



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### VIA ELECTRONIC MAIL

August 24, 2018

Kri Pelletier  
Property Specialist  
SBA Communications Corporation  
134 Flanders Rd., Suite 125  
Westborough, MA 01581

RE: **EM-SPRINT-116-180702** – Sprint notice of intent to modify an existing telecommunications facility located at 154 Sayle Avenue, Putnam, Connecticut.

Dear Ms. Pelletier:

The Connecticut Siting Council (Council) is in receipt of your correspondence of August 23, 2018 submitted in response to the Council's July 19, 2018 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/FC/emr



## Robidoux, Evan

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**From:** Kri Pelletier <KPelletier@sbsite.com>  
**Sent:** Thursday, August 23, 2018 2:45 PM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council  
**Subject:** RE: [External] Council Extension Letter for EM-SPRINT-116-180702-SayleAve-Putnam  
**Attachments:** em-sprint-116-180702\_extltr\_sayleave.pdf; EM-SPRINT-116-180702\_2ndincompleteltr\_SayleAve.pdf; em-sprint-116-180702\_incompleteltr\_sayleavenue\_putnam.pdf; CT23XC409-Passing SA rev2.pdf

Good Afternoon,

Thank you for your letter of 8/15/18 granting extension to submit documentation with regard to EM-SPRINT-116-180702. We are now in receipt of the revised Structural Analysis requested in Council's letter of 7/19/18 and have attached herewith.

Thank you,

**Kri Pelletier**  
*Prop Spec - Svcs*

508.251.0720 x3804 + T  
508.366.2610 + F  
203.446.7700 + C

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**From:** Robidoux, Evan [mailto:Evan.Robidoux@ct.gov]  
**Sent:** Wednesday, August 15, 2018 12:41 PM  
**To:** Kri Pelletier  
**Cc:** CSC-DL Siting Council  
**Subject:** [External] Council Extension Letter for EM-SPRINT-116-180702-SayleAve-Putnam

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051



**Tower Engineering Solutions**

Phone (972) 483-0607, Fax (972) 975-9615  
1320 Greenway Drive, Suite 600, Irving, Texas 75038

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## Structural Analysis Report

Existing 175 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT00680-S

Customer Site Name: Putnam

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT23XC409 / Putnam

Site Location: 154 Sayle Avenue

Putnam, Connecticut

Windham County

Latitude: 41.929449

Longitude: -71.886272

### Analysis Result:

Max Structural Usage: 99.8% [Pass]

Max Foundation Usage: 49% [Pass]

Additional Usage Caused by Mount Modification: 7%

Report Prepared By: Mariana Franco



*MFR*  
8/17/18

## Introduction

The purpose of this report is to summarize the analysis results on the 175 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

<b>Tower Drawings</b>	Tower Drawing prepared by Fred A. Nudd, drawing #98-6220-1 dated 11/12/98
<b>Foundation Drawing</b>	Foundation Drawing prepared by Fred A. Nudd, drawing #98-6220-2 dated 11/12/98
<b>Geotechnical Report</b>	Geotechnical Report prepared by Jaworski Geotech, Project #C98291G dated 8/4/98
<b>Modification Drawings</b>	Modification Drawing prepared by o2wirelss Solutions, Job #2230-019 dated 5/30/02 Modification Drawing prepared by FDH, Project #12-01602E S2 dated 4/30/12 Modification Drawing prepared by TES, Job #17447 dated 12/21/15

## Analysis Criteria

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

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 130.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 101.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_S = 0.172g$ , $S_1 = 0.063g$

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

## Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	191.5	6	EMS - DR65-18-02DPL2Q - Panel	(3) 24' x 4.5 Pipe Mounts	(12) 1 5/8"	T-Mobile
2	188.5	6	Andrew - E15S09P9402 - TMA/TTA			
-	177.0	3	KMW - ETCR-654L12H6 - Panel	(3) T-arms	(4) 1 1/4" Fiber	Sprint Nextel
-		3	ALU - 1900MHz - RRU			
-		6	ALU - 800 MHz - RRU			
-		3	ALU - TD-RRH8x20-25 - RRU			
8	148.0	3	Amphenol - BXA-80080/4CF - Panel	Low Profile Platform	(11) 1 5/8" (2) 1 5/8" Hybrid	Verizon
9		6	Commscope - SBNHH-1D65B - Panel			
10		3	Amphenol - BXA-70063-6CF-EDIN-X - Panel			
11		6	RFS - FD9R6004-2C-3L - Diplexer			
12		3	ALU - RRH2X60-AWS - RRU			
13		3	ALU - RRH2X60-PCS - RRU			
14		3	ALU - RRH2X60-700 - RRU			
15	2	RFS - DB-T1-6Z-8AB-OZ - Distribution Box				
16	137.5	3	Powerwave 7770 - Panel	Low Profile Platform	(12) 1 5/8" ** (4) 3/4" DC ** (2) 7/16" Fiber	AT&T
17		3	KMW AM-X-CD-17-65-00T-RET - Panel			
18		6	Powerwave LGP21401 TMA			
19		3	Ericsson RRUS 11			
20		1	Raycap DC6-48-60-18-8F - Surge			
21		3	Cci Antennas TPA-65R-LCUUUU-H8 - Panel			
22		6	Ericsson RRUS-32			
23		3	Kaelus DBC0061F1V51-2- Combiner			
24	1	Raycap DC6-48-60-18-8C - Surge				
26	124.0	6	Kathrein - 742 351 - Panel	Low Profile Platform	(12) 1 5/8" (1) 3/8" RET	Metro PCS
27	55.5	1	Lucent - GPS	Standoff	(1) 1/2"	Sprint

\*\*Existing (2) 3/4" DC and (1) 7/16" Fiber lines are routed in (1) 3" Flex 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
3	177.0	3	ALU 1900 Mhz - RRUs	(3) T-Arms w/ (1) SitePro PRK-1245L reinforcement kit, (1) SitePro PRK-SFS-L V-brace kit, (3) 2” std. pipe x 12.5’ horizontal rails, (3) 2” std. pipe x 4’ corner braces, and (6) Puck Brackets and (12) 2.0” Pipe Mast	(4) 1 1/4” Fiber	Sprint Nextel
4		6	ALU 800 Mhz - RRUs			
5		3	ALU TD-RRH8x20-25 - RRUs			
6		3	RFS APXVTM14-C-I20 - Panel			
7		3	Commscope NNVV-65B-R4 - Panel			

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

## **Analysis Results**

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	<b>99.8%</b>	<b>60.3%</b>	<b>79.6%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	5446.0	43.5	56.5

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

## **Operational Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.7945 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 90.60% at 105.0ft

**Structure:** CT00680-S-SBA  
**Site Name:** Putnam  
**Height:** 175.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Gh:** 1.1

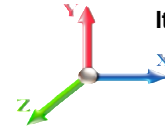
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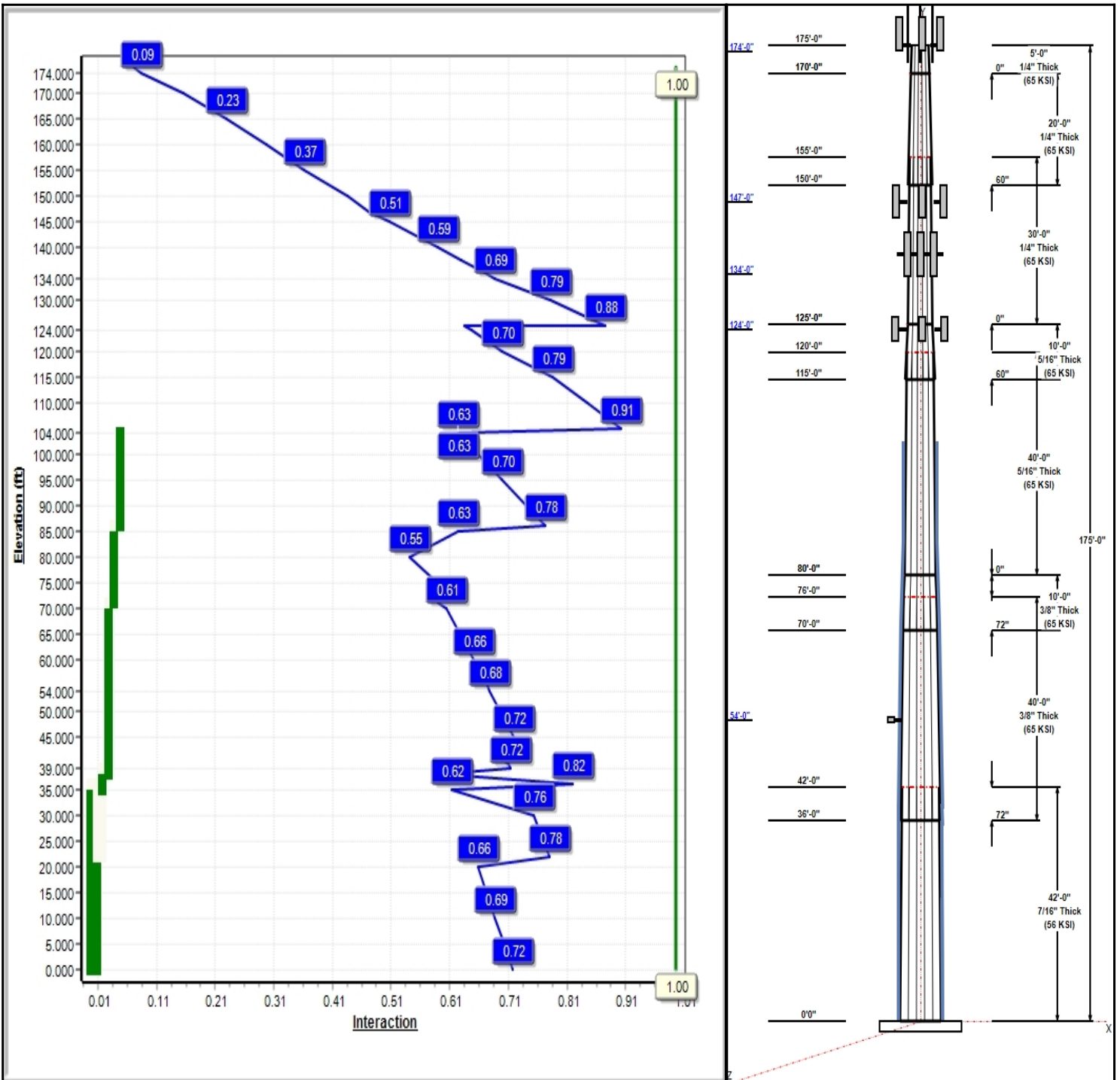
Dead Load Factor: 1.20  
 Wind Load Factor: 1.60

**Load Case : 1.2D + 1.6W 101 mph Wind**



**Iterations:** 25

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## Structure: CT00680-S-SBA

**Type:** Custom  
**Site Name:** Putnam  
**Height:** 175.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 12 Sided  
**Taper:** 1.15000

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### Shaft Properties

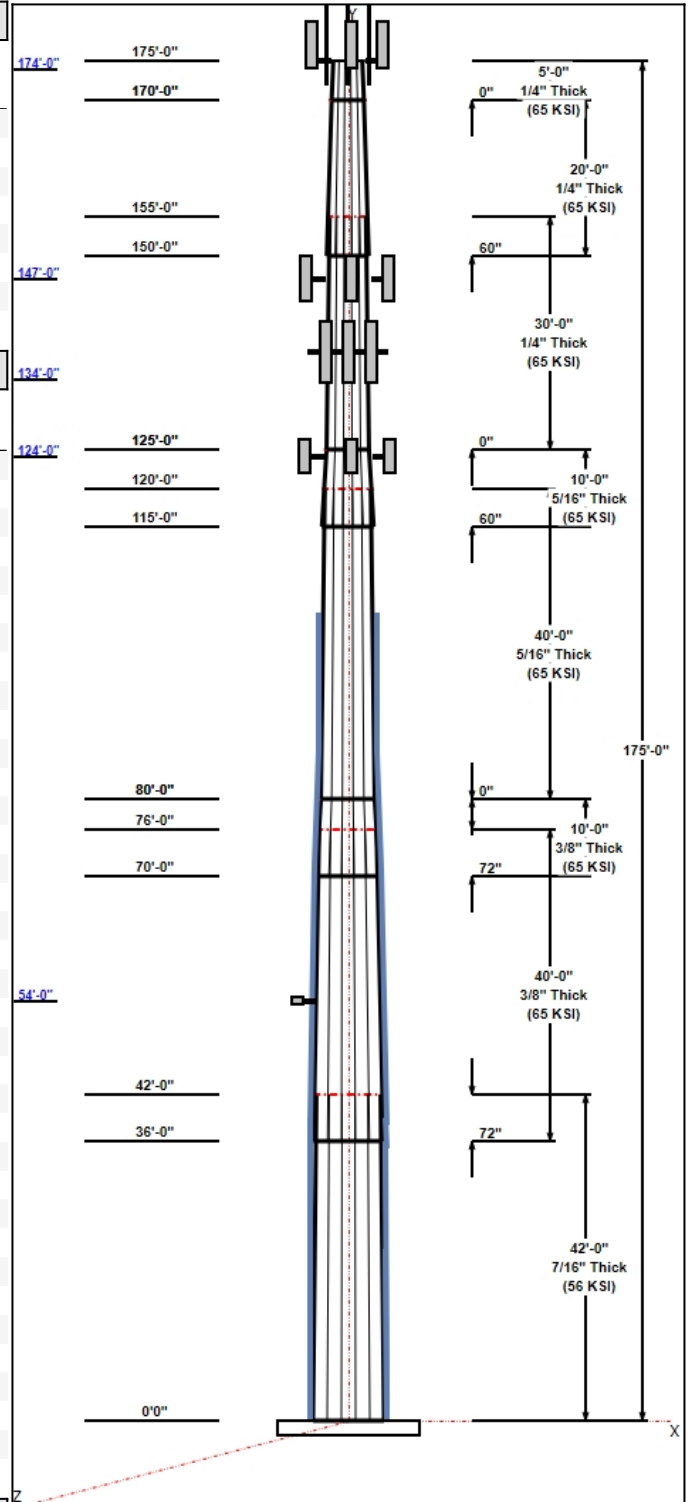
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	42.00	45.88	54.00	0.438		0.19338	56
2	40.00	40.05	47.79	0.375	Slip	0.19338	65
3	10.00	40.03	41.96	0.375	Slip	0.19338	65
4	40.00	32.29	40.03	0.313	Butt	0.19338	65
5	10.00	31.95	33.89	0.313	Slip	0.19338	65
6	30.00	26.15	31.95	0.250	Butt	0.19338	65
7	20.00	23.75	27.62	0.250	Slip	0.19338	65
8	5.00	18.00	23.75	0.250	Butt	1.15000	65

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
175.00	191.50	6	DR65-18-02DPL2Q	T-Mobile
175.00	188.50	6	E15S09P94	T-Mobile
175.00	175.00	3	T-Arms	Sprint Nextel
175.00	177.00	3	APXVTM14-C-I20	Sprint Nextel
175.00	177.00	3	NNVV-65B-R4	Sprint Nextel
175.00	175.00	1	PRK-SFS-L	Sprint Nextel
175.00	177.00	3	1900MHz	Sprint Nextel
175.00	177.00	6	800 MHz	Sprint Nextel
175.00	177.00	3	TD-RRH8x20-25	Sprint Nextel
175.00	175.00	12	Pipes	Sprint Nextel
175.00	175.00	1	Handrail	Sprint Nextel
175.00	175.00	1	PRK-1245L	Sprint Nextel
174.00	184.00	3	4.5" x 24 FT Pipe	T-Mobile
147.00	147.00	3	BXA-70063-6CF-EDIN-X	Verizon
147.00	147.00	3	BXA-80080-4CF	Verizon
147.00	147.00	6	SBNHH-1D65B	Verizon
147.00	147.00	6	FD9R6004/2C-3L	Verizon
147.00	147.00	2	DB-T1-6Z-8AB-0Z	Verizon
147.00	144.00	3	RRH2X60-AWS	Verizon
147.00	144.00	3	RRH2X60-PCS	Verizon
147.00	144.00	3	RRH2X60-700	Verizon
147.00	147.00	3	T-Arms	Verizon
137.50	137.50	1	Low Profile	AT&T
134.00	137.50	3	TPA-65R-LCUUUU-H8	AT&T
134.00	137.50	6	RRUS-32	AT&T
134.00	137.50	3	DBC0061F1V51-2	AT&T
134.00	137.50	1	DC6-48-60-18-8C	AT&T
134.00	137.50	3	7770.00	AT&T
134.00	137.50	3	AM-X-CD-17-65-00T-RET	AT&T
134.00	137.50	6	LGP21401	AT&T
134.00	137.50	3	RRUS 11	AT&T
134.00	137.50	1	DC6-48-60-18-8F	AT&T
124.00	124.00	6	742 351	Metro PCS
124.00	124.00	3	T-Arms	Metro PCS
54.00	54.00	1	GPS	Sprint
54.00	54.00	1	Standoff	Sprint

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	192.00	Inside	1 5/8" Coax	T-Mobile
0.00	177.00	Inside	1-1/4" Fiber	Sprint Nextel



**Structure: CT00680-S-SBA**

**Type:** Custom  
**Site Name:** Putnam  
**Height:** 175.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 12 Sided  
**Taper:** 1.15000

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0.00	147.00	Inside	1 5/8" Coax	Verizon
0.00	147.00	Inside	1 5/8" Hybrid	Verizon
0.00	134.00	Inside	1 5/8" Coax	AT&T
0.00	134.00	Inside	3/4" DC	AT&T
0.00	134.00	Inside	7/16" Fiber	AT&T
0.00	124.00	Inside	1 5/8" Coax	Metro PCS
0.00	124.00	Inside	3/8" RET	Metro PCS
0.00	105.00	Outside	3" Chanel	
0.00	54.00	Inside	1/2" Coax	Sprint

**Anchor Bolts**

Qty	Specifications	Grade (ksi)	Arrangement
18	2.00" A687	105.0	Radial

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	67.0	50.0	Round

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	5446.0	43.5	56.5
0.9D + 1.6W 101 mph Wind	5388.1	43.5	42.4
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1255.1	9.4	83.5
1.2D + 1.0E	272.0	2.0	56.6
0.9D + 1.0E	268.8	2.0	42.4
1.0D + 1.0W 60 mph Wind	1195.0	9.6	47.1

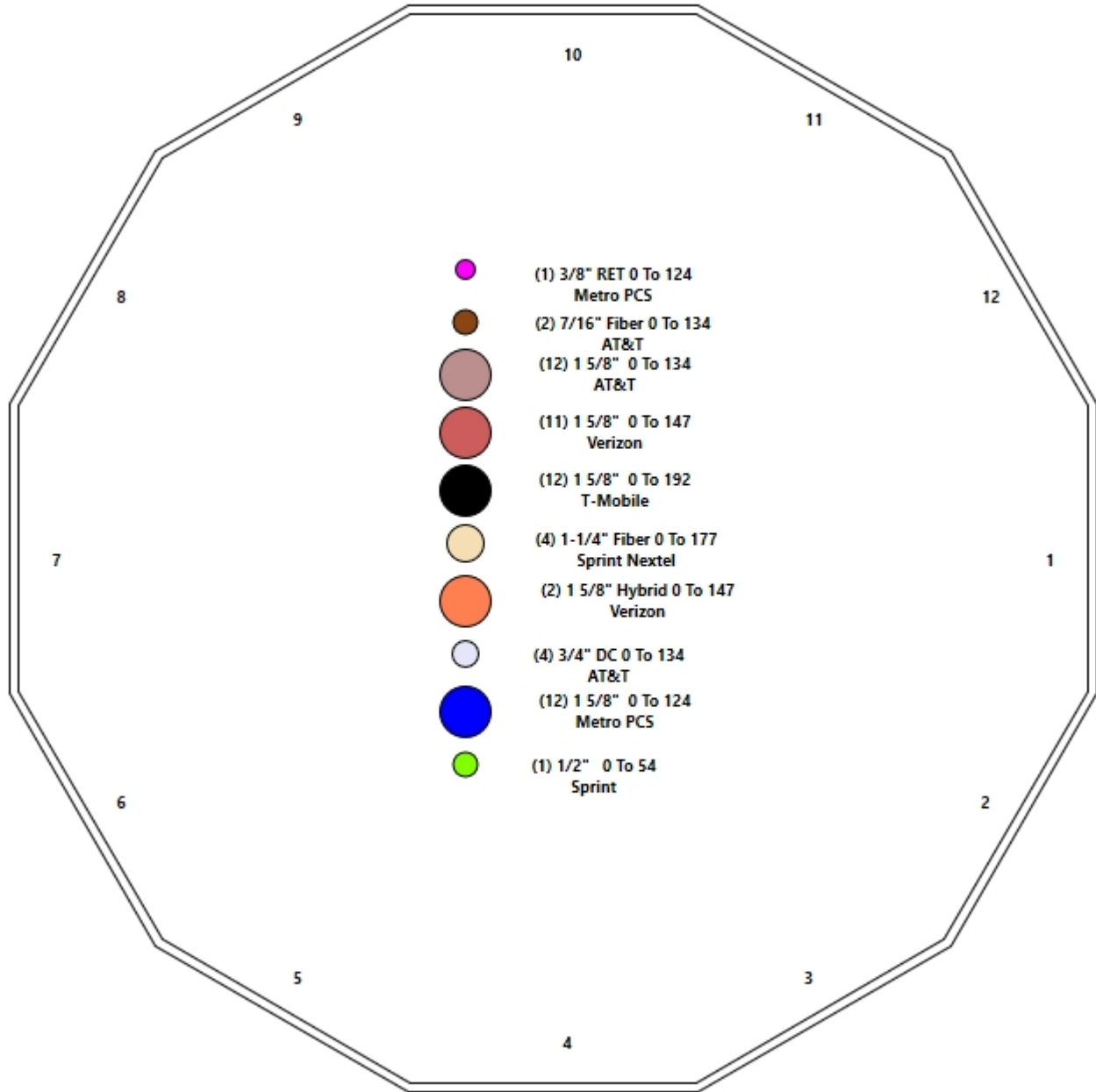
# Structure: CT00680-S-SBA - Coax Line Placement

Type: Monopole  
Site Name: Putnam  
Height: 175.00 (ft)

