May 22, 2020

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

Re: Notice of Exempt Modification New Cingular Wireless PCS, LLC ("AT&T") Site CT1110
154 Sayles Avenue, Putnam, CT 06260 (the "Property")
Latitude: 41.929444N Longitude: 71.886388 W

Dear Ms. Bachman:

AT&T currently maintains (12) antennas at the 134± foot level on the existing 175' monopole tower ("Tower") at 154 Sayles Avenue in Putnam, CT. The tower and property are owned by SBA Towers, Inc. ("SBA"). AT&T intends to modify its facility by adding (3) 4478 B14 remote radio units ("RRUs"). The height of AT&Ts proposed RRUs will be the 137.6-foot level of the tower.

The SBA facility received a Special Permit approved by the Town of Putnam Zoning Commission on October 28, 1998. This approval contained no conditions that could feasibly be violated by this modification, including facility height or mounting restrictions. AT&Ts modification complies with the above-mentioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies ("R.C.S.A") §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A §16-50j-72(b)(2). In accordance with R.C.S.A §16-50j-73, a copy of this letter is being sent to the Honorable Barney Seney, Mayor, Town of Putnam, Ms. Elaine Sistare, Town Engineer & Town Planner, Town of Putnam and SBA as tower & property owner.

The planned modification of the facility falls squarely within those activities explicitly provided for in R.C.S.A §16-50j-72(b)(2). Specifically:

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

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

3. The proposed modification 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 modified facility 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 foundation can support the proposed loading.

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

Please contact me at 860-834-6964 if you should have any questions regarding this matter. Thank you for your time & consideration.

Sincerely,

Hollis M. Redding

Hollis M. Redding
SAI Communications, LLC
12 Industrial Way
Salem, NH 03079
Mobile: 860-834-6964
hredding@saigrp.com

Enclosures

Cc: The Honorable Barney Seney, Mayor, Town of Putnam
Ms. Elaine Sistare, Town Engineer/Town Planner, Town of Putnam
SBA Towers, Inc. as tower & property owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							4.80%
AT&T UMTS	1	262	134	0.0058	850	0.5667	0.10%
AT&T LTE	1	1476	134	0.0324	700	0.4667	0.69%
AT&T LTE	1	1000	134	0.0219	850	0.5667	0.39%
AT&T 5G	1	1000	134	0.0219	850	0.5667	0.39%
AT&T LTE	2	4842	134	0.2126	1900	1.0000	2.13%
AT&T LTE	1	1476	134	0.0324	2100	1.0000	0.32%
AT&T LTE	1	1285	134	0.0282	2300	1.0000	0.28%
Site Total							9.10%

*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^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							4.80%
AT&T UMTS	1	262	137.6	0.0054	850	0.5667	0.10%
AT&T LTE	1	1476	137.6	0.0306	700	0.4667	0.66%
AT&T LTE	1	2951	137.6	0.0613	700	0.4667	1.31%
AT&T LTE	1	1000	137.6	0.0208	850	0.5667	0.37%
AT&T 5G	1	1000	137.6	0.0208	850	0.5667	0.37%
AT&T LTE	2	4842	137.6	0.2011	1900	1.0000	2.01%
AT&T LTE	1	5070	137.6	0.1053	2100	1.0000	1.05%
AT&T LTE	1	1285	137.6	0.0267	2300	1.0000	0.27%
Site Total							10.92%

*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:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEED 3' SEPARATION BETWEEN ANTENNAS POS. 3 & POS.4 (TYP. FOR ALL SECTORS)
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD RBS 6630.
- ADD IDLe.
- ADD (1) XMU.

ITEMS TO BE REMOVED:
- REMOVE EXISTING DEMON

ITEMS TO REMAIN:
- (12) ANTENNAS, (15) RRU'S, (6) TMA'S, (6) COMBINERS (3) SURGE ARRESTOR, (12) COAX CABLES, (6) DC POWER & (3) FIBER.

SITE ADDRESS:	154 SAYLE AVENUE PUTNAM, CT 06260
LATITUDE:	41.929444° N, 41° 55' 45.99" N
LONGITUDE:	71.886388° W, 71° 53' 11.00" W
TYPE OF SITE:	MONOPOLE / INDOOR
STRUCTURE HEIGHT:	175'-0"±
RAD CENTER:	137'-6"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1110

SITE NAME: PUTNAM SAYLE AVE

FA CODE: 10035406

PACE ID: MRCTB047189

PROJECT: LTE 6C 2020 UPGRADE

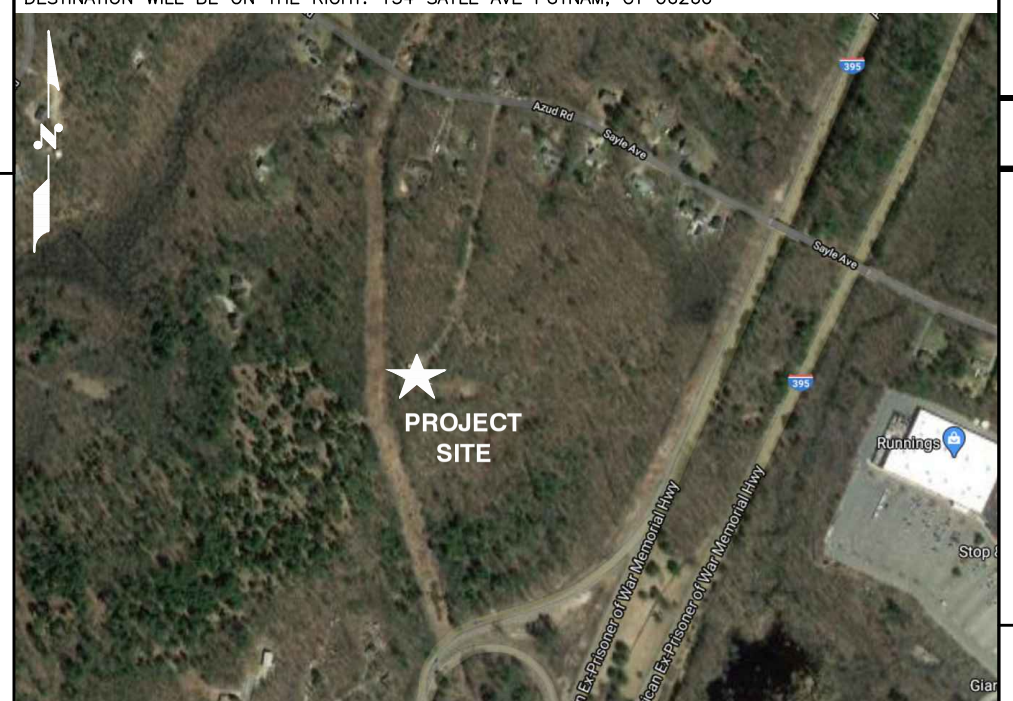
DRAWING INDEX

SBA SITE NAME: CT00680
SBA SITE #: 1060766

VICINITY MAP

DIRECTIONS TO SITE:

MERGE ONTO I-91 N. TAKE EXIT 29 TO MERGE ONTO CT-15 N/US-5 N TOWARD I-84 E/E HARTFORD/BOSTON. CONTINUE ONTO CT-15 N. USE THE LEFT 2 LANES TO MERGE ONTO I-84 E TOWARD BOSTON. TAKE EXIT 69 FOR CT-74 TOWARD U.S. 44/WILLINGTON/PUTNAM. CONTINUE ON CT-74 E. TAKE US-44 E, CT-244 E AND US-44 E TO SAYLE AVE IN PUTNAM. TURN RIGHT ONTO CT-74 E. TURN LEFT ONTO US-44 E. TURN LEFT ONTO CT-198 N. TURN RIGHT ONTO CT-244 E. MERGE ONTO CT-97 S. CONTINUE STRAIGHT ONTO US-44 E. TURN LEFT ONTO CT-12 N/MECHANICS ST. CONTINUE TO FOLLOW CT-12 N. TURN RIGHT ONTO AZUD RD. CONTINUE ONTO SAYLE AVE DESTINATION WILL BE ON THE RIGHT. 154 SAYLE AVE PUTNAM, CT 06260



GENERAL NOTES

1. 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.
2. 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.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

UNDERGROUND SERVICE ALERT

811 DigSafe MA·ME·NH·RI·VT

WWW.DIGSAFE.COM
72 HOURS PRIOR

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

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SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: GA

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
LTE 6C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1110	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SAI
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **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: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    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, FOURTEENTH EDITION;

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

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.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1110
SITE NAME: PUTNAM SAYLE AVE
SBA SITE # ID: 1060766

154 SAYLE AVENUE
PUTNAM, CT 06260
WINDHAM COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
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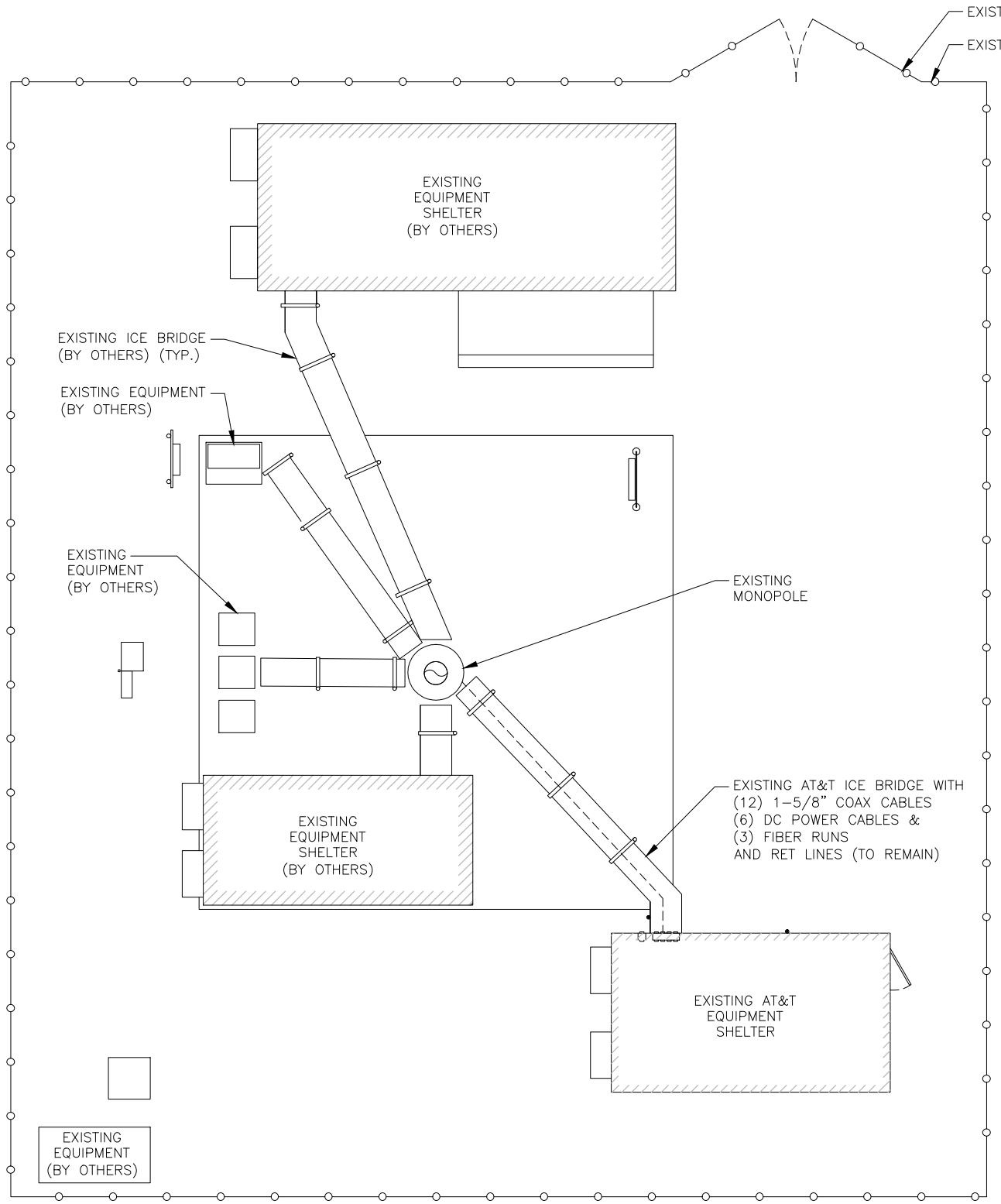
SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: GA

STATE OF CONNECTICUT – DANIEL P. HAMM – No. 24178 – LICENSED PROFESSIONAL ENGINEER

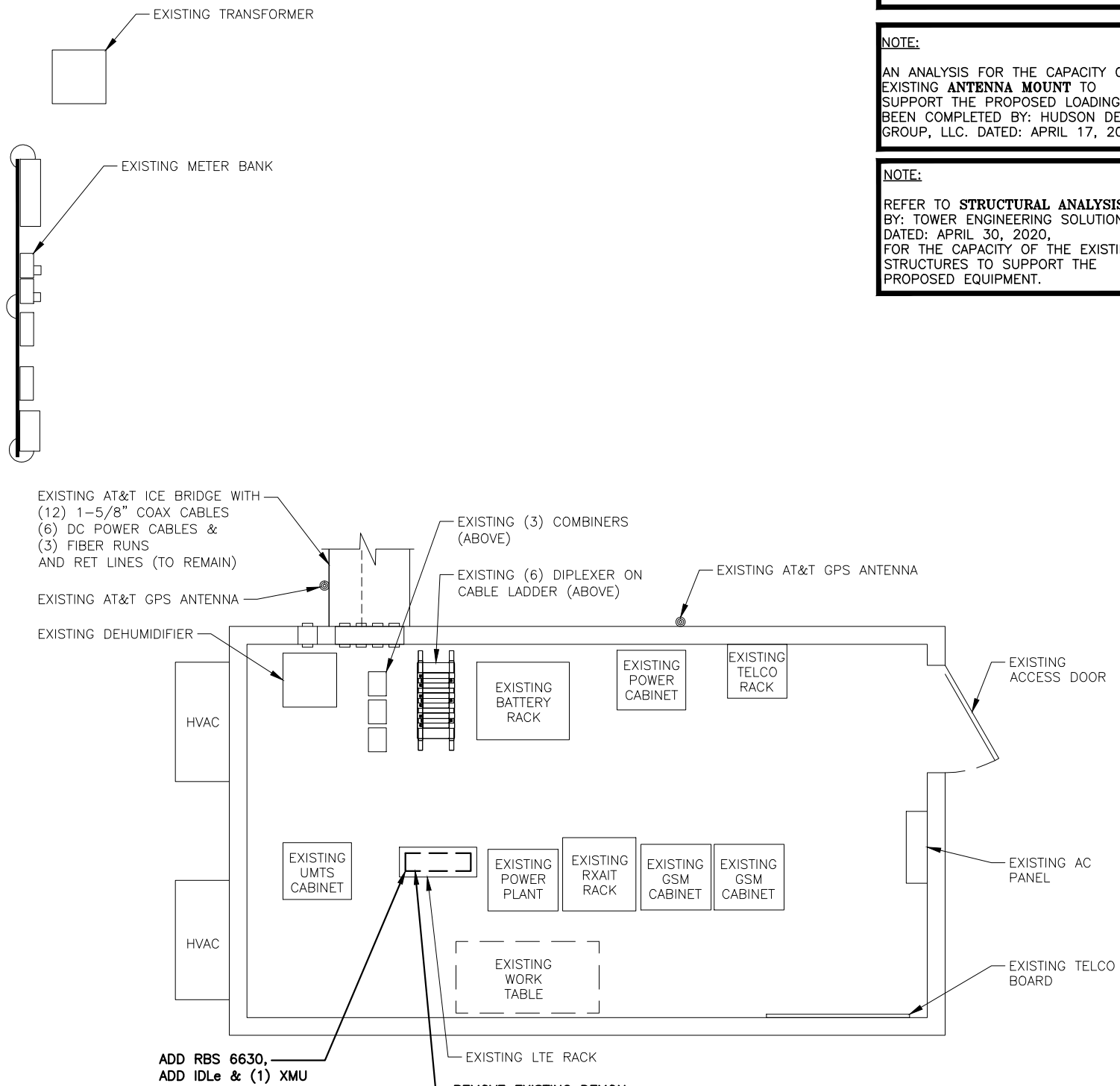
AT&T

GENERAL NOTES
LTE 6C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1110	GN-1	1



COMPOUND PLAN (1) A-1
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
0 2'-0" 4'-0" 8'-0" 12'-0"



EQUIPMENT PLAN (2) A-1
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: APRIL 17, 2020

NOTE:
REFER TO **STRUCTURAL ANALYSIS** BY: TOWER ENGINEERING SOLUTIONS DATED: APRIL 30, 2020,
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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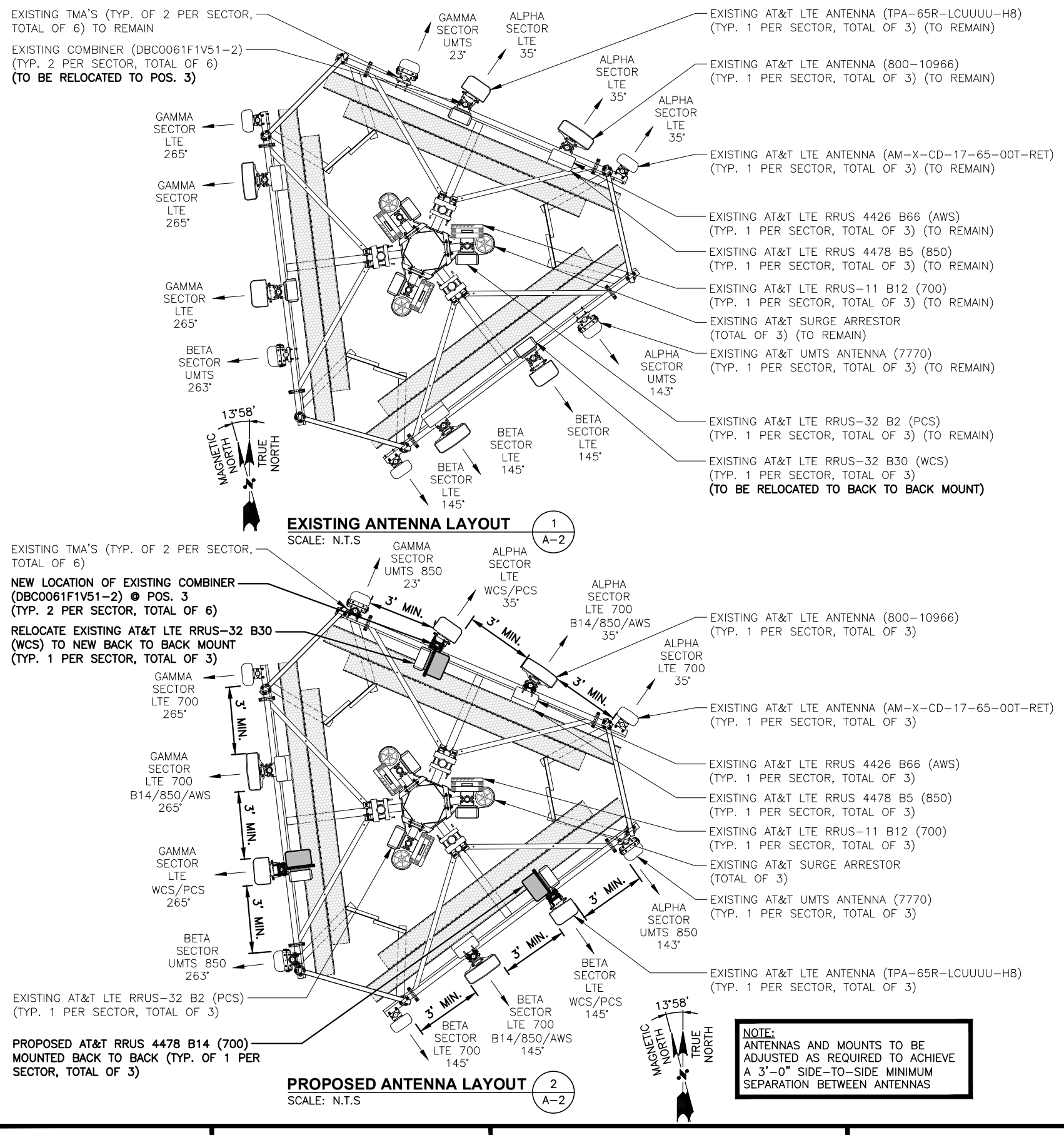
STATE OF CONNECTICUT DANIEL P. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 6C 2020 UPGRADE

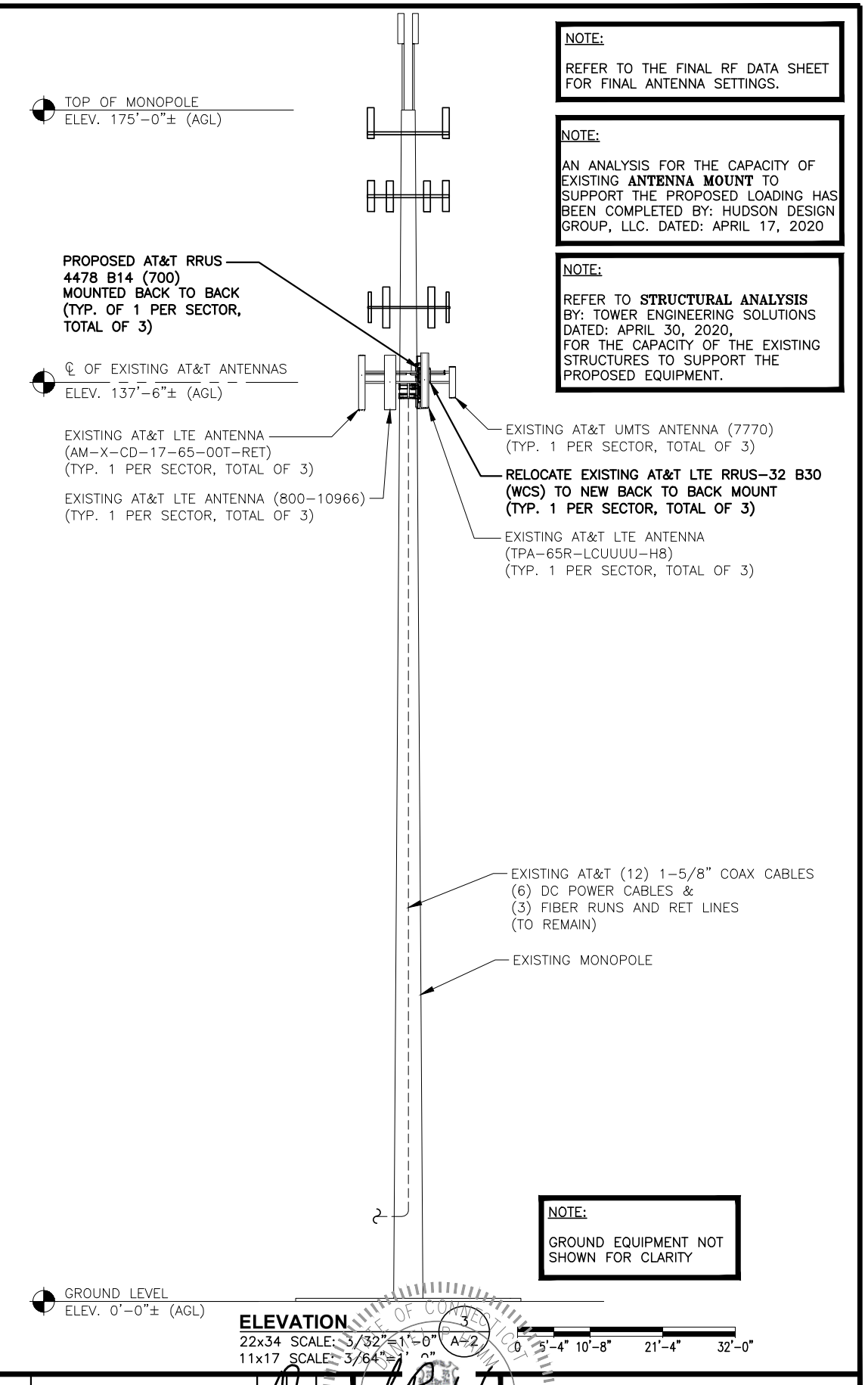
SITE NUMBER	DRAWING NUMBER	REV
CT1110	A-1	1



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

NOTE:
ANTENNAS AND MOUNTS TO BE ADJUSTED AS REQUIRED TO ACHIEVE A 3'-0" SIDE-TO-SIDE MINIMUM SEPARATION BETWEEN ANTENNAS

PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S



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NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

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ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/19/20	ISSUED FOR CONSTRUCTION	AM	HC	DPH
A	04/20/20	ISSUED FOR REVIEW	GA	HC	DPH

SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: GA

STATE OF CONNECTICUT — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
LTE 6C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1110	A-2	1

ANTENNA SCHEDULE

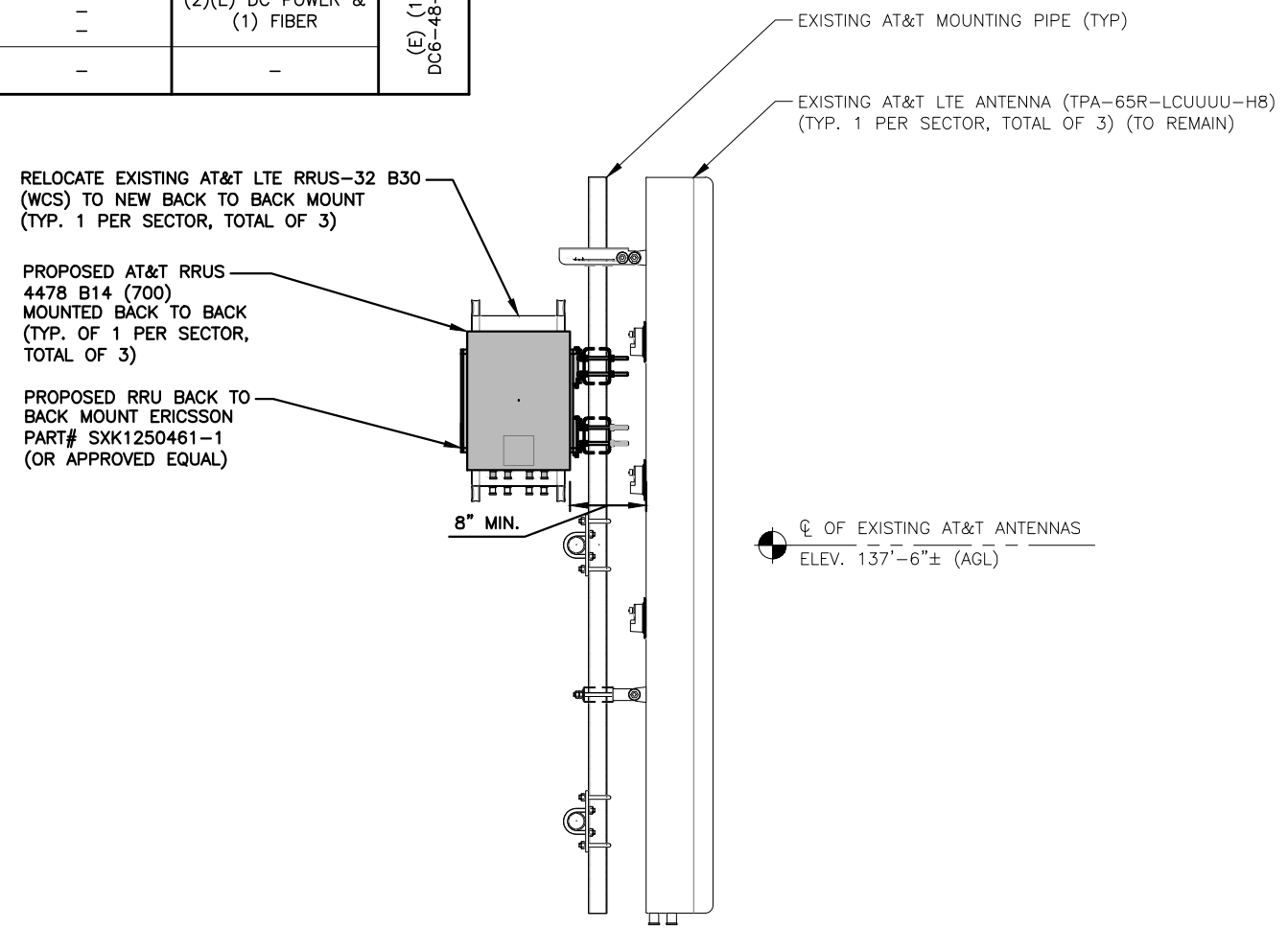
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ LOW BAND COMBINER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55x11x5	137'-6"±	143°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE WCS/PCS	TPA-65R-LCUUUU-H8	96x14.4x8.6	137'-6"±	35°	–	(1)(E) RRUS-32 B2 (PCS) (1)(E) RRUS-32 B30 (WCS)	–	(2)1-5/8 COAX	
A3	EXISTING	LTE 700 B14/850/AWS	800-10966	96x20x6.9	137'-6"±	35°	(2)(E) DBC0061F1V51-2	**(1)(P) 4478 B14 (700)** (1)(E) 4478 B5 (850) (1)(E) 4426 B66 (AWS)	**18.1X13.4X8.3** – –	(2)(E) DC POWER & (1) FIBER	
A4	EXISTING	LTE 700	AM-X-CD-17-65-00T-RET	96x11.8x5.9	137'-6"±	35°	–	(1)(E) RRUS-11 B12 (700)	–	–	
B1	EXISTING	UMTS 850	7770	55X11X5	137'-6"±	263°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE WCS/PCS	TPA-65R-LCUUUU-H8	96X14.4X8.6	137'-6"±	145°	–	(1)(E) RRUS-32 B2 (PCS) (1)(E) RRUS-32 B30 (WCS)	–	(2)1-5/8 COAX	
B3	EXISTING	LTE 700 B14/850/AWS	800-10966	96X20X6.9	137'-6"±	145°	(2)(E) DBC0061F1V51-2	**(1)(P) 4478 B14 (700)** (1)(E) 4478 B5 (850) (1)(E) 4426 B66 (AWS)	**18.1X13.4X8.3** – –	(2)(E) DC POWER & (1) FIBER	
B4	EXISTING	LTE 700	AM-X-CD-17-65-00T-RET	96X11.8X5.9	137'-6"±	145°	–	(1)(E) RRUS-11 B12 (700)	–	–	
C1	EXISTING	UMTS 850	7770	55X11X5	137'-6"±	23°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
C2	EXISTING	LTE WCS/PCS	TPA-65R-LCUUUU-H8	96X14.4X8.6	137'-6"±	265°	–	(1)(E) RRUS-32 B2 (PCS) (1)(E) RRUS-32 B30 (WCS)	–	(2)1-5/8 COAX	
C3	EXISTING	LTE 700 B14/850/AWS	800-10966	96X20X6.9	137'-6"±	265°	(2)(E) DBC0061F1V51-2	**(1)(P) 4478 B14 (700)** (1)(E) 4478 B5 (850) (1)(E) 4426 B66 (AWS)	**18.1X13.4X8.3** – –	(2)(E) DC POWER & (1) FIBER	
C4	EXISTING	LTE 700	AM-X-CD-17-65-00T-RET	96X11.8X5.9	137'-6"±	265°	–	(1)(E) RRUS-11 B12 (700)	–	–	

FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: APRIL 17, 2020

NOTE:
REFER TO **STRUCTURAL ANALYSIS** BY: TOWER ENGINEERING SOLUTIONS DATED: APRIL 30, 2020,
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



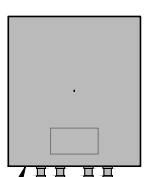
PROPOSED RRUS MOUNTING DETAIL (3 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(E)	**4478 B14 (700)**	**18.1"x13.4"x8.3"**
3(E)	4478 B5 (850)	18.1"X13.4"X8.3"
3(E)	4426	14.9"x13.2"x5.8"
3(E)	RRUS-32 B2 (PCS)	27.2"x12.1"x7.0"
3(E)	RRUS-32 B30 (WCS)	27.2"X12.1"X7.0"
3(E)	RRUS-11 B12 (700)	19.7"x17.0"x7.2"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-3)
SCALE: N.T.S

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1110
SITE NAME: PUTNAM SAYLE AVE
SBA SITE # ID: 1060766

154 SAYLE AVENUE
PUTNAM, CT 06260
WINDHAM COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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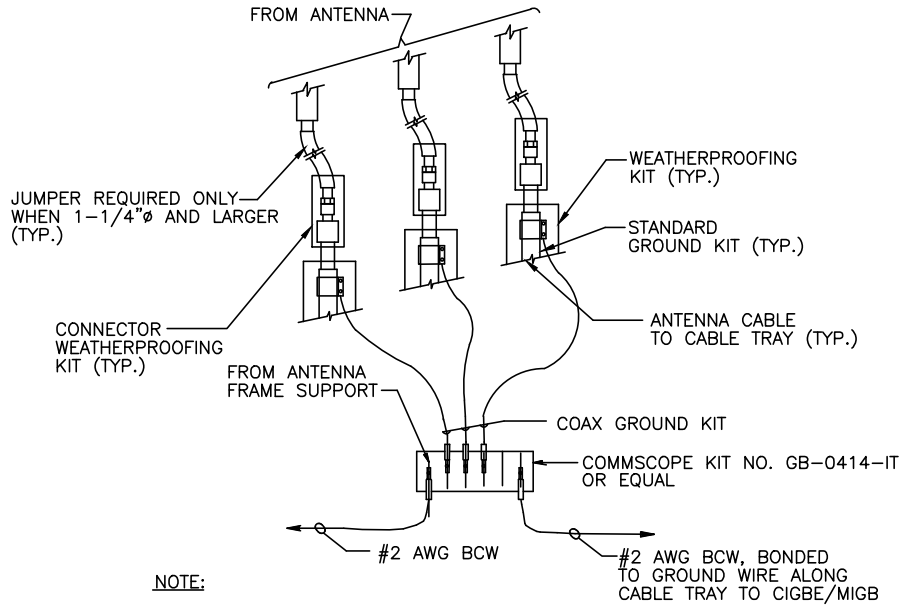
STATE OF CONNECTICUT DANIEL P. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
LTE 6C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1110	A-3	1

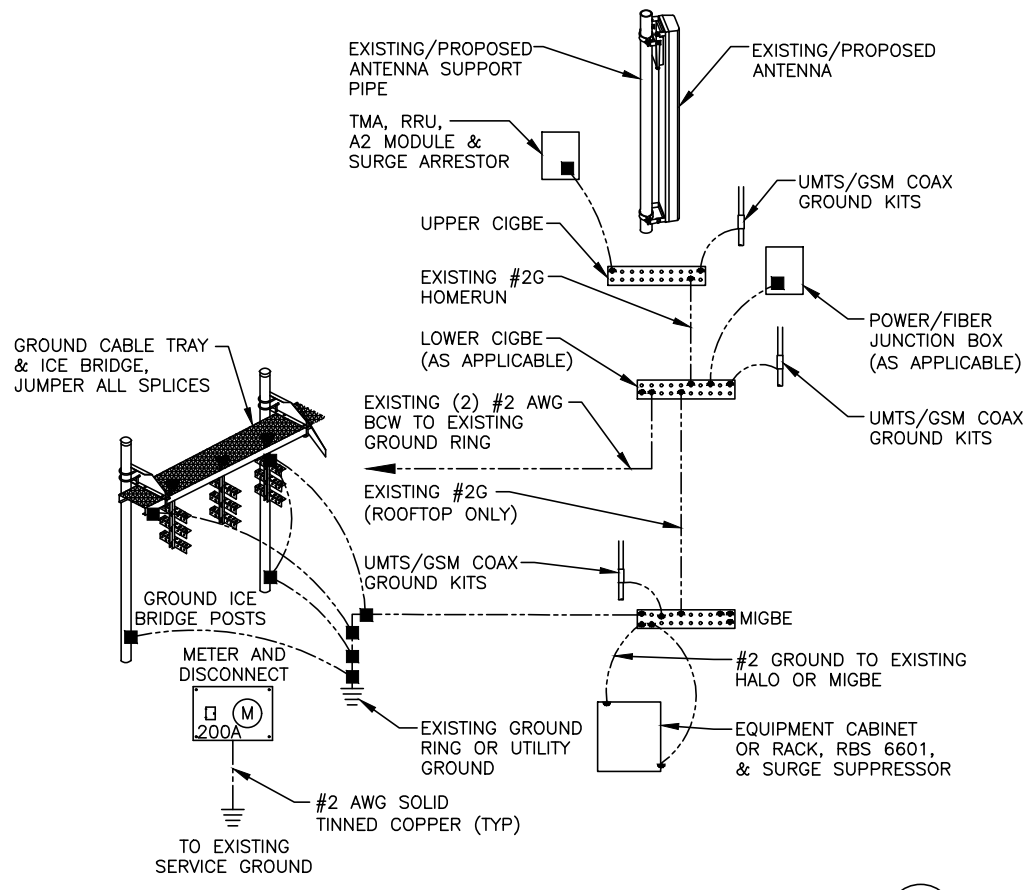


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

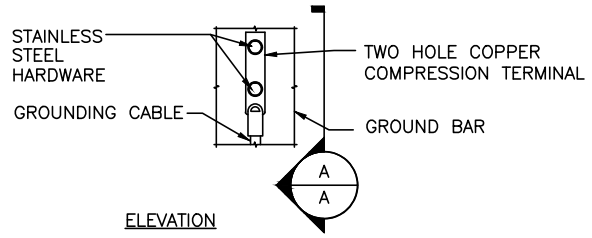
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

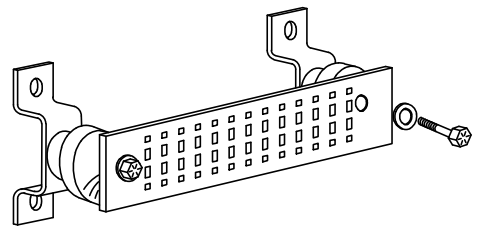
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED) (4 / G-1)

SCALE: N.T.S

HDG HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1110
SITE NAME: PUTNAM SAYLE AVE
SBA SITE # ID: 1060766

154 SAYLE AVENUE
PUTNAM, CT 06260
WINDHAM COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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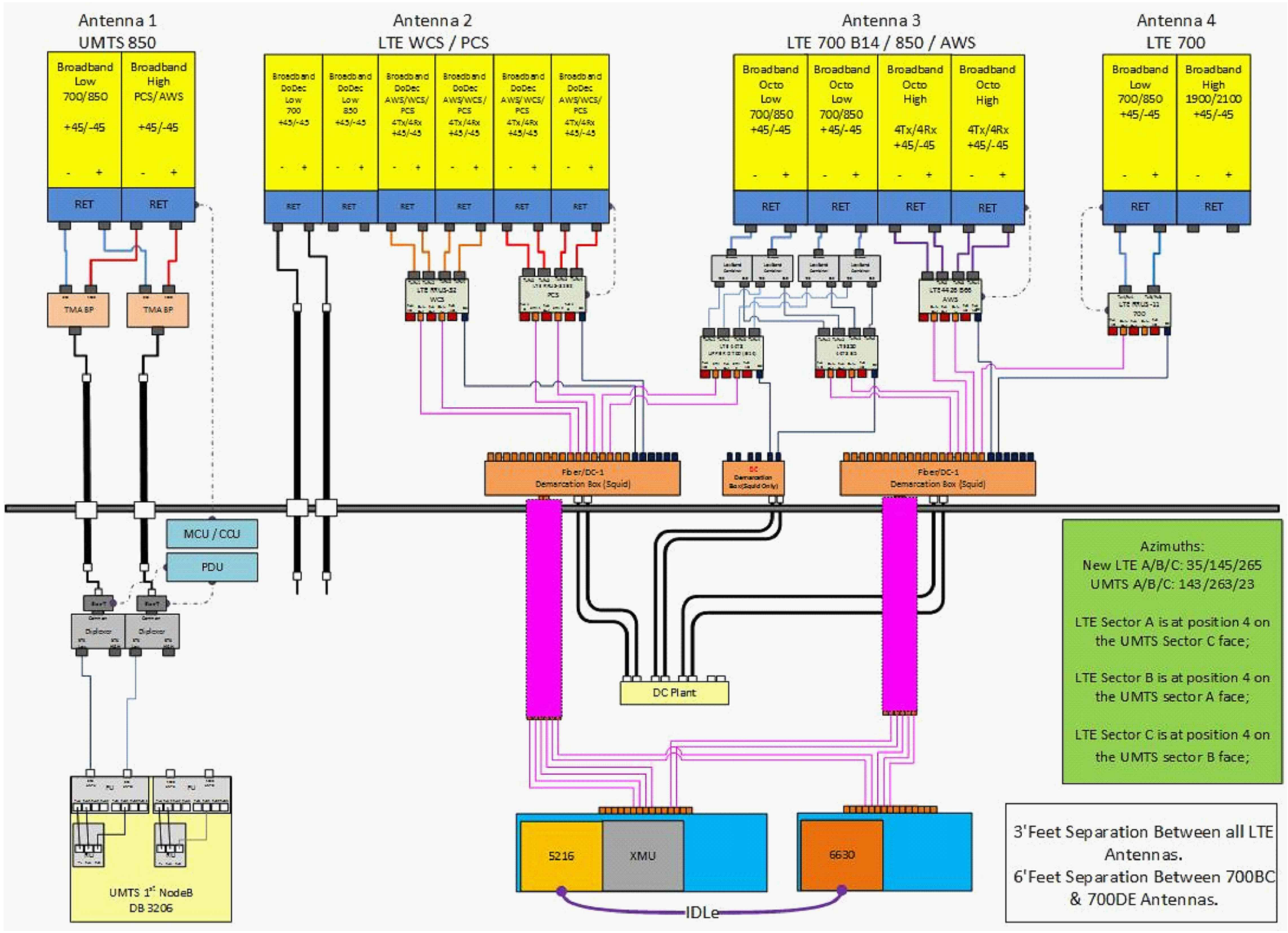
STATE OF CONNECTICUT DANIEL P. HAMM No.24178 LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 6C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1110	G-1	1



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1110
SITE NAME: PUTNAM SAYLE AVE
SBA SITE # ID: 1060766

154 SAYLE AVENUE
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SCALE: AS SHOWN | DESIGNED BY: HC | DRAWN BY: GA

AT&T

RF PLUMBING DIAGRAM
LTE 6C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1110	RF–1	1

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

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 (App#: 132548, V1)
Carrier Site ID / Name: CT1110 / PUTNAM SAYLE AVE
Site Location: 154 Sayle Avenue
Putnam, Connecticut
Windham County
Latitude: 41.929449
Longitude: -71.886272

Analysis Result:

Max Structural Usage: 95.3% [Pass]
Max Foundation Usage: 49% [Pass]
Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Stacey Hesselbein

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

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 (App#: 132548, V1)

Carrier Site ID / Name: CT1110 / PUTNAM SAYLE AVE

Site Location: 154 Sayle Avenue

Putnam, Connecticut

Windham County

Latitude: 41.929449

Longitude: -71.886272

Analysis Result:

Max Structural Usage: 95.3% [Pass]

Max Foundation Usage: 49% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Stacey Hesselbein

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

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

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.172, S_1 = 0.063

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	191.5	6	EMS - DR65-18-02DPL2Q - Panel	(3) 24' x 4.5 Pipe Mounts	(12) 1 5/8"	T-Mobile
2	188.5	6	Andrew - E15S09P9402 - TMA/TTA			
3	175.0	3	Commscope NNVV-65B-R4 - Panel	(3) T-Arms w/ (1) SitePro PRK-1245L, (1) SitePro PRK-SFS-L V-brace kit (3) 2" PST x 12.5' support rails, (3) 2" PST x 4' corner braces (6) Puck Brackets and (12) 2.0" Pipe Mast	(4) 1 1/4" Fiber	Sprint Nextel
4		3	RFS APXVTM14-C-I20 - Panel			
5		3	ALU 1900 Mhz - RRUs			
6		6	ALU 800 Mhz - RRUs			
7		3	ALU TD-RRH8x20-25 - RRUs			
8	148.0	3	Amphenol - BXA-80080/4CF - Panel	Low Profile Platform	(11) 1 5/8" (2) 1 5/8" Hybrid	Verizon
9		6	Commscope - SBNHH-1D65B - Panel			
10		3	Amphenol - BXA-70063-6CF-EDIN-X Panel			
11		6	RFS - FD9R6004-2C-3L - Diplexer			
12		3	ALU - RRH2X60-AWS - RRU			
13		3	ALU - RRH2X60-PCS - RRU			
14		3	ALU - RRH2X60-700 - RRU			
15		2	RFS - DB-T1-6Z-8AB-0Z - Distribution Box			
-	137.5	3	Kathrein 800 10966 Panel	(1) Low Profile Platform w/ handrail	(12) 1 5/8" **(4) 3/4" DC Power **(2) 7/16" Fiber	AT&T
-		3	Cci TPA-65R-LCUUUU-H8 Panel			
-		3	KMW AM-X-CD-17-65-00T-RET (96") Panel			
-		3	Powerwave 7770 Panel			
-		6	Powerwave LGP21401 TMA			
-		3	Ericsson RRUS 11 RRU			
-		6	Ericsson RRUS 32 RRU			
-		3	Ericsson 4478 B5 RRU			
-		3	Ericsson 4426 B66 RRU			
-		6	Kaelus dbc0061F1V51-2 Diplexer			
-		6	Powerwave LGP21901 Diplexer			
-		1	Raycap DC6-48-60-18-8C			
-		1	Raycap DC6-48-60-18-8F			
30	54.0	1	Generic - GPS - Panel	(1) Standoff	(1) 1/2"	Sprint
-	12.0	1	Nokia CS72188.01 LMU GPS	Direct	(1) 1/2"	AT&T

**Existing (2) 3/4" DC and (1) 7/16" Fiber lines are routed in (1) 3" Flex Conduit.

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
16	137.5	3	Kathrein 800 10966 Panel	Platform w/ Handrail	(12) 1 5/8" (6) 3/4" DC** (2) 7/16" Fiber** (3) 3/8" RET	AT&T
17		3	Cci TPA-65R-LCUUUU-H8 Panel			
18		3	KMW AM-X-CD-17-65-00T-RET Panel			
19		3	Powerwave 7770 Panel			
20		6	Powerwave LGP21401 TMA			
21		3	Ericsson 4426 B66 RRU			
22		3	Ericsson 4478 B5 RRU			
23		3	Ericsson RRUS 11 RRU			
24		6	Ericsson RRUS 32 RRU			
25		3	Ericsson RRUS 4478 B14 RRU			
26		6	Kaelus dbc0061F1V51-2 Diplexer			
27		1	Raycap dc6-48-60-18-8c			
28		1	Raycap DC6-48-60-18-8F			
29		1	Raycap DC6-48-60-0-8C-EV			
31	12.0	1	Nokia CS72188.01 LMU GPS	Direct	(1) 1/2"	

**Existing (2) 3/4" DC and (1) 7/16" Fiber lines are routed in (1) 3" Flex Conduit.

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:	**95.3%**	**61.0%**	**80.6%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	5510.6	43.8	55.5

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.4894 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 structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. 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.

4. 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.

5. 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.

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

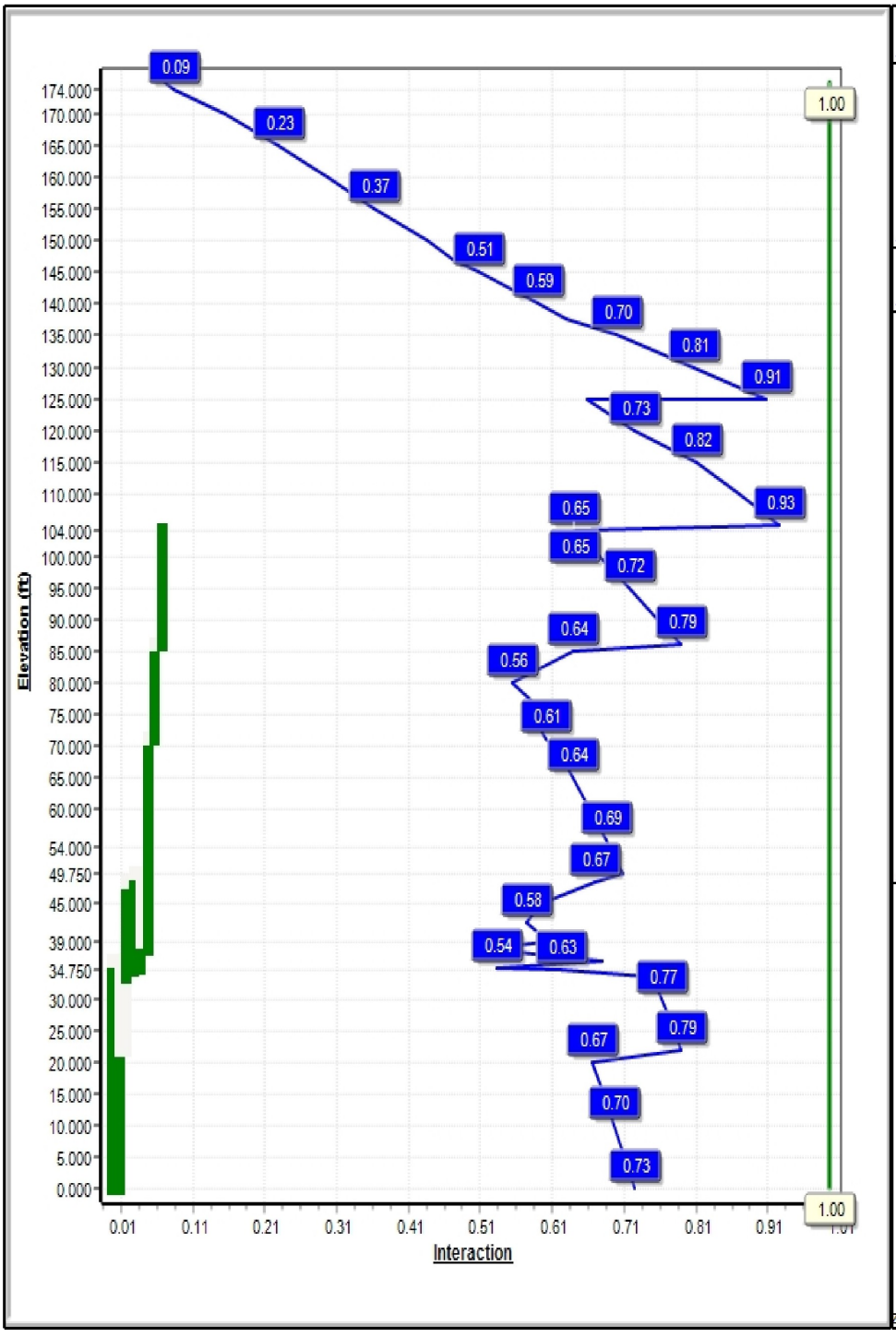
Usage Diagram - Max Ratio 93.09% at 105.0ft

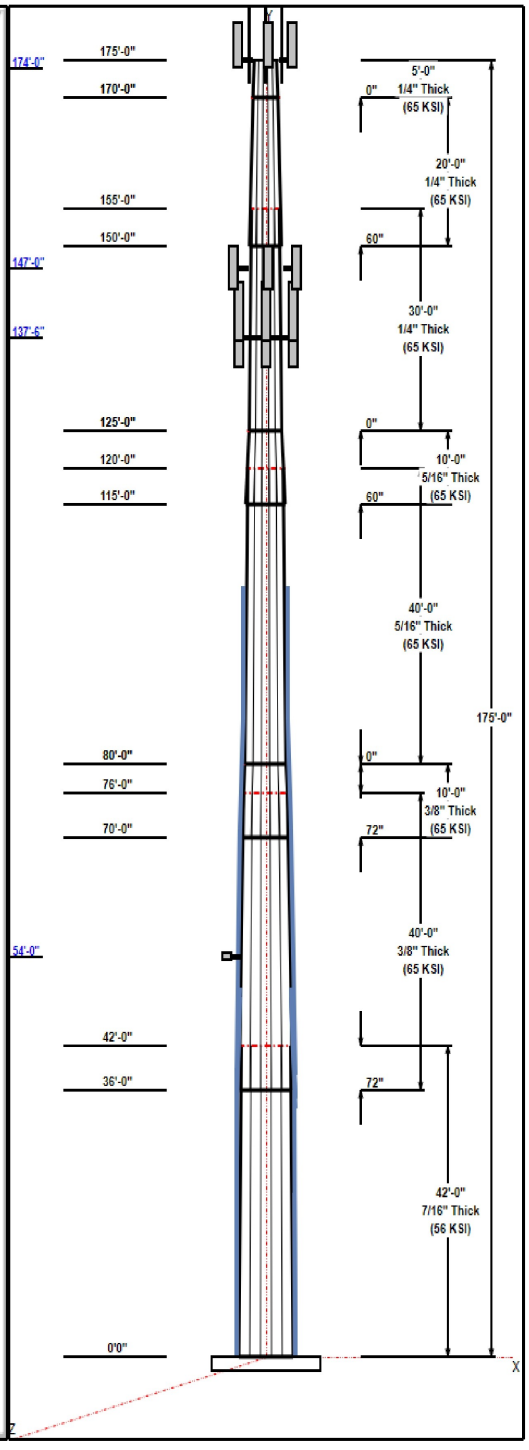
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020
Site Name:	Putnam	**Exposure:**	B	
Height:	175.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	24
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 101 mph Wind





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

4/30/2020

Tower Engineering Solutions

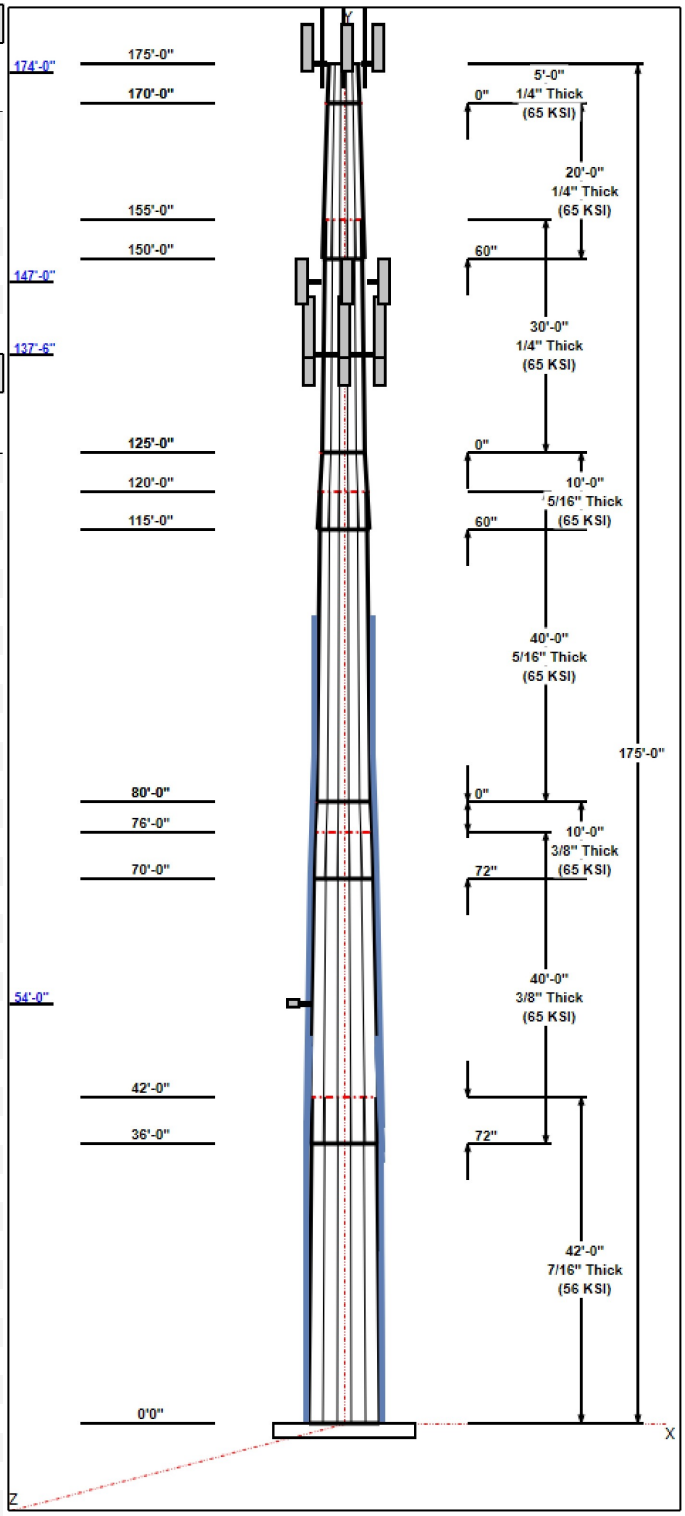
Shaft Properties

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

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
175.00	191.50	6	DR65-18-02DPL2Q	T-Mobile
175.00	188.50	6	E15S09P94	T-Mobile
175.00	177.00	3	1900MHz	Sprint Nextel
175.00	177.00	6	800 MHz	Sprint Nextel
175.00	177.00	3	TD-RRH8x20-25	Sprint Nextel
175.00	175.00	12	Pipes	Sprint Nextel
175.00	177.00	3	APXVTM14-C-I20	Sprint Nextel
175.00	177.00	3	NNVV-65B-R4	Sprint Nextel
175.00	175.00	1	PRK-SFS-L	Sprint Nextel
175.00	175.00	1	Handrail	Sprint Nextel
175.00	175.00	1	PRK-1245L	Sprint Nextel
175.00	175.00	3	T-Arms	Sprint Nextel
174.00	184.00	3	4.5" x 24 FT Pipe	T-Mobile
147.00	147.00	2	DB-T1-6Z-8AB-0Z	Verizon
147.00	144.00	3	RRH2X60-AWS	Verizon
147.00	144.00	3	RRH2X60-PCS	Verizon
147.00	144.00	3	RRH2X60-700	Verizon
147.00	147.00	3	T-Arms	Verizon
147.00	147.00	3	BXA-70063-6CF-EDIN-X	Verizon
147.00	147.00	3	BXA-80080-4CF	Verizon
147.00	147.00	6	SBNHH-1D65B	Verizon
147.00	147.00	6	FD9R6004/2C-3L	Verizon
137.50	141.00	3	7770.00	AT&T
137.50	141.00	3	AM-X-CD-17-65-00T-RET	AT&T
137.50	141.00	3	TPA-65R-LCUUUU-H8	AT&T
137.50	141.00	3	RRUS 4478 B5	AT&T
137.50	137.50	1	Platform w/ Hand Rail	AT&T
137.50	137.50	3	800 10966	AT&T
137.50	137.50	3	4426 B66	AT&T
137.50	137.50	3	RRUS 11	AT&T
137.50	137.50	6	RRUS 32	AT&T
137.50	137.50	3	RRUS 4478 B14	AT&T
137.50	137.50	6	dbc0061F1V51-2	AT&T
137.50	137.50	1	dc6-48-60-18-8c	AT&T
137.50	137.50	1	DC6-48-60-18-8F	AT&T
137.50	137.50	1	DC6-48-60-0-8C-EV	AT&T
137.50	141.00	6	LGP21401	AT&T
54.00	54.00	1	GPS	Sprint
54.00	54.00	1	Standoff	Sprint
12.00	12.00	1	CS72188.01 LMU	AT&T

