



**QC Development**

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February 16, 2017

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

**Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1110**  
**154 Sayles Avenue, Putnam, CT 06260**  
**N 41-55-46**  
**W 71-53-11**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 134-foot level of the existing 175-foot Monopole at 154 Sayles Ave, Putnam, CT. The tower and the property are owned by SBA. AT&T now intends to replace three (3) Ericsson remote radio units (RRUS-11) with three (3) Ericsson RRUS-12 units at the 134-foot level of the tower.

This facility was approved by the Putnam Zoning Commission on October 29, 1998. This approval included no condition(s) that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Tony Falzarano, Mayor of the Town of Putnam, and the Putnam Planning & Land Use Department as well as the property and tower owner.

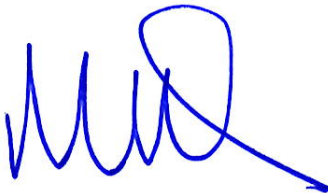
The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts  
QC Development  
Consultant for AT&T

#### Attachments

cc: The Honorable Tony Falzarano - as elected official (via e-mail)  
Fred Wojick - as local Land Use Agent (via e-mail)  
SBA - as tower and property owner (via e-mail)

## Power Density

### Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm <sup>2</sup> )	Freq. Band (MHz <sup>**</sup> )	Limit S (mW/cm <sup>2</sup> )	%MPE
Other Carriers*							2.93%
AT&T GSM	1	283	134	0.0062	880	0.5867	0.11%
AT&T UMTS	2	565	134	0.0248	880	0.5867	0.42%
AT&T UMTS	2	875	134	0.0384	1900	1.0000	0.38%
AT&T LTE	1	1771	134	0.0389	734	0.4893	0.79%
AT&T LTE	4	525	134	0.0461	1900	1.0000	0.46%
Site Total							5.10%

\*Per CSC Records (available upon request, includes calculation formulas)

\*\* If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

### Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm <sup>2</sup> )	Freq. Band (MHz <sup>**</sup> )	Limit S (mW/cm <sup>2</sup> )	%MPE
Other Carriers*							2.93%
AT&T GSM	1	283	134	0.0062	880	0.5867	0.11%
AT&T UMTS	2	262	134	0.0115	880	0.5867	0.20%
AT&T UMTS	2	317	134	0.0139	1900	1.0000	0.14%
AT&T LTE	1	1476	134	0.0324	734	0.4893	0.66%
AT&T LTE	4	2421	134	0.2126	1900	1.0000	2.13%
Site Total							6.16%

\*Per CSC Records (available upon request, includes calculation formulas)

\*\* If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS  
 SITE ADDRESS: 154 SAYLE AVENUE  
 PUTNAM, CT 06260  
 LATITUDE: 41° 55' 46" N  
 LONGITUDE: 71° 53' 11" W  
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES  
 CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY  
 DESIGN GUIDELINE: LTE BWE

**SITE NUMBER: CT1110**  
**SITE NAME: PUTNAM SAYLE AVE**

154 SAYLE AVENUE  
 PUTNAM, CT 06260  
 WINDHAM COUNTY

DRAWING INDEX

REV

LOCUS MAP

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- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



- DRIVING DIRECTIONS FROM 550 COCHITUATE ROAD, FRAMINGHAM, MA:
- HEAD NORTHEAST, TURN RIGHT TOWARD SPEEN ST, TURN RIGHT ONTO SPEEN ST
  - TURN RIGHT ONTO COCHITUATE RD
  - USE THE RIGHT LANE TO TAKE THE RAMP TO I-90/MASSPIKE/SPRINGFIELD/BOSTON
  - KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSPIKE
  - MERGE ONTO I-90 W/MASSPIKE
  - TAKE EXIT 10 TOWARD MA-12 N/AUBURN/WORCESTER
  - KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR I-395 S/US-20 E/NORWICH CT
  - CONTINUE ONTO I-395 S
  - TAKE EXIT 47 FOR US-44 TOWARD PROVIDENCE/PUTNAM
  - TURN LEFT ONTO US-44 E
  - TURN LEFT ONTO MARY CREST DR
  - TURN LEFT ONTO SAYLES AVE
  - SAYLES TURNS INTO AZUD RD (SITE ENTRANCE ACROSS FROM SCRAP YARD)



DIG SAFE SYSTEM, INC.



CALL BEFORE YOU DIG

CALL TOLL FREE: 811 OR 888-DIG-SAFE

**UNDERGROUND SERVICE ALERT**



SAI COMMUNICATIONS  
 27 NORTHWESTERN DRIVE  
 SALEM, NH 03079

**SITE NUMBER: CT1110**  
**SITE NAME: PUTNAM SAYLE AVE**  
 154 SAYLE AVENUE  
 PUTNAM, CT 06260  
 WINDHAM COUNTY



550 COCHITUATE ROAD, SUITE 13,  
 FRAMINGHAM, MA 01701-4681

NO.	DATE	REVISIONS	BY	CHK
0	01/12/17	ISSUED FOR REVIEW	AAB	MRC

TITLE SHEET

SHEET NO. **T-1**

## GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE LESEE/LICENSEE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

15. THE CONTRACTOR SHALL NOTIFY THE LESEE/LICENSEE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESEE/LICENSEE REPRESENTATIVE.

16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233 CALL BEFORE YOU DIG (CT): 1-800-922-4455

18. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.

19. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH PROJECT OWNER PRIOR TO CONSTRUCTION.

20. NORTH ARROW SHOWN ON PLANS REFERS TO APPROXIMATE TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATING OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.

21. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

22. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.

23. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE PROJECT OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF PROJECT OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE EXHIBIT 3). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.

24. WHEN "PAINT TO MATCH" IS SPECIFIED FOR ANTENNA CONCEALMENT, PAINT PRODUCT FOR ANTENNA RADOME SHALL BE SHERWIN WILLIAMS COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PROJECT OWNER'S GUIDELINE'S.

25. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

26. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

27. ALL (E)ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.

28. ALL (E)INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF UTILITY COMPANY ENGINEERING. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR

29. GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES

30. DURING CONSTRUCTION. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS

31. FOR WIRELESS COMMUNICATIONS SYSTEMS. PROJECT OWNER'S IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. PROJECT OWNER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

32. APPLICABLE BUILDING CODES: SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

### BUILDING CODE:

2009 INTERNATIONAL BUILDING CODE  
2005 CT STATE BUILDING CODE  
ELECTRICAL CODE: NEC 2014  
LIGHTING CODE: NEC 2014

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

## ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.

2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.

3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.

4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.

5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.

6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.

7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION.

8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.

9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE AND GREENLEE CONDUIT MEASURING TAPE IN EACH INSTALLED TELCO CONDUIT.

10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.

11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

12. PPC SUPPLIED BY PROJECT OWNER.

13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".

14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.

15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.

16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.

17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.

18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.

19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

20. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.

21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ (E) MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.

22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.

23. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.



## ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	(P)	PROPOSED/NEW	TBR	TO BE REMOVED
(E)	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		
(F)	FUTURE				



SAI COMMUNICATIONS  
27 NORTHWESTERN DRIVE  
SALEM, NH 03079

SITE NUMBER: CT1110

SITE NAME: PUTNAM SAYLE AVE

154 SAYLE AVENUE  
PUTNAM, CT 06260  
WINDHAM COUNTY



550 COCHITUATE ROAD, SUITE 13,  
FRAMINGHAM, MA 01701-4681

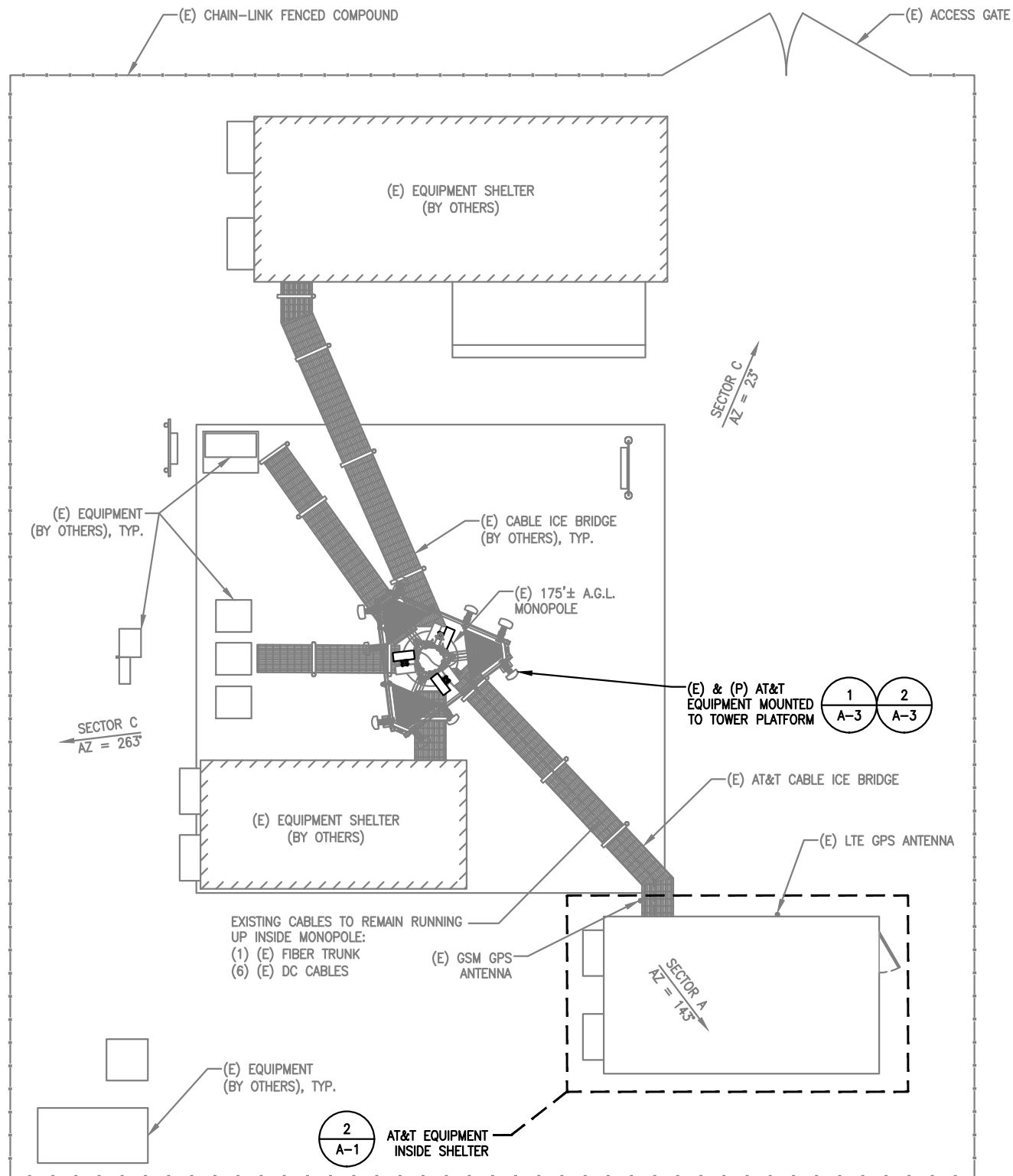
NO.	DATE	REVISIONS	BY	CHK
0	01/12/17	ISSUED FOR REVIEW	AAB	MRC

GENERAL NOTES

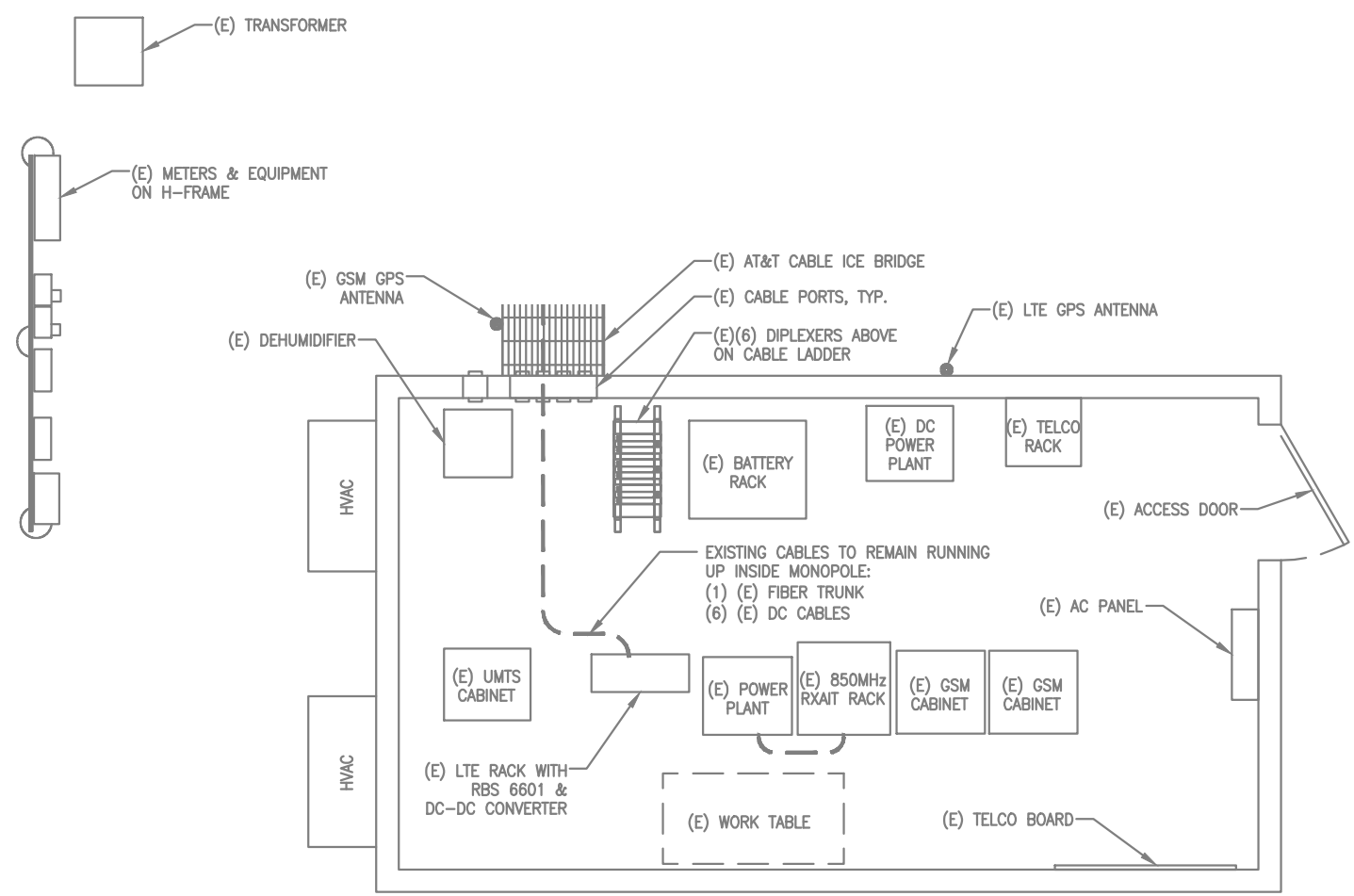
SHEET NO.

GN-1

HALF SIZE PRINT  
THIS DRAWING IS SCALEABLE  
AT HALF THE NOTED SCALE



**1**  
COMPOUND PLAN  
SCALE: 1"=10'-0"  
NORTH

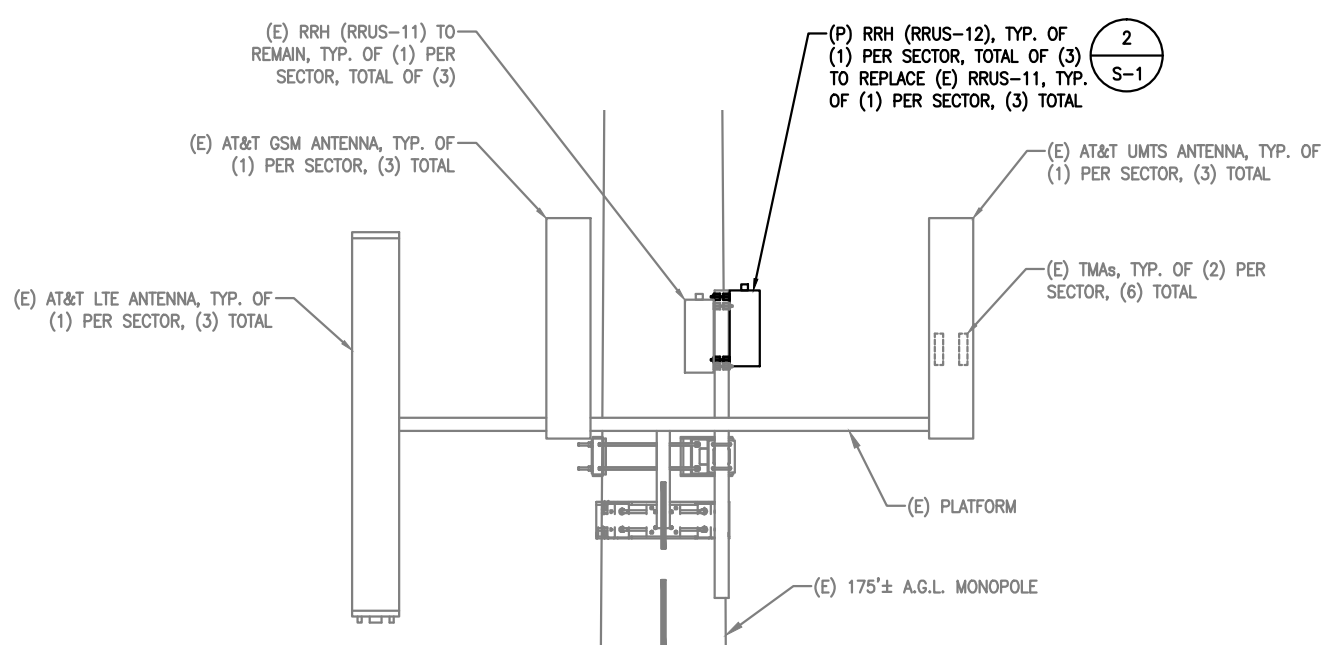
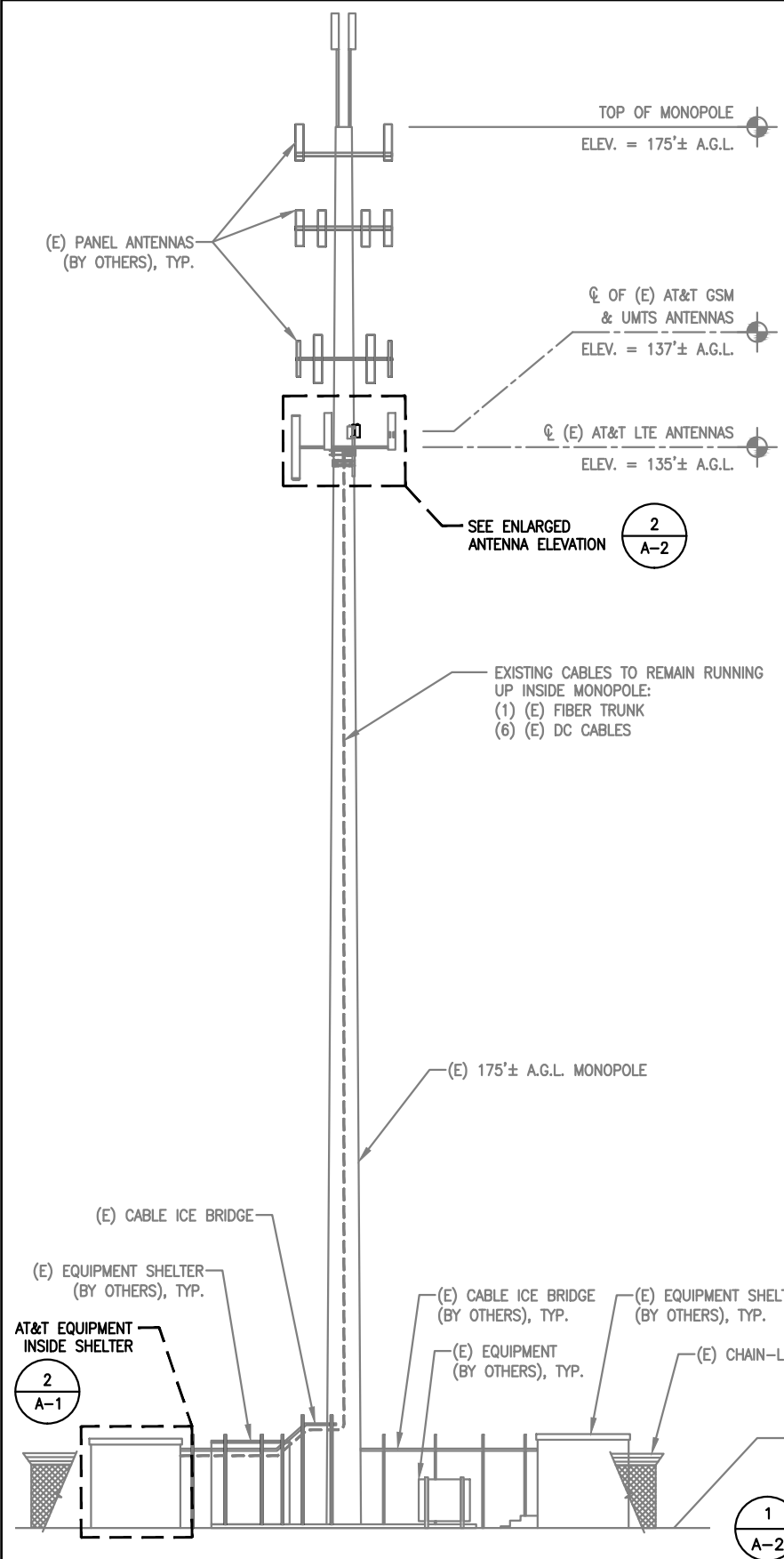


