.00	1568.56	2656.16	1328.08	4199.76	2103.00	61.28	-5.539	0.000	0.752
120.00	-14.69	-27.29	0.00	-1429.5	0.00	1429.57	2600.95	1300.48	3985.68	1995.80	67.23	-5.837	0.000	0.722
125.00	-13.87	-26.79	0.00	-1293.1	0.00	1293.11	2544.10	1272.05	3774.55	1890.08	73.49	-6.134	0.000	0.690
130.00	-13.07	-26.29	0.00	-1159.1	0.00	1159.16	2485.60	1242.80	3566.61	1785.96	80.07	-6.429	0.000	0.655
135.00	-11.88	-25.74	0.00	-1027.6	0.00	1027.69	1823.78	911.89	2575.19	1289.51	86.94	-6.720	0.000	0.804
140.00	-11.22	-25.27	0.00	-898.97	0.00	898.97	1784.40	892.20	2432.60	1218.11	94.12	-7.004	0.000	0.745
145.00	-10.57	-24.80	0.00	-772.63	0.00	772.63	1743.38	871.69	2291.70	1147.55	101.61	-7.329	0.000	0.680
150.00	-9.95	-24.34	0.00	-648.62	0.00	648.62	1700.71	850.36	2152.72	1077.96	109.43	-7.637	0.000	0.608
155.00	-8.14	-20.96	0.00	-526.93	0.00	526.93	1656.41	828.20	2015.90	1009.45	117.56	-7.922	0.000	0.528
160.00	-7.64	-20.51	0.00	-422.14	0.00	422.14	1610.46	805.23	1881.48	942.14	125.97	-8.181	0.000	0.453
165.00	-5.61	-15.86	0.00	-319.59	0.00	319.59	1562.88	781.44	1749.71	876.15	134.64	-8.409	0.000	0.369
170.00	-5.24	-15.43	0.00	-240.31	0.00	240.31	1513.65	756.82	1620.81	811.61	143.52	-8.605	0.000	0.300
175.00	-3.38	-8.81	0.00	-163.16	0.00	163.16	1462.77	731.39	1495.04	748.63	152.59	-8.765	0.000	0.220
180.00	-3.11	-8.41	0.00	-119.11	0.00	119.11	1400.09	700.04	1362.73	682.38	161.81	-8.895	0.000	0.177
180.00	-3.11	-8.41	0.00	-119.11	0.00	119.11	1571.64	785.82	1525.71	763.99	161.81	-8.895	0.000	0.158
185.00	-2.81	-8.02	0.00	-77.04	0.00	77.04	1571.64	785.82	1525.71	763.99	171.14	-8.999	0.000	0.103
190.00	-2.53	-7.61	0.00	-36.96	0.00	36.96	1571.64	785.82	1525.71	763.99	180.56	-9.053	0.000	0.050
193.00	-2.09	-7.06	0.00	-14.11	0.00	14.11	1571.64	785.82	1525.71	763.99	186.23	-9.067	0.000	0.020
195.00	0.00	-6.64	0.00	0.00	0.00	0.00	1571.64	785.82	1525.71	763.99	190.01	-9.070	0.000	0.000

Calculated Forces

Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 17

Wind Loading - Shaft

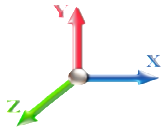
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	3.308	3.64	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	3.308	3.64	0.00	1.200	1.656	5.00	28.421	34.10	124.1	674.1	2218.0
10.00		1.00	0.85	3.308	3.64	0.00	1.200	1.775	5.00	28.022	33.63	122.3	710.7	2226.0
15.00		1.00	0.85	3.308	3.64	0.00	1.200	1.848	5.00	27.585	33.10	120.4	727.3	2214.0
20.00		1.00	0.90	3.509	3.86	0.00	1.200	1.902	5.00	27.132	32.56	125.7	735.1	2193.2
25.00		1.00	0.95	3.678	4.05	0.00	1.200	1.945	5.00	26.670	32.00	129.5	737.9	2167.4
30.00		1.00	0.98	3.822	4.20	0.00	1.200	1.981	5.00	26.201	31.44	132.2	737.3	2138.2
35.00		1.00	1.01	3.948	4.34	0.00	1.200	2.012	5.00	25.729	30.87	134.1	734.3	2106.6
40.00		1.00	1.04	4.061	4.47	0.00	1.200	2.039	5.00	25.253	30.30	135.4	729.4	2073.2
41.00	Bot - Section 2	1.00	1.05	4.082	4.49	0.00	1.200	2.044	1.00	4.992	5.99	26.9	145.7	411.0
45.00		1.00	1.07	4.163	4.58	0.00	1.200	2.063	4.00	20.035	24.04	110.1	586.3	2700.5
48.00	Top - Section 1	1.00	1.08	4.220	4.64	0.00	1.200	2.076	3.00	14.823	17.79	82.6	437.2	1998.8
50.00		1.00	1.09	4.256	4.68	0.00	1.200	2.085	2.00	9.785	11.74	55.0	290.2	808.7
55.00		1.00	1.12	4.342	4.78	0.00	1.200	2.105	5.00	24.132	28.96	138.3	717.2	1993.3
60.00		1.00	1.14	4.423	4.86	0.00	1.200	2.123	5.00	23.649	28.38	138.1	708.1	1955.6
65.00		1.00	1.16	4.498	4.95	0.00	1.200	2.140	5.00	23.165	27.80	137.5	698.2	1917.1
70.00		1.00	1.17	4.569	5.03	0.00	1.200	2.156	5.00	22.681	27.22	136.8	687.7	1878.0
75.00		1.00	1.19	4.635	5.10	0.00	1.200	2.171	5.00	22.195	26.63	135.8	676.6	1838.4
80.00		1.00	1.21	4.699	5.17	0.00	1.200	2.185	5.00	21.709	26.05	134.6	665.1	1798.2
81.00	Top - Section 2	1.00	1.21	4.711	5.18	0.00	1.200	2.188	1.00	4.282	5.14	26.6	132.5	355.7
85.00	Bot - Section 4	1.00	1.22	4.759	5.24	0.00	1.200	2.198	4.00	16.938	20.33	106.4	522.5	1257.9
90.00		1.00	1.24	4.817	5.30	0.00	1.200	2.211	5.00	20.999	25.20	133.5	649.4	2457.7
91.00	Top - Section 3	1.00	1.24	4.828	5.31	0.00	1.200	2.214	1.00	4.140	4.97	26.4	129.4	485.3
95.00		1.00	1.25	4.872	5.36	0.00	1.200	2.223	4.00	16.369	19.64	105.3	509.3	1216.8
100.00		1.00	1.27	4.925	5.42	0.00	1.200	2.234	5.00	20.022	24.03	130.2	623.6	1486.4
105.00		1.00	1.28	4.976	5.47	0.00	1.200	2.245	5.00	19.533	23.44	128.3	610.2	1449.2
110.00		1.00	1.29	5.025	5.53	0.00	1.200	2.256	5.00	19.044	22.85	126.3	596.6	1411.8
115.00		1.00	1.30	5.072	5.58	0.00	1.200	2.266	5.00	18.554	22.27	124.2	582.7	1374.0
120.00		1.00	1.32	5.117	5.63	0.00	1.200	2.276	5.00	18.064	21.68	122.0	568.5	1336.0
125.00		1.00	1.33	5.162	5.68	0.00	1.200	2.285	5.00	17.574	21.09	119.7	554.1	1297.8
130.00	Bot - Section 5	1.00	1.34	5.204	5.72	0.00	1.200	2.294	5.00	17.083	20.50	117.4	539.5	1259.3
135.00	Top - Section 4	1.00	1.35	5.246	5.77	0.00	1.200	2.303	5.00	16.804	20.17	116.4	531.9	1793.8
140.00		1.00	1.36	5.286	5.81	0.00	1.200	2.311	5.00	16.313	19.58	113.8	516.9	1063.7
145.00		1.00	1.37	5.325	5.86	0.00	1.200	2.319	5.00	15.822	18.99	111.2	501.7	1029.5
150.00		1.00	1.38	5.364	5.90	0.00	1.200	2.327	5.00	15.331	18.40	108.5	486.4	995.1
155.00	Appurtenance(s)	1.00	1.39	5.401	5.94	0.00	1.200	2.335	5.00	14.839	17.81	105.8	470.9	960.5
160.00		1.00	1.40	5.437	5.98	0.00	1.200	2.342	5.00	14.347	17.22	103.0	455.2	925.8
165.00	Appurtenance(s)	1.00	1.41	5.472	6.02	0.00	1.200	2.349	5.00	13.855	16.63	100.1	439.4	890.9
170.00		1.00	1.42	5.507	6.06	0.00	1.200	2.356	5.00	13.363	16.04	97.1	423.4	855.8
175.00	Appurtenance(s)	1.00	1.42	5.541	6.09	0.00	1.200	2.363	5.00	12.871	15.44	94.1	407.3	820.7
180.00	Top - Section 5	1.00	1.43	5.574	6.13	0.00	1.200	2.370	5.00	12.378	14.85	91.1	391.1	785.4
185.00		1.00	1.44	5.606	6.17	0.00	1.200	2.376	5.00	12.134	14.56	89.8	392.2	824.1
190.00		1.00	1.45	5.637	6.20	0.00	1.200	2.383	5.00	12.140	14.57	90.3	393.4	825.3
193.00	Appurtenance(s)	1.00	1.45	5.656	6.22	0.00	1.200	2.386	3.00	7.286	8.74	54.4	236.4	495.6
195.00	Appurtenance(s)	1.00	1.46	5.668	6.24	0.00	1.200	2.389	2.00	4.858	5.83	36.3	157.8	330.6
								Totals:	**195.00**			**4,697.6**		**62,620.7**

Discrete Appurtenance Forces

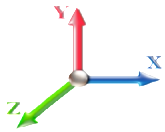
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	195.00	1900MHz RRH	3	5.668	6.235	0.79	0.90	13.55	513.06	0.000	0.000	84.48	0.00	0.00
2	195.00	APXVSPP18-C-A20	3	5.668	6.235	0.75	0.90	26.54	766.49	0.000	0.000	165.49	0.00	0.00
3	195.00	800 Mhz	6	5.668	6.235	0.60	0.90	19.03	1079.18	0.000	0.000	118.62	0.00	0.00
4	195.00	ACU-A20-N	4	5.668	6.235	0.71	0.90	1.55	23.12	0.000	0.000	9.68	0.00	0.00
5	195.00	Modified Platform + HR &	1	5.668	6.235	1.00	1.00	104.06	4910.36	0.000	0.000	648.85	0.00	0.00
6	195.00	800 Mhz Filter	3	5.668	6.235	0.63	0.90	2.38	88.10	0.000	0.000	14.82	0.00	0.00
7	195.00	Commscope DT465B-2XR	3	5.668	6.235	0.75	0.90	24.60	1215.08	0.000	0.000	153.37	0.00	0.00
8	195.00	TD-RRH8x20-25	3	5.668	6.235	0.62	0.90	9.68	741.27	0.000	0.000	60.34	0.00	0.00
9	193.00	Collar Mount	1	5.656	6.222	1.00	1.00	9.77	720.91	0.000	0.000	60.80	0.00	0.00
10	175.00	DB-C1-12C-24AB-0Z	1	5.541	6.095	1.00	1.00	5.08	168.72	0.000	0.000	30.98	0.00	0.00
11	175.00	B13 RRH4X30-4R	3	5.541	6.095	0.70	0.80	6.31	413.06	0.000	0.000	38.45	0.00	0.00
12	175.00	B66A	3	5.541	6.095	0.66	0.80	6.91	576.32	0.000	0.000	42.09	0.00	0.00
13	175.00	LPA-80080/6CF	6	5.541	6.095	1.36	0.80	48.80	1846.02	0.000	0.000	297.41	0.00	0.00
14	175.00	JAHH-65B-R3B	6	5.541	6.095	0.66	0.80	43.71	2444.22	0.000	0.000	266.40	0.00	0.00
15	175.00	(3) mounting kit	1	5.541	6.095	1.00	1.00	9.73	717.00	0.000	0.000	59.28	0.00	0.00
16	175.00	Low Profile Platform	1	5.541	6.095	1.00	1.00	45.91	3272.33	0.000	0.000	279.83	0.00	0.00
17	165.00	AM-X-CD-16-65-00T-RET	1	5.472	6.020	1.00	1.00	11.78	230.14	0.000	0.000	70.91	0.00	0.00
18	165.00	7770.00	6	5.472	6.020	0.58	0.80	24.41	1431.14	0.000	0.000	146.94	0.00	0.00
19	165.00	LGP2140X TMA	12	5.472	6.020	0.54	0.80	15.76	590.12	0.000	0.000	94.84	0.00	0.00
20	165.00	RRUS-11	6	5.472	6.020	0.57	0.80	11.49	854.92	0.000	0.000	69.19	0.00	0.00
21	165.00	Low Profile Platform	1	5.472	6.020	1.00	1.00	45.77	3261.93	0.000	0.000	275.54	0.00	0.00
22	165.00	ABT-DF-DMADBH	1	5.472	6.020	1.00	1.00	0.31	3.62	0.000	0.000	1.86	0.00	0.00
23	165.00	DC6-48-60-18-8F	1	5.472	6.020	1.00	1.00	1.51	103.68	0.000	0.000	9.09	0.00	0.00
24	165.00	800 10764	2	5.472	6.020	0.72	0.80	12.62	368.21	0.000	0.000	75.97	0.00	0.00
25	155.00	Low Profile Platform	1	5.401	5.941	1.00	1.00	45.63	3250.95	0.000	0.000	271.06	0.00	0.00
26	155.00	KRY 112 144/1	3	5.401	5.941	0.56	0.80	1.76	73.57	0.000	0.000	10.44	0.00	0.00
27	155.00	S20057A1	3	5.401	5.941	0.58	0.80	3.07	99.15	0.000	0.000	18.25	0.00	0.00
28	155.00	LNX-6565DS	3	5.401	5.941	0.64	0.80	30.37	907.27	0.000	0.000	180.40	0.00	0.00
29	155.00	782 11056	3	5.401	5.941	0.70	0.80	1.71	48.89	0.000	0.000	10.13	0.00	0.00
30	155.00	APXV18-209014-CT2	3	5.401	5.941	0.59	0.80	8.64	461.22	0.000	0.000	51.33	0.00	0.00
							Totals:		**31,180.04**			**3,616.86**		

Total Applied Force Summary

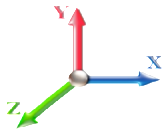
Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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		124.08	2456.26	0.00	0.00
10.00		122.34	2464.25	0.00	0.00
15.00		120.43	2452.26	0.00	0.00
20.00		125.69	2431.48	0.00	0.00
25.00		129.49	2405.63	0.00	0.00
30.00		132.19	2376.43	0.00	0.00
35.00		134.09	2344.82	0.00	0.00
40.00		135.36	2311.39	0.00	0.00
41.00		26.90	458.62	0.00	0.00
45.00		110.09	2891.07	0.00	0.00
48.00		82.57	2141.71	0.00	0.00
50.00		54.98	903.97	0.00	0.00
55.00		138.32	2231.58	0.00	0.00
60.00		138.06	2193.83	0.00	0.00
65.00		137.53	2155.35	0.00	0.00
70.00		136.77	2116.25	0.00	0.00
75.00		135.80	2076.59	0.00	0.00
80.00		134.65	2036.44	0.00	0.00
81.00		26.63	403.38	0.00	0.00
85.00		106.40	1448.51	0.00	0.00
90.00		133.51	2695.97	0.00	0.00
91.00		26.39	532.97	0.00	0.00
95.00		105.26	1407.34	0.00	0.00
100.00		130.16	1724.68	0.00	0.00
105.00		128.29	1687.48	0.00	0.00
110.00		126.31	1649.99	0.00	0.00
115.00		124.22	1612.24	0.00	0.00
120.00		122.03	1574.24	0.00	0.00
125.00		119.74	1536.01	0.00	0.00
130.00		117.36	1497.55	0.00	0.00
135.00		116.36	2032.02	0.00	0.00
140.00		113.83	1301.97	0.00	0.00
145.00		111.22	1267.73	0.00	0.00
150.00		108.54	1233.31	0.00	0.00
155.00	(16) attachments	647.40	6039.76	0.00	0.00
160.00		102.97	1089.11	0.00	0.00
165.00	(30) attachments	844.42	7897.99	0.00	0.00
170.00		97.13	929.36	0.00	0.00
175.00	(21) attachments	1108.57	10331.86	0.00	0.00
180.00		91.07	808.25	0.00	0.00
185.00		89.79	847.03	0.00	0.00
190.00		90.34	848.17	0.00	0.00
193.00	(1) attachments	115.20	1230.21	0.00	0.00
195.00	(26) attachments	1292.01	9676.37	0.00	0.00
	Totals:	**8,314.48**	**101,751.46**	**0.00**	**0.00**

Calculated Forces

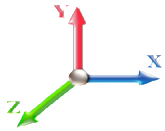
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	-101.7	-8.35	0.00	-1234.6	0.00	1234.67	4628.91	2314.46	12221.1	6119.66	0.00	0.000	0.000	0.224
5.00	-99.29	-8.30	0.00	-1192.9	0.00	1192.91	4587.84	2293.92	11889.0	5953.37	0.02	-0.044	0.000	0.222
10.00	-96.82	-8.26	0.00	-1151.3	0.00	1151.38	4545.12	2272.56	11556.8	5787.00	0.09	-0.088	0.000	0.220
15.00	-94.36	-8.21	0.00	-1110.1	0.00	1110.11	4500.76	2250.38	11224.6	5620.67	0.21	-0.133	0.000	0.218
20.00	-91.92	-8.15	0.00	-1069.0	0.00	1069.08	4454.76	2227.38	10892.7	5454.49	0.37	-0.180	0.000	0.217
25.00	-89.51	-8.09	0.00	-1028.3	0.00	1028.34	4407.12	2203.56	10561.4	5288.58	0.59	-0.227	0.000	0.215
30.00	-87.12	-8.02	0.00	-987.92	0.00	987.92	4357.84	2178.92	10230.9	5123.07	0.85	-0.275	0.000	0.213
35.00	-84.77	-7.94	0.00	-947.83	0.00	947.83	4306.92	2153.46	9901.44	4958.08	1.17	-0.325	0.000	0.211
40.00	-82.46	-7.84	0.00	-908.11	0.00	908.11	4254.35	2127.17	9573.22	4793.73	1.53	-0.375	0.000	0.209
41.00	-82.00	-7.85	0.00	-900.28	0.00	900.28	4243.64	2121.82	9507.75	4760.94	1.61	-0.385	0.000	0.208
45.00	-79.10	-7.77	0.00	-868.90	0.00	868.90	4200.14	2100.07	9246.51	4630.13	1.95	-0.427	0.000	0.207
48.00	-76.96	-7.70	0.00	-845.60	0.00	845.60	4202.19	2101.09	9258.62	4636.19	2.23	-0.458	0.000	0.201
50.00	-76.05	-7.69	0.00	-830.20	0.00	830.20	4180.07	2090.03	9128.39	4570.98	2.43	-0.480	0.000	0.200
55.00	-73.81	-7.60	0.00	-791.76	0.00	791.76	4123.62	2061.81	8804.12	4408.60	2.96	-0.531	0.000	0.198
60.00	-71.61	-7.50	0.00	-753.78	0.00	753.78	4065.54	2032.77	8481.93	4247.27	3.54	-0.583	0.000	0.195
65.00	-69.45	-7.41	0.00	-716.27	0.00	716.27	4005.81	2002.90	8162.06	4087.10	4.18	-0.637	0.000	0.193
70.00	-67.33	-7.31	0.00	-679.23	0.00	679.23	3944.44	1972.22	7844.75	3928.21	4.88	-0.691	0.000	0.190
75.00	-65.25	-7.21	0.00	-642.68	0.00	642.68	3881.43	1940.71	7530.24	3770.72	5.63	-0.746	0.000	0.187
80.00	-63.21	-7.09	0.00	-606.62	0.00	606.62	3816.78	1908.39	7218.77	3614.75	6.44	-0.802	0.000	0.184
81.00	-62.80	-7.09	0.00	-599.53	0.00	599.53	3803.65	1901.82	7156.86	3583.75	6.61	-0.814	0.000	0.184
81.00	-62.80	-7.09	0.00	-599.53	0.00	599.53	2964.89	1482.44	5593.90	2801.11	6.61	-0.814	0.000	0.235
85.00	-61.35	-7.02	0.00	-571.19	0.00	571.19	2929.08	1464.54	5412.12	2710.08	7.31	-0.860	0.000	0.232
90.00	-58.65	-6.89	0.00	-536.08	0.00	536.08	2882.85	1441.42	5186.17	2596.94	8.25	-0.929	0.000	0.227
91.00	-58.11	-6.89	0.00	-529.20	0.00	529.20	2898.33	1449.17	5260.79	2634.30	8.45	-0.944	0.000	0.221
95.00	-56.70	-6.82	0.00	-501.64	0.00	501.64	2860.60	1430.30	5080.74	2544.15	9.26	-1.000	0.000	0.217
100.00	-54.97	-6.73	0.00	-467.53	0.00	467.53	2811.95	1405.98	4857.28	2432.25	10.35	-1.069	0.000	0.212
105.00	-53.28	-6.63	0.00	-433.90	0.00	433.90	2761.66	1380.83	4635.80	2321.34	11.50	-1.138	0.000	0.206
110.00	-51.62	-6.53	0.00	-400.75	0.00	400.75	2709.73	1354.87	4416.54	2211.55	12.73	-1.207	0.000	0.200
115.00	-50.01	-6.44	0.00	-368.08	0.00	368.08	2656.16	1328.08	4199.76	2103.00	14.03	-1.277	0.000	0.194
120.00	-48.43	-6.34	0.00	-335.91	0.00	335.91	2600.95	1300.48	3985.68	1995.80	15.41	-1.347	0.000	0.187
125.00	-46.89	-6.24	0.00	-304.23	0.00	304.23	2544.10	1272.05	3774.55	1890.08	16.86	-1.417	0.000	0.179
130.00	-45.39	-6.14	0.00	-273.04	0.00	273.04	2485.60	1242.80	3566.61	1785.96	18.38	-1.486	0.000	0.171
135.00	-43.35	-6.02	0.00	-242.37	0.00	242.37	1823.78	911.89	2575.19	1289.51	19.97	-1.555	0.000	0.212
140.00	-42.05	-5.92	0.00	-212.28	0.00	212.28	1784.40	892.20	2432.60	1218.11	21.64	-1.622	0.000	0.198
145.00	-40.77	-5.83	0.00	-182.68	0.00	182.68	1743.38	871.69	2291.70	1147.55	23.38	-1.699	0.000	0.183
150.00	-39.54	-5.73	0.00	-153.55	0.00	153.55	1700.71	850.36	2152.72	1077.96	25.19	-1.772	0.000	0.166
155.00	-33.52	-4.93	0.00	-124.91	0.00	124.91	1656.41	828.20	2015.90	1009.45	27.09	-1.839	0.000	0.144
160.00	-32.43	-4.82	0.00	-100.27	0.00	100.27	1610.46	805.23	1881.48	942.14	29.05	-1.900	0.000	0.127
165.00	-24.56	-3.73	0.00	-76.16	0.00	76.16	1562.88	781.44	1749.71	876.15	31.07	-1.955	0.000	0.103
170.00	-23.63	-3.62	0.00	-57.49	0.00	57.49	1513.65	756.82	1620.81	811.61	33.14	-2.002	0.000	0.086
175.00	-13.34	-2.16	0.00	-39.37	0.00	39.37	1462.77	731.39	1495.04	748.63	35.26	-2.040	0.000	0.062
180.00	-12.54	-2.04	0.00	-28.58	0.00	28.58	1400.09	700.04	1362.73	682.38	37.41	-2.071	0.000	0.051
180.00	-12.54	-2.04	0.00	-28.58	0.00	28.58	1571.64	785.82	1525.71	763.99	37.41	-2.071	0.000	0.045
185.00	-11.69	-1.93	0.00	-18.36	0.00	18.36	1571.64	785.82	1525.71	763.99	39.59	-2.096	0.000	0.031
190.00	-10.85	-1.81	0.00	-8.72	0.00	8.72	1571.64	785.82	1525.71	763.99	41.80	-2.109	0.000	0.018
193.00	-9.62	-1.65	0.00	-3.30	0.00	3.30	1571.64	785.82	1525.71	763.99	43.12	-2.112	0.000	0.010
195.00	0.00	-1.29	0.00	0.00	0.00	0.00	1571.64	785.82	1525.71	763.99	44.01	-2.113	0.000	0.000

Calculated Forces

Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

Wind Loading - Shaft

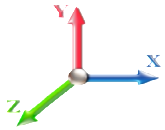
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	301.92	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	296.41	0.650	0.000	5.00	27.041	17.58	143.9	0.0	1286.6
10.00		1.00	0.85	7.442	8.19	290.90	0.650	0.000	5.00	26.543	17.25	141.2	0.0	1262.8
15.00		1.00	0.85	7.442	8.19	285.39	0.650	0.000	5.00	26.045	16.93	138.6	0.0	1238.9
20.00		1.00	0.90	7.896	8.69	288.29	0.650	0.000	5.00	25.547	16.61	144.2	0.0	1215.1
25.00		1.00	0.95	8.276	9.10	289.33	0.650	0.000	5.00	25.049	16.28	148.2	0.0	1191.3
30.00		1.00	0.98	8.600	9.46	289.02	0.650	0.000	5.00	24.550	15.96	151.0	0.0	1167.4
35.00		1.00	1.01	8.883	9.77	287.73	0.650	0.000	5.00	24.052	15.63	152.8	0.0	1143.6
40.00		1.00	1.04	9.137	10.05	285.69	0.650	0.000	5.00	23.554	15.31	153.9	0.0	1119.8
41.00	Bot - Section 2	1.00	1.05	9.184	10.10	285.21	0.650	0.000	1.00	4.651	3.02	30.5	0.0	221.1
45.00		1.00	1.07	9.366	10.30	283.08	0.650	0.000	4.00	18.659	12.13	125.0	0.0	1761.8
48.00	Top - Section 1	1.00	1.08	9.494	10.44	281.27	0.650	0.000	3.00	13.785	8.96	93.6	0.0	1301.3
50.00		1.00	1.09	9.576	10.53	283.97	0.650	0.000	2.00	9.091	5.91	62.2	0.0	432.1
55.00		1.00	1.12	9.770	10.75	280.52	0.650	0.000	5.00	22.378	14.55	156.3	0.0	1063.4
60.00		1.00	1.14	9.951	10.95	276.73	0.650	0.000	5.00	21.880	14.22	155.7	0.0	1039.6
65.00		1.00	1.16	10.120	11.13	272.64	0.650	0.000	5.00	21.382	13.90	154.7	0.0	1015.8
70.00		1.00	1.17	10.279	11.31	268.30	0.650	0.000	5.00	20.884	13.57	153.5	0.0	991.9
75.00		1.00	1.19	10.430	11.47	263.74	0.650	0.000	5.00	20.386	13.25	152.0	0.0	968.1
80.00		1.00	1.21	10.572	11.63	258.97	0.650	0.000	5.00	19.888	12.93	150.3	0.0	944.3
81.00	Top - Section 2	1.00	1.21	10.600	11.66	257.99	0.650	0.000	1.00	3.918	2.55	29.7	0.0	186.0
85.00	Bot - Section 4	1.00	1.22	10.708	11.78	254.01	0.650	0.000	4.00	15.472	10.06	118.5	0.0	612.9
90.00		1.00	1.24	10.838	11.92	248.90	0.650	0.000	5.00	19.156	12.45	148.4	0.0	1507.0
91.00	Top - Section 3	1.00	1.24	10.863	11.95	247.86	0.650	0.000	1.00	3.771	2.45	29.3	0.0	296.6
95.00		1.00	1.25	10.962	12.06	247.18	0.650	0.000	4.00	14.887	9.68	116.7	0.0	589.5
100.00		1.00	1.27	11.081	12.19	241.80	0.650	0.000	5.00	18.160	11.80	143.9	0.0	719.0
105.00		1.00	1.28	11.195	12.31	236.29	0.650	0.000	5.00	17.662	11.48	141.4	0.0	699.2
110.00		1.00	1.29	11.305	12.44	230.65	0.650	0.000	5.00	17.164	11.16	138.7	0.0	679.3
115.00		1.00	1.30	11.412	12.55	224.91	0.650	0.000	5.00	16.666	10.83	136.0	0.0	659.4
120.00		1.00	1.32	11.514	12.67	219.07	0.650	0.000	5.00	16.168	10.51	133.1	0.0	639.6
125.00		1.00	1.33	11.614	12.78	213.13	0.650	0.000	5.00	15.670	10.19	130.1	0.0	619.7
130.00	Bot - Section 5	1.00	1.34	11.710	12.88	207.10	0.650	0.000	5.00	15.172	9.86	127.0	0.0	599.9
135.00	Top - Section 4	1.00	1.35	11.803	12.98	200.99	0.650	0.000	5.00	14.885	9.68	125.6	0.0	1051.6
140.00		1.00	1.36	11.894	13.08	197.75	0.650	0.000	5.00	14.387	9.35	122.4	0.0	455.7
145.00		1.00	1.37	11.982	13.18	191.49	0.650	0.000	5.00	13.889	9.03	119.0	0.0	439.8
150.00		1.00	1.38	12.068	13.27	185.16	0.650	0.000	5.00	13.391	8.70	115.6	0.0	423.9
155.00	Appurtenance(s)	1.00	1.39	12.152	13.37	178.76	0.650	0.000	5.00	12.893	8.38	112.0	0.0	408.0
160.00		1.00	1.40	12.233	13.46	172.29	0.650	0.000	5.00	12.395	8.06	108.4	0.0	392.1
165.00	Appurtenance(s)	1.00	1.41	12.313	13.54	165.76	0.650	0.000	5.00	11.897	7.73	104.7	0.0	376.2
170.00		1.00	1.42	12.390	13.63	159.18	0.650	0.000	5.00	11.399	7.41	101.0	0.0	360.4
175.00	Appurtenance(s)	1.00	1.42	12.466	13.71	152.53	0.650	0.000	5.00	10.901	7.09	97.2	0.0	344.5
180.00	Top - Section 5	1.00	1.43	12.540	13.79	145.83	0.650	0.000	5.00	10.403	6.76	93.3	0.0	328.6
185.00		1.00	1.44	12.613	13.87	146.25	0.650	0.000	5.00	10.154	6.60	91.6	0.0	359.9
190.00		1.00	1.45	12.684	13.95	146.66	0.650	0.000	5.00	10.154	6.60	92.1	0.0	359.9
193.00	Appurtenance(s)	1.00	1.45	12.726	14.00	146.91	0.650	0.000	3.00	6.093	3.96	55.4	0.0	215.9
195.00	Appurtenance(s)	1.00	1.46	12.753	14.03	147.07	0.650	0.000	2.00	4.062	2.64	37.0	0.0	144.0
								Totals:	**195.00**			**5,175.7**		**32,833.6**