Linear Appurtenances



Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	192.00	Inside	1 5/8" Coax	T-Mobile
0.00	177.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	147.00	Inside	1 5/8" Coax	Verizon
0.00	147.00	Inside	1 5/8" Hybrid	Verizon
0.00	137.50	Inside	1 5/8" Coax	AT&T
0.00	137.50	Inside	1/2" Coax	AT&T
0.00	137.50	Inside	3" Conduit	AT&T
0.00	137.50	Inside	3/4" DC	AT&T
0.00	137.50	Inside	3/8" RET	AT&T
0.00	137.50	Inside	7/16" Fiber	AT&T
0.00	105.00	Outside	3" Chanel	
0.00	54.00	Inside	1/2" Coax	Sprint

Anchor Bolts

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

Base Plate

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

Reactions

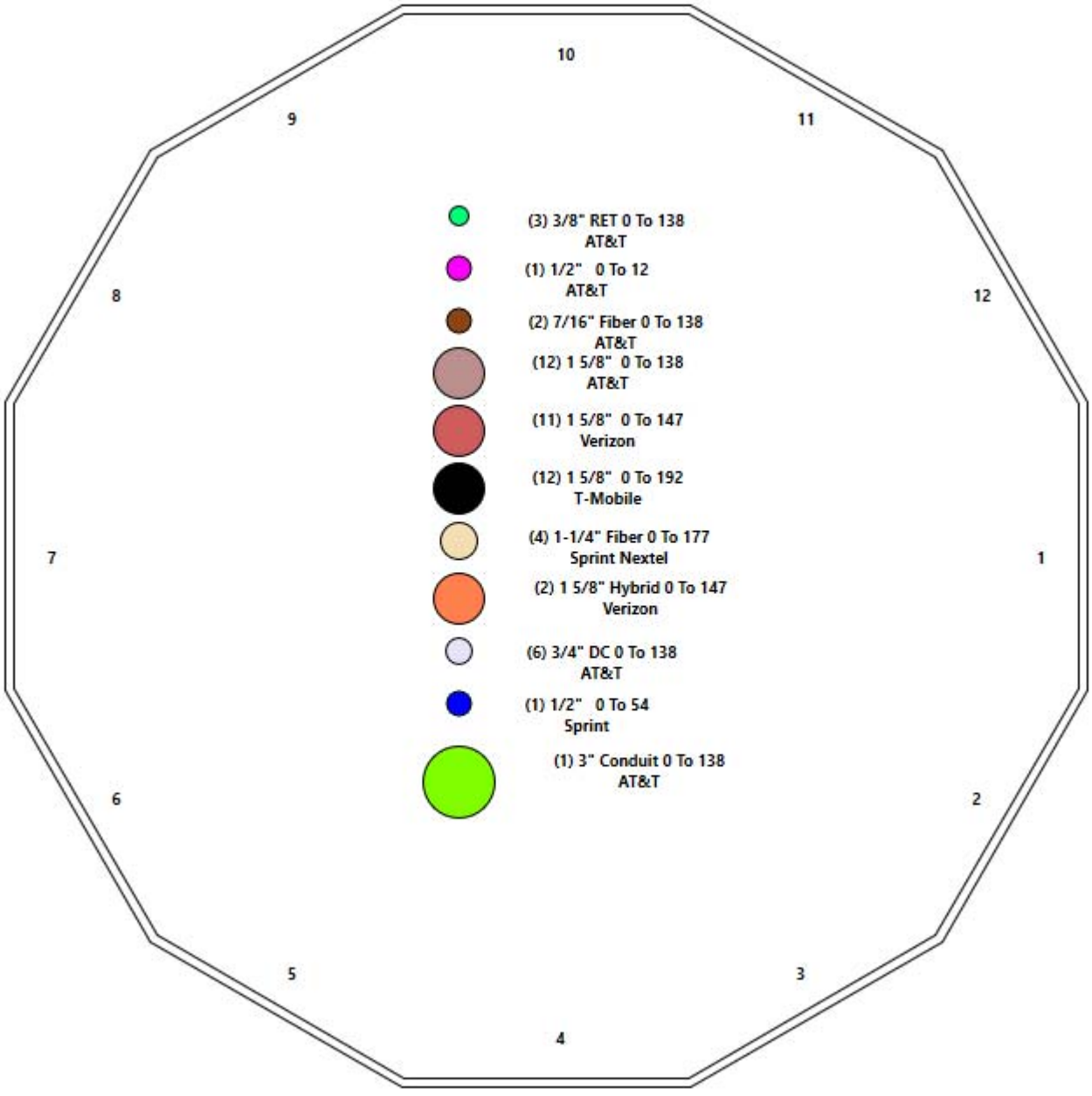
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	5510.6	43.8	55.5
0.9D + 1.6W 101 mph Wind	5452.4	43.8	41.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1262.8	9.4	83.3
1.2D + 1.0E	272.0	2.0	55.5
0.9D + 1.0E	268.8	2.0	41.6
1.0D + 1.0W 60 mph Wind	1209.4	9.7	46.3

Structure: CT00680-S-SBA - Coax Line Placement

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

4/30/2020

Tower Engineering Solutions



Shaft Properties

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
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: 5

Tower Engineering Solutions

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
					Total Shaft Weight:		**28,861**

	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

							Intermediate Connectors		Termination Connectors			
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	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		
33.50	48.50	1	LNP LP6X100-G-20TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	10	10
34.75	49.75	2	LNP LP6X100-G-20TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	10	10
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

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	175.00	DR65-18-02DPL2Q	6	24.00	5.81	0.67	158.71	6.884	0.69	0.00	16.50
2	175.00	E15S09P94	6	14.60	0.66	0.60	32.11	1.273	0.60	0.00	13.50
3	175.00	1900MHz	3	60.00	2.77	0.67	144.73	4.058	0.67	0.00	2.00
4	175.00	800 MHz	6	53.00	2.49	0.67	128.11	3.651	0.67	0.00	2.00
5	175.00	TD-RRH8x20-25	3	70.00	4.05	0.67	182.54	4.877	0.67	0.00	2.00
6	175.00	Pipes	12	33.00	1.90	0.80	84.47	4.311	0.80	0.00	0.00
7	175.00	APXVTM14-C-I20	3	56.20	6.34	0.77	219.62	7.472	0.77	0.00	2.00
8	175.00	NNVV-65B-R4	3	77.40	12.27	0.74	367.39	13.749	0.74	0.00	2.00
9	175.00	PRK-SFS-L	1	230.00	7.70	1.00	556.11	15.888	1.00	0.00	0.00
10	175.00	Handrail	1	415.06	9.85	1.00	827.01	22.419	1.00	0.00	0.00
11	175.00	PRK-1245L	1	464.91	9.50	1.00	794.50	19.602	1.00	0.00	0.00
12	175.00	T-Arms	3	242.00	11.00	0.75	451.13	24.997	0.75	0.00	0.00
13	174.00	4.5" x 24 FT Pipe	3	259.20	13.50	1.00	513.18	20.585	1.00	0.00	10.00
14	147.00	DB-T1-6Z-8AB-0Z	2	44.00	4.80	1.00	187.39	5.672	1.00	0.00	0.00
15	147.00	RRH2X60-AWS	3	60.00	3.50	0.67	147.11	4.288	0.67	0.00	-3.00
16	147.00	RRH2X60-PCS	3	55.00	2.20	0.67	139.32	2.835	0.67	0.00	-3.00
17	147.00	RRH2X60-700	3	60.00	3.50	0.67	147.11	4.288	0.67	0.00	-3.00
18	147.00	T-Arms	3	242.00	11.00	0.75	447.52	24.755	0.75	0.00	0.00
19	147.00	BXA-70063-6CF-EDIN-X	3	17.00	7.57	0.77	165.00	10.328	0.77	0.00	0.00
20	147.00	BXA-80080-4CF	3	12.00	3.56	0.88	100.05	5.398	0.88	0.00	0.00
21	147.00	SBNHH-1D65B	6	50.71	8.08	0.82	251.83	9.369	0.82	0.00	0.00
22	147.00	FD9R6004/2C-3L	6	3.10	0.36	0.50	11.11	0.802	0.50	0.00	0.00
23	137.50	7770.00	3	35.00	5.50	0.73	168.74	6.555	0.75	0.00	3.50
24	137.50	AM-X-CD-17-65-00T-RET	3	30.80	11.31	0.75	141.83	15.513	0.77	0.00	3.50
25	137.50	TPA-65R-LCUUUU-H8	3	75.00	13.30	0.83	384.00	14.931	0.83	0.00	3.50
26	137.50	RRUS 4478 B5	3	59.90	1.84	0.67	108.36	2.384	0.67	0.00	3.50
27	137.50	Platform w/ Hand Rail (round)	1	1600.00	32.00	1.00	3681.65	59.681	1.00	0.00	0.00
28	137.50	800 10966	3	125.70	17.36	0.72	479.78	19.151	0.73	0.00	0.00
29	137.50	4426 B66	3	48.50	1.15	0.67	87.18	1.620	0.69	0.00	0.00
30	137.50	RRUS 11	3	50.70	2.52	0.67	138.95	3.165	0.69	0.00	0.00
31	137.50	RRUS 32	6	77.00	1.65	0.67	124.93	2.224	0.69	0.00	0.00
32	137.50	RRUS 4478 B14	3	59.40	1.65	0.67	100.51	2.164	0.69	0.00	0.00
33	137.50	dbc0061F1V51-2	6	25.40	0.43	0.50	39.81	0.713	0.52	0.00	0.00
34	137.50	dc6-48-60-18-8c	1	20.00	1.26	1.00	72.30	1.914	1.00	0.00	0.00
35	137.50	DC6-48-60-18-8F	1	31.80	0.92	1.00	93.09	1.354	1.00	0.00	0.00
36	137.50	DC6-48-60-0-8C-EV	1	16.00	4.78	1.00	138.66	5.657	1.00	0.00	0.00
37	137.50	LGP21401	6	14.10	1.29	0.50	38.88	2.119	0.50	0.00	3.50
38	54.00	GPS	1	10.00	1.00	1.00	36.47	1.643	1.00	0.00	0.00
39	54.00	Standoff	1	40.00	2.63	1.00	112.48	8.019	1.00	0.00	0.00
40	12.00	CS72188.01 LMU	1	1.00	0.14	1.00	7.04	0.307	1.00	0.00	0.00
		Totals:	**132**	**9,971.63**			**26,322.90**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	192.00	(12) 1 5/8" Coax	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	177.00	(4) 1-1/4" Fiber			0.00	Inside					
0.00	147.00	(11) 1 5/8" Coax			0.00	Inside					
0.00	147.00	(2) 1 5/8" Hybrid			0.00	Inside					
0.00	137.50	(12) 1 5/8" Coax			0.00	Inside					
0.00	137.50	(1) 1/2" Coax			0.00	Inside					
0.00	137.50	(1) 3" Conduit			0.00	Inside					
0.00	137.50	(6) 3/4" DC			0.00	Inside					
0.00	137.50	(3) 3/8" RET			0.00	Inside					
0.00	137.50	(2) 7/16" Fiber			0.00	Inside					
0.00	105.00	(1) 3" Chanel			3.25	Outside					
0.00	54.00	(1) 1/2" Coax			0.00	Inside					

Shaft Section Properties

Structure: CT00680-S-SBA **Code:** EIA/TIA-222-G 4/30/2020

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

Tower Engineering Solutions

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)	Additional Reinforcing Ixp (in^4)	Additional Reinforcing Iyp (in^4)	Additional Reinforcing 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
12.00		0.4375	51.679	72.187	24193.3	29.51	118.12	56	64	493.1	52.92	22337.2	15944.1	360.0
15.00		0.4375	51.099	71.370	23380.9	29.15	116.80	56	65	732.7	52.92	21859.1	15603.0	540.0
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
33.50	RB3	0.4375	47.522	66.330	18769.2	26.96	108.62	56	67	795.6	32.46	11373.8	8205.1	386.5
34.75	RB4	0.4375	47.280	65.989	18481.6	26.81	108.07	56	67	281.4	44.46	13386.8	13386.8	189.1
35.00	RB5	0.4375	47.232	65.921	18424.4	26.78	107.96	56	67	56.1	62.46	18622.4	18622.4	53.1
36.00	Bot - Section 2 RT1	0.4375	47.038	65.649	18196.9	26.67	107.52	56	67	223.9	36.00	10440.0	10440.0	122.5
38.00	RB6	0.4375	46.651	65.104	17747.6	26.43	106.63	56	67	833.0	62.46	18751.9	18751.9	425.0
39.00	RT5	0.4375	46.458	64.832	17525.7	26.31	106.19	56	67	413.9	44.46	13347.7	13347.7	151.2
40.00		0.4375	46.265	64.559	17305.7	26.19	105.75	56	67	412.2	44.46	13242.8	13242.8	151.2
42.00	Top - Section 1	0.3750	46.628	55.850	15250.7	31.17	124.34	65	71	819.2	44.46	13034.2	13034.2	302.5
45.00		0.3750	46.048	55.150	14684.0	30.76	122.79	65	71	566.6	44.46	12724.4	12724.4	453.7
48.50	RT3	0.3750	45.371	54.333	14040.9	30.28	120.99	65	72	652.0	38.46	12356.3	8804.6	457.9
49.75	RT4	0.3750	45.129	54.041	13815.8	30.10	120.34	65	72	230.5	26.46	7426.0	7426.0	112.5
50.00		0.3750	45.081	53.982	13771.1	30.07	120.22	65	72	45.9	26.46	7410.9	7410.9	22.5
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	RT6 RB7	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	RT7 RB8	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	RT8	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				
135.00		0.2500	30.018	23.964	2710.5	30.03	120.07	65	72	414.3				
137.50		0.2500	29.535	23.574	2580.6	29.51	118.14	65	73	202.2				
140.00		0.2500	29.051	23.185	2454.9	28.99	116.21	65	73	198.9				
145.00		0.2500	28.085	22.407	2215.8	27.96	112.34	65	74	387.8				
147.00		0.2500	27.698	22.095	2124.7	27.54	110.79	65	75	151.4				
150.00	Bot - Section 7	0.2500	27.118	21.628	1992.8	26.92	108.47	65	75	223.2				

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)
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				
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				
									Total Weight	**28861.4**				**11349.9**

Wind Loading - Shaft

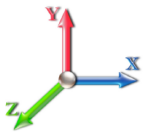
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.70	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
12.00	Appurtenance(s)	1.00	0.70	17.366	19.10	376.76	1.000	0.000	2.00	8.950	8.95	273.6	0.0	591.8
15.00		1.00	0.70	17.366	19.10	372.53	1.000	0.000	3.00	13.301	13.30	406.5	0.0	879.3
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	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
33.50	RB3	1.00	0.72	17.938	19.73	352.10	1.000	0.000	3.50	14.452	14.45	456.2	0.0	954.8
34.75	RB4	1.00	0.73	18.126	19.94	352.15	1.000	0.000	1.25	5.112	5.11	163.1	0.0	337.7
35.00	RB5	1.00	0.73	18.163	19.98	352.15	1.000	0.000	0.25	1.019	1.02	32.6	0.0	67.3
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	RB6	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	RT5	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
48.50	RT3	1.00	0.80	19.938	21.93	354.41	1.000	0.000	3.50	13.802	13.80	484.3	0.0	782.3
49.75	RT4	1.00	0.81	20.083	22.09	353.81	1.000	0.000	1.25	4.880	4.88	172.5	0.0	276.6
50.00		1.00	0.81	20.112	22.12	353.68	1.000	0.000	0.25	0.973	0.97	34.4	0.0	55.1
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	RT6 RB7	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	RT7 RB8	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	RT8	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
135.00		1.00	1.08	26.712	29.38	271.41	1.000	0.000	5.00	13.157	13.16	618.6	0.0	497.2
137.50	Appurtenance(s)	1.00	1.08	26.852	29.54	267.74	1.000	0.000	2.50	6.422	6.42	303.5	0.0	242.6
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	2.50	6.318	6.32	300.1	0.0	238.7
145.00		1.00	1.10	27.263	29.99	256.53	1.000	0.000	5.00	12.323	12.32	591.3	0.0	465.4
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	253.50	1.000	0.000	2.00	4.813	4.81	231.8	0.0	181.7

Wind Loading - Shaft

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

4/30/2020

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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
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
							Totals:	**175.00**			**22,683.9**		**34,633.7**

Discrete Appurtenance Forces

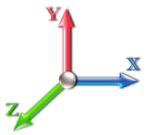
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

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)	Orient Factor 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	Pipes	12	28.768	31.644	0.64	0.80	14.59	475.20	0.000	0.000	738.81	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	29.518	32.470	0.67	1.00	23.36	172.80	0.000	16.500	1213.39	0.00	20020.89
3	175.00	E15S09P94	6	29.385	32.323	0.60	1.00	2.38	105.12	0.000	13.500	122.88	0.00	1658.89
4	175.00	1900MHz	3	28.861	31.747	0.67	1.00	5.57	216.00	0.000	2.000	282.82	0.00	565.63
5	175.00	800 MHz	6	28.861	31.747	0.67	1.00	10.01	381.60	0.000	2.000	508.45	0.00	1016.91
6	175.00	TD-RRH8x20-25	3	28.861	31.747	0.67	1.00	8.14	252.00	0.000	2.000	413.50	0.00	827.00
7	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
8	175.00	NNVV-65B-R4	3	28.861	31.747	0.74	1.00	27.24	278.64	0.000	2.000	1383.64	0.00	2767.29
9	175.00	PRK-SFS-L	1	28.768	31.644	0.75	0.75	5.78	276.00	0.000	0.000	292.39	0.00	0.00
10	175.00	Handrail	1	28.768	31.644	0.75	0.75	7.39	498.07	0.000	0.000	374.04	0.00	0.00
11	175.00	PRK-1245L	1	28.768	31.644	0.75	0.75	7.13	557.89	0.000	0.000	360.75	0.00	0.00
12	175.00	APXVTM14-C-I20	3	28.861	31.747	0.77	1.00	14.65	202.32	0.000	2.000	743.92	0.00	1487.85
13	174.00	4.5" x 24 FT Pipe	3	29.183	32.101	1.00	1.00	40.50	933.12	0.000	10.000	2080.15	0.00	20801.51
14	147.00	T-Arms	3	27.370	30.107	0.56	0.75	18.56	871.20	0.000	0.000	894.17	0.00	0.00
15	147.00	RRH2X60-PCS	3	27.209	29.930	0.54	0.80	3.54	198.00	0.000	-3.000	169.41	0.00	-508.22
16	147.00	RRH2X60-700	3	27.209	29.930	0.54	0.80	5.63	216.00	0.000	-3.000	269.51	0.00	-808.54
17	147.00	FD9R6004/2C-3L	6	27.370	30.107	0.40	0.80	0.86	22.32	0.000	0.000	41.62	0.00	0.00
18	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
19	147.00	BXA-80080-4CF	3	27.370	30.107	0.70	0.80	7.50	43.20	0.000	0.000	361.36	0.00	0.00
20	147.00	SBNHH-1D65B	6	27.370	30.107	0.66	0.80	31.88	365.11	0.000	0.000	1535.70	0.00	0.00
21	147.00	RRH2X60-AWS	3	27.209	29.930	0.54	0.80	5.63	216.00	0.000	-3.000	269.51	0.00	-808.54
22	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
23	137.50	RRUS 11	3	26.852	29.537	0.50	0.75	3.80	182.52	0.000	0.000	179.54	0.00	0.00
24	137.50	7770.00	3	27.046	29.750	0.55	0.75	9.03	126.00	0.000	3.500	430.01	0.00	1505.04
25	137.50	AM-X-CD-17-65-00T-RET	3	27.046	29.750	0.56	0.75	19.09	110.88	0.000	3.500	908.49	0.00	3179.70
26	137.50	TPA-65R-LCUUUU-H8	3	27.046	29.750	0.62	0.75	24.84	270.00	0.000	3.500	1182.29	0.00	4138.01
27	137.50	RRUS 4478 B5	3	27.046	29.750	0.50	0.75	2.77	215.64	0.000	3.500	132.03	0.00	462.12
28	137.50	Platform w/ Hand Rail	1	26.852	29.537	1.00	1.00	32.00	1920.00	0.000	0.000	1512.32	0.00	0.00
29	137.50	800 10966	3	26.852	29.537	0.54	0.75	28.12	452.52	0.000	0.000	1329.10	0.00	0.00
30	137.50	4426 B66	3	26.852	29.537	0.50	0.75	1.73	174.60	0.000	0.000	81.93	0.00	0.00
31	137.50	RRUS 32	6	26.852	29.537	0.50	0.75	4.97	554.40	0.000	0.000	235.11	0.00	0.00
32	137.50	RRUS 4478 B14	3	26.852	29.537	0.50	0.75	2.49	213.84	0.000	0.000	117.55	0.00	0.00
33	137.50	dbc0061F1V51-2	6	26.852	29.537	0.38	0.75	0.97	182.88	0.000	0.000	45.72	0.00	0.00
34	137.50	dc6-48-60-18-8c	1	26.852	29.537	0.75	0.75	0.95	24.00	0.000	0.000	44.66	0.00	0.00
35	137.50	DC6-48-60-18-8F	1	26.852	29.537	0.75	0.75	0.69	38.16	0.000	0.000	32.61	0.00	0.00
36	137.50	DC6-48-60-0-8C-EV	1	26.852	29.537	0.75	0.75	3.58	19.20	0.000	0.000	169.43	0.00	0.00
37	137.50	LGP21401	6	27.046	29.750	0.38	0.75	2.90	101.52	0.000	3.500	138.16	0.00	483.56
38	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
39	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
40	12.00	CS72188.01 LMU	1	17.366	19.103	1.00	1.00	0.14	1.20	0.000	0.000	4.28	0.00	0.00
							Totals:		**11,965.96**			**21,026.66**		

Total Applied Force Summary

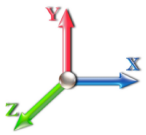
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

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	1821.83	0.00	0.00
10.00		692.84	1794.02	0.00	0.00
12.00	(1) attachments	277.84	711.02	0.00	0.00
15.00		406.52	1056.39	0.00	0.00
20.00		667.34	1738.40	0.00	0.00
22.00		263.37	687.57	0.00	0.00
25.00		391.23	1023.02	0.00	0.00
30.00		642.39	1682.78	0.00	0.00
33.50		456.24	1161.40	0.00	0.00
34.75		163.08	411.48	0.00	0.00
35.00		32.58	82.09	0.00	0.00
36.00		131.05	327.66	0.00	0.00
38.00		268.77	1117.62	0.00	0.00
39.00		134.56	555.71	0.00	0.00
40.00		134.98	553.65	0.00	0.00
42.00		272.07	1101.10	0.00	0.00
45.00		411.93	856.98	0.00	0.00
48.50		484.33	988.97	0.00	0.00
49.75		172.49	350.37	0.00	0.00
50.00		34.44	69.90	0.00	0.00
54.00	(2) attachments	689.44	1170.22	0.00	0.00
55.00		138.74	274.98	0.00	0.00
60.00		701.82	1360.60	0.00	0.00
65.00		702.14	1336.76	0.00	0.00
70.00		700.92	1312.92	0.00	0.00
71.25		176.73	580.08	0.00	0.00
75.00		531.81	1722.37	0.00	0.00
76.00		140.77	454.77	0.00	0.00
80.00		564.65	1025.08	0.00	0.00
85.00		702.68	1100.24	0.00	0.00
86.00		138.94	217.66	0.00	0.00
90.00		556.03	862.71	0.00	0.00
95.00		689.90	1060.51	0.00	0.00
100.00		682.09	1040.65	0.00	0.00
104.00		538.71	818.21	0.00	0.00
105.00		133.22	202.57	0.00	0.00
110.00		663.93	990.24	0.00	0.00
115.00		653.68	970.37	0.00	0.00
120.00		654.98	1630.32	0.00	0.00
125.00		643.48	943.48	0.00	0.00
130.00		631.33	796.63	0.00	0.00
135.00		618.57	780.74	0.00	0.00
137.50	(46) attachments	6842.46	4970.57	0.00	9768.43
140.00		300.13	328.48	0.00	0.00
145.00		591.30	645.03	0.00	0.00
147.00	(32) attachments	4816.05	2352.20	0.00	-2125.29

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
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: 14

Tower Engineering Solutions

150.00		343.68	326.47	0.00	0.00
155.00		572.43	973.26	0.00	0.00
160.00		557.06	523.74	0.00	0.00
165.00		541.21	507.85	0.00	0.00
170.00		524.90	491.95	0.00	0.00
174.00	(3) attachments	2454.32	1290.09	0.00	20801.51
175.00	(48) attachments	7768.85	4366.64	0.00	28344.46
	Totals:	**43,710.59**	**55,520.37**	**0.00**	**56,789.11**

Linear Appurtenance Segment Forces (Factored)

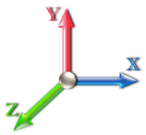
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

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	3.25	1.35	0.00	0.059	0.000	17.366	0.00	10.68
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	17.366	0.00	10.68
12.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.061	0.000	17.366	0.00	4.27
15.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.061	0.000	17.366	0.00	6.41
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	17.366	0.00	10.68
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	17.366	0.00	4.27
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	17.366	0.00	6.41
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	17.381	0.00	10.68
33.50	3" Chanel	Yes	3.50	0.000	3.25	0.95	0.00	0.066	0.000	17.938	0.00	7.48
34.75	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.066	0.000	18.126	0.00	2.67
35.00	3" Chanel	Yes	0.25	0.000	3.25	0.07	0.00	0.066	0.000	18.163	0.00	0.53
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.310	0.00	2.14
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	18.595	0.00	4.27
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.734	0.00	2.14
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	18.870	0.00	2.14
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	19.135	0.00	4.27
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	19.516	0.00	6.41
48.50	3" Chanel	Yes	3.50	0.000	3.25	0.95	0.00	0.069	0.000	19.938	0.00	7.48
49.75	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.069	0.000	20.083	0.00	2.67
50.00	3" Chanel	Yes	0.25	0.000	3.25	0.07	0.00	0.070	0.000	20.112	0.00	0.53
54.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.070	0.000	20.559	0.00	8.54
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.071	0.000	20.667	0.00	2.14
60.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.072	0.000	21.187	0.00	10.68
65.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.074	0.000	21.678	0.00	10.68
70.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.075	0.000	22.142	0.00	10.68
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.076	0.000	22.254	0.00	2.67
75.00	3" Chanel	Yes	3.75	0.000	3.25	1.02	0.00	0.077	0.000	22.582	0.00	8.01
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.078	0.000	22.668	0.00	2.14
80.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.078	0.000	23.003	0.00	8.54
85.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.079	0.000	23.404	0.00	10.68
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.081	0.000	23.483	0.00	2.14
90.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.082	0.000	23.790	0.00	8.54
95.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.083	0.000	24.160	0.00	10.68
100.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.086	0.000	24.517	0.00	10.68
104.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.088	0.000	24.793	0.00	8.54
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.089	0.000	24.861	0.00	2.14
										Totals:	**0.0**	**224.3**

Calculated Forces

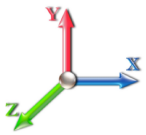
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