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## Shaft Properties

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	12	42.000	0.4375	56		0.00	9,966
2	12	40.000	0.3750	65	Slip	72.00	7,157
3	12	10.000	0.3750	65	Slip	72.00	1,669
4	12	40.000	0.3125	65	Flange	0.00	4,910
5	12	10.000	0.3125	65	Slip	60.00	1,116
6	12	30.000	0.2500	65	Flange	0.00	2,367
7	12	20.000	0.2500	65	Slip	60.00	1,393
8	12	5.000	0.2500	65	Flange	0.00	282
<b>Total Shaft Weight:</b>							<b>28,861</b>

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	54.00	0.00	75.46	27631.37	30.93	123.43	45.88	42.00	64.01	16871.2	25.95	104.8	0.193382
2	47.79	36.00	57.25	16427.51	32.00	127.44	40.05	76.00	47.91	9627.65	26.48	106.8	0.193382
3	41.96	70.00	50.22	11086.25	27.84	111.90	40.03	80.00	47.88	9610.54	26.46	106.7	0.193382
4	40.03	80.00	39.97	8046.71	32.18	128.09	32.29	120.00	32.18	4201.39	25.55	103.3	0.193382
5	33.89	115.0	33.78	4860.52	26.91	108.44	31.95	125.00	31.84	4068.08	25.25	102.2	0.193382
6	31.95	125.0	25.52	3273.79	32.10	127.81	26.15	155.00	20.85	1785.33	25.88	104.6	0.193382
7	27.62	150.0	22.03	2106.17	27.46	110.47	23.75	170.00	18.92	1333.48	23.31	95.00	0.193382
8	23.75	170.0	18.92	1333.48	23.31	95.00	18.00	175.00	14.29	574.61	17.15	72.00	1.150000

### Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	┌ Intermediate Connectors ┐	┌ Termination Connectors ┐	Lower Qty	Upper Qty		
							Spacing (in)	Description			Spacing (in)	
0.00	36.00	3	PLT C10x30(1.5" Hole)	65	80	0.00	AJM20&sleeve	0.00	AJM20&sleeve	3.00		
0.00	22.00	3	PLT C10x30(1.5" Hole)	65	80	0.00	AJM20&sleeve	24.00	AJM20&sleeve	3.00		
35.00	39.00	3	LNP LP6X100-G-10TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	11	11
38.00	71.25	3	PLT C10x30(1.5" Hole)	65	80	0.00	AJM20&sleeve	24.00	AJM20&sleeve	3.00		
71.25	86.00	3	PLT C10x30(1.5" Hole)	65	80	0.00	AJM20&sleeve	24.00	AJM20&sleeve	3.00		
86.00	104.0	3	PLT C10x15.3(1.5" Hole)	65	80	0.00	AJM20&sleeve	24.00	AJM20&sleeve	3.00		

## Load Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	175.00	DR65-18-02DPL2Q	6	24.00	5.81	0.67	158.71	6.884	0.69	0.00	16.50
2	175.00	E15S09P94	6	14.60	0.66	0.60	32.11	1.273	0.60	0.00	13.50
3	175.00	T-Arms	3	242.00	11.00	0.75	451.13	24.997	0.75	0.00	0.00
4	175.00	APXVTM14-C-I20	3	56.20	6.34	0.77	219.62	7.472	0.77	0.00	2.00
5	175.00	NNVV-65B-R4	3	77.40	12.27	0.74	367.39	13.749	0.74	0.00	2.00
6	175.00	PRK-SFS-L	1	230.00	7.70	1.00	556.11	15.888	1.00	0.00	0.00
7	175.00	1900MHz	3	60.00	2.77	0.67	144.73	4.058	0.67	0.00	2.00
8	175.00	800 MHz	6	53.00	2.49	0.67	128.11	3.651	0.67	0.00	2.00
9	175.00	TD-RRH8x20-25	3	70.00	4.05	0.67	182.54	4.877	0.67	0.00	2.00
10	175.00	Pipes	12	33.00	1.90	0.80	84.47	4.311	0.80	0.00	0.00
11	175.00	Handrail	1	415.06	9.85	1.00	827.01	22.419	1.00	0.00	0.00
12	175.00	PRK-1245L	1	464.91	9.50	1.00	794.50	19.602	1.00	0.00	0.00
13	174.00	4.5" x 24 FT Pipe	3	259.20	13.50	1.00	513.18	20.585	1.00	0.00	10.00
14	147.00	BXA-70063-6CF-EDIN-X	3	17.00	7.57	0.77	165.00	10.328	0.77	0.00	0.00
15	147.00	BXA-80080-4CF	3	12.00	3.56	0.88	100.05	5.398	0.88	0.00	0.00
16	147.00	SBNHH-1D65B	6	50.71	8.08	0.82	251.83	9.369	0.82	0.00	0.00
17	147.00	FD9R6004/2C-3L	6	3.10	0.36	0.50	11.11	0.802	0.50	0.00	0.00
18	147.00	DB-T1-6Z-8AB-0Z	2	44.00	4.80	1.00	187.39	5.672	1.00	0.00	0.00
19	147.00	RRH2X60-AWS	3	60.00	3.50	0.67	147.11	4.288	0.67	0.00	-3.00
20	147.00	RRH2X60-PCS	3	55.00	2.20	0.67	139.32	2.835	0.67	0.00	-3.00
21	147.00	RRH2X60-700	3	60.00	3.50	0.67	147.11	4.288	0.67	0.00	-3.00
22	147.00	T-Arms	3	242.00	11.00	0.75	447.52	24.755	0.75	0.00	0.00
23	137.50	Low Profile Platform-Round	1	1500.00	22.00	1.00	2797.57	39.509	1.00	0.00	0.00
24	134.00	TPA-65R-LCUUUU-H8	3	75.00	13.30	0.83	383.08	14.927	0.83	0.00	3.50
25	134.00	RRUS-32	6	77.00	3.87	0.67	189.06	4.097	0.67	0.00	3.50
26	134.00	DBC0061F1V51-2 Combiner	3	10.00	0.60	0.69	31.13	0.960	0.69	0.00	3.50
27	134.00	DC6-48-60-18-8C	1	11.80	3.17	1.00	61.48	3.864	1.00	0.00	3.50
28	134.00	7770.00	3	35.00	5.50	0.73	168.32	6.552	0.75	0.00	3.50
29	134.00	AM-X-CD-17-65-00T-RET	3	30.80	11.31	0.75	141.54	15.502	0.77	0.00	3.50
30	134.00	LGP21401	6	14.10	1.29	0.50	38.82	2.116	0.50	0.00	3.50
31	134.00	RRUS 11	3	50.70	2.52	0.67	138.67	3.163	0.67	0.00	3.50
32	134.00	DC6-48-60-18-8F	1	14.50	2.92	1.00	77.02	4.121	1.00	0.00	3.50
33	124.00	742 351	6	29.80	5.38	0.61	123.30	7.329	0.63	0.00	0.00
34	124.00	T-Arms	3	242.00	8.19	0.75	444.05	18.258	0.75	0.00	0.00
35	54.00	GPS	1	10.00	1.00	1.00	36.47	1.643	1.00	0.00	0.00
36	54.00	Standoff	1	40.00	2.63	1.00	112.48	8.019	1.00	0.00	0.00
<b>Totals:</b>			<b>124</b>	<b>9,731.03</b>			<b>25,243.86</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	192.00	(12) 1 5/8" Coax	0.00	Inside
0.00	177.00	(4) 1-1/4" Fiber	0.00	Inside
0.00	147.00	(11) 1 5/8" Coax	0.00	Inside
0.00	147.00	(2) 1 5/8" Hybrid	0.00	Inside
0.00	134.00	(12) 1 5/8" Coax	0.00	Inside

## Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
0.00	134.00	(4) 3/4" DC		0.00		Inside					
0.00	134.00	(2) 7/16" Fiber		0.00		Inside					
0.00	124.00	(12) 1 5/8" Coax		0.00		Inside					
0.00	124.00	(1) 3/8" RET		0.00		Inside					
0.00	105.00	(1) 3" Chanel		3.25		Outside					
0.00	54.00	(1) 1/2" Coax		0.00		Inside					

## Shaft Section Properties

**Structure:** CT00680-S-SBA

**Code:** EIA/TIA-222-G

8/17/2018

**Site Name:** Putnam

**Exposure:** B

**Height:** 175.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)									Additional Reinforcing			
			Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Area (in <sup>2</sup> )	Ixp (in <sup>4</sup> )	Iyp (in <sup>4</sup> )	Weight (lb)
0.00	RB1 RB2	0.4375	54.000	75.456	27631.4	30.93	123.43	56	63	0.0	52.92	24301.7	17345.4	
5.00		0.4375	53.033	74.094	26161.8	30.34	121.22	56	64	1272.2	52.92	23473.1	16754.3	900.0
10.00		0.4375	52.066	72.732	24745.3	29.74	119.01	56	64	1249.0	52.92	22658.9	16173.5	900.0
15.00		0.4375	51.099	71.370	23380.9	29.15	116.80	56	65	1225.9	52.92	21859.1	15603.0	900.0
20.00		0.4375	50.132	70.008	22067.5	28.56	114.59	56	65	1202.7	52.92	21073.7	15042.8	900.0
22.00	RT2	0.4375	49.746	69.463	21556.3	28.32	113.70	56	66	474.6	26.46	8941.3	8941.3	180.0
25.00		0.4375	49.165	68.645	20804.3	27.97	112.38	56	66	704.9	26.46	8743.1	8743.1	270.0
30.00		0.4375	48.199	67.283	19590.3	27.38	110.17	56	66	1156.3	26.46	8417.8	8417.8	450.0
35.00	RB3	0.4375	47.232	65.921	18424.4	26.78	107.96	56	67	1133.2	44.46	13360.5	13360.5	756.2
36.00	Bot - Section 2 RT1	0.4375	47.038	65.649	18196.9	26.67	107.52	56	67	223.9	18.00	5220.0	5220.0	61.2
38.00	RB4	0.4375	46.651	65.104	17747.6	26.43	106.63	56	67	833.0	44.46	13453.1	13453.1	302.5
39.00	RT3	0.4375	46.458	64.832	17525.7	26.31	106.19	56	67	413.9	26.46	8090.9	8090.9	90.0
40.00		0.4375	46.265	64.559	17305.7	26.19	105.75	56	67	412.2	26.46	8027.9	8027.9	90.0
42.00	Top - Section 1	0.3750	46.628	55.850	15250.7	31.17	124.34	65	71	819.2	26.46	7902.5	7902.5	180.0
45.00		0.3750	46.048	55.150	14684.0	30.76	122.79	65	71	566.6	26.46	7716.3	7716.3	270.0
50.00		0.3750	45.081	53.982	13771.1	30.07	120.22	65	72	928.4	26.46	7410.9	7410.9	450.0
54.00		0.3750	44.307	53.048	13068.5	29.52	118.15	65	73	728.4	26.46	7171.0	7171.0	360.0
55.00		0.3750	44.114	52.815	12896.7	29.38	117.64	65	73	180.1	26.46	7111.6	7111.6	90.0
60.00		0.3750	43.147	51.647	12060.2	28.69	115.06	65	73	888.7	26.46	6818.6	6818.6	450.0
65.00		0.3750	42.180	50.480	11260.6	28.00	112.48	65	74	868.8	26.46	6531.8	6531.8	450.0
70.00	Bot - Section 3	0.3750	41.213	49.312	10497.2	27.30	109.90	65	75	848.9	26.46	6251.1	6251.1	450.0
71.25	RT4 RB5	0.3750	40.972	49.020	10311.9	27.13	109.26	65	75	422.1	26.46	6397.9	6397.9	112.5
75.00		0.3750	40.246	48.145	9769.1	26.61	107.32	65	76	1251.4	26.46	6189.0	6189.0	337.5
76.00	Top - Section 2	0.3750	40.803	48.817	10184.0	27.01	108.81	65	75	329.9	26.46	6133.9	6133.9	90.0
80.00	Top - Section 3	0.3750	40.029	47.883	9610.5	26.46	106.75	65	76	658.1	26.46	5915.9	5915.9	360.0
80.00	Bot - Section 4	0.3125	40.029	39.965	8046.7	31.75	128.09	65	70					
85.00		0.3125	39.063	38.992	7473.2	31.35	125.00	65	71	671.7	26.46	5649.0	5649.0	450.0
86.00	RT5 RB6	0.3125	38.869	38.798	7361.9	31.18	124.38	65	71	132.4	13.47	3024.7	3024.7	45.9
90.00		0.3125	38.096	38.019	6927.6	30.52	121.91	65	71	522.8	13.47	2915.4	2915.4	183.6
95.00		0.3125	37.129	37.046	6409.3	29.69	118.81	65	72	638.6	13.47	2781.6	2781.6	229.5
100.00		0.3125	36.162	36.073	5917.4	28.86	115.72	65	73	622.0	13.47	2650.9	2650.9	229.5
104.00	RT6	0.3125	35.388	35.295	5542.6	28.20	113.24	65	74	485.7	13.47	2548.7	2548.7	183.6
105.00		0.3125	35.195	35.100	5451.4	28.03	112.62	65	74	119.8				
110.00		0.3125	34.228	34.127	5010.5	27.20	109.53	65	75	588.9				
115.00	Bot - Section 5	0.3125	33.261	33.154	4594.1	26.38	106.44	65	76	572.4				
120.00	Top - Section 4	0.3125	32.919	32.810	4452.6	26.08	105.34	65	76	1122.3				
124.00		0.3125	32.146	32.032	4143.1	25.42	102.87	65	77	441.3				
125.00	Top - Section 5	0.3125	31.952	31.837	4068.1	25.25	102.25	65	77	108.7				
125.00	Bot - Section 6	0.2500	31.952	25.520	3273.8	31.57	127.81	65	70					
130.00		0.2500	30.985	24.742	2983.3	31.07	123.94	65	71	427.6				
134.00		0.2500	30.212	24.119	2763.7	30.24	120.85	65	72	332.5				
135.00		0.2500	30.018	23.964	2710.5	30.03	120.07	65	72	81.8				
137.50		0.2500	29.535	23.574	2580.6	29.51	118.14	65	73	202.2				
140.00		0.2500	29.051	23.185	2454.9	28.99	116.21	65	73	198.9				
145.00		0.2500	28.085	22.407	2215.8	27.96	112.34	65	74	387.8				
147.00		0.2500	27.698	22.095	2124.7	27.54	110.79	65	75	151.4				
150.00	Bot - Section 7	0.2500	27.118	21.628	1992.8	26.92	108.47	65	75	223.2				
155.00	Top - Section 6	0.2500	26.651	21.253	1890.7	26.42	106.60	65	76	729.6				
160.00		0.2500	25.684	20.474	1690.5	25.38	102.74	65	77	355.0				
165.00		0.2500	24.717	19.696	1504.9	24.35	98.87	65	78	341.7				



Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
170.00	Top - Section 7	0.2500	23.750	18.918	1333.5	23.31	95.00	65	79	328.5				
170.00	Bot - Section 8	0.2500	23.750	18.918	1333.5	23.31	95.00	65	79					
174.00		0.2500	19.150	15.214	693.7	18.38	76.60	65	82	232.3				
175.00		0.2500	18.000	14.289	574.6	17.15	72.00	65	82	50.2				
<b>Total Weight</b>										<b>28861.4</b>			<b>10722.1</b>	

## Wind Loading - Shaft

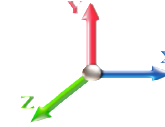
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**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	RB1 RB2	1.00	0.70	17.366	19.10	393.68	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	386.63	1.000	0.000	5.00	23.085	23.09	705.6	0.0	1526.7
10.00		1.00	0.70	17.366	19.10	379.58	1.000	0.000	5.00	22.668	22.67	692.8	0.0	1498.8
15.00		1.00	0.70	17.366	19.10	372.53	1.000	0.000	5.00	22.251	22.25	680.1	0.0	1471.0
20.00		1.00	0.70	17.366	19.10	365.48	1.000	0.000	5.00	21.834	21.83	667.3	0.0	1443.2
22.00	RT2	1.00	0.70	17.366	19.10	362.66	1.000	0.000	2.00	8.617	8.62	263.4	0.0	569.5
25.00		1.00	0.70	17.366	19.10	358.43	1.000	0.000	3.00	12.800	12.80	391.2	0.0	845.9
30.00		1.00	0.70	17.381	19.12	351.53	1.000	0.000	5.00	21.000	21.00	642.4	0.0	1387.6
35.00	RB3	1.00	0.73	18.163	19.98	352.15	1.000	0.000	5.00	20.583	20.58	658.0	0.0	1359.8
36.00	Bot - Section 2 RT1	1.00	0.74	18.310	20.14	352.12	1.000	0.000	1.00	4.066	4.07	131.0	0.0	268.6
38.00	RB4	1.00	0.75	18.595	20.45	351.93	1.000	0.000	2.00	8.212	8.21	268.8	0.0	999.6
39.00	RT3	1.00	0.76	18.734	20.61	351.78	1.000	0.000	1.00	4.081	4.08	134.6	0.0	496.7
40.00		1.00	0.76	18.870	20.76	351.58	1.000	0.000	1.00	4.064	4.06	135.0	0.0	494.6
42.00	Top - Section 1	1.00	0.77	19.135	21.05	351.08	1.000	0.000	2.00	8.079	8.08	272.1	0.0	983.0
45.00		1.00	0.79	19.516	21.47	355.87	1.000	0.000	3.00	11.993	11.99	411.9	0.0	679.9
50.00		1.00	0.81	20.112	22.12	353.68	1.000	0.000	5.00	19.655	19.65	695.7	0.0	1114.1
54.00	Appurtenance(s)	1.00	0.83	20.559	22.62	351.46	1.000	0.000	4.00	15.424	15.42	558.1	0.0	874.1
55.00		1.00	0.83	20.667	22.73	350.84	1.000	0.000	1.00	3.814	3.81	138.7	0.0	216.1
60.00		1.00	0.85	21.187	23.31	347.44	1.000	0.000	5.00	18.821	18.82	701.8	0.0	1066.4
65.00		1.00	0.87	21.678	23.85	343.56	1.000	0.000	5.00	18.404	18.40	702.1	0.0	1042.5
70.00	Bot - Section 3	1.00	0.89	22.142	24.36	339.26	1.000	0.000	5.00	17.986	17.99	700.9	0.0	1018.7
71.25	RT4 RB5	1.00	0.90	22.254	24.48	338.12	1.000	0.000	1.25	4.512	4.51	176.7	0.0	506.5
75.00		1.00	0.91	22.582	24.84	334.58	1.000	0.000	3.75	13.381	13.38	531.8	0.0	1501.7
76.00	Top - Section 2	1.00	0.91	22.668	24.93	333.61	1.000	0.000	1.00	3.529	3.53	140.8	0.0	395.9
80.00	Top - Section 3	1.00	0.93	23.003	25.30	335.86	1.000	0.000	4.00	13.947	13.95	564.6	0.0	789.7
85.00		1.00	0.94	23.404	25.74	330.60	1.000	0.000	5.00	17.059	17.06	702.7	0.0	806.0
86.00	RT5 RB6	1.00	0.95	23.483	25.83	329.51	1.000	0.000	1.00	3.362	3.36	138.9	0.0	158.8
90.00		1.00	0.96	23.790	26.17	325.06	1.000	0.000	4.00	13.280	13.28	556.0	0.0	627.3
95.00		1.00	0.97	24.160	26.58	319.27	1.000	0.000	5.00	16.225	16.22	689.9	0.0	766.3
100.00		1.00	0.99	24.517	26.97	313.24	1.000	0.000	5.00	15.807	15.81	682.1	0.0	746.4
104.00	RT6	1.00	1.00	24.793	27.27	308.26	1.000	0.000	4.00	12.346	12.35	538.7	0.0	582.8
105.00		1.00	1.00	24.861	27.35	307.00	1.000	0.000	1.00	3.045	3.04	133.2	0.0	143.7
110.00		1.00	1.02	25.194	27.71	300.55	1.000	0.000	5.00	14.973	14.97	663.9	0.0	706.7
115.00	Bot - Section 5	1.00	1.03	25.516	28.07	293.92	1.000	0.000	5.00	14.556	14.56	653.7	0.0	686.8
120.00	Top - Section 4	1.00	1.04	25.828	28.41	287.12	1.000	0.000	5.00	14.409	14.41	655.0	0.0	1346.8
124.00	Appurtenance(s)	1.00	1.05	26.071	28.68	287.14	1.000	0.000	4.00	11.227	11.23	515.1	0.0	529.5
125.00	Top - Section 5	1.00	1.05	26.131	28.74	285.74	1.000	0.000	1.00	2.765	2.76	127.2	0.0	130.4
130.00		1.00	1.07	26.425	29.07	278.65	1.000	0.000	5.00	13.575	13.57	631.3	0.0	513.1
134.00	Appurtenance(s)	1.00	1.07	26.655	29.32	272.87	1.000	0.000	4.00	10.559	10.56	495.4	0.0	399.0
135.00		1.00	1.08	26.712	29.38	271.41	1.000	0.000	1.00	2.598	2.60	122.1	0.0	98.2
137.50	Appurtenance(s)	1.00	1.08	26.852	29.54	267.74	1.000	0.000	2.50	6.422	6.42	303.5	0.0	242.6
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	2.50	6.318	6.32	300.1	0.0	238.7
145.00		1.00	1.10	27.263	29.99	256.53	1.000	0.000	5.00	12.323	12.32	591.3	0.0	465.4
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	253.50	1.000	0.000	2.00	4.813	4.81	231.8	0.0	181.7
150.00	Bot - Section 7	1.00	1.11	27.528	30.28	248.90	1.000	0.000	3.00	7.094	7.09	343.7	0.0	267.8
155.00	Top - Section 6	1.00	1.12	27.787	30.57	241.16	1.000	0.000	5.00	11.705	11.70	572.4	0.0	875.5
160.00		1.00	1.13	28.040	30.84	237.93	1.000	0.000	5.00	11.288	11.29	557.1	0.0	426.0

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 11
	<b>Struct Class:</b> II	