Discrete Appurtenance Forces

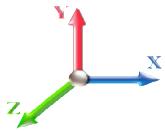
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	195.00	1900MHz RRH	3	12.753	14.029	0.79	0.90	9.03	132.00	0.000	0.000	126.66	0.00	0.00
2	195.00	APXVSPP18-C-A20	3	12.753	14.029	0.75	0.90	17.97	171.00	0.000	0.000	252.14	0.00	0.00
3	195.00	800 Mhz	6	12.753	14.029	0.60	0.90	12.52	409.80	0.000	0.000	175.62	0.00	0.00
4	195.00	ACU-A20-N	4	12.753	14.029	0.71	0.90	0.40	4.00	0.000	0.000	5.59	0.00	0.00
5	195.00	Modified Platform + HR &	1	12.753	14.029	1.00	1.00	51.70	2246.00	0.000	0.000	725.29	0.00	0.00
6	195.00	800 Mhz Filter	3	12.753	14.029	0.63	0.90	0.93	30.00	0.000	0.000	12.99	0.00	0.00
7	195.00	Commscope DT465B-2XR	3	12.753	14.029	0.75	0.90	20.39	174.00	0.000	0.000	286.09	0.00	0.00
8	195.00	TD-RRH8x20-25	3	12.753	14.029	0.62	0.90	7.55	210.00	0.000	0.000	105.85	0.00	0.00
9	193.00	Collar Mount	1	12.726	13.998	1.00	1.00	5.00	350.00	0.000	0.000	69.99	0.00	0.00
10	175.00	DB-C1-12C-24AB-0Z	1	12.466	13.713	1.00	1.00	3.79	32.00	0.000	0.000	51.97	0.00	0.00
11	175.00	B13 RRH4X30-4R	3	12.466	13.713	0.70	0.80	4.56	171.60	0.000	0.000	62.56	0.00	0.00
12	175.00	B66A	3	12.466	13.713	0.66	0.80	5.00	170.40	0.000	0.000	68.55	0.00	0.00
13	175.00	LPA-80080/6CF	6	12.466	13.713	1.36	0.80	35.33	126.00	0.000	0.000	484.51	0.00	0.00
14	175.00	JAHH-65B-R3B	6	12.466	13.713	0.66	0.80	36.29	379.80	0.000	0.000	497.70	0.00	0.00
15	175.00	(3) mounting kit	1	12.466	13.713	1.00	1.00	5.00	350.00	0.000	0.000	68.56	0.00	0.00
16	175.00	Low Profile Platform	1	12.466	13.713	1.00	1.00	22.00	1500.00	0.000	0.000	301.68	0.00	0.00
17	165.00	AM-X-CD-16-65-00T-RET	1	12.313	13.544	1.00	1.00	8.02	48.50	0.000	0.000	108.62	0.00	0.00
18	165.00	7770.00	6	12.313	13.544	0.58	0.80	19.27	210.00	0.000	0.000	261.02	0.00	0.00
19	165.00	LGP2140X TMA	12	12.313	13.544	0.54	0.80	8.36	228.00	0.000	0.000	113.25	0.00	0.00
20	165.00	RRUS-11	6	12.313	13.544	0.57	0.80	8.59	306.00	0.000	0.000	116.32	0.00	0.00
21	165.00	Low Profile Platform	1	12.313	13.544	1.00	1.00	22.00	1500.00	0.000	0.000	297.97	0.00	0.00
22	165.00	ABT-DF-DMADBH	1	12.313	13.544	1.00	1.00	0.05	1.10	0.000	0.000	0.68	0.00	0.00
23	165.00	DC6-48-60-18-8F	1	12.313	13.544	1.00	1.00	0.92	31.80	0.000	0.000	12.46	0.00	0.00
24	165.00	800 10764	2	12.313	13.544	0.72	0.80	8.47	81.60	0.000	0.000	114.68	0.00	0.00
25	155.00	Low Profile Platform	1	12.152	13.367	1.00	1.00	22.00	1500.00	0.000	0.000	294.07	0.00	0.00
26	155.00	KRY 112 144/1	3	12.152	13.367	0.56	0.80	0.69	33.00	0.000	0.000	9.21	0.00	0.00
27	155.00	S20057A1	3	12.152	13.367	0.58	0.80	1.44	33.00	0.000	0.000	19.20	0.00	0.00
28	155.00	LNX-6565DS	3	12.152	13.367	0.64	0.80	22.00	152.40	0.000	0.000	294.12	0.00	0.00
29	155.00	782 11056	3	12.152	13.367	0.70	0.80	0.58	15.90	0.000	0.000	7.81	0.00	0.00
30	155.00	APXV18-209014-CT2	3	12.152	13.367	0.59	0.80	6.36	56.10	0.000	0.000	84.99	0.00	0.00
							Totals:		**10,654.00**			**5,030.15**		

Total Applied Force Summary

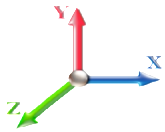
Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 25

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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		143.88	1485.15	0.00	0.00
10.00		141.23	1461.31	0.00	0.00
15.00		138.58	1437.47	0.00	0.00
20.00		144.23	1413.64	0.00	0.00
25.00		148.22	1389.80	0.00	0.00
30.00		150.96	1365.97	0.00	0.00
35.00		152.77	1342.13	0.00	0.00
40.00		153.88	1318.29	0.00	0.00
41.00		30.54	260.80	0.00	0.00
45.00		124.96	1920.65	0.00	0.00
48.00		93.58	1420.46	0.00	0.00
50.00		62.24	511.46	0.00	0.00
55.00		156.33	1261.97	0.00	0.00
60.00		155.67	1238.14	0.00	0.00
65.00		154.71	1214.30	0.00	0.00
70.00		153.49	1190.47	0.00	0.00
75.00		152.02	1166.63	0.00	0.00
80.00		150.33	1142.79	0.00	0.00
81.00		29.69	225.70	0.00	0.00
85.00		118.46	771.70	0.00	0.00
90.00		148.44	1705.51	0.00	0.00
91.00		29.29	336.33	0.00	0.00
95.00		116.68	748.35	0.00	0.00
100.00		143.88	917.57	0.00	0.00
105.00		141.38	897.70	0.00	0.00
110.00		138.74	877.84	0.00	0.00
115.00		135.98	857.98	0.00	0.00
120.00		133.11	838.11	0.00	0.00
125.00		130.12	818.25	0.00	0.00
130.00		127.03	798.39	0.00	0.00
135.00		125.62	1250.11	0.00	0.00
140.00		122.35	654.23	0.00	0.00
145.00		119.00	638.34	0.00	0.00
150.00		115.55	622.45	0.00	0.00
155.00	(16) attachments	821.42	2396.95	0.00	0.00
160.00		108.42	528.26	0.00	0.00
165.00	(30) attachments	1129.74	2919.37	0.00	0.00
170.00		100.99	421.63	0.00	0.00
175.00	(21) attachments	1632.70	3135.54	0.00	0.00
180.00		93.28	347.65	0.00	0.00
185.00		91.57	378.99	0.00	0.00
190.00		92.09	378.99	0.00	0.00
193.00	(1) attachments	125.43	577.40	0.00	0.00
195.00	(26) attachments	1727.27	3528.40	0.00	0.00
	Totals:	**10,205.85**	**50,113.17**	**0.00**	**0.00**

Calculated Forces

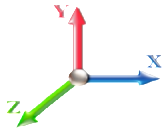
Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	-50.11	-10.23	0.00	-1438.1	0.00	1438.12	4628.91	2314.46	12221.1	6119.66	0.00	0.000	0.000	0.246
5.00	-48.61	-10.13	0.00	-1386.9	0.00	1386.99	4587.84	2293.92	11889.0	5953.37	0.03	-0.051	0.000	0.244
10.00	-47.14	-10.03	0.00	-1336.3	0.00	1336.36	4545.12	2272.56	11556.8	5787.00	0.11	-0.102	0.000	0.241
15.00	-45.70	-9.93	0.00	-1286.2	0.00	1286.23	4500.76	2250.38	11224.6	5620.67	0.24	-0.155	0.000	0.239
20.00	-44.28	-9.82	0.00	-1236.6	0.00	1236.60	4454.76	2227.38	10892.7	5454.49	0.43	-0.209	0.000	0.237
25.00	-42.88	-9.71	0.00	-1187.5	0.00	1187.50	4407.12	2203.56	10561.4	5288.58	0.68	-0.263	0.000	0.234
30.00	-41.50	-9.59	0.00	-1138.9	0.00	1138.97	4357.84	2178.92	10230.9	5123.07	0.99	-0.319	0.000	0.232
35.00	-40.15	-9.47	0.00	-1091.0	0.00	1091.02	4306.92	2153.46	9901.44	4958.08	1.35	-0.376	0.000	0.229
40.00	-38.83	-9.33	0.00	-1043.6	0.00	1043.67	4254.35	2127.17	9573.22	4793.73	1.78	-0.434	0.000	0.227
41.00	-38.56	-9.32	0.00	-1034.3	0.00	1034.34	4243.64	2121.82	9507.75	4760.94	1.87	-0.446	0.000	0.226
45.00	-36.64	-9.20	0.00	-997.08	0.00	997.08	4200.14	2100.07	9246.51	4630.13	2.26	-0.493	0.000	0.224
48.00	-35.21	-9.12	0.00	-969.47	0.00	969.47	4202.19	2101.09	9258.62	4636.19	2.58	-0.530	0.000	0.218
50.00	-34.70	-9.07	0.00	-951.24	0.00	951.24	4180.07	2090.03	9128.39	4570.98	2.81	-0.554	0.000	0.216
55.00	-33.43	-8.94	0.00	-905.87	0.00	905.87	4123.62	2061.81	8804.12	4408.60	3.42	-0.613	0.000	0.214
60.00	-32.18	-8.80	0.00	-861.17	0.00	861.17	4065.54	2032.77	8481.93	4247.27	4.10	-0.673	0.000	0.211
65.00	-30.96	-8.67	0.00	-817.16	0.00	817.16	4005.81	2002.90	8162.06	4087.10	4.83	-0.733	0.000	0.208
70.00	-29.76	-8.53	0.00	-773.82	0.00	773.82	3944.44	1972.22	7844.75	3928.21	5.64	-0.795	0.000	0.205
75.00	-28.59	-8.39	0.00	-731.17	0.00	731.17	3881.43	1940.71	7530.24	3770.72	6.50	-0.858	0.000	0.201
80.00	-27.44	-8.24	0.00	-689.21	0.00	689.21	3816.78	1908.39	7218.77	3614.75	7.43	-0.922	0.000	0.198
81.00	-27.21	-8.23	0.00	-680.97	0.00	680.97	3803.65	1901.82	7156.86	3583.75	7.63	-0.935	0.000	0.197
81.00	-27.21	-8.23	0.00	-680.97	0.00	680.97	2964.89	1482.44	5593.90	2801.11	7.63	-0.935	0.000	0.252
85.00	-26.43	-8.12	0.00	-648.07	0.00	648.07	2929.08	1464.54	5412.12	2710.08	8.43	-0.987	0.000	0.248
90.00	-24.72	-7.97	0.00	-607.45	0.00	607.45	2882.85	1441.42	5186.17	2596.94	9.51	-1.066	0.000	0.243
91.00	-24.38	-7.95	0.00	-599.48	0.00	599.48	2898.33	1449.17	5260.79	2634.30	9.74	-1.082	0.000	0.236
95.00	-23.63	-7.85	0.00	-567.69	0.00	567.69	2860.60	1430.30	5080.74	2544.15	10.67	-1.146	0.000	0.231
100.00	-22.70	-7.71	0.00	-528.46	0.00	528.46	2811.95	1405.98	4857.28	2432.25	11.91	-1.224	0.000	0.225
105.00	-21.80	-7.58	0.00	-489.90	0.00	489.90	2761.66	1380.83	4635.80	2321.34	13.24	-1.302	0.000	0.219
110.00	-20.91	-7.45	0.00	-451.99	0.00	451.99	2709.73	1354.87	4416.54	2211.55	14.64	-1.380	0.000	0.212
115.00	-20.05	-7.32	0.00	-414.73	0.00	414.73	2656.16	1328.08	4199.76	2103.00	16.13	-1.459	0.000	0.205
120.00	-19.20	-7.19	0.00	-378.12	0.00	378.12	2600.95	1300.48	3985.68	1995.80	17.70	-1.538	0.000	0.197
125.00	-18.38	-7.07	0.00	-342.16	0.00	342.16	2544.10	1272.05	3774.55	1890.08	19.35	-1.616	0.000	0.188
130.00	-17.58	-6.94	0.00	-306.83	0.00	306.83	2485.60	1242.80	3566.61	1785.96	21.09	-1.695	0.000	0.179
135.00	-16.32	-6.80	0.00	-272.13	0.00	272.13	1823.78	911.89	2575.19	1289.51	22.90	-1.771	0.000	0.220
140.00	-15.66	-6.68	0.00	-238.14	0.00	238.14	1784.40	892.20	2432.60	1218.11	24.80	-1.847	0.000	0.204
145.00	-15.02	-6.56	0.00	-204.75	0.00	204.75	1743.38	871.69	2291.70	1147.55	26.78	-1.933	0.000	0.187
150.00	-14.39	-6.44	0.00	-171.96	0.00	171.96	1700.71	850.36	2152.72	1077.96	28.85	-2.014	0.000	0.168
155.00	-12.02	-5.55	0.00	-139.75	0.00	139.75	1656.41	828.20	2015.90	1009.45	31.00	-2.090	0.000	0.146
160.00	-11.49	-5.44	0.00	-111.99	0.00	111.99	1610.46	805.23	1881.48	942.14	33.23	-2.159	0.000	0.126
165.00	-8.61	-4.20	0.00	-84.82	0.00	84.82	1562.88	781.44	1749.71	876.15	35.52	-2.219	0.000	0.102
170.00	-8.19	-4.09	0.00	-63.80	0.00	63.80	1513.65	756.82	1620.81	811.61	37.87	-2.271	0.000	0.084
175.00	-5.12	-2.34	0.00	-43.33	0.00	43.33	1462.77	731.39	1495.04	748.63	40.27	-2.314	0.000	0.061
180.00	-4.78	-2.23	0.00	-31.63	0.00	31.63	1400.09	700.04	1362.73	682.38	42.72	-2.348	0.000	0.050
180.00	-4.78	-2.23	0.00	-31.63	0.00	31.63	1571.64	785.82	1525.71	763.99	42.72	-2.348	0.000	0.044
185.00	-4.40	-2.13	0.00	-20.46	0.00	20.46	1571.64	785.82	1525.71	763.99	45.19	-2.376	0.000	0.030
190.00	-4.02	-2.02	0.00	-9.81	0.00	9.81	1571.64	785.82	1525.71	763.99	47.69	-2.390	0.000	0.015
193.00	-3.45	-1.87	0.00	-3.75	0.00	3.75	1571.64	785.82	1525.71	763.99	49.19	-2.394	0.000	0.007
195.00	0.00	-1.73	0.00	0.00	0.00	0.00	1571.64	785.82	1525.71	763.99	50.19	-2.395	0.000	0.000

Calculated Forces

Structure:	CT01501-S-SBA		**Code:**	EIA/TIA-222-G	4/25/2018
Site Name:	Morris		**Exposure:**	C	
Height:	195.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 27

Final Analysis Summary

Structure:	CT01501-S-SBA	**Code:**	EIA/TIA-222-G	4/25/2018	
Site Name:	Morris	**Exposure:**	C		
Height:	195.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
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 93 mph Wind	39.3	0.00	60.07	0.00	0.00	5569.93
0.9D + 1.6W 93 mph Wind	39.3	0.00	45.03	0.00	0.00	5482.17
1.2D + 1.0Di + 1.0Wi 40 mph Wind	8.4	0.00	101.75	0.00	0.00	1234.67
1.0D + 1.0W 60 mph Wind	10.2	0.00	50.11	0.00	0.00	1438.12

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 93 mph Wind	-30.80	-31.93	0.00	-2642.7	0.00	-2642.7	3803.65	1901.8	7156.86	3583.75	81.00	0.954
0.9D + 1.6W 93 mph Wind	-22.66	-31.37	0.00	-2582.1	0.00	-2582.1	3803.65	1901.8	7156.86	3583.75	81.00	0.930
1.2D + 1.0Di + 1.0Wi 40 mph Wind	-62.80	-7.09	0.00	-599.53	0.00	-599.53	3803.65	1901.8	7156.86	3583.75	81.00	0.235
1.0D + 1.0W 60 mph Wind	-27.21	-8.23	0.00	-680.97	0.00	-680.97	3803.65	1901.8	7156.86	3583.75	81.00	0.252

Antenna Mount Structural Analysis

Source: SBA Date: 11.13.2017

SBA Site:	CT01501-S Morris
Sprint Site Number:	CT33XC109
Project:	Sprint DO Macro Upgrade
Prepared For:	Sprint
Mount Description:	(3) Nudd T-Arms
Site Location:	Bethlehem, CT Litchfield County 41.667219°, -73.170516°
Design Codes:	ANSI/TIA-222-G IBC 2012 w/ 2016 CT Building Code
Analysis Load Case:	Sprint Final Configuration
Analysis Result:	**Adequate @ 89%** - Once Augmented See Conclusion

Revision 0
February 28, 2018

DO Macro_CT33XC109_Mount Analysis (Pass with Mods)_2.28.2018

1.0 Introduction

An antenna mount structural analysis has been performed on Sprint's existing mount assembly located at the CT01501-S Morris communications site in Litchfield 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 2012 – 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 = 123 mph (3-sec gust Ultimate Wind Speed) Wind w/o ice = 97 mph (3-sec gust Equivalent per TIA-222-G Tower Code)	
Wind with ice = 40 mph (3-sec gust, 1" Ice) Exposure Category C	Topographic Category 1 Structure Class II

The following documents were provided:

- Prelim Construction Drawings
  Infinigy, 1/18/18.
- 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 fadnot 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
195.0'±	(3) RFS APXVSPP18-C-A20	*(3) Nudd T-Arms*
	(3) ANDREW DT465B-2XR	
	(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 1 and 4 as shown in Construction Drawings. RRH units to be installed in Positions 1 and 2 as shown in Construction Drawings.*

4.0 Analysis Results

Table 4.1 – Existing Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final Sprint Configuration	Standoff Member	127%	**Inadequate**[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. *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	Mount Pipe	89%	**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 3.0' below the existing standoff centerline and attaching to the existing standoff member end near the face rail.
  - Sitepro1 PRK-1245L, (1) total.
- Install V-Brace Kit; located 4.0' below the existing mount face rail centerline.
  - Sitepro1 PRK-SFS-L, (1) total. Attach kit ring mount in kit to monopole shaft.
    - If the PRK-SFS-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.
  - Pipe2.0STD x 12.5' Horizontal Rail, (3) total. Attach SFS-L kit angles to new horizontal rail.
  - Pipe2.0STD x ~4' long corner braces, (3) total. Attach to new horizontal rail w/ Sitepro1 PUCK brackets, (6) total.
  - Sitepro1 SCX_x_-K, (18) total. Attach all mount pipes to new rail. (9) new Pipe2.5STD mount pipes will be required to span between existing rail and new rail.
- Panel antennas to be installed in Positions 1 and 4 as shown in Construction Drawings. RRH units to be installed in Positions 1 and 2 as shown in Construction Drawings.

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:

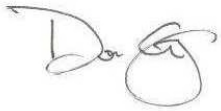
- **In order to obtain a mount structure capable of supporting the currently proposed final loading configuration, upgrade augments must be installed in accordance with GeoStructural's *Mount Augmentation Drawings*.**
- **Antennas and equipment shall be installed centered vertically on the mount front face rails in locations specified on the Construction Drawings (by others). 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 Nudd T-Arm mounts must be appropriately rotated on standoff member such that they are perpendicular to the face of the tower (T-Arm standoff tube and collar standoff member to be colinear). 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:

Jesse Drennen, PE, MLE
208.761.7986
jesse.drennen@geostructural.com

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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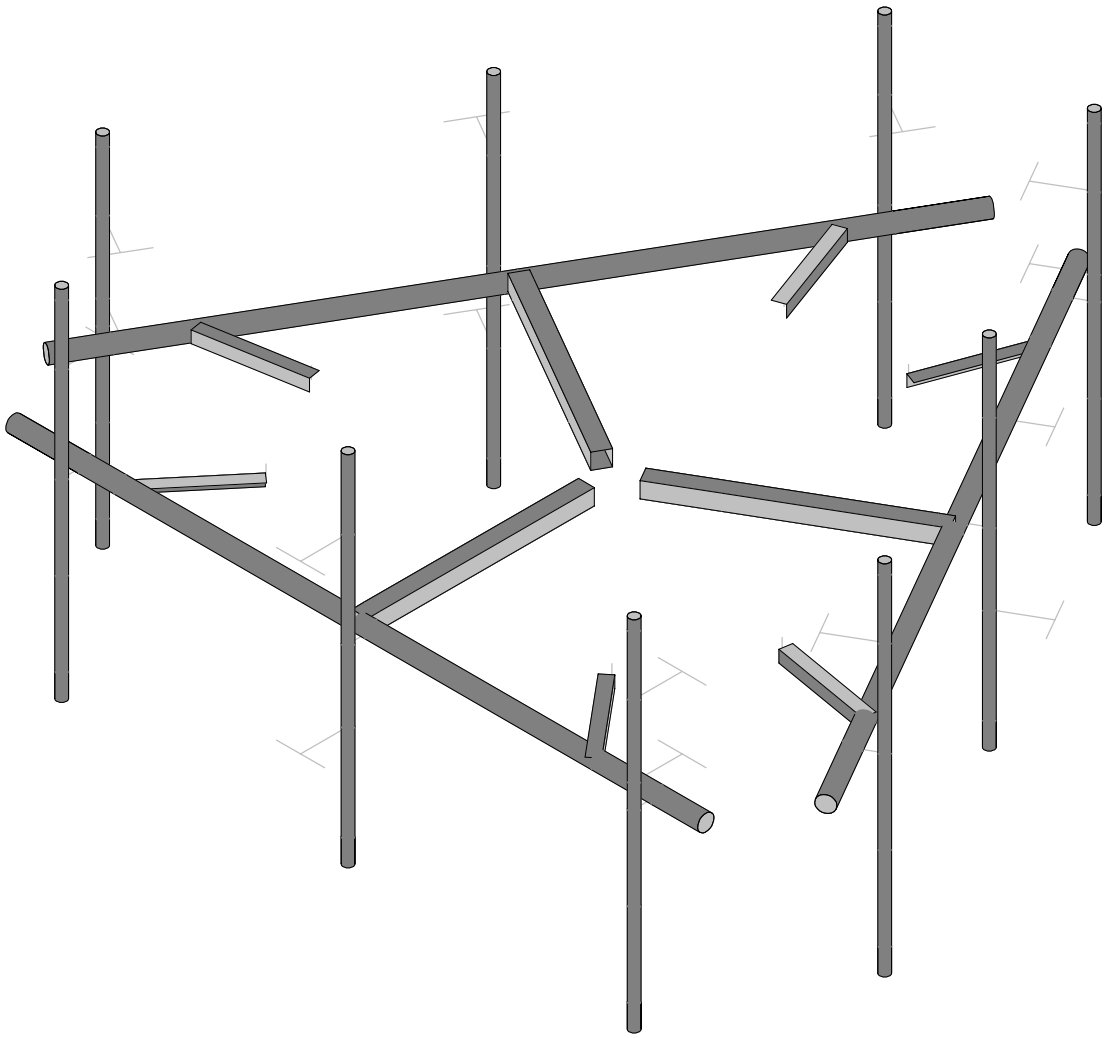

Envelope Only Solution

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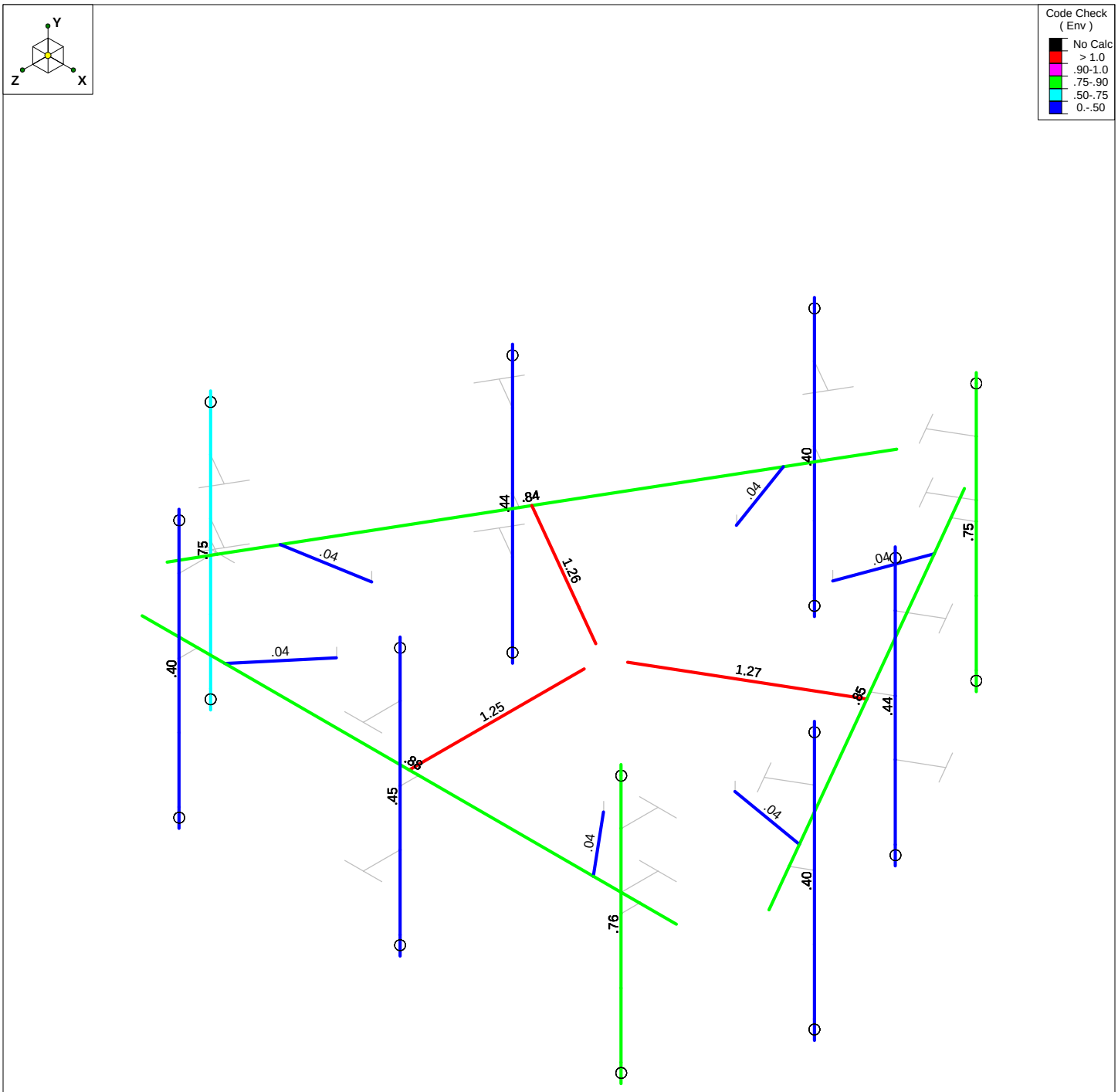