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	-55.45	-43.79	0.00	-5510.5	0.00	5510.55	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.729
5.00	-53.50	-43.25	0.00	-5291.5	0.00	5291.58	4251.62	2125.81	9227.39	4557.06	0.09	-0.171	0.000	0.715
10.00	-51.62	-42.65	0.00	-5075.3	0.00	5075.36	4207.27	2103.63	8961.88	4425.94	0.36	-0.342	0.000	0.700
12.00	-50.85	-42.45	0.00	-4990.0	0.00	4990.06	4189.17	2094.59	8855.93	4373.61	0.52	-0.412	0.000	0.695
15.00	-49.69	-42.15	0.00	-4862.7	0.00	4862.71	4161.65	2080.83	8697.29	4295.27	0.81	-0.517	0.000	0.686
20.00	-47.87	-41.57	0.00	-4651.9	0.00	4651.95	4114.76	2057.38	8433.78	4165.13	1.45	-0.690	0.000	0.671
22.00	-47.12	-41.38	0.00	-4568.8	0.00	4568.81	4095.66	2047.83	8328.71	4113.24	1.75	-0.761	0.000	0.794
25.00	-45.98	-41.11	0.00	-4444.6	0.00	4444.67	4066.61	2033.31	8171.50	4035.59	2.27	-0.887	0.000	0.784
30.00	-44.18	-40.57	0.00	-4239.1	0.00	4239.13	4017.20	2008.60	7910.59	3906.74	3.31	-1.096	0.000	0.767
33.50	-42.96	-40.17	0.00	-4097.1	0.00	4097.12	3981.85	1990.92	7728.86	3817.00	4.17	-1.244	0.000	0.755
34.75	-42.53	-40.02	0.00	-4046.9	0.00	4046.91	3969.08	1984.54	7664.15	3785.04	4.50	-1.298	0.000	0.627
35.00	-42.44	-40.00	0.00	-4036.9	0.00	4036.91	3966.51	1983.26	7651.22	3778.65	4.57	-1.307	0.000	0.537
36.00	-42.07	-39.90	0.00	-3996.9	0.00	3996.91	3956.22	1978.11	7599.55	3753.13	4.85	-1.338	0.000	0.684
38.00	-40.93	-39.65	0.00	-3917.1	0.00	3917.10	3935.49	1967.75	7496.40	3702.19	5.43	-1.417	0.000	0.520
39.00	-40.35	-39.52	0.00	-3877.4	0.00	3877.46	3925.05	1962.53	7444.93	3676.77	5.73	-1.447	0.000	0.605
40.00	-39.76	-39.41	0.00	-3837.9	0.00	3837.93	3914.56	1957.28	7393.54	3651.39	6.03	-1.482	0.000	0.602
42.00	-38.61	-39.17	0.00	-3759.1	0.00	3759.12	3554.53	1777.27	6785.59	3351.15	6.67	-1.553	0.000	0.578
45.00	-37.69	-38.81	0.00	-3641.6	0.00	3641.62	3532.39	1766.19	6658.05	3288.16	7.68	-1.659	0.000	0.600
48.50	-36.65	-38.35	0.00	-3505.7	0.00	3505.79	3505.83	1752.92	6509.28	3214.69	8.95	-1.789	0.000	0.673
49.75	-36.28	-38.19	0.00	-3457.8	0.00	3457.84	3496.16	1748.08	6456.16	3188.45	9.42	-1.843	0.000	0.713
50.00	-36.15	-38.22	0.00	-3448.3	0.00	3448.30	3494.22	1747.11	6445.54	3183.21	9.52	-1.854	0.000	0.712
54.00	-34.93	-37.56	0.00	-3295.4	0.00	3295.43	3462.54	1731.27	6275.67	3099.32	11.15	-2.035	0.000	0.694
55.00	-34.57	-37.49	0.00	-3257.8	0.00	3257.88	3454.46	1727.23	6233.23	3078.36	11.58	-2.081	0.000	0.689
60.00	-33.09	-36.87	0.00	-3070.4	0.00	3070.43	3413.12	1706.56	6021.34	2973.71	13.88	-2.306	0.000	0.666
65.00	-31.65	-36.23	0.00	-2886.1	0.00	2886.10	3370.20	1685.10	5810.04	2869.36	16.42	-2.531	0.000	0.643
70.00	-30.28	-35.55	0.00	-2704.9	0.00	2704.94	3325.69	1662.84	5599.53	2765.40	19.19	-2.754	0.000	0.619
71.25	-29.64	-35.40	0.00	-2660.5	0.00	2660.51	3314.31	1657.16	5547.04	2739.48	19.91	-2.811	0.000	0.606
75.00	-27.89	-34.83	0.00	-2527.7	0.00	2527.76	3279.60	1639.80	5389.99	2661.91	22.19	-2.977	0.000	0.587
76.00	-27.37	-34.72	0.00	-2492.9	0.00	2492.93	3306.32	1653.16	5510.48	2721.42	22.82	-3.022	0.000	0.598
80.00	-26.26	-34.19	0.00	-2354.0	0.00	2354.05	3269.04	1634.52	5343.14	2638.78	25.42	-3.197	0.000	0.558
80.00	-26.26	-34.19	0.00	-2354.0	0.00	2354.05	2504.08	1252.04	4105.75	2027.68	25.42	-3.197	0.000	0.608
85.00	-25.13	-33.48	0.00	-2183.1	0.00	2183.11	2474.85	1237.43	3958.27	1954.84	28.88	-3.404	0.000	0.643
86.00	-24.84	-33.39	0.00	-2149.6	0.00	2149.63	2468.82	1234.41	3928.75	1940.26	29.60	-3.451	0.000	0.793
90.00	-23.87	-32.89	0.00	-2016.0	0.00	2016.08	2444.04	1222.02	3810.67	1881.94	32.59	-3.680	0.000	0.762
95.00	-22.70	-32.24	0.00	-1851.6	0.00	1851.65	2411.64	1205.82	3663.14	1809.09	36.59	-3.959	0.000	0.721
100.00	-21.58	-31.57	0.00	-1690.4	0.00	1690.46	2377.66	1188.83	3515.87	1736.36	40.88	-4.233	0.000	0.680
104.00	-20.73	-31.02	0.00	-1564.1	0.00	1564.17	2349.34	1174.67	3398.38	1678.33	44.51	-4.449	0.000	0.645
104.00	-20.73	-31.02	0.00	-1564.1	0.00	1564.17	2349.34	1174.67	3398.38	1678.33	44.51	-4.449	0.000	0.645
105.00	-20.42	-30.95	0.00	-1533.1	0.00	1533.14	2342.10	1171.05	3369.07	1663.86	45.45	-4.504	0.000	0.931
110.00	-19.29	-30.34	0.00	-1378.3	0.00	1378.37	2304.95	1152.47	3222.91	1591.67	50.37	-4.884	0.000	0.875
115.00	-18.19	-29.72	0.00	-1226.6	0.00	1226.68	2266.22	1133.11	3077.59	1519.90	55.68	-5.253	0.000	0.816
120.00	-16.46	-29.01	0.00	-1078.0	0.00	1078.09	2252.14	1126.07	3026.44	1494.64	61.36	-5.610	0.000	0.729
125.00	-15.42	-28.36	0.00	-933.03	0.00	933.03	2211.27	1105.63	2882.56	1423.59	67.41	-5.951	0.000	0.663
125.00	-15.42	-28.36	0.00	-933.03	0.00	933.03	1600.93	800.47	2095.19	1034.73	67.41	-5.951	0.000	0.913
130.00	-14.54	-27.73	0.00	-791.22	0.00	791.22	1577.27	788.64	2000.77	988.11	73.80	-6.252	0.000	0.811
135.00	-13.72	-27.09	0.00	-652.55	0.00	652.55	1552.03	776.01	1906.32	941.46	80.52	-6.596	0.000	0.703
137.50	-9.52	-19.74	0.00	-575.05	0.00	575.05	1538.81	769.41	1859.13	918.16	84.01	-6.759	0.000	0.633
140.00	-9.16	-19.44	0.00	-525.69	0.00	525.69	1525.20	762.60	1812.01	894.88	87.59	-6.910	0.000	0.594

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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

Tower Engineering Solutions

145.00	-8.53	-18.80	0.00	-428.49	0.00	428.49	1496.79	748.40	1718.05	848.48	94.96	-7.187	0.000	0.511
147.00	-6.77	-13.74	0.00	-390.88	0.00	390.88	1484.98	742.49	1680.60	829.98	97.98	-7.292	0.000	0.476
150.00	-6.45	-13.38	0.00	-349.65	0.00	349.65	1466.80	733.40	1624.61	802.34	102.60	-7.441	0.000	0.441
155.00	-5.51	-12.71	0.00	-282.73	0.00	282.73	1451.75	725.87	1579.74	780.18	110.50	-7.667	0.000	0.367
160.00	-5.03	-12.10	0.00	-219.19	0.00	219.19	1419.41	709.70	1487.45	734.60	118.61	-7.867	0.000	0.302
165.00	-4.57	-11.51	0.00	-158.69	0.00	158.69	1385.48	692.74	1396.17	689.51	126.91	-8.025	0.000	0.234
170.00	-4.14	-10.92	0.00	-101.16	0.00	101.16	1349.97	674.99	1306.08	645.02	135.36	-8.148	0.000	0.160
170.00	-4.14	-10.92	0.00	-101.16	0.00	101.16	1349.97	674.99	1306.08	645.02	135.36	-8.148	0.000	0.160
174.00	-3.21	-8.31	0.00	-36.66	0.00	36.66	1121.46	560.73	870.39	429.85	142.20	-8.216	0.000	0.088
175.00	0.00	-7.77	0.00	-28.34	0.00	28.34	1053.22	526.61	767.04	378.81	143.91	-8.229	0.000	0.075

Wind Loading - Shaft

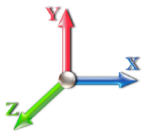
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.70	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
12.00	Appurtenance(s)	1.00	0.70	17.366	19.10	376.76	1.000	0.000	2.00	8.950	8.95	273.6	0.0	443.8
15.00		1.00	0.70	17.366	19.10	372.53	1.000	0.000	3.00	13.301	13.30	406.5	0.0	659.5
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
33.50	RB3	1.00	0.72	17.938	19.73	352.10	1.000	0.000	3.50	14.452	14.45	456.2	0.0	716.1
34.75	RB4	1.00	0.73	18.126	19.94	352.15	1.000	0.000	1.25	5.112	5.11	163.1	0.0	253.3
35.00	RB5	1.00	0.73	18.163	19.98	352.15	1.000	0.000	0.25	1.019	1.02	32.6	0.0	50.5
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	RB6	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	RT5	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
48.50	RT3	1.00	0.80	19.938	21.93	354.41	1.000	0.000	3.50	13.802	13.80	484.3	0.0	586.8
49.75	RT4	1.00	0.81	20.083	22.09	353.81	1.000	0.000	1.25	4.880	4.88	172.5	0.0	207.4
50.00		1.00	0.81	20.112	22.12	353.68	1.000	0.000	0.25	0.973	0.97	34.4	0.0	41.4
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	RT6 RB7	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	RT7 RB8	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	RT8	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
135.00		1.00	1.08	26.712	29.38	271.41	1.000	0.000	5.00	13.157	13.16	618.6	0.0	372.9
137.50	Appurtenance(s)	1.00	1.08	26.852	29.54	267.74	1.000	0.000	2.50	6.422	6.42	303.5	0.0	182.0
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	2.50	6.318	6.32	300.1	0.0	179.0
145.00		1.00	1.10	27.263	29.99	256.53	1.000	0.000	5.00	12.323	12.32	591.3	0.0	349.1
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	253.50	1.000	0.000	2.00	4.813	4.81	231.8	0.0	136.3

Wind Loading - Shaft

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

4/30/2020

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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
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
							Totals:	**175.00**			**22,683.9**		**25,975.3**

Discrete Appurtenance Forces

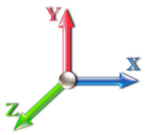
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

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)	Orient Factor 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	Pipes	12	28.768	31.644	0.64	0.80	14.59	356.40	0.000	0.000	738.81	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	29.518	32.470	0.67	1.00	23.36	129.60	0.000	16.500	1213.39	0.00	20020.89
3	175.00	E15S09P94	6	29.385	32.323	0.60	1.00	2.38	78.84	0.000	13.500	122.88	0.00	1658.89
4	175.00	1900MHz	3	28.861	31.747	0.67	1.00	5.57	162.00	0.000	2.000	282.82	0.00	565.63
5	175.00	800 MHz	6	28.861	31.747	0.67	1.00	10.01	286.20	0.000	2.000	508.45	0.00	1016.91
6	175.00	TD-RRH8x20-25	3	28.861	31.747	0.67	1.00	8.14	189.00	0.000	2.000	413.50	0.00	827.00
7	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
8	175.00	NNVV-65B-R4	3	28.861	31.747	0.74	1.00	27.24	208.98	0.000	2.000	1383.64	0.00	2767.29
9	175.00	PRK-SFS-L	1	28.768	31.644	0.75	0.75	5.78	207.00	0.000	0.000	292.39	0.00	0.00
10	175.00	Handrail	1	28.768	31.644	0.75	0.75	7.39	373.55	0.000	0.000	374.04	0.00	0.00
11	175.00	PRK-1245L	1	28.768	31.644	0.75	0.75	7.13	418.42	0.000	0.000	360.75	0.00	0.00
12	175.00	APXVTM14-C-I20	3	28.861	31.747	0.77	1.00	14.65	151.74	0.000	2.000	743.92	0.00	1487.85
13	174.00	4.5" x 24 FT Pipe	3	29.183	32.101	1.00	1.00	40.50	699.84	0.000	10.000	2080.15	0.00	20801.51
14	147.00	T-Arms	3	27.370	30.107	0.56	0.75	18.56	653.40	0.000	0.000	894.17	0.00	0.00
15	147.00	RRH2X60-PCS	3	27.209	29.930	0.54	0.80	3.54	148.50	0.000	-3.000	169.41	0.00	-508.22
16	147.00	RRH2X60-700	3	27.209	29.930	0.54	0.80	5.63	162.00	0.000	-3.000	269.51	0.00	-808.54
17	147.00	FD9R6004/2C-3L	6	27.370	30.107	0.40	0.80	0.86	16.74	0.000	0.000	41.62	0.00	0.00
18	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
19	147.00	BXA-80080-4CF	3	27.370	30.107	0.70	0.80	7.50	32.40	0.000	0.000	361.36	0.00	0.00
20	147.00	SBNHH-1D65B	6	27.370	30.107	0.66	0.80	31.88	273.83	0.000	0.000	1535.70	0.00	0.00
21	147.00	RRH2X60-AWS	3	27.209	29.930	0.54	0.80	5.63	162.00	0.000	-3.000	269.51	0.00	-808.54
22	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
23	137.50	RRUS 11	3	26.852	29.537	0.50	0.75	3.80	136.89	0.000	0.000	179.54	0.00	0.00
24	137.50	7770.00	3	27.046	29.750	0.55	0.75	9.03	94.50	0.000	3.500	430.01	0.00	1505.04
25	137.50	AM-X-CD-17-65-00T-RET	3	27.046	29.750	0.56	0.75	19.09	83.16	0.000	3.500	908.49	0.00	3179.70
26	137.50	TPA-65R-LCUUUU-H8	3	27.046	29.750	0.62	0.75	24.84	202.50	0.000	3.500	1182.29	0.00	4138.01
27	137.50	RRUS 4478 B5	3	27.046	29.750	0.50	0.75	2.77	161.73	0.000	3.500	132.03	0.00	462.12
28	137.50	Platform w/ Hand Rail	1	26.852	29.537	1.00	1.00	32.00	1440.00	0.000	0.000	1512.32	0.00	0.00
29	137.50	800 10966	3	26.852	29.537	0.54	0.75	28.12	339.39	0.000	0.000	1329.10	0.00	0.00
30	137.50	4426 B66	3	26.852	29.537	0.50	0.75	1.73	130.95	0.000	0.000	81.93	0.00	0.00
31	137.50	RRUS 32	6	26.852	29.537	0.50	0.75	4.97	415.80	0.000	0.000	235.11	0.00	0.00
32	137.50	RRUS 4478 B14	3	26.852	29.537	0.50	0.75	2.49	160.38	0.000	0.000	117.55	0.00	0.00
33	137.50	dbc0061F1V51-2	6	26.852	29.537	0.38	0.75	0.97	137.16	0.000	0.000	45.72	0.00	0.00
34	137.50	dc6-48-60-18-8c	1	26.852	29.537	0.75	0.75	0.95	18.00	0.000	0.000	44.66	0.00	0.00
35	137.50	DC6-48-60-18-8F	1	26.852	29.537	0.75	0.75	0.69	28.62	0.000	0.000	32.61	0.00	0.00
36	137.50	DC6-48-60-0-8C-EV	1	26.852	29.537	0.75	0.75	3.58	14.40	0.000	0.000	169.43	0.00	0.00
37	137.50	LGP21401	6	27.046	29.750	0.38	0.75	2.90	76.14	0.000	3.500	138.16	0.00	483.56
38	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
39	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
40	12.00	CS72188.01 LMU	1	17.366	19.103	1.00	1.00	0.14	0.90	0.000	0.000	4.28	0.00	0.00
							Totals:		**8,974.47**			**21,026.66**		

Total Applied Force Summary

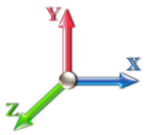
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Tower Engineering Solutions

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	1366.38	0.00	0.00
10.00		692.84	1345.52	0.00	0.00
12.00	(1) attachments	277.84	533.27	0.00	0.00
15.00		406.52	792.29	0.00	0.00
20.00		667.34	1303.80	0.00	0.00
22.00		263.37	515.68	0.00	0.00
25.00		391.23	767.26	0.00	0.00
30.00		642.39	1262.09	0.00	0.00
33.50		456.24	871.05	0.00	0.00
34.75		163.08	308.61	0.00	0.00
35.00		32.58	61.57	0.00	0.00
36.00		131.05	245.74	0.00	0.00
38.00		268.77	838.22	0.00	0.00
39.00		134.56	416.78	0.00	0.00
40.00		134.98	415.24	0.00	0.00
42.00		272.07	825.82	0.00	0.00
45.00		411.93	642.74	0.00	0.00
48.50		484.33	741.73	0.00	0.00
49.75		172.49	262.78	0.00	0.00
50.00		34.44	52.42	0.00	0.00
54.00	(2) attachments	689.44	877.67	0.00	0.00
55.00		138.74	206.24	0.00	0.00
60.00		701.82	1020.45	0.00	0.00
65.00		702.14	1002.57	0.00	0.00
70.00		700.92	984.69	0.00	0.00
71.25		176.73	435.06	0.00	0.00
75.00		531.81	1291.78	0.00	0.00
76.00		140.77	341.08	0.00	0.00
80.00		564.65	768.81	0.00	0.00
85.00		702.68	825.18	0.00	0.00
86.00		138.94	163.25	0.00	0.00
90.00		556.03	647.03	0.00	0.00
95.00		689.90	795.38	0.00	0.00
100.00		682.09	780.48	0.00	0.00
104.00		538.71	613.66	0.00	0.00
105.00		133.22	151.93	0.00	0.00
110.00		663.93	742.68	0.00	0.00
115.00		653.68	727.78	0.00	0.00
120.00		654.98	1222.74	0.00	0.00
125.00		643.48	707.61	0.00	0.00
130.00		631.33	597.47	0.00	0.00
135.00		618.57	585.55	0.00	0.00
137.50	(46) attachments	6842.46	3727.93	0.00	9768.43
140.00		300.13	246.36	0.00	0.00
145.00		591.30	483.78	0.00	0.00
147.00	(32) attachments	4816.05	1764.15	0.00	-2125.29

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
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: 22

Tower Engineering Solutions

150.00		343.68	244.86	0.00	0.00
155.00		572.43	729.95	0.00	0.00
160.00		557.06	392.80	0.00	0.00
165.00		541.21	380.88	0.00	0.00
170.00		524.90	368.97	0.00	0.00
174.00	(3) attachments	2454.32	967.56	0.00	20801.51
175.00	(48) attachments	7768.85	3274.98	0.00	28344.46
	Totals:	**43,710.59**	**41,640.28**	**0.00**	**56,789.11**

Linear Appurtenance Segment Forces (Factored)

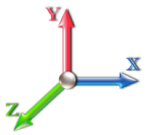
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

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	3.25	1.35	0.00	0.059	0.000	17.366	0.00	8.01
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	17.366	0.00	8.01
12.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.061	0.000	17.366	0.00	3.20
15.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.061	0.000	17.366	0.00	4.81
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	17.366	0.00	8.01
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	17.366	0.00	3.20
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	17.366	0.00	4.81
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	17.381	0.00	8.01
33.50	3" Chanel	Yes	3.50	0.000	3.25	0.95	0.00	0.066	0.000	17.938	0.00	5.61
34.75	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.066	0.000	18.126	0.00	2.00
35.00	3" Chanel	Yes	0.25	0.000	3.25	0.07	0.00	0.066	0.000	18.163	0.00	0.40
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.310	0.00	1.60
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	18.595	0.00	3.20
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.734	0.00	1.60
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	18.870	0.00	1.60
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	19.135	0.00	3.20
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	19.516	0.00	4.81
48.50	3" Chanel	Yes	3.50	0.000	3.25	0.95	0.00	0.069	0.000	19.938	0.00	5.61
49.75	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.069	0.000	20.083	0.00	2.00
50.00	3" Chanel	Yes	0.25	0.000	3.25	0.07	0.00	0.070	0.000	20.112	0.00	0.40
54.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.070	0.000	20.559	0.00	6.41
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.071	0.000	20.667	0.00	1.60
60.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.072	0.000	21.187	0.00	8.01
65.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.074	0.000	21.678	0.00	8.01
70.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.075	0.000	22.142	0.00	8.01
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.076	0.000	22.254	0.00	2.00
75.00	3" Chanel	Yes	3.75	0.000	3.25	1.02	0.00	0.077	0.000	22.582	0.00	6.01
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.078	0.000	22.668	0.00	1.60
80.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.078	0.000	23.003	0.00	6.41
85.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.079	0.000	23.404	0.00	8.01
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.081	0.000	23.483	0.00	1.60
90.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.082	0.000	23.790	0.00	6.41
95.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.083	0.000	24.160	0.00	8.01
100.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.086	0.000	24.517	0.00	8.01
104.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.088	0.000	24.793	0.00	6.41
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.089	0.000	24.861	0.00	1.60
										Totals:	**0.0**	**168.2**

Calculated Forces

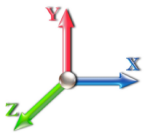
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

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	-41.57	-43.77	0.00	-5452.3	0.00	5452.38	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.720
5.00	-40.08	-43.18	0.00	-5233.5	0.00	5233.52	4251.62	2125.81	9227.39	4557.06	0.09	-0.169	0.000	0.705
10.00	-38.65	-42.56	0.00	-5017.6	0.00	5017.61	4207.27	2103.63	8961.88	4425.94	0.36	-0.339	0.000	0.691
12.00	-38.06	-42.34	0.00	-4932.4	0.00	4932.48	4189.17	2094.59	8855.93	4373.61	0.52	-0.408	0.000	0.685
15.00	-37.17	-42.02	0.00	-4805.4	0.00	4805.46	4161.65	2080.83	8697.29	4295.27	0.80	-0.511	0.000	0.676
20.00	-35.78	-41.41	0.00	-4595.3	0.00	4595.38	4114.76	2057.38	8433.78	4165.13	1.43	-0.683	0.000	0.661
22.00	-35.20	-41.20	0.00	-4512.5	0.00	4512.55	4095.66	2047.83	8328.71	4113.24	1.73	-0.752	0.000	0.782
25.00	-34.32	-40.90	0.00	-4388.9	0.00	4388.95	4066.61	2033.31	8171.50	4035.59	2.25	-0.877	0.000	0.772
30.00	-32.95	-40.34	0.00	-4184.4	0.00	4184.46	4017.20	2008.60	7910.59	3906.74	3.27	-1.083	0.000	0.755
33.50	-32.01	-39.92	0.00	-4043.2	0.00	4043.28	3981.85	1990.92	7728.86	3817.00	4.12	-1.229	0.000	0.743
34.75	-31.69	-39.77	0.00	-3993.3	0.00	3993.38	3969.08	1984.54	7664.15	3785.04	4.45	-1.282	0.000	0.617
35.00	-31.61	-39.74	0.00	-3983.4	0.00	3983.44	3966.51	1983.26	7651.22	3778.65	4.52	-1.291	0.000	0.529
36.00	-31.33	-39.64	0.00	-3943.7	0.00	3943.70	3956.22	1978.11	7599.55	3753.13	4.79	-1.322	0.000	0.673
38.00	-30.47	-39.38	0.00	-3864.4	0.00	3864.43	3935.49	1967.75	7496.40	3702.19	5.36	-1.399	0.000	0.512
39.00	-30.03	-39.25	0.00	-3825.0	0.00	3825.06	3925.05	1962.53	7444.93	3676.77	5.66	-1.429	0.000	0.595
40.00	-29.58	-39.13	0.00	-3785.8	0.00	3785.81	3914.56	1957.28	7393.54	3651.39	5.96	-1.464	0.000	0.592
42.00	-28.70	-38.88	0.00	-3707.5	0.00	3707.55	3554.53	1777.27	6785.59	3351.15	6.59	-1.534	0.000	0.569
45.00	-28.00	-38.51	0.00	-3590.9	0.00	3590.91	3532.39	1766.19	6658.05	3288.16	7.59	-1.638	0.000	0.590
48.50	-27.21	-38.04	0.00	-3456.1	0.00	3456.14	3505.83	1752.92	6509.28	3214.69	8.84	-1.766	0.000	0.662
49.75	-26.93	-37.88	0.00	-3408.5	0.00	3408.59	3496.16	1748.08	6456.16	3188.45	9.31	-1.819	0.000	0.701
50.00	-26.82	-37.89	0.00	-3399.1	0.00	3399.12	3494.22	1747.11	6445.54	3183.21	9.41	-1.831	0.000	0.700
54.00	-25.89	-37.22	0.00	-3247.5	0.00	3247.57	3462.54	1731.27	6275.67	3099.32	11.02	-2.009	0.000	0.682
55.00	-25.60	-37.13	0.00	-3210.3	0.00	3210.36	3454.46	1727.23	6233.23	3078.36	11.44	-2.055	0.000	0.678
60.00	-24.47	-36.49	0.00	-3024.6	0.00	3024.69	3413.12	1706.56	6021.34	2973.71	13.71	-2.276	0.000	0.655
65.00	-23.36	-35.83	0.00	-2842.2	0.00	2842.26	3370.20	1685.10	5810.04	2869.36	16.21	-2.498	0.000	0.632
70.00	-22.32	-35.14	0.00	-2663.0	0.00	2663.09	3325.69	1662.84	5599.53	2765.40	18.95	-2.718	0.000	0.608
71.25	-21.83	-34.99	0.00	-2619.1	0.00	2619.16	3314.31	1657.16	5547.04	2739.48	19.67	-2.774	0.000	0.595
75.00	-20.50	-34.43	0.00	-2487.9	0.00	2487.95	3279.60	1639.80	5389.99	2661.91	21.91	-2.937	0.000	0.577
76.00	-20.10	-34.31	0.00	-2453.5	0.00	2453.53	3306.32	1653.16	5510.48	2721.42	22.53	-2.981	0.000	0.587
80.00	-19.25	-33.77	0.00	-2316.2	0.00	2316.29	3269.04	1634.52	5343.14	2638.78	25.10	-3.153	0.000	0.548
80.00	-19.25	-33.77	0.00	-2316.2	0.00	2316.29	2504.08	1252.04	4105.75	2027.68	25.10	-3.153	0.000	0.597
85.00	-18.40	-33.06	0.00	-2147.4	0.00	2147.45	2474.85	1237.43	3958.27	1954.84	28.51	-3.357	0.000	0.631
86.00	-18.17	-32.95	0.00	-2114.3	0.00	2114.39	2468.82	1234.41	3928.75	1940.26	29.22	-3.404	0.000	0.779
90.00	-17.41	-32.44	0.00	-1982.5	0.00	1982.58	2444.04	1222.02	3810.67	1881.94	32.16	-3.628	0.000	0.747
95.00	-16.51	-31.77	0.00	-1820.4	0.00	1820.40	2411.64	1205.82	3663.14	1809.09	36.11	-3.903	0.000	0.707
100.00	-15.65	-31.10	0.00	-1661.5	0.00	1661.53	2377.66	1188.83	3515.87	1736.36	40.34	-4.172	0.000	0.666
104.00	-15.01	-30.56	0.00	-1537.1	0.00	1537.11	2349.34	1174.67	3398.38	1678.33	43.92	-4.385	0.000	0.633
104.00	-15.01	-30.56	0.00	-1537.1	0.00	1537.11	2349.34	1174.67	3398.38	1678.33	43.92	-4.385	0.000	0.633
105.00	-14.75	-30.47	0.00	-1506.5	0.00	1506.55	2342.10	1171.05	3369.07	1663.86	44.85	-4.438	0.000	0.912
110.00	-13.88	-29.84	0.00	-1354.2	0.00	1354.21	2304.95	1152.47	3222.91	1591.67	49.69	-4.812	0.000	0.858
115.00	-13.03	-29.20	0.00	-1205.0	0.00	1205.03	2266.22	1133.11	3077.59	1519.90	54.92	-5.175	0.000	0.799
120.00	-11.70	-28.51	0.00	-1059.0	0.00	1059.02	2252.14	1126.07	3026.44	1494.64	60.52	-5.525	0.000	0.714
125.00	-10.91	-27.86	0.00	-916.48	0.00	916.48	2211.27	1105.63	2882.56	1423.59	66.48	-5.860	0.000	0.649
125.00	-10.91	-27.86	0.00	-916.48	0.00	916.48	1600.93	800.47	2095.19	1034.73	66.48	-5.860	0.000	0.894
130.00	-10.23	-27.22	0.00	-777.19	0.00	777.19	1577.27	788.64	2000.77	988.11	72.77	-6.156	0.000	0.794
135.00	-9.60	-26.59	0.00	-641.07	0.00	641.07	1552.03	776.01	1906.32	941.46	79.39	-6.494	0.000	0.688
137.50	-6.63	-19.38	0.00	-564.84	0.00	564.84	1538.81	769.41	1859.13	918.16	82.83	-6.654	0.000	0.620
140.00	-6.35	-19.08	0.00	-516.39	0.00	516.39	1525.20	762.60	1812.01	894.88	86.34	-6.803	0.000	0.582