165.00	1.00	1.14	28.288	31.12	229.98	1.000	0.000	5.00	10.871	10.87	541.2	0.0	410.1
170.00 Top - Section 7	1.00	1.15	28.530	31.38	221.93	1.000	0.000	5.00	10.453	10.45	524.9	0.0	394.2
174.00 Appurtenance(s)	1.00	1.16	28.721	31.59	179.54	1.000	0.000	4.00	7.402	7.40	374.2	0.0	278.7
175.00 Appurtenance(s)	1.00	1.16	28.768	31.64	168.90	1.000	0.000	1.00	1.603	1.60	81.1	0.0	60.2
<b>Totals:</b>								<b>175.00</b>			<b>22,692.3</b>		<b>34,633.7</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**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	175.00	PRK-SFS-L	1	28.768	31.644	0.75	0.75	5.78	276.00	0.000	0.000	292.39	0.00	0.00	
2	175.00	DR65-18-02DPL2Q	6	29.518	32.470	0.67	1.00	23.36	172.80	0.000	16.500	1213.39	0.00	20020.89	
3	175.00	E15S09P94	6	29.385	32.323	0.60	1.00	2.38	105.12	0.000	13.500	122.88	0.00	1658.89	
4	175.00	T-Arms	3	28.768	31.644	0.75	1.00	24.75	871.20	0.000	0.000	1253.12	0.00	0.00	
5	175.00	APXVTM14-C-I20	3	28.861	31.747	0.77	1.00	14.65	202.32	0.000	2.000	743.92	0.00	1487.85	
6	175.00	NNVV-65B-R4	3	28.861	31.747	0.74	1.00	27.24	278.64	0.000	2.000	1383.64	0.00	2767.29	
7	175.00	Pipes	12	28.768	31.644	0.64	0.80	14.59	475.20	0.000	0.000	738.81	0.00	0.00	
8	175.00	1900MHz	3	28.861	31.747	0.67	1.00	5.57	216.00	0.000	2.000	282.82	0.00	565.63	
9	175.00	800 MHz	6	28.861	31.747	0.67	1.00	10.01	381.60	0.000	2.000	508.45	0.00	1016.91	
10	175.00	TD-RRH8x20-25	3	28.861	31.747	0.67	1.00	8.14	252.00	0.000	2.000	413.50	0.00	827.00	
11	175.00	Handrail	1	28.768	31.644	0.75	0.75	7.39	498.07	0.000	0.000	374.04	0.00	0.00	
12	175.00	PRK-1245L	1	28.768	31.644	0.75	0.75	7.13	557.89	0.000	0.000	360.75	0.00	0.00	
13	174.00	4.5" x 24 FT Pipe	3	29.183	32.101	1.00	1.00	40.50	933.12	0.000	10.000	2080.15	0.00	20801.51	
14	147.00	T-Arms	3	27.370	30.107	0.56	0.75	18.56	871.20	0.000	0.000	894.17	0.00	0.00	
15	147.00	RRH2X60-700	3	27.209	29.930	0.54	0.80	5.63	216.00	0.000	-3.000	269.51	0.00	-808.54	
16	147.00	RRH2X60-PCS	3	27.209	29.930	0.54	0.80	3.54	198.00	0.000	-3.000	169.41	0.00	-508.22	
17	147.00	RRH2X60-AWS	3	27.209	29.930	0.54	0.80	5.63	216.00	0.000	-3.000	269.51	0.00	-808.54	
18	147.00	DB-T1-6Z-8AB-0Z	2	27.370	30.107	0.80	0.80	7.68	105.60	0.000	0.000	369.95	0.00	0.00	
19	147.00	FD9R6004/2C-3L	6	27.370	30.107	0.40	0.80	0.86	22.32	0.000	0.000	41.62	0.00	0.00	
20	147.00	SBNHH-1D65B	6	27.370	30.107	0.66	0.80	31.88	365.11	0.000	0.000	1535.70	0.00	0.00	
21	147.00	BXA-80080-4CF	3	27.370	30.107	0.70	0.80	7.50	43.20	0.000	0.000	361.36	0.00	0.00	
22	147.00	BXA-70063-6CF-EDIN-X	3	27.370	30.107	0.62	0.80	13.97	61.20	0.000	0.000	673.00	0.00	0.00	
23	137.50	Low Profile	1	26.852	29.537	1.00	1.00	22.00	1800.00	0.000	0.000	1039.72	0.00	0.00	
24	134.00	7770.00	3	26.852	29.537	0.58	0.80	9.64	126.00	0.000	3.500	455.40	0.00	1593.89	
25	134.00	AM-X-CD-17-65-00T-RET	3	26.852	29.537	0.60	0.80	20.36	110.88	0.000	3.500	962.12	0.00	3367.41	
26	134.00	LGP21401	6	26.852	29.537	0.40	0.80	3.10	101.52	0.000	3.500	146.32	0.00	512.11	
27	134.00	RRUS 11	3	26.852	29.537	0.54	0.80	4.05	182.52	0.000	3.500	191.50	0.00	670.27	
28	134.00	DC6-48-60-18-8F	1	26.852	29.537	0.80	0.80	2.34	17.40	0.000	3.500	110.40	0.00	386.40	
29	134.00	TPA-65R-LCUUUU-H8	3	26.852	29.537	0.66	0.80	26.49	270.00	0.000	3.500	1252.08	0.00	4382.30	
30	134.00	RRUS-32	6	26.852	29.537	0.54	0.80	12.45	554.40	0.000	3.500	588.19	0.00	2058.67	
31	134.00	DBC0061F1V51-2	3	26.852	29.537	0.55	0.80	0.99	36.00	0.000	3.500	46.96	0.00	164.35	
32	134.00	DC6-48-60-18-8C	1	26.852	29.537	0.80	0.80	2.54	14.16	0.000	3.500	119.85	0.00	419.48	
33	124.00	T-Arms	3	26.071	28.678	0.56	0.75	13.82	871.20	0.000	0.000	634.16	0.00	0.00	
34	124.00	742 351	6	26.071	28.678	0.49	0.80	15.75	214.56	0.000	0.000	722.81	0.00	0.00	
35	54.00	Standoff	1	20.559	22.615	1.00	1.00	2.63	48.00	0.000	0.000	95.16	0.00	0.00	
36	54.00	GPS	1	20.559	22.615	1.00	1.00	1.00	12.00	0.000	0.000	36.18	0.00	0.00	
<b>Totals:</b>									<b>11,677.24</b>						<b>20,752.94</b>

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**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		705.59	1879.55	0.00	0.00
10.00		692.84	1851.74	0.00	0.00
15.00		680.09	1823.93	0.00	0.00
20.00		667.34	1796.12	0.00	0.00
22.00		263.37	710.66	0.00	0.00
25.00		391.23	1057.65	0.00	0.00
30.00		642.39	1740.50	0.00	0.00
35.00		657.98	1712.69	0.00	0.00
36.00		131.05	339.20	0.00	0.00
38.00		268.77	1140.71	0.00	0.00
39.00		134.56	567.26	0.00	0.00
40.00		134.98	565.19	0.00	0.00
42.00		272.07	1124.18	0.00	0.00
45.00		411.93	891.61	0.00	0.00
50.00		695.73	1466.95	0.00	0.00
54.00	(2) attachments	689.44	1216.40	0.00	0.00
55.00		138.74	286.52	0.00	0.00
60.00		701.82	1418.32	0.00	0.00
65.00		702.14	1394.48	0.00	0.00
70.00		700.92	1370.64	0.00	0.00
71.25		176.73	594.51	0.00	0.00
75.00		531.81	1765.66	0.00	0.00
76.00		140.77	466.31	0.00	0.00
80.00		564.65	1071.26	0.00	0.00
85.00		702.68	1157.96	0.00	0.00
86.00		138.94	229.21	0.00	0.00
90.00		556.03	908.89	0.00	0.00
95.00		689.90	1118.23	0.00	0.00
100.00		682.09	1098.37	0.00	0.00
104.00		538.71	864.39	0.00	0.00
105.00		133.22	214.11	0.00	0.00
110.00		663.93	1047.96	0.00	0.00
115.00		653.68	1028.09	0.00	0.00
120.00		654.98	1688.04	0.00	0.00
124.00	(9) attachments	1872.10	1888.31	0.00	0.00
125.00		127.16	183.60	0.00	0.00
130.00		631.33	779.11	0.00	0.00
134.00	(29) attachments	4368.19	2024.73	0.00	13554.86
135.00		122.14	134.09	0.00	0.00
137.50	(1) attachments	1343.23	2132.45	0.00	0.00
140.00		300.13	328.48	0.00	0.00
145.00		591.30	645.03	0.00	0.00
147.00	(32) attachments	4816.05	2352.20	0.00	-2125.29
150.00		343.68	326.47	0.00	0.00
155.00		572.43	973.26	0.00	0.00
160.00		557.06	523.74	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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165.00	541.21	507.85	0.00	0.00
170.00	524.90	491.95	0.00	0.00
174.00 (3) attachments	2454.32	1290.09	0.00	20801.51
175.00 (48) attachments	7768.85	4366.64	0.00	28344.46
<b>Totals:</b>	<b>43,445.20</b>	<b>56,555.32</b>	<b>0.00</b>	<b>60,575.54</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 25

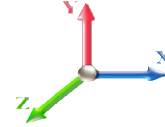
Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.059	0.000	17.366	0.00	10.68
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	17.366	0.00	10.68
15.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.061	0.000	17.366	0.00	10.68
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	17.366	0.00	10.68
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	17.366	0.00	4.27
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	17.366	0.00	6.41
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	17.381	0.00	10.68
35.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.066	0.000	18.163	0.00	10.68
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.310	0.00	2.14
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	18.595	0.00	4.27
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.734	0.00	2.14
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	18.870	0.00	2.14
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	19.135	0.00	4.27
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	19.516	0.00	6.41
50.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.069	0.000	20.112	0.00	10.68
54.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.070	0.000	20.559	0.00	8.54
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.071	0.000	20.667	0.00	2.14
60.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.072	0.000	21.187	0.00	10.68
65.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.074	0.000	21.678	0.00	10.68
70.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.075	0.000	22.142	0.00	10.68
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.076	0.000	22.254	0.00	2.67
75.00	3" Chanel	Yes	3.75	0.000	3.25	1.02	0.00	0.077	0.000	22.582	0.00	8.01
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.078	0.000	22.668	0.00	2.14
80.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.078	0.000	23.003	0.00	8.54
85.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.079	0.000	23.404	0.00	10.68
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.081	0.000	23.483	0.00	2.14
90.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.082	0.000	23.790	0.00	8.54
95.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.083	0.000	24.160	0.00	10.68
100.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.086	0.000	24.517	0.00	10.68
104.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.088	0.000	24.793	0.00	8.54
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.089	0.000	24.861	0.00	2.14
<b>Totals:</b>											<b>0.0</b>	<b>224.3</b>

# Calculated Forces

Structure: CT00680-S-SBA	Code: EIA/TIA-222-G	8/17/2018
Site Name: Putnam	Exposure: B	
Height: 175.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.6W 101 mph Wind	Iterations	25
Dead Load Factor	1.20	
Wind Load Factor	1.60	



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	-56.49	-43.53	0.00	-5445.9	0.00	5445.97	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.721
5.00	-54.48	-42.98	0.00	-5228.3	0.00	5228.32	4251.62	2125.81	9227.39	4557.06	0.09	-0.169	0.000	0.707
10.00	-52.51	-42.44	0.00	-5013.4	0.00	5013.41	4207.27	2103.63	8961.88	4425.94	0.36	-0.338	0.000	0.692
15.00	-50.57	-41.89	0.00	-4801.2	0.00	4801.23	4161.65	2080.83	8697.29	4295.27	0.80	-0.509	0.000	0.677
20.00	-48.69	-41.31	0.00	-4591.7	0.00	4591.76	4114.76	2057.38	8433.78	4165.13	1.43	-0.680	0.000	0.662
22.00	-47.91	-41.12	0.00	-4509.1	0.00	4509.14	4095.66	2047.83	8328.71	4113.24	1.73	-0.750	0.000	0.784
25.00	-46.74	-40.85	0.00	-4385.7	0.00	4385.78	4066.61	2033.31	8171.50	4035.59	2.24	-0.874	0.000	0.774
30.00	-44.87	-40.34	0.00	-4181.5	0.00	4181.54	4017.20	2008.60	7910.59	3906.74	3.26	-1.080	0.000	0.757
35.00	-43.09	-39.74	0.00	-3979.8	0.00	3979.84	3966.51	1983.26	7651.22	3778.65	4.51	-1.288	0.000	0.617
36.00	-42.71	-39.65	0.00	-3940.1	0.00	3940.11	3956.22	1978.11	7599.55	3753.13	4.78	-1.323	0.000	0.825
38.00	-41.53	-39.40	0.00	-3860.8	0.00	3860.82	3935.49	1967.75	7496.40	3702.19	5.36	-1.418	0.000	0.600
39.00	-40.94	-39.28	0.00	-3821.4	0.00	3821.42	3925.05	1962.53	7444.93	3676.77	5.66	-1.453	0.000	0.719
40.00	-40.33	-39.17	0.00	-3782.1	0.00	3782.14	3914.56	1957.28	7393.54	3651.39	5.97	-1.495	0.000	0.715
42.00	-39.14	-38.94	0.00	-3703.8	0.00	3703.80	3554.53	1777.27	6785.59	3351.15	6.61	-1.579	0.000	0.688
45.00	-38.15	-38.62	0.00	-3586.9	0.00	3586.98	3532.39	1766.19	6658.05	3288.16	7.64	-1.705	0.000	0.723
50.00	-36.57	-38.01	0.00	-3393.8	0.00	3393.88	3494.22	1747.11	6445.54	3183.21	9.55	-1.926	0.000	0.701
54.00	-35.31	-37.34	0.00	-3241.8	0.00	3241.86	3462.54	1731.27	6275.67	3099.32	11.24	-2.105	0.000	0.683
55.00	-34.94	-37.28	0.00	-3204.5	0.00	3204.52	3454.46	1727.23	6233.23	3078.36	11.68	-2.150	0.000	0.678
60.00	-33.41	-36.65	0.00	-3018.1	0.00	3018.14	3413.12	1706.56	6021.34	2973.71	14.05	-2.371	0.000	0.655
65.00	-31.91	-36.01	0.00	-2834.9	0.00	2834.91	3370.20	1685.10	5810.04	2869.36	16.65	-2.592	0.000	0.632
70.00	-30.49	-35.32	0.00	-2654.8	0.00	2654.87	3325.69	1662.84	5599.53	2765.40	19.48	-2.811	0.000	0.608
71.25	-29.84	-35.17	0.00	-2610.7	0.00	2610.72	3314.31	1657.16	5547.04	2739.48	20.23	-2.867	0.000	0.594
75.00	-28.04	-34.60	0.00	-2478.8	0.00	2478.85	3279.60	1639.80	5389.99	2661.91	22.54	-3.029	0.000	0.576
76.00	-27.51	-34.48	0.00	-2444.2	0.00	2444.25	3306.32	1653.16	5510.48	2721.42	23.18	-3.073	0.000	0.586
80.00	-26.36	-33.95	0.00	-2306.3	0.00	2306.33	3269.04	1634.52	5343.14	2638.78	25.83	-3.245	0.000	0.547
80.00	-26.36	-33.95	0.00	-2306.3	0.00	2306.33	2504.08	1252.04	4105.75	2027.68	25.83	-3.245	0.000	0.596
85.00	-25.18	-33.23	0.00	-2136.6	0.00	2136.60	2474.85	1237.43	3958.27	1954.84	29.34	-3.448	0.000	0.629
86.00	-24.88	-33.14	0.00	-2103.3	0.00	2103.37	2468.82	1234.41	3928.75	1940.26	30.06	-3.494	0.000	0.777
90.00	-23.87	-32.63	0.00	-1970.8	0.00	1970.81	2444.04	1222.02	3810.67	1881.94	33.09	-3.718	0.000	0.745
95.00	-22.65	-31.97	0.00	-1807.6	0.00	1807.67	2411.64	1205.82	3663.14	1809.09	37.12	-3.991	0.000	0.704
100.00	-21.47	-31.30	0.00	-1647.8	0.00	1647.80	2377.66	1188.83	3515.87	1736.36	41.44	-4.258	0.000	0.663
104.00	-20.58	-30.75	0.00	-1522.5	0.00	1522.59	2349.34	1174.67	3398.38	1678.33	45.10	-4.469	0.000	0.628
104.00	-20.58	-30.75	0.00	-1522.5	0.00	1522.59	2349.34	1174.67	3398.38	1678.33	45.10	-4.469	0.000	0.628
105.00	-20.26	-30.67	0.00	-1491.8	0.00	1491.84	2342.10	1171.05	3369.07	1663.86	46.04	-4.522	0.000	0.906
110.00	-19.08	-30.05	0.00	-1338.4	0.00	1338.47	2304.95	1152.47	3222.91	1591.67	50.97	-4.891	0.000	0.850
115.00	-17.93	-29.42	0.00	-1188.2	0.00	1188.23	2266.22	1133.11	3077.59	1519.90	56.28	-5.249	0.000	0.790
120.00	-16.16	-28.69	0.00	-1041.1	0.00	1041.15	2252.14	1126.07	3026.44	1494.64	61.96	-5.595	0.000	0.704
124.00	-14.40	-26.68	0.00	-926.38	0.00	926.38	2219.57	1109.78	2911.24	1437.75	66.75	-5.861	0.000	0.651
125.00	-14.14	-26.58	0.00	-899.70	0.00	899.70	2211.27	1105.63	2882.56	1423.59	67.98	-5.924	0.000	0.639
125.00	-14.14	-26.58	0.00	-899.70	0.00	899.70	1600.93	800.47	2095.19	1034.73	67.98	-5.924	0.000	0.879
130.00	-13.31	-25.94	0.00	-766.80	0.00	766.80	1577.27	788.64	2000.77	988.11	74.34	-6.215	0.000	0.786
134.00	-11.72	-21.40	0.00	-649.50	0.00	649.50	1557.20	778.60	1925.20	950.79	79.65	-6.488	0.000	0.691
135.00	-11.55	-21.29	0.00	-628.09	0.00	628.09	1552.03	776.01	1906.32	941.46	81.02	-6.554	0.000	0.675
137.50	-9.54	-19.74	0.00	-574.87	0.00	574.87	1538.81	769.41	1859.13	918.16	84.48	-6.711	0.000	0.633
140.00	-9.17	-19.43	0.00	-525.53	0.00	525.53	1525.20	762.60	1812.01	894.88	88.03	-6.863	0.000	0.594
145.00	-8.54	-18.80	0.00	-428.36	0.00	428.36	1496.79	748.40	1718.05	848.48	95.35	-7.140	0.000	0.511
147.00	-6.78	-13.74	0.00	-390.76	0.00	390.76	1484.98	742.49	1680.60	829.98	98.36	-7.245	0.000	0.476
150.00	-6.46	-13.38	0.00	-349.55	0.00	349.55	1466.80	733.40	1624.61	802.34	102.95	-7.393	0.000	0.440



## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 17
	<b>Struct Class:</b> II	



155.00	-5.52	-12.70	0.00	-282.66	0.00	282.66	1451.75	725.87	1579.74	780.18	110.79	-7.619	0.000	0.366
160.00	-5.04	-12.10	0.00	-219.14	0.00	219.14	1419.41	709.70	1487.45	734.60	118.86	-7.819	0.000	0.302
165.00	-4.58	-11.50	0.00	-158.65	0.00	158.65	1385.48	692.74	1396.17	689.51	127.11	-7.978	0.000	0.234
170.00	-4.15	-10.92	0.00	-101.14	0.00	101.14	1349.97	674.99	1306.08	645.02	135.51	-8.101	0.000	0.160
170.00	-4.15	-10.92	0.00	-101.14	0.00	101.14	1349.97	674.99	1306.08	645.02	135.51	-8.101	0.000	0.160
174.00	-3.22	-8.31	0.00	-36.66	0.00	36.66	1121.46	560.73	870.39	429.85	142.30	-8.168	0.000	0.088
175.00	0.00	-7.77	0.00	-28.34	0.00	28.34	1053.22	526.61	767.04	378.81	144.01	-8.182	0.000	0.075