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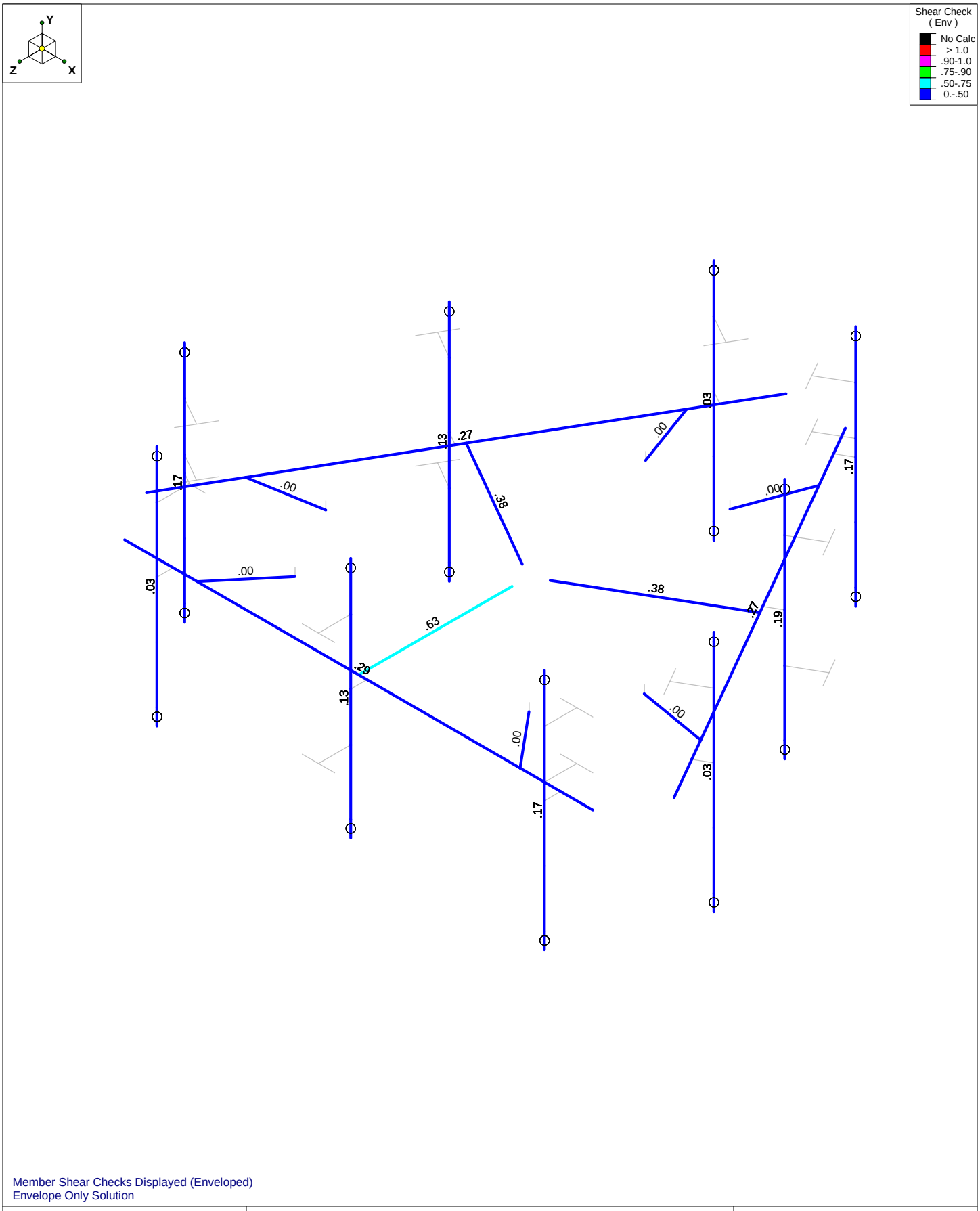

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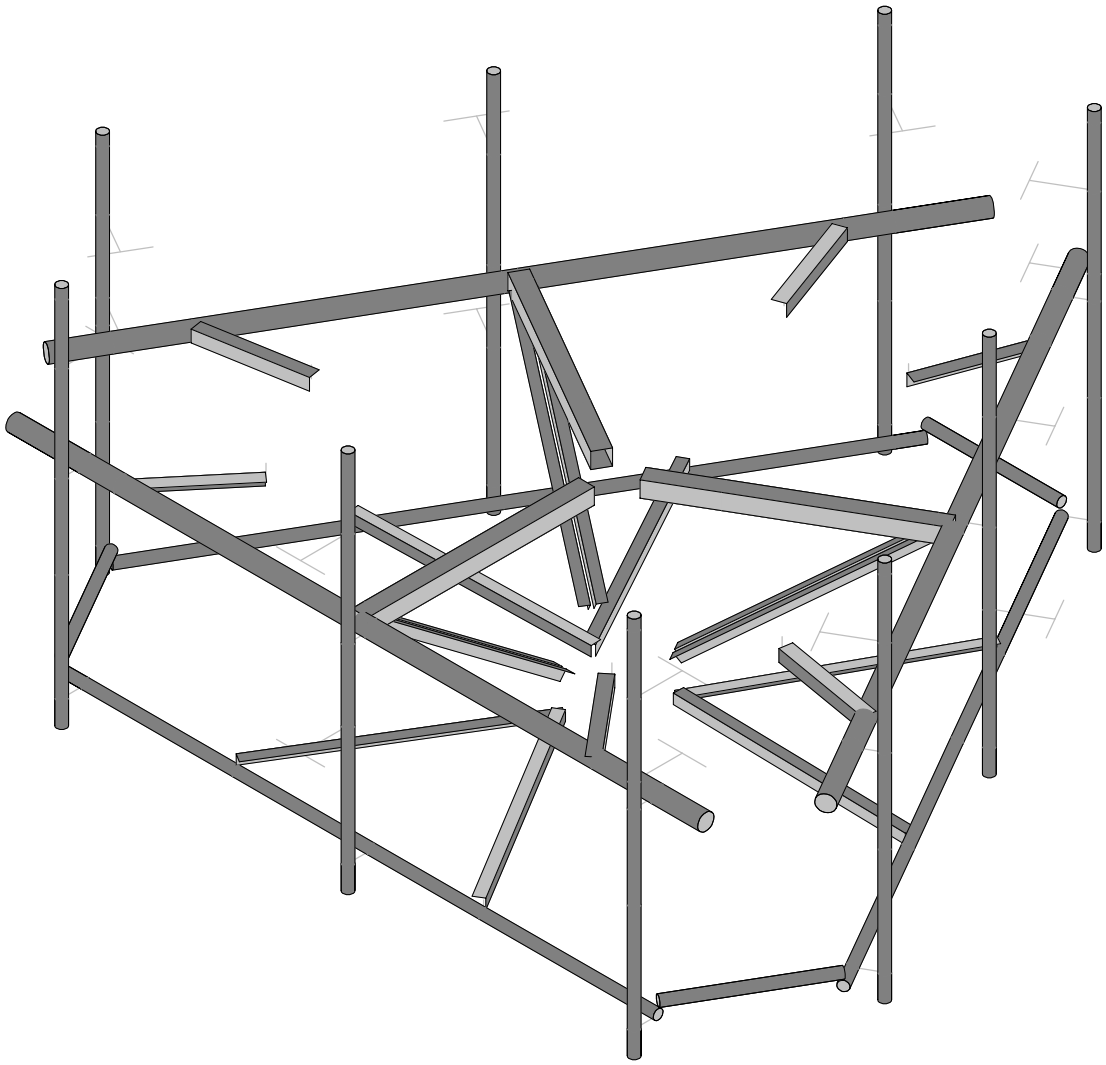

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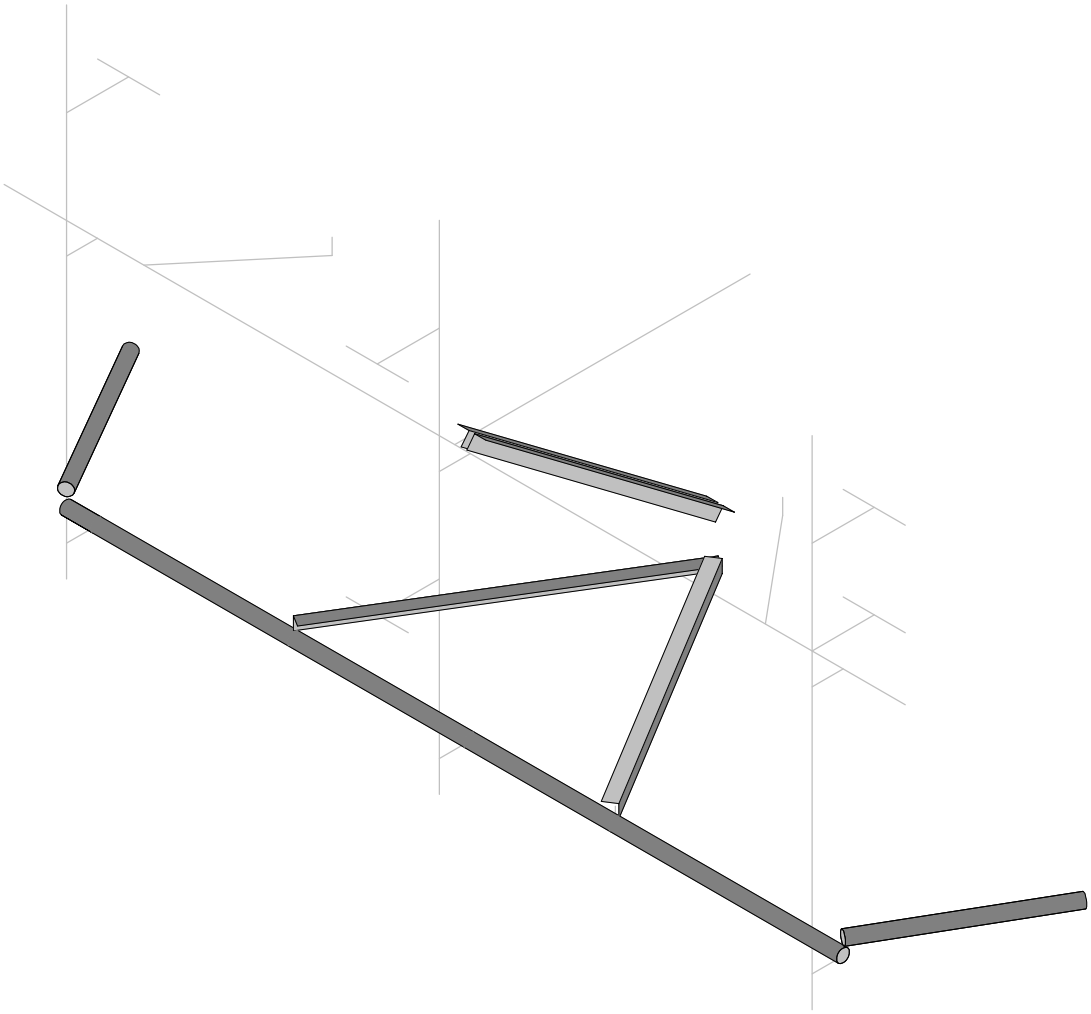

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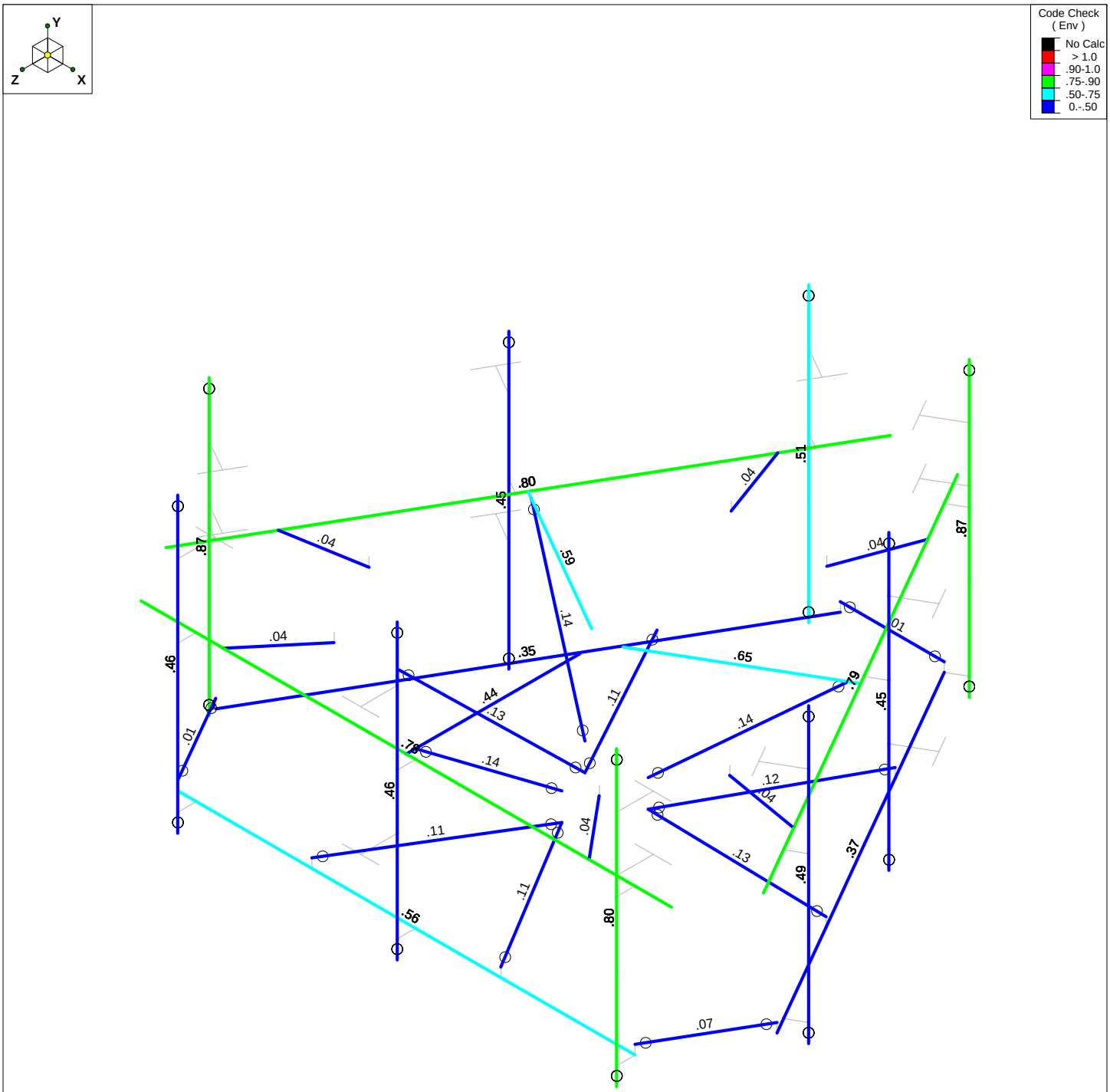

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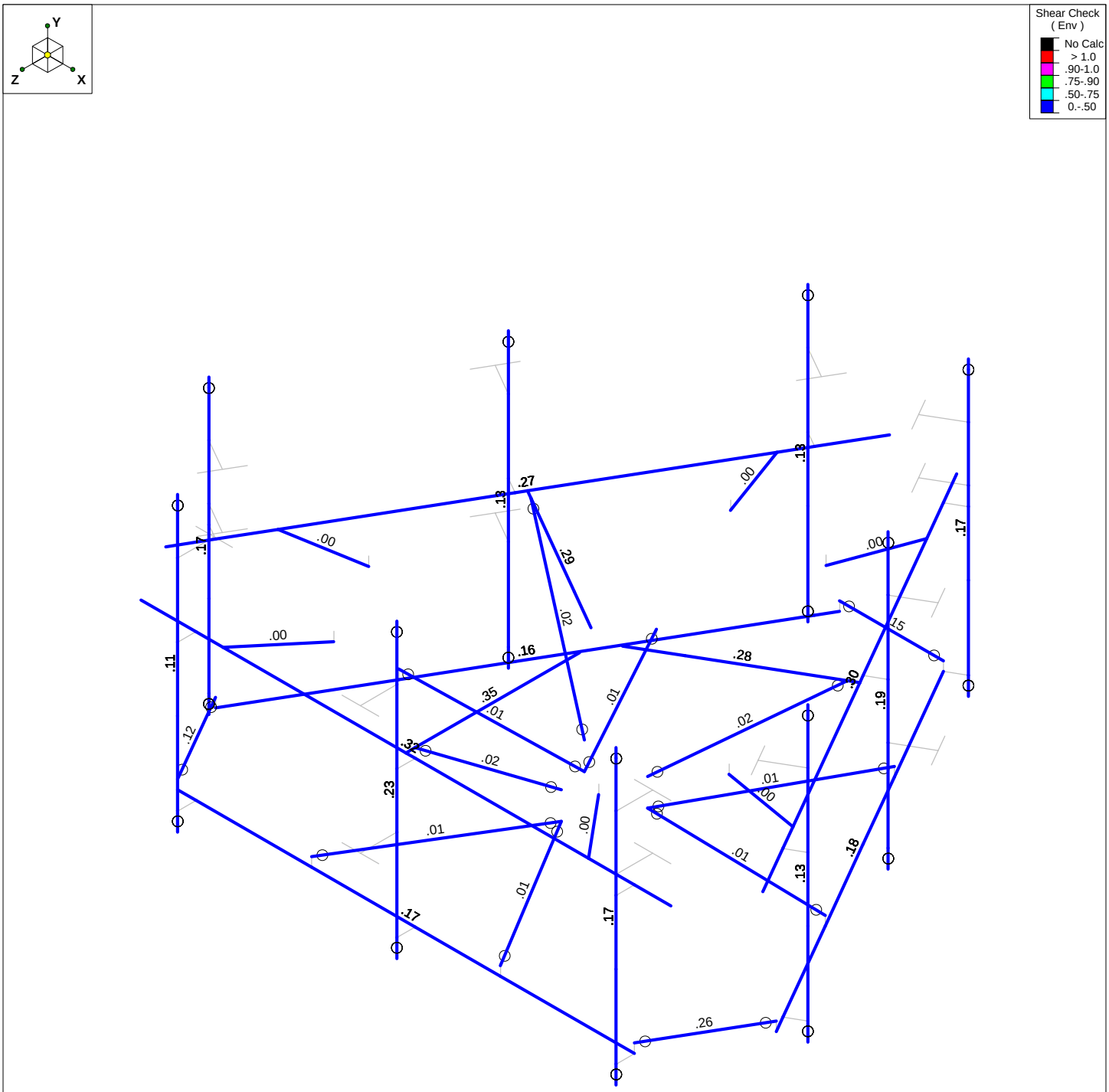

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Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	D	DL		-1		25		3		
2	Di	SL				25		42		
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	N39	max	4.061	36	3.638	36	-.248	17	.002	34	.002	34	0	16
2		min	.482	18	.368	18	-2.339	36	0	16	0	16	-.001	34
3	N40	max	.047	17	3.643	32	4.696	32	0	1	.003	45	.004	45
4		min	-.047	23	.233	14	.359	14	0	1	0	15	0	15
5	N50	max	.58	40	.116	31	.564	2	0	1	0	1	0	1
6		min	-.02	66	.004	48	-.546	20	0	1	0	1	0	1
7	N57	max	.374	18	.115	36	.255	24	0	1	0	1	0	1
8		min	-.402	12	.01	17	-.387	6	0	1	0	1	0	1
9	N87	max	-.481	22	3.638	28	-.256	23	0	18	.002	37	0	18
10		min	-4.058	28	.366	22	-2.345	28	-.002	37	0	18	-.001	37
11	N91	max	.362	16	.114	28	.34	4	0	1	0	1	0	1
12		min	-.475	10	.011	21	-.224	22	0	1	0	1	0	1
13	N19	max	1.497	17	.54	14	1.787	14	.953	8	5.302	17	3.048	47
14		min	-1.663	11	-.705	8	-4.989	32	-.769	14	-5.393	11	-.692	17
15	N102	max	4.539	29	.407	22	2.506	2	.479	25	7.065	25	.584	15
16		min	-1.79	23	-.582	4	-1.315	20	-1.931	31	-7.123	7	-1.092	9
17	N103	max	1.786	17	.406	18	2.746	26	1.801	4	7.483	21	.212	19
18		min	-4.351	35	-.585	11	-1.298	20	-.761	22	-7.483	3	-1.289	26
19	Totals:	max	7.025	5	10.084	30	6.753	2						

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	-7.025	23	2.248	73	-6.753	20						

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	M4	1	max	.855	21	1.187	47	.677	18	1.567e-02	17	NC	1	NC	1
2			min	-.942	3	-.474	17	-.782	12	-2.01e-02	11	NC	1	NC	1
3		2	max	.855	21	1.173	47	.692	17	1.567e-02	17	NC	1	NC	1
4			min	-.942	3	-.468	17	-.785	11	-2.01e-02	11	NC	1	NC	1
5		3	max	.855	21	1.16	47	.714	17	1.567e-02	17	NC	1	NC	1
6			min	-.942	3	-.463	17	-.798	11	-2.01e-02	11	NC	1	NC	1
7		4	max	.855	21	1.147	47	.736	17	1.567e-02	17	NC	1	NC	1
8			min	-.942	3	-.457	17	-.811	11	-2.01e-02	11	NC	1	NC	1
9		5	max	.855	21	1.133	47	.758	17	1.567e-02	17	NC	1	NC	1
10			min	-.942	3	-.451	17	-.824	11	-2.01e-02	11	NC	1	NC	1
11	M5	1	max	1.134	47	.771	38	.367	20	1.549e-02	20	NC	3	NC	2
12			min	-.451	17	.114	20	-.739	2	-1.752e-02	2	65.093	39	145.303	46
13		2	max	1.133	47	.419	41	.445	21	1.402e-02	21	NC	59	NC	3
14			min	-.451	17	-.083	23	-.71	3	-1.635e-02	3	85.772	39	220.011	45
15		3	max	1.133	47	.424	5	.55	21	1.282e-02	21	NC	38	NC	65
16			min	-.451	17	-.354	23	-.718	3	-1.549e-02	3	124.186	47	239.712	10
17		4	max	1.133	47	.667	17	.769	21	1.252e-02	21	NC	29	NC	14
18			min	-.451	17	-.707	11	-.872	3	-1.528e-02	3	81.798	47	161.757	10
19		5	max	1.133	47	1.056	17	1.145	21	1.252e-02	21	NC	1	NC	1
20			min	-.451	17	-1.203	11	-1.185	3	-1.528e-02	3	60.649	47	109.901	10
21	M6	1	max	.677	18	1.084	47	.851	3	1.317e-02	14	NC	1	NC	1
22			min	-.782	12	-.38	17	-.78	21	-1.576e-02	8	NC	1	NC	1
23		2	max	.677	18	1.135	47	.897	3	1.317e-02	14	NC	1	NC	1
24			min	-.782	12	-.427	17	-.818	21	-1.576e-02	8	NC	1	NC	1
25		3	max	.677	18	1.187	47	.942	3	1.317e-02	14	NC	1	NC	1
26			min	-.782	12	-.474	17	-.855	21	-1.576e-02	8	NC	1	NC	1
27		4	max	.677	18	1.238	47	.988	3	1.317e-02	14	NC	1	NC	1
28			min	-.782	12	-.521	17	-.893	21	-1.576e-02	8	NC	1	NC	1
29		5	max	.677	18	1.289	47	1.034	3	1.317e-02	14	NC	1	NC	1
30			min	-.782	12	-.568	17	-.93	21	-1.576e-02	8	NC	1	NC	1
31	M7	1	max	.168	14	.102	14	.941	12	2.039e-02	47	NC	1	NC	1
32			min	-.271	8	-.229	8	-.787	18	-8.305e-03	17	NC	1	NC	1
33		2	max	.168	14	.079	14	.904	12	2.039e-02	47	NC	1	NC	1
34			min	-.271	8	-.187	8	-.745	18	-8.305e-03	17	NC	1	NC	1
35		3	max	.168	14	.056	14	.866	12	2.039e-02	47	NC	1	NC	1
36			min	-.271	8	-.148	32	-.706	17	-8.305e-03	17	NC	1	NC	1
37		4	max	.168	14	.036	15	.833	11	2.039e-02	47	NC	1	NC	1
38			min	-.271	8	-.114	33	-.669	17	-8.305e-03	17	NC	1	NC	1
39		5	max	.168	14	.017	15	.801	11	2.039e-02	47	NC	1	NC	1
40			min	-.271	8	-.083	45	-.633	17	-8.305e-03	17	NC	1	NC	1
41	M8	1	max	.017	15	.907	45	.209	2	-6.847e-04	25	NC	1	NC	1
42			min	-.084	45	.145	15	-.177	20	-1.373e-02	43	304.049	52	484.543	16
43		2	max	.017	15	.439	42	.095	14	2.857e-03	24	NC	1	NC	3
44			min	-.083	45	-.107	24	-.101	8	-8.777e-03	42	194.181	47	680.045	16
45		3	max	.018	15	.46	6	.024	17	7.856e-03	24	NC	1	NC	17
46			min	-.083	45	-.383	24	-.024	11	-1.008e-02	6	105.788	47	468.315	2
47		4	max	.017	15	.583	17	.188	8	1.188e-02	24	NC	1	NC	23
48			min	-.083	45	-.701	11	-.122	14	-1.335e-02	6	69.315	47	266.161	8
49		5	max	.017	15	.783	17	.528	8	1.28e-02	24	NC	1	NC	3
50			min	-.083	45	-1.102	11	-.305	14	-1.425e-02	6	51.22	47	137.021	8
51	M9	1	max	.941	12	.135	25	.225	8	1.425e-02	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
52			min	-.787	18	-.212	7	-.131	14	-7.557e-03	14	NC	1	NC	1
53		2	max	.941	12	.116	14	.248	8	1.425e-02	8	NC	1	NC	1
54			min	-.787	18	-.218	8	-.149	14	-7.557e-03	14	NC	1	NC	1
55		3	max	.941	12	.102	14	.271	8	1.425e-02	8	NC	1	NC	1
56			min	-.787	18	-.229	8	-.168	14	-7.557e-03	14	NC	1	NC	1
57		4	max	.941	12	.094	15	.296	7	1.425e-02	8	NC	1	NC	1
58			min	-.787	18	-.253	33	-.188	25	-7.557e-03	14	NC	1	NC	1
59		5	max	.941	12	.098	15	.333	7	1.425e-02	8	NC	1	NC	1
60			min	-.787	18	-.291	33	-.221	25	-7.557e-03	14	NC	1	NC	1
61	M10	1	max	1.9	7	.37	18	.754	17	1.78e-02	17	NC	1	NC	1
62			min	-1.835	14	-2.164	48	-1.083	11	-3.186e-02	11	NC	1	NC	1
63		2	max	1.9	7	.325	18	.756	17	1.78e-02	17	NC	1	NC	1
64			min	-1.835	14	-2.149	48	-1.077	11	-3.186e-02	11	NC	1	NC	1
65		3	max	1.9	7	.286	17	.757	17	1.78e-02	17	NC	1	NC	1
66			min	-1.835	14	-2.134	47	-1.071	11	-3.186e-02	11	NC	1	NC	1
67		4	max	1.9	7	.281	17	.758	17	1.78e-02	17	NC	1	NC	1
68			min	-1.835	14	-2.121	47	-1.065	11	-3.186e-02	11	NC	1	NC	1
69		5	max	1.9	7	.276	17	.783	18	1.78e-02	17	NC	1	NC	1
70			min	-1.835	14	-2.108	47	-1.087	12	-3.186e-02	11	NC	1	NC	1
71	M11	1	max	.276	17	.806	44	1.004	8	2.066e-02	14	NC	1	NC	2
72			min	-2.107	47	.017	14	-.601	14	-2.427e-02	8	766.467	53	109.27	37
73		2	max	.276	17	.477	43	1.167	8	2.168e-02	14	NC	3	NC	9
74			min	-2.107	47	-.132	25	-.904	14	-2.473e-02	8	275.334	47	154.711	37
75		3	max	.276	17	.496	6	1.377	7	2.305e-02	14	NC	15	NC	28
76			min	-2.108	47	-.386	24	-1.203	25	-2.534e-02	8	129.082	47	120.818	13
77		4	max	.276	17	.694	18	1.765	7	2.306e-02	14	NC	52	NC	59
78			min	-2.108	47	-.913	12	-1.66	25	-2.532e-02	8	66.269	47	76.004	13
79		5	max	.276	17	1.097	17	2.363	20	2.295e-02	14	NC	1	NC	1
80			min	-2.108	47	-1.65	11	-2.423	2	-2.526e-02	8	43.875	47	47.966	13
81	M12	1	max	.754	17	.463	18	1.973	14	3.171e-02	2	NC	1	NC	1
82			min	-1.083	11	-2.348	48	-2.042	8	-2.53e-02	20	NC	1	NC	1
83		2	max	.754	17	.416	18	1.904	14	3.171e-02	2	NC	1	NC	1
84			min	-1.083	11	-2.256	48	-1.966	8	-2.53e-02	20	NC	1	NC	1
85		3	max	.754	17	.37	18	1.835	14	3.171e-02	2	NC	1	NC	1
86			min	-1.083	11	-2.164	48	-1.9	7	-2.53e-02	20	NC	1	NC	1
87		4	max	.754	17	.324	18	1.771	25	3.171e-02	2	NC	1	NC	1
88			min	-1.083	11	-2.073	48	-1.834	7	-2.53e-02	20	NC	1	NC	1
89		5	max	.754	17	.278	18	1.713	25	3.171e-02	2	NC	1	NC	1
90			min	-1.083	11	-1.981	48	-1.769	7	-2.53e-02	20	NC	1	NC	1
91	M37	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
92			min	0	1	0	1	0	1	0	1	NC	1	NC	1
93		2	max	.001	32	.006	8	.041	17	1.061e-03	17	NC	1	NC	1
94			min	0	14	-.005	14	-.042	11	-4.673e-03	47	4746.135	8	1363.558	11
95		3	max	.002	32	.015	8	.143	5	2.122e-03	17	NC	1	NC	1
96			min	0	14	-.013	14	-.142	23	-9.346e-03	47	2208.237	8	398.206	5
97		4	max	.004	32	.01	20	.277	5	3.183e-03	17	NC	1	NC	1
98			min	-.001	14	-.012	2	-.27	23	-1.402e-02	47	2122.467	8	205.583	5
99		5	max	.005	32	.007	14	.416	5	4.244e-03	17	NC	2	NC	33
100			min	-.002	14	-.029	32	-.394	23	-1.869e-02	47	1992.931	32	136.903	5
101	M38	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
102			min	0	1	0	1	0	1	0	1	NC	1	NC	1
103		2	max	.001	36	.005	11	.059	9	8.458e-04	21	NC	1	NC	1
104			min	0	18	-.004	18	-.059	15	-2.986e-03	27	5573.647	12	964.882	9
105		3	max	.002	36	.012	11	.208	10	1.692e-03	21	NC	1	NC	1
106			min	0	18	-.01	18	-.207	16	-5.973e-03	27	2612.89	11	273.71	10
107		4	max	.004	36	.008	23	.417	10	2.537e-03	21	NC	1	NC	30
108			min	-.001	18	-.01	5	-.41	16	-8.959e-03	27	2517.075	11	136.788	10