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 25

Tower Engineering Solutions

145.00	-5.88	-18.45	0.00	-421.00	0.00	421.00	1496.79	748.40	1718.05	848.48	93.60	-7.074	0.000	0.501
147.00	-4.70	-13.46	0.00	-384.10	0.00	384.10	1484.98	742.49	1680.60	829.98	96.58	-7.177	0.000	0.466
150.00	-4.46	-13.11	0.00	-343.71	0.00	343.71	1466.80	733.40	1624.61	802.34	101.12	-7.324	0.000	0.432
155.00	-3.76	-12.46	0.00	-278.19	0.00	278.19	1451.75	725.87	1579.74	780.18	108.90	-7.546	0.000	0.359
160.00	-3.41	-11.86	0.00	-215.90	0.00	215.90	1419.41	709.70	1487.45	734.60	116.88	-7.742	0.000	0.297
165.00	-3.08	-11.28	0.00	-156.58	0.00	156.58	1385.48	692.74	1396.17	689.51	125.05	-7.899	0.000	0.230
170.00	-2.77	-10.72	0.00	-100.17	0.00	100.17	1349.97	674.99	1306.08	645.02	133.37	-8.021	0.000	0.158
170.00	-2.77	-10.72	0.00	-100.17	0.00	100.17	1349.97	674.99	1306.08	645.02	133.37	-8.021	0.000	0.158
174.00	-2.15	-8.15	0.00	-36.50	0.00	36.50	1121.46	560.73	870.39	429.85	140.10	-8.088	0.000	0.087
175.00	0.00	-7.77	0.00	-28.34	0.00	28.34	1053.22	526.61	767.04	378.81	141.79	-8.101	0.000	0.075

Wind Loading - Shaft

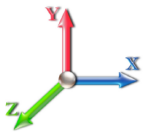
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	24.120	28.94	135.5	436.6	1963.3
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	23.777	28.53	133.6	460.4	1959.2
12.00	Appurtenance(s)	1.00	0.70	4.256	4.68	0.00	1.200	1.356	2.00	9.402	11.28	52.8	186.3	778.0
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	3.00	13.994	16.79	78.6	282.7	1162.0
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
33.50	RB3	1.00	0.72	4.396	4.84	0.00	1.200	1.502	3.50	15.328	18.39	88.9	333.8	1288.6
34.75	RB4	1.00	0.73	4.442	4.89	0.00	1.200	1.508	1.25	5.426	6.51	31.8	119.1	456.8
35.00	RB5	1.00	0.73	4.451	4.90	0.00	1.200	1.509	0.25	1.082	1.30	6.4	23.8	91.1
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	RB6	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	RT5	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
48.50	RT3	1.00	0.80	4.886	5.37	0.00	1.200	1.559	3.50	14.712	17.65	94.9	331.6	1113.9
49.75	RT4	1.00	0.81	4.922	5.41	0.00	1.200	1.563	1.25	5.205	6.25	33.8	118.1	394.7
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	0.25	1.038	1.25	6.8	23.6	78.7
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	RT6 RB7	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	RT7 RB8	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	RT8	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
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	5.00	14.597	17.52	126.1	354.7	851.9
137.50	Appurtenance(s)	1.00	1.08	6.581	7.24	0.00	1.200	1.730	2.50	7.143	8.57	62.1	175.0	417.6
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	2.50	7.040	8.45	61.5	172.6	411.3
145.00		1.00	1.10	6.681	7.35	0.00	1.200	1.739	5.00	13.773	16.53	121.5	335.6	801.0
147.00	Appurtenance(s)	1.00	1.10	6.708	7.38	0.00	1.200	1.742	2.00	5.393	6.47	47.8	132.7	314.4

Wind Loading - Shaft

Structure: CT00680-S-SBA | **Code:** EIA/TIA-222-G | 4/30/2020

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: 27

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
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
							Totals:	**175.00**			**4,528.0**		**48,888.5**

Discrete Appurtenance Forces

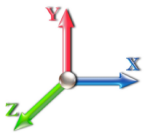
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor 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	Pipes	12	7.050	7.755	0.64	0.80	33.11	72.82	0.000	0.000	256.77	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	7.234	7.957	0.69	1.00	28.50	981.06	0.000	16.500	226.80	0.00	3742.19
3	175.00	E15S09P94	6	7.201	7.922	0.60	1.00	4.58	180.80	0.000	13.500	36.30	0.00	490.07
4	175.00	1900MHz	3	7.073	7.780	0.67	1.00	8.16	398.49	0.000	2.000	63.47	0.00	126.93
5	175.00	800 MHz	6	7.073	7.780	0.67	1.00	14.68	705.65	0.000	2.000	114.21	0.00	228.42
6	175.00	TD-RRH8x20-25	3	7.073	7.780	0.67	1.00	9.80	589.63	0.000	2.000	76.27	0.00	152.53
7	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
8	175.00	NNVV-65B-R4	3	7.073	7.780	0.74	1.00	30.52	951.22	0.000	2.000	237.48	0.00	474.95
9	175.00	PRK-SFS-L	1	7.050	7.755	0.75	0.75	11.92	501.11	0.000	0.000	92.41	0.00	0.00
10	175.00	Handrail	1	7.050	7.755	0.75	0.75	16.81	725.08	0.000	0.000	130.40	0.00	0.00
11	175.00	PRK-1245L	1	7.050	7.755	0.75	0.75	14.70	792.39	0.000	0.000	114.01	0.00	0.00
12	175.00	APXVTM14-C-I20	3	7.073	7.780	0.77	1.00	17.26	692.57	0.000	2.000	134.29	0.00	268.58
13	174.00	4.5" x 24 FT Pipe	3	7.152	7.867	1.00	1.00	61.76	1475.17	0.000	10.000	485.84	0.00	4858.41
14	147.00	T-Arms	3	6.708	7.378	0.56	0.75	41.77	1310.76	0.000	0.000	308.22	0.00	0.00
15	147.00	RRH2X60-PCS	3	6.668	7.335	0.54	0.80	4.56	450.95	0.000	-3.000	33.43	0.00	-100.30
16	147.00	RRH2X60-700	3	6.668	7.335	0.54	0.80	6.89	417.04	0.000	-3.000	50.57	0.00	-151.71
17	147.00	FD9R6004/2C-3L	6	6.708	7.378	0.40	0.80	1.93	60.18	0.000	0.000	14.21	0.00	0.00
18	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
19	147.00	BXA-80080-4CF	3	6.708	7.378	0.70	0.80	11.37	239.55	0.000	0.000	83.92	0.00	0.00
20	147.00	SBNHH-1D65B	6	6.708	7.378	0.66	0.80	37.06	1571.84	0.000	0.000	273.42	0.00	0.00
21	147.00	RRH2X60-AWS	3	6.668	7.335	0.54	0.80	6.89	417.04	0.000	-3.000	50.57	0.00	-151.71
22	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
23	137.50	RRUS 11	3	6.581	7.239	0.52	0.75	4.91	447.27	0.000	0.000	35.57	0.00	0.00
24	137.50	7770.00	3	6.628	7.291	0.56	0.75	11.06	527.22	0.000	3.500	80.65	0.00	282.29
25	137.50	AM-X-CD-17-65-00T-RET	3	6.628	7.291	0.58	0.75	26.88	347.37	0.000	3.500	195.96	0.00	685.85
26	137.50	TPA-65R-LCUUUU-H8	3	6.628	7.291	0.62	0.75	27.88	1197.00	0.000	3.500	203.30	0.00	711.56
27	137.50	RRUS 4478 B5	3	6.628	7.291	0.50	0.75	3.59	325.92	0.000	3.500	26.20	0.00	91.70
28	137.50	Platform w/ Hand Rail	1	6.581	7.239	1.00	1.00	59.68	3401.65	0.000	0.000	432.03	0.00	0.00
29	137.50	800 10966	3	6.581	7.239	0.55	0.75	31.46	1514.77	0.000	0.000	227.70	0.00	0.00
30	137.50	4426 B66	3	6.581	7.239	0.52	0.75	2.52	290.63	0.000	0.000	18.21	0.00	0.00
31	137.50	RRUS 32	6	6.581	7.239	0.52	0.75	6.91	842.00	0.000	0.000	49.99	0.00	0.00
32	137.50	RRUS 4478 B14	3	6.581	7.239	0.52	0.75	3.36	308.96	0.000	0.000	24.32	0.00	0.00
33	137.50	dbc0061F1V51-2	6	6.581	7.239	0.39	0.75	1.67	248.36	0.000	0.000	12.07	0.00	0.00
34	137.50	dc6-48-60-18-8c	1	6.581	7.239	0.75	0.75	1.44	61.20	0.000	0.000	10.39	0.00	0.00
35	137.50	DC6-48-60-18-8F	1	6.581	7.239	0.75	0.75	1.02	81.75	0.000	0.000	7.35	0.00	0.00
36	137.50	DC6-48-60-0-8C-EV	1	6.581	7.239	0.75	0.75	4.24	112.06	0.000	0.000	30.71	0.00	0.00
37	137.50	LGP21401	6	6.628	7.291	0.38	0.75	4.77	207.63	0.000	3.500	34.75	0.00	121.63
38	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
39	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
40	12.00	CS72188.01 LMU	1	4.256	4.682	1.00	1.00	0.31	4.94	0.000	0.000	1.44	0.00	0.00
							Totals:		**24,680.57**			**4,871.30**		

Total Applied Force Summary

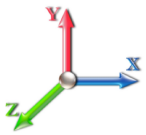
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		135.51	2286.27	0.00	0.00
10.00		133.58	2284.65	0.00	0.00
12.00	(1) attachments	54.26	913.40	0.00	0.00
15.00		78.62	1358.21	0.00	0.00
20.00		129.34	2247.77	0.00	0.00
22.00		51.11	891.91	0.00	0.00
25.00		76.01	1330.35	0.00	0.00
30.00		125.04	2195.53	0.00	0.00
33.50		88.94	1519.88	0.00	0.00
34.75		31.82	539.41	0.00	0.00
35.00		6.36	107.67	0.00	0.00
36.00		25.58	429.91	0.00	0.00
38.00		52.45	1324.72	0.00	0.00
39.00		26.27	659.16	0.00	0.00
40.00		26.37	656.99	0.00	0.00
42.00		53.18	1307.29	0.00	0.00
45.00		80.60	1165.03	0.00	0.00
48.50		94.89	1346.41	0.00	0.00
49.75		33.82	477.76	0.00	0.00
50.00		6.75	95.36	0.00	0.00
54.00	(2) attachments	163.12	1642.64	0.00	0.00
55.00		27.26	375.89	0.00	0.00
60.00		138.09	1859.84	0.00	0.00
65.00		138.44	1830.17	0.00	0.00
70.00		138.49	1800.08	0.00	0.00
71.25		34.91	703.43	0.00	0.00
75.00		105.18	2088.70	0.00	0.00
76.00		27.87	552.19	0.00	0.00
80.00		111.92	1410.30	0.00	0.00
85.00		139.56	1574.53	0.00	0.00
86.00		27.63	312.23	0.00	0.00
90.00		110.71	1236.14	0.00	0.00
95.00		137.67	1519.55	0.00	0.00
100.00		136.45	1491.70	0.00	0.00
104.00		108.01	1173.82	0.00	0.00
105.00		26.74	291.14	0.00	0.00
110.00		133.52	1383.54	0.00	0.00
115.00		131.84	1354.85	0.00	0.00
120.00		132.27	2012.73	0.00	0.00
125.00		130.35	1316.80	0.00	0.00
130.00		128.30	1160.70	0.00	0.00
135.00		126.13	1135.43	0.00	0.00
137.50	(46) attachments	1451.26	10473.17	0.00	1893.03
140.00		61.47	501.07	0.00	0.00
145.00		121.47	980.61	0.00	0.00
147.00	(32) attachments	1070.44	5632.54	0.00	-403.73

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
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: 30

Tower Engineering Solutions

150.00		70.94	521.98	0.00	0.00
155.00		118.33	1294.93	0.00	0.00
160.00		115.67	835.48	0.00	0.00
165.00		112.91	809.57	0.00	0.00
170.00		110.07	783.56	0.00	0.00
174.00	(3) attachments	565.59	2023.75	0.00	4858.41
175.00	(48) attachments	1936.24	8037.51	0.00	5483.68
	Totals:	**9,399.33**	**83,258.25**	**0.00**	**11,831.39**

Linear Appurtenance Segment Forces (Factored)

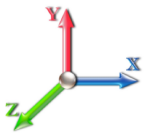
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	2.39	0.00	0.059	0.000	4.256	0.00	38.50
10.00	3" Chanel	Yes	5.00	0.000	3.25	2.46	0.00	0.060	0.000	4.256	0.00	40.94
12.00	3" Chanel	Yes	2.00	0.000	3.25	0.99	0.00	0.061	0.000	4.256	0.00	16.65
15.00	3" Chanel	Yes	3.00	0.000	3.25	1.51	0.00	0.061	0.000	4.256	0.00	25.50
20.00	3" Chanel	Yes	5.00	0.000	3.25	2.54	0.00	0.062	0.000	4.256	0.00	43.68
22.00	3" Chanel	Yes	2.00	0.000	3.25	1.02	0.00	0.063	0.000	4.256	0.00	17.63
25.00	3" Chanel	Yes	3.00	0.000	3.25	1.54	0.00	0.063	0.000	4.256	0.00	26.77
30.00	3" Chanel	Yes	5.00	0.000	3.25	2.59	0.00	0.064	0.000	4.260	0.00	45.42
33.50	3" Chanel	Yes	3.50	0.000	3.25	1.82	0.00	0.066	0.000	4.396	0.00	32.14
34.75	3" Chanel	Yes	1.25	0.000	3.25	0.65	0.00	0.066	0.000	4.442	0.00	11.52
35.00	3" Chanel	Yes	0.25	0.000	3.25	0.13	0.00	0.066	0.000	4.451	0.00	2.31
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.52	0.00	0.067	0.000	4.487	0.00	9.25
38.00	3" Chanel	Yes	2.00	0.000	3.25	1.05	0.00	0.067	0.000	4.557	0.00	18.60
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.067	0.000	4.591	0.00	9.32
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.068	0.000	4.625	0.00	9.35
42.00	3" Chanel	Yes	2.00	0.000	3.25	1.05	0.00	0.068	0.000	4.689	0.00	18.78
45.00	3" Chanel	Yes	3.00	0.000	3.25	1.59	0.00	0.068	0.000	4.783	0.00	28.37
48.50	3" Chanel	Yes	3.50	0.000	3.25	1.86	0.00	0.069	0.000	4.886	0.00	33.35
49.75	3" Chanel	Yes	1.25	0.000	3.25	0.66	0.00	0.069	0.000	4.922	0.00	11.94
50.00	3" Chanel	Yes	0.25	0.000	3.25	0.13	0.00	0.070	0.000	4.929	0.00	2.39
54.00	3" Chanel	Yes	4.00	0.000	3.25	2.13	0.00	0.070	0.000	5.039	0.00	38.53
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.071	0.000	5.065	0.00	9.65
60.00	3" Chanel	Yes	5.00	0.000	3.25	2.68	0.00	0.072	0.000	5.193	0.00	48.68
65.00	3" Chanel	Yes	5.00	0.000	3.25	2.69	0.00	0.074	0.000	5.313	0.00	49.08
70.00	3" Chanel	Yes	5.00	0.000	3.25	2.70	0.00	0.075	0.000	5.426	0.00	49.45
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.68	0.00	0.076	0.000	5.454	0.00	12.39
75.00	3" Chanel	Yes	3.75	0.000	3.25	2.03	0.00	0.077	0.000	5.534	0.00	37.36
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.54	0.00	0.078	0.000	5.555	0.00	9.98
80.00	3" Chanel	Yes	4.00	0.000	3.25	2.18	0.00	0.078	0.000	5.637	0.00	40.11
85.00	3" Chanel	Yes	5.00	0.000	3.25	2.73	0.00	0.079	0.000	5.736	0.00	50.46
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.55	0.00	0.081	0.000	5.755	0.00	10.10
90.00	3" Chanel	Yes	4.00	0.000	3.25	2.19	0.00	0.082	0.000	5.830	0.00	40.61
95.00	3" Chanel	Yes	5.00	0.000	3.25	2.74	0.00	0.083	0.000	5.921	0.00	51.05
100.00	3" Chanel	Yes	5.00	0.000	3.25	2.75	0.00	0.086	0.000	6.008	0.00	51.32
104.00	3" Chanel	Yes	4.00	0.000	3.25	2.20	0.00	0.088	0.000	6.076	0.00	41.23
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.55	0.00	0.089	0.000	6.093	0.00	10.32
										Totals:	**0.0**	**992.7**

Calculated Forces

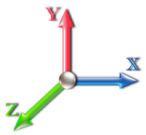
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-83.25	-9.43	0.00	-1262.8	0.00	1262.85	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.177
5.00	-80.96	-9.35	0.00	-1215.7	0.00	1215.71	4251.62	2125.81	9227.39	4557.06	0.02	-0.039	0.000	0.174
10.00	-78.67	-9.25	0.00	-1168.9	0.00	1168.97	4207.27	2103.63	8961.88	4425.94	0.08	-0.079	0.000	0.170
12.00	-77.76	-9.22	0.00	-1150.4	0.00	1150.47	4189.17	2094.59	8855.93	4373.61	0.12	-0.095	0.000	0.169
15.00	-76.39	-9.18	0.00	-1122.8	0.00	1122.81	4161.65	2080.83	8697.29	4295.27	0.19	-0.119	0.000	0.167
20.00	-74.14	-9.08	0.00	-1076.9	0.00	1076.90	4114.76	2057.38	8433.78	4165.13	0.33	-0.159	0.000	0.164
22.00	-73.25	-9.06	0.00	-1058.7	0.00	1058.73	4095.66	2047.83	8328.71	4113.24	0.40	-0.175	0.000	0.195
25.00	-71.91	-9.03	0.00	-1031.5	0.00	1031.55	4066.61	2033.31	8171.50	4035.59	0.52	-0.205	0.000	0.193
30.00	-69.71	-8.95	0.00	-986.41	0.00	986.41	4017.20	2008.60	7910.59	3906.74	0.76	-0.253	0.000	0.189
33.50	-68.19	-8.88	0.00	-955.10	0.00	955.10	3981.85	1990.92	7728.86	3817.00	0.96	-0.288	0.000	0.186
34.75	-67.65	-8.85	0.00	-944.00	0.00	944.00	3969.08	1984.54	7664.15	3785.04	1.04	-0.300	0.000	0.155
35.00	-67.54	-8.85	0.00	-941.79	0.00	941.79	3966.51	1983.26	7651.22	3778.65	1.05	-0.302	0.000	0.133
36.00	-67.11	-8.84	0.00	-932.94	0.00	932.94	3956.22	1978.11	7599.55	3753.13	1.12	-0.310	0.000	0.169
38.00	-65.78	-8.79	0.00	-915.27	0.00	915.27	3935.49	1967.75	7496.40	3702.19	1.25	-0.328	0.000	0.129
39.00	-65.12	-8.77	0.00	-906.48	0.00	906.48	3925.05	1962.53	7444.93	3676.77	1.32	-0.335	0.000	0.150
40.00	-64.46	-8.75	0.00	-897.71	0.00	897.71	3914.56	1957.28	7393.54	3651.39	1.39	-0.343	0.000	0.149
42.00	-63.15	-8.72	0.00	-880.20	0.00	880.20	3554.53	1777.27	6785.59	3351.15	1.54	-0.360	0.000	0.143
45.00	-61.98	-8.66	0.00	-854.06	0.00	854.06	3532.39	1766.19	6658.05	3288.16	1.77	-0.385	0.000	0.149
48.50	-60.63	-8.58	0.00	-823.76	0.00	823.76	3505.83	1752.92	6509.28	3214.69	2.07	-0.415	0.000	0.167
49.75	-60.15	-8.55	0.00	-813.04	0.00	813.04	3496.16	1748.08	6456.16	3188.45	2.18	-0.428	0.000	0.177
50.00	-60.05	-8.56	0.00	-810.90	0.00	810.90	3494.22	1747.11	6445.54	3183.21	2.20	-0.430	0.000	0.177
54.00	-58.41	-8.41	0.00	-776.65	0.00	776.65	3462.54	1731.27	6275.67	3099.32	2.58	-0.473	0.000	0.173
55.00	-58.03	-8.42	0.00	-768.24	0.00	768.24	3454.46	1727.23	6233.23	3078.36	2.68	-0.484	0.000	0.172
60.00	-56.16	-8.31	0.00	-726.16	0.00	726.16	3413.12	1706.56	6021.34	2973.71	3.22	-0.537	0.000	0.167
65.00	-54.33	-8.21	0.00	-684.59	0.00	684.59	3370.20	1685.10	5810.04	2869.36	3.81	-0.590	0.000	0.162
70.00	-52.52	-8.08	0.00	-643.55	0.00	643.55	3325.69	1662.84	5599.53	2765.40	4.45	-0.643	0.000	0.156
71.25	-51.82	-8.06	0.00	-633.45	0.00	633.45	3314.31	1657.16	5547.04	2739.48	4.62	-0.657	0.000	0.153
75.00	-49.73	-7.95	0.00	-603.22	0.00	603.22	3279.60	1639.80	5389.99	2661.91	5.15	-0.696	0.000	0.149
76.00	-49.17	-7.94	0.00	-595.27	0.00	595.27	3306.32	1653.16	5510.48	2721.42	5.30	-0.707	0.000	0.151
80.00	-47.76	-7.85	0.00	-563.51	0.00	563.51	3269.04	1634.52	5343.14	2638.78	5.91	-0.749	0.000	0.142
80.00	-47.76	-7.85	0.00	-563.51	0.00	563.51	2504.08	1252.04	4105.75	2027.68	5.91	-0.749	0.000	0.154
85.00	-46.18	-7.71	0.00	-524.26	0.00	524.26	2474.85	1237.43	3958.27	1954.84	6.72	-0.799	0.000	0.164
86.00	-45.86	-7.71	0.00	-516.55	0.00	516.55	2468.82	1234.41	3928.75	1940.26	6.89	-0.810	0.000	0.203
90.00	-44.62	-7.63	0.00	-485.72	0.00	485.72	2444.04	1222.02	3810.67	1881.94	7.59	-0.865	0.000	0.195
95.00	-43.09	-7.52	0.00	-447.58	0.00	447.58	2411.64	1205.82	3663.14	1809.09	8.54	-0.932	0.000	0.186
100.00	-41.60	-7.40	0.00	-410.01	0.00	410.01	2377.66	1188.83	3515.87	1736.36	9.55	-0.999	0.000	0.176
104.00	-40.42	-7.29	0.00	-380.42	0.00	380.42	2349.34	1174.67	3398.38	1678.33	10.41	-1.051	0.000	0.168
104.00	-40.42	-7.29	0.00	-380.42	0.00	380.42	2349.34	1174.67	3398.38	1678.33	10.41	-1.051	0.000	0.168
105.00	-40.12	-7.30	0.00	-373.13	0.00	373.13	2342.10	1171.05	3369.07	1663.86	10.63	-1.064	0.000	0.241
110.00	-38.73	-7.20	0.00	-336.64	0.00	336.64	2304.95	1152.47	3222.91	1591.67	11.79	-1.157	0.000	0.228
115.00	-37.37	-7.10	0.00	-300.65	0.00	300.65	2266.22	1133.11	3077.59	1519.90	13.05	-1.248	0.000	0.214
120.00	-35.35	-6.97	0.00	-265.17	0.00	265.17	2252.14	1126.07	3026.44	1494.64	14.41	-1.335	0.000	0.193
125.00	-34.03	-6.86	0.00	-230.32	0.00	230.32	2211.27	1105.63	2882.56	1423.59	15.85	-1.419	0.000	0.177
125.00	-34.03	-6.86	0.00	-230.32	0.00	230.32	1600.93	800.47	2095.19	1034.73	15.85	-1.419	0.000	0.244
130.00	-32.86	-6.75	0.00	-196.03	0.00	196.03	1577.27	788.64	2000.77	988.11	17.38	-1.494	0.000	0.219
135.00	-31.72	-6.62	0.00	-162.31	0.00	162.31	1552.03	776.01	1906.32	941.46	18.99	-1.579	0.000	0.193
137.50	-21.29	-4.89	0.00	-143.86	0.00	143.86	1538.81	769.41	1859.13	918.16	19.83	-1.619	0.000	0.171
140.00	-20.79	-4.84	0.00	-131.63	0.00	131.63	1525.20	762.60	1812.01	894.88	20.69	-1.657	0.000	0.161

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 33

Tower Engineering Solutions

145.00	-19.81	-4.70	0.00	-107.44	0.00	107.44	1496.79	748.40	1718.05	848.48	22.46	-1.727	0.000	0.140
147.00	-14.21	-3.47	0.00	-98.03	0.00	98.03	1484.98	742.49	1680.60	829.98	23.19	-1.753	0.000	0.128
150.00	-13.68	-3.40	0.00	-87.62	0.00	87.62	1466.80	733.40	1624.61	802.34	24.30	-1.790	0.000	0.119
155.00	-12.39	-3.25	0.00	-70.64	0.00	70.64	1451.75	725.87	1579.74	780.18	26.21	-1.847	0.000	0.099
160.00	-11.56	-3.11	0.00	-54.41	0.00	54.41	1419.41	709.70	1487.45	734.60	28.17	-1.897	0.000	0.082
165.00	-10.75	-2.98	0.00	-38.84	0.00	38.84	1385.48	692.74	1396.17	689.51	30.18	-1.936	0.000	0.064
170.00	-9.97	-2.85	0.00	-23.94	0.00	23.94	1349.97	674.99	1306.08	645.02	32.22	-1.966	0.000	0.045
170.00	-9.97	-2.85	0.00	-23.94	0.00	23.94	1349.97	674.99	1306.08	645.02	32.22	-1.966	0.000	0.045
174.00	-7.97	-2.21	0.00	-7.70	0.00	7.70	1121.46	560.73	870.39	429.85	33.88	-1.981	0.000	0.025
175.00	0.00	-1.94	0.00	-5.48	0.00	5.48	1053.22	526.61	767.04	378.81	34.29	-1.984	0.000	0.014

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 34	

Tower Engineering Solutions

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 (f1)**	0.28		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		1272.2	0.00	0.03	0.02	22.72	
10.00		1249.0	0.01	0.05	0.03	32.57	
12.00	Appurtenance(s)	494.13	0.01	0.05	0.03	13.90	
15.00		732.74	0.01	0.06	0.03	22.25	
20.00		1202.6	0.02	0.07	0.04	39.33	
22.00	RT2	474.59	0.03	0.07	0.04	15.81	
25.00		704.93	0.04	0.07	0.04	24.00	
30.00		1156.3	0.06	0.07	0.04	40.40	
33.50	RB3	795.65	0.07	0.07	0.04	28.22	
34.75	RB4	281.41	0.07	0.07	0.04	10.03	
35.00	RB5	56.11	0.08	0.07	0.04	2.00	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	8.02	
38.00	RB6	832.96	0.09	0.07	0.04	30.10	
39.00	RT5	413.90	0.09	0.07	0.04	15.02	
40.00		412.18	0.10	0.07	0.04	15.02	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	30.10	
45.00		566.56	0.12	0.07	0.03	21.08	
48.50	RT3	651.95	0.15	0.07	0.03	24.58	
49.75	RT4	230.48	0.15	0.07	0.03	8.72	
50.00		45.95	0.15	0.07	0.03	1.74	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	29.76	
55.00		180.11	0.19	0.06	0.02	6.89	
60.00		888.65	0.22	0.06	0.02	33.80	
65.00		868.79	0.26	0.05	0.02	31.89	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	28.63	
71.25	RT6 RB7	422.11	0.31	0.04	0.01	13.78	
75.00		1251.4	0.35	0.03	0.01	35.59	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.93	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.42	
85.00		671.69	0.45	0.00	0.01	6.44	
86.00	RT7 RB8	132.35	0.46	0.00	0.01	0.95	
90.00		522.78	0.50	-0.02	0.01	-1.65	
95.00		638.58	0.56	-0.04	0.01	-10.30	
100.00		622.02	0.62	-0.06	0.02	-17.08	
104.00	RT8	485.70	0.67	-0.08	0.02	-16.69	
105.00		119.77	0.68	-0.08	0.03	-4.28	
110.00		588.92	0.75	-0.10	0.04	-23.71	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-23.44	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-42.51	
125.00	Top - Section 5	549.96	0.96	-0.12	0.11	-17.16	
130.00		427.58	1.04	-0.10	0.15	-8.99	
135.00		414.33	1.12	-0.05	0.20	-3.07	
137.50	Appurtenance(s)	4024.0	1.17	-0.02	0.23	2.73	
140.00		198.89	1.21	0.01	0.26	1.92	
145.00		387.85	1.30	0.12	0.33	11.69	

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 35	

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147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	74.72			
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.09			
155.00	Top - Section 6	729.57	1.48	0.46	0.52	59.65			
160.00		354.97	1.58	0.72	0.64	40.12			
165.00		341.72	1.68	1.05	0.78	50.58			
170.00	Top - Section 7	328.48	1.78	1.46	0.95	61.37			
174.00	Appurtenance(s)	1009.8	1.87	1.87	1.10	222.85			
175.00	Appurtenance(s)	3622.5	1.89	1.98	1.14	831.46			
	Totals:	**38,833.1**				**1,816.0**	**Total Wind:**		**43,710.6**