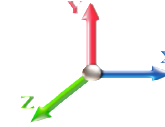
## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**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	RB1 RB2	1.00	0.70	17.366	19.10	393.68	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	386.63	1.000	0.000	5.00	23.085	23.09	705.6	0.0	1145.0
10.00		1.00	0.70	17.366	19.10	379.58	1.000	0.000	5.00	22.668	22.67	692.8	0.0	1124.1
15.00		1.00	0.70	17.366	19.10	372.53	1.000	0.000	5.00	22.251	22.25	680.1	0.0	1103.3
20.00		1.00	0.70	17.366	19.10	365.48	1.000	0.000	5.00	21.834	21.83	667.3	0.0	1082.4
22.00	RT2	1.00	0.70	17.366	19.10	362.66	1.000	0.000	2.00	8.617	8.62	263.4	0.0	427.1
25.00		1.00	0.70	17.366	19.10	358.43	1.000	0.000	3.00	12.800	12.80	391.2	0.0	634.4
30.00		1.00	0.70	17.381	19.12	351.53	1.000	0.000	5.00	21.000	21.00	642.4	0.0	1040.7
35.00	RB3	1.00	0.73	18.163	19.98	352.15	1.000	0.000	5.00	20.583	20.58	658.0	0.0	1019.8
36.00	Bot - Section 2 RT1	1.00	0.74	18.310	20.14	352.12	1.000	0.000	1.00	4.066	4.07	131.0	0.0	201.5
38.00	RB4	1.00	0.75	18.595	20.45	351.93	1.000	0.000	2.00	8.212	8.21	268.8	0.0	749.7
39.00	RT3	1.00	0.76	18.734	20.61	351.78	1.000	0.000	1.00	4.081	4.08	134.6	0.0	372.5
40.00		1.00	0.76	18.870	20.76	351.58	1.000	0.000	1.00	4.064	4.06	135.0	0.0	371.0
42.00	Top - Section 1	1.00	0.77	19.135	21.05	351.08	1.000	0.000	2.00	8.079	8.08	272.1	0.0	737.3
45.00		1.00	0.79	19.516	21.47	355.87	1.000	0.000	3.00	11.993	11.99	411.9	0.0	509.9
50.00		1.00	0.81	20.112	22.12	353.68	1.000	0.000	5.00	19.655	19.65	695.7	0.0	835.5
54.00	Appurtenance(s)	1.00	0.83	20.559	22.62	351.46	1.000	0.000	4.00	15.424	15.42	558.1	0.0	655.6
55.00		1.00	0.83	20.667	22.73	350.84	1.000	0.000	1.00	3.814	3.81	138.7	0.0	162.1
60.00		1.00	0.85	21.187	23.31	347.44	1.000	0.000	5.00	18.821	18.82	701.8	0.0	799.8
65.00		1.00	0.87	21.678	23.85	343.56	1.000	0.000	5.00	18.404	18.40	702.1	0.0	781.9
70.00	Bot - Section 3	1.00	0.89	22.142	24.36	339.26	1.000	0.000	5.00	17.986	17.99	700.9	0.0	764.0
71.25	RT4 RB5	1.00	0.90	22.254	24.48	338.12	1.000	0.000	1.25	4.512	4.51	176.7	0.0	379.9
75.00		1.00	0.91	22.582	24.84	334.58	1.000	0.000	3.75	13.381	13.38	531.8	0.0	1126.3
76.00	Top - Section 2	1.00	0.91	22.668	24.93	333.61	1.000	0.000	1.00	3.529	3.53	140.8	0.0	296.9
80.00	Top - Section 3	1.00	0.93	23.003	25.30	335.86	1.000	0.000	4.00	13.947	13.95	564.6	0.0	592.3
85.00		1.00	0.94	23.404	25.74	330.60	1.000	0.000	5.00	17.059	17.06	702.7	0.0	604.5
86.00	RT5 RB6	1.00	0.95	23.483	25.83	329.51	1.000	0.000	1.00	3.362	3.36	138.9	0.0	119.1
90.00		1.00	0.96	23.790	26.17	325.06	1.000	0.000	4.00	13.280	13.28	556.0	0.0	470.5
95.00		1.00	0.97	24.160	26.58	319.27	1.000	0.000	5.00	16.225	16.22	689.9	0.0	574.7
100.00		1.00	0.99	24.517	26.97	313.24	1.000	0.000	5.00	15.807	15.81	682.1	0.0	559.8
104.00	RT6	1.00	1.00	24.793	27.27	308.26	1.000	0.000	4.00	12.346	12.35	538.7	0.0	437.1
105.00		1.00	1.00	24.861	27.35	307.00	1.000	0.000	1.00	3.045	3.04	133.2	0.0	107.8
110.00		1.00	1.02	25.194	27.71	300.55	1.000	0.000	5.00	14.973	14.97	663.9	0.0	530.0
115.00	Bot - Section 5	1.00	1.03	25.516	28.07	293.92	1.000	0.000	5.00	14.556	14.56	653.7	0.0	515.1
120.00	Top - Section 4	1.00	1.04	25.828	28.41	287.12	1.000	0.000	5.00	14.409	14.41	655.0	0.0	1010.1
124.00	Appurtenance(s)	1.00	1.05	26.071	28.68	287.14	1.000	0.000	4.00	11.227	11.23	515.1	0.0	397.2
125.00	Top - Section 5	1.00	1.05	26.131	28.74	285.74	1.000	0.000	1.00	2.765	2.76	127.2	0.0	97.8
130.00		1.00	1.07	26.425	29.07	278.65	1.000	0.000	5.00	13.575	13.57	631.3	0.0	384.8
134.00	Appurtenance(s)	1.00	1.07	26.655	29.32	272.87	1.000	0.000	4.00	10.559	10.56	495.4	0.0	299.3
135.00		1.00	1.08	26.712	29.38	271.41	1.000	0.000	1.00	2.598	2.60	122.1	0.0	73.6
137.50	Appurtenance(s)	1.00	1.08	26.852	29.54	267.74	1.000	0.000	2.50	6.422	6.42	303.5	0.0	182.0
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	2.50	6.318	6.32	300.1	0.0	179.0
145.00		1.00	1.10	27.263	29.99	256.53	1.000	0.000	5.00	12.323	12.32	591.3	0.0	349.1
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	253.50	1.000	0.000	2.00	4.813	4.81	231.8	0.0	136.3
150.00	Bot - Section 7	1.00	1.11	27.528	30.28	248.90	1.000	0.000	3.00	7.094	7.09	343.7	0.0	200.9
155.00	Top - Section 6	1.00	1.12	27.787	30.57	241.16	1.000	0.000	5.00	11.705	11.70	572.4	0.0	656.6
160.00		1.00	1.13	28.040	30.84	237.93	1.000	0.000	5.00	11.288	11.29	557.1	0.0	319.5

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 19
	<b>Struct Class:</b> II	



165.00	1.00	1.14	28.288	31.12	229.98	1.000	0.000	5.00	10.871	10.87	541.2	0.0	307.6
170.00 Top - Section 7	1.00	1.15	28.530	31.38	221.93	1.000	0.000	5.00	10.453	10.45	524.9	0.0	295.6
174.00 Appurtenance(s)	1.00	1.16	28.721	31.59	179.54	1.000	0.000	4.00	7.402	7.40	374.2	0.0	209.1
175.00 Appurtenance(s)	1.00	1.16	28.768	31.64	168.90	1.000	0.000	1.00	1.603	1.60	81.1	0.0	45.2
<b>Totals:</b>								<b>175.00</b>			<b>22,692.3</b>		<b>25,975.3</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**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	175.00	PRK-SFS-L	1	28.768	31.644	0.75	0.75	5.78	207.00	0.000	0.000	292.39	0.00	0.00	
2	175.00	DR65-18-02DPL2Q	6	29.518	32.470	0.67	1.00	23.36	129.60	0.000	16.500	1213.39	0.00	20020.89	
3	175.00	E15S09P94	6	29.385	32.323	0.60	1.00	2.38	78.84	0.000	13.500	122.88	0.00	1658.89	
4	175.00	T-Arms	3	28.768	31.644	0.75	1.00	24.75	653.40	0.000	0.000	1253.12	0.00	0.00	
5	175.00	APXVTM14-C-I20	3	28.861	31.747	0.77	1.00	14.65	151.74	0.000	2.000	743.92	0.00	1487.85	
6	175.00	NNVV-65B-R4	3	28.861	31.747	0.74	1.00	27.24	208.98	0.000	2.000	1383.64	0.00	2767.29	
7	175.00	Pipes	12	28.768	31.644	0.64	0.80	14.59	356.40	0.000	0.000	738.81	0.00	0.00	
8	175.00	1900MHz	3	28.861	31.747	0.67	1.00	5.57	162.00	0.000	2.000	282.82	0.00	565.63	
9	175.00	800 MHz	6	28.861	31.747	0.67	1.00	10.01	286.20	0.000	2.000	508.45	0.00	1016.91	
10	175.00	TD-RRH8x20-25	3	28.861	31.747	0.67	1.00	8.14	189.00	0.000	2.000	413.50	0.00	827.00	
11	175.00	Handrail	1	28.768	31.644	0.75	0.75	7.39	373.55	0.000	0.000	374.04	0.00	0.00	
12	175.00	PRK-1245L	1	28.768	31.644	0.75	0.75	7.13	418.42	0.000	0.000	360.75	0.00	0.00	
13	174.00	4.5" x 24 FT Pipe	3	29.183	32.101	1.00	1.00	40.50	699.84	0.000	10.000	2080.15	0.00	20801.51	
14	147.00	T-Arms	3	27.370	30.107	0.56	0.75	18.56	653.40	0.000	0.000	894.17	0.00	0.00	
15	147.00	RRH2X60-700	3	27.209	29.930	0.54	0.80	5.63	162.00	0.000	-3.000	269.51	0.00	-808.54	
16	147.00	RRH2X60-PCS	3	27.209	29.930	0.54	0.80	3.54	148.50	0.000	-3.000	169.41	0.00	-508.22	
17	147.00	RRH2X60-AWS	3	27.209	29.930	0.54	0.80	5.63	162.00	0.000	-3.000	269.51	0.00	-808.54	
18	147.00	DB-T1-6Z-8AB-0Z	2	27.370	30.107	0.80	0.80	7.68	79.20	0.000	0.000	369.95	0.00	0.00	
19	147.00	FD9R6004/2C-3L	6	27.370	30.107	0.40	0.80	0.86	16.74	0.000	0.000	41.62	0.00	0.00	
20	147.00	SBNHH-1D65B	6	27.370	30.107	0.66	0.80	31.88	273.83	0.000	0.000	1535.70	0.00	0.00	
21	147.00	BXA-80080-4CF	3	27.370	30.107	0.70	0.80	7.50	32.40	0.000	0.000	361.36	0.00	0.00	
22	147.00	BXA-70063-6CF-EDIN-X	3	27.370	30.107	0.62	0.80	13.97	45.90	0.000	0.000	673.00	0.00	0.00	
23	137.50	Low Profile	1	26.852	29.537	1.00	1.00	22.00	1350.00	0.000	0.000	1039.72	0.00	0.00	
24	134.00	7770.00	3	26.852	29.537	0.58	0.80	9.64	94.50	0.000	3.500	455.40	0.00	1593.89	
25	134.00	AM-X-CD-17-65-00T-RET	3	26.852	29.537	0.60	0.80	20.36	83.16	0.000	3.500	962.12	0.00	3367.41	
26	134.00	LGP21401	6	26.852	29.537	0.40	0.80	3.10	76.14	0.000	3.500	146.32	0.00	512.11	
27	134.00	RRUS 11	3	26.852	29.537	0.54	0.80	4.05	136.89	0.000	3.500	191.50	0.00	670.27	
28	134.00	DC6-48-60-18-8F	1	26.852	29.537	0.80	0.80	2.34	13.05	0.000	3.500	110.40	0.00	386.40	
29	134.00	TPA-65R-LCUUUU-H8	3	26.852	29.537	0.66	0.80	26.49	202.50	0.000	3.500	1252.08	0.00	4382.30	
30	134.00	RRUS-32	6	26.852	29.537	0.54	0.80	12.45	415.80	0.000	3.500	588.19	0.00	2058.67	
31	134.00	DBC0061F1V51-2	3	26.852	29.537	0.55	0.80	0.99	27.00	0.000	3.500	46.96	0.00	164.35	
32	134.00	DC6-48-60-18-8C	1	26.852	29.537	0.80	0.80	2.54	10.62	0.000	3.500	119.85	0.00	419.48	
33	124.00	T-Arms	3	26.071	28.678	0.56	0.75	13.82	653.40	0.000	0.000	634.16	0.00	0.00	
34	124.00	742 351	6	26.071	28.678	0.49	0.80	15.75	160.92	0.000	0.000	722.81	0.00	0.00	
35	54.00	Standoff	1	20.559	22.615	1.00	1.00	2.63	36.00	0.000	0.000	95.16	0.00	0.00	
36	54.00	GPS	1	20.559	22.615	1.00	1.00	1.00	9.00	0.000	0.000	36.18	0.00	0.00	
<b>Totals:</b>									<b>8,757.93</b>						<b>20,752.94</b>

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

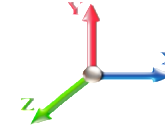


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**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		705.59	1409.67	0.00	0.00
10.00		692.84	1388.81	0.00	0.00
15.00		680.09	1367.95	0.00	0.00
20.00		667.34	1347.09	0.00	0.00
22.00		263.37	533.00	0.00	0.00
25.00		391.23	793.24	0.00	0.00
30.00		642.39	1305.38	0.00	0.00
35.00		657.98	1284.52	0.00	0.00
36.00		131.05	254.40	0.00	0.00
38.00		268.77	855.53	0.00	0.00
39.00		134.56	425.44	0.00	0.00
40.00		134.98	423.89	0.00	0.00
42.00		272.07	843.14	0.00	0.00
45.00		411.93	668.71	0.00	0.00
50.00		695.73	1100.22	0.00	0.00
54.00	(2) attachments	689.44	912.30	0.00	0.00
55.00		138.74	214.89	0.00	0.00
60.00		701.82	1063.74	0.00	0.00
65.00		702.14	1045.86	0.00	0.00
70.00		700.92	1027.98	0.00	0.00
71.25		176.73	445.88	0.00	0.00
75.00		531.81	1324.24	0.00	0.00
76.00		140.77	349.73	0.00	0.00
80.00		564.65	803.45	0.00	0.00
85.00		702.68	868.47	0.00	0.00
86.00		138.94	171.91	0.00	0.00
90.00		556.03	681.66	0.00	0.00
95.00		689.90	838.67	0.00	0.00
100.00		682.09	823.77	0.00	0.00
104.00		538.71	648.29	0.00	0.00
105.00		133.22	160.58	0.00	0.00
110.00		663.93	785.97	0.00	0.00
115.00		653.68	771.07	0.00	0.00
120.00		654.98	1266.03	0.00	0.00
124.00	(9) attachments	1872.10	1416.23	0.00	0.00
125.00		127.16	137.70	0.00	0.00
130.00		631.33	584.33	0.00	0.00
134.00	(29) attachments	4368.19	1518.54	0.00	13554.86
135.00		122.14	100.57	0.00	0.00
137.50	(1) attachments	1343.23	1599.34	0.00	0.00
140.00		300.13	246.36	0.00	0.00
145.00		591.30	483.78	0.00	0.00
147.00	(32) attachments	4816.05	1764.15	0.00	-2125.29
150.00		343.68	244.86	0.00	0.00
155.00		572.43	729.95	0.00	0.00
160.00		557.06	392.80	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II
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165.00	541.21	380.88	0.00	0.00
170.00	524.90	368.97	0.00	0.00
174.00 (3) attachments	2454.32	967.56	0.00	20801.51
175.00 (48) attachments	7768.85	3274.98	0.00	28344.46
<b>Totals:</b>	<b>43,445.20</b>	<b>42,416.49</b>	<b>0.00</b>	<b>60,575.54</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.059	0.000	17.366	0.00	8.01
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	17.366	0.00	8.01
15.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.061	0.000	17.366	0.00	8.01
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	17.366	0.00	8.01
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	17.366	0.00	3.20
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	17.366	0.00	4.81
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	17.381	0.00	8.01
35.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.066	0.000	18.163	0.00	8.01
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.310	0.00	1.60
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	18.595	0.00	3.20
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.734	0.00	1.60
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	18.870	0.00	1.60
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	19.135	0.00	3.20
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	19.516	0.00	4.81
50.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.069	0.000	20.112	0.00	8.01
54.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.070	0.000	20.559	0.00	6.41
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.071	0.000	20.667	0.00	1.60
60.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.072	0.000	21.187	0.00	8.01
65.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.074	0.000	21.678	0.00	8.01
70.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.075	0.000	22.142	0.00	8.01
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.076	0.000	22.254	0.00	2.00
75.00	3" Chanel	Yes	3.75	0.000	3.25	1.02	0.00	0.077	0.000	22.582	0.00	6.01
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.078	0.000	22.668	0.00	1.60
80.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.078	0.000	23.003	0.00	6.41
85.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.079	0.000	23.404	0.00	8.01
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.081	0.000	23.483	0.00	1.60
90.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.082	0.000	23.790	0.00	6.41
95.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.083	0.000	24.160	0.00	8.01
100.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.086	0.000	24.517	0.00	8.01
104.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.088	0.000	24.793	0.00	6.41
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.089	0.000	24.861	0.00	1.60
<b>Totals:</b>											<b>0.0</b>	<b>168.2</b>

## Calculated Forces

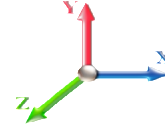
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 0.9D + 1.6W 101 mph Wind

**Iterations** 25

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



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	-42.35	-43.51	0.00	-5388.1	0.00	5388.10	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.712
5.00	-40.82	-42.92	0.00	-5170.5	0.00	5170.56	4251.62	2125.81	9227.39	4557.06	0.09	-0.167	0.000	0.697
10.00	-39.31	-42.34	0.00	-4955.9	0.00	4955.97	4207.27	2103.63	8961.88	4425.94	0.35	-0.335	0.000	0.682
15.00	-37.82	-41.76	0.00	-4744.2	0.00	4744.29	4161.65	2080.83	8697.29	4295.27	0.79	-0.503	0.000	0.667
20.00	-36.40	-41.15	0.00	-4535.5	0.00	4535.50	4114.76	2057.38	8433.78	4165.13	1.41	-0.672	0.000	0.652
22.00	-35.80	-40.94	0.00	-4453.2	0.00	4453.20	4095.66	2047.83	8328.71	4113.24	1.71	-0.741	0.000	0.772
25.00	-34.89	-40.64	0.00	-4330.3	0.00	4330.38	4066.61	2033.31	8171.50	4035.59	2.21	-0.864	0.000	0.762
30.00	-33.46	-40.09	0.00	-4127.1	0.00	4127.18	4017.20	2008.60	7910.59	3906.74	3.23	-1.067	0.000	0.745
35.00	-32.11	-39.48	0.00	-3926.7	0.00	3926.71	3966.51	1983.26	7651.22	3778.65	4.46	-1.272	0.000	0.608
36.00	-31.81	-39.38	0.00	-3887.2	0.00	3887.23	3956.22	1978.11	7599.55	3753.13	4.73	-1.307	0.000	0.812
38.00	-30.92	-39.12	0.00	-3808.4	0.00	3808.48	3935.49	1967.75	7496.40	3702.19	5.29	-1.400	0.000	0.590
39.00	-30.47	-39.00	0.00	-3769.3	0.00	3769.36	3925.05	1962.53	7444.93	3676.77	5.59	-1.435	0.000	0.707
40.00	-30.01	-38.88	0.00	-3730.3	0.00	3730.36	3914.56	1957.28	7393.54	3651.39	5.90	-1.477	0.000	0.704
42.00	-29.10	-38.64	0.00	-3652.6	0.00	3652.60	3554.53	1777.27	6785.59	3351.15	6.53	-1.560	0.000	0.677
45.00	-28.33	-38.30	0.00	-3536.6	0.00	3536.67	3532.39	1766.19	6658.05	3288.16	7.55	-1.683	0.000	0.711
50.00	-27.12	-37.66	0.00	-3345.1	0.00	3345.19	3494.22	1747.11	6445.54	3183.21	9.43	-1.902	0.000	0.689
54.00	-26.16	-36.99	0.00	-3194.5	0.00	3194.55	3462.54	1731.27	6275.67	3099.32	11.10	-2.078	0.000	0.671
55.00	-25.87	-36.90	0.00	-3157.5	0.00	3157.56	3454.46	1727.23	6233.23	3078.36	11.54	-2.122	0.000	0.667
60.00	-24.70	-36.25	0.00	-2973.0	0.00	2973.05	3413.12	1706.56	6021.34	2973.71	13.88	-2.340	0.000	0.644
65.00	-23.55	-35.60	0.00	-2791.7	0.00	2791.78	3370.20	1685.10	5810.04	2869.36	16.45	-2.557	0.000	0.621
70.00	-22.47	-34.90	0.00	-2613.7	0.00	2613.79	3325.69	1662.84	5599.53	2765.40	19.24	-2.773	0.000	0.597
71.25	-21.97	-34.75	0.00	-2570.1	0.00	2570.16	3314.31	1657.16	5547.04	2739.48	19.97	-2.829	0.000	0.584
75.00	-20.61	-34.18	0.00	-2439.8	0.00	2439.87	3279.60	1639.80	5389.99	2661.91	22.26	-2.988	0.000	0.566
76.00	-20.21	-34.06	0.00	-2405.6	0.00	2405.69	3306.32	1653.16	5510.48	2721.42	22.89	-3.032	0.000	0.576
80.00	-19.33	-33.52	0.00	-2269.4	0.00	2269.44	3269.04	1634.52	5343.14	2638.78	25.50	-3.200	0.000	0.537
80.00	-19.33	-33.52	0.00	-2269.4	0.00	2269.44	2504.08	1252.04	4105.75	2027.68	25.50	-3.200	0.000	0.585
85.00	-18.43	-32.80	0.00	-2101.8	0.00	2101.85	2474.85	1237.43	3958.27	1954.84	28.96	-3.401	0.000	0.617
86.00	-18.19	-32.70	0.00	-2069.0	0.00	2069.05	2468.82	1234.41	3928.75	1940.26	29.68	-3.446	0.000	0.762
90.00	-17.41	-32.18	0.00	-1938.2	0.00	1938.26	2444.04	1222.02	3810.67	1881.94	32.66	-3.665	0.000	0.731
95.00	-16.47	-31.51	0.00	-1777.3	0.00	1777.38	2411.64	1205.82	3663.14	1809.09	36.64	-3.934	0.000	0.691
100.00	-15.57	-30.83	0.00	-1619.8	0.00	1619.84	2377.66	1188.83	3515.87	1736.36	40.89	-4.197	0.000	0.650
104.00	-14.90	-30.28	0.00	-1496.5	0.00	1496.50	2349.34	1174.67	3398.38	1678.33	44.50	-4.404	0.000	0.616
104.00	-14.90	-30.28	0.00	-1496.5	0.00	1496.50	2349.34	1174.67	3398.38	1678.33	44.50	-4.404	0.000	0.616
105.00	-14.64	-30.19	0.00	-1466.2	0.00	1466.22	2342.10	1171.05	3369.07	1663.86	45.42	-4.456	0.000	0.888
110.00	-13.72	-29.55	0.00	-1315.2	0.00	1315.27	2304.95	1152.47	3222.91	1591.67	50.28	-4.819	0.000	0.833
115.00	-12.84	-28.91	0.00	-1167.5	0.00	1167.52	2266.22	1133.11	3077.59	1519.90	55.51	-5.171	0.000	0.774
120.00	-11.49	-28.20	0.00	-1022.9	0.00	1022.96	2252.14	1126.07	3026.44	1494.64	61.10	-5.510	0.000	0.690
124.00	-10.19	-26.23	0.00	-910.16	0.00	910.16	2219.57	1109.78	2911.24	1437.75	65.83	-5.772	0.000	0.638
125.00	-9.99	-26.12	0.00	-883.93	0.00	883.93	2211.27	1105.63	2882.56	1423.59	67.04	-5.834	0.000	0.626
125.00	-9.99	-26.12	0.00	-883.93	0.00	883.93	1600.93	800.47	2095.19	1034.73	67.04	-5.834	0.000	0.862
130.00	-9.35	-25.47	0.00	-753.34	0.00	753.34	1577.27	788.64	2000.77	988.11	73.30	-6.120	0.000	0.769
134.00	-8.26	-20.99	0.00	-637.89	0.00	637.89	1557.20	778.60	1925.20	950.79	78.53	-6.388	0.000	0.677
135.00	-8.13	-20.87	0.00	-616.90	0.00	616.90	1552.03	776.01	1906.32	941.46	79.87	-6.453	0.000	0.661
137.50	-6.64	-19.37	0.00	-564.71	0.00	564.71	1538.81	769.41	1859.13	918.16	83.29	-6.608	0.000	0.620
140.00	-6.36	-19.07	0.00	-516.28	0.00	516.28	1525.20	762.60	1812.01	894.88	86.78	-6.757	0.000	0.582
145.00	-5.89	-18.45	0.00	-420.92	0.00	420.92	1496.79	748.40	1718.05	848.48	93.99	-7.028	0.000	0.501
147.00	-4.71	-13.46	0.00	-384.03	0.00	384.03	1484.98	742.49	1680.60	829.98	96.95	-7.131	0.000	0.466
150.00	-4.47	-13.10	0.00	-343.65	0.00	343.65	1466.80	733.40	1624.61	802.34	101.47	-7.278	0.000	0.432



## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 25
	<b>Struct Class:</b> II	



155.00	-3.77	-12.45	0.00	-278.14	0.00	278.14	1451.75	725.87	1579.74	780.18	109.19	-7.499	0.000	0.359
160.00	-3.42	-11.86	0.00	-215.86	0.00	215.86	1419.41	709.70	1487.45	734.60	117.13	-7.696	0.000	0.297
165.00	-3.09	-11.28	0.00	-156.56	0.00	156.56	1385.48	692.74	1396.17	689.51	125.25	-7.853	0.000	0.230
170.00	-2.78	-10.71	0.00	-100.16	0.00	100.16	1349.97	674.99	1306.08	645.02	133.52	-7.974	0.000	0.158
170.00	-2.78	-10.71	0.00	-100.16	0.00	100.16	1349.97	674.99	1306.08	645.02	133.52	-7.974	0.000	0.158
174.00	-2.15	-8.15	0.00	-36.50	0.00	36.50	1121.46	560.73	870.39	429.85	140.21	-8.041	0.000	0.087
175.00	0.00	-7.77	0.00	-28.34	0.00	28.34	1053.22	526.61	767.04	378.81	141.89	-8.055	0.000	0.075

## Wind Loading - Shaft

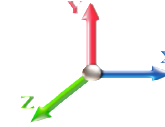
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

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	RB1 RB2	1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	24.120	28.94	135.5	436.6	1963.3
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	23.777	28.53	133.6	460.4	1959.2
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	23.406	28.09	131.5	471.2	1942.2
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	23.023	27.63	129.3	476.4	1919.6
22.00	RT2	1.00	0.70	4.256	4.68	0.00	1.200	1.440	2.00	9.097	10.92	51.1	191.0	760.5
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	3.00	13.529	16.24	76.0	287.0	1132.9
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	22.238	26.69	125.0	478.0	1865.6
35.00	RB3	1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	21.840	26.21	128.3	476.2	1836.0
36.00	Bot - Section 2 RT1	1.00	0.74	4.487	4.94	0.00	1.200	1.513	1.00	4.319	5.18	25.6	95.1	363.8
38.00	RB4	1.00	0.75	4.557	5.01	0.00	1.200	1.521	2.00	8.719	10.46	52.5	192.8	1192.3
39.00	RT3	1.00	0.76	4.591	5.05	0.00	1.200	1.525	1.00	4.335	5.20	26.3	96.3	592.9
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	1.00	4.319	5.18	26.4	96.1	590.7
42.00	Top - Section 1	1.00	0.77	4.689	5.16	0.00	1.200	1.537	2.00	8.591	10.31	53.2	191.7	1174.7
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	3.00	12.767	15.32	80.6	286.1	966.0
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	5.00	20.958	25.15	136.4	472.2	1586.3
54.00	Appurtenance(s)	1.00	0.83	5.039	5.54	0.00	1.200	1.576	4.00	16.474	19.77	109.6	374.5	1248.6
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	1.00	4.077	4.89	27.3	93.4	309.5
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	20.148	24.18	138.1	461.2	1527.6
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	19.741	23.69	138.4	455.0	1497.6
70.00	Bot - Section 3	1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	19.334	23.20	138.5	448.4	1467.1
71.25	RT4 RB5	1.00	0.90	5.454	6.00	0.00	1.200	1.620	1.25	4.850	5.82	34.9	113.6	620.2
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	3.75	14.398	17.28	105.2	337.0	1838.7
76.00	Top - Section 2	1.00	0.91	5.555	6.11	0.00	1.200	1.631	1.00	3.800	4.56	27.9	89.6	485.5
80.00	Top - Section 3	1.00	0.93	5.637	6.20	0.00	1.200	1.639	4.00	15.040	18.05	111.9	353.6	1143.4
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	5.00	18.433	22.12	139.6	434.5	1240.5
86.00	RT5 RB6	1.00	0.95	5.755	6.33	0.00	1.200	1.651	1.00	3.637	4.36	27.6	86.6	245.4
90.00		1.00	0.96	5.830	6.41	0.00	1.200	1.658	4.00	14.385	17.26	110.7	341.4	968.7
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	5.00	17.614	21.14	137.7	418.7	1185.0
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	5.00	17.204	20.64	136.4	410.4	1156.8
104.00	RT6	1.00	1.00	6.076	6.68	0.00	1.200	1.682	4.00	13.467	16.16	108.0	322.9	905.8
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	1.00	3.325	3.99	26.7	80.4	224.1
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	5.00	16.383	19.66	133.5	393.3	1100.0
115.00	Bot - Section 5	1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	15.972	19.17	131.8	384.5	1071.3
120.00	Top - Section 4	1.00	1.04	6.330	6.96	0.00	1.200	1.707	5.00	15.831	19.00	132.3	382.4	1729.2
124.00	Appurtenance(s)	1.00	1.05	6.389	7.03	0.00	1.200	1.712	4.00	12.368	14.84	104.3	300.1	829.7
125.00	Top - Section 5	1.00	1.05	6.404	7.04	0.00	1.200	1.714	1.00	3.051	3.66	25.8	74.7	205.1
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	5.00	15.008	18.01	128.3	364.1	877.2
134.00	Appurtenance(s)	1.00	1.07	6.532	7.19	0.00	1.200	1.726	4.00	11.710	14.05	101.0	285.3	684.3
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	1.00	2.886	3.46	24.9	70.9	169.1
137.50	Appurtenance(s)	1.00	1.08	6.581	7.24	0.00	1.200	1.730	2.50	7.143	8.57	62.1	175.0	417.6
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	2.50	7.040	8.45	61.5	172.6	411.3
145.00		1.00	1.10	6.681	7.35	0.00	1.200	1.739	5.00	13.773	16.53	121.5	335.6	801.0
147.00	Appurtenance(s)	1.00	1.10	6.708	7.38	0.00	1.200	1.742	2.00	5.393	6.47	47.8	132.7	314.4
150.00	Bot - Section 7	1.00	1.11	6.746	7.42	0.00	1.200	1.745	3.00	7.966	9.56	70.9	195.5	463.3
155.00	Top - Section 6	1.00	1.12	6.810	7.49	0.00	1.200	1.751	5.00	13.164	15.80	118.3	321.7	1197.2
160.00		1.00	1.13	6.872	7.56	0.00	1.200	1.757	5.00	12.751	15.30	115.7	311.7	737.7

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 27
	<b>Struct Class:</b> II	



165.00	1.00	1.14	6.933	7.63	0.00	1.200	1.762	5.00	12.339	14.81	112.9	301.7	711.8	
170.00 Top - Section 7	1.00	1.15	6.992	7.69	0.00	1.200	1.767	5.00	11.926	14.31	110.1	291.6	685.8	
174.00 Appurtenance(s)	1.00	1.16	7.039	7.74	0.00	1.200	1.771	4.00	8.583	10.30	79.7	191.6	470.4	
175.00 Appurtenance(s)	1.00	1.16	7.050	7.76	0.00	1.200	1.772	1.00	1.898	2.28	17.7	45.3	105.5	
<b>Totals:</b>								<b>175.00</b>				<b>4,529.7</b>	<b>48,892.2</b>	

## Discrete Appurtenance Forces

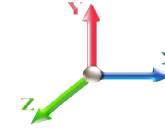
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

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	175.00	PRK-SFS-L	1	7.050	7.755	0.75	0.75	11.92	501.11	0.000	0.000	92.41	0.00	0.00			
2	175.00	DR65-18-02DPL2Q	6	7.234	7.957	0.69	1.00	28.50	981.06	0.000	16.500	226.80	0.00	3742.19			
3	175.00	E15S09P94	6	7.201	7.922	0.60	1.00	4.58	180.80	0.000	13.500	36.30	0.00	490.07			
4	175.00	T-Arms	3	7.050	7.755	0.75	1.00	56.24	1321.60	0.000	0.000	436.18	0.00	0.00			
5	175.00	APXVTM14-C-I20	3	7.073	7.780	0.77	1.00	17.26	692.57	0.000	2.000	134.29	0.00	268.58			
6	175.00	NNVV-65B-R4	3	7.073	7.780	0.74	1.00	30.52	951.22	0.000	2.000	237.48	0.00	474.95			
7	175.00	Pipes	12	7.050	7.755	0.64	0.80	33.11	72.82	0.000	0.000	256.77	0.00	0.00			
8	175.00	1900MHz	3	7.073	7.780	0.67	1.00	8.16	398.49	0.000	2.000	63.47	0.00	126.93			
9	175.00	800 MHz	6	7.073	7.780	0.67	1.00	14.68	705.65	0.000	2.000	114.21	0.00	228.42			
10	175.00	TD-RRH8x20-25	3	7.073	7.780	0.67	1.00	9.80	589.63	0.000	2.000	76.27	0.00	152.53			
11	175.00	Handrail	1	7.050	7.755	0.75	0.75	16.81	725.08	0.000	0.000	130.40	0.00	0.00			
12	175.00	PRK-1245L	1	7.050	7.755	0.75	0.75	14.70	792.39	0.000	0.000	114.01	0.00	0.00			
13	174.00	4.5" x 24 FT Pipe	3	7.152	7.867	1.00	1.00	61.76	1475.17	0.000	10.000	485.84	0.00	4858.41			
14	147.00	T-Arms	3	6.708	7.378	0.56	0.75	41.77	1310.76	0.000	0.000	308.22	0.00	0.00			
15	147.00	RRH2X60-700	3	6.668	7.335	0.54	0.80	6.89	417.04	0.000	-3.000	50.57	0.00	-151.71			
16	147.00	RRH2X60-PCS	3	6.668	7.335	0.54	0.80	4.56	450.95	0.000	-3.000	33.43	0.00	-100.30			
17	147.00	RRH2X60-AWS	3	6.668	7.335	0.54	0.80	6.89	417.04	0.000	-3.000	50.57	0.00	-151.71			
18	147.00	DB-T1-6Z-8AB-0Z	2	6.708	7.378	0.80	0.80	9.07	392.37	0.000	0.000	66.96	0.00	0.00			
19	147.00	FD9R6004/2C-3L	6	6.708	7.378	0.40	0.80	1.93	60.18	0.000	0.000	14.21	0.00	0.00			
20	147.00	SBNHH-1D65B	6	6.708	7.378	0.66	0.80	37.06	1571.84	0.000	0.000	273.42	0.00	0.00			
21	147.00	BXA-80080-4CF	3	6.708	7.378	0.70	0.80	11.37	239.55	0.000	0.000	83.92	0.00	0.00			
22	147.00	BXA-70063-6CF-EDIN-X	3	6.708	7.378	0.62	0.80	19.16	386.57	0.000	0.000	141.38	0.00	0.00			
23	137.50	Low Profile	1	6.581	7.239	1.00	1.00	39.51	2797.57	0.000	0.000	286.00	0.00	0.00			
24	134.00	7770.00	3	6.581	7.239	0.60	0.80	11.79	525.95	0.000	3.500	85.38	0.00	298.82			
25	134.00	AM-X-CD-17-65-00T-RET	3	6.581	7.239	0.62	0.80	28.65	346.51	0.000	3.500	207.38	0.00	725.83			
26	134.00	LGP21401	6	6.581	7.239	0.40	0.80	5.08	207.25	0.000	3.500	36.77	0.00	128.69			
27	134.00	RRUS 11	3	6.581	7.239	0.54	0.80	5.09	446.43	0.000	3.500	36.82	0.00	128.88			
28	134.00	DC6-48-60-18-8F	1	6.581	7.239	0.80	0.80	3.30	61.82	0.000	3.500	23.87	0.00	83.53			
29	134.00	TPA-65R-LCUUUU-H8	3	6.581	7.239	0.66	0.80	29.73	1194.23	0.000	3.500	215.24	0.00	753.34			
30	134.00	RRUS-32	6	6.581	7.239	0.54	0.80	13.17	1226.73	0.000	3.500	95.37	0.00	333.79			
31	134.00	DBC0061F1V51-2	3	6.581	7.239	0.55	0.80	1.59	99.40	0.000	3.500	11.51	0.00	40.27			
32	134.00	DC6-48-60-18-8C	1	6.581	7.239	0.80	0.80	3.09	47.14	0.000	3.500	22.37	0.00	78.31			
33	124.00	T-Arms	3	6.389	7.028	0.56	0.75	30.81	1300.36	0.000	0.000	216.55	0.00	0.00			
34	124.00	742 351	6	6.389	7.028	0.50	0.80	22.16	611.77	0.000	0.000	155.77	0.00	0.00			
35	54.00	Standoff	1	5.039	5.542	1.00	1.00	8.02	97.48	0.000	0.000	44.44	0.00	0.00			
36	54.00	GPS	1	5.039	5.542	1.00	1.00	1.64	30.47	0.000	0.000	9.11	0.00	0.00			
<b>Totals:</b>									<b>23,627.02</b>						<b>4,873.68</b>		

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

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		135.51	2343.99	0.00	0.00
10.00		133.58	2342.37	0.00	0.00
15.00		131.49	2326.96	0.00	0.00
20.00		129.34	2305.49	0.00	0.00
22.00		51.11	915.00	0.00	0.00
25.00		76.01	1364.98	0.00	0.00
30.00		125.04	2253.25	0.00	0.00
35.00		128.33	2224.32	0.00	0.00
36.00		25.58	441.45	0.00	0.00
38.00		52.45	1347.81	0.00	0.00
39.00		26.27	670.70	0.00	0.00
40.00		26.37	668.53	0.00	0.00
42.00		53.18	1330.38	0.00	0.00
45.00		80.60	1199.66	0.00	0.00
50.00		136.36	1976.28	0.00	0.00
54.00	(2) attachments	163.12	1688.81	0.00	0.00
55.00		27.26	387.44	0.00	0.00
60.00		138.09	1917.56	0.00	0.00
65.00		138.44	1887.89	0.00	0.00
70.00		138.49	1857.80	0.00	0.00
71.25		34.91	717.86	0.00	0.00
75.00		105.18	2131.99	0.00	0.00
76.00		27.87	563.73	0.00	0.00
80.00		111.92	1456.48	0.00	0.00
85.00		139.56	1632.25	0.00	0.00
86.00		27.63	323.77	0.00	0.00
90.00		110.71	1282.32	0.00	0.00
95.00		137.67	1577.27	0.00	0.00
100.00		136.45	1549.42	0.00	0.00
104.00		108.01	1220.00	0.00	0.00
105.00		26.74	302.68	0.00	0.00
110.00		133.52	1441.26	0.00	0.00
115.00		131.84	1412.57	0.00	0.00
120.00		132.27	2070.45	0.00	0.00
124.00	(9) attachments	476.63	3014.80	0.00	0.00
125.00		25.79	258.27	0.00	0.00
130.00		128.30	1143.18	0.00	0.00
134.00	(29) attachments	835.68	5052.58	0.00	2571.46
135.00		24.94	205.03	0.00	0.00
137.50	(1) attachments	348.05	3305.00	0.00	0.00
140.00		61.47	501.07	0.00	0.00
145.00		121.47	980.61	0.00	0.00
147.00	(32) attachments	1070.44	5632.54	0.00	-403.73
150.00		70.94	521.98	0.00	0.00
155.00		118.33	1294.93	0.00	0.00
160.00		115.67	835.48	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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165.00	112.91	809.57	0.00	0.00
170.00	110.07	783.56	0.00	0.00
174.00 (3) attachments	565.59	2023.75	0.00	4858.41
175.00 (48) attachments	1936.24	8037.51	0.00	5483.68
<b>Totals:</b>	<b>9,403.40</b>	<b>83,532.59</b>	<b>0.00</b>	<b>12,509.83</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor**    1.20  
**Wind Load Factor**    1.00



**Iterations**    24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	2.39	0.00	0.059	0.000	4.256	0.00	38.50
10.00	3" Chanel	Yes	5.00	0.000	3.25	2.46	0.00	0.060	0.000	4.256	0.00	40.94
15.00	3" Chanel	Yes	5.00	0.000	3.25	2.51	0.00	0.061	0.000	4.256	0.00	42.51
20.00	3" Chanel	Yes	5.00	0.000	3.25	2.54	0.00	0.062	0.000	4.256	0.00	43.68
22.00	3" Chanel	Yes	2.00	0.000	3.25	1.02	0.00	0.063	0.000	4.256	0.00	17.63
25.00	3" Chanel	Yes	3.00	0.000	3.25	1.54	0.00	0.063	0.000	4.256	0.00	26.77
30.00	3" Chanel	Yes	5.00	0.000	3.25	2.59	0.00	0.064	0.000	4.260	0.00	45.42
35.00	3" Chanel	Yes	5.00	0.000	3.25	2.61	0.00	0.066	0.000	4.451	0.00	46.11
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.52	0.00	0.067	0.000	4.487	0.00	9.25
38.00	3" Chanel	Yes	2.00	0.000	3.25	1.05	0.00	0.067	0.000	4.557	0.00	18.60
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.067	0.000	4.591	0.00	9.32
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.068	0.000	4.625	0.00	9.35
42.00	3" Chanel	Yes	2.00	0.000	3.25	1.05	0.00	0.068	0.000	4.689	0.00	18.78
45.00	3" Chanel	Yes	3.00	0.000	3.25	1.59	0.00	0.068	0.000	4.783	0.00	28.37
50.00	3" Chanel	Yes	5.00	0.000	3.25	2.66	0.00	0.069	0.000	4.929	0.00	47.79
54.00	3" Chanel	Yes	4.00	0.000	3.25	2.13	0.00	0.070	0.000	5.039	0.00	38.53
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.071	0.000	5.065	0.00	9.65
60.00	3" Chanel	Yes	5.00	0.000	3.25	2.68	0.00	0.072	0.000	5.193	0.00	48.68
65.00	3" Chanel	Yes	5.00	0.000	3.25	2.69	0.00	0.074	0.000	5.313	0.00	49.08
70.00	3" Chanel	Yes	5.00	0.000	3.25	2.70	0.00	0.075	0.000	5.426	0.00	49.45
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.68	0.00	0.076	0.000	5.454	0.00	12.39
75.00	3" Chanel	Yes	3.75	0.000	3.25	2.03	0.00	0.077	0.000	5.534	0.00	37.36
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.54	0.00	0.078	0.000	5.555	0.00	9.98
80.00	3" Chanel	Yes	4.00	0.000	3.25	2.18	0.00	0.078	0.000	5.637	0.00	40.11
85.00	3" Chanel	Yes	5.00	0.000	3.25	2.73	0.00	0.079	0.000	5.736	0.00	50.46
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.55	0.00	0.081	0.000	5.755	0.00	10.10
90.00	3" Chanel	Yes	4.00	0.000	3.25	2.19	0.00	0.082	0.000	5.830	0.00	40.61
95.00	3" Chanel	Yes	5.00	0.000	3.25	2.74	0.00	0.083	0.000	5.921	0.00	51.05
100.00	3" Chanel	Yes	5.00	0.000	3.25	2.75	0.00	0.086	0.000	6.008	0.00	51.32
104.00	3" Chanel	Yes	4.00	0.000	3.25	2.20	0.00	0.088	0.000	6.076	0.00	41.23
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.55	0.00	0.089	0.000	6.093	0.00	10.32
<b>Totals:</b>											<b>0.0</b>	<b>993.3</b>

## Calculated Forces

**Structure:** CT00680-S-SBA

**Code:** EIA/TIA-222-G

8/17/2018

**Site Name:** Putnam

**Exposure:** B

**Height:** 175.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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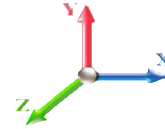