**2**  
EQUIPMENT SHELTER PLAN  
SCALE: 1/2"=1'-0"  
NORTH

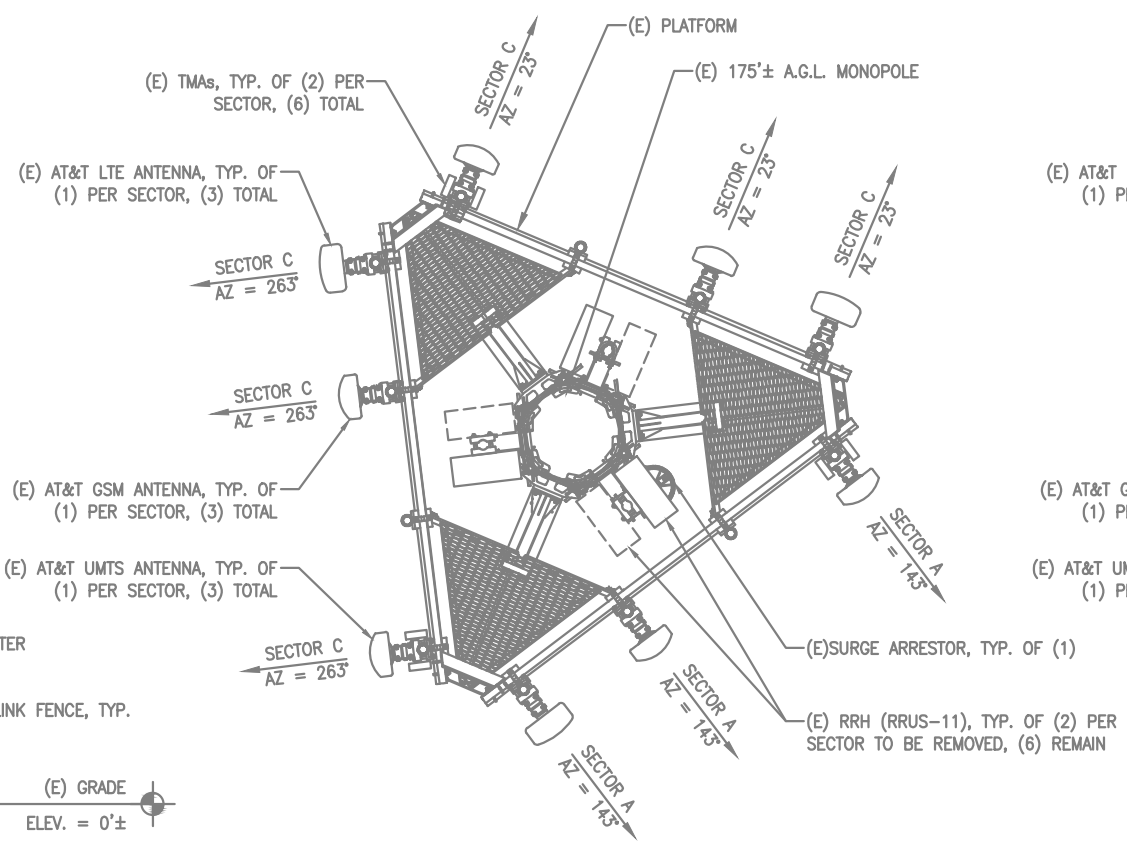


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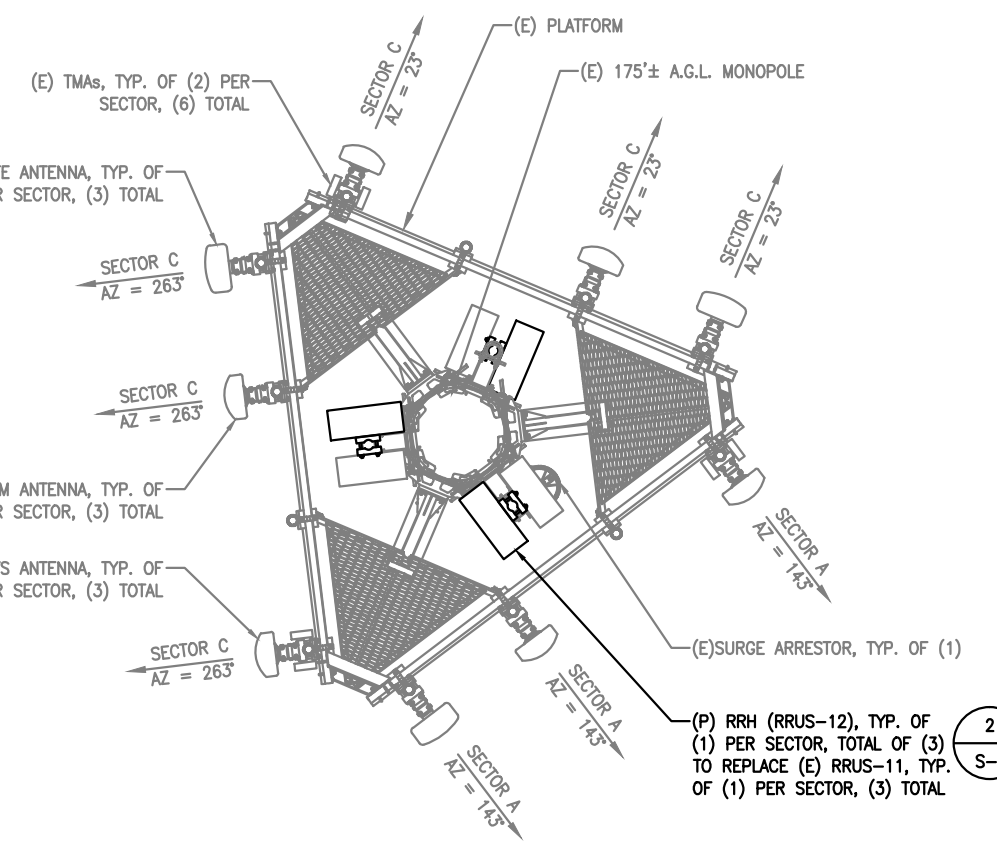
HALF SIZE PRINT  
THIS DRAWING IS SCALEABLE  
AT HALF THE NOTED SCALE



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

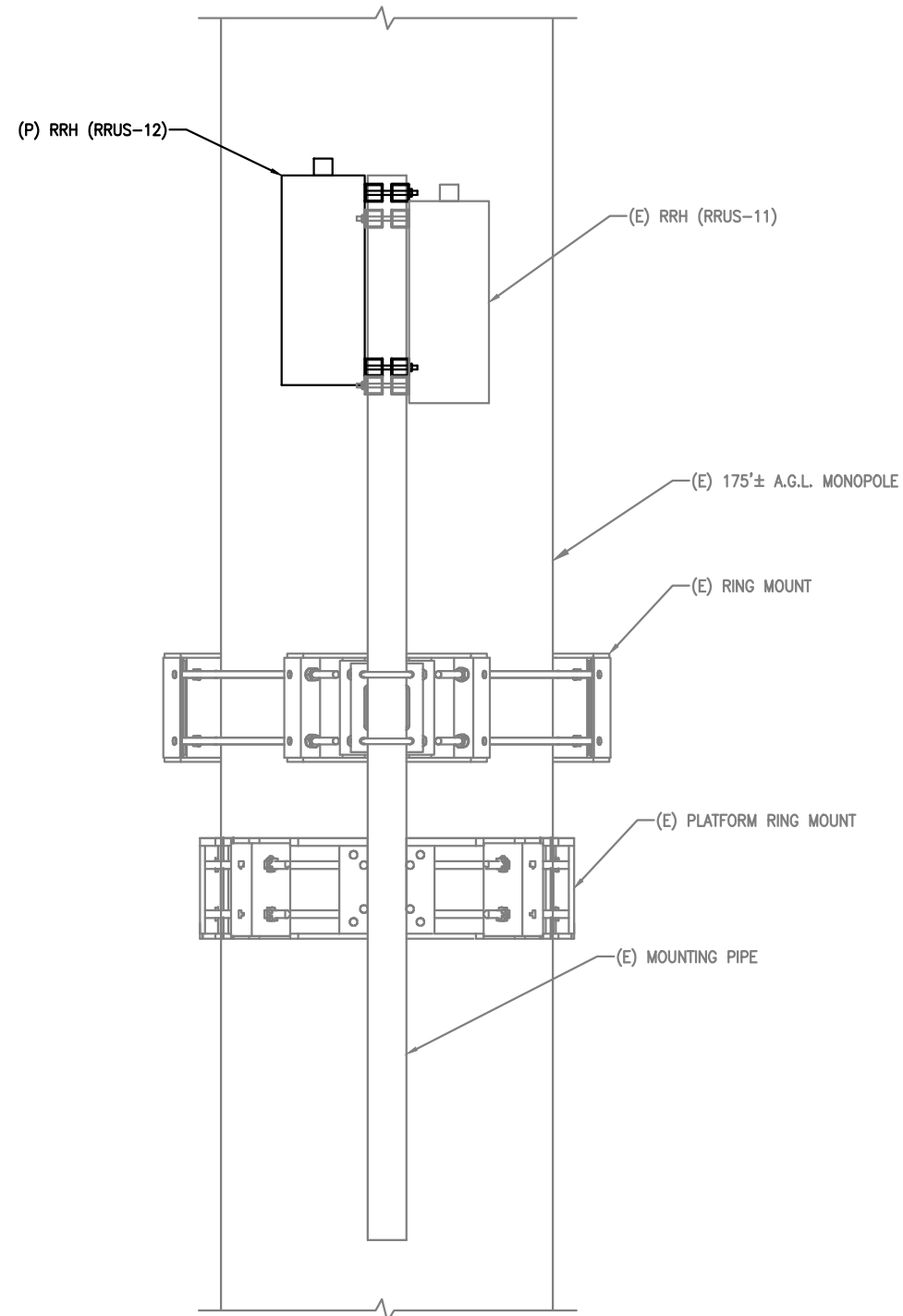


3  
A-2 EXISTING ANTENNA PLAN  
SCALE: 1/2" = 1'-0"

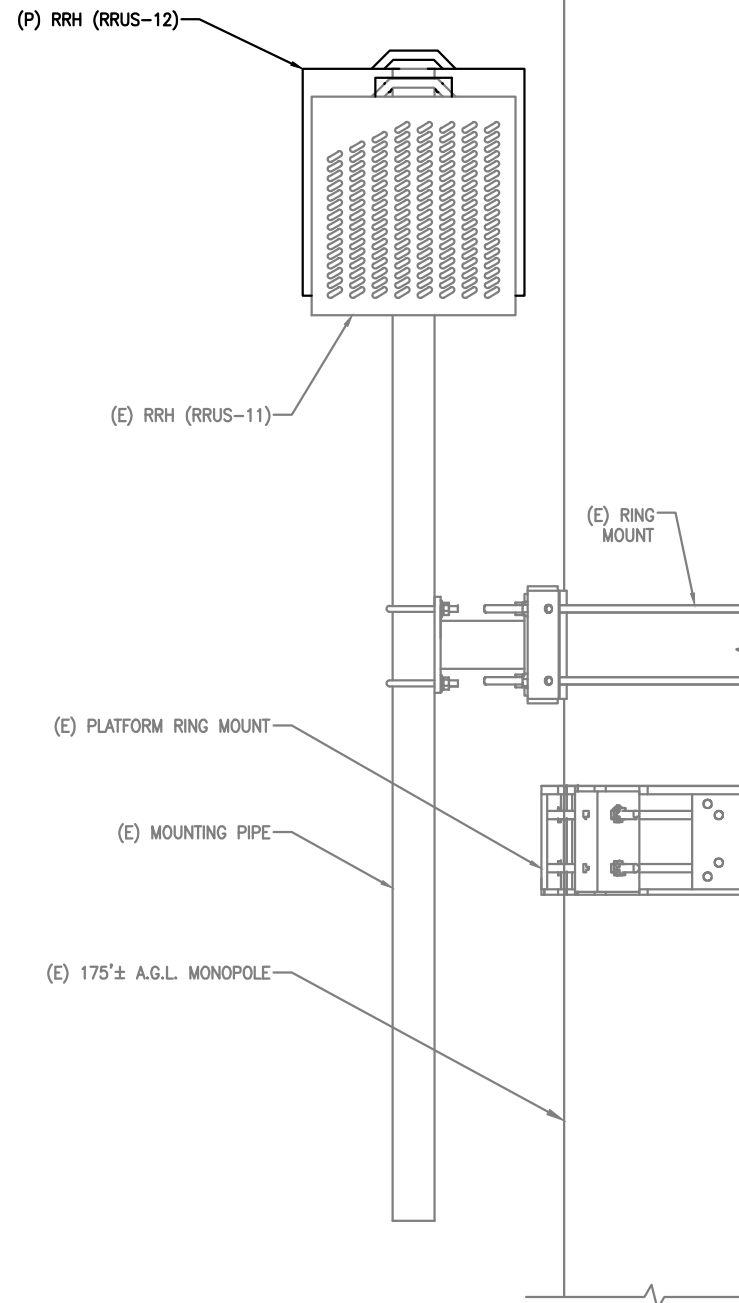


4  
A-2 PROPOSED ANTENNA PLAN  
SCALE: 1/2" = 1'-0"

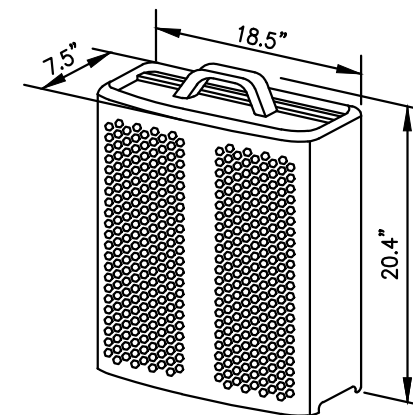
NO.	DATE	REVISIONS	BY	CHK
0	01/12/17	ISSUED FOR REVIEW	AAB	MRC



FRONT



SIDE



ERICSSON RRUS-12  
 -DIMENSIONS (H x W x D):  
 20.4" x 18.5" x 7.5"  
 (INCLUDES SUNSHIELD)  
 -WEIGHT: 50 LBS

NOTES:  
 RRU CAN ONLY BE PAINTED ON SOLAR SHIELD.

2 REMOTE RADIO HEAD (RRH) DETAILS  
 S-1 SCALE: N.T.S.

1 RRH MOUNTING DETAILS  
 S-1 SCALE: 1 1/2" = 1'-0"

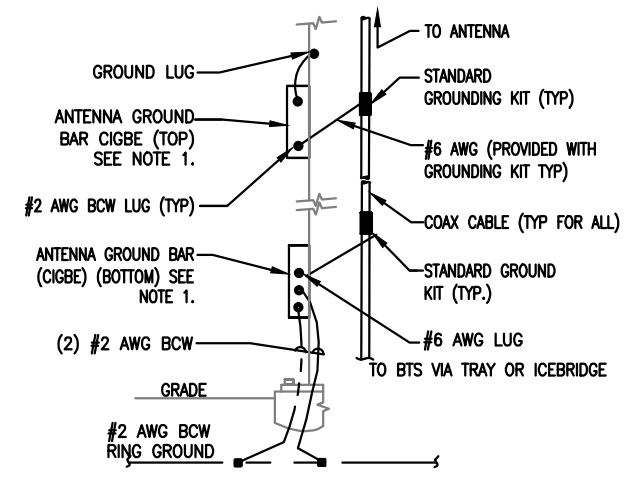


NO.	DATE	REVISIONS	BY	CHK
0	01/12/17	ISSUED FOR REVIEW	AAB	MRC

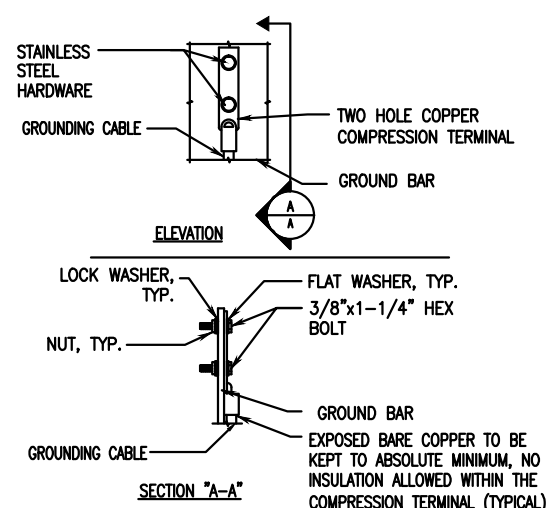


	CIRCUIT BREAKER	ACCA	ANTENNA CABLE COVER ASSEMBLY
	ELECTRIC BOX	AWG	AMERICAN WIRE GAUGE
	ELECTRICAL CONDUIT	BTWC	BARE TINNED COPPER WIRE
	EXOTHERMIC CONNECTION (CADWELD) TO GROUND RING AND COMPRESSION TO GROUND HALO	C	CONDUIT
	DISCONNECT SWITCH	CIGBE	COAX INSULATED GROUND BAR EXTERNAL CONDUIT ONLY
	GROUND ROD	CO	CONDUIT DRAWING
	GROUND ROD WITH ACCESS	DWG	DRAWING
	MECHANICAL GROUND CONN.	EGB	EXTERNAL GROUND BAR
	GROUND ACCESS WELL	EMT	ELECTRICAL METALLIC TUBING
	GROUNDING WIRE	(E)	EXISTING
	GENERATOR	(F)	FUTURE
	FUSE	GEN	GENERATOR
	GROUND BUS BAR	GFI	GROUND FAULT CIRCUIT INTERRUPTER
	REVISION	GND	GROUND
	TELEPHONE BOX	GPS	GLOBAL POSITIONING SYSTEM
	UTILITY METER	GR	GROWTH
	XIT GROUND ROD	IGR	INTERIOR GROUND RING (HALO)
		MIGB	MASTER ISOLATED GROUND BAR
		(P)	PROPOSED, NEW (PROVIDE AND INSTALL UNLESS NOTED OTHERWISE)
		PCS	PERSONAL COMMUNICATION SERVICE
		PCC	POWER PROTECTION CABINET
		PRC	PRIMARY RADIO CABINET
		PVC	POLYVINYL CHLORIDE CONDUIT
		RGS	RIGID GALVANIZED STEEL
		RWY	RACEWAY
		S.L.D.	SINGLE LINE DIAGRAM
		TEL	TELEPHONE
		TYP.	TYPICAL
		WP	WEATHERPROOF EQUIPMENT

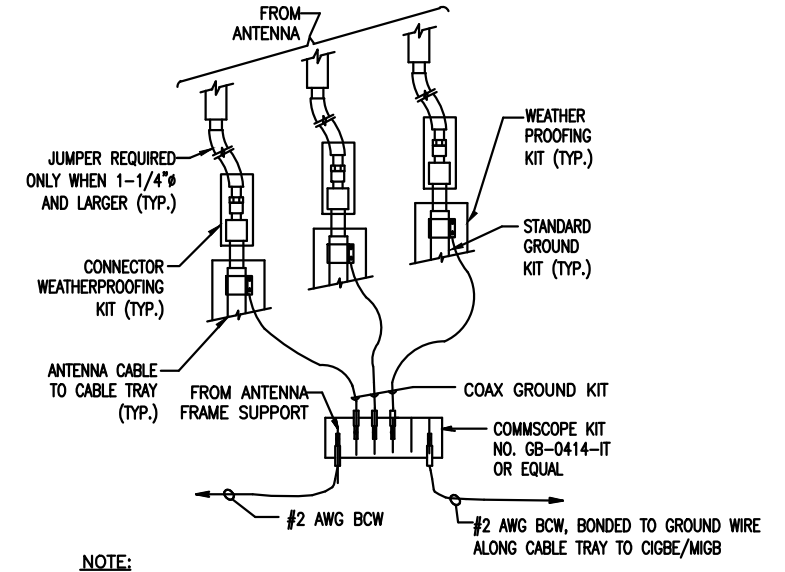
1 ELEC. / GROUNDING LEGEND  
G-1 SCALE: N.T.S.



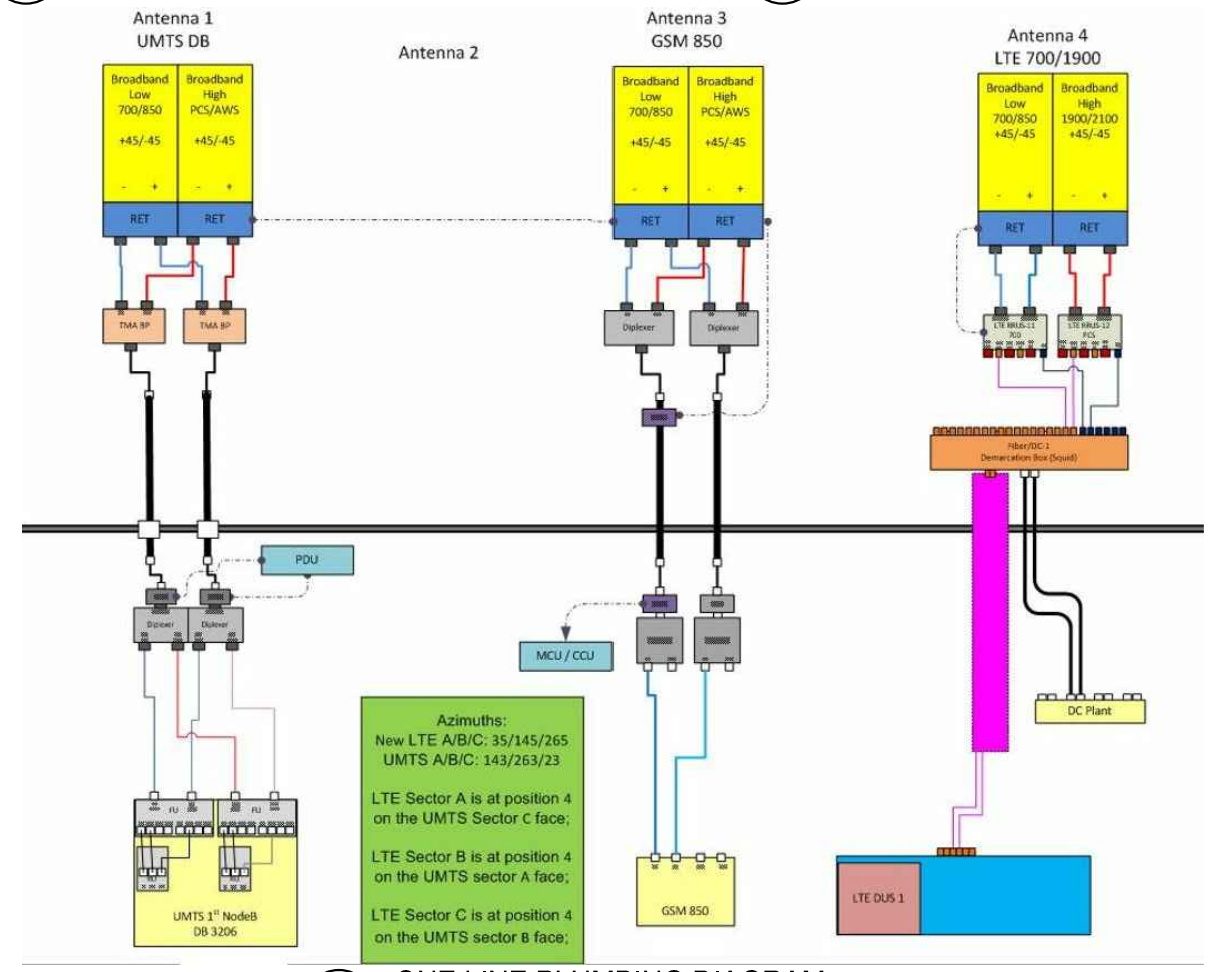
2 TYP. ANTENNA CABLE GROUNDING  
G-1 SCALE: N.T.S.