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

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 36	

Tower Engineering Solutions

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 (f1)**	0.28	**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	-55.52	-1.99	0.00	-271.98	0.00	271.98	4294.71	2147.35	9493.67	4688.57		0.00	0.00	0.043
5.00	-53.70	-1.97	0.00	-262.04	0.00	262.04	4251.62	2125.81	9227.39	4557.06		0.00	-0.01	0.042
10.00	-51.90	-1.95	0.00	-252.17	0.00	252.17	4207.27	2103.63	8961.88	4425.94		0.02	-0.02	0.042
12.00	-51.19	-1.94	0.00	-248.28	0.00	248.28	4189.17	2094.59	8855.93	4373.61		0.03	-0.02	0.041
15.00	-50.14	-1.92	0.00	-242.47	0.00	242.47	4161.65	2080.83	8697.29	4295.27		0.04	-0.03	0.041
20.00	-48.40	-1.88	0.00	-232.88	0.00	232.88	4114.76	2057.38	8433.78	4165.13		0.07	-0.03	0.040
22.00	-47.71	-1.87	0.00	-229.11	0.00	229.11	4095.66	2047.83	8328.71	4113.24		0.09	-0.04	0.048
25.00	-46.69	-1.85	0.00	-223.50	0.00	223.50	4066.61	2033.31	8171.50	4035.59		0.11	-0.04	0.047
30.00	-45.00	-1.82	0.00	-214.23	0.00	214.23	4017.20	2008.60	7910.59	3906.74		0.16	-0.05	0.046
33.50	-43.84	-1.79	0.00	-207.86	0.00	207.86	3981.85	1990.92	7728.86	3817.00		0.21	-0.06	0.045
34.75	-43.43	-1.78	0.00	-205.62	0.00	205.62	3969.08	1984.54	7664.15	3785.04		0.22	-0.06	0.038
35.00	-43.35	-1.78	0.00	-205.17	0.00	205.17	3966.51	1983.26	7651.22	3778.65		0.23	-0.07	0.033
36.00	-43.02	-1.78	0.00	-203.39	0.00	203.39	3956.22	1978.11	7599.55	3753.13		0.24	-0.07	0.041
38.00	-41.90	-1.75	0.00	-199.84	0.00	199.84	3935.49	1967.75	7496.40	3702.19		0.27	-0.07	0.032
39.00	-41.35	-1.73	0.00	-198.09	0.00	198.09	3925.05	1962.53	7444.93	3676.77		0.29	-0.07	0.037
40.00	-40.79	-1.72	0.00	-196.36	0.00	196.36	3914.56	1957.28	7393.54	3651.39		0.30	-0.07	0.037
42.00	-39.69	-1.69	0.00	-192.92	0.00	192.92	3554.53	1777.27	6785.59	3351.15		0.33	-0.08	0.035
45.00	-38.84	-1.67	0.00	-187.85	0.00	187.85	3532.39	1766.19	6658.05	3288.16		0.38	-0.08	0.037
48.50	-37.85	-1.65	0.00	-181.99	0.00	181.99	3505.83	1752.92	6509.28	3214.69		0.45	-0.09	0.041
49.75	-37.50	-1.64	0.00	-179.93	0.00	179.93	3496.16	1748.08	6456.16	3188.45		0.47	-0.09	0.044
50.00	-37.43	-1.64	0.00	-179.52	0.00	179.52	3494.22	1747.11	6445.54	3183.21		0.48	-0.09	0.044
54.00	-36.26	-1.61	0.00	-172.95	0.00	172.95	3462.54	1731.27	6275.67	3099.32		0.56	-0.10	0.043
55.00	-35.98	-1.61	0.00	-171.34	0.00	171.34	3454.46	1727.23	6233.23	3078.36		0.58	-0.11	0.043
60.00	-34.62	-1.58	0.00	-163.28	0.00	163.28	3413.12	1706.56	6021.34	2973.71		0.70	-0.12	0.042
65.00	-33.28	-1.55	0.00	-155.36	0.00	155.36	3370.20	1685.10	5810.04	2869.36		0.83	-0.13	0.041
70.00	-31.97	-1.53	0.00	-147.59	0.00	147.59	3325.69	1662.84	5599.53	2765.40		0.97	-0.14	0.040
71.25	-31.39	-1.52	0.00	-145.68	0.00	145.68	3314.31	1657.16	5547.04	2739.48		1.01	-0.14	0.039
75.00	-29.67	-1.48	0.00	-140.00	0.00	140.00	3279.60	1639.80	5389.99	2661.91		1.12	-0.15	0.038
76.00	-29.21	-1.47	0.00	-138.52	0.00	138.52	3306.32	1653.16	5510.48	2721.42		1.16	-0.16	0.039
80.00	-28.19	-1.46	0.00	-132.63	0.00	132.63	3269.04	1634.52	5343.14	2638.78		1.29	-0.17	0.037
80.00	-28.19	-1.46	0.00	-132.63	0.00	132.63	2504.08	1252.04	4105.75	2027.68		1.29	-0.17	0.040
85.00	-27.09	-1.45	0.00	-125.33	0.00	125.33	2474.85	1237.43	3958.27	1954.84		1.47	-0.18	0.043
86.00	-26.87	-1.46	0.00	-123.88	0.00	123.88	2468.82	1234.41	3928.75	1940.26		1.51	-0.18	0.053
90.00	-26.00	-1.46	0.00	-118.05	0.00	118.05	2444.04	1222.02	3810.67	1881.94		1.66	-0.19	0.052
95.00	-24.94	-1.46	0.00	-110.75	0.00	110.75	2411.64	1205.82	3663.14	1809.09		1.88	-0.21	0.050
100.00	-23.90	-1.47	0.00	-103.43	0.00	103.43	2377.66	1188.83	3515.87	1736.36		2.11	-0.23	0.048
104.00	-23.08	-1.47	0.00	-97.57	0.00	97.57	2349.34	1174.67	3398.38	1678.33		2.30	-0.24	0.047
104.00	-23.08	-1.47	0.00	-97.57	0.00	97.57	2349.34	1174.67	3398.38	1678.33		2.30	-0.24	0.047
105.00	-22.88	-1.47	0.00	-96.10	0.00	96.10	2342.10	1171.05	3369.07	1663.86		2.35	-0.24	0.068
110.00	-21.89	-1.48	0.00	-88.75	0.00	88.75	2304.95	1152.47	3222.91	1591.67		2.62	-0.27	0.065
115.00	-20.92	-1.48	0.00	-81.37	0.00	81.37	2266.22	1133.11	3077.59	1519.90		2.91	-0.29	0.063
120.00	-19.29	-1.48	0.00	-73.97	0.00	73.97	2252.14	1126.07	3026.44	1494.64		3.23	-0.32	0.058
125.00	-18.34	-1.48	0.00	-66.58	0.00	66.58	2211.27	1105.63	2882.56	1423.59		3.58	-0.34	0.055
125.00	-18.34	-1.48	0.00	-66.58	0.00	66.58	1600.93	800.47	2095.19	1034.73		3.58	-0.34	0.076
130.00	-17.55	-1.48	0.00	-59.17	0.00	59.17	1577.27	788.64	2000.77	988.11		3.94	-0.36	0.071
135.00	-16.77	-1.48	0.00	-51.75	0.00	51.75	1552.03	776.01	1906.32	941.46		4.34	-0.39	0.066
137.50	-11.80	-1.45	0.00	-48.04	0.00	48.04	1538.81	769.41	1859.13	918.16		4.54	-0.40	0.060

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 37	

140.00	-11.47	-1.45	0.00	-44.42	0.00	44.42	1525.20	762.60	1812.01	894.88	4.76	-0.41	0.057
145.00	-10.82	-1.44	0.00	-37.17	0.00	37.17	1496.79	748.40	1718.05	848.48	5.20	-0.44	0.051
147.00	-8.47	-1.34	0.00	-34.30	0.00	34.30	1484.98	742.49	1680.60	829.98	5.39	-0.45	0.047
150.00	-8.14	-1.33	0.00	-30.26	0.00	30.26	1466.80	733.40	1624.61	802.34	5.67	-0.46	0.043
155.00	-7.17	-1.27	0.00	-23.60	0.00	23.60	1451.75	725.87	1579.74	780.18	6.17	-0.48	0.035
160.00	-6.65	-1.22	0.00	-17.26	0.00	17.26	1419.41	709.70	1487.45	734.60	6.68	-0.50	0.028
165.00	-6.14	-1.17	0.00	-11.14	0.00	11.14	1385.48	692.74	1396.17	689.51	7.20	-0.51	0.021
170.00	-5.65	-1.11	0.00	-5.29	0.00	5.29	1349.97	674.99	1306.08	645.02	7.74	-0.51	0.012
170.00	-5.65	-1.11	0.00	-5.29	0.00	5.29	1349.97	674.99	1306.08	645.02	7.74	-0.51	0.012
174.00	-4.36	-0.87	0.00	-0.87	0.00	0.87	1121.46	560.73	870.39	429.85	8.17	-0.52	0.006
175.00	0.00	-0.83	0.00	0.00	0.00	0.00	1053.22	526.61	767.04	378.81	8.28	-0.52	0.000

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 38	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	22
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.28		**SA**	0.03	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1 RB2	0.00	0.00	0.00	0.00	0.00	
5.00		1272.2	0.00	0.03	0.02	22.72	
10.00		1249.0	0.01	0.05	0.03	32.57	
12.00	Appurtenance(s)	494.13	0.01	0.05	0.03	13.90	
15.00		732.74	0.01	0.06	0.03	22.25	
20.00		1202.6	0.02	0.07	0.04	39.33	
22.00	RT2	474.59	0.03	0.07	0.04	15.81	
25.00		704.93	0.04	0.07	0.04	24.00	
30.00		1156.3	0.06	0.07	0.04	40.40	
33.50	RB3	795.65	0.07	0.07	0.04	28.22	
34.75	RB4	281.41	0.07	0.07	0.04	10.03	
35.00	RB5	56.11	0.08	0.07	0.04	2.00	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	8.02	
38.00	RB6	832.96	0.09	0.07	0.04	30.10	
39.00	RT5	413.90	0.09	0.07	0.04	15.02	
40.00		412.18	0.10	0.07	0.04	15.02	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	30.10	
45.00		566.56	0.12	0.07	0.03	21.08	
48.50	RT3	651.95	0.15	0.07	0.03	24.58	
49.75	RT4	230.48	0.15	0.07	0.03	8.72	
50.00		45.95	0.15	0.07	0.03	1.74	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	29.76	
55.00		180.11	0.19	0.06	0.02	6.89	
60.00		888.65	0.22	0.06	0.02	33.80	
65.00		868.79	0.26	0.05	0.02	31.89	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	28.63	
71.25	RT6 RB7	422.11	0.31	0.04	0.01	13.78	
75.00		1251.4	0.35	0.03	0.01	35.59	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.93	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.42	
85.00		671.69	0.45	0.00	0.01	6.44	
86.00	RT7 RB8	132.35	0.46	0.00	0.01	0.95	
90.00		522.78	0.50	-0.02	0.01	-1.65	
95.00		638.58	0.56	-0.04	0.01	-10.30	
100.00		622.02	0.62	-0.06	0.02	-17.08	
104.00	RT8	485.70	0.67	-0.08	0.02	-16.69	
105.00		119.77	0.68	-0.08	0.03	-4.28	
110.00		588.92	0.75	-0.10	0.04	-23.71	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-23.44	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-42.51	
125.00	Top - Section 5	549.96	0.96	-0.12	0.11	-17.16	
130.00		427.58	1.04	-0.10	0.15	-8.99	
135.00		414.33	1.12	-0.05	0.20	-3.07	
137.50	Appurtenance(s)	4024.0	1.17	-0.02	0.23	2.73	
140.00		198.89	1.21	0.01	0.26	1.92	
145.00		387.85	1.30	0.12	0.33	11.69	

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 39	

Tower Engineering Solutions

147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	74.72			
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.09			
155.00	Top - Section 6	729.57	1.48	0.46	0.52	59.65			
160.00		354.97	1.58	0.72	0.64	40.12			
165.00		341.72	1.68	1.05	0.78	50.58			
170.00	Top - Section 7	328.48	1.78	1.46	0.95	61.37			
174.00	Appurtenance(s)	1009.8	1.87	1.87	1.10	222.85			
175.00	Appurtenance(s)	3622.5	1.89	1.98	1.14	831.46			
	Totals:	**38,833.1**				**1,816.0**	**Total Wind:**		**43,710.6**

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

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 40	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Iterations 22

Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.28	**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	-41.64	-1.99	0.00	-268.78	0.00	268.78	4294.71	2147.35	9493.67	4688.57		0.00	0.00	0.041
5.00	-40.27	-1.97	0.00	-258.84	0.00	258.84	4251.62	2125.81	9227.39	4557.06		0.00	-0.01	0.040
10.00	-38.93	-1.94	0.00	-248.99	0.00	248.99	4207.27	2103.63	8961.88	4425.94		0.02	-0.02	0.039
12.00	-38.39	-1.93	0.00	-245.11	0.00	245.11	4189.17	2094.59	8855.93	4373.61		0.03	-0.02	0.039
15.00	-37.60	-1.91	0.00	-239.31	0.00	239.31	4161.65	2080.83	8697.29	4295.27		0.04	-0.03	0.039
20.00	-36.30	-1.88	0.00	-229.75	0.00	229.75	4114.76	2057.38	8433.78	4165.13		0.07	-0.03	0.038
22.00	-35.78	-1.86	0.00	-226.00	0.00	226.00	4095.66	2047.83	8328.71	4113.24		0.09	-0.04	0.045
25.00	-35.01	-1.84	0.00	-220.41	0.00	220.41	4066.61	2033.31	8171.50	4035.59		0.11	-0.04	0.045
30.00	-33.75	-1.81	0.00	-211.20	0.00	211.20	4017.20	2008.60	7910.59	3906.74		0.16	-0.05	0.044
33.50	-32.88	-1.78	0.00	-204.87	0.00	204.87	3981.85	1990.92	7728.86	3817.00		0.20	-0.06	0.043
34.75	-32.57	-1.77	0.00	-202.64	0.00	202.64	3969.08	1984.54	7664.15	3785.04		0.22	-0.06	0.036
35.00	-32.51	-1.77	0.00	-202.20	0.00	202.20	3966.51	1983.26	7651.22	3778.65		0.22	-0.06	0.031
36.00	-32.26	-1.76	0.00	-200.43	0.00	200.43	3956.22	1978.11	7599.55	3753.13		0.24	-0.07	0.039
38.00	-31.43	-1.73	0.00	-196.91	0.00	196.91	3935.49	1967.75	7496.40	3702.19		0.27	-0.07	0.030
39.00	-31.01	-1.72	0.00	-195.17	0.00	195.17	3925.05	1962.53	7444.93	3676.77		0.28	-0.07	0.035
40.00	-30.59	-1.70	0.00	-193.45	0.00	193.45	3914.56	1957.28	7393.54	3651.39		0.30	-0.07	0.035
42.00	-29.77	-1.68	0.00	-190.04	0.00	190.04	3554.53	1777.27	6785.59	3351.15		0.33	-0.08	0.033
45.00	-29.13	-1.66	0.00	-185.02	0.00	185.02	3532.39	1766.19	6658.05	3288.16		0.38	-0.08	0.035
48.50	-28.38	-1.63	0.00	-179.22	0.00	179.22	3505.83	1752.92	6509.28	3214.69		0.44	-0.09	0.039
49.75	-28.12	-1.63	0.00	-177.17	0.00	177.17	3496.16	1748.08	6456.16	3188.45		0.46	-0.09	0.042
50.00	-28.07	-1.63	0.00	-176.77	0.00	176.77	3494.22	1747.11	6445.54	3183.21		0.47	-0.09	0.041
54.00	-27.19	-1.60	0.00	-170.26	0.00	170.26	3462.54	1731.27	6275.67	3099.32		0.55	-0.10	0.041
55.00	-26.98	-1.59	0.00	-168.66	0.00	168.66	3454.46	1727.23	6233.23	3078.36		0.57	-0.10	0.041
60.00	-25.96	-1.56	0.00	-160.70	0.00	160.70	3413.12	1706.56	6021.34	2973.71		0.69	-0.12	0.040
65.00	-24.96	-1.53	0.00	-152.88	0.00	152.88	3370.20	1685.10	5810.04	2869.36		0.82	-0.13	0.039
70.00	-23.98	-1.51	0.00	-145.21	0.00	145.21	3325.69	1662.84	5599.53	2765.40		0.96	-0.14	0.038
71.25	-23.54	-1.49	0.00	-143.33	0.00	143.33	3314.31	1657.16	5547.04	2739.48		0.99	-0.14	0.037
75.00	-22.25	-1.46	0.00	-137.72	0.00	137.72	3279.60	1639.80	5389.99	2661.91		1.11	-0.15	0.036
76.00	-21.91	-1.45	0.00	-136.26	0.00	136.26	3306.32	1653.16	5510.48	2721.42		1.14	-0.15	0.037
80.00	-21.14	-1.44	0.00	-130.46	0.00	130.46	3269.04	1634.52	5343.14	2638.78		1.27	-0.16	0.035
80.00	-21.14	-1.44	0.00	-130.46	0.00	130.46	2504.08	1252.04	4105.75	2027.68		1.27	-0.16	0.038
85.00	-20.31	-1.43	0.00	-123.27	0.00	123.27	2474.85	1237.43	3958.27	1954.84		1.45	-0.18	0.041
86.00	-20.15	-1.43	0.00	-121.84	0.00	121.84	2468.82	1234.41	3928.75	1940.26		1.49	-0.18	0.051
90.00	-19.50	-1.44	0.00	-116.11	0.00	116.11	2444.04	1222.02	3810.67	1881.94		1.64	-0.19	0.049
95.00	-18.71	-1.44	0.00	-108.92	0.00	108.92	2411.64	1205.82	3663.14	1809.09		1.85	-0.21	0.048
100.00	-17.93	-1.44	0.00	-101.73	0.00	101.73	2377.66	1188.83	3515.87	1736.36		2.08	-0.22	0.046
104.00	-17.31	-1.44	0.00	-95.97	0.00	95.97	2349.34	1174.67	3398.38	1678.33		2.27	-0.24	0.045
104.00	-17.31	-1.44	0.00	-95.97	0.00	95.97	2349.34	1174.67	3398.38	1678.33		2.27	-0.24	0.045
105.00	-17.16	-1.44	0.00	-94.53	0.00	94.53	2342.10	1171.05	3369.07	1663.86		2.32	-0.24	0.064
110.00	-16.42	-1.45	0.00	-87.31	0.00	87.31	2304.95	1152.47	3222.91	1591.67		2.58	-0.26	0.062
115.00	-15.69	-1.45	0.00	-80.07	0.00	80.07	2266.22	1133.11	3077.59	1519.90		2.87	-0.29	0.060
120.00	-14.46	-1.45	0.00	-72.82	0.00	72.82	2252.14	1126.07	3026.44	1494.64		3.18	-0.31	0.055
125.00	-13.76	-1.45	0.00	-65.56	0.00	65.56	2211.27	1105.63	2882.56	1423.59		3.52	-0.33	0.052
125.00	-13.76	-1.45	0.00	-65.56	0.00	65.56	1600.93	800.47	2095.19	1034.73		3.52	-0.33	0.072
130.00	-13.16	-1.45	0.00	-58.31	0.00	58.31	1577.27	788.64	2000.77	988.11		3.88	-0.36	0.067
135.00	-12.57	-1.45	0.00	-51.04	0.00	51.04	1552.03	776.01	1906.32	941.46		4.27	-0.38	0.062
137.50	-8.84	-1.43	0.00	-47.40	0.00	47.40	1538.81	769.41	1859.13	918.16		4.48	-0.40	0.057

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 41	

140.00	-8.60	-1.43	0.00	-43.83	0.00	43.83	1525.20	762.60	1812.01	894.88	4.69	-0.41	0.055
145.00	-8.11	-1.41	0.00	-36.70	0.00	36.70	1496.79	748.40	1718.05	848.48	5.13	-0.43	0.049
147.00	-6.35	-1.33	0.00	-33.87	0.00	33.87	1484.98	742.49	1680.60	829.98	5.31	-0.44	0.045
150.00	-6.10	-1.32	0.00	-29.89	0.00	29.89	1466.80	733.40	1624.61	802.34	5.59	-0.45	0.041
155.00	-5.37	-1.25	0.00	-23.31	0.00	23.31	1451.75	725.87	1579.74	780.18	6.07	-0.47	0.034
160.00	-4.98	-1.21	0.00	-17.05	0.00	17.05	1419.41	709.70	1487.45	734.60	6.58	-0.49	0.027
165.00	-4.60	-1.16	0.00	-11.01	0.00	11.01	1385.48	692.74	1396.17	689.51	7.09	-0.50	0.019
170.00	-4.23	-1.09	0.00	-5.23	0.00	5.23	1349.97	674.99	1306.08	645.02	7.62	-0.51	0.011
170.00	-4.23	-1.09	0.00	-5.23	0.00	5.23	1349.97	674.99	1306.08	645.02	7.62	-0.51	0.011
174.00	-3.27	-0.86	0.00	-0.86	0.00	0.86	1121.46	560.73	870.39	429.85	8.05	-0.51	0.005
175.00	0.00	-0.83	0.00	0.00	0.00	0.00	1053.22	526.61	767.04	378.81	8.16	-0.51	0.000

Wind Loading - Shaft

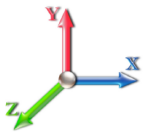
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.70	6.129	6.74	233.87	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	229.68	1.000	0.000	5.00	23.085	23.09	155.6	0.0	1272.2
10.00		1.00	0.70	6.129	6.74	225.49	1.000	0.000	5.00	22.668	22.67	152.8	0.0	1249.0
12.00	Appurtenance(s)	1.00	0.70	6.129	6.74	223.82	1.000	0.000	2.00	8.950	8.95	60.3	0.0	493.1
15.00		1.00	0.70	6.129	6.74	221.30	1.000	0.000	3.00	13.301	13.30	89.7	0.0	732.7
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
33.50	RB3	1.00	0.72	6.330	6.96	209.17	1.000	0.000	3.50	14.452	14.45	100.6	0.0	795.6
34.75	RB4	1.00	0.73	6.397	7.04	209.20	1.000	0.000	1.25	5.112	5.11	36.0	0.0	281.4
35.00	RB5	1.00	0.73	6.410	7.05	209.20	1.000	0.000	0.25	1.019	1.02	7.2	0.0	56.1
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	RB6	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	RT5	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
48.50	RT3	1.00	0.80	7.036	7.74	210.54	1.000	0.000	3.50	13.802	13.80	106.8	0.0	652.0
49.75	RT4	1.00	0.81	7.088	7.80	210.18	1.000	0.000	1.25	4.880	4.88	38.0	0.0	230.5
50.00		1.00	0.81	7.098	7.81	210.11	1.000	0.000	0.25	0.973	0.97	7.6	0.0	45.9
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	RT6 RB7	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	RT7 RB8	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	RT8	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
135.00		1.00	1.08	9.427	10.37	161.24	1.000	0.000	5.00	13.157	13.16	136.4	0.0	414.3
137.50	Appurtenance(s)	1.00	1.08	9.476	10.42	159.06	1.000	0.000	2.50	6.422	6.42	66.9	0.0	202.2
140.00		1.00	1.09	9.525	10.48	156.86	1.000	0.000	2.50	6.318	6.32	66.2	0.0	198.9
145.00		1.00	1.10	9.621	10.58	152.40	1.000	0.000	5.00	12.323	12.32	130.4	0.0	387.8
147.00	Appurtenance(s)	1.00	1.10	9.659	10.62	150.59	1.000	0.000	2.00	4.813	4.81	51.1	0.0	151.4

Wind Loading - Shaft

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

4/30/2020

Tower Engineering Solutions

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
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
							Totals:	**175.00**			**5,003.3**		**28,861.4**

Discrete Appurtenance Forces

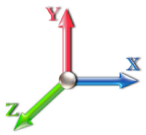
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 44	

Tower Engineering Solutions

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)	Orient Factor 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	Pipes	12	10.152	11.168	0.64	0.80	14.59	396.00	0.000	0.000	162.96	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	10.417	11.459	0.67	1.00	23.36	144.00	0.000	16.500	267.63	0.00	4415.94
3	175.00	E15S09P94	6	10.370	11.407	0.60	1.00	2.38	87.60	0.000	13.500	27.10	0.00	365.90
4	175.00	1900MHz	3	10.185	11.204	0.67	1.00	5.57	180.00	0.000	2.000	62.38	0.00	124.76
5	175.00	800 MHz	6	10.185	11.204	0.67	1.00	10.01	318.00	0.000	2.000	112.15	0.00	224.30
6	175.00	TD-RRH8x20-25	3	10.185	11.204	0.67	1.00	8.14	210.00	0.000	2.000	91.20	0.00	182.41
7	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
8	175.00	NNVV-65B-R4	3	10.185	11.204	0.74	1.00	27.24	232.20	0.000	2.000	305.19	0.00	610.37
9	175.00	PRK-SFS-L	1	10.152	11.168	0.75	0.75	5.78	230.00	0.000	0.000	64.49	0.00	0.00
10	175.00	Handrail	1	10.152	11.168	0.75	0.75	7.39	415.06	0.000	0.000	82.50	0.00	0.00
11	175.00	PRK-1245L	1	10.152	11.168	0.75	0.75	7.13	464.91	0.000	0.000	79.57	0.00	0.00
12	175.00	APXVTM14-C-I20	3	10.185	11.204	0.77	1.00	14.65	168.60	0.000	2.000	164.08	0.00	328.17
13	174.00	4.5" x 24 FT Pipe	3	10.299	11.329	1.00	1.00	40.50	777.60	0.000	10.000	458.81	0.00	4588.12
14	147.00	T-Arms	3	9.659	10.625	0.56	0.75	18.56	726.00	0.000	0.000	197.22	0.00	0.00
15	147.00	RRH2X60-PCS	3	9.602	10.562	0.54	0.80	3.54	165.00	0.000	-3.000	37.37	0.00	-112.10
16	147.00	RRH2X60-700	3	9.602	10.562	0.54	0.80	5.63	180.00	0.000	-3.000	59.45	0.00	-178.34
17	147.00	FD9R6004/2C-3L	6	9.659	10.625	0.40	0.80	0.86	18.60	0.000	0.000	9.18	0.00	0.00
18	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
19	147.00	BXA-80080-4CF	3	9.659	10.625	0.70	0.80	7.50	36.00	0.000	0.000	79.70	0.00	0.00
20	147.00	SBNHH-1D65B	6	9.659	10.625	0.66	0.80	31.88	304.26	0.000	0.000	338.72	0.00	0.00
21	147.00	RRH2X60-AWS	3	9.602	10.562	0.54	0.80	5.63	180.00	0.000	-3.000	59.45	0.00	-178.34
22	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
23	137.50	RRUS 11	3	9.476	10.424	0.50	0.75	3.80	152.10	0.000	0.000	39.60	0.00	0.00
24	137.50	7770.00	3	9.545	10.499	0.55	0.75	9.03	105.00	0.000	3.500	94.85	0.00	331.96
25	137.50	AM-X-CD-17-65-00T-RET	3	9.545	10.499	0.56	0.75	19.09	92.40	0.000	3.500	200.38	0.00	701.34
26	137.50	TPA-65R-LCUUUU-H8	3	9.545	10.499	0.62	0.75	24.84	225.00	0.000	3.500	260.77	0.00	912.71
27	137.50	RRUS 4478 B5	3	9.545	10.499	0.50	0.75	2.77	179.70	0.000	3.500	29.12	0.00	101.93
28	137.50	Platform w/ Hand Rail	1	9.476	10.424	1.00	1.00	32.00	1600.00	0.000	0.000	333.57	0.00	0.00
29	137.50	800 10966	3	9.476	10.424	0.54	0.75	28.12	377.10	0.000	0.000	293.15	0.00	0.00
30	137.50	4426 B66	3	9.476	10.424	0.50	0.75	1.73	145.50	0.000	0.000	18.07	0.00	0.00
31	137.50	RRUS 32	6	9.476	10.424	0.50	0.75	4.97	462.00	0.000	0.000	51.86	0.00	0.00
32	137.50	RRUS 4478 B14	3	9.476	10.424	0.50	0.75	2.49	178.20	0.000	0.000	25.93	0.00	0.00
33	137.50	dbc0061F1V51-2	6	9.476	10.424	0.38	0.75	0.97	152.40	0.000	0.000	10.09	0.00	0.00
34	137.50	dc6-48-60-18-8c	1	9.476	10.424	0.75	0.75	0.95	20.00	0.000	0.000	9.85	0.00	0.00
35	137.50	DC6-48-60-18-8F	1	9.476	10.424	0.75	0.75	0.69	31.80	0.000	0.000	7.19	0.00	0.00
36	137.50	DC6-48-60-0-8C-EV	1	9.476	10.424	0.75	0.75	3.58	16.00	0.000	0.000	37.37	0.00	0.00
37	137.50	LGP21401	6	9.545	10.499	0.38	0.75	2.90	84.60	0.000	3.500	30.47	0.00	106.66
38	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
39	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
40	12.00	CS72188.01 LMU	1	6.129	6.742	1.00	1.00	0.14	1.00	0.000	0.000	0.94	0.00	0.00
							Totals:		**9,971.63**			**4,637.78**		

Total Applied Force Summary

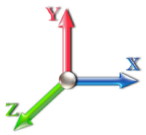
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 45