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	.005	36	.005	18	.652	10	3.383e-03	21	NC	4	NC	26
110			min	-.002	18	-.029	36	-.632	16	-1.195e-02	27	1994.832	36	87.431	10
111	M48	1	max	1.447	7	.299	17	.417	5	5.883e-03	17	NC	1	NC	1
112			min	-1.284	25	-2.116	47	-.395	23	-2.979e-02	47	NC	1	NC	1
113		2	max	1.447	7	.293	17	.439	6	5.883e-03	17	NC	1	NC	1
114			min	-1.284	25	-2.114	47	-.416	24	-2.979e-02	47	NC	1	NC	1
115		3	max	1.447	7	.287	17	.464	6	5.883e-03	17	NC	1	NC	1
116			min	-1.284	25	-2.112	47	-.437	24	-2.979e-02	47	NC	1	NC	1
117		4	max	1.447	7	.282	17	.489	6	5.883e-03	17	NC	1	NC	1
118			min	-1.284	25	-2.11	47	-.458	24	-2.979e-02	47	NC	1	NC	1
119		5	max	1.447	7	.276	17	.514	6	5.883e-03	17	NC	1	NC	1
120			min	-1.284	25	-2.108	47	-.48	24	-2.979e-02	47	NC	1	NC	1
121	M49	1	max	.034	6	.008	16	.416	5	4.206e-03	17	NC	1	NC	1
122			min	-.027	24	-.074	46	-.394	23	-1.994e-02	47	NC	1	NC	1
123		2	max	.034	6	.01	16	.43	5	4.206e-03	17	NC	1	NC	1
124			min	-.027	24	-.076	46	-.407	24	-1.994e-02	47	NC	1	NC	1
125		3	max	.034	6	.011	16	.445	6	4.206e-03	17	NC	1	NC	1
126			min	-.027	24	-.078	46	-.421	24	-1.994e-02	47	NC	1	NC	1
127		4	max	.034	6	.014	15	.461	6	4.206e-03	17	NC	1	NC	1
128			min	-.027	24	-.08	45	-.434	24	-1.994e-02	47	NC	1	NC	1
129		5	max	.034	6	.018	15	.477	6	4.206e-03	17	NC	1	NC	1
130			min	-.027	24	-.083	45	-.448	24	-1.994e-02	47	NC	1	NC	1
131	M50	1	max	.584	21	1.16	47	.417	5	8.066e-03	17	NC	1	NC	1
132			min	-.733	3	-.463	17	-.395	23	-1.648e-02	47	NC	1	NC	1
133		2	max	.584	21	1.153	47	.428	5	8.066e-03	17	NC	1	NC	1
134			min	-.733	3	-.46	17	-.402	23	-1.648e-02	47	NC	1	NC	1
135		3	max	.584	21	1.147	47	.44	5	8.066e-03	17	NC	1	NC	1
136			min	-.733	3	-.457	17	-.409	23	-1.648e-02	47	NC	1	NC	1
137		4	max	.584	21	1.14	47	.451	5	8.066e-03	17	NC	1	NC	1
138			min	-.733	3	-.454	17	-.416	23	-1.648e-02	47	NC	1	NC	1
139		5	max	.584	21	1.133	47	.463	5	8.066e-03	17	NC	1	NC	1
140			min	-.733	3	-.451	17	-.424	23	-1.648e-02	47	NC	1	NC	1
141	M61	1	max	.672	17	1.557	27	1.333	10	2.515e-02	28	NC	8	NC	3
142			min	-.762	11	-.128	21	-1.228	16	-7.74e-03	22	48.402	5	36.357	11
143		2	max	.672	17	1.427	27	1.176	10	2.515e-02	28	NC	8	NC	3
144			min	-.762	11	-.147	22	-1.09	16	-7.74e-03	22	64.584	5	48.582	11
145		3	max	.672	17	1.302	28	1.021	10	2.515e-02	28	NC	8	NC	3
146			min	-.762	11	-.18	22	-.952	16	-7.74e-03	22	96.912	5	72.949	11
147		4	max	.672	17	1.177	28	.865	10	2.515e-02	28	NC	8	NC	3
148			min	-.762	11	-.213	22	-.814	16	-7.74e-03	22	193.851	5	145.956	11
149		5	max	.672	17	1.053	28	.71	10	2.515e-02	28	NC	1	NC	1
150			min	-.762	11	-.246	22	-.676	16	-7.74e-03	22	2970.944	73	339.562	67
151	M62	1	max	.36	7	.903	15	.38	22	9.808e-03	3	NC	1	NC	1
152			min	-.289	25	-.992	9	-.594	4	-6.422e-03	21	81.83	8	97.805	7
153		2	max	.36	7	.839	15	.345	21	9.808e-03	3	NC	1	NC	1
154			min	-.289	25	-.914	9	-.563	4	-6.422e-03	21	109.253	8	130.847	7
155		3	max	.36	7	.777	15	.316	21	9.808e-03	3	NC	1	NC	1
156			min	-.289	25	-.837	9	-.538	3	-6.422e-03	21	163.986	8	196.575	7
157		4	max	.36	7	.723	16	.287	21	9.808e-03	3	NC	1	NC	1
158			min	-.289	25	-.764	10	-.514	3	-6.422e-03	21	328.053	8	237.43	5
159		5	max	.36	7	.697	16	.257	21	9.809e-03	3	NC	1	NC	1
160			min	-.289	25	-.723	10	-.49	3	-6.422e-03	21	NC	1	177.878	5
161	M63	1	max	.632	16	.869	4	1.025	14	6.087e-03	37	NC	1	NC	1
162			min	-.653	10	-.596	22	-1.199	8	-1.948e-03	19	212.629	21	127.636	8
163		2	max	.632	16	.435	4	.514	15	4.792e-03	37	NC	56	NC	1
164			min	-.652	10	-.255	22	-.588	9	-1.644e-03	19	363.106	21	246.577	8
165		3	max	.632	16	.005	18	.005	36	3.019e-03	11	NC	7	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	-.652	10	-.029	36	-.002	18	-1.697e-03	18	200.03	4	154.786	9
167		4	max	.632	16	.09	21	.941	11	8.548e-03	11	NC	10	NC	1
168			min	-.652	10	-1.036	27	-.853	17	-8.388e-03	17	110.337	4	99.143	9
169		5	max	.633	16	.229	21	2.21	11	1.253e-02	23	NC	8	NC	1
170			min	-.653	10	-2.404	27	-2.01	17	-1.33e-02	5	69.04	27	63.562	10
171	M67	1	max	.647	14	1.657	47	.927	7	2.458e-02	48	NC	4	NC	2
172			min	-.727	8	-.221	17	-.833	25	-8.057e-03	18	64.128	13	38.696	8
173		2	max	.647	14	1.533	47	.775	7	2.458e-02	48	NC	54	NC	2
174			min	-.727	8	-.217	17	-.696	25	-8.057e-03	18	85.571	13	51.662	8
175		3	max	.647	14	1.41	48	.654	6	2.458e-02	48	NC	54	NC	2
176			min	-.727	8	-.223	18	-.586	24	-8.057e-03	18	128.406	13	77.541	8
177		4	max	.647	14	1.288	48	.549	6	2.458e-02	48	NC	54	NC	2
178			min	-.727	8	-.245	18	-.497	24	-8.057e-03	18	248.014	21	85.353	15
179		5	max	.647	14	1.166	48	.454	5	2.458e-02	48	NC	1	NC	1
180			min	-.727	8	-.267	18	-.416	23	-8.057e-03	18	185.977	21	64.004	15
181	M68	1	max	.401	2	.532	22	.391	17	1.52e-02	47	NC	1	NC	1
182			min	-.315	20	-.63	4	-1.012	47	-7.031e-03	17	102.381	4	79.559	2
183		2	max	.401	2	.498	23	.366	17	1.52e-02	47	NC	1	NC	1
184			min	-.315	20	-.581	5	-.964	47	-7.031e-03	17	136.688	4	106.17	2
185		3	max	.401	2	.469	23	.341	17	1.52e-02	47	NC	1	NC	1
186			min	-.315	20	-.533	5	-.915	47	-7.031e-03	17	205.164	4	159.315	2
187		4	max	.401	2	.439	23	.317	17	1.52e-02	47	NC	1	NC	1
188			min	-.315	20	-.485	5	-.867	47	-7.031e-03	17	410.427	4	318.683	2
189		5	max	.401	2	.428	24	.292	17	1.52e-02	47	NC	1	NC	1
190			min	-.315	20	-.454	6	-.818	47	-7.031e-03	17	1146.986	19	296.877	18
191	M69	1	max	.395	23	1.456	47	.809	21	6.547e-03	9	NC	1	NC	2
192			min	-.417	5	-.608	17	-1.009	3	-3.947e-03	15	178.032	17	140.512	5
193		2	max	.395	23	.74	47	.324	22	5.285e-03	9	NC	53	NC	58
194			min	-.417	5	-.266	17	-.408	4	-3.191e-03	15	242.947	47	191.752	5
195		3	max	.394	23	.007	14	.005	32	3.572e-03	8	NC	53	NC	26
196			min	-.416	5	-.029	32	-.002	14	-2.305e-03	14	118.235	47	172.705	3
197		4	max	.395	23	.153	17	.706	7	8.44e-03	19	NC	65	NC	27
198			min	-.417	5	-1.144	47	-.619	25	-8.653e-03	13	66.909	47	204.889	6
199		5	max	.395	23	.369	17	1.737	7	1.214e-02	19	NC	4	NC	1
200			min	-.417	5	-2.474	47	-1.552	14	-1.354e-02	13	44.276	47	110.882	6
201	M64A	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
202			min	0	1	0	1	0	1	0	1	NC	1	NC	1
203		2	max	0	14	.005	14	.101	5	-3.422e-04	15	NC	1	NC	1
204			min	-.002	32	-.021	32	-.096	23	-3.357e-03	45	3760.528	32	3171.468	39
205		3	max	0	14	.008	14	.199	5	-6.844e-04	15	NC	1	NC	1
206			min	-.004	32	-.032	32	-.19	23	-6.713e-03	45	2679.376	32	1582.415	39
207		4	max	0	14	.006	14	.295	5	-1.027e-03	15	NC	1	NC	1
208			min	-.006	32	-.03	32	-.281	23	-1.007e-02	45	3760.528	32	1052.222	39
209		5	max	0	14	.002	14	.388	5	-1.369e-03	15	NC	1	NC	1
210			min	-.008	32	-.019	32	-.37	23	-1.343e-02	45	NC	1	787.329	39
211	M66A	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
212			min	0	1	0	1	0	1	0	1	NC	1	NC	1
213		2	max	0	18	.011	18	.157	10	3.668e-04	16	NC	1	NC	1
214			min	-.002	36	-.021	36	-.153	16	-2.39e-03	34	3621.908	36	3296.297	49
215		3	max	0	18	.016	18	.311	10	7.335e-04	16	NC	1	NC	1
216			min	-.004	36	-.033	36	-.302	16	-4.781e-03	34	2580.609	36	1644.871	49
217		4	max	0	18	.012	18	.458	10	1.1e-03	16	NC	1	NC	1
218			min	-.006	36	-.031	36	-.446	16	-7.171e-03	34	3621.908	36	1093.894	49
219		5	max	0	18	.001	18	.602	10	1.467e-03	16	NC	1	NC	1
220			min	-.008	36	-.019	36	-.585	16	-9.562e-03	34	NC	1	818.605	49
221	M68B	1	max	1.042	8	.32	17	.692	43	5.539e-03	17	NC	1	NC	1
222			min	-.675	14	-2.168	47	.111	25	-1.692e-02	47	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	1.042	8	.309	17	.696	44	5.539e-03	17	NC	1	NC	1
224			min	-.675	14	-2.152	47	.084	14	-1.692e-02	47	NC	1	NC	1
225		3	max	1.042	8	.298	17	.7	44	5.539e-03	17	NC	1	NC	1
226			min	-.675	14	-2.137	47	.053	14	-1.692e-02	47	NC	1	NC	1
227		4	max	1.042	8	.287	17	.705	44	5.539e-03	17	NC	1	NC	1
228			min	-.675	14	-2.122	47	.022	14	-1.692e-02	47	NC	1	NC	1
229		5	max	1.042	8	.276	17	.709	44	5.539e-03	17	NC	1	NC	1
230			min	-.675	14	-2.107	47	-.009	14	-1.692e-02	47	NC	1	NC	1
231	M69B	1	max	.18	2	0	16	.691	43	5.883e-03	17	NC	1	NC	1
232			min	-.16	20	-.105	34	.111	25	-2.293e-02	47	NC	1	NC	1
233		2	max	.18	2	.003	16	.712	43	5.883e-03	17	NC	1	NC	1
234			min	-.16	20	-.099	34	.112	25	-2.293e-02	47	NC	1	NC	1
235		3	max	.18	2	.007	16	.732	43	5.883e-03	17	NC	1	NC	1
236			min	-.16	20	-.093	34	.113	25	-2.293e-02	47	NC	1	NC	1
237		4	max	.18	2	.012	15	.753	43	5.883e-03	17	NC	1	NC	1
238			min	-.16	20	-.087	45	.114	25	-2.293e-02	47	NC	1	NC	1
239		5	max	.18	2	.017	15	.774	43	5.883e-03	17	NC	1	NC	1
240			min	-.16	20	-.084	45	.115	25	-2.293e-02	47	NC	1	NC	1
241	M70B	1	max	.371	20	1.19	47	.69	43	5.56e-03	17	NC	1	NC	1
242			min	-.718	2	-.486	17	.111	25	-1.494e-02	47	NC	1	NC	1
243		2	max	.371	20	1.176	47	.688	43	5.56e-03	17	NC	1	NC	1
244			min	-.718	2	-.477	17	.127	24	-1.494e-02	47	NC	1	NC	1
245		3	max	.371	20	1.162	47	.686	41	5.56e-03	17	NC	1	NC	1
246			min	-.718	2	-.469	17	.128	23	-1.494e-02	47	NC	1	NC	1
247		4	max	.371	20	1.148	47	.685	40	5.56e-03	17	NC	1	NC	1
248			min	-.718	2	-.46	17	.113	22	-1.494e-02	47	NC	1	NC	1
249		5	max	.371	20	1.134	47	.685	39	5.56e-03	17	NC	1	NC	1
250			min	-.718	2	-.451	17	.093	21	-1.494e-02	47	NC	1	NC	1
251	M71A	1	max	-.111	25	1.277	47	.465	20	1.007e-02	11	NC	1	NC	1
252			min	-.69	43	-.519	17	-.824	2	-5.697e-03	17	178.744	17	147.46	29
253		2	max	-.111	25	.693	47	-.052	21	4.487e-03	11	NC	3	NC	42
254			min	-.691	43	-.282	17	-.432	39	-3.47e-03	17	249.364	17	172.114	41
255		3	max	-.111	25	0	25	.172	14	2.588e-03	20	NC	3	NC	23
256			min	-.691	43	-.068	31	-.174	8	-4.525e-03	26	114.683	47	177.164	14
257		4	max	-.111	25	.154	17	.412	44	6.039e-03	19	NC	15	NC	17
258			min	-.691	43	-1.144	47	0	14	-9.431e-03	13	61.969	47	177.178	42
259		5	max	-.111	25	.32	17	1.042	8	1.088e-02	18	NC	4	NC	2
260			min	-.692	43	-2.168	47	-.675	14	-1.657e-02	12	43.549	47	146.04	30
261	M73	1	max	.235	17	.64	43	.387	43	1.331e-02	2	NC	1	NC	1
262			min	-.58	47	.086	24	.052	24	-7.722e-03	20	NC	1	NC	1
263		2	max	.235	17	.653	43	.388	43	1.331e-02	2	NC	1	NC	1
264			min	-.58	47	.093	25	.054	24	-7.722e-03	20	NC	1	NC	1
265		3	max	.235	17	.665	43	.389	43	1.331e-02	2	NC	1	NC	1
266			min	-.58	47	.099	25	.055	25	-7.722e-03	20	NC	1	NC	1
267		4	max	.235	17	.678	43	.389	43	1.331e-02	2	NC	1	NC	1
268			min	-.58	47	.105	25	.056	25	-7.722e-03	20	NC	1	NC	1
269		5	max	.235	17	.691	43	.39	43	1.331e-02	2	NC	1	NC	1
270			min	-.58	47	.111	25	.057	25	-7.722e-03	20	NC	1	NC	1
271	M74	1	max	.926	47	.594	43	-.04	24	1.501e-02	8	NC	1	NC	1
272			min	-.129	17	.068	24	-.359	43	-9.666e-03	14	NC	1	NC	1
273		2	max	.926	47	.619	43	-.046	24	1.501e-02	8	NC	1	NC	1
274			min	-.129	17	.08	24	-.362	43	-9.666e-03	14	NC	1	NC	1
275		3	max	.926	47	.643	43	-.052	24	1.501e-02	8	NC	1	NC	1
276			min	-.129	17	.091	25	-.364	43	-9.666e-03	14	NC	1	NC	1
277		4	max	.926	47	.667	43	-.057	24	1.501e-02	8	NC	1	NC	1
278			min	-.129	17	.101	25	-.366	43	-9.666e-03	14	NC	1	NC	1
279		5	max	.926	47	.691	43	-.063	24	1.501e-02	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
280			min	-.129	17	.111	25	-.369	43	-9.666e-03	14	NC	1	NC	1
281	M75	1	max	0	1	0	1	0	1	7.771e-03	17	NC	1	NC	1
282			min	0	1	0	1	0	1	-1.59e-02	47	NC	1	NC	1
283		2	max	0	45	.048	18	.001	23	7.771e-03	17	NC	1	NC	7
284			min	0	15	-.139	48	-.186	41	-1.59e-02	47	1330.484	8	264.149	48
285		3	max	0	45	.1	18	-.016	23	7.771e-03	17	NC	1	NC	7
286			min	0	15	-.282	48	-.372	41	-1.59e-02	47	657.909	8	130.902	48
287		4	max	.001	45	.162	17	-.053	24	7.771e-03	17	NC	1	NC	7
288			min	0	15	-.429	47	-.559	42	-1.59e-02	47	432.714	8	86.246	47
289		5	max	.002	45	.235	17	-.1	24	7.771e-03	17	NC	1	NC	2
290			min	0	15	-.58	47	-.748	43	-1.59e-02	47	320.638	8	63.992	47
291	M76	1	max	0	1	0	1	0	1	5.195e-03	18	NC	1	NC	1
292			min	0	1	0	1	0	1	-3.056e-02	48	NC	1	NC	1
293		2	max	0	20	.179	42	.235	47	5.195e-03	18	NC	1	NC	38
294			min	0	38	-.009	24	-.011	17	-3.056e-02	48	2864.69	67	553.931	9
295		3	max	0	20	.354	42	.468	47	5.195e-03	18	NC	1	NC	46
296			min	0	38	0	24	-.035	17	-3.056e-02	48	1413.821	67	270.09	10
297		4	max	0	20	.526	42	.698	47	5.195e-03	18	NC	1	NC	38
298			min	-.001	38	.031	24	-.076	17	-3.056e-02	48	927.726	67	169.902	11
299		5	max	0	20	.695	43	.926	47	5.195e-03	18	NC	1	NC	1
300			min	-.002	38	.079	24	-.129	17	-3.056e-02	48	686.034	67	118.136	11
301	M88	1	max	.148	16	.813	4	.595	14	1.076e-02	4	NC	1	NC	1
302			min	-.515	34	-.512	22	-.97	8	-4.867e-03	22	NC	1	108.111	9
303		2	max	.148	16	.26	16	.14	15	5.413e-03	41	NC	14	NC	53
304			min	-.515	34	-.682	34	-.375	9	-2.281e-03	23	632.763	32	153.324	9
305		3	max	.148	16	-.201	20	.187	6	2.923e-03	9	2177.455	19	NC	1
306			min	-.516	34	-1.439	26	-.177	24	-2.64e-03	3	293.497	26	161.87	6
307		4	max	.148	16	-.031	21	.395	10	7.428e-03	22	2441.974	21	NC	12
308			min	-.516	34	-1.965	27	-.157	16	-9.561e-03	4	329.098	27	167.464	34
309		5	max	.148	16	.203	21	1.279	11	1.259e-02	22	NC	1	NC	1
310			min	-.516	34	-2.092	27	-.921	17	-1.797e-02	4	NC	1	99.939	10
311	M90	1	max	.823	34	.013	10	.227	16	1.507e-02	7	NC	1	NC	1
312			min	-.161	16	-.005	16	-.601	10	-9.328e-03	25	NC	1	NC	1
313		2	max	.823	34	.014	9	.216	16	1.507e-02	7	NC	1	NC	1
314			min	-.161	16	-.01	15	-.6	10	-9.328e-03	25	NC	1	NC	1
315		3	max	.823	34	.014	9	.205	16	1.507e-02	7	NC	1	NC	1
316			min	-.161	16	-.014	3	-.599	10	-9.328e-03	25	NC	1	NC	1
317		4	max	.823	34	.015	21	.193	16	1.507e-02	7	NC	1	NC	1
318			min	-.161	16	-.019	3	-.598	10	-9.328e-03	25	NC	1	NC	1
319		5	max	.823	34	.017	21	.182	16	1.507e-02	7	NC	1	NC	1
320			min	-.161	16	-.024	3	-.597	10	-9.328e-03	25	NC	1	NC	1
321	M91	1	max	1.905	27	.193	16	.105	16	1.785e-02	11	NC	1	NC	1
322			min	.068	21	-.538	10	-.294	10	-1.292e-02	17	NC	1	NC	1
323		2	max	1.905	27	.183	16	.099	16	1.785e-02	11	NC	1	NC	1
324			min	.068	21	-.532	10	-.294	10	-1.292e-02	17	NC	1	NC	1
325		3	max	1.905	27	.173	16	.094	16	1.785e-02	11	NC	1	NC	1
326			min	.068	21	-.527	10	-.293	10	-1.292e-02	17	NC	1	NC	1
327		4	max	1.905	27	.163	16	.088	16	1.785e-02	11	NC	1	NC	1
328			min	.068	21	-.521	10	-.293	10	-1.292e-02	17	NC	1	NC	1
329		5	max	1.905	27	.153	16	.083	16	1.785e-02	11	NC	1	NC	1
330			min	.068	21	-.523	34	-.293	34	-1.292e-02	17	NC	1	NC	1
331	M92	1	max	0	1	0	1	0	1	3.303e-03	22	NC	1	NC	1
332			min	0	1	0	1	0	1	-2.244e-02	27	NC	1	NC	1
333		2	max	0	13	.234	34	.089	15	3.303e-03	22	NC	1	NC	5
334			min	0	19	-.027	17	-.177	9	-2.244e-02	27	586.789	12	1048.484	45
335		3	max	0	13	.451	34	.157	15	3.303e-03	22	NC	1	NC	12
336			min	0	19	-.059	16	-.336	9	-2.244e-02	27	289.825	12	517.195	45

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	0	13	.645	34	.195	15	3.303e-03	22	NC	1	NC	5
338			min	0	19	-.106	16	-.469	9	-2.244e-02	27	190.357	12	339.166	45
339		5	max	0	13	.823	34	.227	16	3.303e-03	22	NC	1	NC	2
340			min	0	19	-.161	16	-.601	10	-2.244e-02	27	140.88	12	250.67	45
341	M93	1	max	0	1	0	1	0	1	8.227e-03	22	NC	1	NC	1
342			min	0	1	0	1	0	1	-1.653e-02	4	NC	1	NC	1
343		2	max	0	24	.187	10	.505	27	8.227e-03	22	NC	1	NC	38
344			min	0	6	-.084	16	.035	21	-1.653e-02	4	595.988	13	416.606	2
345		3	max	0	24	.354	10	.992	27	8.227e-03	22	NC	1	NC	39
346			min	0	6	-.15	16	.059	21	-1.653e-02	4	297.333	13	206.1	2
347		4	max	0	24	.494	10	1.457	27	8.227e-03	22	NC	1	NC	38
348			min	0	6	-.194	16	.068	21	-1.653e-02	4	197.681	13	135.628	2
349		5	max	0	24	.613	10	1.905	27	8.227e-03	22	NC	1	NC	1
350			min	-.001	6	-.22	16	.068	21	-1.653e-02	4	147.895	13	100.548	2
351	M103	1	max	.519	17	.651	43	.814	2	1.773e-02	2	NC	1	NC	1
352			min	-1.277	47	.087	25	-.468	20	-1.57e-02	20	NC	1	NC	1
353		2	max	.519	17	.661	43	.816	2	1.773e-02	2	NC	1	NC	1
354			min	-1.277	47	.093	25	-.467	20	-1.57e-02	20	NC	1	NC	1
355		3	max	.519	17	.671	43	.819	2	1.773e-02	2	NC	1	NC	1
356			min	-1.277	47	.099	25	-.466	20	-1.57e-02	20	NC	1	NC	1
357		4	max	.519	17	.68	43	.822	2	1.773e-02	2	NC	1	NC	1
358			min	-1.277	47	.105	25	-.465	20	-1.57e-02	20	NC	1	NC	1
359		5	max	.519	17	.69	43	.824	2	1.773e-02	2	NC	1	NC	1
360			min	-1.277	47	.111	25	-.465	20	-1.57e-02	20	NC	1	NC	1
361	M108	1	max	.512	22	.691	7	.367	14	1.895e-02	7	NC	1	NC	1
362			min	-.813	4	-.549	25	-.835	8	-1.599e-02	25	NC	1	NC	1
363		2	max	.512	22	.692	7	.359	14	1.895e-02	7	NC	1	NC	1
364			min	-.813	4	-.55	25	-.835	8	-1.599e-02	25	NC	1	NC	1
365		3	max	.512	22	.693	7	.35	14	1.895e-02	7	NC	1	NC	1
366			min	-.813	4	-.551	25	-.834	8	-1.599e-02	25	NC	1	NC	1
367		4	max	.512	22	.695	7	.342	14	1.895e-02	7	NC	1	NC	1
368			min	-.813	4	-.552	25	-.834	8	-1.599e-02	25	NC	1	NC	1
369		5	max	.512	22	.696	7	.334	14	1.895e-02	7	NC	1	NC	1
370			min	-.813	4	-.552	25	-.834	8	-1.599e-02	25	NC	1	NC	1
371	M109	1	max	2.168	47	.644	43	.712	14	2.427e-02	8	NC	1	NC	1
372			min	-.32	17	.085	24	-1.06	8	-2.066e-02	14	NC	1	NC	1
373		2	max	2.168	47	.656	43	.702	14	2.427e-02	8	NC	1	NC	1
374			min	-.32	17	.092	25	-1.056	8	-2.066e-02	14	NC	1	NC	1
375		3	max	2.168	47	.668	43	.693	14	2.427e-02	8	NC	1	NC	1
376			min	-.32	17	.098	25	-1.051	8	-2.066e-02	14	NC	1	NC	1
377		4	max	2.168	47	.68	43	.684	14	2.427e-02	8	NC	1	NC	1
378			min	-.32	17	.105	25	-1.046	8	-2.066e-02	14	NC	1	NC	1
379		5	max	2.168	47	.692	43	.675	14	2.427e-02	8	NC	1	NC	1
380			min	-.32	17	.111	25	-1.042	8	-2.066e-02	14	NC	1	NC	1
381	M111	1	max	2.092	27	.889	17	.359	24	2.688e-02	12	NC	1	NC	1
382			min	-.203	21	-1.364	11	-.5	6	-2.369e-02	18	NC	1	NC	1
383		2	max	2.092	27	.876	17	.357	24	2.688e-02	12	NC	1	NC	1
384			min	-.203	21	-1.356	11	-.498	6	-2.369e-02	18	NC	1	NC	1
385		3	max	2.092	27	.864	17	.356	24	2.688e-02	12	NC	1	NC	1
386			min	-.203	21	-1.347	11	-.496	6	-2.369e-02	18	NC	1	NC	1
387		4	max	2.092	27	.851	17	.355	24	2.688e-02	12	NC	1	NC	1
388			min	-.203	21	-1.339	11	-.494	6	-2.369e-02	18	NC	1	NC	1
389		5	max	2.092	27	.838	17	.353	24	2.688e-02	12	NC	1	NC	1
390			min	-.203	21	-1.331	11	-.492	6	-2.369e-02	18	NC	1	NC	1
391	M75B	1	max	.292	17	.433	19	.413	4	1.47e-02	3	NC	1	NC	1
392			min	-.818	47	-.485	13	-.339	22	-1.194e-02	21	NC	1	NC	1
393		2	max	.292	17	.43	19	.411	4	1.47e-02	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
394			min	-.818	47	-.478	13	-.335	22	-1.194e-02	21	NC	1	NC	1
395		3	max	.292	17	.427	19	.409	4	1.47e-02	3	NC	1	NC	1
396			min	-.818	47	-.472	13	-.331	22	-1.194e-02	21	NC	1	NC	1
397		4	max	.292	17	.424	19	.407	4	1.47e-02	3	NC	1	NC	1
398			min	-.818	47	-.466	13	-.327	22	-1.194e-02	21	NC	1	NC	1
399		5	max	.292	17	.421	19	.404	4	1.47e-02	3	NC	1	NC	1
400			min	-.818	47	-.46	13	-.323	22	-1.194e-02	21	NC	1	NC	1
401	M76B	1	max	1.166	48	.466	16	.642	25	2.468e-02	8	NC	1	NC	1
402			min	-.267	18	-.53	10	-.727	7	-2.256e-02	14	NC	1	NC	1
403		2	max	1.166	48	.464	15	.634	25	2.468e-02	8	NC	1	NC	1
404			min	-.267	18	-.519	9	-.719	7	-2.256e-02	14	NC	1	NC	1
405		3	max	1.166	48	.465	15	.625	25	2.468e-02	8	NC	1	NC	1
406			min	-.267	18	-.509	9	-.712	7	-2.256e-02	14	NC	1	NC	1
407		4	max	1.166	48	.467	15	.617	25	2.468e-02	8	NC	1	NC	1
408			min	-.267	18	-.5	9	-.704	7	-2.256e-02	14	NC	1	NC	1
409		5	max	1.166	48	.469	15	.609	25	2.468e-02	8	NC	1	NC	1
410			min	-.267	18	-.491	9	-.697	7	-2.256e-02	14	NC	1	NC	1
411	M77	1	max	.257	21	.387	8	.719	16	1.479e-02	8	NC	1	NC	1
412			min	-.49	3	-.319	14	-.722	10	-1.243e-02	14	NC	1	NC	1
413		2	max	.257	21	.388	8	.712	16	1.479e-02	8	NC	1	NC	1
414			min	-.49	3	-.319	14	-.718	10	-1.243e-02	14	NC	1	NC	1
415		3	max	.257	21	.389	8	.706	16	1.479e-02	8	NC	1	NC	1
416			min	-.49	3	-.319	14	-.714	10	-1.243e-02	14	NC	1	NC	1
417		4	max	.257	21	.39	8	.699	16	1.479e-02	8	NC	1	NC	1
418			min	-.49	3	-.319	14	-.709	10	-1.243e-02	14	NC	1	NC	1
419		5	max	.257	21	.391	8	.692	16	1.479e-02	8	NC	1	NC	1
420			min	-.49	3	-.319	14	-.705	10	-1.243e-02	14	NC	1	NC	1
421	M78	1	max	1.053	28	.854	16	.657	12	2.883e-02	11	NC	1	NC	1
422			min	-.246	22	-.89	10	-.546	18	-2.629e-02	17	NC	1	NC	1
423		2	max	1.053	28	.841	16	.648	12	2.883e-02	11	NC	1	NC	1
424			min	-.246	22	-.884	10	-.549	18	-2.629e-02	17	NC	1	NC	1
425		3	max	1.053	28	.828	16	.64	12	2.883e-02	11	NC	1	NC	1
426			min	-.246	22	-.878	10	-.552	18	-2.629e-02	17	NC	1	NC	1
427		4	max	1.053	28	.815	16	.631	12	2.883e-02	11	NC	1	NC	1
428			min	-.246	22	-.873	10	-.556	18	-2.629e-02	17	NC	1	NC	1
429		5	max	1.053	28	.802	16	.622	12	2.883e-02	11	NC	1	NC	1
430			min	-.246	22	-.867	10	-.559	18	-2.629e-02	17	NC	1	NC	1
431	M89A	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
432			min	0	1	0	1	0	1	0	1	NC	1	NC	1
433		2	max	.001	28	.005	4	.056	25	8.535e-04	25	NC	1	NC	1
434			min	0	22	-.004	22	-.056	7	-3.099e-03	31	5574.146	4	1022.45	7
435		3	max	.002	28	.012	4	.194	13	1.707e-03	25	NC	1	NC	1
436			min	0	22	-.01	22	-.193	19	-6.198e-03	31	2613.968	4	293.242	13
437		4	max	.004	28	.008	16	.381	13	2.561e-03	25	NC	1	NC	1
438			min	-.001	22	-.009	10	-.373	19	-9.297e-03	31	2520.237	4	149.441	13
439		5	max	.005	28	.005	22	.582	13	3.414e-03	25	NC	3	NC	4
440			min	-.002	22	-.029	28	-.559	19	-1.24e-02	31	1994.572	28	97.91	13
441	M92A	1	max	.508	22	1.588	31	.938	2	2.531e-02	32	NC	4	NC	6
442			min	-.588	4	-.133	25	-.837	20	-5.726e-03	14	66.099	9	44.746	4
443		2	max	.508	22	1.455	31	.833	2	2.531e-02	32	NC	4	NC	6
444			min	-.588	4	-.132	25	-.749	20	-5.726e-03	14	88.219	9	59.769	4
445		3	max	.508	22	1.323	32	.746	13	2.531e-02	32	NC	4	NC	6
446			min	-.588	4	-.131	25	-.675	19	-5.726e-03	14	132.392	9	89.733	4
447		4	max	.508	22	1.195	32	.694	13	2.531e-02	32	NC	4	NC	6
448			min	-.588	4	-.154	14	-.64	19	-5.726e-03	14	264.831	9	135.409	23
449		5	max	.508	22	1.067	32	.643	13	2.531e-02	32	NC	1	NC	1
450			min	-.588	4	-.176	14	-.605	19	-5.726e-03	14	1566.254	12	101.512	23