3 TYP. GROUND BAR CONNECTION  
G-1 SCALE: N.T.S.



4 TYP. GROUND WIRE TO GROUND BAR CONN.  
G-1 SCALE: N.T.S.



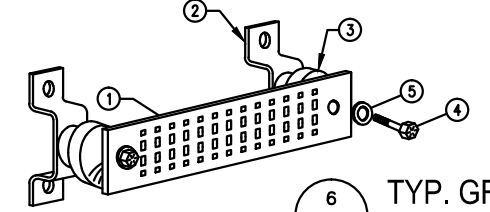
5 ONE LINE PLUMBING DIAGRAM  
G-1 SCALE: N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2		WALL MTG. BRKT.
3	2		INSULATORS
4	4		5/8"-11x1" H.H.C.S.
5	4		5/8 LOCKWASHER

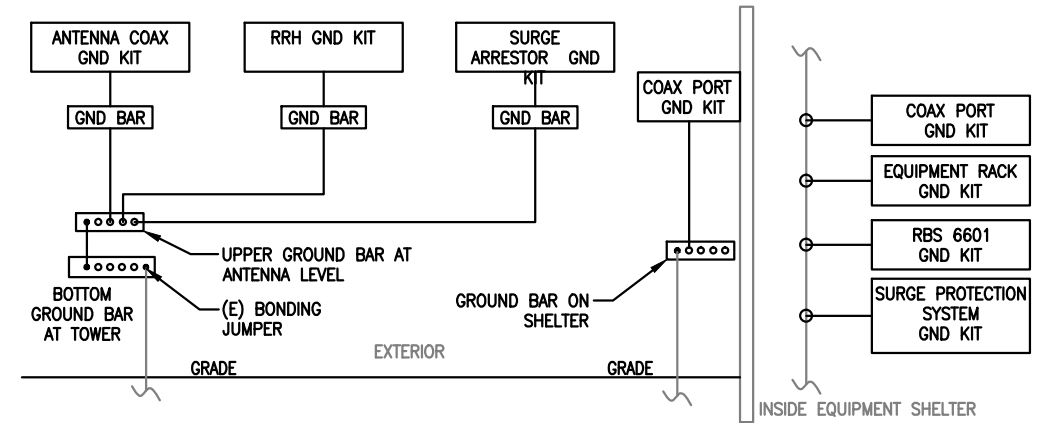
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

- SECTION "P" - SURGE PRODUCERS**
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
  - GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
  - TELCO GROUND BAR
  - COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
  - +24V POWER SUPPLY RETURN BAR (#2)
  - 48V POWER SUPPLY RETURN BAR (#2)
  - RECTIFIER FRAMES.

- SECTION "A" - SURGE ABSORBERS**
- INTERIOR GROUND RING (#2)
  - EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
  - METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
  - BUILDING STEEL (IF AVAILABLE) (#2)



6 TYP. GROUND BAR CONN.  
G-1 SCALE: N.T.S.



7 ONE LINE GROUNDING DIAGRAM  
G-1 SCALE: N.T.S.

**GROUNDING NOTES:**  
ALL GROUNDING SHALL BE DONE IN ACCORDANCE WITH THE AT&T MOBILITY GROUNDING GUIDE.



NO.	DATE	REVISIONS	BY	CHK
0	01/12/17	ISSUED FOR REVIEW	AAB	MRC



**Tower Engineering Solutions**

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

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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: AT&T**

**Carrier Site ID / Name: CT1110 / PUTNAM-SBA**

**Site Location: 154 Sayle Avenue**

**Putnam, Connecticut**

**Windham County**

**Latitude: 41.929449**

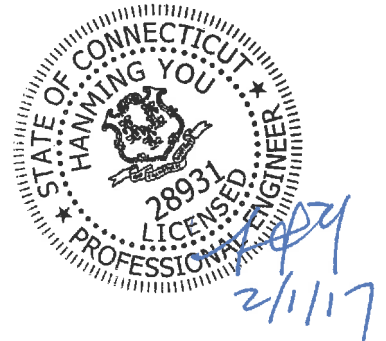
**Longitude: -71.886272**

**Analysis Result:**

**Max Structural Usage: 74.0% [Pass]**

**Max Foundation Usage: 38% [Pass]**

**Report Prepared By : Jarryd Tibbetts**





**Tower Engineering Solutions**

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## **Structural Analysis Report**

**Existing 175 ft Nudd Corporation Monopole**

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**Customer Site Name: Putnam**

**Carrier Name: AT&T**

**Carrier Site ID / Name: CT1110 / PUTNAM-SBA**

**Site Location: 154 Sayle Avenue**

**Putnam, Connecticut**

**Windham County**

**Latitude: 41.929449**

**Longitude: -71.886272**

### **Analysis Result:**

**Max Structural Usage: 74.0% [Pass]**

**Max Foundation Usage: 38% [Pass]**

**Report Prepared By : Jarryd Tibbetts**

## 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 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>	$S_5 = 0.172g$ , $S_1 = 0.063g$



## 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	3	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			
3	179.0	6	Decibel - DB980H90 - Panel	(3) T-Arms	(6) 1 5/8"	Sprint
5	147.0	3	Amphenol - BXA-70063-6CF-EDIN-X - Panel	(3) T-Arms	(11) 1 5/8" (2) 1 5/8" Fiber	Verizon
6		3	Amphenol - BXA-80080-4CF-EDIN-X - Panel			
7		6	Commscope - SBNHH-1D65B - Panel			
8		6	RFS Celwave - FD9R6004/2C-3L - Diplexer			
9		2	RFS Celwave - DB-T1-6Z-8AB-0Z - Distribution Box			
10	144.0	3	Alcatel Lucent - RRH2X60-AWS - RRU			
11		3	Alcatel Lucent - RRH2X60-PCS - RRU			
12		3	Alcatel Lucent - RRH2X60-700 - RRU			
13	134.0	6	Powerwave - 7770 - Panel	(3) T-Arms (1) Ring Mount	(12) 1 5/8" (1) 7/16" Fiber (2) 3/4" DC (1) 1/2"	AT&T
14		3	KMW - AM-X-CD-17-65-00T-RET - Panel			
15		1	Nokia - CS72188.01 - Omni			
16		6	Powerwave - LGP21401 - TMA/TTA			
17		6	Powerwave - LGP21903 - Diplexer			
18		6	Ericsson - RRUS 11 - RRU			
20		1	Raycap - DC6-48-60-18-8F - Surge			
21	55.5	1	GPS	(1) Standoff	(1) 1/2"	Sprint

**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
13	134.0	6	Powerwave - 7770 - Panel	(3) T-Arms (1) Ring Mount	(12) 1 5/8" (1) 7/16" Fiber (2) 3/4" DC (1) 1/2"	AT&T
14		3	KMW - AM-X-CD-17-65-00T-RET - Panel			
15		1	Nokia - CS72188.01 - Omni			
16		6	Powerwave - LGP21401 - TMA/TTA			
17		6	Powerwave - LGP21903 - Diplexer			
18		3	Ericsson - RRUS 11 - RRU			
19		3	Ericsson - RRUS 12 - RRU			
20		1	Raycap - DC6-48-60-18-8F - Surge			

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>74.0%</b>	<b>46.4%</b>	<b>61.0%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	4161.6	36.1	73.8

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 1.1121 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 62.42% 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

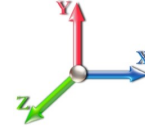
2/1/2017



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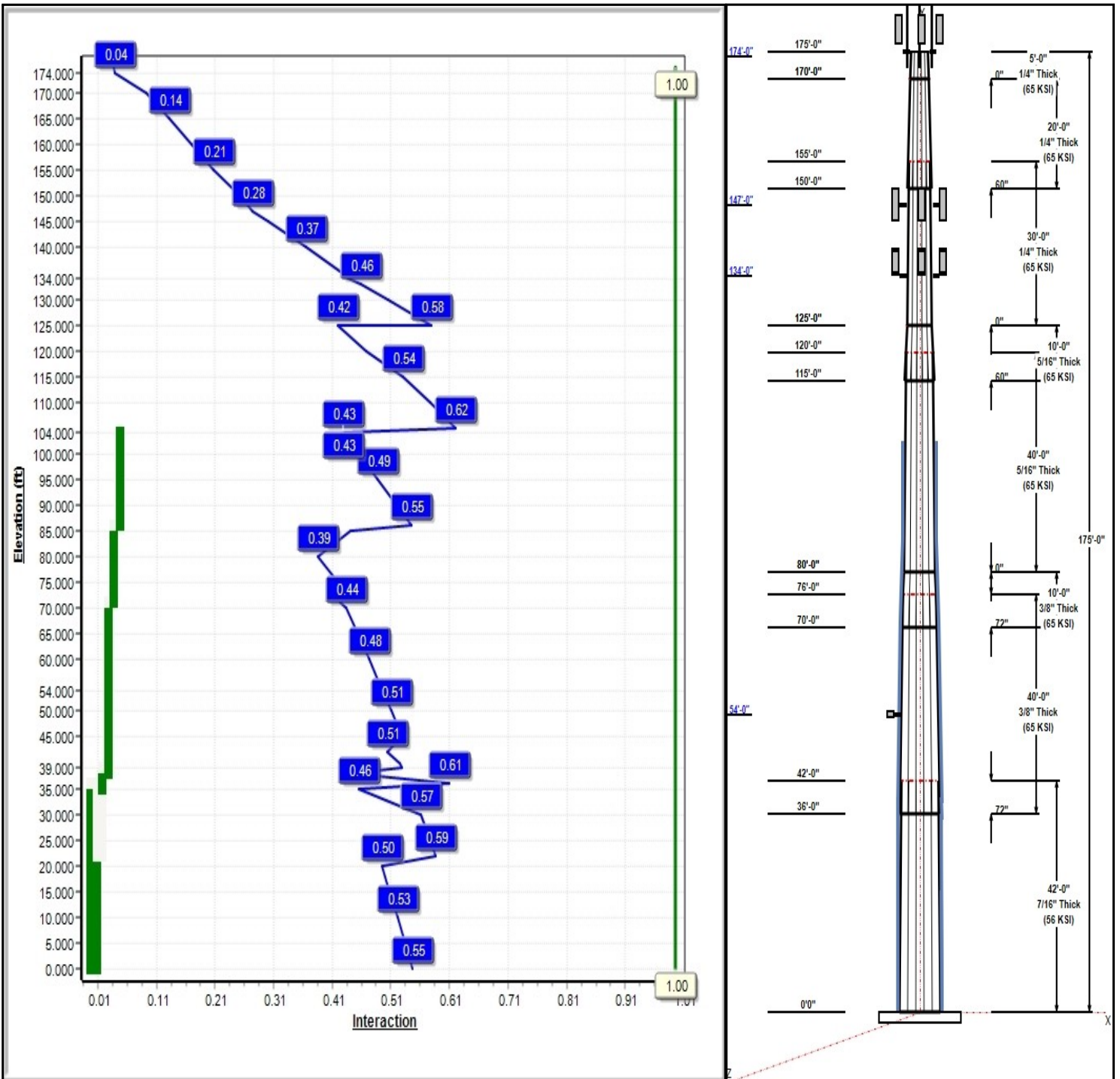
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

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



**Iterations:** 24

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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:** 0.19338

2/1/2017

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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

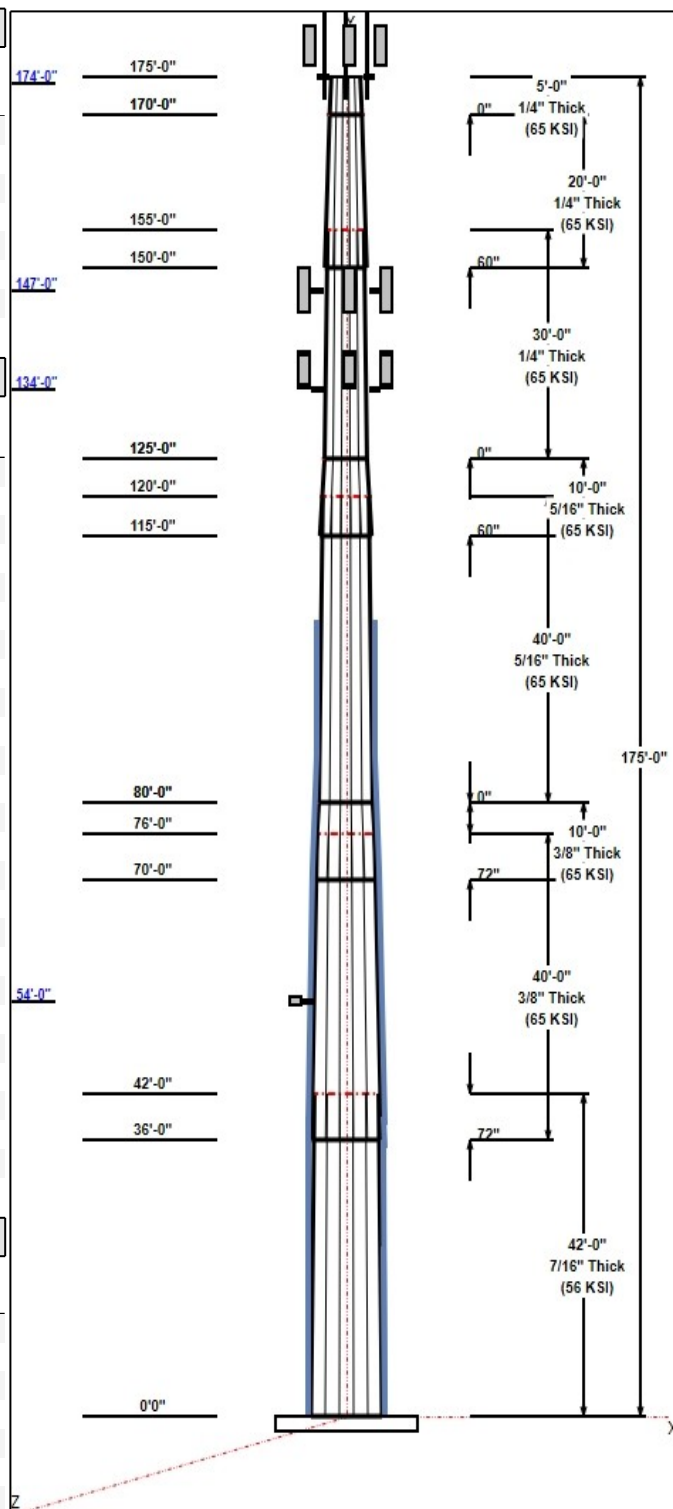
### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
175.00	191.50	3	DR65-18-02DPL2Q	T-Mobile
175.00	188.50	6	E15S09P94	T-Mobile
175.00	179.00	6	DB980H90	Sprint
175.00	175.00	3	T-Arms	Sprint
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-EDIN-X	Verizon
147.00	147.00	6	SBNHH-1D65B	Verizon
147.00	147.00	6	FD9R6004/2C-3L (3.1 lbs)	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-AWS	Verizon
147.00	147.00	3	T-Arms	Verizon
134.00	136.50	6	7770.00	AT&T
134.00	136.50	3	AM-X-CD-17-65-00T-RET	AT&T
134.00	136.50	1	CS72188.01	AT&T
134.00	136.50	6	LGP21903	AT&T
134.00	136.00	6	LGP21401	AT&T
134.00	134.00	3	T-Arms	AT&T
133.00	133.00	1	Flush Mount	AT&T
133.00	133.00	3	RRUS 12	AT&T
133.00	134.00	3	RRUS 11	AT&T
133.00	134.00	1	DC6-48-60-18-8F	AT&T
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	175.00	Inside	1 5/8" Coax	T-Mobile
0.00	175.00	Inside	1 5/8" Coax	Sprint
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	1/2" 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	105.00	Outside	3" Chanel	
0.00	54.00	Inside	1/2" Coax	Sprint

### Anchor Bolts



**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

2/1/2017

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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**

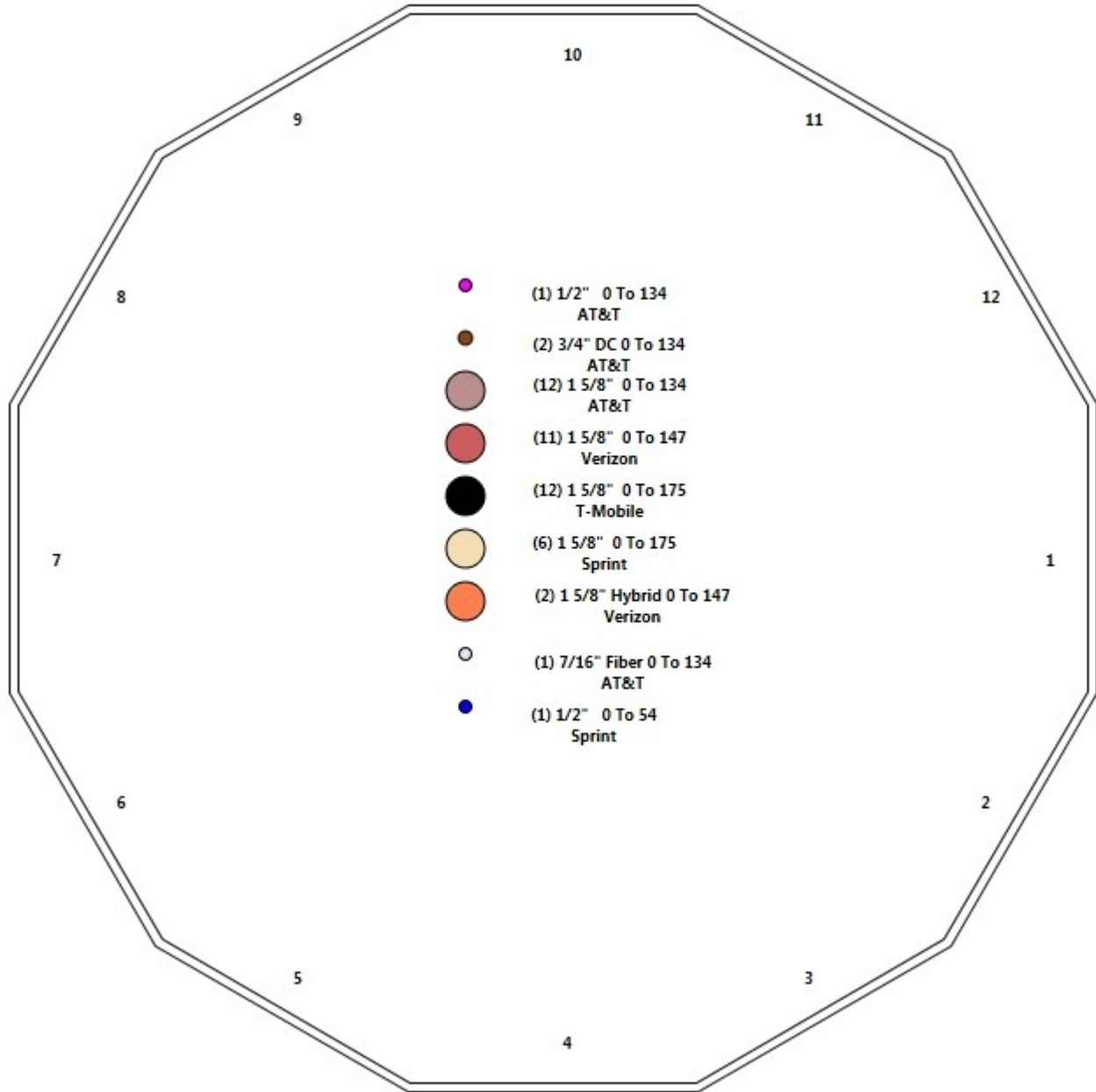
Load Case	Moment	Shear	Axial
1.2D + 1.6W 101 mph Wind	4161.6	36.1	50.2
0.9D + 1.6W 101 mph Wind	4129.5	36.1	37.7
1.2D + 1.0Di + 1.0Wi 50 mph Wind	945.4	7.8	73.8
1.2D + 1.0E	159.3	1.4	50.3
0.9D + 1.0E	157.8	1.4	37.7
1.0D + 1.0W 60 mph Wind	914.0	8.0	41.9