Tower Engineering Solutions

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	1518.20	0.00	0.00
10.00		152.82	1495.02	0.00	0.00
12.00	(1) attachments	61.28	592.52	0.00	0.00
15.00		89.67	880.33	0.00	0.00
20.00		147.19	1448.67	0.00	0.00
22.00		58.09	572.98	0.00	0.00
25.00		86.29	852.52	0.00	0.00
30.00		141.69	1402.32	0.00	0.00
33.50		100.63	967.83	0.00	0.00
34.75		35.97	342.90	0.00	0.00
35.00		7.19	68.41	0.00	0.00
36.00		28.90	273.05	0.00	0.00
38.00		59.28	931.35	0.00	0.00
39.00		29.68	463.09	0.00	0.00
40.00		29.77	461.37	0.00	0.00
42.00		60.01	917.58	0.00	0.00
45.00		90.86	714.15	0.00	0.00
48.50		106.83	824.14	0.00	0.00
49.75		38.04	291.98	0.00	0.00
50.00		7.60	58.25	0.00	0.00
54.00	(2) attachments	152.07	975.19	0.00	0.00
55.00		30.60	229.15	0.00	0.00
60.00		154.80	1133.83	0.00	0.00
65.00		154.87	1113.97	0.00	0.00
70.00		154.60	1094.10	0.00	0.00
71.25		38.98	483.40	0.00	0.00
75.00		117.30	1435.31	0.00	0.00
76.00		31.05	378.97	0.00	0.00
80.00		124.54	854.24	0.00	0.00
85.00		154.99	916.87	0.00	0.00
86.00		30.65	181.39	0.00	0.00
90.00		122.64	718.93	0.00	0.00
95.00		152.17	883.76	0.00	0.00
100.00		150.45	867.20	0.00	0.00
104.00		118.82	681.84	0.00	0.00
105.00		29.38	168.81	0.00	0.00
110.00		146.44	825.20	0.00	0.00
115.00		144.18	808.64	0.00	0.00
120.00		144.47	1358.60	0.00	0.00
125.00		141.93	786.24	0.00	0.00
130.00		139.25	663.86	0.00	0.00
135.00		136.44	650.61	0.00	0.00
137.50	(46) attachments	1509.22	4142.14	0.00	2154.59
140.00		66.20	273.73	0.00	0.00
145.00		130.42	537.53	0.00	0.00
147.00	(32) attachments	1062.26	1960.16	0.00	-468.77

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	4/30/2020
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: 46

Tower Engineering Solutions

150.00		75.81	272.06	0.00	0.00
155.00		126.26	811.05	0.00	0.00
160.00		122.87	436.45	0.00	0.00
165.00		119.37	423.20	0.00	0.00
170.00		115.78	409.96	0.00	0.00
174.00	(3) attachments	541.34	1075.07	0.00	4588.12
175.00	(48) attachments	1713.55	3638.86	0.00	6251.84
	Totals:	**9,641.10**	**46,266.98**	**0.00**	**12,525.78**

Linear Appurtenance Segment Forces (Factored)

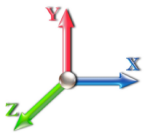
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 47	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.059	0.000	6.129	0.00	8.90
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	6.129	0.00	8.90
12.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.061	0.000	6.129	0.00	3.56
15.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.061	0.000	6.129	0.00	5.34
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	6.129	0.00	8.90
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	6.129	0.00	3.56
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	6.129	0.00	5.34
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	6.134	0.00	8.90
33.50	3" Chanel	Yes	3.50	0.000	3.25	0.95	0.00	0.066	0.000	6.330	0.00	6.23
34.75	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.066	0.000	6.397	0.00	2.23
35.00	3" Chanel	Yes	0.25	0.000	3.25	0.07	0.00	0.066	0.000	6.410	0.00	0.45
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	6.462	0.00	1.78
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	6.562	0.00	3.56
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	6.611	0.00	1.78
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	6.659	0.00	1.78
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	6.753	0.00	3.56
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	6.887	0.00	5.34
48.50	3" Chanel	Yes	3.50	0.000	3.25	0.95	0.00	0.069	0.000	7.036	0.00	6.23
49.75	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.069	0.000	7.088	0.00	2.23
50.00	3" Chanel	Yes	0.25	0.000	3.25	0.07	0.00	0.070	0.000	7.098	0.00	0.45
54.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.070	0.000	7.255	0.00	7.12
55.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.071	0.000	7.294	0.00	1.78
60.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.072	0.000	7.477	0.00	8.90
65.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.074	0.000	7.650	0.00	8.90
70.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.075	0.000	7.814	0.00	8.90
71.25	3" Chanel	Yes	1.25	0.000	3.25	0.34	0.00	0.076	0.000	7.853	0.00	2.23
75.00	3" Chanel	Yes	3.75	0.000	3.25	1.02	0.00	0.077	0.000	7.969	0.00	6.67
76.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.078	0.000	8.000	0.00	1.78
80.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.078	0.000	8.118	0.00	7.12
85.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.079	0.000	8.260	0.00	8.90
86.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.081	0.000	8.287	0.00	1.78
90.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.082	0.000	8.396	0.00	7.12
95.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.083	0.000	8.526	0.00	8.90
100.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.086	0.000	8.652	0.00	8.90
104.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.088	0.000	8.750	0.00	7.12
105.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.089	0.000	8.774	0.00	1.78
										Totals:	**0.0**	**186.9**

Calculated Forces

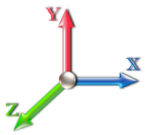
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 48	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	-46.26	-9.66	0.00	-1209.3	0.00	1209.38	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.165
5.00	-44.74	-9.53	0.00	-1161.1	0.00	1161.10	4251.62	2125.81	9227.39	4557.06	0.02	-0.037	0.000	0.161
10.00	-43.24	-9.39	0.00	-1113.4	0.00	1113.46	4207.27	2103.63	8961.88	4425.94	0.08	-0.075	0.000	0.158
12.00	-42.64	-9.35	0.00	-1094.6	0.00	1094.67	4189.17	2094.59	8855.93	4373.61	0.11	-0.090	0.000	0.157
15.00	-41.76	-9.28	0.00	-1066.6	0.00	1066.63	4161.65	2080.83	8697.29	4295.27	0.18	-0.113	0.000	0.155
20.00	-40.31	-9.15	0.00	-1020.2	0.00	1020.24	4114.76	2057.38	8433.78	4165.13	0.32	-0.151	0.000	0.151
22.00	-39.73	-9.10	0.00	-1001.9	0.00	1001.95	4095.66	2047.83	8328.71	4113.24	0.38	-0.167	0.000	0.179
25.00	-38.87	-9.04	0.00	-974.65	0.00	974.65	4066.61	2033.31	8171.50	4035.59	0.50	-0.195	0.000	0.177
30.00	-37.46	-8.92	0.00	-929.46	0.00	929.46	4017.20	2008.60	7910.59	3906.74	0.73	-0.240	0.000	0.173
33.50	-36.49	-8.82	0.00	-898.26	0.00	898.26	3981.85	1990.92	7728.86	3817.00	0.92	-0.273	0.000	0.170
34.75	-36.15	-8.79	0.00	-887.22	0.00	887.22	3969.08	1984.54	7664.15	3785.04	0.99	-0.285	0.000	0.141
35.00	-36.08	-8.79	0.00	-885.03	0.00	885.03	3966.51	1983.26	7651.22	3778.65	1.00	-0.287	0.000	0.121
36.00	-35.81	-8.76	0.00	-876.24	0.00	876.24	3956.22	1978.11	7599.55	3753.13	1.06	-0.293	0.000	0.154
38.00	-34.87	-8.71	0.00	-858.71	0.00	858.71	3935.49	1967.75	7496.40	3702.19	1.19	-0.311	0.000	0.117
39.00	-34.41	-8.68	0.00	-850.01	0.00	850.01	3925.05	1962.53	7444.93	3676.77	1.26	-0.317	0.000	0.136
40.00	-33.95	-8.65	0.00	-841.33	0.00	841.33	3914.56	1957.28	7393.54	3651.39	1.32	-0.325	0.000	0.136
42.00	-33.03	-8.60	0.00	-824.02	0.00	824.02	3554.53	1777.27	6785.59	3351.15	1.46	-0.341	0.000	0.130
45.00	-32.31	-8.52	0.00	-798.22	0.00	798.22	3532.39	1766.19	6658.05	3288.16	1.69	-0.364	0.000	0.135
48.50	-31.48	-8.42	0.00	-768.41	0.00	768.41	3505.83	1752.92	6509.28	3214.69	1.96	-0.392	0.000	0.151
49.75	-31.19	-8.38	0.00	-757.88	0.00	757.88	3496.16	1748.08	6456.16	3188.45	2.07	-0.404	0.000	0.161
50.00	-31.13	-8.39	0.00	-755.79	0.00	755.79	3494.22	1747.11	6445.54	3183.21	2.09	-0.407	0.000	0.160
54.00	-30.15	-8.24	0.00	-722.25	0.00	722.25	3462.54	1731.27	6275.67	3099.32	2.45	-0.446	0.000	0.156
55.00	-29.92	-8.22	0.00	-714.01	0.00	714.01	3454.46	1727.23	6233.23	3078.36	2.54	-0.456	0.000	0.155
60.00	-28.78	-8.08	0.00	-672.90	0.00	672.90	3413.12	1706.56	6021.34	2973.71	3.04	-0.506	0.000	0.150
65.00	-27.66	-7.94	0.00	-632.49	0.00	632.49	3370.20	1685.10	5810.04	2869.36	3.60	-0.555	0.000	0.145
70.00	-26.56	-7.79	0.00	-592.78	0.00	592.78	3325.69	1662.84	5599.53	2765.40	4.21	-0.604	0.000	0.140
71.25	-26.08	-7.76	0.00	-583.05	0.00	583.05	3314.31	1657.16	5547.04	2739.48	4.37	-0.616	0.000	0.136
75.00	-24.64	-7.63	0.00	-553.96	0.00	553.96	3279.60	1639.80	5389.99	2661.91	4.87	-0.653	0.000	0.132
76.00	-24.26	-7.61	0.00	-546.33	0.00	546.33	3306.32	1653.16	5510.48	2721.42	5.00	-0.662	0.000	0.135
80.00	-23.40	-7.49	0.00	-515.90	0.00	515.90	3269.04	1634.52	5343.14	2638.78	5.58	-0.701	0.000	0.126
80.00	-23.40	-7.49	0.00	-515.90	0.00	515.90	2504.08	1252.04	4105.75	2027.68	5.58	-0.701	0.000	0.137
85.00	-22.48	-7.33	0.00	-478.45	0.00	478.45	2474.85	1237.43	3958.27	1954.84	6.33	-0.746	0.000	0.145
86.00	-22.30	-7.31	0.00	-471.11	0.00	471.11	2468.82	1234.41	3928.75	1940.26	6.49	-0.757	0.000	0.179
90.00	-21.57	-7.20	0.00	-441.86	0.00	441.86	2444.04	1222.02	3810.67	1881.94	7.15	-0.807	0.000	0.172
95.00	-20.68	-7.06	0.00	-405.85	0.00	405.85	2411.64	1205.82	3663.14	1809.09	8.03	-0.868	0.000	0.163
100.00	-19.81	-6.91	0.00	-370.55	0.00	370.55	2377.66	1188.83	3515.87	1736.36	8.97	-0.928	0.000	0.153
104.00	-19.13	-6.79	0.00	-342.90	0.00	342.90	2349.34	1174.67	3398.38	1678.33	9.76	-0.975	0.000	0.146
104.00	-19.13	-6.79	0.00	-342.90	0.00	342.90	2349.34	1174.67	3398.38	1678.33	9.76	-0.975	0.000	0.146
105.00	-18.95	-6.78	0.00	-336.10	0.00	336.10	2342.10	1171.05	3369.07	1663.86	9.97	-0.987	0.000	0.210
110.00	-18.12	-6.64	0.00	-302.22	0.00	302.22	2304.95	1152.47	3222.91	1591.67	11.05	-1.071	0.000	0.198
115.00	-17.31	-6.51	0.00	-269.01	0.00	269.01	2266.22	1133.11	3077.59	1519.90	12.21	-1.152	0.000	0.185
120.00	-15.94	-6.35	0.00	-236.48	0.00	236.48	2252.14	1126.07	3026.44	1494.64	13.46	-1.230	0.000	0.165
125.00	-15.15	-6.21	0.00	-204.71	0.00	204.71	2211.27	1105.63	2882.56	1423.59	14.79	-1.305	0.000	0.151
125.00	-15.15	-6.21	0.00	-204.71	0.00	204.71	1600.93	800.47	2095.19	1034.73	14.79	-1.305	0.000	0.207
130.00	-14.49	-6.08	0.00	-173.64	0.00	173.64	1577.27	788.64	2000.77	988.11	16.19	-1.371	0.000	0.185
135.00	-13.83	-5.94	0.00	-143.25	0.00	143.25	1552.03	776.01	1906.32	941.46	17.67	-1.446	0.000	0.161
137.50	-9.73	-4.33	0.00	-126.25	0.00	126.25	1538.81	769.41	1859.13	918.16	18.44	-1.482	0.000	0.144
140.00	-9.45	-4.26	0.00	-115.43	0.00	115.43	1525.20	762.60	1812.01	894.88	19.22	-1.515	0.000	0.135

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 49

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145.00	-8.92	-4.13	0.00	-94.11	0.00	94.11	1496.79	748.40	1718.05	848.48	20.84	-1.576	0.000	0.117
147.00	-6.98	-3.01	0.00	-85.86	0.00	85.86	1484.98	742.49	1680.60	829.98	21.51	-1.599	0.000	0.108
150.00	-6.71	-2.93	0.00	-76.82	0.00	76.82	1466.80	733.40	1624.61	802.34	22.52	-1.632	0.000	0.100
155.00	-5.90	-2.79	0.00	-62.15	0.00	62.15	1451.75	725.87	1579.74	780.18	24.26	-1.681	0.000	0.084
160.00	-5.47	-2.66	0.00	-48.20	0.00	48.20	1419.41	709.70	1487.45	734.60	26.05	-1.725	0.000	0.069
165.00	-5.05	-2.53	0.00	-34.91	0.00	34.91	1385.48	692.74	1396.17	689.51	27.87	-1.760	0.000	0.054
170.00	-4.64	-2.40	0.00	-22.27	0.00	22.27	1349.97	674.99	1306.08	645.02	29.73	-1.787	0.000	0.038
170.00	-4.64	-2.40	0.00	-22.27	0.00	22.27	1349.97	674.99	1306.08	645.02	29.73	-1.787	0.000	0.038
174.00	-3.58	-1.83	0.00	-8.08	0.00	8.08	1121.46	560.73	870.39	429.85	31.23	-1.802	0.000	0.022
175.00	0.00	-1.71	0.00	-6.25	0.00	6.25	1053.22	526.61	767.04	378.81	31.61	-1.805	0.000	0.017

Final Analysis Summary

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	4/30/2020	
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: 50	

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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	43.8	0.00	55.45	0.00	0.00	5510.55
0.9D + 1.6W 101 mph Wind	43.8	0.00	41.57	0.00	0.00	5452.38
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.4	0.00	83.25	0.00	0.00	1262.85
1.2D + 1.0E	2.0	0.00	55.52	0.00	0.00	271.98
0.9D + 1.0E	2.0	0.00	41.64	0.00	0.00	268.78
1.0D + 1.0W 60 mph Wind	9.7	0.00	46.26	0.00	0.00	1209.38

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-20.42	-30.95	0.00	-1533.1	0.00	-1533.1	2342.10	1171.0	3369.07	1663.86	105.00	0.931
0.9D + 1.6W 101 mph Wind	-14.75	-30.47	0.00	-1506.5	0.00	-1506.5	2342.10	1171.0	3369.07	1663.86	105.00	0.912
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-34.03	-6.86	0.00	-230.32	0.00	-230.32	2211.27	1105.6	2882.56	1423.59	125.00	0.244
1.2D + 1.0E	-18.34	-1.48	0.00	-66.58	0.00	-66.58	2211.27	1105.6	2882.56	1423.59	125.00	0.076
0.9D + 1.0E	-13.76	-1.45	0.00	-65.56	0.00	-65.56	2211.27	1105.6	2882.56	1423.59	125.00	0.072
1.0D + 1.0W 60 mph Wind	-18.95	-6.78	0.00	-336.10	0.00	-336.10	2342.10	1171.0	3369.07	1663.86	105.00	0.210

Additional Steel Summary

			Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
Elev From (ft)	Elev To (ft)	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)	326.6	0.00	37.1	364.6	37.1	10	0	283.9	37.1	8	0	411.69	516.0	468.64	0.878
0.0	22.0	(3) PLT-C10x30(1.5" Hole)	243.1	5.84	37.1	341.1	37.1	10	0	322.2	37.1	9	0	341.07	500.4	468.64	0.728
33.5	48.5	(1) LNP-LP6X100-G-20TT	-203.1	-4.87	25.3	221.9	25.3	9	10	221.6	25.3	9	10	241.37	297.8	292.50	0.825
34.8	49.8	(2) LNP-LP6X100-G-20TT	-203.1	-4.87	25.3	220.7	25.3	9	10	220.5	25.3	9	10	241.37	297.8	292.50	0.825
35.0	39.0	(3) LNP-LP6X100-G-10TT	203.1	4.87	25.3	189.2	25.3	8	11	186.3	25.3	8	11	241.37	297.8	292.50	0.825
38.0	71.3	(3) PLT-C10x30(1.5" Hole)	410.2	9.84	37.1	281.6	37.1	8	0	369.9	37.1			407.59	500.4	468.64	0.870
71.3	86.0	(3) PLT-C10x30(1.5" Hole)	466.5	11.20	37.1	369.9	37.1			360.4	37.1			369.94	500.4	468.64	0.789
86.0	104.0	(3) PLT-C10x15.3(1.5" Hole)	466.5	11.20	37.1	236.1	37.1			202.4	37.1	6	0	236.11	255.7	247.80	0.953

Base Plate Summary

Structure:	CT00680-S-SB		**Code:**	EIA/TIA-222-G	4/30/2020
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: 51

Tower Engineering Solutions

Reactions

Original Design

Moment (kip-ft):	1.00
Axial (kip):	1.00
Shear (kip):	1.00

Analysis

Moment (kip-ft):	5510.55
Axial (kip):	83.25
Shear (kip):	43.79
Moment Design %:	551055.01

Base Plate

Yield (ksi):	50.00
Width (in):	67.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	12.64
Moment (kip-in):	257.80
Allow Stress (ksi):	67.50
Applied Stress (ksi):	0.00
Stress Ratio:	0.81

Anchor Bolts

Bolt Circle:	61.00
Number Bolts:	18.00
Bolt Type:	2.00" A687
Bolt Diameter (in):	2.00
Yield (ksi):	105.00
Ultimate (ksi):	150.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00

Compression

Force (kip):	178.23
Allowable (kip):	300.00
Ratio:	0.61

Tension

Force (kip):	168.98
Allowable (kip):	300.00
Ratio:	0.58

Monopole Mat Foundation Design

				Date
				4/30/2020
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Putnam	**Structure Height (Ft.):**	175
Site Number:	CT00680-S-SBA	**Engineer Name:**	S. Hesselbein
Engr. Number:	93540	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

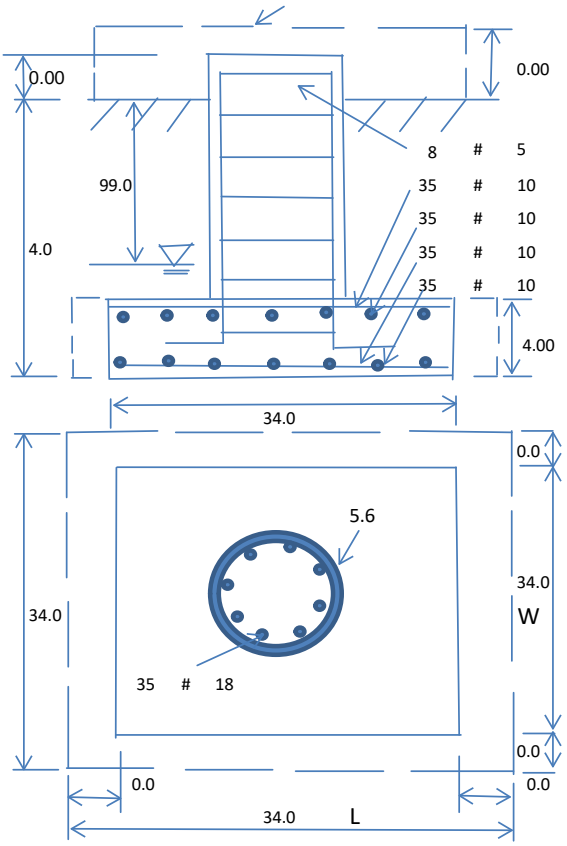
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	55.5	Shear Force (Kips):	43.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5510.6
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



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	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	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	40000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

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

Total Dry Soil Volume (cu. Ft.):	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):	749.12

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1708	<	Allowable Factored Soil Bearing (psf):	30000	0.06	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	11555.9	>	Design Factored Momont (kips-ft):	5686	0.49	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.03	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	4.00		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	14287.5	>	Design Factored Moment (Mu, Kips-F	5510.6	0.39	OK!
Calculated Shear Capacity (Kips):	624.7	>	Design Factored Shear (Kips):	43.8	0.07	OK!
Calculated Tension Capacity (Tn, Kips):	7560.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	4517.3	>	Design Factored Axial Load (Pu Kips):	55.5	0.01	OK!
Moment & Axial Strength Combination:	0.39	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.039		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1487.5	>	One-Way Factored Shear (L-D. Kips):	349.8	0.24	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1487.5	>	One-Way Factored Shear (W-D., Kips)	349.8	0.24	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1535.1	>	One-Way Factored Shear (C-C, Kips):	340.3	0.22	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0025	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0025		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	8619.7	>	Moment at Bottom (L-Dir. K-Ft):	2922.6	0.34	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	8619.7	>	Moment at Bottom (W-Dir. K-Ft):	2922.6	0.34	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	12142.4	>	Moment at Bottom (C-C Dir. K-Ft):	4133.1	0.34	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0025	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0025		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	8619.7	>	Moment at the top (L-Dir K-Ft):	1214.4	0.14	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	8619.7	>	Moment at the top (W-Dir K-Ft):	1214.4	0.14	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	12142.4	>	Moment at the top (C-C Dir. K-Ft):	1131.8	0.09	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	2204.2	k-ft.	Max. factored shear stress v_{u_CD}:		9.5	Psi
Max. factored shear stress v_{u_AB}:	14.6	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	14.6	Psi	Check Usage of Punching Shear Capacity:		0.09	OK!

April 17, 2020

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:	SBA Site I.D.	CT00680-S-05
	Site Number:	CT1110 (6C)
	FA Number:	10035406
	PACE Number:	MRCTB047189
	PT Number:	2051A0VCS5
	Site Name:	PUTNAM SAYLE AVE
	Site Address:	154 Sayle Avenue Putnam, CT 06260

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by SAI Communications to perform a mount analysis on the existing AT&T antenna/RRH mount to determine their capability of supporting the following additional loading:

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (3) TPA-65R-LCUUUU-H8 Antennas (96.0"x14.4"x8.6" – Wt. = 95 lbs. /each)
- (3) 800-10966 Antennas (96.0"x20.0"x6.9"– Wt. = 115 lbs. /each)
- (3) AM-X-CD-17-65-00T-RET Antennas (96.0"x11.8"x6.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) 4478 B5 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each) (Tower Mount)
- (3) RRUS-11 B12 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each) (Tower Mount)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (3) DBC0061F1V51-2 Diplexers (8.0"x6.2"x6.5" - Wt. = 26 lbs. /each)
- (3) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG did not perform a survey climb on the existing mount. B+T GRP conducted a survey climb and mapping of the existing AT&T mount on January 13, 2018

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 130 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.73 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with a ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 5G) Mount Rating	106	LC7	98%	**PASS**

Reference Documents:

- Mount mapping report prepared by B+T GRP.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mount must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 203.208.3919 f: 203.234.6398 a: 110 Washington Avenue, 4th Floor, North Haven CT 06473

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Wind & Ice
Calculations

Date: 4/17/2020
Project Name: PUTNAM SAYLE AVE
Project No.: CT1110
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01 (z/z_g)^{2/\alpha}$

z=	135	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.077**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= **#DIV/0!**

K_h=	#DIV/0!	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	135	
z_s=	460	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.98	(from 2.6.8)

(If Category 1 then K_{zt}=1.0)

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness =
Importance Factor =

t_i =	1.50	in
I=	1.0	(from Table 2-3)
K_{iz} =	1.15	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.73 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	175	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.077	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**43.52**	K_e=	0.98	(from 2.6.8)
$q_{z\ (ice)}$=	**6.44**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.32**	V_{max}=	130	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.73 in **Angle =** 0 (deg) **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	240	50	13
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	6.67	1.39	579	110	31
800-10966 Antenna	96.0	20.0	6.9	13.33	4.80	1.30	756	136	40
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	8.14	1.44	492	98	26
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	119	26	6
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	0.00	1.20	0	6	0
4478 B14 RRH	18.1	13.4	8.3	1.68	1.35	1.20	88	19	5
4478 B14 RRH (Shielded)	18.1	0.0	8.3	0.00	0.00	1.20	0	4	0
4426 B66 RRH	14.9	13.2	5.8	1.37	1.13	1.20	71	16	4
4426 B66 RRH (Shielded)	14.9	0.0	5.8	0.00	0.00	1.20	0	3	0
4478 B5 RRH	18.1	13.4	8.3	1.68	1.35	1.20	88	19	5
4478 B5 RRH (Shielded)	18.1	1.6	8.3	0.20	11.31	1.54	14	8	1
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	119	26	6
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	1.16	1.20	121	25	6
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	16	7	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	49	11	3
2" Pipe	2.4	12.0		0.20	0.20	1.20	10	5	1
4" Pipe	4.5	12.0		0.38	0.38	1.20	20	7	1
2x2 Angle	2.0	12.0		0.17	0.17	2.00	15	8	1
4x4 Angle	4.0	12.0		0.33	0.33	2.00	29	10	2
HSS 4x4	4.0	12.0		0.33	0.33	1.25	18	6	1

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Project Name: PUTNAM SAYLE AVE
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Designed By: LBW Checked By: MSC

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WIND LOADS

Angle = 30 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	240	127	212
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	579	384	530
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	756	326	648
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	492	296	443
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	108
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	64	73	66
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	80
4478 B14 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	44	54	47
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	71	31	61
4426 B66 RRH (Shielded)	14.9	6.6	5.8	0.68	0.60	2.26	2.57	1.20	1.20	36	31	35
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	80
4478 B5 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	44	54	47
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	108
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	121	52	104
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	47	23

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	48	31	44
TPA-65R-LCUUUU-H8 Antenna	99.5	17.9	12.1	12.33	8.33	5.57	8.25	1.34	1.44	106	77	99
800-10966 Antenna	99.5	23.5	10.4	16.20	7.15	4.24	9.61	1.28	1.49	133	68	117
AM-X-CD-17-65-00T-RET Antenna	99.5	15.3	9.5	10.54	6.53	6.52	10.52	1.38	1.52	94	64	86
RRUS-32 B30 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	24
RRUS-32 B30 RRH (Shielded)	30.7	7.8	10.5	1.66	2.23	3.94	2.93	1.26	1.22	13	17	14
4478 B14 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	18
4478 B14 RRH (Shielded)	21.6	8.4	11.8	1.26	1.76	2.56	1.83	1.20	1.20	10	14	11
4426 B66 RRH	18.4	16.7	9.3	2.12	1.18	1.10	1.98	1.20	1.20	16	9	15
4426 B66 RRH (Shielded)	18.4	8.3	9.3	1.06	1.18	2.20	1.98	1.20	1.20	8	9	8
4478 B5 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	18
4478 B5 RRH (Shielded)	21.6	8.4	11.8	1.26	1.76	2.56	1.83	1.20	1.20	10	14	11
RRUS-32 B2 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	24
RRUS-11 B2 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	25	13	22
LGP21401 TMA	17.9	6.2	12.5	0.76	1.54	2.90	1.43	1.22	1.20	6	12	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	11
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	31	20	28
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	40	17	35
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	26	16	24
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4478 B14 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	3
4426 B66 RRH (Shielded)	14.9	6.6	5.8	0.68	0.60	2.26	2.57	1.20	1.20	2	2	2
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4478 B5 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	6
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1

Date: 4/17/2020
Project Name: PUTNAM SAYLE AVE
Project No.: CT1110
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	240	127	156
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	579	384	433
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	756	326	434
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	492	296	345
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	84
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	91	73	77
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	63
4478 B14 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	66	54	57
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	71	31	41
4426 B66 RRH (Shielded)	14.9	9.9	5.8	1.02	0.60	1.51	2.57	1.20	1.20	54	31	37
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	63
4478 B5 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	66	54	57
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	84
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	121	52	69
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	47	39

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	48	31	35
TPA-65R-LCUUUU-H8 Antenna	99.5	17.9	12.1	12.33	8.33	5.57	8.25	1.34	1.44	106	77	84
800-10966 Antenna	99.5	23.5	10.4	16.20	7.15	4.24	9.61	1.28	1.49	133	68	85
AM-X-CD-17-65-00T-RET Antenna	99.5	15.3	9.5	10.54	6.53	6.52	10.52	1.38	1.52	94	64	71
RRUS-32 B30 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	19
RRUS-32 B30 RRH (Shielded)	30.7	11.7	10.5	2.48	2.23	2.63	2.93	1.21	1.22	19	17	18
4478 B14 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	15
4478 B14 RRH (Shielded)	21.6	12.6	11.8	1.89	1.76	1.71	1.83	1.20	1.20	15	14	14
4426 B66 RRH	18.4	16.7	9.3	2.12	1.18	1.10	1.98	1.20	1.20	16	9	11
4426 B66 RRH (Shielded)	18.4	12.5	9.3	1.59	1.18	1.47	1.98	1.20	1.20	12	9	10
4478 B5 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	15
4478 B5 RRH (Shielded)	21.6	12.6	11.8	1.89	1.76	1.71	1.83	1.20	1.20	15	14	14
RRUS-32 B2 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	19
RRUS-11 B2 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	25	13	16
LGP21401 TMA	17.9	6.2	12.5	0.76	1.54	2.90	1.43	1.22	1.20	6	12	10