**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-83.53	-9.43	0.00	-1255.1	0.00	1255.10	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.176
5.00	-81.18	-9.35	0.00	-1207.9	0.00	1207.94	4251.62	2125.81	9227.39	4557.06	0.02	-0.039	0.000	0.173
10.00	-78.83	-9.27	0.00	-1161.1	0.00	1161.19	4207.27	2103.63	8961.88	4425.94	0.08	-0.078	0.000	0.169
15.00	-76.50	-9.19	0.00	-1114.8	0.00	1114.84	4161.65	2080.83	8697.29	4295.27	0.19	-0.118	0.000	0.166
20.00	-74.19	-9.09	0.00	-1068.9	0.00	1068.91	4114.76	2057.38	8433.78	4165.13	0.33	-0.157	0.000	0.163
22.00	-73.27	-9.06	0.00	-1050.7	0.00	1050.74	4095.66	2047.83	8328.71	4113.24	0.40	-0.174	0.000	0.194
25.00	-71.90	-9.03	0.00	-1023.5	0.00	1023.55	4066.61	2033.31	8171.50	4035.59	0.52	-0.203	0.000	0.191
30.00	-69.64	-8.96	0.00	-978.39	0.00	978.39	4017.20	2008.60	7910.59	3906.74	0.76	-0.251	0.000	0.188
35.00	-67.41	-8.85	0.00	-933.61	0.00	933.61	3966.51	1983.26	7651.22	3778.65	1.04	-0.299	0.000	0.153
36.00	-66.97	-8.84	0.00	-924.76	0.00	924.76	3956.22	1978.11	7599.55	3753.13	1.11	-0.308	0.000	0.205
38.00	-65.62	-8.80	0.00	-907.08	0.00	907.08	3935.49	1967.75	7496.40	3702.19	1.24	-0.330	0.000	0.149
39.00	-64.94	-8.78	0.00	-898.29	0.00	898.29	3925.05	1962.53	7444.93	3676.77	1.31	-0.338	0.000	0.179
40.00	-64.27	-8.76	0.00	-889.51	0.00	889.51	3914.56	1957.28	7393.54	3651.39	1.38	-0.348	0.000	0.178
42.00	-62.94	-8.73	0.00	-871.98	0.00	871.98	3554.53	1777.27	6785.59	3351.15	1.53	-0.368	0.000	0.171
45.00	-61.74	-8.69	0.00	-845.79	0.00	845.79	3532.39	1766.19	6658.05	3288.16	1.78	-0.398	0.000	0.180
50.00	-59.75	-8.58	0.00	-802.37	0.00	802.37	3494.22	1747.11	6445.54	3183.21	2.22	-0.450	0.000	0.175
54.00	-58.06	-8.43	0.00	-768.03	0.00	768.03	3462.54	1731.27	6275.67	3099.32	2.61	-0.492	0.000	0.171
55.00	-57.67	-8.43	0.00	-759.60	0.00	759.60	3454.46	1727.23	6233.23	3078.36	2.72	-0.503	0.000	0.170
60.00	-55.75	-8.33	0.00	-717.43	0.00	717.43	3413.12	1706.56	6021.34	2973.71	3.27	-0.555	0.000	0.165
65.00	-53.85	-8.22	0.00	-675.78	0.00	675.78	3370.20	1685.10	5810.04	2869.36	3.88	-0.608	0.000	0.160
70.00	-51.99	-8.09	0.00	-634.67	0.00	634.67	3325.69	1662.84	5599.53	2765.40	4.55	-0.660	0.000	0.154
71.25	-51.27	-8.07	0.00	-624.55	0.00	624.55	3314.31	1657.16	5547.04	2739.48	4.72	-0.674	0.000	0.151
75.00	-49.14	-7.96	0.00	-594.28	0.00	594.28	3279.60	1639.80	5389.99	2661.91	5.27	-0.713	0.000	0.146
76.00	-48.57	-7.95	0.00	-586.32	0.00	586.32	3306.32	1653.16	5510.48	2721.42	5.42	-0.723	0.000	0.149
80.00	-47.11	-7.86	0.00	-554.52	0.00	554.52	3269.04	1634.52	5343.14	2638.78	6.04	-0.764	0.000	0.139
80.00	-47.11	-7.86	0.00	-554.52	0.00	554.52	2504.08	1252.04	4105.75	2027.68	6.04	-0.764	0.000	0.152
85.00	-45.47	-7.72	0.00	-515.24	0.00	515.24	2474.85	1237.43	3958.27	1954.84	6.87	-0.813	0.000	0.161
86.00	-45.15	-7.71	0.00	-507.52	0.00	507.52	2468.82	1234.41	3928.75	1940.26	7.04	-0.824	0.000	0.199
90.00	-43.86	-7.63	0.00	-476.68	0.00	476.68	2444.04	1222.02	3810.67	1881.94	7.75	-0.878	0.000	0.192
95.00	-42.27	-7.51	0.00	-438.54	0.00	438.54	2411.64	1205.82	3663.14	1809.09	8.71	-0.944	0.000	0.182
100.00	-40.72	-7.39	0.00	-400.97	0.00	400.97	2377.66	1188.83	3515.87	1736.36	9.73	-1.009	0.000	0.172
104.00	-39.50	-7.28	0.00	-371.41	0.00	371.41	2349.34	1174.67	3398.38	1678.33	10.60	-1.061	0.000	0.164
104.00	-39.50	-7.28	0.00	-371.41	0.00	371.41	2349.34	1174.67	3398.38	1678.33	10.60	-1.061	0.000	0.164
105.00	-39.19	-7.29	0.00	-364.13	0.00	364.13	2342.10	1171.05	3369.07	1663.86	10.82	-1.074	0.000	0.236
110.00	-37.74	-7.18	0.00	-327.69	0.00	327.69	2304.95	1152.47	3222.91	1591.67	12.00	-1.164	0.000	0.222
115.00	-36.32	-7.08	0.00	-291.77	0.00	291.77	2266.22	1133.11	3077.59	1519.90	13.26	-1.252	0.000	0.208
120.00	-34.24	-6.94	0.00	-256.38	0.00	256.38	2252.14	1126.07	3026.44	1494.64	14.62	-1.337	0.000	0.187
124.00	-31.24	-6.42	0.00	-228.61	0.00	228.61	2219.57	1109.78	2911.24	1437.75	15.77	-1.402	0.000	0.173
125.00	-30.97	-6.41	0.00	-222.19	0.00	222.19	2211.27	1105.63	2882.56	1423.59	16.06	-1.418	0.000	0.170
125.00	-30.97	-6.41	0.00	-222.19	0.00	222.19	1600.93	800.47	2095.19	1034.73	16.06	-1.418	0.000	0.234
130.00	-29.83	-6.29	0.00	-190.15	0.00	190.15	1577.27	788.64	2000.77	988.11	17.59	-1.490	0.000	0.211
134.00	-24.79	-5.34	0.00	-162.43	0.00	162.43	1557.20	778.60	1925.20	950.79	18.87	-1.558	0.000	0.187
135.00	-24.59	-5.32	0.00	-157.10	0.00	157.10	1552.03	776.01	1906.32	941.46	19.19	-1.574	0.000	0.183
137.50	-21.29	-4.89	0.00	-143.80	0.00	143.80	1538.81	769.41	1859.13	918.16	20.03	-1.614	0.000	0.170
140.00	-20.79	-4.84	0.00	-131.57	0.00	131.57	1525.20	762.60	1812.01	894.88	20.88	-1.651	0.000	0.161
145.00	-19.81	-4.70	0.00	-107.40	0.00	107.40	1496.79	748.40	1718.05	848.48	22.65	-1.721	0.000	0.140
147.00	-14.21	-3.47	0.00	-97.99	0.00	97.99	1484.98	742.49	1680.60	829.98	23.38	-1.747	0.000	0.128
150.00	-13.68	-3.39	0.00	-87.59	0.00	87.59	1466.80	733.40	1624.61	802.34	24.49	-1.784	0.000	0.119



## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 33
	<b>Struct Class:</b> II	



155.00	-12.39	-3.25	0.00	-70.62	0.00	70.62	1451.75	725.87	1579.74	780.18	26.39	-1.841	0.000	0.099
160.00	-11.56	-3.11	0.00	-54.39	0.00	54.39	1419.41	709.70	1487.45	734.60	28.34	-1.891	0.000	0.082
165.00	-10.75	-2.98	0.00	-38.83	0.00	38.83	1385.48	692.74	1396.17	689.51	30.35	-1.930	0.000	0.064
170.00	-9.97	-2.85	0.00	-23.94	0.00	23.94	1349.97	674.99	1306.08	645.02	32.38	-1.960	0.000	0.045
170.00	-9.97	-2.85	0.00	-23.94	0.00	23.94	1349.97	674.99	1306.08	645.02	32.38	-1.960	0.000	0.045
174.00	-7.97	-2.21	0.00	-7.70	0.00	7.70	1121.46	560.73	870.39	429.85	34.03	-1.975	0.000	0.025
175.00	0.00	-1.94	0.00	-5.48	0.00	5.48	1053.22	526.61	767.04	378.81	34.45	-1.978	0.000	0.014

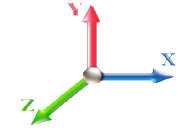
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E					<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10			<b>Sds</b> 0.18	<b>Ss</b> 0.17
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b> 0.10	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.28	<b>SA</b> 0.03	<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		1272.2	0.00	0.03	0.02	22.63	
10.00		1249.0	0.01	0.05	0.03	32.47	
15.00		1225.8	0.01	0.06	0.03	37.12	
20.00		1202.6	0.02	0.07	0.04	39.23	
22.00	RT2	474.59	0.03	0.07	0.04	15.78	
25.00		704.93	0.04	0.07	0.04	23.94	
30.00		1156.3	0.06	0.07	0.04	40.31	
35.00	RB3	1133.1	0.08	0.07	0.04	40.35	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	8.00	
38.00	RB4	832.96	0.09	0.07	0.04	30.03	
39.00	RT3	413.90	0.09	0.07	0.04	14.98	
40.00		412.18	0.10	0.07	0.04	14.98	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	30.03	
45.00		566.56	0.12	0.07	0.03	21.03	
50.00		928.38	0.15	0.07	0.03	35.08	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	29.68	
55.00		180.11	0.19	0.06	0.02	6.88	
60.00		888.65	0.22	0.06	0.02	33.71	
65.00		868.79	0.26	0.05	0.02	31.80	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	28.55	
71.25	RT4 RB5	422.11	0.31	0.04	0.01	13.74	
75.00		1251.4	0.35	0.03	0.01	35.51	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.91	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.41	
85.00		671.69	0.45	0.00	0.01	6.47	
86.00	RT5 RB6	132.35	0.46	0.00	0.01	0.95	
90.00		522.78	0.50	-0.02	0.01	-1.58	
95.00		638.58	0.56	-0.04	0.01	-10.17	
100.00		622.02	0.62	-0.06	0.02	-16.93	
104.00	RT6	485.70	0.67	-0.08	0.02	-16.57	
105.00		119.77	0.68	-0.08	0.03	-4.25	
110.00		588.92	0.75	-0.10	0.04	-23.58	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-23.32	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-42.32	
124.00	Appurtenance(s)	1346.0	0.95	-0.12	0.11	-43.97	
125.00	Top - Section 5	108.67	0.96	-0.12	0.11	-3.37	
130.00		427.58	1.04	-0.10	0.15	-8.94	
134.00	Appurtenance(s)	1509.9	1.11	-0.07	0.19	-15.56	
135.00		81.81	1.12	-0.05	0.20	-0.60	
137.50	Appurtenance(s)	1702.2	1.17	-0.02	0.23	1.32	
140.00		198.89	1.21	0.01	0.26	1.93	
145.00		387.85	1.30	0.12	0.33	11.72	
147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	74.86	
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.10	
155.00	Top - Section 6	729.57	1.48	0.46	0.52	59.69	

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018	
<b>Site Name:</b> Putnam	<b>Exposure:</b> B		
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00		
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil		
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II	Page: 35



160.00	354.97	1.58	0.72	0.64	40.14
165.00	341.72	1.68	1.05	0.78	50.59
170.00 Top - Section 7	328.48	1.78	1.46	0.95	61.38
174.00 Appurtenance(s)	1009.8	1.87	1.87	1.10	222.89
175.00 Appurtenance(s)	<u>3622.5</u>	1.89	1.98	1.14	<u>831.60</u>
<b>Totals:</b>	<b>38,592.5</b>				<b>1,772.6</b>
					<b>Total Wind: 43,445.2</b>

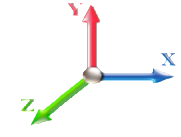
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 1.2D + 1.0E						<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.18	<b>Ss</b> 0.17
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.28	<b>SA</b>	0.03	<b>Seismic Importance Factor</b> 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-56.56	-1.99	0.00	-272.00	0.00	272.00	4294.71	2147.35	9493.67	4688.57	0.00	0.00	0.00	0.043
5.00	-54.68	-1.97	0.00	-262.07	0.00	262.07	4251.62	2125.81	9227.39	4557.06	0.00	-0.01	-0.01	0.043
10.00	-52.82	-1.95	0.00	-252.21	0.00	252.21	4207.27	2103.63	8961.88	4425.94	0.02	-0.02	-0.02	0.042
15.00	-51.00	-1.92	0.00	-242.47	0.00	242.47	4161.65	2080.83	8697.29	4295.27	0.04	-0.03	-0.03	0.041
20.00	-49.20	-1.88	0.00	-232.89	0.00	232.89	4114.76	2057.38	8433.78	4165.13	0.07	-0.03	-0.03	0.040
22.00	-48.49	-1.87	0.00	-229.12	0.00	229.12	4095.66	2047.83	8328.71	4113.24	0.09	-0.04	-0.04	0.048
25.00	-47.43	-1.85	0.00	-223.51	0.00	223.51	4066.61	2033.31	8171.50	4035.59	0.11	-0.04	-0.04	0.047
30.00	-45.69	-1.82	0.00	-214.25	0.00	214.25	4017.20	2008.60	7910.59	3906.74	0.16	-0.05	-0.05	0.047
35.00	-43.98	-1.78	0.00	-205.16	0.00	205.16	3966.51	1983.26	7651.22	3778.65	0.23	-0.07	-0.07	0.038
36.00	-43.64	-1.78	0.00	-203.38	0.00	203.38	3956.22	1978.11	7599.55	3753.13	0.24	-0.07	-0.07	0.051
38.00	-42.50	-1.75	0.00	-199.82	0.00	199.82	3935.49	1967.75	7496.40	3702.19	0.27	-0.07	-0.07	0.037
39.00	-41.93	-1.73	0.00	-198.08	0.00	198.08	3925.05	1962.53	7444.93	3676.77	0.29	-0.07	-0.07	0.044
40.00	-41.37	-1.72	0.00	-196.34	0.00	196.34	3914.56	1957.28	7393.54	3651.39	0.30	-0.08	-0.08	0.044
42.00	-40.24	-1.69	0.00	-192.91	0.00	192.91	3554.53	1777.27	6785.59	3351.15	0.33	-0.08	-0.08	0.042
45.00	-39.35	-1.68	0.00	-187.83	0.00	187.83	3532.39	1766.19	6658.05	3288.16	0.39	-0.09	-0.09	0.045
50.00	-37.88	-1.65	0.00	-179.45	0.00	179.45	3494.22	1747.11	6445.54	3183.21	0.48	-0.10	-0.10	0.044
54.00	-36.67	-1.62	0.00	-172.87	0.00	172.87	3462.54	1731.27	6275.67	3099.32	0.57	-0.11	-0.11	0.043
55.00	-36.38	-1.61	0.00	-171.26	0.00	171.26	3454.46	1727.23	6233.23	3078.36	0.59	-0.11	-0.11	0.043
60.00	-34.96	-1.58	0.00	-163.19	0.00	163.19	3413.12	1706.56	6021.34	2973.71	0.72	-0.12	-0.12	0.042
65.00	-33.57	-1.56	0.00	-155.26	0.00	155.26	3370.20	1685.10	5810.04	2869.36	0.85	-0.13	-0.13	0.041
70.00	-32.20	-1.53	0.00	-147.48	0.00	147.48	3325.69	1662.84	5599.53	2765.40	1.00	-0.15	-0.15	0.040
71.25	-31.60	-1.52	0.00	-145.57	0.00	145.57	3314.31	1657.16	5547.04	2739.48	1.04	-0.15	-0.15	0.039
75.00	-29.84	-1.48	0.00	-139.88	0.00	139.88	3279.60	1639.80	5389.99	2661.91	1.16	-0.16	-0.16	0.038
76.00	-29.37	-1.47	0.00	-138.40	0.00	138.40	3306.32	1653.16	5510.48	2721.42	1.19	-0.16	-0.16	0.039
80.00	-28.30	-1.46	0.00	-132.50	0.00	132.50	3269.04	1634.52	5343.14	2638.78	1.33	-0.17	-0.17	0.037
80.00	-28.30	-1.46	0.00	-132.50	0.00	132.50	2504.08	1252.04	4105.75	2027.68	1.33	-0.17	-0.17	0.040
85.00	-27.14	-1.46	0.00	-125.20	0.00	125.20	2474.85	1237.43	3958.27	1954.84	1.52	-0.18	-0.18	0.043
86.00	-26.91	-1.46	0.00	-123.74	0.00	123.74	2468.82	1234.41	3928.75	1940.26	1.55	-0.19	-0.19	0.053
90.00	-26.00	-1.46	0.00	-117.91	0.00	117.91	2444.04	1222.02	3810.67	1881.94	1.71	-0.20	-0.20	0.052
95.00	-24.88	-1.46	0.00	-110.60	0.00	110.60	2411.64	1205.82	3663.14	1809.09	1.93	-0.22	-0.22	0.050
100.00	-23.78	-1.47	0.00	-103.28	0.00	103.28	2377.66	1188.83	3515.87	1736.36	2.17	-0.23	-0.23	0.048
104.00	-22.92	-1.47	0.00	-97.42	0.00	97.42	2349.34	1174.67	3398.38	1678.33	2.37	-0.25	-0.25	0.047
104.00	-22.92	-1.47	0.00	-97.42	0.00	97.42	2349.34	1174.67	3398.38	1678.33	2.37	-0.25	-0.25	0.047
105.00	-22.71	-1.47	0.00	-95.95	0.00	95.95	2342.10	1171.05	3369.07	1663.86	2.42	-0.25	-0.25	0.067
110.00	-21.66	-1.48	0.00	-88.60	0.00	88.60	2304.95	1152.47	3222.91	1591.67	2.69	-0.27	-0.27	0.065
115.00	-20.63	-1.48	0.00	-81.22	0.00	81.22	2266.22	1133.11	3077.59	1519.90	2.99	-0.30	-0.30	0.063
120.00	-18.94	-1.48	0.00	-73.83	0.00	73.83	2252.14	1126.07	3026.44	1494.64	3.31	-0.32	-0.32	0.058
124.00	-17.05	-1.47	0.00	-67.93	0.00	67.93	2219.57	1109.78	2911.24	1437.75	3.59	-0.34	-0.34	0.055
125.00	-16.87	-1.47	0.00	-66.46	0.00	66.46	2211.27	1105.63	2882.56	1423.59	3.66	-0.34	-0.34	0.054
125.00	-16.87	-1.47	0.00	-66.46	0.00	66.46	1600.93	800.47	2095.19	1034.73	3.66	-0.34	-0.34	0.075
130.00	-16.09	-1.47	0.00	-59.10	0.00	59.10	1577.27	788.64	2000.77	988.11	4.03	-0.37	-0.37	0.070
134.00	-14.06	-1.46	0.00	-53.20	0.00	53.20	1557.20	778.60	1925.20	950.79	4.35	-0.39	-0.39	0.065
135.00	-13.93	-1.46	0.00	-51.74	0.00	51.74	1552.03	776.01	1906.32	941.46	4.43	-0.39	-0.39	0.064
137.50	-11.80	-1.45	0.00	-48.08	0.00	48.08	1538.81	769.41	1859.13	918.16	4.64	-0.41	-0.41	0.060
140.00	-11.47	-1.45	0.00	-44.45	0.00	44.45	1525.20	762.60	1812.01	894.88	4.86	-0.42	-0.42	0.057
145.00	-10.82	-1.44	0.00	-37.19	0.00	37.19	1496.79	748.40	1718.05	848.48	5.31	-0.44	-0.44	0.051
147.00	-8.47	-1.35	0.00	-34.32	0.00	34.32	1484.98	742.49	1680.60	829.98	5.50	-0.45	-0.45	0.047

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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150.00	-8.14	-1.33	0.00	-30.28	0.00	30.28	1466.80	733.40	1624.61	802.34	5.79	-0.46	0.043
155.00	-7.17	-1.27	0.00	-23.61	0.00	23.61	1451.75	725.87	1579.74	780.18	6.28	-0.48	0.035
160.00	-6.65	-1.23	0.00	-17.28	0.00	17.28	1419.41	709.70	1487.45	734.60	6.80	-0.50	0.028
165.00	-6.14	-1.17	0.00	-11.15	0.00	11.15	1385.48	692.74	1396.17	689.51	7.33	-0.51	0.021
170.00	-5.65	-1.11	0.00	-5.29	0.00	5.29	1349.97	674.99	1306.08	645.02	7.87	-0.52	0.012
170.00	-5.65	-1.11	0.00	-5.29	0.00	5.29	1349.97	674.99	1306.08	645.02	7.87	-0.52	0.012
174.00	-4.36	-0.87	0.00	-0.87	0.00	0.87	1121.46	560.73	870.39	429.85	8.31	-0.52	0.006
175.00	0.00	-0.83	0.00	0.00	0.00	0.00	1053.22	526.61	767.04	378.81	8.42	-0.52	0.000

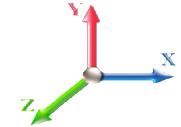
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E					<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10			<b>Sds</b> 0.18	<b>Ss</b> 0.17
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b> 0.10	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.28	<b>SA</b> 0.03	<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		1272.2	0.00	0.03	0.02	22.63	
10.00		1249.0	0.01	0.05	0.03	32.47	
15.00		1225.8	0.01	0.06	0.03	37.12	
20.00		1202.6	0.02	0.07	0.04	39.23	
22.00	RT2	474.59	0.03	0.07	0.04	15.78	
25.00		704.93	0.04	0.07	0.04	23.94	
30.00		1156.3	0.06	0.07	0.04	40.31	
35.00	RB3	1133.1	0.08	0.07	0.04	40.35	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	8.00	
38.00	RB4	832.96	0.09	0.07	0.04	30.03	
39.00	RT3	413.90	0.09	0.07	0.04	14.98	
40.00		412.18	0.10	0.07	0.04	14.98	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	30.03	
45.00		566.56	0.12	0.07	0.03	21.03	
50.00		928.38	0.15	0.07	0.03	35.08	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	29.68	
55.00		180.11	0.19	0.06	0.02	6.88	
60.00		888.65	0.22	0.06	0.02	33.71	
65.00		868.79	0.26	0.05	0.02	31.80	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	28.55	
71.25	RT4 RB5	422.11	0.31	0.04	0.01	13.74	
75.00		1251.4	0.35	0.03	0.01	35.51	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.91	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.41	
85.00		671.69	0.45	0.00	0.01	6.47	
86.00	RT5 RB6	132.35	0.46	0.00	0.01	0.95	
90.00		522.78	0.50	-0.02	0.01	-1.58	
95.00		638.58	0.56	-0.04	0.01	-10.17	
100.00		622.02	0.62	-0.06	0.02	-16.93	
104.00	RT6	485.70	0.67	-0.08	0.02	-16.57	
105.00		119.77	0.68	-0.08	0.03	-4.25	
110.00		588.92	0.75	-0.10	0.04	-23.58	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-23.32	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-42.32	
124.00	Appurtenance(s)	1346.0	0.95	-0.12	0.11	-43.97	
125.00	Top - Section 5	108.67	0.96	-0.12	0.11	-3.37	
130.00		427.58	1.04	-0.10	0.15	-8.94	
134.00	Appurtenance(s)	1509.9	1.11	-0.07	0.19	-15.56	
135.00		81.81	1.12	-0.05	0.20	-0.60	
137.50	Appurtenance(s)	1702.2	1.17	-0.02	0.23	1.32	
140.00		198.89	1.21	0.01	0.26	1.93	
145.00		387.85	1.30	0.12	0.33	11.72	
147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	74.86	
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.10	
155.00	Top - Section 6	729.57	1.48	0.46	0.52	59.69	

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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160.00	354.97	1.58	0.72	0.64	40.14
165.00	341.72	1.68	1.05	0.78	50.59
170.00 Top - Section 7	328.48	1.78	1.46	0.95	61.38
174.00 Appurtenance(s)	1009.8	1.87	1.87	1.10	222.89
175.00 Appurtenance(s)	<u>3622.5</u>	1.89	1.98	1.14	<u>831.60</u>
<b>Totals:</b>	<b>38,592.5</b>				<b>1,772.6</b>
					<b>Total Wind: 43,445.2</b>