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

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

2/1/2017

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## Shaft Properties

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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			
							Description	Spacing (in)	Description	Spacing (in)	Lower Qty	Upper Qty
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	2/1/2017
<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	3	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	0.75	32.11	1.273	0.75	0.00	13.50
3	175.00	DB980H90	6	8.50	3.79	0.73	101.30	4.868	0.75	0.00	4.00
4	175.00	T-Arms	3	242.00	11.00	0.75	451.13	24.997	0.75	0.00	0.00
5	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
6	147.00	BXA-70063-6CF-EDIN-X	3	17.00	7.57	0.77	165.00	10.328	0.77	0.00	0.00
7	147.00	BXA-80080-4CF-EDIN-X	3	12.00	3.56	0.88	100.05	5.398	0.88	0.00	0.00
8	147.00	SBNHH-1D65B	6	50.71	8.08	0.82	251.83	9.369	0.82	0.00	0.00
9	147.00	FD9R6004/2C-3L (3.1 lbs)	6	3.10	0.36	0.63	11.11	0.802	0.66	0.00	0.00
10	147.00	DB-T1-6Z-8AB-OZ	2	44.00	4.80	1.00	187.39	5.672	1.00	0.00	0.00
11	147.00	RRH2X60-AWS	3	60.00	3.50	0.76	147.11	4.288	0.78	0.00	-3.00
12	147.00	RRH2X60-PCS	3	55.00	2.20	0.89	139.32	2.835	0.90	0.00	-3.00
13	147.00	RRH2X60-AWS	3	60.00	3.50	0.76	147.11	4.288	0.78	0.00	-3.00
14	147.00	T-Arms	3	242.00	11.00	0.75	447.52	24.755	0.75	0.00	0.00
15	134.00	7770.00	6	35.00	5.50	0.73	168.32	6.552	0.75	0.00	2.50
16	134.00	AM-X-CD-17-65-00T-RET	3	30.80	11.31	0.75	141.54	15.502	0.77	0.00	2.50
17	134.00	CS72188.01	1	17.60	1.43	0.65	45.74	2.286	0.67	0.00	2.50
18	134.00	LGP21903	6	5.50	0.23	0.75	13.10	0.594	0.77	0.00	2.50
19	134.00	LGP21401	6	14.10	1.29	0.75	38.82	2.116	0.77	0.00	2.00
20	134.00	T-Arms	3	242.00	8.19	0.75	445.63	18.337	0.77	0.00	0.00
21	133.00	Flush Mount	1	350.00	5.00	1.00	639.69	8.449	1.00	0.00	0.00
22	133.00	RRUS 12	3	60.00	2.70	0.75	133.42	3.763	0.77	0.00	0.00
23	133.00	RRUS 11	3	50.70	2.52	0.76	138.59	3.163	0.78	0.00	1.00
24	133.00	DC6-48-60-18-8F	1	14.50	2.92	1.00	76.98	4.120	1.00	0.00	1.00
25	54.00	GPS	1	10.00	1.00	1.00	36.47	1.643	1.00	0.00	0.00
26	54.00	Standoff	1	40.00	2.63	1.00	112.48	8.019	1.00	0.00	0.00
<b>Totals:</b>			<b>88</b>	<b>5,373.26</b>				<b>14,370.66</b>			

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	175.00	(12) 1 5/8" Coax	0.00	Inside
0.00	175.00	(6) 1 5/8" Coax	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
0.00	134.00	(1) 1/2" Coax	0.00	Inside
0.00	134.00	(2) 3/4" DC	0.00	Inside
0.00	134.00	(1) 7/16" Fiber	0.00	Inside
0.00	105.00	(3) 3" Chanel	3.00	Outside
0.00	54.00	(1) 1/2" Coax	0.00	Inside



## Shaft Section Properties

**Structure:** CT00680-S-SBA      **Code:** EIA/TIA-222-G      2/1/2017  
**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      **Page:** 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)
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				
125.00	Top - Section 5	0.3125	31.952	31.837	4068.1	25.25	102.25	65	77	550.0				
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				
133.00		0.2500	30.405	24.275	2817.5	30.44	121.62	65	72	250.2				
134.00		0.2500	30.212	24.119	2763.7	30.24	120.85	65	72	82.3				
135.00		0.2500	30.018	23.964	2710.5	30.03	120.07	65	72	81.8				
140.00		0.2500	29.051	23.185	2454.9	28.99	116.21	65	73	401.1				
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				
170.00	Top - Section 7	0.2500	23.750	18.918	1333.5	23.31	95.00	65	79	328.5				

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	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

**Structure:** CT00680-S-SBA

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

2/1/2017

**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

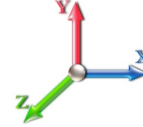
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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



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
125.00	Top - Section 5	1.00	1.05	26.131	28.74	285.74	1.000	0.000	5.00	13.992	13.99	643.5	0.0	659.9
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
133.00	Appurtenance(s)	1.00	1.07	26.598	29.26	274.33	1.000	0.000	3.00	7.945	7.94	371.9	0.0	300.2
134.00	Appurtenance(s)	1.00	1.07	26.655	29.32	272.87	1.000	0.000	1.00	2.615	2.61	122.7	0.0	98.8
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
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	5.00	12.740	12.74	605.2	0.0	481.3
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
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

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 10
	<b>Struct Class:</b> II	



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>22,694.2</b>		<b>34,633.7</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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

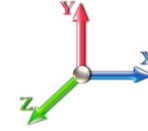


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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**Iterations** 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	DB980H90	6	28.954	31.849	0.73	1.00	16.60	61.20	0.000	4.000	845.93	0.00	3383.72
2	175.00	E15S09P94	6	29.385	32.323	0.75	1.00	2.97	105.12	0.000	13.500	153.60	0.00	2073.62
3	175.00	DR65-18-02DPL2Q	3	29.518	32.470	0.67	1.00	11.68	86.40	0.000	16.500	606.69	0.00	10010.44
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	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
6	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
7	147.00	BXA-80080-4CF-EDIN-X	3	27.370	30.107	0.70	0.80	7.50	43.20	0.000	0.000	361.36	0.00	0.00
8	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
9	147.00	FD9R6004/2C-3L (3.1 lbs)	6	27.370	30.107	0.50	0.80	1.09	22.32	0.000	0.000	52.36	0.00	0.00
10	147.00	RRH2X60-AWS	3	27.209	29.930	0.61	0.80	6.38	216.00	0.000	-3.000	305.72	0.00	-917.15
11	147.00	RRH2X60-AWS	3	27.209	29.930	0.61	0.80	6.38	216.00	0.000	-3.000	305.72	0.00	-917.15
12	147.00	RRH2X60-PCS	3	27.209	29.930	0.71	0.80	4.71	198.00	0.000	-3.000	225.54	0.00	-676.62
13	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
14	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
15	134.00	CS72188.01	1	26.796	29.476	0.52	0.80	0.74	21.12	0.000	2.500	35.07	0.00	87.67
16	134.00	7770.00	6	26.796	29.476	0.58	0.80	19.27	252.00	0.000	2.500	908.89	0.00	2272.24
17	134.00	AM-X-CD-17-65-00T-RET	3	26.796	29.476	0.60	0.80	20.36	110.88	0.000	2.500	960.11	0.00	2400.28
18	134.00	T-Arms	3	26.655	29.321	0.56	0.75	13.82	871.20	0.000	0.000	648.37	0.00	0.00
19	134.00	LGP21903	6	26.796	29.476	0.60	0.80	0.83	39.60	0.000	2.500	39.05	0.00	97.62
20	134.00	LGP21401	6	26.768	29.445	0.60	0.80	4.64	101.52	0.000	2.000	218.79	0.00	437.58
21	133.00	DC6-48-60-18-8F	1	26.655	29.321	0.80	0.80	2.34	17.40	0.000	1.000	109.59	0.00	109.59
22	133.00	RRUS 11	3	26.655	29.321	0.61	0.80	4.60	182.52	0.000	1.000	215.63	0.00	215.63
23	133.00	RRUS 12	3	26.598	29.258	0.60	0.80	4.86	216.00	0.000	0.000	227.51	0.00	0.00
24	133.00	Flush Mount	1	26.598	29.258	1.00	1.00	5.00	420.00	0.000	0.000	234.06	0.00	0.00
25	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
26	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

**Totals:** 6,447.91

**13,391.43**

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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

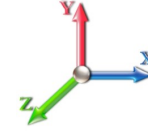


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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**Iterations** 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		705.59	1835.42	0.00	0.00
10.00		692.84	1807.61	0.00	0.00
15.00		680.09	1779.80	0.00	0.00
20.00		667.34	1751.99	0.00	0.00
22.00		263.37	693.01	0.00	0.00
25.00		391.23	1031.17	0.00	0.00
30.00		642.39	1696.37	0.00	0.00
35.00		657.98	1668.56	0.00	0.00
36.00		131.05	330.37	0.00	0.00
38.00		268.77	1123.06	0.00	0.00
39.00		134.56	558.43	0.00	0.00
40.00		134.98	556.36	0.00	0.00
42.00		272.07	1106.53	0.00	0.00
45.00		411.93	865.13	0.00	0.00
50.00		695.73	1422.82	0.00	0.00
54.00	(2) attachments	689.44	1181.09	0.00	0.00
55.00		138.74	277.70	0.00	0.00
60.00		701.82	1374.18	0.00	0.00
65.00		702.14	1350.35	0.00	0.00
70.00		700.92	1326.51	0.00	0.00
71.25		176.73	583.48	0.00	0.00
75.00		531.81	1732.56	0.00	0.00
76.00		140.77	457.49	0.00	0.00
80.00		564.65	1035.95	0.00	0.00
85.00		702.68	1113.82	0.00	0.00
86.00		138.94	220.38	0.00	0.00
90.00		556.03	873.58	0.00	0.00
95.00		689.90	1074.09	0.00	0.00
100.00		682.09	1054.23	0.00	0.00
104.00		538.71	829.08	0.00	0.00
105.00		133.22	205.28	0.00	0.00
110.00		663.93	982.46	0.00	0.00
115.00		653.68	962.60	0.00	0.00
120.00		654.98	1622.54	0.00	0.00
125.00		643.48	935.71	0.00	0.00
130.00		631.33	788.85	0.00	0.00
133.00	(8) attachments	1158.70	1301.60	0.00	325.22
134.00	(25) attachments	2932.95	1550.28	0.00	5295.39
135.00		122.14	137.00	0.00	0.00
140.00		605.21	675.47	0.00	0.00
145.00		591.30	659.58	0.00	0.00
147.00	(32) attachments	4955.33	2358.01	0.00	-2510.91
150.00		343.68	335.20	0.00	0.00
155.00		572.43	987.81	0.00	0.00
160.00		557.06	538.28	0.00	0.00
165.00		541.21	522.39	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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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170.00		524.90	506.50	0.00	0.00
174.00	(3) attachments	2454.32	1301.72	0.00	20801.51
175.00	(18) attachments	2940.48	1206.62	0.00	15467.78
<b>Totals:</b>		<b>36,085.63</b>	<b>50,289.01</b>	<b>0.00</b>	<b>39,378.99</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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

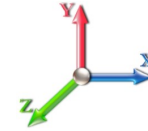


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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**Iterations** 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	3.20	1.33	0.00	0.058	0.000	17.366	0.00	32.04
10.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.059	0.000	17.366	0.00	32.04
15.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.060	0.000	17.366	0.00	32.04
20.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.061	0.000	17.366	0.00	32.04
22.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.062	0.000	17.366	0.00	12.82
25.00	3" Chanel	Yes	3.00	0.000	3.20	0.80	0.00	0.062	0.000	17.366	0.00	19.22
30.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.063	0.000	17.381	0.00	32.04
35.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.065	0.000	18.163	0.00	32.04
36.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.066	0.000	18.310	0.00	6.41
38.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.066	0.000	18.595	0.00	12.82
39.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.066	0.000	18.734	0.00	6.41
40.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.067	0.000	18.870	0.00	6.41
42.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.067	0.000	19.135	0.00	12.82
45.00	3" Chanel	Yes	3.00	0.000	3.20	0.80	0.00	0.067	0.000	19.516	0.00	19.22
50.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.068	0.000	20.112	0.00	32.04
54.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.069	0.000	20.559	0.00	25.63
55.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.070	0.000	20.667	0.00	6.41
60.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.071	0.000	21.187	0.00	32.04
65.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.072	0.000	21.678	0.00	32.04
70.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.074	0.000	22.142	0.00	32.04
71.25	3" Chanel	Yes	1.25	0.000	3.20	0.33	0.00	0.075	0.000	22.254	0.00	8.01
75.00	3" Chanel	Yes	3.75	0.000	3.20	1.00	0.00	0.076	0.000	22.582	0.00	24.03
76.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.077	0.000	22.668	0.00	6.41
80.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.076	0.000	23.003	0.00	25.63
85.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.078	0.000	23.404	0.00	32.04
86.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.079	0.000	23.483	0.00	6.41
90.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.080	0.000	23.790	0.00	25.63
95.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.082	0.000	24.160	0.00	32.04
100.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.084	0.000	24.517	0.00	32.04
104.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.086	0.000	24.793	0.00	25.63
105.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.088	0.000	24.861	0.00	6.41
<b>Totals:</b>											<b>0.0</b>	<b>672.8</b>



## Calculated Forces

**Structure:** CT00680-S-SBA

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

2/1/2017

**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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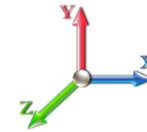


**Load Case:** 1.2D + 1.6W 101 mph Wind

**Iterations** 24

**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	-50.25	-36.14	0.00	-4161.6	0.00	4161.63	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.552
5.00	-48.33	-35.54	0.00	-3980.9	0.00	3980.92	4251.62	2125.81	9227.39	4557.06	0.07	-0.129	0.000	0.539
10.00	-46.45	-34.95	0.00	-3803.2	0.00	3803.21	4207.27	2103.63	8961.88	4425.94	0.27	-0.258	0.000	0.526
15.00	-44.60	-34.36	0.00	-3628.4	0.00	3628.46	4161.65	2080.83	8697.29	4295.27	0.61	-0.387	0.000	0.513
20.00	-42.80	-33.75	0.00	-3456.6	0.00	3456.67	4114.76	2057.38	8433.78	4165.13	1.09	-0.516	0.000	0.499
22.00	-42.06	-33.53	0.00	-3389.1	0.00	3389.18	4095.66	2047.83	8328.71	4113.24	1.31	-0.568	0.000	0.590
25.00	-40.96	-33.22	0.00	-3288.5	0.00	3288.59	4066.61	2033.31	8171.50	4035.59	1.70	-0.662	0.000	0.581
30.00	-39.19	-32.66	0.00	-3122.5	0.00	3122.51	4017.20	2008.60	7910.59	3906.74	2.48	-0.816	0.000	0.566
35.00	-37.48	-32.03	0.00	-2959.2	0.00	2959.22	3966.51	1983.26	7651.22	3778.65	3.41	-0.970	0.000	0.460
36.00	-37.12	-31.93	0.00	-2927.1	0.00	2927.19	3956.22	1978.11	7599.55	3753.13	3.62	-0.997	0.000	0.614
38.00	-35.98	-31.67	0.00	-2863.3	0.00	2863.34	3935.49	1967.75	7496.40	3702.19	4.05	-1.067	0.000	0.446
39.00	-35.41	-31.54	0.00	-2831.6	0.00	2831.67	3925.05	1962.53	7444.93	3676.77	4.28	-1.093	0.000	0.534
40.00	-34.83	-31.42	0.00	-2800.1	0.00	2800.13	3914.56	1957.28	7393.54	3651.39	4.51	-1.124	0.000	0.530
42.00	-33.69	-31.18	0.00	-2737.2	0.00	2737.28	3554.53	1777.27	6785.59	3351.15	5.00	-1.187	0.000	0.509
45.00	-32.76	-30.82	0.00	-2643.7	0.00	2643.76	3532.39	1766.19	6658.05	3288.16	5.77	-1.279	0.000	0.534
50.00	-31.28	-30.17	0.00	-2489.6	0.00	2489.67	3494.22	1747.11	6445.54	3183.21	7.20	-1.442	0.000	0.515
54.00	-30.07	-29.49	0.00	-2368.9	0.00	2368.99	3462.54	1731.27	6275.67	3099.32	8.46	-1.573	0.000	0.500
55.00	-29.75	-29.40	0.00	-2339.5	0.00	2339.50	3454.46	1727.23	6233.23	3078.36	8.80	-1.606	0.000	0.496
60.00	-28.32	-28.73	0.00	-2192.5	0.00	2192.53	3413.12	1706.56	6021.34	2973.71	10.57	-1.767	0.000	0.477
65.00	-26.91	-28.06	0.00	-2048.8	0.00	2048.86	3370.20	1685.10	5810.04	2869.36	12.50	-1.927	0.000	0.457
70.00	-25.56	-27.36	0.00	-1908.5	0.00	1908.55	3325.69	1662.84	5599.53	2765.40	14.60	-2.085	0.000	0.438
71.25	-24.95	-27.20	0.00	-1874.3	0.00	1874.35	3314.31	1657.16	5547.04	2739.48	15.16	-2.125	0.000	0.427
75.00	-23.21	-26.63	0.00	-1772.3	0.00	1772.37	3279.60	1639.80	5389.99	2661.91	16.87	-2.242	0.000	0.412
76.00	-22.72	-26.50	0.00	-1745.7	0.00	1745.74	3306.32	1653.16	5510.48	2721.42	17.34	-2.273	0.000	0.419
80.00	-21.65	-25.94	0.00	-1639.7	0.00	1639.74	3269.04	1634.52	5343.14	2638.78	19.30	-2.395	0.000	0.389
80.00	-21.65	-25.94	0.00	-1639.7	0.00	1639.74	2504.08	1252.04	4105.75	2027.68	19.30	-2.395	0.000	0.424
85.00	-20.52	-25.23	0.00	-1510.0	0.00	1510.02	2474.85	1237.43	3958.27	1954.84	21.89	-2.539	0.000	0.445
86.00	-20.27	-25.11	0.00	-1484.7	0.00	1484.79	2468.82	1234.41	3928.75	1940.26	22.42	-2.572	0.000	0.549
90.00	-19.35	-24.57	0.00	-1384.3	0.00	1384.35	2444.04	1222.02	3810.67	1881.94	24.64	-2.729	0.000	0.524
95.00	-18.23	-23.89	0.00	-1261.4	0.00	1261.48	2411.64	1205.82	3663.14	1809.09	27.60	-2.920	0.000	0.492
100.00	-17.15	-23.21	0.00	-1142.0	0.00	1142.02	2377.66	1188.83	3515.87	1736.36	30.76	-3.106	0.000	0.460
104.00	-16.31	-22.65	0.00	-1049.2	0.00	1049.20	2349.34	1174.67	3398.38	1678.33	33.43	-3.252	0.000	0.434
104.00	-16.31	-22.65	0.00	-1049.2	0.00	1049.20	2349.34	1174.67	3398.38	1678.33	33.43	-3.252	0.000	0.434
105.00	-16.06	-22.54	0.00	-1026.5	0.00	1026.55	2342.10	1171.05	3369.07	1663.86	34.11	-3.288	0.000	0.624
110.00	-15.02	-21.89	0.00	-913.83	0.00	913.83	2304.95	1152.47	3222.91	1591.67	37.69	-3.541	0.000	0.581
115.00	-14.01	-21.23	0.00	-804.39	0.00	804.39	2266.22	1133.11	3077.59	1519.90	41.53	-3.785	0.000	0.536
120.00	-12.36	-20.52	0.00	-698.23	0.00	698.23	2252.14	1126.07	3026.44	1494.64	45.62	-4.018	0.000	0.473
125.00	-11.40	-19.85	0.00	-595.64	0.00	595.64	2211.27	1105.63	2882.56	1423.59	49.94	-4.237	0.000	0.424
125.00	-11.40	-19.85	0.00	-595.64	0.00	595.64	1600.93	800.47	2095.19	1034.73	49.94	-4.237	0.000	0.583
130.00	-10.61	-19.19	0.00	-496.39	0.00	496.39	1577.27	788.64	2000.77	988.11	54.48	-4.428	0.000	0.510
133.00	-9.37	-17.95	0.00	-438.50	0.00	438.50	1562.32	781.16	1944.09	960.11	57.30	-4.562	0.000	0.463
134.00	-8.05	-14.91	0.00	-415.26	0.00	415.26	1557.20	778.60	1925.20	950.79	58.26	-4.605	0.000	0.442
135.00	-7.89	-14.79	0.00	-400.35	0.00	400.35	1552.03	776.01	1906.32	941.46	59.23	-4.647	0.000	0.431
140.00	-7.23	-14.15	0.00	-326.40	0.00	326.40	1525.20	762.60	1812.01	894.88	64.20	-4.838	0.000	0.370
145.00	-6.59	-13.52	0.00	-255.64	0.00	255.64	1496.79	748.40	1718.05	848.48	69.35	-5.006	0.000	0.306
147.00	-4.67	-8.38	0.00	-228.60	0.00	228.60	1484.98	742.49	1680.60	829.98	71.46	-5.069	0.000	0.279
150.00	-4.35	-8.02	0.00	-203.45	0.00	203.45	1466.80	733.40	1624.61	802.34	74.67	-5.155	0.000	0.257
155.00	-3.40	-7.37	0.00	-163.35	0.00	163.35	1451.75	725.87	1579.74	780.18	80.13	-5.286	0.000	0.212

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 16
	<b>Struct Class:</b> II	



160.00	-2.91	-6.77	0.00	-126.52	0.00	126.52	1419.41	709.70	1487.45	734.60	85.72	-5.402	0.000	0.174
165.00	-2.43	-6.18	0.00	-92.68	0.00	92.68	1385.48	692.74	1396.17	689.51	91.42	-5.494	0.000	0.136
170.00	-1.97	-5.61	0.00	-61.77	0.00	61.77	1349.97	674.99	1306.08	645.02	97.21	-5.567	0.000	0.097
170.00	-1.97	-5.61	0.00	-61.77	0.00	61.77	1349.97	674.99	1306.08	645.02	97.21	-5.567	0.000	0.097
174.00	-0.91	-3.04	0.00	-18.51	0.00	18.51	1121.46	560.73	870.39	429.85	101.89	-5.610	0.000	0.044
175.00	0.00	-2.94	0.00	-15.47	0.00	15.47	1053.22	526.61	767.04	378.81	103.06	-5.617	0.000	0.041

## Wind Loading - Shaft

**Structure:** CT00680-S-SBA      **Code:** EIA/TIA-222-G      2/1/2017  
**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      Page: 17

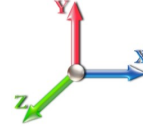


**Load Case:** 0.9D + 1.6W 101 mph Wind

**Iterations** 24

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



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
125.00	Top - Section 5	1.00	1.05	26.131	28.74	285.74	1.000	0.000	5.00	13.992	13.99	643.5	0.0	495.0
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
133.00	Appurtenance(s)	1.00	1.07	26.598	29.26	274.33	1.000	0.000	3.00	7.945	7.94	371.9	0.0	225.2
134.00	Appurtenance(s)	1.00	1.07	26.655	29.32	272.87	1.000	0.000	1.00	2.615	2.61	122.7	0.0	74.1
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
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	5.00	12.740	12.74	605.2	0.0	361.0
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
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