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	M93A	1	max	.51	11	.953	18	.377	25	1.114e-02	7	NC	1	NC	1
452			min	-.439	17	-1.044	12	-.594	7	-7.692e-03	25	69.111	12	65.662	11
453		2	max	.51	11	.844	18	.356	25	1.114e-02	7	NC	1	NC	1
454			min	-.439	17	-.92	12	-.579	7	-7.692e-03	25	92.24	12	87.759	11
455		3	max	.51	11	.736	18	.335	25	1.114e-02	7	NC	1	NC	1
456			min	-.439	17	-.797	12	-.563	7	-7.692e-03	25	138.428	12	131.785	11
457		4	max	.51	11	.659	19	.313	25	1.114e-02	7	NC	1	NC	1
458			min	-.439	17	-.703	13	-.546	7	-7.692e-03	25	276.907	12	263.689	11
459		5	max	.51	11	.592	19	.292	25	1.114e-02	7	NC	1	NC	1
460			min	-.439	17	-.62	13	-.53	7	-7.692e-03	25	NC	1	519.903	20
461	M94	1	max	.56	19	.875	7	1.346	18	6.94e-03	6	NC	1	NC	1
462			min	-.583	13	-.599	25	-1.521	12	-3.785e-03	24	208.805	25	87.088	13
463		2	max	.56	19	.433	7	.606	18	5.164e-03	6	NC	4	NC	1
464			min	-.583	13	-.25	25	-.681	12	-2.714e-03	23	359.214	25	121.841	13
465		3	max	.559	19	.005	22	.005	28	3.018e-03	4	NC	16	NC	1
466			min	-.582	13	-.029	28	-.002	22	-1.704e-03	22	196.54	7	159.971	22
467		4	max	.56	19	.094	25	.621	2	7.193e-03	4	NC	2	NC	1
468			min	-.583	13	-1.058	31	-.529	20	-7.178e-03	22	108.769	7	156.624	2
469		5	max	.561	19	.234	25	1.484	3	1.045e-02	15	NC	2	NC	1
470			min	-.583	13	-2.448	31	-1.294	21	-1.13e-02	9	66.759	31	95.369	2
471	M98	1	max	0	1	0	1	0	1	0	1	NC	1	NC	1
472			min	0	1	0	1	0	1	0	1	NC	1	NC	1
473		2	max	0	22	.011	22	.142	13	-3.627e-05	18	NC	1	NC	1
474			min	-.002	28	-.021	28	-.137	19	-2.407e-03	37	3621.908	28	3266.2	40
475		3	max	0	22	.016	22	.28	13	-7.254e-05	18	NC	1	NC	1
476			min	-.004	28	-.033	28	-.27	19	-4.814e-03	37	2580.609	28	1629.693	40
477		4	max	0	22	.012	22	.412	13	-1.088e-04	18	NC	1	NC	1
478			min	-.006	28	-.031	28	-.398	19	-7.221e-03	37	3621.908	28	1083.67	40
479		5	max	0	22	.001	22	.54	13	-1.451e-04	18	NC	1	NC	1
480			min	-.008	28	-.019	28	-.522	19	-9.628e-03	37	NC	1	810.867	40
481	M110	1	max	.129	18	.801	8	.941	17	1.183e-02	8	NC	1	NC	1
482			min	-.537	36	-.495	25	-1.305	11	-6.924e-03	14	NC	1	118.185	12
483		2	max	.129	18	.242	20	.186	17	6.373e-03	8	NC	17	NC	57
484			min	-.537	36	-.686	37	-.426	11	-4.188e-03	14	567.633	36	186.211	36
485		3	max	.129	18	-.195	24	.186	10	1.875e-03	52	2161.735	23	NC	1
486			min	-.538	36	-1.445	30	-.176	16	-2.401e-03	43	288.043	30	164.749	4
487		4	max	.128	18	-.023	25	.353	37	4.886e-03	14	3144.686	24	NC	61
488			min	-.538	36	-1.966	31	-.059	18	-6.812e-03	8	337.503	30	179.166	26
489		5	max	.128	18	.208	25	.786	3	9.447e-03	14	NC	1	NC	1
490			min	-.539	36	-2.122	31	-.438	21	-1.439e-02	8	NC	1	143.403	48
491	M112	1	max	.828	37	.176	18	.281	12	1.976e-02	11	NC	1	NC	1
492			min	-.146	20	-.513	12	-.096	18	-1.413e-02	17	NC	1	NC	1
493		2	max	.828	37	.169	18	.281	12	1.976e-02	11	NC	1	NC	1
494			min	-.146	20	-.513	12	-.088	18	-1.413e-02	17	NC	1	NC	1
495		3	max	.828	37	.162	18	.293	36	1.976e-02	11	NC	1	NC	1
496			min	-.146	20	-.512	12	-.08	18	-1.413e-02	17	NC	1	NC	1
497		4	max	.828	37	.155	18	.307	36	1.976e-02	11	NC	1	NC	1
498			min	-.146	20	-.511	12	-.072	18	-1.413e-02	17	NC	1	NC	1
499		5	max	.828	37	.148	18	.321	36	1.976e-02	11	NC	1	NC	1
500			min	-.146	20	-.519	36	-.064	18	-1.413e-02	17	NC	1	NC	1
501	M113	1	max	1.906	31	.013	36	.603	36	1.147e-02	3	NC	1	NC	1
502			min	.061	25	-.004	18	-.189	18	-6.602e-03	21	NC	1	NC	1
503		2	max	1.906	31	.013	12	.609	36	1.147e-02	3	NC	1	NC	1
504			min	.061	25	-.006	18	-.181	18	-6.602e-03	21	NC	1	NC	1
505		3	max	1.906	31	.013	12	.614	36	1.147e-02	3	NC	1	NC	1
506			min	.061	25	-.008	18	-.172	18	-6.602e-03	21	NC	1	NC	1
507		4	max	1.906	31	.013	12	.62	36	1.147e-02	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
508			min	.061	25	-.011	18	-.164	18	-6.602e-03	21	NC	1	NC	1
509		5	max	1.906	31	.013	24	.626	36	1.147e-02	3	NC	1	NC	1
510			min	.061	25	-.013	6	-.156	18	-6.602e-03	21	NC	1	NC	1
511	M114	1	max	0	1	0	1	0	1	4.603e-03	25	NC	1	NC	1
512			min	0	1	0	1	0	1	-2.233e-02	31	NC	1	NC	1
513		2	max	0	4	.236	26	.083	18	4.603e-03	25	NC	1	NC	2
514			min	0	22	-.027	20	-.174	12	-2.233e-02	31	655.384	3	1096.55	47
515		3	max	0	4	.455	26	.147	18	4.603e-03	25	NC	1	NC	2
516			min	0	22	-.06	20	-.332	12	-2.233e-02	31	326.893	3	539.701	47
517		4	max	0	4	.65	26	.183	18	4.603e-03	25	NC	1	NC	2
518			min	0	22	-.101	20	-.467	12	-2.233e-02	31	217.275	3	352.982	47
519		5	max	0	4	.828	37	.201	18	4.603e-03	25	NC	1	NC	3
520			min	0	22	-.146	20	-.585	12	-2.233e-02	31	162.514	3	259.475	46
521	M115	1	max	0	1	0	1	0	1	6.643e-03	25	NC	1	NC	1
522			min	0	1	0	1	0	1	-1.474e-02	7	NC	1	NC	1
523		2	max	0	16	.171	36	.504	31	6.643e-03	25	NC	1	NC	5
524			min	0	10	-.065	18	.039	24	-1.474e-02	7	608.379	4	378.428	10
525		3	max	0	16	.33	36	.992	31	6.643e-03	25	NC	1	NC	17
526			min	0	10	-.119	18	.065	25	-1.474e-02	7	300.355	4	183.231	10
527		4	max	0	16	.473	36	1.457	31	6.643e-03	25	NC	1	NC	5
528			min	0	10	-.159	18	.07	25	-1.474e-02	7	197.166	4	117.562	10
529		5	max	0	16	.603	36	1.906	31	6.643e-03	25	NC	1	NC	1
530			min	0	10	-.189	18	.061	25	-1.474e-02	7	145.851	4	84.521	9
531	M116	1	max	.495	25	.889	17	.409	4	2.401e-02	11	NC	1	NC	1
532			min	-.801	8	-1.364	11	-.282	22	-2.145e-02	17	NC	1	NC	1
533		2	max	.495	25	.885	17	.411	4	2.401e-02	11	NC	1	NC	1
534			min	-.801	8	-1.366	11	-.28	22	-2.145e-02	17	NC	1	NC	1
535		3	max	.495	25	.88	17	.413	4	2.401e-02	11	NC	1	NC	1
536			min	-.801	8	-1.369	11	-.278	22	-2.145e-02	17	NC	1	NC	1
537		4	max	.495	25	.875	17	.416	4	2.401e-02	11	NC	1	NC	1
538			min	-.801	8	-1.371	11	-.276	22	-2.145e-02	17	NC	1	NC	1
539		5	max	.495	25	.871	17	.418	4	2.401e-02	11	NC	1	NC	1
540			min	-.801	8	-1.374	11	-.274	22	-2.145e-02	17	NC	1	NC	1
541	M117	1	max	2.122	31	.631	4	.713	26	1.978e-02	4	NC	1	NC	1
542			min	-.208	25	-.526	22	-.16	20	-1.689e-02	22	NC	1	NC	1
543		2	max	2.122	31	.628	4	.714	26	1.978e-02	4	NC	1	NC	1
544			min	-.208	25	-.521	22	-.149	20	-1.689e-02	22	NC	1	NC	1
545		3	max	2.122	31	.626	4	.716	26	1.978e-02	4	NC	1	NC	1
546			min	-.208	25	-.517	22	-.138	20	-1.689e-02	22	NC	1	NC	1
547		4	max	2.122	31	.623	4	.717	26	1.978e-02	4	NC	1	NC	1
548			min	-.208	25	-.512	22	-.127	20	-1.689e-02	22	NC	1	NC	1
549		5	max	2.122	31	.621	4	.719	26	1.978e-02	4	NC	1	NC	1
550			min	-.208	25	-.507	22	-.117	20	-1.689e-02	22	NC	1	NC	1
551	M118	1	max	.292	25	.638	19	.377	16	2.05e-02	11	NC	1	NC	1
552			min	-.53	7	-.68	13	-.443	10	-1.811e-02	17	NC	1	NC	1
553		2	max	.292	25	.631	19	.376	16	2.05e-02	11	NC	1	NC	1
554			min	-.53	7	-.675	13	-.44	10	-1.811e-02	17	NC	1	NC	1
555		3	max	.292	25	.624	19	.374	16	2.05e-02	11	NC	1	NC	1
556			min	-.53	7	-.671	13	-.438	10	-1.811e-02	17	NC	1	NC	1
557		4	max	.292	25	.617	18	.372	16	2.05e-02	11	NC	1	NC	1
558			min	-.53	7	-.667	12	-.435	10	-1.811e-02	17	NC	1	NC	1
559		5	max	.292	25	.611	18	.37	16	2.05e-02	11	NC	1	NC	1
560			min	-.53	7	-.663	12	-.433	10	-1.811e-02	17	NC	1	NC	1
561	M119	1	max	1.067	32	.615	3	.623	25	2.001e-02	3	NC	1	NC	1
562			min	-.176	14	-.498	21	-.649	7	-1.763e-02	21	NC	1	NC	1
563		2	max	1.067	32	.608	3	.62	25	2.001e-02	3	NC	1	NC	1
564			min	-.176	14	-.497	21	-.635	7	-1.763e-02	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	1.067	32	.6	3	.617	25	2.001e-02	3	NC	1	NC	1
566			min	-.176	14	-.497	21	-.62	7	-1.763e-02	21	NC	1	NC	1
567		4	max	1.067	32	.593	3	.615	13	2.001e-02	3	NC	1	NC	1
568			min	-.176	14	-.496	21	-.606	19	-1.763e-02	21	NC	1	NC	1
569		5	max	1.067	32	.586	3	.615	12	2.001e-02	3	NC	1	NC	1
570			min	-.176	14	-.496	21	-.593	19	-1.763e-02	21	NC	1	NC	1
571	M86	1	max	.954	14	.685	3	.914	22	1.625e-02	21	NC	1	NC	1
572			min	-1.01	8	-.438	21	-.961	4	-1.842e-02	3	NC	1	NC	1
573		2	max	.954	14	.675	3	.932	22	1.625e-02	21	NC	1	NC	1
574			min	-1.01	8	-.438	21	-.972	4	-1.842e-02	3	NC	1	NC	1
575		3	max	.954	14	.666	3	.95	22	1.625e-02	21	NC	1	NC	1
576			min	-1.01	8	-.439	21	-.983	4	-1.842e-02	3	NC	1	NC	1
577		4	max	.954	14	.659	4	.973	21	1.625e-02	21	NC	1	NC	1
578			min	-1.01	8	-.439	21	-.994	4	-1.842e-02	3	NC	1	NC	1
579		5	max	.954	14	.668	4	1.009	21	1.625e-02	21	NC	1	NC	1
580			min	-1.01	8	-.455	22	-1.021	3	-1.842e-02	3	NC	1	NC	1
581	M87	1	max	.668	4	.549	7	.87	8	1.585e-02	25	NC	1	NC	2
582			min	-.455	22	-.431	25	-.298	14	-1.879e-02	7	553.07	48	108.842	27
583		2	max	.668	4	.522	7	.914	9	1.451e-02	25	NC	2	NC	8
584			min	-.455	22	-.401	25	-.601	15	-1.726e-02	7	534.665	10	216.242	39
585		3	max	.668	4	.535	8	1.025	9	1.313e-02	14	NC	46	NC	11
586			min	-.455	22	-.432	14	-.9	15	-1.556e-02	8	288.876	10	134.588	3
587		4	max	.668	4	.563	7	1.242	9	1.304e-02	14	NC	2	NC	4
588			min	-.455	22	-.496	25	-1.206	15	-1.539e-02	8	386.31	10	93.002	3
589		5	max	.668	4	.769	6	1.584	21	1.304e-02	14	NC	1	NC	1
590			min	-.455	22	-.736	24	-1.631	3	-1.539e-02	8	221.112	11	65.611	3
591	M88A	1	max	.914	22	.574	3	.917	8	1.065e-02	18	NC	1	NC	1
592			min	-.961	4	-.34	21	-.876	14	-1.378e-02	12	NC	1	NC	1
593		2	max	.914	22	.629	3	.964	8	1.065e-02	18	NC	1	NC	1
594			min	-.961	4	-.389	21	-.915	14	-1.378e-02	12	NC	1	NC	1
595		3	max	.914	22	.685	3	1.01	8	1.065e-02	18	NC	1	NC	1
596			min	-.961	4	-.438	21	-.954	14	-1.378e-02	12	NC	1	NC	1
597		4	max	.914	22	.74	3	1.056	8	1.065e-02	18	NC	1	NC	1
598			min	-.961	4	-.487	21	-.994	14	-1.378e-02	12	NC	1	NC	1
599		5	max	.914	22	.795	3	1.102	8	1.065e-02	18	NC	1	NC	1
600			min	-.961	4	-.535	21	-1.033	14	-1.378e-02	12	NC	1	NC	1
601	M89B	1	max	2.317	11	.305	22	.892	21	1.701e-02	21	NC	1	NC	1
602			min	-2.225	17	-2.136	28	-1.307	3	-3.472e-02	3	NC	1	NC	1
603		2	max	2.317	11	.252	22	.918	21	1.701e-02	21	NC	1	NC	1
604			min	-2.225	17	-2.106	28	-1.325	3	-3.472e-02	3	NC	1	NC	1
605		3	max	2.317	11	.199	22	.944	21	1.701e-02	21	NC	1	NC	1
606			min	-2.225	17	-2.077	28	-1.346	4	-3.472e-02	3	NC	1	NC	1
607		4	max	2.317	11	.16	21	1.001	22	1.701e-02	21	NC	1	NC	1
608			min	-2.225	17	-2.051	27	-1.398	4	-3.472e-02	3	NC	1	NC	1
609		5	max	2.317	11	.144	21	1.062	22	1.701e-02	21	NC	1	NC	1
610			min	-2.225	17	-2.028	27	-1.451	4	-3.472e-02	3	NC	1	NC	1
611	M90A	1	max	.144	21	.806	17	.358	7	2.369e-02	18	NC	1	NC	1
612			min	-2.028	27	-1.344	11	-.213	25	-2.688e-02	12	2754.366	13	NC	1
613		2	max	.144	21	1.232	17	.423	6	2.485e-02	17	NC	2	NC	9
614			min	-2.027	27	-1.626	11	-.262	24	-2.785e-02	11	194.297	4	638.119	5
615		3	max	.144	21	1.669	17	.419	6	2.671e-02	17	NC	2	NC	4
616			min	-2.027	27	-1.887	11	-.39	24	-2.934e-02	11	96.924	4	447.91	5
617		4	max	.144	21	2.288	5	.509	19	2.521e-02	17	NC	14	NC	9
618			min	-2.027	27	-2.251	23	-.804	13	-2.79e-02	11	59.118	4	130.744	26
619		5	max	.144	21	3.242	5	.795	19	2.455e-02	17	NC	1	NC	5
620			min	-2.028	27	-2.875	23	-1.391	13	-2.73e-02	11	38.013	4	71.039	26
621	M91A	1	max	.892	21	.399	22	2.372	17	2.987e-02	5	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	-1.307	3	-2.335	28	-2.481	11	-2.42e-02	23	NC	1	NC	1
623		2	max	.892	21	.352	22	2.298	17	2.987e-02	5	NC	1	NC	1
624			min	-1.307	3	-2.235	28	-2.399	11	-2.42e-02	23	NC	1	NC	1
625		3	max	.892	21	.305	22	2.225	17	2.987e-02	5	NC	1	NC	1
626			min	-1.307	3	-2.136	28	-2.317	11	-2.42e-02	23	NC	1	NC	1
627		4	max	.892	21	.257	22	2.151	17	2.987e-02	5	NC	1	NC	1
628			min	-1.307	3	-2.036	28	-2.235	11	-2.42e-02	23	NC	1	NC	1
629		5	max	.892	21	.21	22	2.077	17	2.987e-02	5	NC	1	NC	1
630			min	-1.307	3	-1.937	28	-2.153	11	-2.42e-02	23	NC	1	NC	1
631	M92B	1	max	1.853	11	.179	21	.653	10	4.115e-03	21	NC	1	NC	1
632			min	-1.683	17	-2.033	27	-.633	16	-3.092e-02	27	NC	1	NC	1
633		2	max	1.853	11	.17	21	.69	10	4.115e-03	21	NC	1	NC	1
634			min	-1.683	17	-2.031	27	-.665	16	-3.092e-02	27	NC	1	NC	1
635		3	max	1.853	11	.162	21	.727	10	4.115e-03	21	NC	1	NC	1
636			min	-1.683	17	-2.03	27	-.698	16	-3.092e-02	27	NC	1	NC	1
637		4	max	1.853	11	.153	21	.764	10	4.115e-03	21	NC	1	NC	1
638			min	-1.683	17	-2.028	27	-.731	16	-3.092e-02	27	NC	1	NC	1
639		5	max	1.853	11	.144	21	.801	10	4.115e-03	21	NC	1	NC	1
640			min	-1.683	17	-2.027	27	-.764	16	-3.092e-02	27	NC	1	NC	1
641	M93B	1	max	.791	14	.684	4	.653	10	8.048e-03	22	NC	1	NC	1
642			min	-.922	8	-.451	22	-.632	16	-1.029e-02	4	NC	1	NC	1
643		2	max	.791	14	.68	4	.662	10	8.048e-03	22	NC	1	NC	1
644			min	-.922	8	-.452	22	-.638	16	-1.029e-02	4	NC	1	NC	1
645		3	max	.791	14	.676	4	.672	10	8.048e-03	22	NC	1	NC	1
646			min	-.922	8	-.453	22	-.644	16	-1.029e-02	4	NC	1	NC	1
647		4	max	.791	14	.672	4	.688	9	8.048e-03	22	NC	1	NC	1
648			min	-.922	8	-.454	22	-.653	15	-1.029e-02	4	NC	1	NC	1
649		5	max	.791	14	.668	4	.707	9	8.048e-03	22	NC	1	NC	1
650			min	-.922	8	-.455	22	-.668	15	-1.029e-02	4	NC	1	NC	1
651	M94A	1	max	1.273	17	.736	7	.817	25	1.651e-02	25	NC	1	NC	1
652			min	-1.331	11	-.481	25	-.863	7	-1.876e-02	7	NC	1	NC	1
653		2	max	1.273	17	.714	7	.855	25	1.651e-02	25	NC	1	NC	1
654			min	-1.331	11	-.469	25	-.894	7	-1.876e-02	7	NC	1	NC	1
655		3	max	1.273	17	.693	7	.894	25	1.651e-02	25	NC	1	NC	1
656			min	-1.331	11	-.457	25	-.925	7	-1.876e-02	7	NC	1	NC	1
657		4	max	1.273	17	.672	7	.932	25	1.651e-02	25	NC	1	NC	1
658			min	-1.331	11	-.445	25	-.956	7	-1.876e-02	7	NC	1	NC	1
659		5	max	1.273	17	.65	7	.971	25	1.651e-02	25	NC	1	NC	1
660			min	-1.331	11	-.434	25	-.987	7	-1.876e-02	7	NC	1	NC	1
661	M95	1	max	.65	7	.788	17	.07	22	2.133e-02	17	NC	2	NC	2
662			min	-.434	25	-1.341	11	-.324	29	-2.389e-02	11	105.73	31	283.745	43
663		2	max	.65	7	.925	17	.165	21	2.039e-02	17	NC	51	NC	14
664			min	-.434	25	-1.258	11	-.217	3	-2.289e-02	11	172.592	30	440.199	26
665		3	max	.65	7	1.144	18	.275	9	1.915e-02	17	NC	51	NC	25
666			min	-.434	25	-1.306	12	-.239	15	-2.155e-02	11	163.442	6	322.535	26
667		4	max	.65	7	1.449	18	.472	9	1.884e-02	17	NC	52	NC	1
668			min	-.434	25	-1.514	12	-.419	15	-2.121e-02	11	105.945	6	197.282	8
669		5	max	.65	7	1.911	6	.82	8	1.884e-02	17	NC	1	NC	1
670			min	-.434	25	-1.882	24	-.76	14	-2.121e-02	11	69.653	6	113.032	8
671	M96	1	max	.817	25	.623	7	1.211	12	1.221e-02	23	NC	1	NC	1
672			min	-.863	7	-.382	25	-1.167	18	-1.535e-02	5	NC	1	NC	1
673		2	max	.817	25	.679	7	1.27	12	1.221e-02	23	NC	1	NC	1
674			min	-.863	7	-.431	25	-1.219	18	-1.535e-02	5	NC	1	NC	1
675		3	max	.817	25	.736	7	1.331	11	1.221e-02	23	NC	1	NC	1
676			min	-.863	7	-.481	25	-1.273	17	-1.535e-02	5	NC	1	NC	1
677		4	max	.817	25	.792	7	1.394	11	1.221e-02	23	NC	1	NC	1
678			min	-.863	7	-.53	25	-1.33	17	-1.535e-02	5	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	.817	25	.848	7	1.458	11	1.221e-02	23	NC	1	NC	1
680			min	-.863	7	-.58	25	-1.386	17	-1.535e-02	5	NC	1	NC	1
681	M97	1	max	1.625	3	.216	14	.875	25	1.704e-02	25	NC	1	NC	1
682			min	-1.543	21	-2.164	32	-1.294	7	-3.486e-02	7	NC	1	NC	1
683		2	max	1.625	3	.181	14	.885	25	1.704e-02	25	NC	1	NC	1
684			min	-1.543	21	-2.136	32	-1.297	7	-3.486e-02	7	NC	1	NC	1
685		3	max	1.625	3	.161	25	.896	25	1.704e-02	25	NC	1	NC	1
686			min	-1.543	21	-2.111	31	-1.299	7	-3.486e-02	7	NC	1	NC	1
687		4	max	1.625	3	.164	25	.906	25	1.704e-02	25	NC	1	NC	1
688			min	-1.543	21	-2.09	31	-1.302	7	-3.486e-02	7	NC	1	NC	1
689		5	max	1.625	3	.167	25	.917	25	1.704e-02	25	NC	1	NC	1
690			min	-1.543	21	-2.068	31	-1.304	7	-3.486e-02	7	NC	1	NC	1
691	M98A	1	max	.167	25	.542	4	.083	20	1.689e-02	22	NC	1	NC	1
692			min	-2.068	31	-.417	22	-.763	27	-1.978e-02	4	1396.847	46	NC	1
693		2	max	.167	25	.641	3	.439	20	1.717e-02	22	NC	2	5263.2	16
694			min	-2.068	31	-.586	21	-.862	2	-1.979e-02	4	403.78	7	256.795	8
695		3	max	.167	25	.822	3	.837	20	1.806e-02	21	NC	55	NC	16
696			min	-2.068	31	-.738	21	-1.041	2	-2.051e-02	3	246.582	7	119.546	8
697		4	max	.167	25	1.194	4	1.462	8	1.738e-02	22	NC	39	NC	51
698			min	-2.068	31	-.958	22	-1.276	14	-1.968e-02	4	147.22	4	65.929	8
699		5	max	.167	25	1.801	4	2.339	8	1.73e-02	22	NC	2	NC	1
700			min	-2.068	31	-1.465	22	-1.711	14	-1.964e-02	4	76.232	4	41.143	8
701	M99A	1	max	.875	25	.297	14	1.638	21	2.888e-02	10	NC	1	NC	1
702			min	-1.294	7	-2.364	32	-1.736	3	-2.3e-02	16	NC	1	NC	1
703		2	max	.875	25	.256	14	1.59	21	2.888e-02	10	NC	1	NC	1
704			min	-1.294	7	-2.264	32	-1.68	3	-2.3e-02	16	NC	1	NC	1
705		3	max	.875	25	.216	14	1.543	21	2.888e-02	10	NC	1	NC	1
706			min	-1.294	7	-2.164	32	-1.625	3	-2.3e-02	16	NC	1	NC	1
707		4	max	.875	25	.175	14	1.495	21	2.888e-02	10	NC	1	NC	1
708			min	-1.294	7	-2.064	32	-1.57	3	-2.3e-02	16	NC	1	NC	1
709		5	max	.875	25	.135	14	1.447	21	2.888e-02	10	NC	1	NC	1
710			min	-1.294	7	-1.964	32	-1.514	3	-2.3e-02	16	NC	1	NC	1
711	M100A	1	max	1.235	3	.184	25	.583	13	4.148e-03	25	NC	1	NC	1
712			min	-1.073	21	-2.071	31	-.561	19	-3.138e-02	31	NC	1	NC	1
713		2	max	1.235	3	.18	25	.595	13	4.148e-03	25	NC	1	NC	1
714			min	-1.073	21	-2.07	31	-.569	19	-3.138e-02	31	NC	1	NC	1
715		3	max	1.235	3	.176	25	.607	13	4.148e-03	25	NC	1	NC	1
716			min	-1.073	21	-2.069	31	-.577	19	-3.138e-02	31	NC	1	NC	1
717		4	max	1.235	3	.171	25	.62	13	4.148e-03	25	NC	1	NC	1
718			min	-1.073	21	-2.069	31	-.585	19	-3.138e-02	31	NC	1	NC	1
719		5	max	1.235	3	.167	25	.632	13	4.148e-03	25	NC	1	NC	1
720			min	-1.073	21	-2.068	31	-.594	19	-3.138e-02	31	NC	1	NC	1
721	M101A	1	max	1.035	18	.686	7	.583	13	8.253e-03	25	NC	1	NC	1
722			min	-1.168	12	-.451	25	-.56	19	-1.05e-02	7	NC	1	NC	1
723		2	max	1.035	18	.677	7	.603	13	8.253e-03	25	NC	1	NC	1
724			min	-1.168	12	-.446	25	-.576	19	-1.05e-02	7	NC	1	NC	1