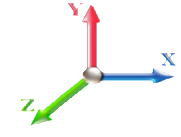
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 0.9D + 1.0E						<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10		<b>Sds</b>	0.18		<b>Ss</b> 0.17
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.28	<b>SA</b>	0.03	<b>Seismic Importance Factor</b> 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-42.42	-1.99	0.00	-268.77	0.00	268.77	4294.71	2147.35	9493.67	4688.57	0.00	0.00	0.00	0.041
5.00	-41.01	-1.97	0.00	-258.84	0.00	258.84	4251.62	2125.81	9227.39	4557.06	0.00	-0.01	-0.01	0.040
10.00	-39.62	-1.94	0.00	-249.00	0.00	249.00	4207.27	2103.63	8961.88	4425.94	0.02	-0.02	-0.02	0.039
15.00	-38.25	-1.91	0.00	-239.29	0.00	239.29	4161.65	2080.83	8697.29	4295.27	0.04	-0.03	-0.03	0.039
20.00	-36.90	-1.87	0.00	-229.74	0.00	229.74	4114.76	2057.38	8433.78	4165.13	0.07	-0.03	-0.03	0.038
22.00	-36.37	-1.86	0.00	-225.99	0.00	225.99	4095.66	2047.83	8328.71	4113.24	0.09	-0.04	-0.04	0.045
25.00	-35.58	-1.84	0.00	-220.41	0.00	220.41	4066.61	2033.31	8171.50	4035.59	0.11	-0.04	-0.04	0.045
30.00	-34.27	-1.81	0.00	-211.20	0.00	211.20	4017.20	2008.60	7910.59	3906.74	0.16	-0.05	-0.05	0.044
35.00	-32.98	-1.77	0.00	-202.17	0.00	202.17	3966.51	1983.26	7651.22	3778.65	0.22	-0.06	-0.06	0.036
36.00	-32.73	-1.76	0.00	-200.40	0.00	200.40	3956.22	1978.11	7599.55	3753.13	0.24	-0.07	-0.07	0.048
38.00	-31.87	-1.73	0.00	-196.87	0.00	196.87	3935.49	1967.75	7496.40	3702.19	0.27	-0.07	-0.07	0.035
39.00	-31.45	-1.72	0.00	-195.14	0.00	195.14	3925.05	1962.53	7444.93	3676.77	0.28	-0.07	-0.07	0.042
40.00	-31.03	-1.70	0.00	-193.42	0.00	193.42	3914.56	1957.28	7393.54	3651.39	0.30	-0.07	-0.07	0.042
42.00	-30.18	-1.68	0.00	-190.01	0.00	190.01	3554.53	1777.27	6785.59	3351.15	0.33	-0.08	-0.08	0.040
45.00	-29.51	-1.66	0.00	-184.98	0.00	184.98	3532.39	1766.19	6658.05	3288.16	0.38	-0.09	-0.09	0.043
50.00	-28.41	-1.63	0.00	-176.69	0.00	176.69	3494.22	1747.11	6445.54	3183.21	0.48	-0.10	-0.10	0.042
54.00	-27.50	-1.60	0.00	-170.18	0.00	170.18	3462.54	1731.27	6275.67	3099.32	0.56	-0.11	-0.11	0.041
55.00	-27.29	-1.59	0.00	-168.58	0.00	168.58	3454.46	1727.23	6233.23	3078.36	0.59	-0.11	-0.11	0.041
60.00	-26.22	-1.56	0.00	-160.61	0.00	160.61	3413.12	1706.56	6021.34	2973.71	0.71	-0.12	-0.12	0.040
65.00	-25.18	-1.54	0.00	-152.78	0.00	152.78	3370.20	1685.10	5810.04	2869.36	0.84	-0.13	-0.13	0.039
70.00	-24.15	-1.51	0.00	-145.11	0.00	145.11	3325.69	1662.84	5599.53	2765.40	0.98	-0.14	-0.14	0.038
71.25	-23.70	-1.50	0.00	-143.22	0.00	143.22	3314.31	1657.16	5547.04	2739.48	1.02	-0.15	-0.15	0.037
75.00	-22.38	-1.46	0.00	-137.61	0.00	137.61	3279.60	1639.80	5389.99	2661.91	1.14	-0.16	-0.16	0.036
76.00	-22.03	-1.45	0.00	-136.16	0.00	136.16	3306.32	1653.16	5510.48	2721.42	1.17	-0.16	-0.16	0.037
80.00	-21.22	-1.44	0.00	-130.35	0.00	130.35	3269.04	1634.52	5343.14	2638.78	1.31	-0.17	-0.17	0.035
80.00	-21.22	-1.44	0.00	-130.35	0.00	130.35	2504.08	1252.04	4105.75	2027.68	1.31	-0.17	-0.17	0.038
85.00	-20.35	-1.43	0.00	-123.16	0.00	123.16	2474.85	1237.43	3958.27	1954.84	1.49	-0.18	-0.18	0.041
86.00	-20.18	-1.43	0.00	-121.72	0.00	121.72	2468.82	1234.41	3928.75	1940.26	1.53	-0.18	-0.18	0.051
90.00	-19.50	-1.44	0.00	-115.99	0.00	115.99	2444.04	1222.02	3810.67	1881.94	1.69	-0.20	-0.20	0.049
95.00	-18.66	-1.44	0.00	-108.81	0.00	108.81	2411.64	1205.82	3663.14	1809.09	1.90	-0.21	-0.21	0.048
100.00	-17.84	-1.44	0.00	-101.61	0.00	101.61	2377.66	1188.83	3515.87	1736.36	2.13	-0.23	-0.23	0.046
104.00	-17.19	-1.44	0.00	-95.85	0.00	95.85	2349.34	1174.67	3398.38	1678.33	2.33	-0.24	-0.24	0.044
104.00	-17.19	-1.44	0.00	-95.85	0.00	95.85	2349.34	1174.67	3398.38	1678.33	2.33	-0.24	-0.24	0.044
105.00	-17.03	-1.44	0.00	-94.41	0.00	94.41	2342.10	1171.05	3369.07	1663.86	2.38	-0.24	-0.24	0.064
110.00	-16.24	-1.45	0.00	-87.19	0.00	87.19	2304.95	1152.47	3222.91	1591.67	2.65	-0.27	-0.27	0.062
115.00	-15.47	-1.45	0.00	-79.96	0.00	79.96	2266.22	1133.11	3077.59	1519.90	2.95	-0.29	-0.29	0.059
120.00	-14.20	-1.45	0.00	-72.71	0.00	72.71	2252.14	1126.07	3026.44	1494.64	3.26	-0.32	-0.32	0.055
124.00	-12.79	-1.44	0.00	-66.92	0.00	66.92	2219.57	1109.78	2911.24	1437.75	3.54	-0.33	-0.33	0.052
125.00	-12.65	-1.44	0.00	-65.47	0.00	65.47	2211.27	1105.63	2882.56	1423.59	3.61	-0.34	-0.34	0.052
125.00	-12.65	-1.44	0.00	-65.47	0.00	65.47	1600.93	800.47	2095.19	1034.73	3.61	-0.34	-0.34	0.071
130.00	-12.06	-1.45	0.00	-58.25	0.00	58.25	1577.27	788.64	2000.77	988.11	3.97	-0.36	-0.36	0.067
134.00	-10.54	-1.44	0.00	-52.47	0.00	52.47	1557.20	778.60	1925.20	950.79	4.29	-0.38	-0.38	0.062
135.00	-10.44	-1.44	0.00	-51.03	0.00	51.03	1552.03	776.01	1906.32	941.46	4.37	-0.39	-0.39	0.061
137.50	-8.84	-1.43	0.00	-47.43	0.00	47.43	1538.81	769.41	1859.13	918.16	4.57	-0.40	-0.40	0.057
140.00	-8.60	-1.43	0.00	-43.86	0.00	43.86	1525.20	762.60	1812.01	894.88	4.79	-0.41	-0.41	0.055
145.00	-8.11	-1.42	0.00	-36.71	0.00	36.71	1496.79	748.40	1718.05	848.48	5.23	-0.44	-0.44	0.049
147.00	-6.35	-1.33	0.00	-33.88	0.00	33.88	1484.98	742.49	1680.60	829.98	5.42	-0.45	-0.45	0.045



## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 41
	<b>Struct Class:</b> II	



150.00	-6.10	-1.32	0.00	-29.90	0.00	29.90	1466.80	733.40	1624.61	802.34	5.70	-0.46	0.041
155.00	-5.37	-1.25	0.00	-23.32	0.00	23.32	1451.75	725.87	1579.74	780.18	6.19	-0.48	0.034
160.00	-4.98	-1.21	0.00	-17.06	0.00	17.06	1419.41	709.70	1487.45	734.60	6.70	-0.49	0.027
165.00	-4.60	-1.16	0.00	-11.01	0.00	11.01	1385.48	692.74	1396.17	689.51	7.22	-0.50	0.019
170.00	-4.23	-1.09	0.00	-5.23	0.00	5.23	1349.97	674.99	1306.08	645.02	7.76	-0.51	0.011
170.00	-4.23	-1.09	0.00	-5.23	0.00	5.23	1349.97	674.99	1306.08	645.02	7.76	-0.51	0.011
174.00	-3.27	-0.86	0.00	-0.86	0.00	0.86	1121.46	560.73	870.39	429.85	8.19	-0.52	0.005
175.00	0.00	-0.83	0.00	0.00	0.00	0.00	1053.22	526.61	767.04	378.81	8.29	-0.52	0.000

## Wind Loading - Shaft

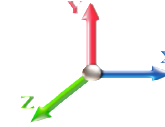
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

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	RB1 RB2	1.00	0.70	6.129	6.74	233.87	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	229.68	1.000	0.000	5.00	23.085	23.09	155.6	0.0	1272.2
10.00		1.00	0.70	6.129	6.74	225.49	1.000	0.000	5.00	22.668	22.67	152.8	0.0	1249.0
15.00		1.00	0.70	6.129	6.74	221.30	1.000	0.000	5.00	22.251	22.25	150.0	0.0	1225.9
20.00		1.00	0.70	6.129	6.74	217.12	1.000	0.000	5.00	21.834	21.83	147.2	0.0	1202.7
22.00	RT2	1.00	0.70	6.129	6.74	215.44	1.000	0.000	2.00	8.617	8.62	58.1	0.0	474.6
25.00		1.00	0.70	6.129	6.74	212.93	1.000	0.000	3.00	12.800	12.80	86.3	0.0	704.9
30.00		1.00	0.70	6.134	6.75	208.83	1.000	0.000	5.00	21.000	21.00	141.7	0.0	1156.3
35.00	RB3	1.00	0.73	6.410	7.05	209.20	1.000	0.000	5.00	20.583	20.58	145.1	0.0	1133.2
36.00	Bot - Section 2 RT1	1.00	0.74	6.462	7.11	209.18	1.000	0.000	1.00	4.066	4.07	28.9	0.0	223.9
38.00	RB4	1.00	0.75	6.562	7.22	209.07	1.000	0.000	2.00	8.212	8.21	59.3	0.0	833.0
39.00	RT3	1.00	0.76	6.611	7.27	208.98	1.000	0.000	1.00	4.081	4.08	29.7	0.0	413.9
40.00		1.00	0.76	6.659	7.33	208.86	1.000	0.000	1.00	4.064	4.06	29.8	0.0	412.2
42.00	Top - Section 1	1.00	0.77	6.753	7.43	208.56	1.000	0.000	2.00	8.079	8.08	60.0	0.0	819.2
45.00		1.00	0.79	6.887	7.58	211.41	1.000	0.000	3.00	11.993	11.99	90.9	0.0	566.6
50.00		1.00	0.81	7.098	7.81	210.11	1.000	0.000	5.00	19.655	19.65	153.5	0.0	928.4
54.00	Appurtenance(s)	1.00	0.83	7.255	7.98	208.79	1.000	0.000	4.00	15.424	15.42	123.1	0.0	728.4
55.00		1.00	0.83	7.294	8.02	208.42	1.000	0.000	1.00	3.814	3.81	30.6	0.0	180.1
60.00		1.00	0.85	7.477	8.22	206.40	1.000	0.000	5.00	18.821	18.82	154.8	0.0	888.7
65.00		1.00	0.87	7.650	8.42	204.10	1.000	0.000	5.00	18.404	18.40	154.9	0.0	868.8
70.00	Bot - Section 3	1.00	0.89	7.814	8.60	201.54	1.000	0.000	5.00	17.986	17.99	154.6	0.0	848.9
71.25	RT4 RB5	1.00	0.90	7.853	8.64	200.87	1.000	0.000	1.25	4.512	4.51	39.0	0.0	422.1
75.00		1.00	0.91	7.969	8.77	198.76	1.000	0.000	3.75	13.381	13.38	117.3	0.0	1251.4
76.00	Top - Section 2	1.00	0.91	8.000	8.80	198.18	1.000	0.000	1.00	3.529	3.53	31.0	0.0	329.9
80.00	Top - Section 3	1.00	0.93	8.118	8.93	199.52	1.000	0.000	4.00	13.947	13.95	124.5	0.0	658.1
85.00		1.00	0.94	8.260	9.09	196.40	1.000	0.000	5.00	17.059	17.06	155.0	0.0	671.7
86.00	RT5 RB6	1.00	0.95	8.287	9.12	195.75	1.000	0.000	1.00	3.362	3.36	30.6	0.0	132.4
90.00		1.00	0.96	8.396	9.24	193.10	1.000	0.000	4.00	13.280	13.28	122.6	0.0	522.8
95.00		1.00	0.97	8.526	9.38	189.66	1.000	0.000	5.00	16.225	16.22	152.2	0.0	638.6
100.00		1.00	0.99	8.652	9.52	186.08	1.000	0.000	5.00	15.807	15.81	150.4	0.0	622.0
104.00	RT6	1.00	1.00	8.750	9.62	183.13	1.000	0.000	4.00	12.346	12.35	118.8	0.0	485.7
105.00		1.00	1.00	8.774	9.65	182.37	1.000	0.000	1.00	3.045	3.04	29.4	0.0	119.8
110.00		1.00	1.02	8.891	9.78	178.55	1.000	0.000	5.00	14.973	14.97	146.4	0.0	588.9
115.00	Bot - Section 5	1.00	1.03	9.005	9.91	174.61	1.000	0.000	5.00	14.556	14.56	144.2	0.0	572.4
120.00	Top - Section 4	1.00	1.04	9.115	10.03	170.57	1.000	0.000	5.00	14.409	14.41	144.5	0.0	1122.3
124.00	Appurtenance(s)	1.00	1.05	9.201	10.12	170.58	1.000	0.000	4.00	11.227	11.23	113.6	0.0	441.3
125.00	Top - Section 5	1.00	1.05	9.222	10.14	169.75	1.000	0.000	1.00	2.765	2.76	28.0	0.0	108.7
130.00		1.00	1.07	9.326	10.26	165.53	1.000	0.000	5.00	13.575	13.57	139.3	0.0	427.6
134.00	Appurtenance(s)	1.00	1.07	9.407	10.35	162.10	1.000	0.000	4.00	10.559	10.56	109.3	0.0	332.5
135.00		1.00	1.08	9.427	10.37	161.24	1.000	0.000	1.00	2.598	2.60	26.9	0.0	81.8
137.50	Appurtenance(s)	1.00	1.08	9.476	10.42	159.06	1.000	0.000	2.50	6.422	6.42	66.9	0.0	202.2
140.00		1.00	1.09	9.525	10.48	156.86	1.000	0.000	2.50	6.318	6.32	66.2	0.0	198.9
145.00		1.00	1.10	9.621	10.58	152.40	1.000	0.000	5.00	12.323	12.32	130.4	0.0	387.8
147.00	Appurtenance(s)	1.00	1.10	9.659	10.62	150.59	1.000	0.000	2.00	4.813	4.81	51.1	0.0	151.4
150.00	Bot - Section 7	1.00	1.11	9.715	10.69	147.86	1.000	0.000	3.00	7.094	7.09	75.8	0.0	223.2
155.00	Top - Section 6	1.00	1.12	9.806	10.79	143.26	1.000	0.000	5.00	11.705	11.70	126.3	0.0	729.6
160.00		1.00	1.13	9.896	10.89	141.34	1.000	0.000	5.00	11.288	11.29	122.9	0.0	355.0

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II
		<b>Page: 43</b>



165.00	1.00	1.14	9.983	10.98	136.62	1.000	0.000	5.00	10.871	10.87	119.4	0.0	341.7
170.00 Top - Section 7	1.00	1.15	10.069	11.08	131.84	1.000	0.000	5.00	10.453	10.45	115.8	0.0	328.5
174.00 Appurtenance(s)	1.00	1.16	10.136	11.15	106.66	1.000	0.000	4.00	7.402	7.40	82.5	0.0	232.3
175.00 Appurtenance(s)	1.00	1.16	10.152	11.17	100.33	1.000	0.000	1.00	1.603	1.60	17.9	0.0	50.2
<b>Totals:</b>								<b>175.00</b>			<b>5,005.2</b>		<b>28,861.4</b>

## Discrete Appurtenance Forces

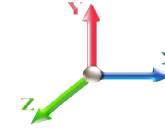
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

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	175.00	PRK-SFS-L	1	10.152	11.168	0.75	0.75	5.78	230.00	0.000	0.000	64.49	0.00	0.00	
2	175.00	DR65-18-02DPL2Q	6	10.417	11.459	0.67	1.00	23.36	144.00	0.000	16.500	267.63	0.00	4415.94	
3	175.00	E15S09P94	6	10.370	11.407	0.60	1.00	2.38	87.60	0.000	13.500	27.10	0.00	365.90	
4	175.00	T-Arms	3	10.152	11.168	0.75	1.00	24.75	726.00	0.000	0.000	276.40	0.00	0.00	
5	175.00	APXVTM14-C-I20	3	10.185	11.204	0.77	1.00	14.65	168.60	0.000	2.000	164.08	0.00	328.17	
6	175.00	NNVV-65B-R4	3	10.185	11.204	0.74	1.00	27.24	232.20	0.000	2.000	305.19	0.00	610.37	
7	175.00	Pipes	12	10.152	11.168	0.64	0.80	14.59	396.00	0.000	0.000	162.96	0.00	0.00	
8	175.00	1900MHz	3	10.185	11.204	0.67	1.00	5.57	180.00	0.000	2.000	62.38	0.00	124.76	
9	175.00	800 MHz	6	10.185	11.204	0.67	1.00	10.01	318.00	0.000	2.000	112.15	0.00	224.30	
10	175.00	TD-RRH8x20-25	3	10.185	11.204	0.67	1.00	8.14	210.00	0.000	2.000	91.20	0.00	182.41	
11	175.00	Handrail	1	10.152	11.168	0.75	0.75	7.39	415.06	0.000	0.000	82.50	0.00	0.00	
12	175.00	PRK-1245L	1	10.152	11.168	0.75	0.75	7.13	464.91	0.000	0.000	79.57	0.00	0.00	
13	174.00	4.5" x 24 FT Pipe	3	10.299	11.329	1.00	1.00	40.50	777.60	0.000	10.000	458.81	0.00	4588.12	
14	147.00	T-Arms	3	9.659	10.625	0.56	0.75	18.56	726.00	0.000	0.000	197.22	0.00	0.00	
15	147.00	RRH2X60-700	3	9.602	10.562	0.54	0.80	5.63	180.00	0.000	-3.000	59.45	0.00	-178.34	
16	147.00	RRH2X60-PCS	3	9.602	10.562	0.54	0.80	3.54	165.00	0.000	-3.000	37.37	0.00	-112.10	
17	147.00	RRH2X60-AWS	3	9.602	10.562	0.54	0.80	5.63	180.00	0.000	-3.000	59.45	0.00	-178.34	
18	147.00	DB-T1-6Z-8AB-0Z	2	9.659	10.625	0.80	0.80	7.68	88.00	0.000	0.000	81.60	0.00	0.00	
19	147.00	FD9R6004/2C-3L	6	9.659	10.625	0.40	0.80	0.86	18.60	0.000	0.000	9.18	0.00	0.00	
20	147.00	SBNHH-1D65B	6	9.659	10.625	0.66	0.80	31.88	304.26	0.000	0.000	338.72	0.00	0.00	
21	147.00	BXA-80080-4CF	3	9.659	10.625	0.70	0.80	7.50	36.00	0.000	0.000	79.70	0.00	0.00	
22	147.00	BXA-70063-6CF-EDIN-X	3	9.659	10.625	0.62	0.80	13.97	51.00	0.000	0.000	148.44	0.00	0.00	
23	137.50	Low Profile	1	9.476	10.424	1.00	1.00	22.00	1500.00	0.000	0.000	229.33	0.00	0.00	
24	134.00	7770.00	3	9.476	10.424	0.58	0.80	9.64	105.00	0.000	3.500	100.45	0.00	351.56	
25	134.00	AM-X-CD-17-65-00T-RET	3	9.476	10.424	0.60	0.80	20.36	92.40	0.000	3.500	212.21	0.00	742.74	
26	134.00	LGP21401	6	9.476	10.424	0.40	0.80	3.10	84.60	0.000	3.500	32.27	0.00	112.95	
27	134.00	RRUS 11	3	9.476	10.424	0.54	0.80	4.05	152.10	0.000	3.500	42.24	0.00	147.84	
28	134.00	DC6-48-60-18-8F	1	9.476	10.424	0.80	0.80	2.34	14.50	0.000	3.500	24.35	0.00	85.23	
29	134.00	TPA-65R-LCUUUU-H8	3	9.476	10.424	0.66	0.80	26.49	225.00	0.000	3.500	276.17	0.00	966.59	
30	134.00	RRUS-32	6	9.476	10.424	0.54	0.80	12.45	462.00	0.000	3.500	129.74	0.00	454.07	
31	134.00	DBC0061F1V51-2	3	9.476	10.424	0.55	0.80	0.99	30.00	0.000	3.500	10.36	0.00	36.25	
32	134.00	DC6-48-60-18-8C	1	9.476	10.424	0.80	0.80	2.54	11.80	0.000	3.500	26.44	0.00	92.52	
33	124.00	T-Arms	3	9.201	10.121	0.56	0.75	13.82	726.00	0.000	0.000	139.87	0.00	0.00	
34	124.00	742 351	6	9.201	10.121	0.49	0.80	15.75	178.80	0.000	0.000	159.43	0.00	0.00	
35	54.00	Standoff	1	7.255	7.981	1.00	1.00	2.63	40.00	0.000	0.000	20.99	0.00	0.00	
36	54.00	GPS	1	7.255	7.981	1.00	1.00	1.00	10.00	0.000	0.000	7.98	0.00	0.00	
<b>Totals:</b>									<b>9,731.03</b>						<b>4,577.41</b>