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 18
	<b>Struct Class:</b> II	



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>22,694.2</b>		<b>25,975.3</b>

## Discrete Appurtenance Forces

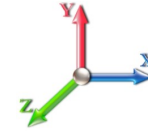
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 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	DB980H90	6	28.954	31.849	0.73	1.00	16.60	45.90	0.000	4.000	845.93	0.00	3383.72
2	175.00	E15S09P94	6	29.385	32.323	0.75	1.00	2.97	78.84	0.000	13.500	153.60	0.00	2073.62
3	175.00	DR65-18-02DPL2Q	3	29.518	32.470	0.67	1.00	11.68	64.80	0.000	16.500	606.69	0.00	10010.44
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	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
6	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
7	147.00	BXA-80080-4CF-EDIN-X	3	27.370	30.107	0.70	0.80	7.50	32.40	0.000	0.000	361.36	0.00	0.00
8	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
9	147.00	FD9R6004/2C-3L (3.1 lbs)	6	27.370	30.107	0.50	0.80	1.09	16.74	0.000	0.000	52.36	0.00	0.00
10	147.00	RRH2X60-AWS	3	27.209	29.930	0.61	0.80	6.38	162.00	0.000	-3.000	305.72	0.00	-917.15
11	147.00	RRH2X60-AWS	3	27.209	29.930	0.61	0.80	6.38	162.00	0.000	-3.000	305.72	0.00	-917.15
12	147.00	RRH2X60-PCS	3	27.209	29.930	0.71	0.80	4.71	148.50	0.000	-3.000	225.54	0.00	-676.62
13	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
14	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
15	134.00	CS72188.01	1	26.796	29.476	0.52	0.80	0.74	15.84	0.000	2.500	35.07	0.00	87.67
16	134.00	7770.00	6	26.796	29.476	0.58	0.80	19.27	189.00	0.000	2.500	908.89	0.00	2272.24
17	134.00	AM-X-CD-17-65-00T-RET	3	26.796	29.476	0.60	0.80	20.36	83.16	0.000	2.500	960.11	0.00	2400.28
18	134.00	T-Arms	3	26.655	29.321	0.56	0.75	13.82	653.40	0.000	0.000	648.37	0.00	0.00
19	134.00	LGP21903	6	26.796	29.476	0.60	0.80	0.83	29.70	0.000	2.500	39.05	0.00	97.62
20	134.00	LGP21401	6	26.768	29.445	0.60	0.80	4.64	76.14	0.000	2.000	218.79	0.00	437.58
21	133.00	DC6-48-60-18-8F	1	26.655	29.321	0.80	0.80	2.34	13.05	0.000	1.000	109.59	0.00	109.59
22	133.00	RRUS 11	3	26.655	29.321	0.61	0.80	4.60	136.89	0.000	1.000	215.63	0.00	215.63
23	133.00	RRUS 12	3	26.598	29.258	0.60	0.80	4.86	162.00	0.000	0.000	227.51	0.00	0.00
24	133.00	Flush Mount	1	26.598	29.258	1.00	1.00	5.00	315.00	0.000	0.000	234.06	0.00	0.00
25	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
26	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

**Totals:** **4,835.93** **13,391.43**

## Total Applied Force Summary

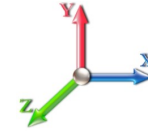
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 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		705.59	1376.56	0.00	0.00
10.00		692.84	1355.71	0.00	0.00
15.00		680.09	1334.85	0.00	0.00
20.00		667.34	1313.99	0.00	0.00
22.00		263.37	519.76	0.00	0.00
25.00		391.23	773.38	0.00	0.00
30.00		642.39	1272.28	0.00	0.00
35.00		657.98	1251.42	0.00	0.00
36.00		131.05	247.78	0.00	0.00
38.00		268.77	842.29	0.00	0.00
39.00		134.56	418.82	0.00	0.00
40.00		134.98	417.27	0.00	0.00
42.00		272.07	829.90	0.00	0.00
45.00		411.93	648.85	0.00	0.00
50.00		695.73	1067.11	0.00	0.00
54.00	(2) attachments	689.44	885.82	0.00	0.00
55.00		138.74	208.27	0.00	0.00
60.00		701.82	1030.64	0.00	0.00
65.00		702.14	1012.76	0.00	0.00
70.00		700.92	994.88	0.00	0.00
71.25		176.73	437.61	0.00	0.00
75.00		531.81	1299.42	0.00	0.00
76.00		140.77	343.11	0.00	0.00
80.00		564.65	776.96	0.00	0.00
85.00		702.68	835.37	0.00	0.00
86.00		138.94	165.29	0.00	0.00
90.00		556.03	655.18	0.00	0.00
95.00		689.90	805.57	0.00	0.00
100.00		682.09	790.67	0.00	0.00
104.00		538.71	621.81	0.00	0.00
105.00		133.22	153.96	0.00	0.00
110.00		663.93	736.85	0.00	0.00
115.00		653.68	721.95	0.00	0.00
120.00		654.98	1216.91	0.00	0.00
125.00		643.48	701.78	0.00	0.00
130.00		631.33	591.64	0.00	0.00
133.00	(8) attachments	1158.70	976.20	0.00	325.22
134.00	(25) attachments	2932.95	1162.71	0.00	5295.39
135.00		122.14	102.75	0.00	0.00
140.00		605.21	506.60	0.00	0.00
145.00		591.30	494.68	0.00	0.00
147.00	(32) attachments	4955.33	1768.51	0.00	-2510.91
150.00		343.68	251.40	0.00	0.00
155.00		572.43	740.86	0.00	0.00
160.00		557.06	403.71	0.00	0.00
165.00		541.21	391.79	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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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170.00		524.90	379.87	0.00	0.00
174.00	(3) attachments	2454.32	976.29	0.00	20801.51
175.00	(18) attachments	2940.48	904.96	0.00	15467.78
<b>Totals:</b>		<b>36,085.63</b>	<b>37,716.76</b>	<b>0.00</b>	<b>39,378.99</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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

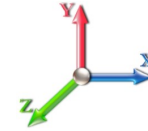


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 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	3.20	1.33	0.00	0.058	0.000	17.366	0.00	24.03
10.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.059	0.000	17.366	0.00	24.03
15.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.060	0.000	17.366	0.00	24.03
20.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.061	0.000	17.366	0.00	24.03
22.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.062	0.000	17.366	0.00	9.61
25.00	3" Chanel	Yes	3.00	0.000	3.20	0.80	0.00	0.062	0.000	17.366	0.00	14.42
30.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.063	0.000	17.381	0.00	24.03
35.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.065	0.000	18.163	0.00	24.03
36.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.066	0.000	18.310	0.00	4.81
38.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.066	0.000	18.595	0.00	9.61
39.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.066	0.000	18.734	0.00	4.81
40.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.067	0.000	18.870	0.00	4.81
42.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.067	0.000	19.135	0.00	9.61
45.00	3" Chanel	Yes	3.00	0.000	3.20	0.80	0.00	0.067	0.000	19.516	0.00	14.42
50.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.068	0.000	20.112	0.00	24.03
54.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.069	0.000	20.559	0.00	19.22
55.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.070	0.000	20.667	0.00	4.81
60.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.071	0.000	21.187	0.00	24.03
65.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.072	0.000	21.678	0.00	24.03
70.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.074	0.000	22.142	0.00	24.03
71.25	3" Chanel	Yes	1.25	0.000	3.20	0.33	0.00	0.075	0.000	22.254	0.00	6.01
75.00	3" Chanel	Yes	3.75	0.000	3.20	1.00	0.00	0.076	0.000	22.582	0.00	18.02
76.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.077	0.000	22.668	0.00	4.81
80.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.076	0.000	23.003	0.00	19.22
85.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.078	0.000	23.404	0.00	24.03
86.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.079	0.000	23.483	0.00	4.81
90.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.080	0.000	23.790	0.00	19.22
95.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.082	0.000	24.160	0.00	24.03
100.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.084	0.000	24.517	0.00	24.03
104.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.086	0.000	24.793	0.00	19.22
105.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.088	0.000	24.861	0.00	4.81
<b>Totals:</b>											<b>0.0</b>	<b>504.6</b>





## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 24
	<b>Struct Class:</b> II	



160.00	-2.03	-6.68	0.00	-125.43	0.00	125.43	1419.41	709.70	1487.45	734.60	84.83	-5.343	0.000	0.172
165.00	-1.69	-6.11	0.00	-92.03	0.00	92.03	1385.48	692.74	1396.17	689.51	90.47	-5.434	0.000	0.135
170.00	-1.35	-5.55	0.00	-61.49	0.00	61.49	1349.97	674.99	1306.08	645.02	96.19	-5.507	0.000	0.096
170.00	-1.35	-5.55	0.00	-61.49	0.00	61.49	1349.97	674.99	1306.08	645.02	96.19	-5.507	0.000	0.096
174.00	-0.62	-3.01	0.00	-18.48	0.00	18.48	1121.46	560.73	870.39	429.85	100.82	-5.550	0.000	0.044
175.00	0.00	-2.94	0.00	-15.47	0.00	15.47	1053.22	526.61	767.04	378.81	101.98	-5.557	0.000	0.041

## Wind Loading - Shaft

**Structure:** CT00680-S-SBA

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

2/1/2017

**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

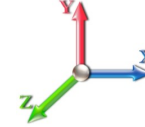
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 23

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



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
125.00	Top - Section 5	1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	15.420	18.50	130.3	373.3	1033.3
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
133.00	Appurtenance(s)	1.00	1.07	6.519	7.17	0.00	1.200	1.724	3.00	8.807	10.57	75.8	215.1	515.3
134.00	Appurtenance(s)	1.00	1.07	6.532	7.19	0.00	1.200	1.726	1.00	2.902	3.48	25.0	71.3	170.1
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
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	5.00	14.185	17.02	123.9	345.2	826.5
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
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

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	<b>2/1/2017</b>
<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: 26</b>



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>4,530.1</b>		<b>48,889.4</b>

## Discrete Appurtenance Forces

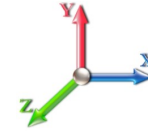
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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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** 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	DB980H90	6	7.096	7.805	0.75	1.00	21.90	618.02	0.000	4.000	170.97	0.00	683.90
2	175.00	E15S09P94	6	7.201	7.922	0.75	1.00	5.73	180.80	0.000	13.500	45.38	0.00	612.59
3	175.00	DR65-18-02DPL2Q	3	7.234	7.957	0.69	1.00	14.25	490.53	0.000	16.500	113.40	0.00	1871.10
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	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
6	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
7	147.00	BXA-80080-4CF-EDIN-X	3	6.708	7.378	0.70	0.80	11.37	239.55	0.000	0.000	83.92	0.00	0.00
8	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
9	147.00	FD9R6004/2C-3L (3.1 lbs)	6	6.708	7.378	0.53	0.80	2.56	60.18	0.000	0.000	18.87	0.00	0.00
10	147.00	RRH2X60-AWS	3	6.668	7.335	0.62	0.80	8.03	417.04	0.000	-3.000	58.87	0.00	-176.62
11	147.00	RRH2X60-AWS	3	6.668	7.335	0.62	0.80	8.03	417.04	0.000	-3.000	58.87	0.00	-176.62
12	147.00	RRH2X60-PCS	3	6.668	7.335	0.72	0.80	6.10	450.95	0.000	-3.000	44.76	0.00	-134.29
13	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
14	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
15	134.00	CS72188.01	1	6.567	7.224	0.54	0.80	1.23	41.16	0.000	2.500	8.85	0.00	22.13
16	134.00	7770.00	6	6.567	7.224	0.60	0.80	23.59	1051.90	0.000	2.500	170.40	0.00	426.00
17	134.00	AM-X-CD-17-65-00T-RET	3	6.567	7.224	0.62	0.80	28.65	346.51	0.000	2.500	206.95	0.00	517.37
18	134.00	T-Arms	3	6.532	7.186	0.58	0.75	31.77	1305.08	0.000	0.000	228.28	0.00	0.00
19	134.00	LGP21903	6	6.567	7.224	0.62	0.80	2.19	72.03	0.000	2.500	15.86	0.00	39.64
20	134.00	LGP21401	6	6.560	7.216	0.62	0.80	7.82	207.25	0.000	2.000	56.44	0.00	112.89
21	133.00	DC6-48-60-18-8F	1	6.532	7.186	0.80	0.80	3.30	61.78	0.000	1.000	23.69	0.00	23.69
22	133.00	RRUS 11	3	6.532	7.186	0.62	0.80	5.92	446.19	0.000	1.000	42.55	0.00	42.55
23	133.00	RRUS 12	3	6.519	7.170	0.62	0.80	6.95	372.65	0.000	0.000	49.87	0.00	0.00
24	133.00	Flush Mount	1	6.519	7.170	1.00	1.00	8.45	609.69	0.000	0.000	60.58	0.00	0.00
25	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
26	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

**Totals:** 13,974.59

3,224.06

## Total Applied Force Summary

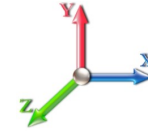
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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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** 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		135.51	2336.64	0.00	0.00
10.00		133.58	2337.11	0.00	0.00
15.00		131.49	2323.00	0.00	0.00
20.00		129.34	2302.48	0.00	0.00
22.00		51.11	913.92	0.00	0.00
25.00		76.01	1363.63	0.00	0.00
30.00		125.04	2251.63	0.00	0.00
35.00		128.33	2223.24	0.00	0.00
36.00		25.58	441.25	0.00	0.00
38.00		52.45	1347.49	0.00	0.00
39.00		26.27	670.56	0.00	0.00
40.00		26.37	668.41	0.00	0.00
42.00		53.18	1330.21	0.00	0.00
45.00		80.60	1199.56	0.00	0.00
50.00		136.36	1976.49	0.00	0.00
54.00	(2) attachments	163.12	1689.20	0.00	0.00
55.00		27.26	387.55	0.00	0.00
60.00		138.09	1918.44	0.00	0.00
65.00		138.44	1889.07	0.00	0.00
70.00		138.49	1859.26	0.00	0.00
71.25		34.91	718.25	0.00	0.00
75.00		105.18	2133.28	0.00	0.00
76.00		27.87	564.08	0.00	0.00
80.00		111.92	1458.05	0.00	0.00
85.00		139.56	1634.46	0.00	0.00
86.00		27.63	324.22	0.00	0.00
90.00		110.71	1284.26	0.00	0.00
95.00		137.67	1579.90	0.00	0.00
100.00		136.45	1552.26	0.00	0.00
104.00		108.01	1222.39	0.00	0.00
105.00		26.74	303.29	0.00	0.00
110.00		133.52	1375.76	0.00	0.00
115.00		131.84	1347.08	0.00	0.00
120.00		132.27	2004.96	0.00	0.00
125.00		130.35	1309.02	0.00	0.00
130.00		128.30	1152.92	0.00	0.00
133.00	(8) attachments	252.46	2171.07	0.00	66.23
134.00	(25) attachments	711.80	3249.18	0.00	1118.02
135.00		24.94	207.94	0.00	0.00
140.00		123.85	1020.66	0.00	0.00
145.00		121.47	995.15	0.00	0.00
147.00	(32) attachments	1103.03	5638.36	0.00	-487.53
150.00		70.94	530.70	0.00	0.00
155.00		118.33	1309.48	0.00	0.00
160.00		115.67	850.03	0.00	0.00
165.00		112.91	824.11	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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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170.00		110.07	798.11	0.00	0.00
174.00	(3) attachments	565.59	2035.39	0.00	4858.41
175.00	(18) attachments	783.59	2738.94	0.00	3167.59
<b>Totals:</b>		<b>7,754.19</b>	<b>73,762.44</b>	<b>0.00</b>	<b>8,722.72</b>

## Linear Appurtenance Segment Forces (Factored)

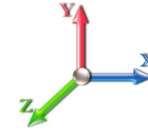
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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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** 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	3.20	2.37	0.00	0.058	0.000	4.256	0.00	96.64
10.00	3" Chanel	Yes	5.00	0.000	3.20	2.44	0.00	0.059	0.000	4.256	0.00	101.18
15.00	3" Chanel	Yes	5.00	0.000	3.20	2.49	0.00	0.060	0.000	4.256	0.00	104.04
20.00	3" Chanel	Yes	5.00	0.000	3.20	2.52	0.00	0.061	0.000	4.256	0.00	106.16
22.00	3" Chanel	Yes	2.00	0.000	3.20	1.01	0.00	0.062	0.000	4.256	0.00	42.75
25.00	3" Chanel	Yes	3.00	0.000	3.20	1.53	0.00	0.062	0.000	4.256	0.00	64.72
30.00	3" Chanel	Yes	5.00	0.000	3.20	2.57	0.00	0.063	0.000	4.260	0.00	109.29
35.00	3" Chanel	Yes	5.00	0.000	3.20	2.59	0.00	0.065	0.000	4.451	0.00	110.53
36.00	3" Chanel	Yes	1.00	0.000	3.20	0.52	0.00	0.066	0.000	4.487	0.00	22.15
38.00	3" Chanel	Yes	2.00	0.000	3.20	1.04	0.00	0.066	0.000	4.557	0.00	44.48
39.00	3" Chanel	Yes	1.00	0.000	3.20	0.52	0.00	0.066	0.000	4.591	0.00	22.28
40.00	3" Chanel	Yes	1.00	0.000	3.20	0.52	0.00	0.067	0.000	4.625	0.00	22.32
42.00	3" Chanel	Yes	2.00	0.000	3.20	1.05	0.00	0.067	0.000	4.689	0.00	44.81
45.00	3" Chanel	Yes	3.00	0.000	3.20	1.57	0.00	0.067	0.000	4.783	0.00	67.56
50.00	3" Chanel	Yes	5.00	0.000	3.20	2.64	0.00	0.068	0.000	4.929	0.00	113.49
54.00	3" Chanel	Yes	4.00	0.000	3.20	2.12	0.00	0.069	0.000	5.039	0.00	91.31
55.00	3" Chanel	Yes	1.00	0.000	3.20	0.53	0.00	0.070	0.000	5.065	0.00	22.86
60.00	3" Chanel	Yes	5.00	0.000	3.20	2.66	0.00	0.071	0.000	5.193	0.00	115.05
65.00	3" Chanel	Yes	5.00	0.000	3.20	2.67	0.00	0.072	0.000	5.313	0.00	115.75
70.00	3" Chanel	Yes	5.00	0.000	3.20	2.68	0.00	0.074	0.000	5.426	0.00	116.41
71.25	3" Chanel	Yes	1.25	0.000	3.20	0.67	0.00	0.075	0.000	5.454	0.00	29.14
75.00	3" Chanel	Yes	3.75	0.000	3.20	2.02	0.00	0.076	0.000	5.534	0.00	87.77
76.00	3" Chanel	Yes	1.00	0.000	3.20	0.54	0.00	0.077	0.000	5.555	0.00	23.43
80.00	3" Chanel	Yes	4.00	0.000	3.20	2.16	0.00	0.076	0.000	5.637	0.00	94.09
85.00	3" Chanel	Yes	5.00	0.000	3.20	2.71	0.00	0.078	0.000	5.736	0.00	118.16
86.00	3" Chanel	Yes	1.00	0.000	3.20	0.54	0.00	0.079	0.000	5.755	0.00	23.65
90.00	3" Chanel	Yes	4.00	0.000	3.20	2.17	0.00	0.080	0.000	5.830	0.00	94.95
95.00	3" Chanel	Yes	5.00	0.000	3.20	2.72	0.00	0.082	0.000	5.921	0.00	119.18
100.00	3" Chanel	Yes	5.00	0.000	3.20	2.73	0.00	0.084	0.000	6.008	0.00	119.66
104.00	3" Chanel	Yes	4.00	0.000	3.20	2.19	0.00	0.086	0.000	6.076	0.00	96.02
105.00	3" Chanel	Yes	1.00	0.000	3.20	0.55	0.00	0.088	0.000	6.093	0.00	24.02
<b>Totals:</b>											<b>0.0</b>	<b>2,363.9</b>



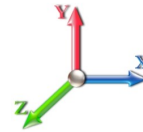
## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 31
	<b>Struct Class:</b> II	