725		3	max	1.035	18	.668	7	.622	13	8.253e-03	25	NC	1	NC	1
726			min	-1.168	12	-.442	25	-.592	19	-1.05e-02	7	NC	1	NC	1
727		4	max	1.035	18	.659	7	.642	13	8.253e-03	25	NC	1	NC	1
728			min	-1.168	12	-.438	25	-.608	19	-1.05e-02	7	NC	1	NC	1
729		5	max	1.035	18	.65	7	.662	13	8.253e-03	25	NC	1	NC	1
730			min	-1.168	12	-.434	25	-.625	19	-1.05e-02	7	NC	1	NC	1
731	M102A	1	max	1.532	7	.329	18	.448	17	1.034e-02	17	NC	1	NC	1
732			min	-1.382	25	-2.134	48	-.524	11	-3.016e-02	47	NC	1	NC	1
733		2	max	1.532	7	.305	17	.459	17	1.034e-02	17	NC	1	NC	1
734			min	-1.382	25	-2.127	47	-.528	11	-3.016e-02	47	NC	1	NC	1
735		3	max	1.532	7	.296	17	.47	17	1.034e-02	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
736			min	-1.382	25	-2.12	47	-.532	11	-3.016e-02	47	NC	1	NC	1
737		4	max	1.532	7	.286	17	.506	18	1.034e-02	17	NC	1	NC	1
738			min	-1.382	25	-2.114	47	-.563	12	-3.016e-02	47	NC	1	NC	1
739		5	max	1.532	7	.276	17	.552	18	1.034e-02	17	NC	1	NC	1
740			min	-1.382	25	-2.108	47	-.602	12	-3.016e-02	47	NC	1	NC	1
741	M103B	1	max	.448	17	.383	18	1.509	25	1.954e-02	2	NC	1	NC	1
742			min	-.524	11	-2.314	48	-1.674	7	-1.677e-02	20	NC	1	NC	1
743		2	max	.448	17	.356	18	1.445	25	1.954e-02	2	NC	1	NC	1
744			min	-.524	11	-2.224	48	-1.603	7	-1.677e-02	20	NC	1	NC	1
745		3	max	.448	17	.329	18	1.382	25	1.954e-02	2	NC	1	NC	1
746			min	-.524	11	-2.134	48	-1.532	7	-1.677e-02	20	NC	1	NC	1
747		4	max	.448	17	.303	18	1.318	25	1.954e-02	2	NC	1	NC	1
748			min	-.524	11	-2.044	48	-1.461	7	-1.677e-02	20	NC	1	NC	1
749		5	max	.448	17	.276	18	1.254	25	1.954e-02	2	NC	1	NC	1
750			min	-.524	11	-1.954	48	-1.39	7	-1.677e-02	20	NC	1	NC	1
751	M104A	1	max	1.941	11	.256	22	.605	21	8.905e-03	21	NC	1	NC	1
752			min	-1.78	17	-2.064	28	-.702	3	-3.189e-02	27	NC	1	NC	1
753		2	max	1.941	11	.215	22	.641	21	8.905e-03	21	NC	1	NC	1
754			min	-1.78	17	-2.053	28	-.729	3	-3.189e-02	27	NC	1	NC	1
755		3	max	1.941	11	.179	21	.692	22	8.905e-03	21	NC	1	NC	1
756			min	-1.78	17	-2.043	27	-.778	4	-3.189e-02	27	NC	1	NC	1
757		4	max	1.941	11	.162	21	.762	22	8.905e-03	21	NC	1	NC	1
758			min	-1.78	17	-2.035	27	-.84	4	-3.189e-02	27	NC	1	NC	1
759		5	max	1.941	11	.144	21	.832	22	8.905e-03	21	NC	1	NC	1
760			min	-1.78	17	-2.027	27	-.901	4	-3.189e-02	27	NC	1	NC	1
761	M105A	1	max	.605	21	.305	22	1.939	17	1.903e-02	5	NC	1	NC	1
762			min	-.702	3	-2.255	28	-2.116	11	-1.703e-02	23	NC	1	NC	1
763		2	max	.605	21	.28	22	1.86	17	1.903e-02	5	NC	1	NC	1
764			min	-.702	3	-2.16	28	-2.029	11	-1.703e-02	23	NC	1	NC	1
765		3	max	.605	21	.256	22	1.78	17	1.903e-02	5	NC	1	NC	1
766			min	-.702	3	-2.064	28	-1.941	11	-1.703e-02	23	NC	1	NC	1
767		4	max	.605	21	.231	22	1.7	17	1.903e-02	5	NC	1	NC	1
768			min	-.702	3	-1.969	28	-1.854	11	-1.703e-02	23	NC	1	NC	1
769		5	max	.605	21	.206	22	1.621	17	1.903e-02	5	NC	1	NC	1
770			min	-.702	3	-1.874	28	-1.766	11	-1.703e-02	23	NC	1	NC	1
771	M106A	1	max	1.309	3	.19	14	.587	25	8.938e-03	25	NC	1	NC	1
772			min	-1.156	21	-2.095	32	-.686	7	-3.236e-02	31	NC	1	NC	1
773		2	max	1.309	3	.183	25	.607	25	8.938e-03	25	NC	1	NC	1
774			min	-1.156	21	-2.088	31	-.698	7	-3.236e-02	31	NC	1	NC	1
775		3	max	1.309	3	.178	25	.627	25	8.938e-03	25	NC	1	NC	1
776			min	-1.156	21	-2.081	31	-.711	7	-3.236e-02	31	NC	1	NC	1
777		4	max	1.309	3	.172	25	.647	25	8.938e-03	25	NC	1	NC	1
778			min	-1.156	21	-2.074	31	-.723	7	-3.236e-02	31	NC	1	NC	1
779		5	max	1.309	3	.167	25	.668	25	8.938e-03	25	NC	1	NC	1
780			min	-1.156	21	-2.068	31	-.735	7	-3.236e-02	31	NC	1	NC	1
781	M107	1	max	.587	25	.242	25	1.262	21	1.736e-02	10	NC	1	NC	1
782			min	-.686	7	-2.288	31	-1.43	3	-1.513e-02	16	NC	1	NC	1
783		2	max	.587	25	.215	25	1.209	21	1.736e-02	10	NC	1	NC	1
784			min	-.686	7	-2.191	32	-1.369	3	-1.513e-02	16	NC	1	NC	1
785		3	max	.587	25	.19	14	1.156	21	1.736e-02	10	NC	1	NC	1
786			min	-.686	7	-2.095	32	-1.309	3	-1.513e-02	16	NC	1	NC	1
787		4	max	.587	25	.169	14	1.102	21	1.736e-02	10	NC	1	NC	1
788			min	-.686	7	-1.999	32	-1.248	3	-1.513e-02	16	NC	1	NC	1
789		5	max	.587	25	.148	14	1.049	21	1.736e-02	10	NC	1	NC	1
790			min	-.686	7	-1.903	32	-1.188	3	-1.513e-02	16	NC	1	NC	1
791	M108B	1	max	.06	9	.057	15	.313	24	1.688e-02	47	NC	1	NC	1
792			min	-.052	15	-.107	9	-.524	6	-5.403e-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
793		2	max	.06	9	.047	15	.297	24	1.688e-02	47	NC	1	NC	1
794			min	-.052	15	-.096	9	-.497	6	-5.403e-03	17	NC	1	NC	1
795		3	max	.06	9	.037	15	.281	24	1.688e-02	47	NC	1	NC	1
796			min	-.052	15	-.087	33	-.471	6	-5.403e-03	17	NC	1	NC	1
797		4	max	.06	9	.027	15	.265	24	1.688e-02	47	NC	1	NC	1
798			min	-.052	15	-.084	33	-.444	6	-5.403e-03	17	NC	1	NC	1
799		5	max	.06	9	.018	15	.249	24	1.688e-02	47	NC	1	NC	1
800			min	-.052	15	-.083	45	-.417	6	-5.403e-03	17	NC	1	NC	1
801	M109A	1	max	.313	24	.09	25	.062	14	4.042e-03	8	NC	1	NC	1
802			min	-.524	6	-.095	7	-.091	8	-3.83e-03	14	NC	1	NC	1
803		2	max	.313	24	.072	14	.054	14	4.042e-03	8	NC	1	NC	1
804			min	-.524	6	-.099	8	-.073	8	-3.83e-03	14	NC	1	NC	1
805		3	max	.313	24	.057	15	.052	15	4.042e-03	8	NC	1	NC	1
806			min	-.524	6	-.107	9	-.06	9	-3.83e-03	14	NC	1	NC	1
807		4	max	.313	24	.056	15	.055	4	4.042e-03	8	NC	1	NC	1
808			min	-.524	6	-.132	45	-.053	22	-3.83e-03	14	NC	1	NC	1
809		5	max	.313	24	.057	16	.069	4	4.042e-03	8	NC	1	NC	1
810			min	-.524	6	-.181	46	-.056	22	-3.83e-03	14	NC	1	NC	1
811	M114A	1	max	.32	21	.208	25	.364	16	2.125e-03	18	NC	1	NC	1
812			min	-.793	3	-2.122	31	-.517	10	-3.754e-03	35	NC	1	74.591	32
813		2	max	.32	21	.311	25	.265	17	2.077e-03	18	NC	1	NC	1
814			min	-.793	3	-1.531	31	-.345	11	-4.11e-03	35	64.198	45	99.462	32
815		3	max	.32	21	.446	24	.208	18	2.029e-03	18	NC	1	NC	1
816			min	-.793	3	-.945	30	-.216	12	-4.465e-03	35	32.094	45	137.525	3
817		4	max	.32	21	.754	48	.267	7	1.981e-03	18	NC	1	NC	1
818			min	-.793	3	-.657	6	-.204	25	-5.822e-03	48	21.391	45	91.644	3
819		5	max	.32	21	1.277	47	.424	8	1.933e-03	18	NC	1	NC	1
820			min	-.793	3	-.519	17	-.293	14	-7.275e-03	48	16.04	45	68.706	3
821	M115A	1	max	.565	14	.32	17	.334	20	9.754e-03	45	NC	1	NC	1
822			min	-1.042	8	-2.168	47	-.461	2	-3.139e-03	15	NC	1	83.262	49
823		2	max	.565	14	.398	17	.239	21	7.292e-03	45	NC	1	NC	1
824			min	-1.042	8	-1.566	47	-.304	3	-3.778e-03	15	127.993	14	111.02	49
825		3	max	.565	14	.476	16	.197	22	4.829e-03	45	NC	1	NC	1
826			min	-1.042	8	-.966	46	-.202	4	-4.536e-03	3	63.981	14	166.536	49
827		4	max	.565	14	.624	16	.267	11	2.77e-03	21	NC	1	NC	1
828			min	-1.042	8	-.647	10	-.211	17	-6.546e-03	27	42.64	14	333.082	49
829		5	max	.565	14	.813	4	.42	12	1.779e-03	21	NC	1	NC	1
830			min	-1.042	8	-.512	22	-.305	18	-9.678e-03	27	31.971	14	NC	1
831	M116A	1	max	.889	17	.203	21	.359	24	1.8e-03	24	NC	1	NC	1
832			min	-1.364	11	-2.092	27	-.5	6	-5.82e-03	31	NC	1	80.427	28
833		2	max	.889	17	.301	21	.252	25	1.223e-03	24	NC	1	NC	1
834			min	-1.364	11	-1.547	27	-.326	7	-7.543e-03	31	108.356	7	107.253	28
835		3	max	.889	17	.399	21	.194	14	7.599e-04	25	NC	1	NC	1
836			min	-1.364	11	-1.004	26	-.202	8	-9.266e-03	31	54.163	7	160.908	28
837		4	max	.889	17	.578	20	.253	3	3.684e-04	25	NC	1	NC	1
838			min	-1.364	11	-.646	2	-.193	21	-1.099e-02	31	36.096	7	321.86	28
839		5	max	.889	17	.801	8	.409	4	-2.314e-05	25	NC	1	NC	1
840			min	-1.364	11	-.495	25	-.282	22	-1.271e-02	31	27.063	7	NC	1
841	M117A	1	max	1.279	11	.203	21	.516	34	6.64e-03	22	NC	1	NC	1
842			min	-.921	17	-2.092	27	-.148	16	-8.651e-03	4	NC	1	NC	1
843		2	max	1.279	11	.188	21	.541	10	6.64e-03	22	NC	1	NC	1
844			min	-.921	17	-2.076	27	-.172	16	-8.651e-03	4	NC	1	NC	1
845		3	max	1.279	11	.173	21	.571	10	6.64e-03	22	NC	1	NC	1
846			min	-.921	17	-2.06	27	-.197	16	-8.651e-03	4	NC	1	NC	1
847		4	max	1.279	11	.159	21	.601	10	6.64e-03	22	NC	1	NC	1
848			min	-.921	17	-2.044	27	-.222	16	-8.651e-03	4	NC	1	NC	1
849		5	max	1.279	11	.144	21	.631	10	6.64e-03	22	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	-.921	17	-2.028	27	-.247	16	-8.651e-03	4	NC	1	NC	1
851	M118A	1	max	.512	14	.732	4	.515	34	3.811e-03	22	NC	1	NC	1
852			min	-.869	8	-.487	22	-.148	16	-1.797e-02	28	NC	1	NC	1
853		2	max	.512	14	.716	4	.522	33	3.811e-03	22	NC	1	NC	1
854			min	-.869	8	-.479	22	-.147	16	-1.797e-02	28	NC	1	NC	1
855		3	max	.512	14	.7	4	.531	33	3.811e-03	22	NC	1	NC	1
856			min	-.869	8	-.471	22	-.158	15	-1.797e-02	28	NC	1	NC	1
857		4	max	.512	14	.684	4	.543	9	3.811e-03	22	NC	1	NC	1
858			min	-.869	8	-.463	22	-.169	15	-1.797e-02	28	NC	1	NC	1
859		5	max	.512	14	.668	4	.559	9	3.811e-03	22	NC	1	NC	1
860			min	-.869	8	-.455	22	-.181	15	-1.797e-02	28	NC	1	NC	1
861	M119A	1	max	.786	3	.208	25	.539	36	6.45e-03	14	NC	1	NC	1
862			min	-.438	21	-2.122	31	-.128	18	-9.157e-03	8	NC	1	NC	1
863		2	max	.786	3	.198	25	.543	36	6.45e-03	14	NC	1	NC	1
864			min	-.438	21	-2.109	31	-.116	18	-9.157e-03	8	NC	1	NC	1
865		3	max	.786	3	.188	25	.548	36	6.45e-03	14	NC	1	NC	1
866			min	-.438	21	-2.095	31	-.104	18	-9.157e-03	8	NC	1	NC	1
867		4	max	.786	3	.177	25	.553	36	6.45e-03	14	NC	1	NC	1
868			min	-.438	21	-2.082	31	-.092	18	-9.157e-03	8	NC	1	NC	1
869		5	max	.786	3	.167	25	.559	37	6.45e-03	14	NC	1	NC	1
870			min	-.438	21	-2.068	31	-.08	18	-9.157e-03	8	NC	1	NC	1
871	M120	1	max	.813	17	.717	7	.537	36	3.692e-03	14	NC	1	NC	1
872			min	-1.162	11	-.474	25	-.129	18	-1.969e-02	32	NC	1	NC	1
873		2	max	.813	17	.701	7	.546	36	3.692e-03	14	NC	1	NC	1
874			min	-1.162	11	-.464	25	-.154	18	-1.969e-02	32	NC	1	NC	1
875		3	max	.813	17	.684	7	.558	12	3.692e-03	14	NC	1	NC	1
876			min	-1.162	11	-.454	25	-.179	18	-1.969e-02	32	NC	1	NC	1
877		4	max	.813	17	.667	7	.594	11	3.692e-03	14	NC	1	NC	1
878			min	-1.162	11	-.444	25	-.207	17	-1.969e-02	32	NC	1	NC	1
879		5	max	.813	17	.65	7	.629	11	3.692e-03	14	NC	1	NC	1
880			min	-1.162	11	-.434	25	-.239	17	-1.969e-02	32	NC	1	NC	1
881	M92C	1	max	.163	17	.075	18	1.352	4	1.736e-02	3	NC	1	NC	1
882			min	-.268	11	-.217	36	-1.173	22	-8.007e-03	21	NC	1	NC	1
883		2	max	.163	17	.056	18	1.289	4	1.736e-02	3	NC	1	NC	1
884			min	-.268	11	-.183	36	-1.106	22	-8.007e-03	21	NC	1	NC	1
885		3	max	.163	17	.038	18	1.226	4	1.736e-02	3	NC	1	NC	1
886			min	-.268	11	-.149	36	-1.039	22	-8.007e-03	21	NC	1	NC	1
887		4	max	.163	17	.019	18	1.162	4	1.736e-02	3	NC	1	NC	1
888			min	-.268	11	-.115	36	-.972	22	-8.007e-03	21	NC	1	NC	1
889		5	max	.163	17	.005	19	1.099	4	1.736e-02	3	NC	1	NC	1
890			min	-.268	11	-.082	37	-.905	22	-8.007e-03	21	NC	1	NC	1
891	M93C	1	max	.005	19	.111	15	.74	34	1.599e-02	16	NC	2	NC	1
892			min	-.082	37	-.313	9	-.167	16	-1.742e-02	10	285.579	28	329.317	56
893		2	max	.005	19	.228	16	.641	10	1.599e-02	16	NC	8	NC	23
894			min	-.082	37	-.35	10	-.357	16	-1.742e-02	10	441.011	28	305.326	27
895		3	max	.005	19	.365	16	.628	10	1.599e-02	16	NC	8	NC	55
896			min	-.082	37	-.406	10	-.554	16	-1.742e-02	10	335.795	4	152.264	27
897		4	max	.005	19	.577	4	.665	21	1.998e-02	16	NC	27	NC	7
898			min	-.082	37	-.568	22	-.816	4	-2.13e-02	10	190.59	4	97.457	27
899		5	max	.005	19	.839	16	.772	21	2.131e-02	16	NC	1	NC	1
900			min	-.082	37	-.856	10	-1.197	3	-2.259e-02	10	125.813	4	67.745	27
901	M94B	1	max	1.352	4	.139	17	.185	12	1.291e-02	12	NC	1	NC	1
902			min	-1.173	22	-.214	11	-.088	18	-6.146e-03	18	NC	1	NC	1
903		2	max	1.352	4	.101	17	.219	12	1.291e-02	12	NC	1	NC	1
904			min	-1.173	22	-.204	11	-.118	18	-6.146e-03	18	NC	1	NC	1
905		3	max	1.352	4	.075	18	.268	11	1.291e-02	12	NC	1	NC	1
906			min	-1.173	22	-.217	36	-.163	17	-6.146e-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
907		4	max	1.352	4	.053	18	.326	11	1.291e-02	12	NC	1	NC	1
908			min	-1.173	22	-.256	37	-.218	17	-6.146e-03	18	NC	1	NC	1
909		5	max	1.352	4	.047	19	.384	11	1.291e-02	12	NC	1	NC	1
910			min	-1.173	22	-.298	37	-.272	17	-6.146e-03	18	NC	1	NC	1
911	M95A	1	max	.054	10	.001	20	.652	10	3.212e-03	21	NC	1	NC	1
912			min	-.048	16	-.066	26	-.632	16	-1.401e-02	27	NC	1	NC	1
913		2	max	.054	10	.001	20	.678	10	3.212e-03	21	NC	1	NC	1
914			min	-.048	16	-.07	26	-.656	16	-1.401e-02	27	NC	1	NC	1
915		3	max	.054	10	.001	20	.704	10	3.212e-03	21	NC	1	NC	1
916			min	-.048	16	-.074	26	-.68	16	-1.401e-02	27	NC	1	NC	1
917		4	max	.054	10	.003	19	.73	10	3.212e-03	21	NC	1	NC	1
918			min	-.048	16	-.078	37	-.704	16	-1.401e-02	27	NC	1	NC	1
919		5	max	.054	10	.005	19	.756	10	3.212e-03	21	NC	1	NC	1
920			min	-.048	16	-.082	37	-.728	16	-1.401e-02	27	NC	1	NC	1
921	M96A	1	max	.041	2	.011	18	.732	16	1.383e-02	27	NC	1	NC	1
922			min	-.022	20	-.115	36	-.945	10	-1.991e-03	22	NC	1	NC	1
923		2	max	.041	2	.009	18	.684	16	1.383e-02	27	NC	1	NC	1
924			min	-.022	20	-.106	36	-.893	10	-1.991e-03	22	NC	1	NC	1
925		3	max	.041	2	.006	19	.636	16	1.383e-02	27	NC	1	NC	1
926			min	-.022	20	-.098	37	-.84	10	-1.991e-03	22	NC	1	NC	1
927		4	max	.041	2	.006	19	.588	16	1.383e-02	27	NC	1	NC	1
928			min	-.022	20	-.09	37	-.788	10	-1.991e-03	22	NC	1	NC	1
929		5	max	.041	2	.005	19	.54	16	1.383e-02	27	NC	1	NC	1
930			min	-.022	20	-.082	37	-.736	10	-1.991e-03	22	NC	1	NC	1
931	M97A	1	max	.732	16	.055	17	.07	17	2.819e-03	35	NC	1	NC	1
932			min	-.945	10	-.066	11	-.097	11	-1.067e-03	17	NC	1	NC	1
933		2	max	.732	16	.03	17	.029	17	2.819e-03	35	NC	1	NC	1
934			min	-.945	10	-.078	36	-.052	11	-1.067e-03	17	NC	1	NC	1
935		3	max	.732	16	.011	18	.022	20	2.819e-03	35	NC	1	NC	1
936			min	-.945	10	-.115	36	-.041	2	-1.067e-03	17	NC	1	NC	1
937		4	max	.732	16	0	19	.065	21	2.819e-03	35	NC	1	NC	1
938			min	-.945	10	-.154	37	-.08	3	-1.067e-03	17	NC	1	NC	1
939		5	max	.732	16	-.005	20	.114	22	2.819e-03	35	NC	1	NC	1
940			min	-.945	10	-.193	26	-.125	4	-1.067e-03	17	NC	1	NC	1
941	M98B	1	max	.127	22	.08	23	1.189	7	1.751e-02	7	NC	1	NC	1
942			min	-.23	4	-.219	28	-1.015	25	-8.034e-03	25	NC	1	NC	1
943		2	max	.127	22	.063	23	1.144	7	1.751e-02	7	NC	1	NC	1
944			min	-.23	4	-.185	29	-.964	25	-8.034e-03	25	NC	1	NC	1
945		3	max	.127	22	.046	23	1.098	7	1.751e-02	7	NC	1	NC	1
946			min	-.23	4	-.152	29	-.914	25	-8.034e-03	25	NC	1	NC	1
947		4	max	.127	22	.029	23	1.052	7	1.751e-02	7	NC	1	NC	1
948			min	-.23	4	-.118	29	-.864	25	-8.034e-03	25	NC	1	NC	1
949		5	max	.127	22	.012	23	1.007	7	1.751e-02	7	NC	1	NC	1
950			min	-.23	4	-.085	29	-.813	25	-8.034e-03	25	NC	1	NC	1
951	M99	1	max	.012	23	-.016	19	.142	18	1.184e-02	19	NC	1	NC	2
952			min	-.084	29	-.498	26	-.621	36	-1.333e-02	13	629.835	60	95.176	32
953		2	max	.012	23	.113	19	.314	19	1.184e-02	19	NC	10	NC	2
954			min	-.084	29	-.299	13	-.565	13	-1.333e-02	13	431.31	30	129.256	32
955		3	max	.012	23	.248	19	.509	19	1.184e-02	19	NC	59	NC	4
956			min	-.084	29	-.294	13	-.584	13	-1.333e-02	13	214.905	30	202.121	32
957		4	max	.012	23	.474	6	.772	7	1.454e-02	19	NC	11	NC	12
958			min	-.085	29	-.346	24	-.689	25	-1.606e-02	13	131.726	30	133.443	8
959		5	max	.012	23	.865	6	1.074	7	1.543e-02	19	NC	1	NC	1
960			min	-.085	29	-.485	24	-.874	25	-1.697e-02	13	84.724	30	92.197	8
961	M100	1	max	1.189	7	.1	22	.24	5	1.289e-02	4	NC	1	NC	1
962			min	-1.015	25	-.173	4	-.144	23	-6.127e-03	22	NC	1	NC	1
963		2	max	1.189	7	.089	22	.225	4	1.289e-02	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
964			min	-1.015	25	-.191	4	-.126	22	-6.127e-03	22	NC	1	NC	1
965		3	max	1.189	7	.08	23	.23	4	1.289e-02	4	NC	1	NC	1
966			min	-1.015	25	-.219	28	-.127	22	-6.127e-03	22	NC	1	NC	1
967		4	max	1.189	7	.086	23	.243	3	1.289e-02	4	NC	1	NC	1
968			min	-1.015	25	-.263	29	-.135	21	-6.127e-03	22	NC	1	NC	1
969		5	max	1.189	7	.093	23	.272	3	1.289e-02	4	NC	1	NC	1
970			min	-1.015	25	-.308	29	-.16	21	-6.127e-03	22	NC	1	NC	1
971	M101	1	max	.041	13	.006	24	.582	13	3.239e-03	25	NC	1	NC	1
972			min	-.035	19	-.068	30	-.56	19	-1.447e-02	31	NC	1	NC	1
973		2	max	.041	13	.008	24	.602	13	3.239e-03	25	NC	1	NC	1
974			min	-.035	19	-.072	30	-.577	19	-1.447e-02	31	NC	1	NC	1
975		3	max	.041	13	.009	24	.622	13	3.239e-03	25	NC	1	NC	1
976			min	-.035	19	-.076	30	-.595	19	-1.447e-02	31	NC	1	NC	1
977		4	max	.041	13	.011	24	.642	13	3.239e-03	25	NC	1	NC	1
978			min	-.035	19	-.08	30	-.613	19	-1.447e-02	31	NC	1	NC	1
979		5	max	.041	13	.012	23	.662	13	3.239e-03	25	NC	1	NC	1
980			min	-.035	19	-.084	29	-.631	19	-1.447e-02	31	NC	1	NC	1
981	M102	1	max	.062	6	.021	23	.585	19	1.43e-02	31	NC	1	NC	1
982			min	-.044	24	-.118	29	-.802	13	-1.895e-03	25	NC	1	NC	1
983		2	max	.062	6	.019	23	.55	19	1.43e-02	31	NC	1	NC	1
984			min	-.044	24	-.109	29	-.762	13	-1.895e-03	25	NC	1	NC	1
985		3	max	.062	6	.017	23	.514	19	1.43e-02	31	NC	1	NC	1
986			min	-.044	24	-.101	29	-.722	13	-1.895e-03	25	NC	1	NC	1
987		4	max	.062	6	.015	23	.479	19	1.43e-02	31	NC	1	NC	1
988			min	-.044	24	-.093	29	-.682	13	-1.895e-03	25	NC	1	NC	1
989		5	max	.062	6	.012	23	.443	19	1.43e-02	31	NC	1	NC	1
990			min	-.044	24	-.084	29	-.642	13	-1.895e-03	25	NC	1	NC	1
991	M103A	1	max	.585	19	.044	22	.039	21	2.81e-03	28	NC	1	NC	1
992			min	-.802	13	-.053	4	-.066	3	-8.411e-04	22	NC	1	NC	1
993		2	max	.585	19	.029	22	.026	22	2.81e-03	28	NC	1	NC	1
994			min	-.802	13	-.078	28	-.048	4	-8.411e-04	22	NC	1	NC	1
995		3	max	.585	19	.021	23	.044	24	2.81e-03	28	NC	1	NC	1
996			min	-.802	13	-.118	29	-.062	6	-8.411e-04	22	NC	1	NC	1
997		4	max	.585	19	.017	24	.076	24	2.81e-03	28	NC	1	NC	1
998			min	-.802	13	-.158	29	-.091	6	-8.411e-04	22	NC	1	NC	1
999		5	max	.585	19	.019	24	.112	25	2.81e-03	28	NC	1	NC	1
1000			min	-.802	13	-.2	30	-.122	7	-8.411e-04	22	NC	1	NC	1