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

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		155.63	1566.30	0.00	0.00
10.00		152.82	1543.12	0.00	0.00
15.00		150.01	1519.94	0.00	0.00
20.00		147.19	1496.77	0.00	0.00
22.00		58.09	592.22	0.00	0.00
25.00		86.29	881.38	0.00	0.00
30.00		141.69	1450.42	0.00	0.00
35.00		145.13	1427.24	0.00	0.00
36.00		28.90	282.67	0.00	0.00
38.00		59.28	950.59	0.00	0.00
39.00		29.68	472.71	0.00	0.00
40.00		29.77	470.99	0.00	0.00
42.00		60.01	936.82	0.00	0.00
45.00		90.86	743.01	0.00	0.00
50.00		153.45	1222.46	0.00	0.00
54.00	(2) attachments	152.07	1013.67	0.00	0.00
55.00		30.60	238.77	0.00	0.00
60.00		154.80	1181.93	0.00	0.00
65.00		154.87	1162.07	0.00	0.00
70.00		154.60	1142.20	0.00	0.00
71.25		38.98	495.43	0.00	0.00
75.00		117.30	1471.38	0.00	0.00
76.00		31.05	388.59	0.00	0.00
80.00		124.54	892.72	0.00	0.00
85.00		154.99	964.97	0.00	0.00
86.00		30.65	191.01	0.00	0.00
90.00		122.64	757.41	0.00	0.00
95.00		152.17	931.86	0.00	0.00
100.00		150.45	915.30	0.00	0.00
104.00		118.82	720.32	0.00	0.00
105.00		29.38	178.43	0.00	0.00
110.00		146.44	873.30	0.00	0.00
115.00		144.18	856.74	0.00	0.00
120.00		144.47	1406.70	0.00	0.00
124.00	(9) attachments	412.92	1573.59	0.00	0.00
125.00		28.05	153.00	0.00	0.00
130.00		139.25	649.26	0.00	0.00
134.00	(29) attachments	963.48	1687.27	0.00	2989.75
135.00		26.94	111.74	0.00	0.00
137.50	(1) attachments	296.27	1777.04	0.00	0.00
140.00		66.20	273.73	0.00	0.00
145.00		130.42	537.53	0.00	0.00
147.00	(32) attachments	1062.26	1960.16	0.00	-468.77
150.00		75.81	272.06	0.00	0.00
155.00		126.26	811.05	0.00	0.00
160.00		122.87	436.45	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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165.00	119.37	423.20	0.00	0.00
170.00	115.78	409.96	0.00	0.00
174.00 (3) attachments	541.34	1075.07	0.00	4588.12
175.00 (48) attachments	1713.55	3638.86	0.00	6251.84
<b>Totals:</b>	<b>9,582.56</b>	<b>47,129.44</b>	<b>0.00</b>	<b>13,360.94</b>

## Linear Appurtenance Segment Forces (Factored)

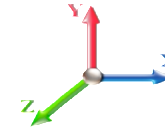
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.059	0.000	6.129	0.00	8.90
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	6.129	0.00	8.90
15.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.061	0.000	6.129	0.00	8.90
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	6.129	0.00	8.90
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	6.129	0.00	3.56
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	6.129	0.00	5.34
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	6.134	0.00	8.90
35.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.066	0.000	6.410	0.00	8.90
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	6.462	0.00	1.78
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	6.562	0.00	3.56
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	6.611	0.00	1.78
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	6.659	0.00	1.78
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	6.753	0.00	3.56
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	6.887	0.00	5.34
50.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.069	0.000	7.098	0.00	8.90
54.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.070	0.000	7.255	0.00	7.12
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.071	0.000	7.294	0.00	1.78
60.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.072	0.000	7.477	0.00	8.90
65.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.074	0.000	7.650	0.00	8.90
70.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.075	0.000	7.814	0.00	8.90
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.076	0.000	7.853	0.00	2.23
75.00	3" Chanel	Yes	3.75	0.000	3.25	1.02	0.00	0.077	0.000	7.969	0.00	6.67
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.078	0.000	8.000	0.00	1.78
80.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.078	0.000	8.118	0.00	7.12
85.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.079	0.000	8.260	0.00	8.90
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.081	0.000	8.287	0.00	1.78
90.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.082	0.000	8.396	0.00	7.12
95.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.083	0.000	8.526	0.00	8.90
100.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.086	0.000	8.652	0.00	8.90
104.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.088	0.000	8.750	0.00	7.12
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.089	0.000	8.774	0.00	1.78
<b>Totals:</b>											<b>0.0</b>	<b>186.9</b>

## Calculated Forces

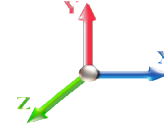
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 23

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.13	-9.60	0.00	-1195.0	0.00	1195.02	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.163
5.00	-45.55	-9.47	0.00	-1147.0	0.00	1147.03	4251.62	2125.81	9227.39	4557.06	0.02	-0.037	0.000	0.160
10.00	-44.00	-9.34	0.00	-1099.6	0.00	1099.68	4207.27	2103.63	8961.88	4425.94	0.08	-0.074	0.000	0.156
15.00	-42.48	-9.22	0.00	-1052.9	0.00	1052.96	4161.65	2080.83	8697.29	4295.27	0.18	-0.112	0.000	0.153
20.00	-40.98	-9.09	0.00	-1006.8	0.00	1006.87	4114.76	2057.38	8433.78	4165.13	0.31	-0.149	0.000	0.149
22.00	-40.38	-9.04	0.00	-988.69	0.00	988.69	4095.66	2047.83	8328.71	4113.24	0.38	-0.164	0.000	0.177
25.00	-39.50	-8.98	0.00	-961.56	0.00	961.56	4066.61	2033.31	8171.50	4035.59	0.49	-0.192	0.000	0.175
30.00	-38.04	-8.86	0.00	-916.67	0.00	916.67	4017.20	2008.60	7910.59	3906.74	0.72	-0.237	0.000	0.171
35.00	-36.61	-8.73	0.00	-872.35	0.00	872.35	3966.51	1983.26	7651.22	3778.65	0.99	-0.282	0.000	0.139
36.00	-36.32	-8.71	0.00	-863.63	0.00	863.63	3956.22	1978.11	7599.55	3753.13	1.05	-0.290	0.000	0.186
38.00	-35.37	-8.65	0.00	-846.22	0.00	846.22	3935.49	1967.75	7496.40	3702.19	1.17	-0.311	0.000	0.135
39.00	-34.90	-8.62	0.00	-837.56	0.00	837.56	3925.05	1962.53	7444.93	3676.77	1.24	-0.319	0.000	0.162
40.00	-34.42	-8.60	0.00	-828.94	0.00	828.94	3914.56	1957.28	7393.54	3651.39	1.31	-0.328	0.000	0.161
42.00	-33.49	-8.55	0.00	-811.74	0.00	811.74	3554.53	1777.27	6785.59	3351.15	1.45	-0.346	0.000	0.155
45.00	-32.74	-8.47	0.00	-786.10	0.00	786.10	3532.39	1766.19	6658.05	3288.16	1.68	-0.374	0.000	0.163
50.00	-31.51	-8.34	0.00	-743.73	0.00	743.73	3494.22	1747.11	6445.54	3183.21	2.09	-0.422	0.000	0.158
54.00	-30.49	-8.19	0.00	-710.39	0.00	710.39	3462.54	1731.27	6275.67	3099.32	2.46	-0.461	0.000	0.154
55.00	-30.25	-8.17	0.00	-702.20	0.00	702.20	3454.46	1727.23	6233.23	3078.36	2.56	-0.471	0.000	0.153
60.00	-29.06	-8.03	0.00	-661.34	0.00	661.34	3413.12	1706.56	6021.34	2973.71	3.08	-0.520	0.000	0.148
65.00	-27.90	-7.89	0.00	-621.18	0.00	621.18	3370.20	1685.10	5810.04	2869.36	3.65	-0.568	0.000	0.142
70.00	-26.75	-7.74	0.00	-581.74	0.00	581.74	3325.69	1662.84	5599.53	2765.40	4.27	-0.616	0.000	0.137
71.25	-26.25	-7.70	0.00	-572.07	0.00	572.07	3314.31	1657.16	5547.04	2739.48	4.44	-0.628	0.000	0.134
75.00	-24.78	-7.58	0.00	-543.18	0.00	543.18	3279.60	1639.80	5389.99	2661.91	4.94	-0.664	0.000	0.130
76.00	-24.39	-7.55	0.00	-535.60	0.00	535.60	3306.32	1653.16	5510.48	2721.42	5.08	-0.674	0.000	0.132
80.00	-23.49	-7.44	0.00	-505.39	0.00	505.39	3269.04	1634.52	5343.14	2638.78	5.66	-0.711	0.000	0.123
80.00	-23.49	-7.44	0.00	-505.39	0.00	505.39	2504.08	1252.04	4105.75	2027.68	5.66	-0.711	0.000	0.134
85.00	-22.53	-7.28	0.00	-468.21	0.00	468.21	2474.85	1237.43	3958.27	1954.84	6.43	-0.756	0.000	0.142
86.00	-22.33	-7.26	0.00	-460.93	0.00	460.93	2468.82	1234.41	3928.75	1940.26	6.59	-0.766	0.000	0.175
90.00	-21.57	-7.14	0.00	-431.90	0.00	431.90	2444.04	1222.02	3810.67	1881.94	7.26	-0.815	0.000	0.168
95.00	-20.63	-7.00	0.00	-396.18	0.00	396.18	2411.64	1205.82	3663.14	1809.09	8.14	-0.875	0.000	0.159
100.00	-19.71	-6.85	0.00	-361.18	0.00	361.18	2377.66	1188.83	3515.87	1736.36	9.09	-0.933	0.000	0.150
104.00	-18.99	-6.73	0.00	-333.77	0.00	333.77	2349.34	1174.67	3398.38	1678.33	9.89	-0.979	0.000	0.142
104.00	-18.99	-6.73	0.00	-333.77	0.00	333.77	2349.34	1174.67	3398.38	1678.33	9.89	-0.979	0.000	0.142
105.00	-18.81	-6.71	0.00	-327.04	0.00	327.04	2342.10	1171.05	3369.07	1663.86	10.10	-0.991	0.000	0.205
110.00	-17.93	-6.58	0.00	-293.46	0.00	293.46	2304.95	1152.47	3222.91	1591.67	11.18	-1.072	0.000	0.192
115.00	-17.07	-6.44	0.00	-260.58	0.00	260.58	2266.22	1133.11	3077.59	1519.90	12.34	-1.151	0.000	0.179
120.00	-15.66	-6.28	0.00	-228.38	0.00	228.38	2252.14	1126.07	3026.44	1494.64	13.59	-1.226	0.000	0.160
124.00	-14.09	-5.85	0.00	-203.24	0.00	203.24	2219.57	1109.78	2911.24	1437.75	14.64	-1.285	0.000	0.148
125.00	-13.93	-5.82	0.00	-197.39	0.00	197.39	2211.27	1105.63	2882.56	1423.59	14.91	-1.299	0.000	0.145
125.00	-13.93	-5.82	0.00	-197.39	0.00	197.39	1600.93	800.47	2095.19	1034.73	14.91	-1.299	0.000	0.200
130.00	-13.28	-5.68	0.00	-168.27	0.00	168.27	1577.27	788.64	2000.77	988.11	16.31	-1.363	0.000	0.179
134.00	-11.61	-4.69	0.00	-142.54	0.00	142.54	1557.20	778.60	1925.20	950.79	17.48	-1.422	0.000	0.157
135.00	-11.50	-4.66	0.00	-137.86	0.00	137.86	1552.03	776.01	1906.32	941.46	17.78	-1.437	0.000	0.154
137.50	-9.73	-4.33	0.00	-126.20	0.00	126.20	1538.81	769.41	1859.13	918.16	18.54	-1.471	0.000	0.144
140.00	-9.45	-4.26	0.00	-115.38	0.00	115.38	1525.20	762.60	1812.01	894.88	19.32	-1.505	0.000	0.135
145.00	-8.92	-4.12	0.00	-94.07	0.00	94.07	1496.79	748.40	1718.05	848.48	20.93	-1.565	0.000	0.117
147.00	-6.98	-3.01	0.00	-85.82	0.00	85.82	1484.98	742.49	1680.60	829.98	21.59	-1.589	0.000	0.108
150.00	-6.71	-2.93	0.00	-76.79	0.00	76.79	1466.80	733.40	1624.61	802.34	22.60	-1.621	0.000	0.100



## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 49
	<b>Struct Class:</b> II	



155.00	-5.90	-2.79	0.00	-62.13	0.00	62.13	1451.75	725.87	1579.74	780.18	24.32	-1.671	0.000	0.084
160.00	-5.47	-2.66	0.00	-48.19	0.00	48.19	1419.41	709.70	1487.45	734.60	26.10	-1.715	0.000	0.069
165.00	-5.05	-2.53	0.00	-34.90	0.00	34.90	1385.48	692.74	1396.17	689.51	27.91	-1.750	0.000	0.054
170.00	-4.64	-2.40	0.00	-22.27	0.00	22.27	1349.97	674.99	1306.08	645.02	29.76	-1.777	0.000	0.038
170.00	-4.64	-2.40	0.00	-22.27	0.00	22.27	1349.97	674.99	1306.08	645.02	29.76	-1.777	0.000	0.038
174.00	-3.58	-1.83	0.00	-8.08	0.00	8.08	1121.46	560.73	870.39	429.85	31.25	-1.792	0.000	0.022
175.00	0.00	-1.71	0.00	-6.25	0.00	6.25	1053.22	526.61	767.04	378.81	31.63	-1.795	0.000	0.017

## Final Analysis Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### 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 101 mph Wind	43.5	0.00	56.49	0.00	0.00	5445.97
0.9D + 1.6W 101 mph Wind	43.5	0.00	42.35	0.00	0.00	5388.10
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.4	0.00	83.53	0.00	0.00	1255.10
1.2D + 1.0E	2.0	0.00	56.56	0.00	0.00	272.00
0.9D + 1.0E	2.0	0.00	42.42	0.00	0.00	268.77
1.0D + 1.0W 60 mph Wind	9.6	0.00	47.13	0.00	0.00	1195.02

### 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 101 mph Wind	-20.26	-30.67	0.00	-1491.8	0.00	-1491.8	2342.10	1171.0	3369.07	1663.86	105.00	0.906
0.9D + 1.6W 101 mph Wind	-14.64	-30.19	0.00	-1466.2	0.00	-1466.2	2342.10	1171.0	3369.07	1663.86	105.00	0.888
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-39.19	-7.29	0.00	-364.13	0.00	-364.13	2342.10	1171.0	3369.07	1663.86	105.00	0.236
1.2D + 1.0E	-16.87	-1.47	0.00	-66.46	0.00	-66.46	2211.27	1105.6	2882.56	1423.59	125.00	0.075
0.9D + 1.0E	-12.65	-1.44	0.00	-65.47	0.00	-65.47	2211.27	1105.6	2882.56	1423.59	125.00	0.071
1.0D + 1.0W 60 mph Wind	-18.81	-6.71	0.00	-327.04	0.00	-327.04	2342.10	1171.0	3369.07	1663.86	105.00	0.205

### Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Req'd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Req'd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	36.0	(3) PLT-C10x30(1.5" Hole)	326.5	0.00	37.1	360.3	37.1	10	0	326.3	37.1	9	0	406.32	516.0	468.64	0.867
0.0	22.0	(3) PLT-C10x30(1.5" Hole)	241.6	5.80	37.1	337.1	37.1	10	0	317.9	37.1	9	0	337.07	500.4	468.64	0.719
35.0	39.0	(3) LNP-LP6X100-G-10TT	248.2	5.96	25.3	217.4	25.3	9	11	214.8	25.3	9	11	291.90	297.8	292.50	0.998
38.0	71.3	(3) PLT-C10x30(1.5" Hole)	407.5	9.78	37.1	324.7	37.1	9	0	363.0	37.1			408.73	500.4	468.64	0.872
71.3	86.0	(3) PLT-C10x30(1.5" Hole)	463.0	11.11	37.1	363.0	37.1			352.6	37.1			363.02	500.4	468.64	0.775
86.0	104.0	(3) PLT-C10x15.3(1.5" Hole)	463.0	11.11	37.1	231.0	37.1			197.0	37.1	6	0	231.03	255.7	247.80	0.932

## Base Plate Summary

<b>Structure:</b> CT00680-S-SB	<b>Code:</b> EIA/TIA-222-G	8/17/2018
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II
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Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 50.00	<b>Bolt Circle:</b> 61.00
<b>Moment (kip-ft):</b> 0.00	<b>Width (in):</b> 67.00	<b>Number Bolts:</b> 18.00
<b>Axial (kip):</b> 0.00	<b>Style:</b> Round	<b>Bolt Type:</b> 2.00" A687
<b>Shear (kip):</b> 0.00	<b>Polygon Sides:</b> 0.00	<b>Bolt Diameter (in):</b> 2.00
Analysis	<b>Clip Length (in):</b> 0.00	<b>Yield (ksi):</b> 105.00
<b>Moment (kip-ft):</b> 5445.97	<b>Effective Len (in):</b> 12.64	<b>Ultimate (ksi):</b> 150.00
<b>Axial (kip):</b> 83.53	<b>Moment (kip-in):</b> 254.85	<b>Arrangement:</b> Radial
<b>Shear (kip):</b> 43.53	<b>Allow Stress (ksi):</b> 67.50	<b>Cluster Dist (in):</b> 0.00
	<b>Applied Stress (ksi):</b> 0.00	<b>Start Angle (deg):</b> 0.00
<b>Moment Design %:</b> 0.00	<b>Stress Ratio:</b> 0.80	<b>Compression</b>
		<b>Force (kip):</b> 176.21
		<b>Allowable (kip):</b> 300.00
		<b>Ratio:</b> 0.60
		<b>Tension</b>
		<b>Force (kip):</b> 166.93
		<b>Allowable (kip):</b> 300.00
		<b>Ratio:</b> 0.57



# Monopole Mat Foundation Design

Date

8/17/2018

<b>Customer Name:</b>	Sprint Nextel	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	175
<b>Site Number:</b>	CT00680-S-SBA	<b>Engineer Name:</b>	M. Franco
<b>Engr. Number:</b>	58361	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

**Base Reactions (Factored):**

Axial Load (Kips):	56.5	Shear Force (Kips):	43.5
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5446.0

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	5.6	Depth of Base BG (ft.):	4.0
Pier Height A. G. (ft.):	0.00	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	34	Width of Pad (ft.):	34
Final Length of pad (ft)	34.0	Final width of pad (ft):	34.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0

**Material Properties and Rebar Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	18	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	35	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	10	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	35	Qty. of Rebar in Pad (W):	35	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	35	Qty. of Rebar in Pad (W):	35	

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

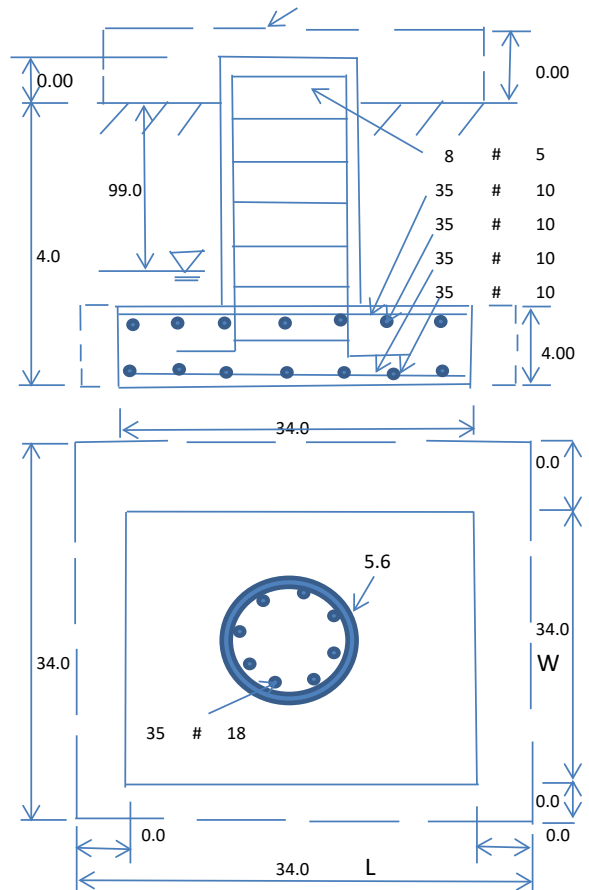
Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	40000	Ultimate Skin Friction:	0	Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4624.12	Total Dry Concrete Weight (Kips):	693.62
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	693.62	Total Vertical Load on Base (Kips):	750.11

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	1711	<	Allowable Factored Soil Bearing (psf):	30000	0.06	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	11572.7	>	Design Factored Momont (kips-ft):	5620	0.49	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.06					OK!



Load/  
Capacity  
Ratio

**Check the capacities of Reinforcing Concrete:**

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

Load/  
Capacity  
Ratio**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	4.00	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	14287.5	>	Design Factored Moment (Mu, Kips-Ft)	5446.0	0.38 OK!
Calculated Shear Capacity (Kips):	624.7	>	Design Factored Shear (Kips):	43.5	0.07 OK!
Calculated Tension Capacity (Tn, Kips):	7560.0	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	4517.3	>	Design Factored Axial Load (Pu Kips):	56.5	0.01 OK!
Moment & Axial Strength Combination:	0.38	OK!	Check Tie Spacing (Design/Required):	0.5	OK!
Pier Reinforcement Ratio:	0.039		Reinforcement Ratio is satisfied per ACI		

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	1487.5	>	One-Way Factored Shear (L-D. Kips):	345.0	0.23 OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1487.5	>	One-Way Factored Shear (W-D., Kips)	345.0	0.23 OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1535.1	>	One-Way Factored Shear (C-C, Kips):	340.9	0.22 OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0025	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0025	
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	8619.7	>	Moment at Bottom ( L-Dir. K-Ft):	2888.3	0.34 OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	8619.7	>	Moment at Bottom ( W-Dir. K-Ft):	2888.3	0.34 OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	12142.4	>	Moment at Bottom ( C-C Dir. K-Ft):	4084.7	0.34 OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0025	OK!	Upper Steel Reinf. Ratio (W-Dir. ):	0.0025	
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	8619.7	>	Moment at the top (L-Dir K-Ft):	1198.6	0.14 OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	8619.7	>	Moment at the top (W-Dir K-Ft):	1198.6	0.14 OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	12142.4	>	Moment at the top (C-C Dir. K-Ft):	1117.1	0.09 OK!

**(3).Check Punching Shear Capacity due to Moment in the Pier:**

Moment transferred by punching shear:	2178.4	k-ft.	Max. factored shear stress $v_{u,CD}$ :	9.4	Psi
Max. factored shear stress $v_{u,AB}$ :	14.5	Psi	Factored shear Strength $\phi v_n$ :	164.3	Psi
Max. factored shear stress $v_u$ :	14.5	Psi	Check Usage of Punching Shear Capacity:	0.09	OK!