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

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



**Iterations**    23

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	-73.76	-7.77	0.00	-945.35	0.00	945.35	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.134
5.00	-71.42	-7.67	0.00	-906.49	0.00	906.49	4251.62	2125.81	9227.39	4557.06	0.02	-0.029	0.000	0.131
10.00	-69.08	-7.57	0.00	-868.13	0.00	868.13	4207.27	2103.63	8961.88	4425.94	0.06	-0.059	0.000	0.128
15.00	-66.75	-7.47	0.00	-830.27	0.00	830.27	4161.65	2080.83	8697.29	4295.27	0.14	-0.088	0.000	0.125
20.00	-64.45	-7.36	0.00	-792.90	0.00	792.90	4114.76	2057.38	8433.78	4165.13	0.25	-0.118	0.000	0.122
22.00	-63.53	-7.33	0.00	-778.18	0.00	778.18	4095.66	2047.83	8328.71	4113.24	0.30	-0.130	0.000	0.145
25.00	-62.16	-7.28	0.00	-756.19	0.00	756.19	4066.61	2033.31	8171.50	4035.59	0.39	-0.151	0.000	0.143
30.00	-59.91	-7.19	0.00	-719.79	0.00	719.79	4017.20	2008.60	7910.59	3906.74	0.57	-0.187	0.000	0.140
35.00	-57.68	-7.07	0.00	-683.87	0.00	683.87	3966.51	1983.26	7651.22	3778.65	0.78	-0.222	0.000	0.114
36.00	-57.24	-7.05	0.00	-676.80	0.00	676.80	3956.22	1978.11	7599.55	3753.13	0.83	-0.228	0.000	0.151
38.00	-55.89	-7.01	0.00	-662.69	0.00	662.69	3935.49	1967.75	7496.40	3702.19	0.93	-0.245	0.000	0.110
39.00	-55.22	-6.98	0.00	-655.68	0.00	655.68	3925.05	1962.53	7444.93	3676.77	0.98	-0.251	0.000	0.132
40.00	-54.55	-6.97	0.00	-648.70	0.00	648.70	3914.56	1957.28	7393.54	3651.39	1.03	-0.258	0.000	0.131
42.00	-53.22	-6.92	0.00	-634.77	0.00	634.77	3554.53	1777.27	6785.59	3351.15	1.14	-0.272	0.000	0.126
45.00	-52.02	-6.86	0.00	-614.00	0.00	614.00	3532.39	1766.19	6658.05	3288.16	1.32	-0.294	0.000	0.132
50.00	-50.04	-6.75	0.00	-579.69	0.00	579.69	3494.22	1747.11	6445.54	3183.21	1.65	-0.332	0.000	0.128
54.00	-48.35	-6.59	0.00	-552.71	0.00	552.71	3462.54	1731.27	6275.67	3099.32	1.94	-0.362	0.000	0.124
55.00	-47.96	-6.58	0.00	-546.12	0.00	546.12	3454.46	1727.23	6233.23	3078.36	2.02	-0.370	0.000	0.124
60.00	-46.03	-6.46	0.00	-513.23	0.00	513.23	3413.12	1706.56	6021.34	2973.71	2.43	-0.408	0.000	0.119
65.00	-44.14	-6.33	0.00	-480.95	0.00	480.95	3370.20	1685.10	5810.04	2869.36	2.87	-0.445	0.000	0.115
70.00	-42.28	-6.20	0.00	-449.29	0.00	449.29	3325.69	1662.84	5599.53	2765.40	3.36	-0.482	0.000	0.110
71.25	-41.56	-6.17	0.00	-441.54	0.00	441.54	3314.31	1657.16	5547.04	2739.48	3.49	-0.492	0.000	0.108
75.00	-39.43	-6.06	0.00	-418.41	0.00	418.41	3279.60	1639.80	5389.99	2661.91	3.88	-0.519	0.000	0.104
76.00	-38.86	-6.04	0.00	-412.35	0.00	412.35	3306.32	1653.16	5510.48	2721.42	3.99	-0.527	0.000	0.106
80.00	-37.40	-5.93	0.00	-388.21	0.00	388.21	3269.04	1634.52	5343.14	2638.78	4.45	-0.556	0.000	0.098
80.00	-37.40	-5.93	0.00	-388.21	0.00	388.21	2504.08	1252.04	4105.75	2027.68	4.45	-0.556	0.000	0.107
85.00	-35.77	-5.79	0.00	-358.55	0.00	358.55	2474.85	1237.43	3958.27	1954.84	5.05	-0.590	0.000	0.113
86.00	-35.44	-5.77	0.00	-352.76	0.00	352.76	2468.82	1234.41	3928.75	1940.26	5.17	-0.597	0.000	0.140
90.00	-34.15	-5.67	0.00	-329.68	0.00	329.68	2444.04	1222.02	3810.67	1881.94	5.69	-0.635	0.000	0.134
95.00	-32.57	-5.54	0.00	-301.32	0.00	301.32	2411.64	1205.82	3663.14	1809.09	6.38	-0.680	0.000	0.126
100.00	-31.02	-5.41	0.00	-273.61	0.00	273.61	2377.66	1188.83	3515.87	1736.36	7.11	-0.725	0.000	0.118
104.00	-29.79	-5.29	0.00	-251.98	0.00	251.98	2349.34	1174.67	3398.38	1678.33	7.74	-0.760	0.000	0.112
104.00	-29.79	-5.29	0.00	-251.98	0.00	251.98	2349.34	1174.67	3398.38	1678.33	7.74	-0.760	0.000	0.112
105.00	-29.49	-5.28	0.00	-246.69	0.00	246.69	2342.10	1171.05	3369.07	1663.86	7.90	-0.769	0.000	0.161
110.00	-28.11	-5.16	0.00	-220.28	0.00	220.28	2304.95	1152.47	3222.91	1591.67	8.73	-0.830	0.000	0.151
115.00	-26.76	-5.03	0.00	-194.48	0.00	194.48	2266.22	1133.11	3077.59	1519.90	9.63	-0.888	0.000	0.140
120.00	-24.75	-4.89	0.00	-169.31	0.00	169.31	2252.14	1126.07	3026.44	1494.64	10.60	-0.945	0.000	0.124
125.00	-23.44	-4.76	0.00	-144.85	0.00	144.85	2211.27	1105.63	2882.56	1423.59	11.61	-0.998	0.000	0.112
125.00	-23.44	-4.76	0.00	-144.85	0.00	144.85	1600.93	800.47	2095.19	1034.73	11.61	-0.998	0.000	0.155
130.00	-22.29	-4.63	0.00	-121.04	0.00	121.04	1577.27	788.64	2000.77	988.11	12.68	-1.044	0.000	0.137
133.00	-20.12	-4.34	0.00	-107.09	0.00	107.09	1562.32	781.16	1944.09	960.11	13.35	-1.077	0.000	0.124
134.00	-16.88	-3.57	0.00	-101.63	0.00	101.63	1557.20	778.60	1925.20	950.79	13.58	-1.088	0.000	0.118
135.00	-16.67	-3.55	0.00	-98.06	0.00	98.06	1552.03	776.01	1906.32	941.46	13.81	-1.098	0.000	0.115
140.00	-15.65	-3.42	0.00	-80.30	0.00	80.30	1525.20	762.60	1812.01	894.88	14.98	-1.145	0.000	0.100
145.00	-14.66	-3.29	0.00	-63.19	0.00	63.19	1496.79	748.40	1718.05	848.48	16.21	-1.186	0.000	0.084
147.00	-9.04	-2.07	0.00	-56.62	0.00	56.62	1484.98	742.49	1680.60	829.98	16.71	-1.202	0.000	0.074
150.00	-8.51	-1.99	0.00	-50.42	0.00	50.42	1466.80	733.40	1624.61	802.34	17.47	-1.223	0.000	0.069
155.00	-7.21	-1.85	0.00	-40.46	0.00	40.46	1451.75	725.87	1579.74	780.18	18.77	-1.256	0.000	0.057

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 32
	<b>Struct Class:</b> II	



160.00	-6.36	-1.72	0.00	-31.23	0.00	31.23	1419.41	709.70	1487.45	734.60	20.10	-1.284	0.000	0.047
165.00	-5.54	-1.59	0.00	-22.64	0.00	22.64	1385.48	692.74	1396.17	689.51	21.45	-1.307	0.000	0.037
170.00	-4.74	-1.46	0.00	-14.71	0.00	14.71	1349.97	674.99	1306.08	645.02	22.83	-1.324	0.000	0.026
170.00	-4.74	-1.46	0.00	-14.71	0.00	14.71	1349.97	674.99	1306.08	645.02	22.83	-1.324	0.000	0.026
174.00	-2.72	-0.85	0.00	-4.01	0.00	4.01	1121.46	560.73	870.39	429.85	23.95	-1.335	0.000	0.012
175.00	0.00	-0.78	0.00	-3.17	0.00	3.17	1053.22	526.61	767.04	378.81	24.23	-1.336	0.000	0.008

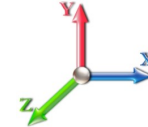
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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>	0.33	<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	20.54	
10.00		1249.0	0.01	0.05	0.03	30.09	
15.00		1225.8	0.01	0.06	0.03	34.76	
20.00		1202.6	0.02	0.07	0.04	36.95	
22.00	RT2	474.59	0.03	0.07	0.04	14.88	
25.00		704.93	0.04	0.07	0.04	22.63	
30.00		1156.3	0.06	0.07	0.04	38.17	
35.00	RB3	1133.1	0.08	0.07	0.04	38.24	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	7.59	
38.00	RB4	832.96	0.09	0.07	0.04	28.46	
39.00	RT3	413.90	0.09	0.07	0.04	14.20	
40.00		412.18	0.10	0.07	0.04	14.20	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	28.45	
45.00		566.56	0.12	0.07	0.03	19.91	
50.00		928.38	0.15	0.07	0.03	33.18	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	28.03	
55.00		180.11	0.19	0.06	0.02	6.49	
60.00		888.65	0.22	0.06	0.02	31.76	
65.00		868.79	0.26	0.05	0.02	29.93	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	26.92	
71.25	RT4 RB5	422.11	0.31	0.04	0.01	12.98	
75.00		1251.4	0.35	0.03	0.01	33.84	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.53	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.22	
85.00		671.69	0.45	0.00	0.01	7.30	
86.00	RT5 RB6	132.35	0.46	0.00	0.01	1.16	
90.00		522.78	0.50	-0.02	0.01	-0.03	
95.00		638.58	0.56	-0.04	0.01	-7.31	
100.00		622.02	0.62	-0.06	0.02	-13.58	
104.00	RT6	485.70	0.67	-0.08	0.02	-13.85	
105.00		119.77	0.68	-0.08	0.03	-3.58	
110.00		588.92	0.75	-0.10	0.04	-20.45	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-20.60	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-37.69	
125.00	Top - Section 5	549.96	0.96	-0.12	0.11	-15.14	
130.00		427.58	1.04	-0.10	0.15	-7.66	
133.00	Appurtenance(s)	946.79	1.09	-0.07	0.18	-9.90	
134.00	Appurtenance(s)	1245.9	1.11	-0.07	0.19	-9.58	
135.00		81.81	1.12	-0.05	0.20	-0.39	
140.00		401.09	1.21	0.01	0.26	4.77	
145.00		387.85	1.30	0.12	0.33	12.44	
147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	78.21	
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.46	
155.00	Top - Section 6	729.57	1.48	0.46	0.52	60.74	
160.00		354.97	1.58	0.72	0.64	40.59	

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	<b>2/1/2017</b>
<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		341.72	1.68	1.05	0.78	50.99
170.00	Top - Section 7	328.48	1.78	1.46	0.95	61.73
174.00	Appurtenance(s)	1009.8	1.87	1.87	1.10	223.89
175.00	Appurtenance(s)	986.80	1.89	1.98	1.14	227.49
<b>Totals:</b>		<b>34,234.7</b>				<b>1,196.0</b>

**Total Wind: 36,085.6**

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

## Calculated Forces

**Structure:** CT00680-S-SBA  
**Site Name:** Putnam  
**Height:** 175.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

2/1/2017



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**Load Case:** 1.2D + 1.0E

**Iterations** 22

**Gust Response Factor** 1.10

**Sds** 0.18

**Ss** 0.17

**Dead Load Factor** 1.20

**Seismic Load Factor** 1.00

**Sd1** 0.10

**S1** 0.06

**Wind Load Factor** 0.00

**Structure Frequency** 0.33

**SA** 0.03

**Seismic Importance Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-50.29	-1.36	0.00	-159.29	0.00	159.29	4294.71	2147.35	9493.67	4688.57	0.00	0.00	0.00	0.028
5.00	-48.45	-1.34	0.00	-152.50	0.00	152.50	4251.62	2125.81	9227.39	4557.06	0.00	0.00	0.00	0.027
10.00	-46.65	-1.31	0.00	-145.80	0.00	145.80	4207.27	2103.63	8961.88	4425.94	0.01	-0.01	0.00	0.026
15.00	-44.87	-1.28	0.00	-139.23	0.00	139.23	4161.65	2080.83	8697.29	4295.27	0.02	-0.01	0.00	0.026
20.00	-43.11	-1.25	0.00	-132.81	0.00	132.81	4114.76	2057.38	8433.78	4165.13	0.04	-0.02	0.00	0.025
22.00	-42.42	-1.24	0.00	-130.31	0.00	130.31	4095.66	2047.83	8328.71	4113.24	0.05	-0.02	0.00	0.030
25.00	-41.39	-1.22	0.00	-126.61	0.00	126.61	4066.61	2033.31	8171.50	4035.59	0.07	-0.03	0.00	0.029
30.00	-39.69	-1.18	0.00	-120.53	0.00	120.53	4017.20	2008.60	7910.59	3906.74	0.09	-0.03	0.00	0.029
35.00	-38.02	-1.14	0.00	-114.62	0.00	114.62	3966.51	1983.26	7651.22	3778.65	0.13	-0.04	0.00	0.023
36.00	-37.69	-1.14	0.00	-113.48	0.00	113.48	3956.22	1978.11	7599.55	3753.13	0.14	-0.04	0.00	0.031
38.00	-36.57	-1.11	0.00	-111.20	0.00	111.20	3935.49	1967.75	7496.40	3702.19	0.16	-0.04	0.00	0.023
39.00	-36.01	-1.10	0.00	-110.09	0.00	110.09	3925.05	1962.53	7444.93	3676.77	0.16	-0.04	0.00	0.027
40.00	-35.46	-1.08	0.00	-109.00	0.00	109.00	3914.56	1957.28	7393.54	3651.39	0.17	-0.04	0.00	0.027
42.00	-34.35	-1.05	0.00	-106.83	0.00	106.83	3554.53	1777.27	6785.59	3351.15	0.19	-0.05	0.00	0.026
45.00	-33.48	-1.04	0.00	-103.67	0.00	103.67	3532.39	1766.19	6658.05	3288.16	0.22	-0.05	0.00	0.027
50.00	-32.06	-1.01	0.00	-98.49	0.00	98.49	3494.22	1747.11	6445.54	3183.21	0.28	-0.06	0.00	0.026
54.00	-30.88	-0.98	0.00	-94.46	0.00	94.46	3462.54	1731.27	6275.67	3099.32	0.33	-0.06	0.00	0.026
55.00	-30.60	-0.97	0.00	-93.48	0.00	93.48	3454.46	1727.23	6233.23	3078.36	0.34	-0.06	0.00	0.025
60.00	-29.23	-0.94	0.00	-88.62	0.00	88.62	3413.12	1706.56	6021.34	2973.71	0.41	-0.07	0.00	0.025
65.00	-27.88	-0.91	0.00	-83.90	0.00	83.90	3370.20	1685.10	5810.04	2869.36	0.48	-0.08	0.00	0.024
70.00	-26.55	-0.89	0.00	-79.33	0.00	79.33	3325.69	1662.84	5599.53	2765.40	0.57	-0.08	0.00	0.023
71.25	-25.97	-0.88	0.00	-78.22	0.00	78.22	3314.31	1657.16	5547.04	2739.48	0.59	-0.08	0.00	0.023
75.00	-24.24	-0.84	0.00	-74.93	0.00	74.93	3279.60	1639.80	5389.99	2661.91	0.65	-0.09	0.00	0.022
76.00	-23.78	-0.83	0.00	-74.09	0.00	74.09	3306.32	1653.16	5510.48	2721.42	0.67	-0.09	0.00	0.022
80.00	-22.74	-0.82	0.00	-70.76	0.00	70.76	3269.04	1634.52	5343.14	2638.78	0.75	-0.09	0.00	0.021
80.00	-22.74	-0.82	0.00	-70.76	0.00	70.76	2504.08	1252.04	4105.75	2027.68	0.75	-0.09	0.00	0.023
85.00	-21.63	-0.81	0.00	-66.66	0.00	66.66	2474.85	1237.43	3958.27	1954.84	0.85	-0.10	0.00	0.025
86.00	-21.41	-0.81	0.00	-65.85	0.00	65.85	2468.82	1234.41	3928.75	1940.26	0.87	-0.10	0.00	0.030
90.00	-20.53	-0.81	0.00	-62.60	0.00	62.60	2444.04	1222.02	3810.67	1881.94	0.96	-0.11	0.00	0.030
95.00	-19.46	-0.81	0.00	-58.53	0.00	58.53	2411.64	1205.82	3663.14	1809.09	1.08	-0.12	0.00	0.028
100.00	-18.41	-0.81	0.00	-54.45	0.00	54.45	2377.66	1188.83	3515.87	1736.36	1.21	-0.13	0.00	0.027
104.00	-17.58	-0.81	0.00	-51.19	0.00	51.19	2349.34	1174.67	3398.38	1678.33	1.32	-0.13	0.00	0.026
104.00	-17.58	-0.81	0.00	-51.19	0.00	51.19	2349.34	1174.67	3398.38	1678.33	1.32	-0.13	0.00	0.026
105.00	-17.37	-0.82	0.00	-50.38	0.00	50.38	2342.10	1171.05	3369.07	1663.86	1.35	-0.14	0.00	0.038
110.00	-16.39	-0.82	0.00	-46.30	0.00	46.30	2304.95	1152.47	3222.91	1591.67	1.50	-0.15	0.00	0.036
115.00	-15.43	-0.82	0.00	-42.21	0.00	42.21	2266.22	1133.11	3077.59	1519.90	1.66	-0.16	0.00	0.035
120.00	-13.80	-0.82	0.00	-38.12	0.00	38.12	2252.14	1126.07	3026.44	1494.64	1.84	-0.17	0.00	0.032
125.00	-12.87	-0.82	0.00	-34.04	0.00	34.04	2211.27	1105.63	2882.56	1423.59	2.02	-0.19	0.00	0.030
125.00	-12.87	-0.82	0.00	-34.04	0.00	34.04	1600.93	800.47	2095.19	1034.73	2.02	-0.19	0.00	0.041
130.00	-12.08	-0.82	0.00	-29.96	0.00	29.96	1577.27	788.64	2000.77	988.11	2.23	-0.20	0.00	0.038
133.00	-10.78	-0.81	0.00	-27.52	0.00	27.52	1562.32	781.16	1944.09	960.11	2.35	-0.21	0.00	0.036
134.00	-9.23	-0.81	0.00	-26.70	0.00	26.70	1557.20	778.60	1925.20	950.79	2.39	-0.21	0.00	0.034
135.00	-9.09	-0.81	0.00	-25.90	0.00	25.90	1552.03	776.01	1906.32	941.46	2.44	-0.21	0.00	0.033
140.00	-8.41	-0.80	0.00	-21.86	0.00	21.86	1525.20	762.60	1812.01	894.88	2.67	-0.22	0.00	0.030
145.00	-7.75	-0.79	0.00	-17.85	0.00	17.85	1496.79	748.40	1718.05	848.48	2.91	-0.23	0.00	0.026
147.00	-5.40	-0.70	0.00	-16.28	0.00	16.28	1484.98	742.49	1680.60	829.98	3.01	-0.24	0.00	0.023
150.00	-5.06	-0.69	0.00	-14.17	0.00	14.17	1466.80	733.40	1624.61	802.34	3.16	-0.25	0.00	0.021

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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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155.00	-4.07	-0.62	0.00	-10.74	0.00	10.74	1451.75	725.87	1579.74	780.18	3.42	-0.25	0.017
160.00	-3.53	-0.58	0.00	-7.62	0.00	7.62	1419.41	709.70	1487.45	734.60	3.69	-0.26	0.013
165.00	-3.01	-0.53	0.00	-4.72	0.00	4.72	1385.48	692.74	1396.17	689.51	3.97	-0.27	0.009
170.00	-2.51	-0.46	0.00	-2.09	0.00	2.09	1349.97	674.99	1306.08	645.02	4.25	-0.27	0.005
170.00	-2.51	-0.46	0.00	-2.09	0.00	2.09	1349.97	674.99	1306.08	645.02	4.25	-0.27	0.005
174.00	-1.21	-0.23	0.00	-0.23	0.00	0.23	1121.46	560.73	870.39	429.85	4.47	-0.27	0.002
175.00	0.00	-0.23	0.00	0.00	0.00	0.00	1053.22	526.61	767.04	378.81	4.53	-0.27	0.000

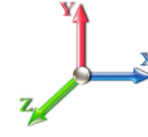
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 21
<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>	0.33	<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	20.54	
10.00		1249.0	0.01	0.05	0.03	30.09	
15.00		1225.8	0.01	0.06	0.03	34.76	
20.00		1202.6	0.02	0.07	0.04	36.95	
22.00	RT2	474.59	0.03	0.07	0.04	14.88	
25.00		704.93	0.04	0.07	0.04	22.63	
30.00		1156.3	0.06	0.07	0.04	38.17	
35.00	RB3	1133.1	0.08	0.07	0.04	38.24	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	7.59	
38.00	RB4	832.96	0.09	0.07	0.04	28.46	
39.00	RT3	413.90	0.09	0.07	0.04	14.20	
40.00		412.18	0.10	0.07	0.04	14.20	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	28.45	
45.00		566.56	0.12	0.07	0.03	19.91	
50.00		928.38	0.15	0.07	0.03	33.18	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	28.03	
55.00		180.11	0.19	0.06	0.02	6.49	
60.00		888.65	0.22	0.06	0.02	31.76	
65.00		868.79	0.26	0.05	0.02	29.93	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	26.92	
71.25	RT4 RB5	422.11	0.31	0.04	0.01	12.98	
75.00		1251.4	0.35	0.03	0.01	33.84	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.53	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.22	
85.00		671.69	0.45	0.00	0.01	7.30	
86.00	RT5 RB6	132.35	0.46	0.00	0.01	1.16	
90.00		522.78	0.50	-0.02	0.01	-0.03	
95.00		638.58	0.56	-0.04	0.01	-7.31	
100.00		622.02	0.62	-0.06	0.02	-13.58	
104.00	RT6	485.70	0.67	-0.08	0.02	-13.85	
105.00		119.77	0.68	-0.08	0.03	-3.58	
110.00		588.92	0.75	-0.10	0.04	-20.45	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-20.60	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-37.69	
125.00	Top - Section 5	549.96	0.96	-0.12	0.11	-15.14	
130.00		427.58	1.04	-0.10	0.15	-7.66	
133.00	Appurtenance(s)	946.79	1.09	-0.07	0.18	-9.90	
134.00	Appurtenance(s)	1245.9	1.11	-0.07	0.19	-9.58	
135.00		81.81	1.12	-0.05	0.20	-0.39	
140.00		401.09	1.21	0.01	0.26	4.77	
145.00		387.85	1.30	0.12	0.33	12.44	
147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	78.21	
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.46	
155.00	Top - Section 6	729.57	1.48	0.46	0.52	60.74	
160.00		354.97	1.58	0.72	0.64	40.59	

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	<b>2/1/2017</b>
<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		341.72	1.68	1.05	0.78	50.99
170.00	Top - Section 7	328.48	1.78	1.46	0.95	61.73
174.00	Appurtenance(s)	1009.8	1.87	1.87	1.10	223.89
175.00	Appurtenance(s)	986.80	1.89	1.98	1.14	227.49
<b>Totals:</b>		<b>34,234.7</b>				<b>1,196.0</b>