Envelope AISI S100-10: ASD Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pn/Om[k]	Tn/Om[k]	Mnyy/O...	Mnzz/O...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

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	M98A	PIPE_2.0	.874	4.5	30	.172	4.5		7	14.916	32.13	1.872	1.872	1...	H1-1b
2	M90A	PIPE_2.0	.870	4.5	4	.170	4.5		3	14.916	32.13	1.872	1.872	3...	H1-1b
3	M11	PIPE_2.0	.800	4.5	2	.167	4.5		11	14.916	32.13	1.872	1.872	2...	H1-1b
4	M94	PIPE_3.5	.798	7.25	30	.270	7.25		4	33.422	78.75	7.954	7.954	1...	H1-1b
5	M63	PIPE_3.5	.791	7.25	28	.299	7.25		11	33.422	78.75	7.954	7.954	1...	H1-1b
6	M69	PIPE_3.5	.780	7.25	8	.323	7.25		8	33.422	78.75	7.954	7.954	1...	H3-6
7	M38	HSS4x4x3	.645	0	10	.280	4.503	y	27	97.541	106.812	12.662	12.662	2...	H1-1b
8	M89A	HSS4x4x3	.588	0	7	.287	4.503	y	31	97.541	106.812	12.662	12.662	2...	H1-1b
9	M71A	PIPE_2.0	.558	12.5	46	.169	3.646		47	6.295	32.13	1.872	1.872	2...	H1-1b
10	M95	PIPE_2.0	.506	4.5	9	.126	4.5		9	14.916	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	M87	PIPE_2.0	.487	4.5	5	.129	4.5		5	14.916	32.13	1.872	1.872	1...	H1-1b
12	M8	PIPE_2.0	.464	4.5	8	.229	4.5		48	14.916	32.13	1.872	1.872	2...	H1-1b
13	M5	PIPE_2.0	.464	4.5	12	.113	4.5		7	14.916	32.13	1.872	1.872	3...	H1-1b
14	M99	PIPE_2.0	.454	4.5	5	.132	4.5		13	14.916	32.13	1.872	1.872	2...	H1-1b
15	M93C	PIPE_2.0	.451	4.5	11	.188	4.5		4	14.916	32.13	1.872	1.872	2...	H1-1b
16	M37	HSS4x4x3	.444	0	6	.346	4.503	y	47	97.541	106.812	12.662	12.662	2...	H1-1b
17	M88	PIPE_2.0	.372	8.854	6	.176	8.854		5	6.295	32.13	1.872	1.872	1...	H1-1b
18	M110	PIPE_2.0	.347	8.854	10	.158	8.854		9	6.295	32.13	1.872	1.872	2...	H1-1b
19	M64A	LL2.5x2.5x...	.142	0	32	.021	0	y	44	41.904	58.32	3.954	2.55	1	H1-1b*
20	M98	LL2.5x2.5x...	.141	0	28	.020	5	y	27	41.904	58.32	3.954	2.55	1...	H1-1b*
21	M66A	LL2.5x2.5x...	.141	0	36	.020	0	y	35	41.904	58.32	3.954	2.55	1...	H1-1b*
22	M92	L2.5x2.5x3	.132	2.487	2	.009	4.974	z	20	12.979	29.192	.873	1.662	1...	H2-1
23	M115	L2.5x2.5x3	.131	2.487	8	.009	4.974	y	14	12.979	29.192	.873	1.662	1...	H2-1
24	M93	L2.5x2.5x3	.115	2.435	5	.007	0	y	10	12.979	29.192	.873	1.662	1...	H2-1
25	M76	L2.5x2.5x3	.110	2.487	28	.007	4.974	y	6	12.979	29.192	.873	1.662	1...	H2-1
26	M114	L2.5x2.5x3	.108	2.487	5	.007	0	z	12	12.979	29.192	.873	1.662	1...	H2-1
27	M75	L2.5x2.5x3	.106	2.487	10	.007	0	z	10	12.979	29.192	.873	1.662	1...	H2-1
28	M115A	PIPE_2.0	.070	1.51	30	.260	0		33	29.162	32.13	1.872	1.872	1...	H3-6
29	M92A	L3x3x4	.042	0	2	.005	0	z	2	42.124	46.656	1.688	3.756	2...	H2-1
30	M62	L3x3x4	.042	0	2	.005	0	y	14	42.124	46.656	1.688	3.756	2...	H2-1
31	M93A	L3x3x4	.039	0	5	.004	0	y	11	42.124	46.656	1.688	3.756	2...	H2-1
32	M61	L3x3x4	.039	0	11	.004	0	z	17	42.124	46.656	1.688	3.756	2...	H2-1
33	M67	L3x3x4	.037	0	30	.004	0	y	27	42.124	46.656	1.688	3.756	2...	H2-1
34	M68	L3x3x4	.037	0	34	.004	0	z	34	42.124	46.656	1.688	3.756	2...	H2-1
35	M116A	PIPE_2.0	.011	1.422	2	.145	0		33	29.162	32.13	1.872	1.872	1...	H1-1b
36	M114A	PIPE_2.0	.011	1.422	37	.119	2.843		47	29.162	32.13	1.872	1.872	1...	H1-1b

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: CT33XC109

SBA Morris_Bethlehem
310 Watertown Road
Bethlehem, CT 06763

March 15, 2018

EBI Project Number: 6218001940

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	5.17 %

EBI Consulting
environmental | engineering | due diligence

March 15, 2018

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

Emissions Analysis for Site: **CT33XC109 – SBA Morris_Bethlehem**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **310 Watertown Road, Bethlehem, 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 **310 Watertown Road, Bethlehem, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

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

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

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

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

8) The antennas used in this modeling are the **RFS APXVSPP18-C-A20 and the Commscope DT465B-2XR** 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 **195 feet** above ground level (AGL) for **Sector A**, **195 feet** above ground level (AGL) for **Sector B** and **195 feet** above ground level (AGL) for Sector C.

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

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	6,662.27	ERP (W):	6,662.27	ERP (W):	6,662.27
Antenna A1 MPE%	**0.70 %**	Antenna B1 MPE%	**0.70 %**	Antenna C1 MPE%	**0.70 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd
Height (AGL):	**195 feet**	Height (AGL):	**195 feet**	Height (AGL):	**195 feet**
Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts
ERP (W):	5,983.32	ERP (W):	5,983.32	ERP (W):	5,983.32
Antenna A2 MPE%	**0.67 %**	Antenna B2 MPE%	**0.67 %**	Antenna C2 MPE%	**0.67 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**1.37 %**
Nextel	0.18 %
AT&T	1.27 %
Verizon Wireless	0.98 %
T-Mobile	1.37 %
Site Total MPE %:	**5.17 %**

SPRINT Sector A Total:	1.37 %
SPRINT Sector B Total:	1.37 %
SPRINT Sector C Total:	1.37 %
Site Total:	5.17 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	195	0.44	850 MHz	567	0.08%
Sprint 1900 MHz (PCS) CDMA	5	622.47	195	3.13	1900 MHz (PCS)	1000	0.31%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	195	3.13	1900 MHz (PCS)	1000	0.31%
Sprint 2500 MHz (BRS) LTE	8	639.78	195	5.15	2500 MHz (BRS)	1000	0.52%
Sprint 850 MHz LTE	2	432.54	195	0.87	850 MHz	567	0.15%
						Total:	**1.37%**

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:	1.37 %
Sector B:	1.37 %
Sector C:	1.37 %
SPRINT Maximum Total (per sector):	1.37 %
Site Total:	5.17 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **5.17 %** 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.

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 AND STRUCTURAL MODIFICATIONS AT THE SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.

Sprint

PROGRAM: DO MACRO UPGRADE EQUIPMENT DEPLOYMENT

SITE NUMBER: CT33XC109

SITE ADDRESS: 310 WATERTOWN ROAD BETHLEHEM, CT 06763

SITE TYPE: MONOPOLE

SITE INFORMATION

SITE INFORMATION:

LATITUDE: 41° 40' 02.15" N
(PER SBA RECORDS) 41.667278°

LONGITUDE: 73° 10' 13.71" W
(PER SBA RECORDS) -73.170472°

STRUCTURE HEIGHT: 195'±

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: CT01501-S

SBA SITE NAME: MORRIS

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

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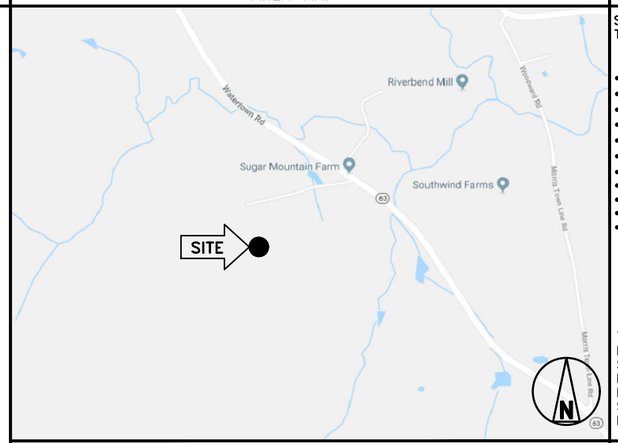
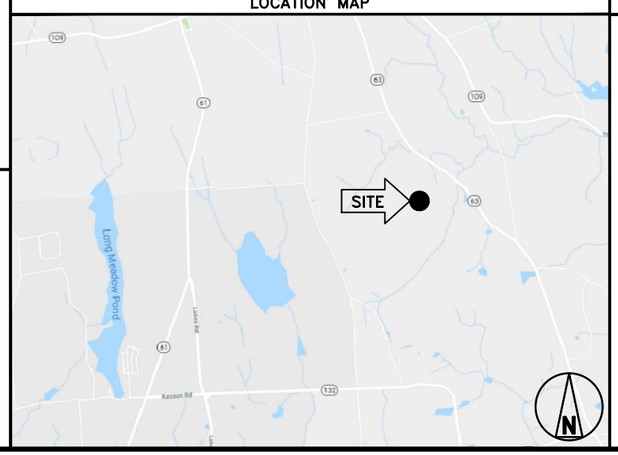
AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL (9) NEW PIPE MOUNT
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) 2.5 GHz RRH'S ON PROPOSED PIPE MOUNT
- INSTALL (3) 800 MHz RRH'S ON PROPOSED PIPE MOUNT
- RELOCATE (3) EXISTING 1900 RRH'S TO SECTOR FRAME
- RELOCATE (3) EXISTING 800 RRH'S TO SECTOR FRAME
- INSTALL (1) HYBRID CABLES
- INSTALL RAN EQUIPMENT INSIDE EXISTING MMBTS CABINET
- INSTALL SECTOR FRAME REINFORCEMENT KIT
- INSTALL HANDRAIL KIT
- INSTALL V-BRACE KIT

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

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 & NOTES	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
1 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
03-08-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/07/18	MPB	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER: CT33XC109

SITE ADDRESS: 310 WATERTOWN ROAD BETHLEHEM, CT 06763

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

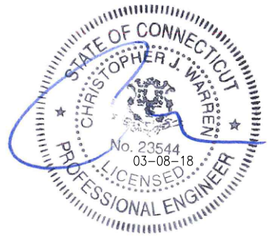
D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:
Sprint
1 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	03/07/18	MPB	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:
CT33XC109

SITE ADDRESS:
310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:
OUTLINE 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 FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, 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:
Sprint
1 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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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
03-08-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/07/18	MPB	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:
CT33XC109

SITE ADDRESS:
310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:
OUTLINE 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

1 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:

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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
03-08-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/07/18	MPB	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

CT33XC109

SITE ADDRESS:

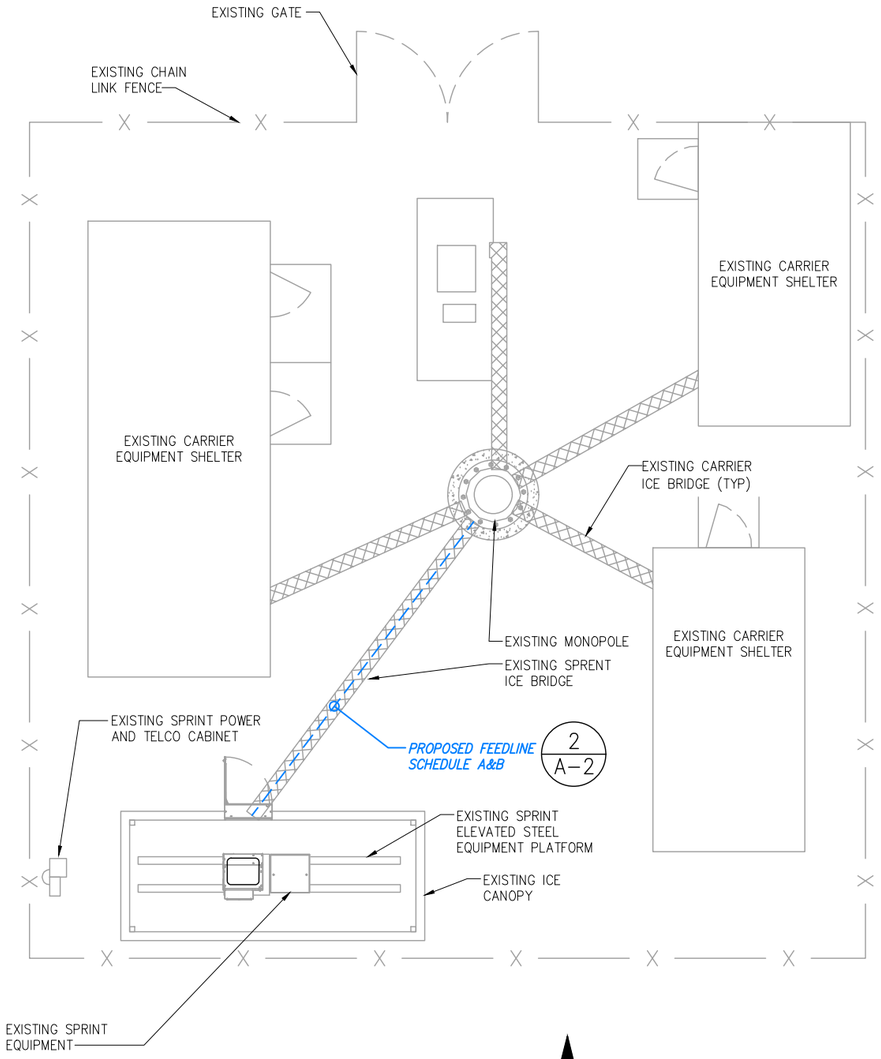
310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:

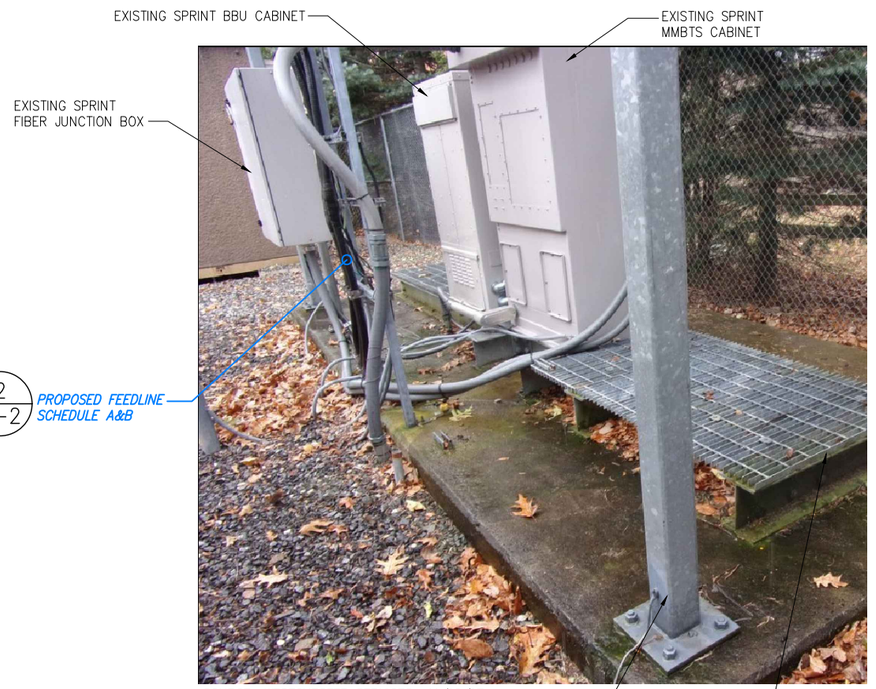
OUTLINE SPECIFICATIONS

SHEET NUMBER:

SP-3



OVERALL SITE PLAN | SCALE: AS NOTED | 1



SOURCE: WESTCHESTER SERVICES 11/16/17

N

SPRINT EQUIPMENT PHOTO DETAIL | SCALE: AS NOTED | 2

PLANS PREPARED FOR:

Sprint

1 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
03-08-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/07/18	MPB	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

CT33XC109

SITE ADDRESS:

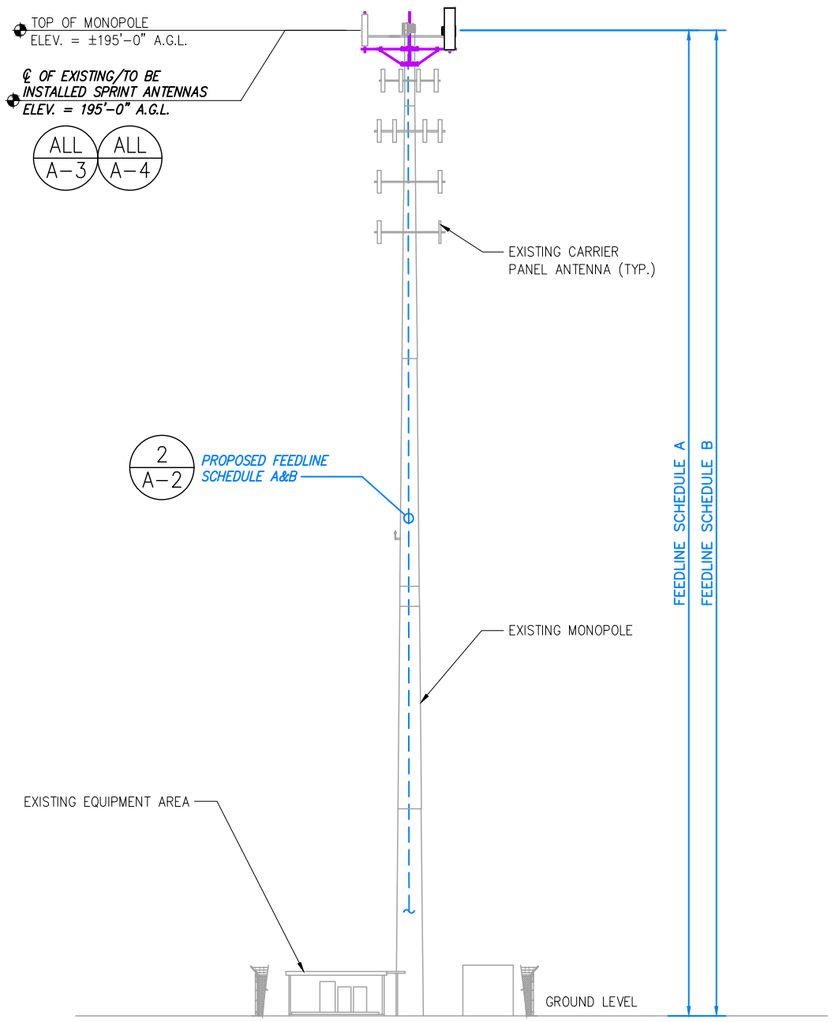
310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

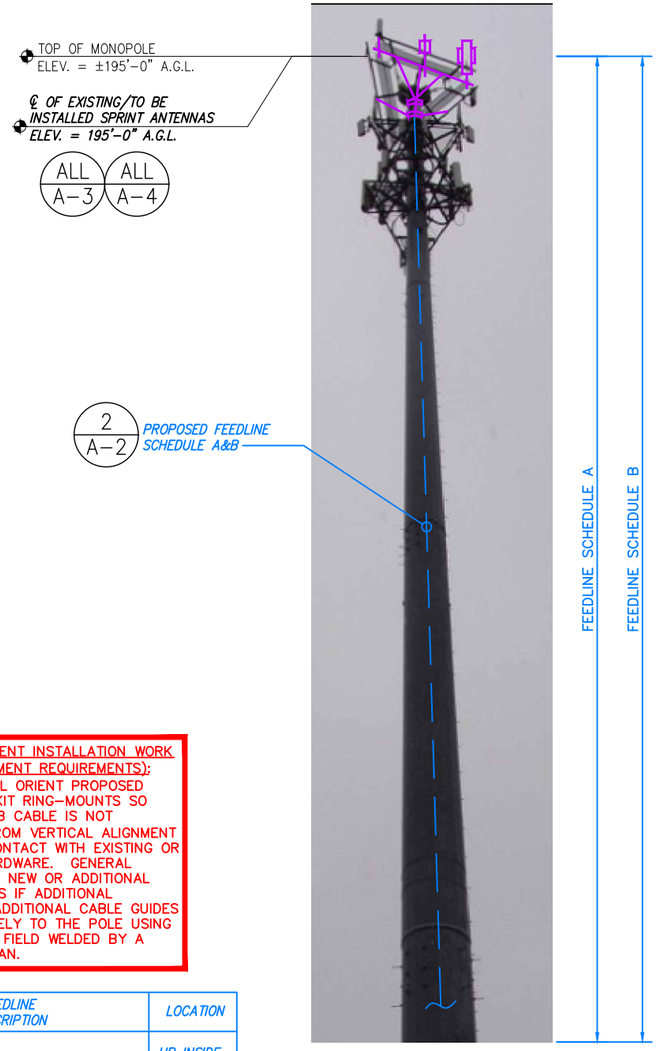


SPECIAL INSTALLATION NOTE:
JUMPERS FROM RRHs TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

TOWER ELEVATION | NO SCALE | 1

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND STRUCTURAL MODIFICATIONS AT THE SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.



SOURCE: WESTCHESTER SERVICES 11/16/17

SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):
GENERAL CONTRACTOR SHALL ORIENT PROPOSED PLATFORM REINFORCEMENT KIT RING-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 RING-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.

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (3) 1 1/4" HYBRID	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (1) 1 1/4" HYBRID TO 195' 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
1 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

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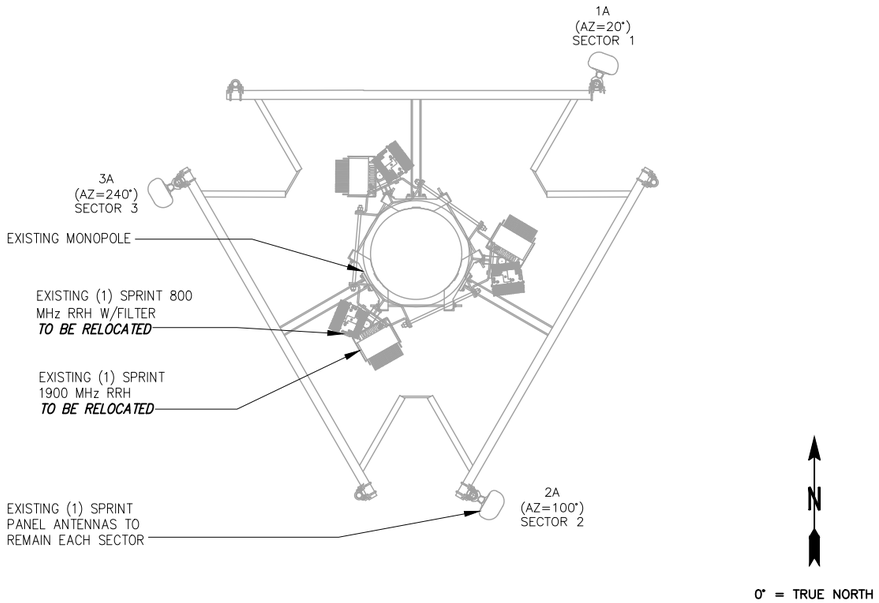
310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2

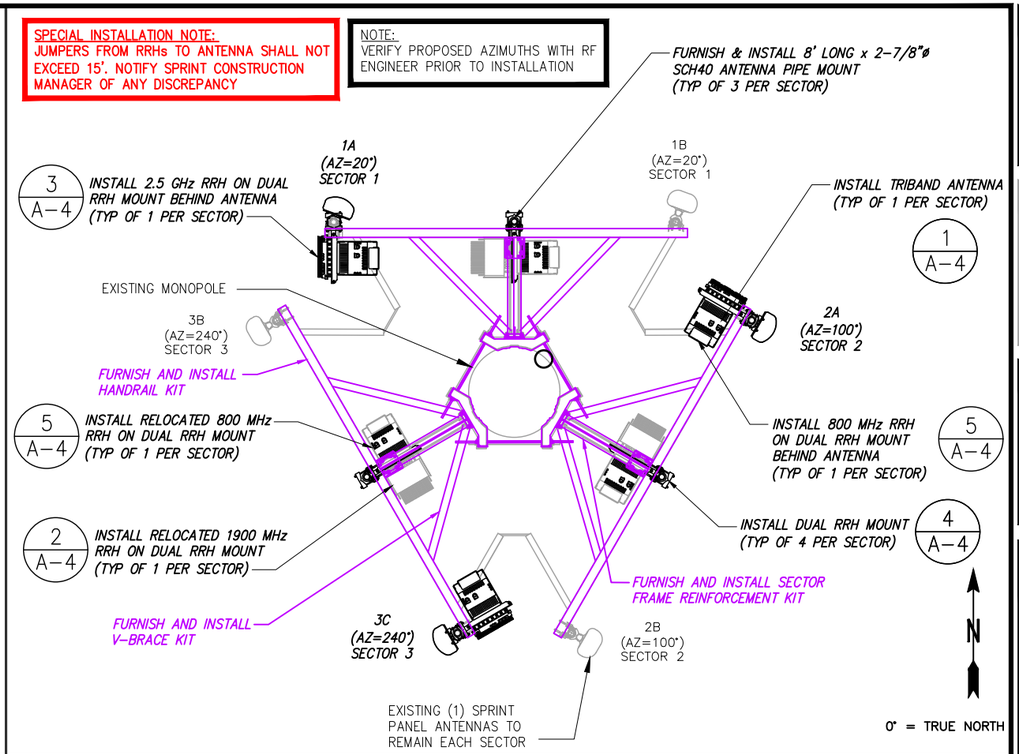
SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND STRUCTURAL MODIFICATIONS AT THE SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.



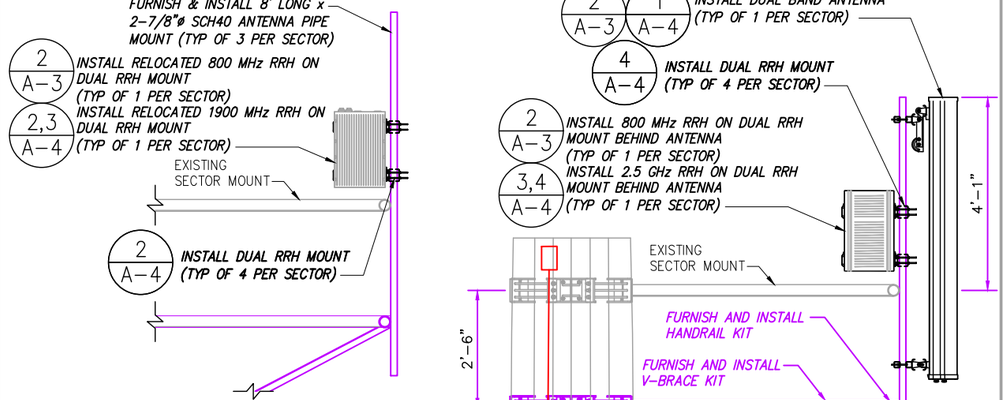
EXISTING ANTENNA & RRH LAYOUT | NO SCALE | 1

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

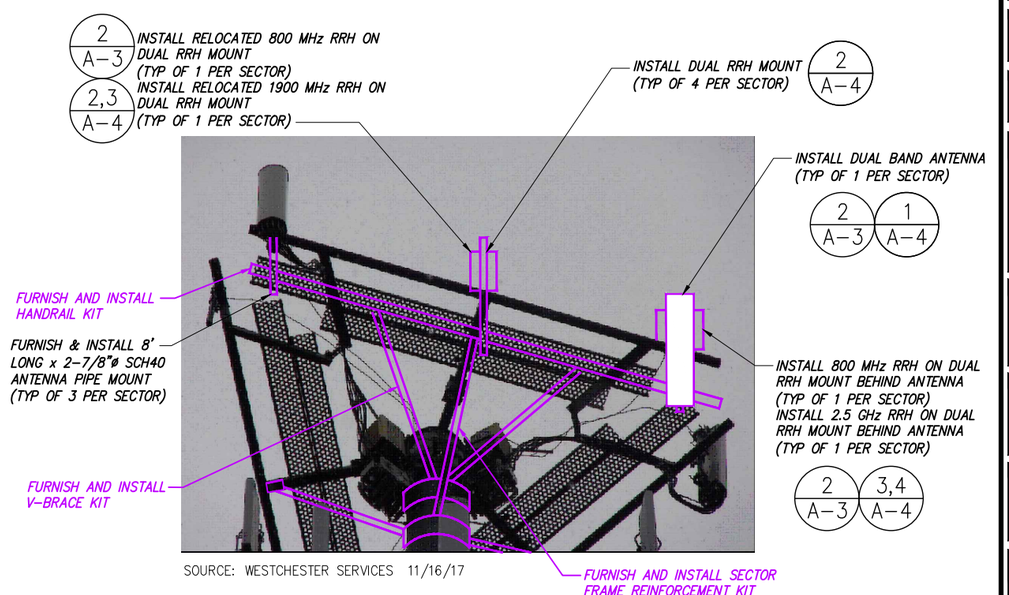


FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2



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



SOURCE: WESTCHESTER SERVICES 11/16/17

ANTENNA & RRH MOUNT PHOTO DETAIL | NO SCALE | 4

PLANS PREPARED FOR:
Sprint
1 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
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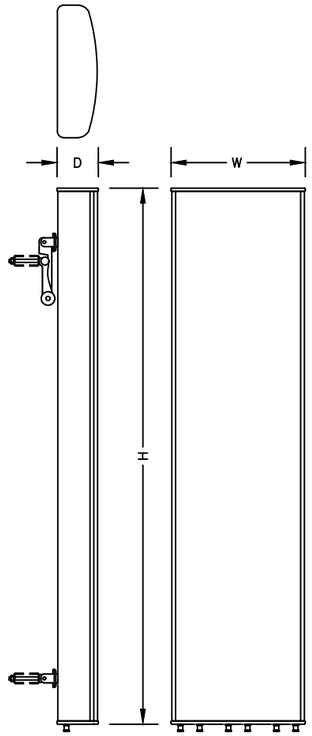
BETHLEHEM, CT 06763

SHEET DESCRIPTION:
ANTENNA LAYOUT
& MOUNTING DETAILS

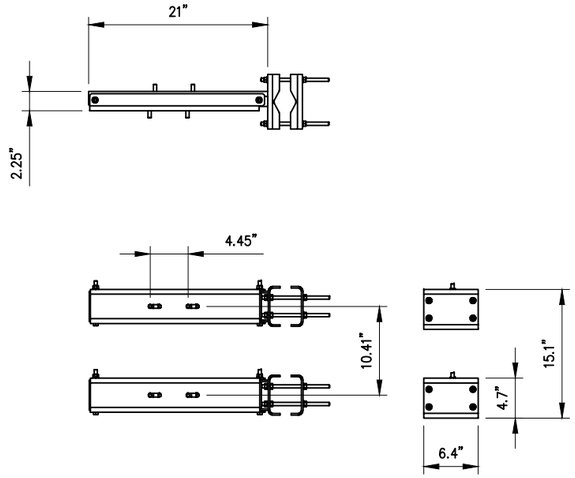
SHEET NUMBER:
A-3



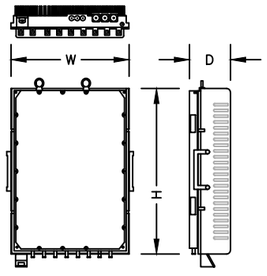
ANTENNA SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	DT465B-2XR
HEIGHT	72"
WIDTH	14"
DEPTH	8"
WEIGHT	58± LBS.