**Total Wind: 36,085.6**

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



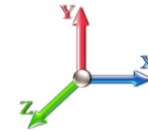
## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 21
<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>	0.33	<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	-37.72	-1.36	0.00	-157.82	0.00	157.82	4294.71	2147.35	9493.67	4688.57	0.00	0.00	0.00	0.026
5.00	-36.34	-1.34	0.00	-151.04	0.00	151.04	4251.62	2125.81	9227.39	4557.06	0.00	0.00	0.00	0.025
10.00	-34.98	-1.31	0.00	-144.35	0.00	144.35	4207.27	2103.63	8961.88	4425.94	0.01	-0.01	0.00	0.025
15.00	-33.65	-1.28	0.00	-137.79	0.00	137.79	4161.65	2080.83	8697.29	4295.27	0.02	-0.01	0.00	0.024
20.00	-32.34	-1.24	0.00	-131.40	0.00	131.40	4114.76	2057.38	8433.78	4165.13	0.04	-0.02	0.00	0.023
22.00	-31.82	-1.23	0.00	-128.91	0.00	128.91	4095.66	2047.83	8328.71	4113.24	0.05	-0.02	0.00	0.028
25.00	-31.04	-1.21	0.00	-125.22	0.00	125.22	4066.61	2033.31	8171.50	4035.59	0.06	-0.03	0.00	0.027
30.00	-29.77	-1.17	0.00	-119.17	0.00	119.17	4017.20	2008.60	7910.59	3906.74	0.09	-0.03	0.00	0.027
35.00	-28.52	-1.14	0.00	-113.31	0.00	113.31	3966.51	1983.26	7651.22	3778.65	0.13	-0.04	0.00	0.022
36.00	-28.27	-1.13	0.00	-112.17	0.00	112.17	3956.22	1978.11	7599.55	3753.13	0.14	-0.04	0.00	0.029
38.00	-27.43	-1.10	0.00	-109.91	0.00	109.91	3935.49	1967.75	7496.40	3702.19	0.15	-0.04	0.00	0.021
39.00	-27.01	-1.09	0.00	-108.81	0.00	108.81	3925.05	1962.53	7444.93	3676.77	0.16	-0.04	0.00	0.025
40.00	-26.59	-1.07	0.00	-107.72	0.00	107.72	3914.56	1957.28	7393.54	3651.39	0.17	-0.04	0.00	0.025
42.00	-25.76	-1.05	0.00	-105.57	0.00	105.57	3554.53	1777.27	6785.59	3351.15	0.19	-0.05	0.00	0.024
45.00	-25.11	-1.03	0.00	-102.43	0.00	102.43	3532.39	1766.19	6658.05	3288.16	0.22	-0.05	0.00	0.025
50.00	-24.05	-1.00	0.00	-97.29	0.00	97.29	3494.22	1747.11	6445.54	3183.21	0.27	-0.06	0.00	0.024
54.00	-23.16	-0.97	0.00	-93.31	0.00	93.31	3462.54	1731.27	6275.67	3099.32	0.32	-0.06	0.00	0.024
55.00	-22.95	-0.96	0.00	-92.34	0.00	92.34	3454.46	1727.23	6233.23	3078.36	0.34	-0.06	0.00	0.024
60.00	-21.92	-0.93	0.00	-87.52	0.00	87.52	3413.12	1706.56	6021.34	2973.71	0.40	-0.07	0.00	0.023
65.00	-20.91	-0.90	0.00	-82.86	0.00	82.86	3370.20	1685.10	5810.04	2869.36	0.48	-0.07	0.00	0.022
70.00	-19.91	-0.88	0.00	-78.34	0.00	78.34	3325.69	1662.84	5599.53	2765.40	0.56	-0.08	0.00	0.022
71.25	-19.48	-0.86	0.00	-77.24	0.00	77.24	3314.31	1657.16	5547.04	2739.48	0.58	-0.08	0.00	0.021
75.00	-18.18	-0.83	0.00	-74.00	0.00	74.00	3279.60	1639.80	5389.99	2661.91	0.65	-0.09	0.00	0.021
76.00	-17.83	-0.82	0.00	-73.17	0.00	73.17	3306.32	1653.16	5510.48	2721.42	0.67	-0.09	0.00	0.021
80.00	-17.06	-0.81	0.00	-69.88	0.00	69.88	3269.04	1634.52	5343.14	2638.78	0.74	-0.09	0.00	0.020
80.00	-17.06	-0.81	0.00	-69.88	0.00	69.88	2504.08	1252.04	4105.75	2027.68	0.74	-0.09	0.00	0.022
85.00	-16.22	-0.80	0.00	-65.83	0.00	65.83	2474.85	1237.43	3958.27	1954.84	0.84	-0.10	0.00	0.023
86.00	-16.06	-0.80	0.00	-65.03	0.00	65.03	2468.82	1234.41	3928.75	1940.26	0.86	-0.10	0.00	0.029
90.00	-15.40	-0.80	0.00	-61.83	0.00	61.83	2444.04	1222.02	3810.67	1881.94	0.95	-0.11	0.00	0.028
95.00	-14.59	-0.80	0.00	-57.81	0.00	57.81	2411.64	1205.82	3663.14	1809.09	1.07	-0.12	0.00	0.027
100.00	-13.80	-0.80	0.00	-53.80	0.00	53.80	2377.66	1188.83	3515.87	1736.36	1.20	-0.13	0.00	0.026
104.00	-13.18	-0.80	0.00	-50.59	0.00	50.59	2349.34	1174.67	3398.38	1678.33	1.31	-0.13	0.00	0.025
104.00	-13.18	-0.80	0.00	-50.59	0.00	50.59	2349.34	1174.67	3398.38	1678.33	1.31	-0.13	0.00	0.025
105.00	-13.03	-0.80	0.00	-49.78	0.00	49.78	2342.10	1171.05	3369.07	1663.86	1.33	-0.13	0.00	0.035
110.00	-12.29	-0.81	0.00	-45.76	0.00	45.76	2304.95	1152.47	3222.91	1591.67	1.48	-0.15	0.00	0.034
115.00	-11.57	-0.81	0.00	-41.74	0.00	41.74	2266.22	1133.11	3077.59	1519.90	1.64	-0.16	0.00	0.033
120.00	-10.35	-0.80	0.00	-37.71	0.00	37.71	2252.14	1126.07	3026.44	1494.64	1.82	-0.17	0.00	0.030
125.00	-9.65	-0.80	0.00	-33.69	0.00	33.69	2211.27	1105.63	2882.56	1423.59	2.00	-0.18	0.00	0.028
125.00	-9.65	-0.80	0.00	-33.69	0.00	33.69	1600.93	800.47	2095.19	1034.73	2.00	-0.18	0.00	0.039
130.00	-9.06	-0.80	0.00	-29.67	0.00	29.67	1577.27	788.64	2000.77	988.11	2.20	-0.19	0.00	0.036
133.00	-8.08	-0.80	0.00	-27.26	0.00	27.26	1562.32	781.16	1944.09	960.11	2.32	-0.20	0.00	0.034
134.00	-6.92	-0.80	0.00	-26.46	0.00	26.46	1557.20	778.60	1925.20	950.79	2.37	-0.21	0.00	0.032
135.00	-6.82	-0.80	0.00	-25.66	0.00	25.66	1552.03	776.01	1906.32	941.46	2.41	-0.21	0.00	0.032
140.00	-6.31	-0.79	0.00	-21.67	0.00	21.67	1525.20	762.60	1812.01	894.88	2.64	-0.22	0.00	0.028
145.00	-5.81	-0.78	0.00	-17.70	0.00	17.70	1496.79	748.40	1718.05	848.48	2.87	-0.23	0.00	0.025
147.00	-4.05	-0.69	0.00	-16.15	0.00	16.15	1484.98	742.49	1680.60	829.98	2.97	-0.24	0.00	0.022
150.00	-3.79	-0.68	0.00	-14.06	0.00	14.06	1466.80	733.40	1624.61	802.34	3.12	-0.24	0.00	0.020

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 40
	<b>Struct Class:</b> II	



155.00	-3.05	-0.62	0.00	-10.66	0.00	10.66	1451.75	725.87	1579.74	780.18	3.38	-0.25	0.016
160.00	-2.65	-0.58	0.00	-7.57	0.00	7.57	1419.41	709.70	1487.45	734.60	3.65	-0.26	0.012
165.00	-2.26	-0.52	0.00	-4.69	0.00	4.69	1385.48	692.74	1396.17	689.51	3.92	-0.26	0.008
170.00	-1.88	-0.46	0.00	-2.07	0.00	2.07	1349.97	674.99	1306.08	645.02	4.20	-0.27	0.005
170.00	-1.88	-0.46	0.00	-2.07	0.00	2.07	1349.97	674.99	1306.08	645.02	4.20	-0.27	0.005
174.00	-0.90	-0.23	0.00	-0.23	0.00	0.23	1121.46	560.73	870.39	429.85	4.42	-0.27	0.001
175.00	0.00	-0.23	0.00	0.00	0.00	0.00	1053.22	526.61	767.04	378.81	4.48	-0.27	0.000

## Wind Loading - Shaft

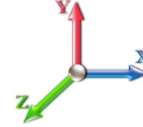
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Iterations** 23

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



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
125.00	Top - Section 5	1.00	1.05	9.222	10.14	169.75	1.000	0.000	5.00	13.992	13.99	141.9	0.0	550.0
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
133.00	Appurtenance(s)	1.00	1.07	9.387	10.33	162.97	1.000	0.000	3.00	7.945	7.94	82.0	0.0	250.2
134.00	Appurtenance(s)	1.00	1.07	9.407	10.35	162.10	1.000	0.000	1.00	2.615	2.61	27.1	0.0	82.3
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
140.00		1.00	1.09	9.525	10.48	156.86	1.000	0.000	5.00	12.740	12.74	133.5	0.0	401.1
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
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

## Wind Loading - Shaft

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 42
	<b>Struct Class:</b> II	



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>5,005.6</b>		<b>28,861.4</b>

## Discrete Appurtenance Forces

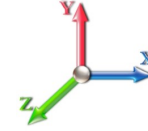
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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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	DB980H90	6	10.218	11.240	0.73	1.00	16.60	51.00	0.000	4.000	186.58	0.00	746.34
2	175.00	E15S09P94	6	10.370	11.407	0.75	1.00	2.97	87.60	0.000	13.500	33.88	0.00	457.37
3	175.00	DR65-18-02DPL2Q	3	10.417	11.459	0.67	1.00	11.68	72.00	0.000	16.500	133.82	0.00	2207.97
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	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
6	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
7	147.00	BXA-80080-4CF-EDIN-X	3	9.659	10.625	0.70	0.80	7.50	36.00	0.000	0.000	79.70	0.00	0.00
8	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
9	147.00	FD9R6004/2C-3L (3.1 lbs)	6	9.659	10.625	0.50	0.80	1.09	18.60	0.000	0.000	11.55	0.00	0.00
10	147.00	RRH2X60-AWS	3	9.602	10.562	0.61	0.80	6.38	180.00	0.000	-3.000	67.43	0.00	-202.29
11	147.00	RRH2X60-AWS	3	9.602	10.562	0.61	0.80	6.38	180.00	0.000	-3.000	67.43	0.00	-202.29
12	147.00	RRH2X60-PCS	3	9.602	10.562	0.71	0.80	4.71	165.00	0.000	-3.000	49.75	0.00	-149.24
13	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
14	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
15	134.00	CS72188.01	1	9.457	10.402	0.52	0.80	0.74	17.60	0.000	2.500	7.74	0.00	19.34
16	134.00	7770.00	6	9.457	10.402	0.58	0.80	19.27	210.00	0.000	2.500	200.47	0.00	501.18
17	134.00	AM-X-CD-17-65-00T-RET	3	9.457	10.402	0.60	0.80	20.36	92.40	0.000	2.500	211.77	0.00	529.42
18	134.00	T-Arms	3	9.407	10.347	0.56	0.75	13.82	726.00	0.000	0.000	143.01	0.00	0.00
19	134.00	LGP21903	6	9.457	10.402	0.60	0.80	0.83	33.00	0.000	2.500	8.61	0.00	21.53
20	134.00	LGP21401	6	9.447	10.391	0.60	0.80	4.64	84.60	0.000	2.000	48.26	0.00	96.51
21	133.00	DC6-48-60-18-8F	1	9.407	10.347	0.80	0.80	2.34	14.50	0.000	1.000	24.17	0.00	24.17
22	133.00	RRUS 11	3	9.407	10.347	0.61	0.80	4.60	152.10	0.000	1.000	47.56	0.00	47.56
23	133.00	RRUS 12	3	9.387	10.325	0.60	0.80	4.86	180.00	0.000	0.000	50.18	0.00	0.00
24	133.00	Flush Mount	1	9.387	10.325	1.00	1.00	5.00	350.00	0.000	0.000	51.63	0.00	0.00
25	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
26	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

**Totals: 5,373.26**

**2,953.70**

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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

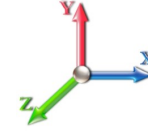


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**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	1529.52	0.00	0.00
10.00		152.82	1506.34	0.00	0.00
15.00		150.01	1483.16	0.00	0.00
20.00		147.19	1459.99	0.00	0.00
22.00		58.09	577.51	0.00	0.00
25.00		86.29	859.31	0.00	0.00
30.00		141.69	1413.64	0.00	0.00
35.00		145.13	1390.46	0.00	0.00
36.00		28.90	275.31	0.00	0.00
38.00		59.28	935.88	0.00	0.00
39.00		29.68	465.36	0.00	0.00
40.00		29.77	463.64	0.00	0.00
42.00		60.01	922.11	0.00	0.00
45.00		90.86	720.94	0.00	0.00
50.00		153.45	1185.68	0.00	0.00
54.00	(2) attachments	152.07	984.24	0.00	0.00
55.00		30.60	231.41	0.00	0.00
60.00		154.80	1145.15	0.00	0.00
65.00		154.87	1125.29	0.00	0.00
70.00		154.60	1105.42	0.00	0.00
71.25		38.98	486.23	0.00	0.00
75.00		117.30	1443.80	0.00	0.00
76.00		31.05	381.24	0.00	0.00
80.00		124.54	863.29	0.00	0.00
85.00		154.99	928.19	0.00	0.00
86.00		30.65	183.65	0.00	0.00
90.00		122.64	727.98	0.00	0.00
95.00		152.17	895.08	0.00	0.00
100.00		150.45	878.52	0.00	0.00
104.00		118.82	690.90	0.00	0.00
105.00		29.38	171.07	0.00	0.00
110.00		146.44	818.72	0.00	0.00
115.00		144.18	802.16	0.00	0.00
120.00		144.47	1352.12	0.00	0.00
125.00		141.93	779.76	0.00	0.00
130.00		139.25	657.38	0.00	0.00
133.00	(8) attachments	255.57	1084.67	0.00	71.73
134.00	(25) attachments	646.91	1291.90	0.00	1167.99
135.00		26.94	114.17	0.00	0.00
140.00		133.49	562.89	0.00	0.00
145.00		130.42	549.65	0.00	0.00
147.00	(32) attachments	1092.98	1965.01	0.00	-553.82
150.00		75.81	279.33	0.00	0.00
155.00		126.26	823.17	0.00	0.00
160.00		122.87	448.57	0.00	0.00
165.00		119.37	435.32	0.00	0.00

## Total Applied Force Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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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170.00		115.78	422.08	0.00	0.00
174.00	(3) attachments	541.34	1084.77	0.00	4588.12
175.00	(18) attachments	648.57	1005.52	0.00	3411.68
<b>Totals:</b>		<b>7,959.29</b>	<b>41,907.51</b>	<b>0.00</b>	<b>8,685.69</b>

## Linear Appurtenance Segment Forces (Factored)

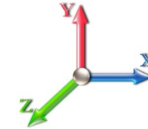
<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<b>Site Name:</b> Putnam	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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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	3.20	1.33	0.00	0.058	0.000	6.129	0.00	26.70
10.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.059	0.000	6.129	0.00	26.70
15.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.060	0.000	6.129	0.00	26.70
20.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.061	0.000	6.129	0.00	26.70
22.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.062	0.000	6.129	0.00	10.68
25.00	3" Chanel	Yes	3.00	0.000	3.20	0.80	0.00	0.062	0.000	6.129	0.00	16.02
30.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.063	0.000	6.134	0.00	26.70
35.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.065	0.000	6.410	0.00	26.70
36.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.066	0.000	6.462	0.00	5.34
38.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.066	0.000	6.562	0.00	10.68
39.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.066	0.000	6.611	0.00	5.34
40.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.067	0.000	6.659	0.00	5.34
42.00	3" Chanel	Yes	2.00	0.000	3.20	0.53	0.00	0.067	0.000	6.753	0.00	10.68
45.00	3" Chanel	Yes	3.00	0.000	3.20	0.80	0.00	0.067	0.000	6.887	0.00	16.02
50.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.068	0.000	7.098	0.00	26.70
54.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.069	0.000	7.255	0.00	21.36
55.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.070	0.000	7.294	0.00	5.34
60.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.071	0.000	7.477	0.00	26.70
65.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.072	0.000	7.650	0.00	26.70
70.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.074	0.000	7.814	0.00	26.70
71.25	3" Chanel	Yes	1.25	0.000	3.20	0.33	0.00	0.075	0.000	7.853	0.00	6.67
75.00	3" Chanel	Yes	3.75	0.000	3.20	1.00	0.00	0.076	0.000	7.969	0.00	20.02
76.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.077	0.000	8.000	0.00	5.34
80.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.076	0.000	8.118	0.00	21.36
85.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.078	0.000	8.260	0.00	26.70
86.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.079	0.000	8.287	0.00	5.34
90.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.080	0.000	8.396	0.00	21.36
95.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.082	0.000	8.526	0.00	26.70
100.00	3" Chanel	Yes	5.00	0.000	3.20	1.33	0.00	0.084	0.000	8.652	0.00	26.70
104.00	3" Chanel	Yes	4.00	0.000	3.20	1.07	0.00	0.086	0.000	8.750	0.00	21.36
105.00	3" Chanel	Yes	1.00	0.000	3.20	0.27	0.00	0.088	0.000	8.774	0.00	5.34
<b>Totals:</b>											<b>0.0</b>	<b>560.7</b>



### Calculated Forces

**Structure:** CT00680-S-SBA

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

2/1/2017

**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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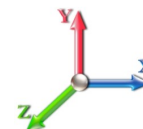


**Load Case:** 1.0D + 1.0W 60 mph Wind

**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	-41.91	-7.97	0.00	-914.02	0.00	914.02	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.125
5.00	-40.37	-7.83	0.00	-874.17	0.00	874.17	4251.62	2125.81	9227.39	4557.06	0.02	-0.028	0.000	0.122
10.00	-38.86	-7.70	0.00	-835.01	0.00	835.01	4207.27	2103.63	8961.88	4425.94	0.06	-0.057	0.000	0.119
15.00	-37.38	-7.56	0.00	-796.52	0.00	796.52	4161.65	2080.83	8697.29	4295.27	0.13	-0.085	0.000	0.116
20.00	-35.91	-7.43	0.00	-758.69	0.00	758.69	4114.76	2057.38	8433.78	4165.13	0.24	-0.113	0.000	0.113
22.00	-35.33	-7.38	0.00	-743.84	0.00	743.84	4095.66	2047.83	8328.71	4113.24	0.29	-0.125	0.000	0.134
25.00	-34.47	-7.31	0.00	-721.70	0.00	721.70	4066.61	2033.31	8171.50	4035.59	0.37	-0.145	0.000	0.132
30.00	-33.05	-7.18	0.00	-685.17	0.00	685.17	4017.20	2008.60	7910.59	3906.74	0.54	-0.179	0.000	0.129
35.00	-31.66	-7.04	0.00	-649.27	0.00	649.27	3966.51	1983.26	7651.22	3778.65	0.75	-0.213	0.000	0.104
36.00	-31.38	-7.02	0.00	-642.23	0.00	642.23	3956.22	1978.11	7599.55	3753.13	0.79	-0.219	0.000	0.139
38.00	-30.45	-6.96	0.00	-628.20	0.00	628.20	3935.49	1967.75	7496.40	3702.19	0.89	-0.234	0.000	0.101
39.00	-29.98	-6.93	0.00	-621.24	0.00	621.24	3925.05	1962.53	7444.93	3676.77	0.94	-0.240	0.000	0.121
40.00	-29.52	-6.90	0.00	-614.31	0.00	614.31	3914.56	1957.28	7393.54	3651.39	0.99	-0.247	0.000	0.120
42.00	-28.59	-6.85	0.00	-600.50	0.00	600.50	3554.53	1777.27	6785.59	3351.15	1.10	-0.260	0.000	0.115
45.00	-27.87	-6.77	0.00	-579.95	0.00	579.95	3532.39	1766.19	6658.05	3288.16	1.27	-0.281	0.000	0.121
50.00	-26.68	-6.62	0.00	-546.11	0.00	546.11	3494.22	1747.11	6445.54	3183.21	1.58	-0.317	0.000	0.117
54.00	-25.70	-6.47	0.00	-519.61	0.00	519.61	3462.54	1731.27	6275.67	3099.32	1.86	-0.345	0.000	0.113
55.00	-25.46	-6.45	0.00	-513.14	0.00	513.14	3454.46	1727.23	6233.23	3078.36	1.93	-0.352	0.000	0.112
60.00	-24.31	-6.30	0.00	-480.88	0.00	480.88	3413.12	1706.56	6021.34	2973.71	2.32	-0.388	0.000	0.108
65.00	-23.19	-6.16	0.00	-449.35	0.00	449.35	3370.20	1685.10	5810.04	2869.36	2.74	-0.423	0.000	0.104
70.00	-22.08	-6.00	0.00	-418.58	0.00	418.58	3325.69	1662.84	5599.53	2765.40	3.21	-0.457	0.000	0.099
71.25	-21.59	-5.96	0.00	-411.07	0.00	411.07	3314.31	1657.16	5547.04	2739.48	3.33	-0.466	0.000	0.097
75.00	-20.15	-5.84	0.00	-388.71	0.00	388.71	3279.60	1639.80	5389.99	2661.91	3.70	-0.492	0.000	0.093
76.00	-19.76	-5.81	0.00	-382.87	0.00	382.87	3306.32	1653.16	5510.48	2721.42	3.81	-0.499	0.000	0.095
80.00	-18.90	-5.69	0.00	-359.62	0.00	359.62	3269.04	1634.52	5343.14	2638.78	4.24	-0.526	0.000	0.088
80.00	-18.90	-5.69	0.00	-359.62	0.00	359.62	2504.08	1252.04	4105.75	2027.68	4.24	-0.526	0.000	0.096
85.00	-17.97	-5.53	0.00	-331.17	0.00	331.17	2474.85	1237.43	3958.27	1954.84	4.80	-0.557	0.000	0.101
86.00	-17.79	-5.51	0.00	-325.63	0.00	325.63	2468.82	1234.41	3928.75	1940.26	4.92	-0.564	0.000	0.124
90.00	-17.06	-5.39	0.00	-303.61	0.00	303.61	2444.04	1222.02	3810.67	1881.94	5.41	-0.599	0.000	0.119
95.00	-16.16	-5.24	0.00	-276.67	0.00	276.67	2411.64	1205.82	3663.14	1809.09	6.06	-0.641	0.000	0.112
100.00	-15.28	-5.09	0.00	-250.48	0.00	250.48	2377.66	1188.83	3515.87	1736.36	6.75	-0.681	0.000	0.104
104.00	-14.59	-4.96	0.00	-230.14	0.00	230.14	2349.34	1174.67	3398.38	1678.33	7.34	-0.713	0.000	0.098
104.00	-14.59	-4.96	0.00	-230.14	0.00	230.14	2349.34	1174.67	3398.38	1678.33	7.34	-0.713	0.000	0.098
105.00	-14.41	-4.94	0.00	-225.17	0.00	225.17	2342.10	1171.05	3369.07	1663.86	7.49	-0.721	0.000	0.142
110.00	-13.59	-4.80	0.00	-200.47	0.00	200.47	2304.95	1152.47	3222.91	1591.67	8.27	-0.777	0.000	0.132
115.00	-12.79	-4.65	0.00	-176.48	0.00	176.48	2266.22	1133.11	3077.59	1519.90	9.12	-0.830	0.000	0.122
120.00	-11.43	-4.50	0.00	-153.22	0.00	153.22	2252.14	1126.07	3026.44	1494.64	10.01	-0.881	0.000	0.108
125.00	-10.65	-4.35	0.00	-130.73	0.00	130.73	2211.27	1105.63	2882.56	1423.59	10.96	-0.930	0.000	0.097
125.00	-10.65	-4.35	0.00	-130.73	0.00	130.73	1600.93	800.47	2095.19	1034.73	10.96	-0.930	0.000	0.133
130.00	-10.00	-4.21	0.00	-108.96	0.00	108.96	1577.27	788.64	2000.77	988.11	11.96	-0.971	0.000	0.117
133.00	-8.91	-3.94	0.00	-96.27	0.00	96.27	1562.32	781.16	1944.09	960.11	12.58	-1.001	0.000	0.106
134.00	-7.63	-3.27	0.00	-91.16	0.00	91.16	1557.20	778.60	1925.20	950.79	12.79	-1.010	0.000	0.101
135.00	-7.52	-3.24	0.00	-87.89	0.00	87.89	1552.03	776.01	1906.32	941.46	13.00	-1.020	0.000	0.098
140.00	-6.96	-3.10	0.00	-71.67	0.00	71.67	1525.20	762.60	1812.01	894.88	14.09	-1.061	0.000	0.085
145.00	-6.41	-2.97	0.00	-56.15	0.00	56.15	1496.79	748.40	1718.05	848.48	15.23	-1.098	0.000	0.070
147.00	-4.46	-1.84	0.00	-50.22	0.00	50.22	1484.98	742.49	1680.60	829.98	15.69	-1.112	0.000	0.064
150.00	-4.19	-1.76	0.00	-44.70	0.00	44.70	1466.80	733.40	1624.61	802.34	16.39	-1.131	0.000	0.059
155.00	-3.36	-1.62	0.00	-35.91	0.00	35.91	1451.75	725.87	1579.74	780.18	17.59	-1.160	0.000	0.048

## Calculated Forces

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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> 48
	<b>Struct Class:</b> II	



160.00	-2.92	-1.49	0.00	-27.83	0.00	27.83	1419.41	709.70	1487.45	734.60	18.82	-1.185	0.000	0.040
165.00	-2.48	-1.36	0.00	-20.40	0.00	20.40	1385.48	692.74	1396.17	689.51	20.08	-1.206	0.000	0.031
170.00	-2.06	-1.23	0.00	-13.61	0.00	13.61	1349.97	674.99	1306.08	645.02	21.35	-1.222	0.000	0.023
170.00	-2.06	-1.23	0.00	-13.61	0.00	13.61	1349.97	674.99	1306.08	645.02	21.35	-1.222	0.000	0.023
174.00	-0.99	-0.67	0.00	-4.08	0.00	4.08	1121.46	560.73	870.39	429.85	22.37	-1.231	0.000	0.010
175.00	0.00	-0.65	0.00	-3.41	0.00	3.41	1053.22	526.61	767.04	378.81	22.63	-1.233	0.000	0.009

## Final Analysis Summary

<b>Structure:</b> CT00680-S-SBA	<b>Code:</b> EIA/TIA-222-G	2/1/2017
<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	36.1	0.00	50.25	0.00	0.00	4161.63
0.9D + 1.6W 101 mph Wind	36.1	0.00	37.68	0.00	0.00	4129.55
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.8	0.00	73.76	0.00	0.00	945.35
1.2D + 1.0E	1.4	0.00	50.29	0.00	0.00	159.29
0.9D + 1.0E	1.4	0.00	37.72	0.00	0.00	157.82
1.0D + 1.0W 60 mph Wind	8.0	0.00	41.91	0.00	0.00	914.02

### 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	-16.06	-22.54	0.00	-1026.5	0.00	-1026.5	2342.10	1171.0	3369.07	1663.86	105.00	0.624
0.9D + 1.6W 101 mph Wind	-11.74	-22.28	0.00	-1014.0	0.00	-1014.0	2342.10	1171.0	3369.07	1663.86	105.00	0.615
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-29.49	-5.28	0.00	-246.69	0.00	-246.69	2342.10	1171.0	3369.07	1663.86	105.00	0.161
1.2D + 1.0E	-12.87	-0.82	0.00	-34.04	0.00	-34.04	2211.27	1105.6	2882.56	1423.59	125.00	0.041
0.9D + 1.0E	-9.65	-0.80	0.00	-33.69	0.00	-33.69	2211.27	1105.6	2882.56	1423.59	125.00	0.039
1.0D + 1.0W 60 mph Wind	-14.41	-4.94	0.00	-225.17	0.00	-225.17	2342.10	1171.0	3369.07	1663.86	105.00	0.142

### 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 Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	36.0	(3) PLT-C10x30(1.5" Hole)	263.2	0.00	37.1	275.3	37.1	8	0	242.4	37.1	7	0	305.40	516.0	468.64	0.652
0.0	22.0	(3) PLT-C10x30(1.5" Hole)	197.0	4.73	37.1	257.6	37.1	7	0	239.0	37.1	7	0	257.58	500.4	468.64	0.550
35.0	39.0	(3) LNP-LP6X100-G-10TT	199.5	4.79	25.3	161.7	25.3	7	11	159.2	25.3	7	11	216.49	297.8	292.50	0.740
38.0	71.3	(3) PLT-C10x30(1.5" Hole)	315.1	7.56	37.1	240.8	37.1	7	0	260.6	37.1			301.25	500.4	468.64	0.643
71.3	86.0	(3) PLT-C10x30(1.5" Hole)	350.8	8.42	37.1	260.6	37.1			248.9	37.1			260.63	500.4	468.64	0.556
86.0	104.0	(3) PLT-C10x15.3(1.5" Hole)	350.8	8.42	37.1	163.1	37.1			135.8	37.1	4	0	163.08	255.7	247.80	0.658



# Monopole Mat Foundation Design

Date

2/1/2017

<b>Customer Name:</b>	AT&T	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>	Putnam	<b>Structure Height (Ft.):</b>	175
<b>Site Number:</b>	CT00680-S-SBA	<b>Engineer Name:</b>	J. Tibbetts
<b>Engr. Number:</b>	30020	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

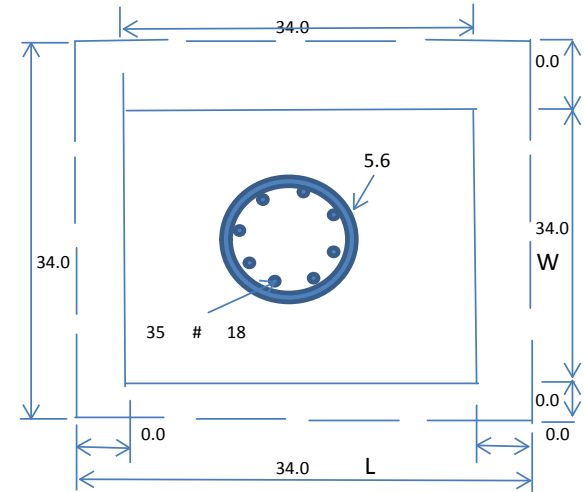
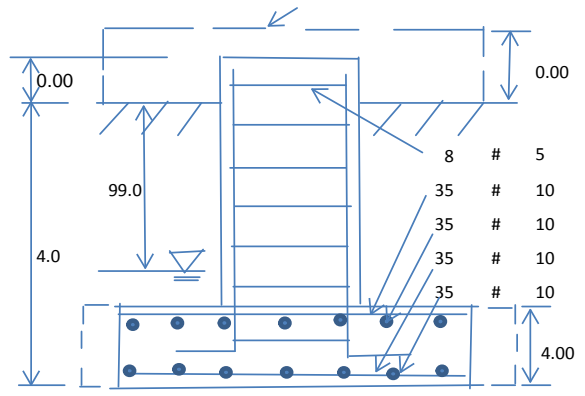
**Base Reactions (Factored):**

Axial Load (Kips):	50.3	Shear Force (Kips):	36.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4161.6

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 hori. force for O.T.M.:	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):	743.87

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	1359	<	Allowable Factored Soil Bearing (psf):	30000	0.05	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	11466.6	>	Design Factored Momont (kips-ft):	4306	0.38	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.66					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):	14212.6	> Design Factored Moment (Mu, Kips-Ft)	4161.6	0.29	OK!
Calculated Shear Capacity (Kips):	622.0	> Design Factored Shear (Kips):	36.1	0.06	OK!
Calculated Tension Capacity (Tn, Kips):	7560.0	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	4489.4	> Design Factored Axial Load (Pu Kips):	50.3	0.01	OK!
Moment & Axial Strength Combination:	0.29	OK! Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.040	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

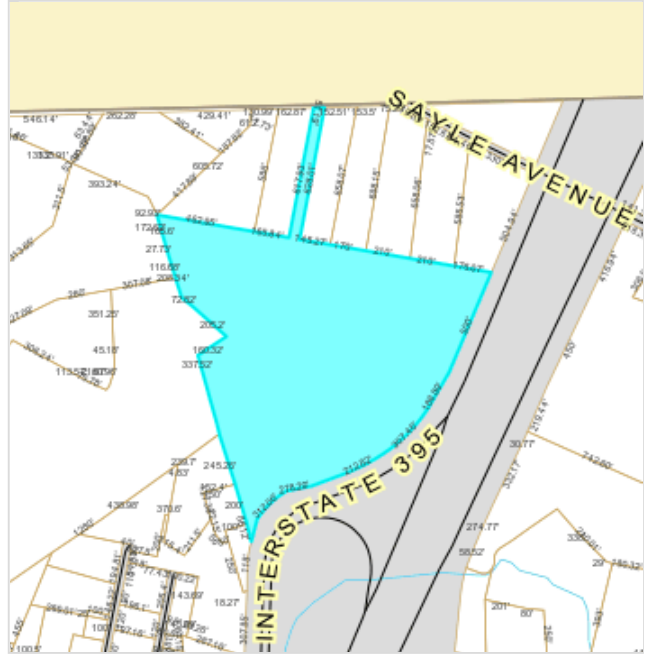
One-Way Design Shear Capacity (L-Direction, Kips):	1487.5	> One-Way Factored Shear (L-D. Kips):	301.1	0.20	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1487.5	> One-Way Factored Shear (W-D., Kips)	301.1	0.20	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1859.3	> One-Way Factored Shear (C-C, Kips):	448.3	0.24	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-Direct. K-Ft):	1582.5	0.18	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	8619.7	> Moment at Bottom ( W-Direct. K-Ft):	1582.5	0.18	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	12142.5	> Moment at Bottom ( C-C Dir. K-Ft):	2238.0	0.18	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0025	OK! Upper Steel Reinf. Ratio (W-Direct. ):	0.0025		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	8619.7	> Moment at the top (L-Dir Kips-Ft):	93.3	0.01	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	8619.7	> Moment at the top (W-Dir Kips-Ft):	93.3	0.01	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	12142.5	> Moment at the top (C-C Direc. K-Ft):	720.7	0.06	OK!



Property Record Card

154 SAYLES AVE

ID: 021-023 Account #: 003961



Owner: SBA TOWER INC  
 Co-Owner:  
 Address: ATTN TAX DEPT, CT 00680-S  
 BOCA RATON FL 33487

**Assessment:** Total: 618000  
 Building: 0 Land: 0 Yard: 618000

**Sales History**

Grantor	Book / Page	Sale Date	Sale Price
SBA TOWER INC	0/ 0	2001-01-01	



MainStreetGIS, LLC  
[www.mainstreetgis.com](http://www.mainstreetgis.com)

**Land Information**  
 Land Area: 0 AC Zoning:  
 Land Use: 5-1 - Res. Land MDL-00  
 Neighborhood: 0040

**Building Information**  
 Style:  
 Year Built:  
 Rooms: Bedrooms:  
 Baths: Half Baths:  
 Living Area:  
 Gross Area:  
 Stories:  
 Heat Fuel:  
 Heat Type:  
 AC Type:  
 Roof Structure:  
 Roof Covering:

Extra Features Description	Area / Units	Assessment
Cell Tower		618000
Sub Areas Description	Living Area	Gross Area



TO: Office of the Putnam Town Clerk

FROM: Zoning Commission

In accordance with the provision of Public Act 75-317, State of Connecticut, the following; was APPROVED 10-29-98

**SPECIAL PERMIT**

is submitted to your office for recording with the Putnam Land Records, and indexing within the Grantor's index.

Information required:

1. Description of premises:  
154 Sayles Avenue . Town Assessors Map 4T, Lot 16-B  
Zoned R -40
2. Nature of permit:  
Construction of a 180' multi tenant monopole  
telecommunication tower
3. Zoning By-Law:  
Sections 720
4. Name and Address of Owner of Records:  
Ronald Blain Bill Moser  
587 Riverside Dr. 34 Totem Pole Drive  
N. Grosvenordale, CT 06255 Thompson, CT 06277
5. Name and Address of Applicant:  
SBA Inc. Nextel Communications  
125 Shaw Street, Suite 116 100 Corporate Place  
New London, CT 06320 Rocky Hill, CT 06067

This information is certified by:

*Anthony* 11-20-98  
Zoning Enforcement Officer Date

TOWN CLERK PUTNAM  
*S. J. [Signature]*  
99 APR 28 AM 9:54

Mayer's Office .....	943-6800	Economic Development .....	943-6804	Planning Commission .....	943-6803	Town Clerk .....	943-6807
Animal Control .....	943-6804	Fire Marshal .....	943-6805	Public Works .....	943-6813	Town Hall Fax .....	943-6814
Assessor .....	943-6802	Island Wetlands .....	943-6803	Revenue Collector .....	943-6806	Treasurer .....	943-6809
Building/Zoning .....	943-6803	Paths & Recreation .....	943-6811	Social Services .....	943-6810	ZBA Commission .....	943-6800

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Zoning Commission  
Minutes of October 29, 1998 Meeting  
Putnam High School Cafeteria

Present: Cynthia Dunne - Chairwoman, Peter Benoit, Patricia Hedenberg  
Mike Lajeunesse  
Absent: Joseph Vacariello

Opened public hearing at 6:35 P.M. on Docket # 98-15 SBA, Inc. request for an amendment to the Town of Putnam Zoning Regulations Section 720 (specifically page 27) to allow (By Special Permit) Telecommunication Towers in an Industrial Zone. Cynthia Dunne read aloud an affirmative recommendation from the Planning Commission. A positive recommendation was read into the record from Northeast Regional Planning Agency. Scott Thomae of SBA was present and reviewed his plans with the Commission. Public hearing closed at 6:50 P.M..

Opened public hearing at 6:50 P.M. on Docket # 98-17 M & M Transport Services, Inc. request for a special permit according to the Town of Putnam Zoning Regulations Section 720 to operate a motor freight terminal on Park Road. Property noted by location Town of Putnam Assessors Map 19T, Lot 4-1, 4.3+/- acres, Zoned Industrial and currently owned by the Town of Putnam. Janet Blanchette of J & D Civil Engineers and Mark Forsoski of M & M Transport were present and reviewed plans for the facility. Joe Flynn questioned if such a facility would require noise levels to be monitored. Peter Benoit informed Joe Flynn that there are required decibel levels in the Zoning Regulations. Public hearing closed.

Opened public hearing on Docket # 98-18 SBA, Inc. & Nextel Communications request for a special permit according to Section 720 of the Town of Putnam Zoning Regulations to construct a 180 foot multi tenant monopole telecommunications facility on property located at 154 Sayles Avenue, noted by location Town Assessors Map 4T, Lot 16-8, 30+/- acres, Zoned R-40 owned by William Moser and Ronald Blain. Scott Thomae of SBA reviewed his plans with the Commission. Public hearing closed at 7:20 P.M.

Opened public hearing at 7:20 P.M. on Docket # 98-20, The Town of Putnam Zoning Commission's proposed amendment to the Town of Putnam Zoning Regulations Section 923-5 to better clarify and define permitted uses in association with a residue facility special permit. Positive recommendation's from Northeast Regional Planning Commission and the Putnam Planning Commission were read into the record. Attorney St. Onge stated that the proposal was an attempt at a compromise to meet the concerns of the residents and to clarify the regulations. Attorney Cotnoir was present on behalf of his clients Timothy P. Taft, Robert G. Viens, J. Robert Viens, Marguerite G. Viens. He reviewed the background with the Commission members. He stated that his clients are in favor of the application. Attorney Cotnoir asked the Commission if they could limit the footprint to 63 acre's without possible expansion on land that may or may not be grandfathered with Wheelabrator's original special permit. Robert Jacques stated that they support the amendment however he could not support the 63 acre limitation as this time. Attorney Cotnoir stated that the new amendments will regulate expansion onto land purchased in the future, but may not affect the land considered under the original



permit. Attorney Cotnoir expressed his concerns if Wheelabrator were to sell there is 180 acres and a new owner could go to D.E.P. for another permit. Peter Benoit made a motion for a five minute recess, seconded by Mike Lajeunesse. ALL WERE IN FAVOR. The meeting was reopened and after a brief discussion, the public hearing was closed at 8:10 P.M..

Opened public hearing at 8:10 P.M. on Docket # 98-21 Timothy P. Taft and Robert G. Viens request for an amendment to the Town of Putnam Zoning Regulations Section 923-5 to better clarify and define permitted uses in association with a residue facility special permit. Positive recommendations were received from the Planning Commission and the Northeast Regional Planning Commission. Attorney Cotnoir reviewed the proposal on behalf of his clients. Public hearing closed at 8:20 P.M..

#### Regular Meeting:

Review minutes of the September 17, 1998 meeting.  
Patricia Hedenberg made a motion to accept as read, seconded by Mike Lajeunesse. ALL WERE IN FAVOR.

#### Correspondence:

J & D Civil Engineer brochure outlining the services they provide.

#### New Business:

Docket # 98-15 SBA Inc. - Amendment to Regulations  
Peter Benoit made a motion to approve as presented, seconded by Patricia Hedenberg. ALL WERE IN FAVOR.

Docket # 98-17 M & M Transport Services Inc. - Special Permit  
Peter Benoit made a motion to accept as presented, seconded by Patricia Hedenberg. ALL WERE IN FAVOR.

Docket # 98-18 SBA Inc. & Nextel Communications Inc. - Special Permit  
Peter Benoit made a motion to approve as presented, seconded by Patricia Hedenberg. ALL WERE IN FAVOR.

Docket # 98-20 Town of Putnam Zoning Comm. - Amendment to Regulations  
Peter Benoit made a motion to approved Docket # 98-20 based on the amendment to Section 923-5 and subsections A1 & A2 and new section g, h, i, j, & k of the regulations, seconded by Patricia Hedenberg. ALL WERE IN FAVOR.

Docket # 98-21 Timothy P. Taft and Robert G. Viens - Amendment to Regulations  
Peter Benoit made a motion to approve as presented, seconded by Patricia Hedenberg. ALL WERE IN FAVOR.

#### Other Business:

Danielson Oil Company - Jurisdictional ruling. Walter Popiak asked to be placed on next month's agenda due to a scheduling conflict.

Referral from Town of Killingly. Discussion was held about their proposed adult oriented business amendment and adopting one for

Putnam 116 Peter Benoit made a motion that Killingly's proposal would

not have a negative impact on Putnam, seconded by Patricia Hedenberg. ALL WERE IN FAVOR. Robert Chenail and Attorney St. Onge will review for the December meeting.

Accepting of New Applications for public hearing on November 16, 1998/Z.E.O. Reports

Scott Thomae would submit an application. The Commission will accept contingent on Robert Chenail's review.

Melinda Copeland - Home Occupation - previously accepted for public hearing.

John Monahan - Transfer Station - Providence Street

Mike Lajeunesse made a motion to accept for public hearing contingent on a revised site plan, seconded by Patricia Hedenberg. ALL WERE IN FAVOR

Peter Benoit made a motion to adjourn, seconded by Patricia Hedenberg. ALL WERE IN FAVOR.

Respectfully submitted by Brenda Roy on November 12, 1998.

Robert Chenail 11-12-98  
Robert Chenail, Z.E.O. Date