DUAL BAND ANTENNA | NO SCALE | 1



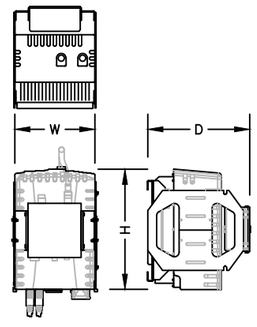
DUAL RRH MOUNT DETAIL | NO SCALE | 2



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



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 | 4

PLANS PREPARED FOR:

Sprint

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

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310 WATERTOWN ROAD
BETHLEHEM, CT 06763

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

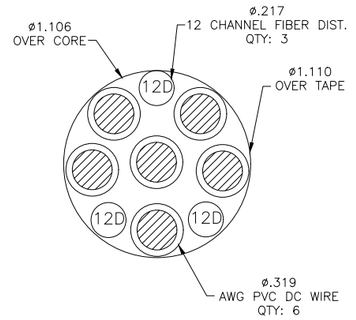
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

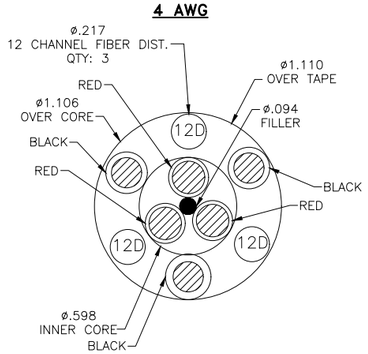
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

* 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.

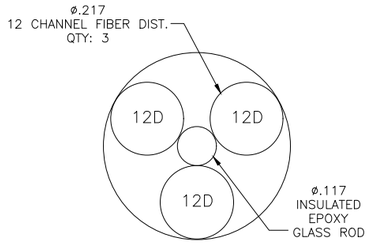
* SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



4 AWG



8 & 6 AWG



FIBER ONLY

800/1900/2500 CROSS SECTION DATA

NO SCALE

1

PLANS PREPARED FOR:

Sprint

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

PROJECT MANAGER:

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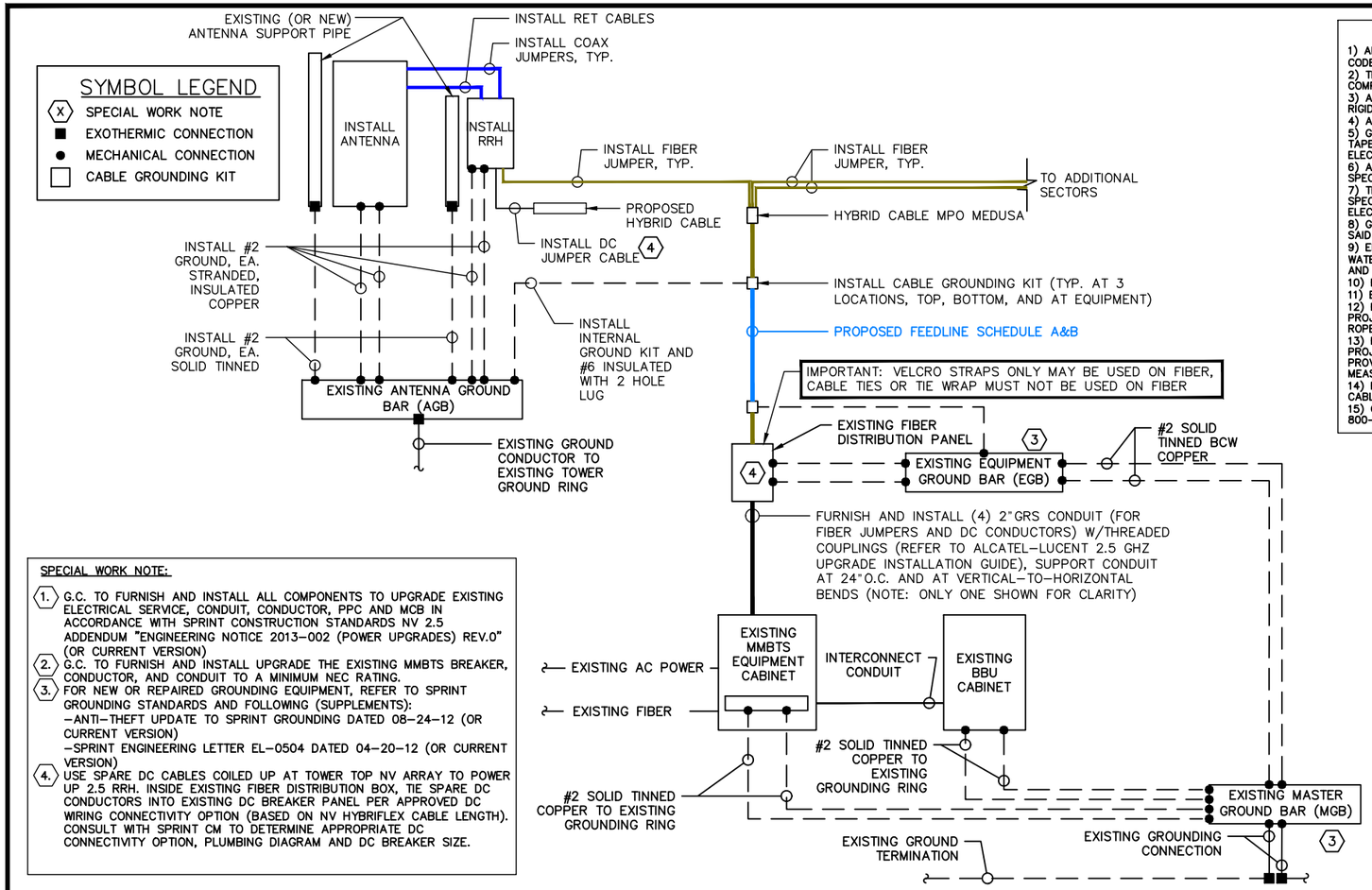
A-5



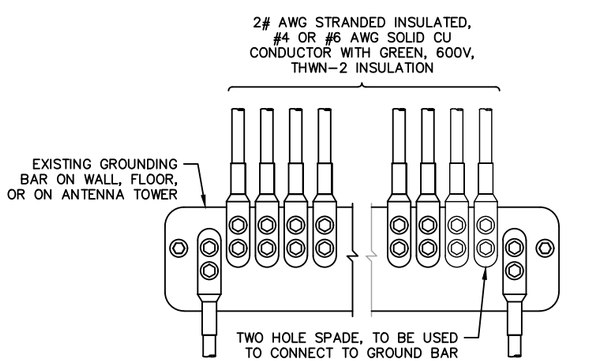
TYPICAL POWER AND GROUNDING ONE LINE DIAGRAMS

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.

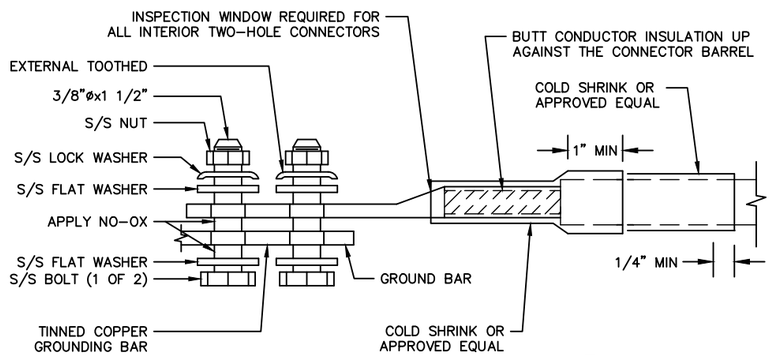


1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

2 / E-1

SCALE: N.T.S.



TWO HOLE LUG

3 / E-1

SCALE: N.T.S.

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:

Sprint

1 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:

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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
03-08-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	03/07/18	MPB	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

CT33XC109

SITE ADDRESS:

310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS & NOTES

SHEET NUMBER:

E-1

SprintVision

RF Design Sheet

Site Identification	
Cascade	CT33XC109
SMS Schedule ID	12323236
SMS Schedule Name	DO Macro Upgrade
PID	
RRU OEM	Alcatel Lucent
Switch OEM	ALU
RFDS Issue Date	2017-08-15 00:00:00.0
RFDS Revision Date	
RFDS Revision	

Filter Analysis Complete	YES
RFDS - Issue Date	08/15/2017
Design Status	Complete
Border Analysis Complete	YES
Project Description	DO Macro Upgrade - Add 2500 MHz and enhance 800 2T4R

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	41.66721944
Longitude	-73.17051666
Market	Southern Connecticut
Region	Northeast
City	Bethlehem
State	CT
Zip Code	CT/06377
County	Litchfield

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	1	1	1	0	0	0

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	DT465B-2XR	DT465B-2XR	DT465B-2XR			
Weight (lbs)	58	58	58	N/A	N/A	N/A
Dimensions	72 x 14 x 8	72 x 14 x 8	72 x 14 x 8	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant1 Top Jumper Make/Model/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	100	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)	194.9475128	194.9475128	194.9475128	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: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	KMW	KMW	KMW	N/A	N/A	N/A
Ant1 Top Jumper Make/Model/Qty	800/1900 Jumper | 2	800/1900 Jumper | 2	800/1900 Jumper | 2	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	100	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)	194.9475128	194.9475128	194.9475128	N/A	N/A	N/A
Antenna 1 Electrical DT	5	5	5	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

Additional RF Notes

Keep Existing NV Antenna for 800/1900 and add 1 800/2500 antenna for LTE2.5 8T8R and enhance 2R for 800 MHz

PLANS PREPARED FOR:

Sprint

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

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134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
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No. 23544
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APPROVED BY:

REVISIONS:

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SITE NUMBER:

CT33XC109

SITE ADDRESS:

310 WATERTOWN ROAD
BETHLEHEM, CT 06763

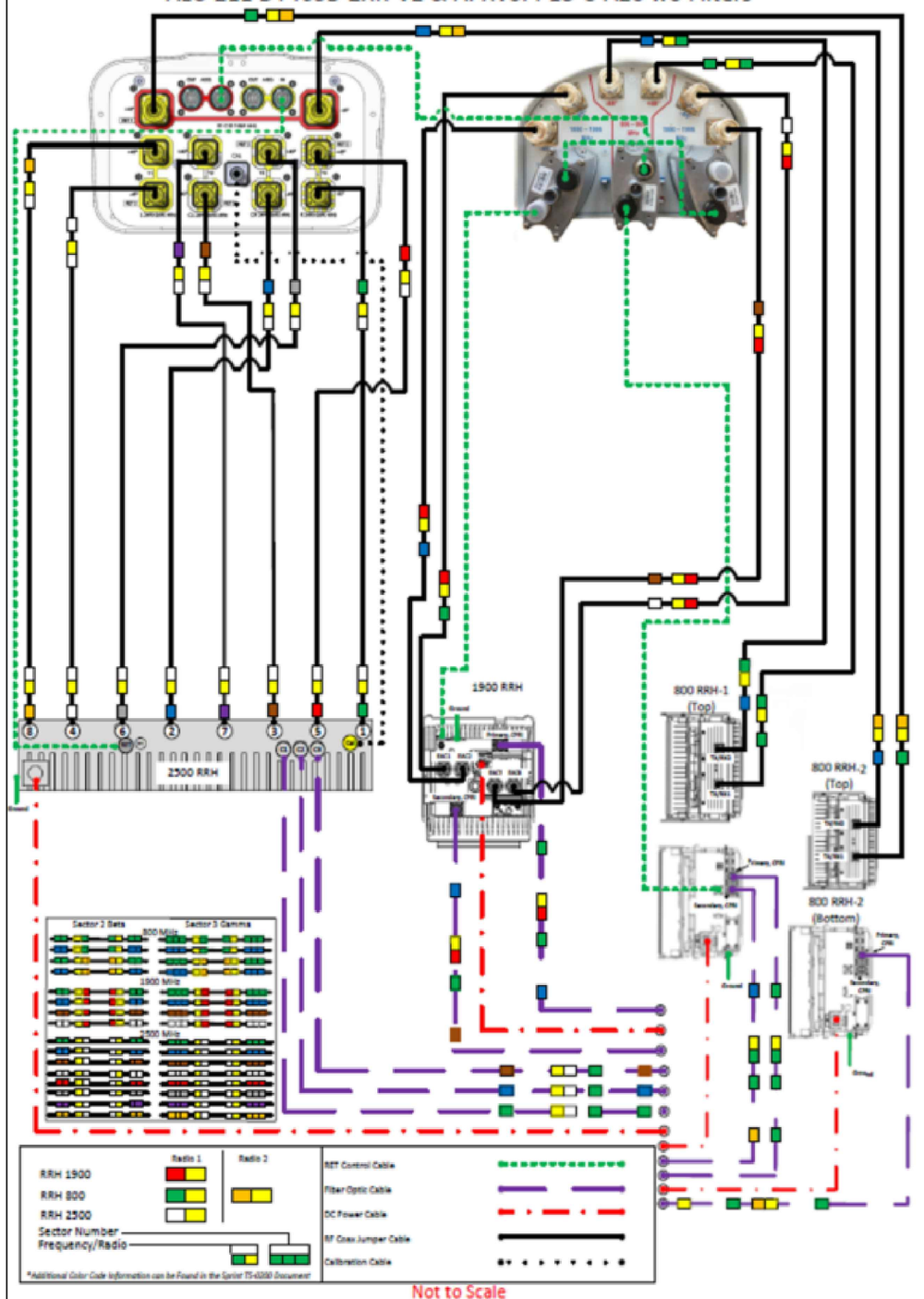
SHEET DESCRIPTION:

RF DATA SHEET

SHEET NUMBER:

RF-1

ALU 211 DT465B-2XR-V2 & APXVSPP18-C-A20 wo Filters



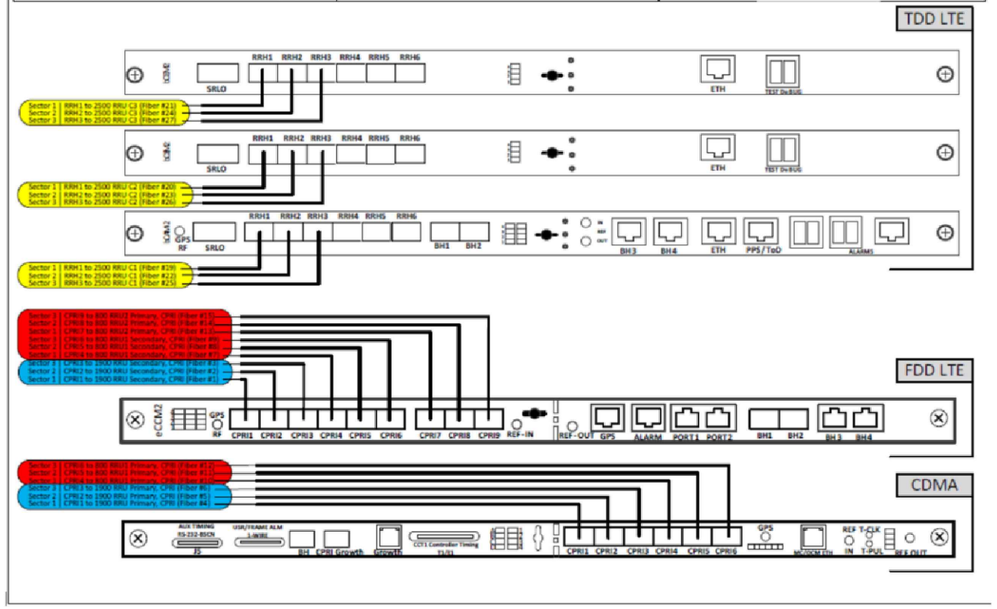
Not to Scale

Prepared By	Creation Date	Revision Number
Mark Elliott	January 24, 2017	R-1
Approved By	Approval Date	
RAN Hardware & Antenna Teams	January 26, 2017	

DO Monopole Fiber Connections

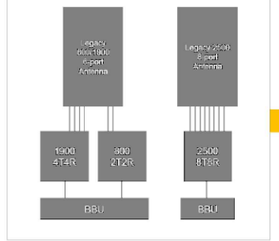
(Nokia-A Triband)

Sprint

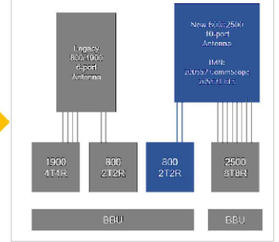


Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Gray	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue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

Existing

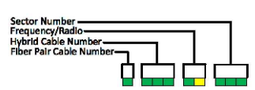


Future



RRH	Radio Port #	Antenna Ports Left	Antenna Ports Right
800MHz	RRU 1-TX/RX1	L+45 (Port 1)	N/A
	RRU 1-TX/RX2	L-45 (Port 2)	
	RRU 2-TX/RX1	N/A	R+45 (Port 3)
	RRU 2-TX/RX2		R-45 (Port 4)
1900MHz	EAC1	L+45 (Port 5)	N/A
	EAC2	L-45 (Port 6)	
	EAC3	N/A	R+45 (Port 7)
	EAC4		R-45 (Port 8)
2500MHz	1	N/A	R8 -45
	2		CR6 -45
	3	CL4 -45	N/A
	4	L2 -45	
	5	N/A	R7 +45
	6		CR5 +45
	7	CL3 +45	N/A
	8	L1 +45	

Frequency/Radio	Indicator	ID
800 #1	Yellow	Green
800 #2	Yellow	Orange
1900 #1	Yellow	Red
1900 #2	Yellow	Brown
1900 #3	Yellow	Blue
1900 #4	Yellow	Grey
2500 #1	Yellow	White
2500 #2	Yellow	Purple



PLUMBING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:

Sprint

1 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
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ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
03-08-18
LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
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ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

CT33XC109

SITE ADDRESS:

310 WATERTOWN ROAD
BETHLEHEM, CT 06763

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

RF-2

CT33XC109
DO MACRO EQUIPMENT DEPLOYMENT

MOUNT AUGMENTATION @ 195'

MONOPOLE TOWER

BETHLEHEM, CT
LITCHFIELD COUNTY

SITE INFORMATION

STRUCTURE TYPE:	MONOPOLE
MOUNT TYPE:	T-ARMS
LATITUDE:	41.667219 (NAD 83)
LONGITUDE:	-73.170516 (NAD 83)
CITY, STATE:	BETHLEHEM, CT
COUNTY:	LITCHFIELD
SBA SITE:	CT01501-S Morris

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

RIGGING PLAN REQUIRED

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

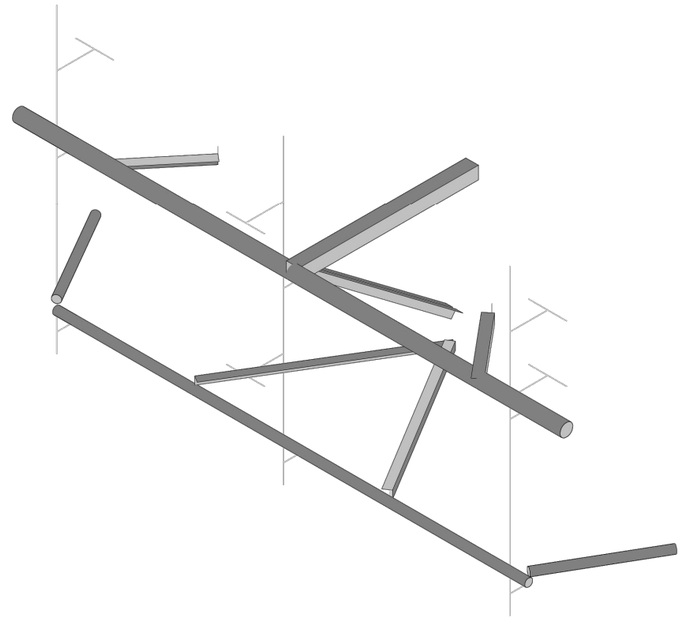
A PROPER RIGGING PLAN SHALL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO PROCEEDING ON ANY AUGMENTATIONS SHOWN HEREIN.

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)

Sprint
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
P: 800.357.7641

SBA
134 FLANDERS RD., SUITE 125
WESTBOROUGH, MA 01581
P: 508.251.0720

GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
P: 530.539.4787
E: CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

REVISIONS:

0	03/05/18	ISSUE FOR CONSTRUCTION	JAD

CHECKED BY: DWG

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32156
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC109

BETHLEHEM, CT

LATITUDE: 41.667219
LONGITUDE: -73.170516

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

Sprint
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
P: 800.357.7641

SBA
134 FLANDERS RD., SUITE 125
WESTBOROUGH, MA 01581
P: 508.251.0720

GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
P: 530.539.4787
E: CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

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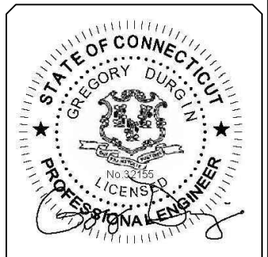


SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC109

BETHLEHEM, CT

LATITUDE: 41.667219
LONGITUDE: -73.170516

SHEET TITLE:

NOTES AND SPECIFICATIONS

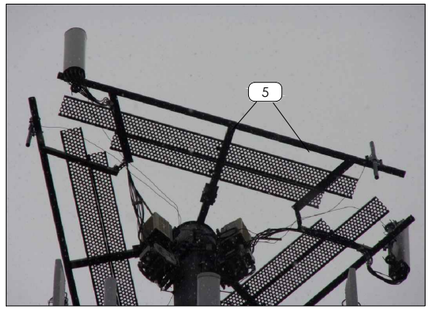
SHEET NUMBER:

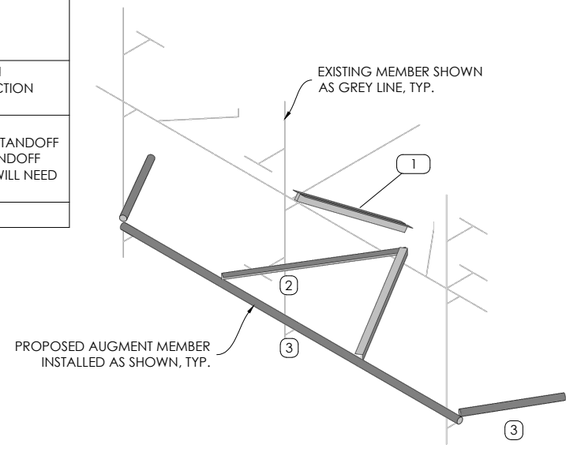
S2

T-ARMS @ 195' AUGMENTATION

NEW MOUNT AUGMENTATIONS

1	PLATFORM REINFORCEMENT KIT SITEPRO1 PART# PRK-1245L. ATTACH PRK COLLAR TO MONOPOLE SHAFT ~3.0' 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]
2	V-BRACE KIT SITEPRO1 PART# PRK-SFS-L. ATTACH COLLAR MOUNT TO MONOPOLE SHAFT ~4.0' BELOW EXISTING STANDOFF CENTERLINE. NOTE: IF THE PRK-SFS-L KIT IS NOT AVAILABLE, PROVIDE (6) TOTAL L2 1/2 x2½x$^{3}/_{16}$ x ~8' LONG REPLACEMENT ANGLES, FIELD-CUT AND DRILL TO SUIT. [(1) KIT TOTAL]
3	HORIZONTAL FACE RAIL COMPONENTS ▪ PIPE2.0STD X 12.5' HORIZ. RAIL, [(3) TOTAL]. ATTACH SFS-L KIT ANGLES TO NEW HORIZ. RAIL. ▪ PIPE2.0STD X ~4' LONG CORNER BRACES, [(3) TOTAL]. ATTACH TO NEW HORIZ. RAIL W/ (6) SITEPRO1 PART# PUCK BRACKETS. ▪ PIPE2.5STD MOUNT PIPES, [(9) TOTAL] W/ SITEPRO1 SCX**x**-K, [(18) TOTAL] CROSS-OVER PLATES. ATTACH ALL MOUNT PIPES TO EXISTING AND NEW HORIZ. RAILS.
4	PANEL ANTENNAS TO BE INSTALLED IN POSITIONS 1 AND 4 AS SHOWN IN CONSTRUCTION DRAWINGS. RRH UNITS TO BE INSTALLED IN POSITIONS 1 AND 2 AS SHOWN IN CONSTRUCTION DRAWINGS.
5	NOTE: IN ORDER FOR THE SPECIFIED MODIFICATIONS TO PERFORM AS DESIGNED AND TO "FIT-UP" THE EXISTING NUDD T-ARM MOUNTS MUST BE APPROPRIATELY ROTATED ON STANDOFF MEMBER SUCH THAT THEY ARE PERPENDICULAR TO THE FACE OF THE TOWER (T-ARM STANDOFF TUBE AND COLLAR STANDOFF MEMBER TO BE COLINEAR). PANEL ANTENNA AZIMUTHS WILL NEED TO BE ADJUSTED TO OBTAIN DESIRED AZIMUTHS.
AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.	

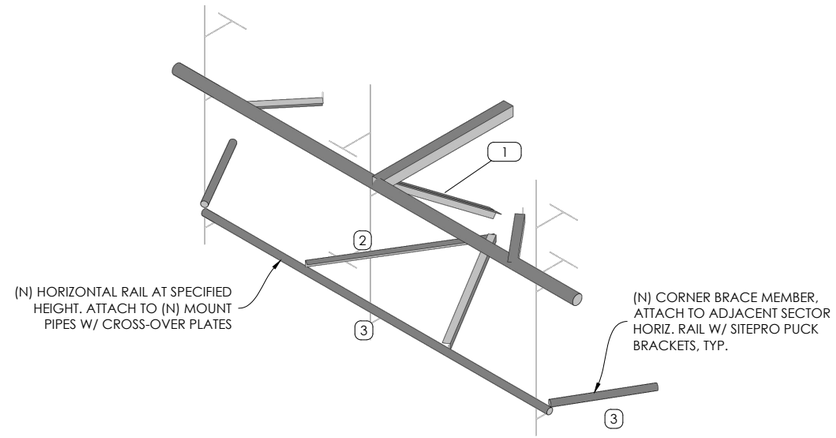




MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.

CONSTRUCTION NOTES

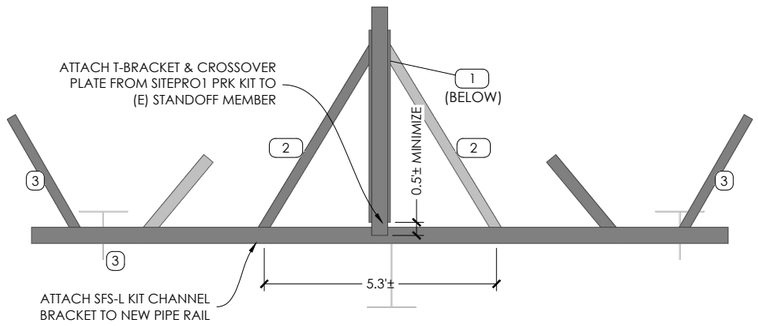
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF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



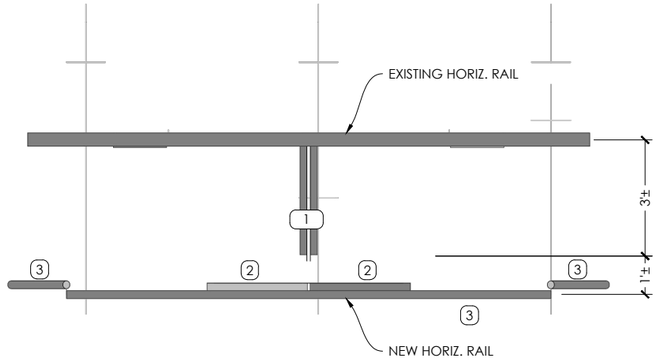
AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

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.

Sprint
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
P: 800.357.7641

SBA
134 FLANDERS RD., SUITE 125
WESTBOROUGH, MA 01581
P: 508.251.0720

GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
P: 530.539.4787
E: CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

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CHECKED BY: DWG

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

CT33XC109

BETHLEHEM, CT

LATITUDE: 41.667219
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SHEET TITLE:

AUGMENTATIONS, SECTIONS & DETAILS

SHEET NUMBER:

S3