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	8
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	31	20	23
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	40	17	23
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	26	16	18
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B14 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	3
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	14.9	9.9	5.8	1.02	0.60	1.51	2.57	1.20	1.20	3	2	2
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B5 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	3
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 4/17/2020
Project Name: PUTNAM SAYLE AVE
Project No.: CT1110
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 90 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	240	127	127
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	579	384	384
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	756	326	326
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	492	296	296
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	73
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	73	73
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	54
4478 B14 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	0.00	2.18	1.20	1.20	0	54	54
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	71	31	31
4426 B66 RRH (Shielded)	14.9	0.0	5.8	0.00	0.60	0.00	2.57	1.20	1.20	0	31	31
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	54
4478 B5 RRH (Shielded)	18.1	1.6	8.3	0.20	1.04	11.31	2.18	1.54	1.20	14	54	54
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	73
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	121	52	52
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	47	47

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	48	31	31
TPA-65R-LCUUUU-H8 Antenna	99.5	17.9	12.1	12.33	8.33	5.57	8.25	1.34	1.44	106	77	77
800-10966 Antenna	99.5	23.5	10.4	16.20	7.15	4.24	9.61	1.28	1.49	133	68	68
AM-X-CD-17-65-00T-RET Antenna	99.5	15.3	9.5	10.54	6.53	6.52	10.52	1.38	1.52	94	64	64
RRUS-32 B30 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	17
RRUS-32 B30 RRH (Shielded)	30.7	3.5	10.5	0.74	2.23	8.88	2.93	1.46	1.22	7	17	17
4478 B14 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	14
4478 B14 RRH (Shielded)	21.6	3.5	11.8	0.52	1.76	6.24	1.83	1.37	1.20	5	14	14
4426 B66 RRH	18.4	16.7	9.3	2.12	1.18	1.10	1.98	1.20	1.20	16	9	9
4426 B66 RRH (Shielded)	18.4	3.5	9.3	0.44	1.18	5.31	1.98	1.33	1.20	4	9	9
4478 B5 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	14
4478 B5 RRH (Shielded)	21.6	5.1	11.8	0.76	1.76	4.26	1.83	1.28	1.20	6	14	14
RRUS-32 B2 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	17
RRUS-11 B2 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	25	13	13
LGP21401 TMA	17.9	6.2	12.5	0.76	1.54	2.90	1.43	1.22	1.20	6	12	12

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	7
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	31	20	20
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	40	17	17
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	26	16	16
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Shielded)	27.2	0.0	7.0	0.00	1.32	0.00	3.89	1.20	1.26	0	4	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B14 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	0.00	2.18	1.20	1.20	0	3	3
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	14.9	0.0	5.8	0.00	0.60	0.00	2.57	1.20	1.20	0	2	2
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B5 RRH (Shielded)	18.1	1.6	8.3	0.20	1.04	11.31	2.18	1.54	1.20	1	3	3
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	3
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	3

Date: 4/17/2020
Project Name: PUTNAM SAYLE AVE
Project No.: CT1110
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	240	127	156
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	579	384	433
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	756	326	434
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	492	296	345
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	84
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	91	73	77
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	63
4478 B14 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	66	54	57
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	71	31	41
4426 B66 RRH (Shielded)	14.9	9.9	5.8	1.02	0.60	1.51	2.57	1.20	1.20	54	31	37
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	63
4478 B5 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	66	54	57
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	84
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	121	52	69
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	47	39

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	48	31	35
TPA-65R-LCUUUU-H8 Antenna	99.5	17.9	12.1	12.33	8.33	5.57	8.25	1.34	1.44	106	77	84
800-10966 Antenna	99.5	23.5	10.4	16.20	7.15	4.24	9.61	1.28	1.49	133	68	85
AM-X-CD-17-65-00T-RET Antenna	99.5	15.3	9.5	10.54	6.53	6.52	10.52	1.38	1.52	94	64	71
RRUS-32 B30 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	19
RRUS-32 B30 RRH (Shielded)	30.7	11.7	10.5	2.48	2.23	2.63	2.93	1.21	1.22	19	17	18
4478 B14 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	15
4478 B14 RRH (Shielded)	21.6	12.6	11.8	1.89	1.76	1.71	1.83	1.20	1.20	15	14	14
4426 B66 RRH	18.4	16.7	9.3	2.12	1.18	1.10	1.98	1.20	1.20	16	9	11
4426 B66 RRH (Shielded)	18.4	12.5	9.3	1.59	1.18	1.47	1.98	1.20	1.20	12	9	10
4478 B5 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	15
4478 B5 RRH (Shielded)	21.6	12.6	11.8	1.89	1.76	1.71	1.83	1.20	1.20	15	14	14
RRUS-32 B2 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	19
RRUS-11 B2 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	25	13	16
LGP21401 TMA	17.9	6.2	12.5	0.76	1.54	2.90	1.43	1.22	1.20	6	12	10

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	8
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	31	20	23
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	40	17	23
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	26	16	18
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Shielded)	27.2	9.1	7.0	1.71	1.32	3.00	3.89	1.22	1.26	5	4	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B14 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	3
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	2
4426 B66 RRH (Shielded)	14.9	9.9	5.8	1.02	0.60	1.51	2.57	1.20	1.20	3	2	2
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4478 B5 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	3
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2

Date: 4/17/2020
Project Name: PUTNAM SAYLE AVE
Project No.: CT1110
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.73 in. | Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	240	127	212
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	579	384	530
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	756	326	648
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	492	296	443
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	108
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	64	73	66
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	80
4478 B14 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	44	54	47
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	71	31	61
4426 B66 RRH (Shielded)	14.9	6.6	5.8	0.68	0.60	2.26	2.57	1.20	1.20	36	31	35
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	54	80
4478 B5 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	44	54	47
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	119	73	108
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	121	52	104
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	16	47	23

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.87	3.43	4.04	6.91	1.27	1.40	48	31	44
TPA-65R-LCUUUU-H8 Antenna	99.5	17.9	12.1	12.33	8.33	5.57	8.25	1.34	1.44	106	77	99
800-10966 Antenna	99.5	23.5	10.4	16.20	7.15	4.24	9.61	1.28	1.49	133	68	117
AM-X-CD-17-65-00T-RET Antenna	99.5	15.3	9.5	10.54	6.53	6.52	10.52	1.38	1.52	94	64	86
RRUS-32 B30 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	24
RRUS-32 B30 RRH (Shielded)	30.7	7.8	10.5	1.66	2.23	3.94	2.93	1.26	1.22	13	17	14
4478 B14 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	18
4478 B14 RRH (Shielded)	21.6	8.4	11.8	1.26	1.76	2.56	1.83	1.20	1.20	10	14	11
4426 B66 RRH	18.4	16.7	9.3	2.12	1.18	1.10	1.98	1.20	1.20	16	9	15
4426 B66 RRH (Shielded)	18.4	8.3	9.3	1.06	1.18	2.20	1.98	1.20	1.20	8	9	8
4478 B5 RRH	21.6	16.9	11.8	2.52	1.76	1.28	1.83	1.20	1.20	19	14	18
4478 B5 RRH (Shielded)	21.6	8.4	11.8	1.26	1.76	2.56	1.83	1.20	1.20	10	14	11
RRUS-32 B2 RRH	30.7	15.6	10.5	3.31	2.23	1.97	2.93	1.20	1.22	26	17	24
RRUS-11 B2 RRH	23.2	20.5	10.7	3.29	1.71	1.13	2.17	1.20	1.20	25	13	22
LGP21401 TMA	17.9	6.2	12.5	0.76	1.54	2.90	1.43	1.22	1.20	6	12	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	13	7	11
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	31	20	28
800-10966 Antenna	96.0	20.0	6.9	13.33	4.60	4.80	13.91	1.30	1.63	40	17	35
AM-X-CD-17-65-00T-RET Antenna	96.0	11.8	6.0	7.87	4.00	8.14	16.00	1.44	1.70	26	16	24
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B30 RRH (Shielded)	27.2	6.1	7.0	1.14	1.32	4.50	3.89	1.29	1.26	3	4	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4478 B14 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	3
4426 B66 RRH (Shielded)	14.9	6.6	5.8	0.68	0.60	2.26	2.57	1.20	1.20	2	2	2
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4478 B5 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	2	3	2
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-11 B2 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	6	3	6
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1

Date: 4/17/2020
Project Name: PUTNAM SAYLE AVE
Project No.: CT1110
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.73 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		134 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		169 lbs

TPA-65R-LCUUUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	14.4	
Depth (in):	8.6	
Total weight of ice on object:		313 lbs
Weight of object:	75.0 lbs	
Combined weight of ice and object:		388 lbs

800-10966 Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.0	
Depth (in):	6.9	
Total weight of ice on object:		387 lbs
Weight of object:	115.0 lbs	
Combined weight of ice and object:		502 lbs

AM-X-CD-17-65-00T-RET Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	11.8	
Depth (in):	6.0	
Total weight of ice on object:		253 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		313 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		75 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		135 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		56 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		116 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		42 lbs
Weight of object:	49.0 lbs	
Combined weight of ice and object:		91 lbs

4478 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		56 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		116 lbs

RRUS-32 B2 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		75 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		135 lbs

RRUS-11 B2 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		70 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		121 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	2.7	
Depth (in):	9.0	
Total weight of ice on object:		28 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		47 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		48 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		81 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		9 plf

4" Pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		13 plf

L 2x2 Angles

Weight of ice based on total radial SF area:

Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:		10 plf

L 4x4 Angles

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		16 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		16 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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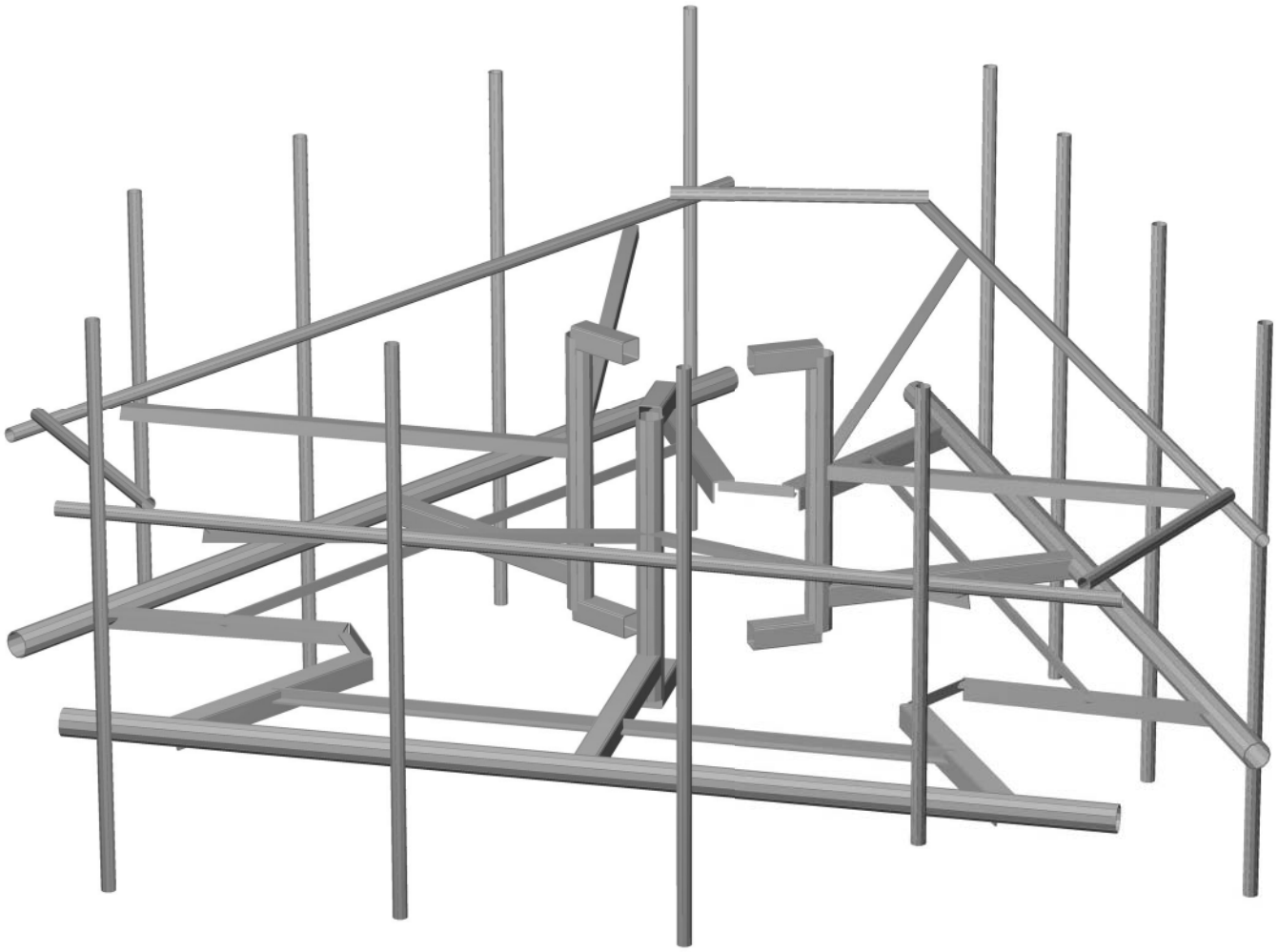

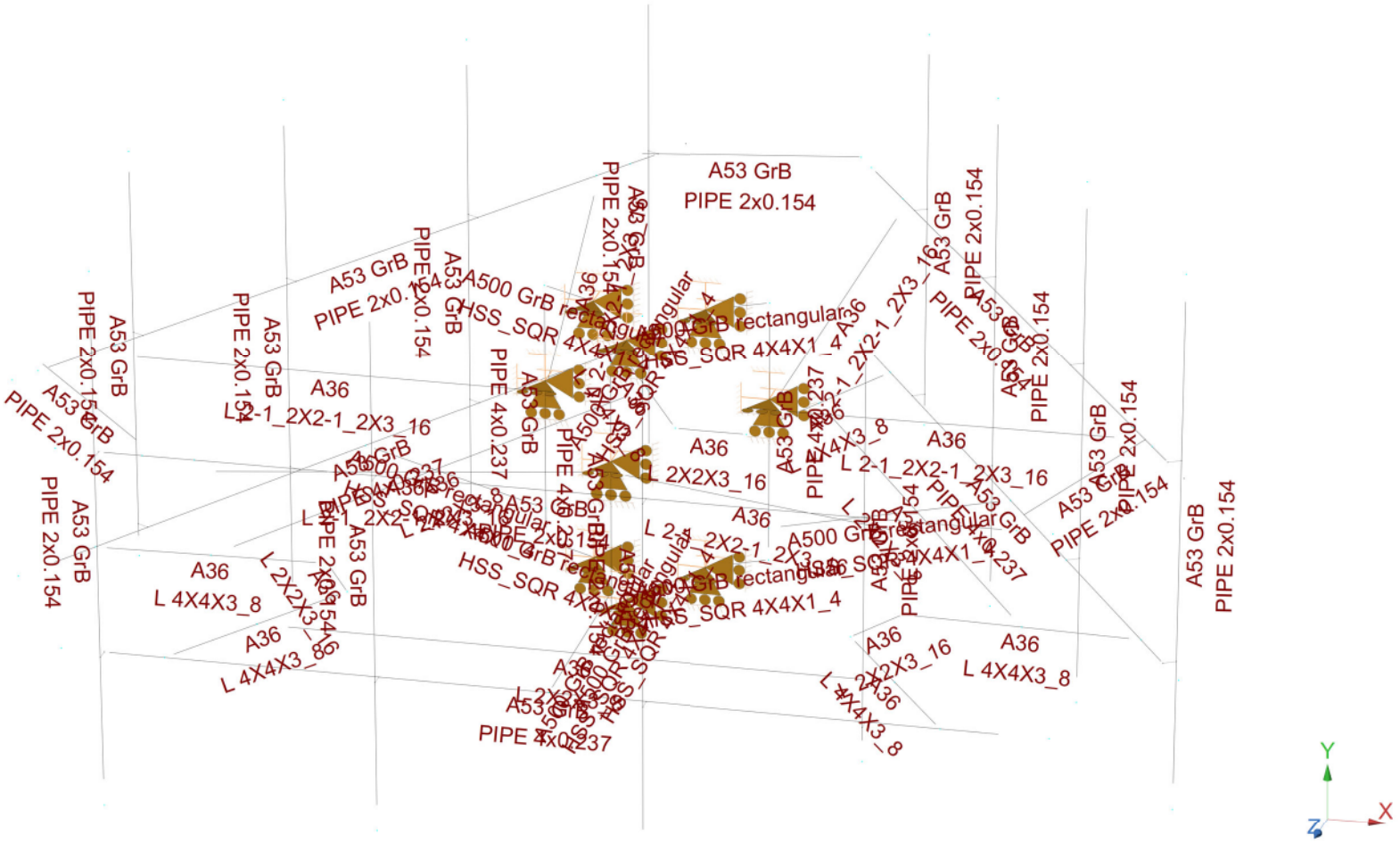
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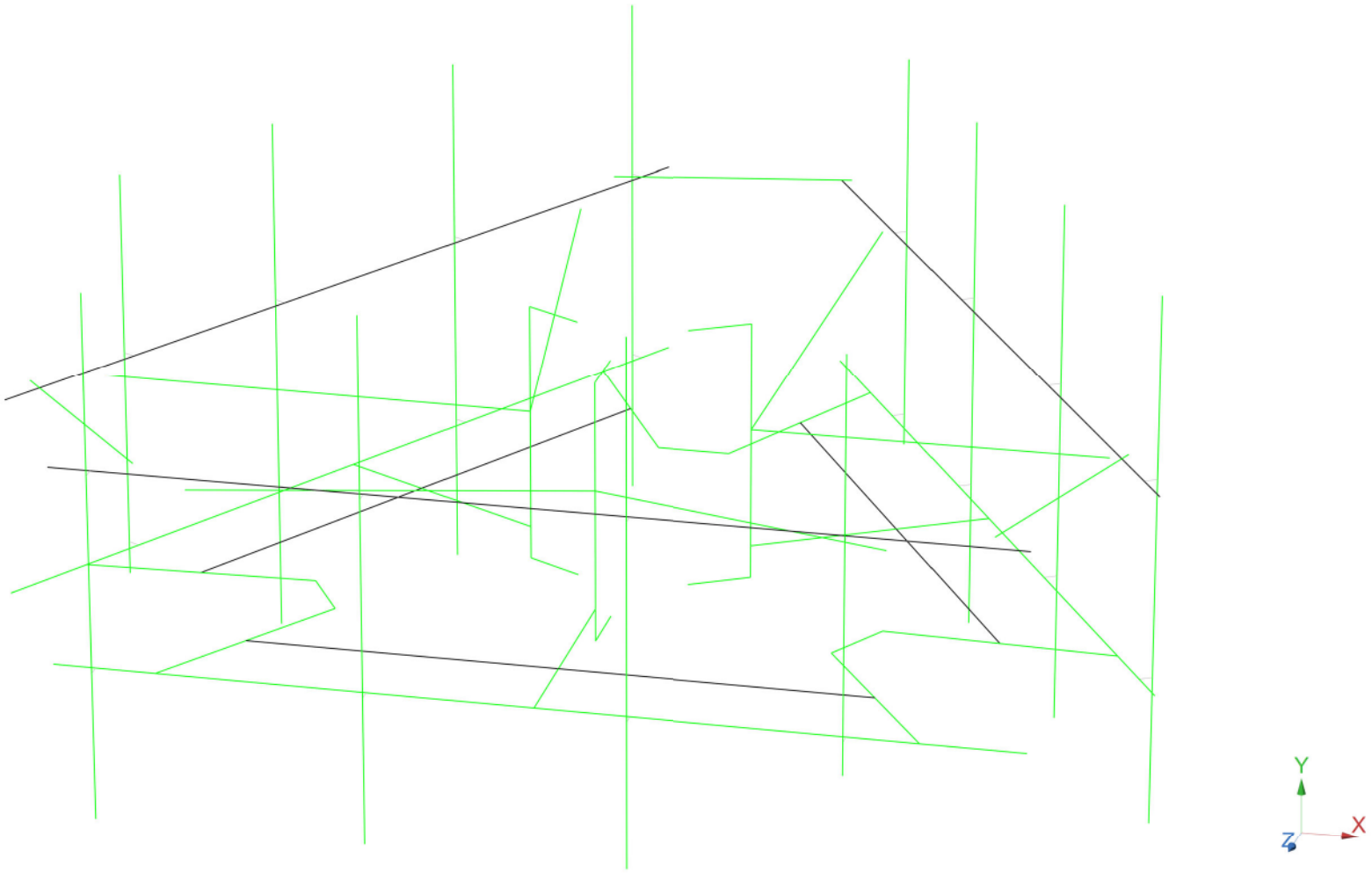
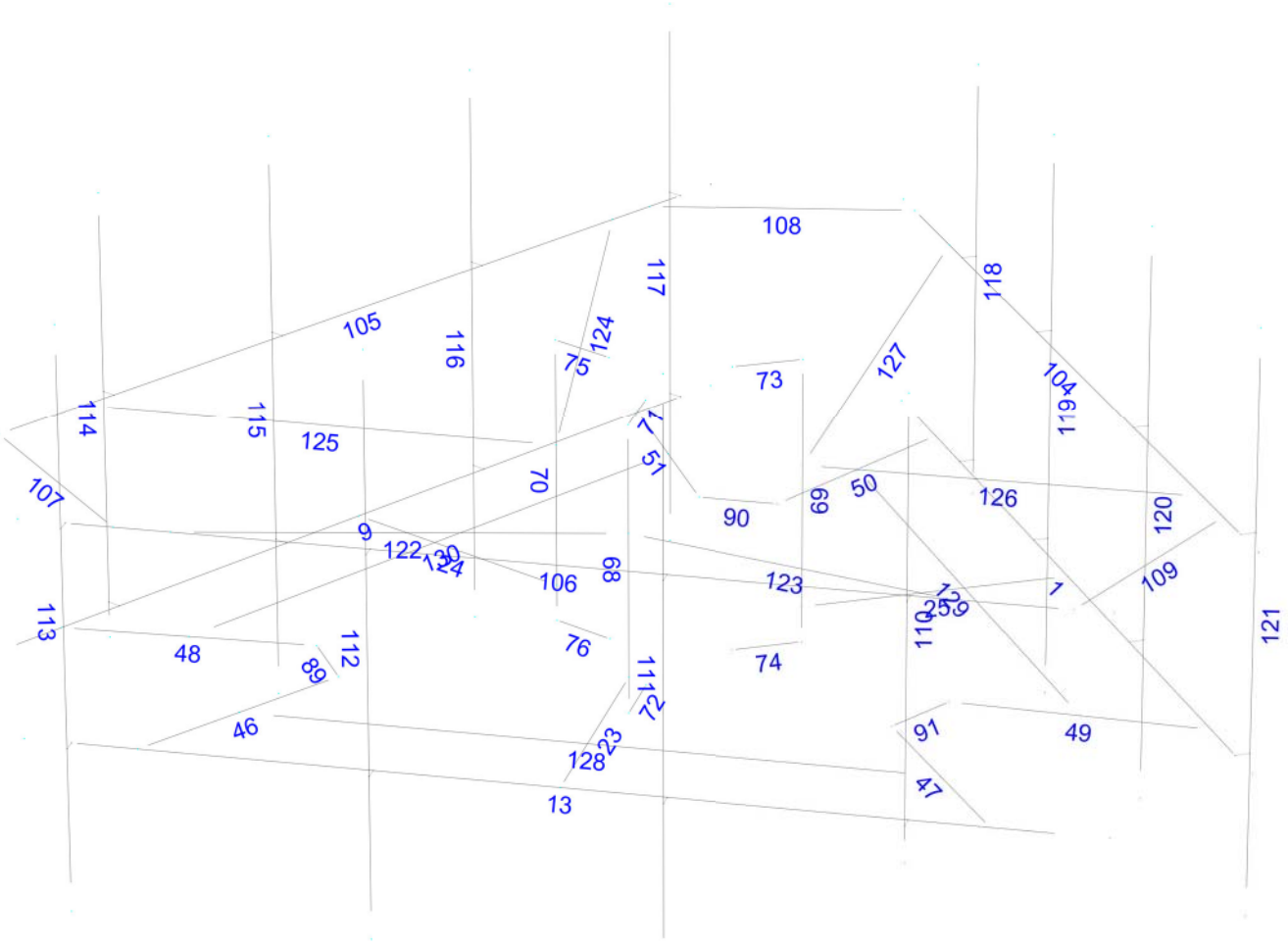
A500 GrB rectangular
HSS_SQR 4X4X1_4
A36
L 2-1_2X2-1_2X3_16
L 2X2X3_16
L 4X4X3_8
PIPE 4x0.237
Y
X
Z


Y
X
Z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Load data

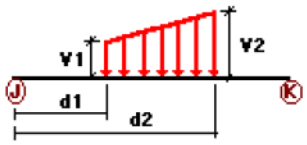
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 lb Live Load Antenna 4	No	LL

Distributed force on members

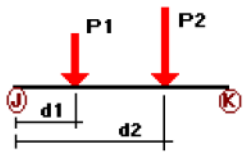


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	128	y	-0.01	0.00	0.00	No	0.00	No
	129	y	-0.01	0.00	0.00	No	0.00	No
	130	y	-0.01	0.00	0.00	No	0.00	No
W0	1	z	-0.02	0.00	0.00	No	0.00	No
	9	z	-0.02	0.00	0.00	No	0.00	No
	13	z	-0.02	0.00	0.00	No	0.00	No
	24	z	-0.018	0.00	0.00	No	0.00	No
	25	z	-0.018	0.00	0.00	No	0.00	No
	46	z	-0.029	0.00	0.00	No	0.00	No
	47	z	-0.029	0.00	0.00	No	0.00	No
	48	z	-0.029	0.00	0.00	No	0.00	No
	49	z	-0.029	0.00	0.00	No	0.00	No
	50	z	-0.029	0.00	0.00	No	0.00	No
	51	z	-0.029	0.00	0.00	No	0.00	No
	68	z	-0.02	0.00	0.00	No	0.00	No

	69	z	-0.02	0.00	0.00	No	0.00	No
	70	z	-0.02	0.00	0.00	No	0.00	No
	73	z	-0.018	0.00	0.00	No	0.00	No
	74	z	-0.018	0.00	0.00	No	0.00	No
	75	z	-0.018	0.00	0.00	No	0.00	No
	76	z	-0.018	0.00	0.00	No	0.00	No
	89	z	-0.015	0.00	0.00	No	0.00	No
	90	z	-0.015	0.00	0.00	No	0.00	No
	91	z	-0.015	0.00	0.00	No	0.00	No
	104	z	-0.01	0.00	0.00	No	0.00	No
	105	z	-0.01	0.00	0.00	No	0.00	No
	106	z	-0.01	0.00	0.00	No	0.00	No
	107	z	-0.01	0.00	0.00	No	0.00	No
	108	z	-0.01	0.00	0.00	No	0.00	No
	109	z	-0.01	0.00	0.00	No	0.00	No
	114	z	-0.01	0.00	0.00	No	0.00	No
	115	z	-0.01	0.00	0.00	No	0.00	No
	116	z	-0.01	0.00	0.00	No	0.00	No
	117	z	-0.01	0.00	0.00	No	0.00	No
	118	z	-0.01	0.00	0.00	No	0.00	No
	119	z	-0.01	0.00	0.00	No	0.00	No
	120	z	-0.01	0.00	0.00	No	0.00	No
	121	z	-0.01	0.00	0.00	No	0.00	No
W30	1	x	-0.02	0.00	0.00	No	0.00	No
	9	x	-0.02	0.00	0.00	No	0.00	No
	13	x	-0.02	0.00	0.00	No	0.00	No
	23	x	-0.018	0.00	0.00	No	0.00	No
	24	x	-0.018	0.00	0.00	No	0.00	No
	25	x	-0.018	0.00	0.00	No	0.00	No
	46	x	-0.029	0.00	0.00	No	0.00	No
	47	x	-0.029	0.00	0.00	No	0.00	No
	48	x	-0.029	0.00	0.00	No	0.00	No
	49	x	-0.029	0.00	0.00	No	0.00	No
	50	x	-0.029	0.00	0.00	No	0.00	No
	51	x	-0.029	0.00	0.00	No	0.00	No
	68	x	-0.02	0.00	0.00	No	0.00	No
	69	x	-0.02	0.00	0.00	No	0.00	No
	70	x	-0.02	0.00	0.00	No	0.00	No
	71	x	-0.018	0.00	0.00	No	0.00	No
	72	x	-0.018	0.00	0.00	No	0.00	No
	73	x	-0.018	0.00	0.00	No	0.00	No
	74	x	-0.018	0.00	0.00	No	0.00	No
	75	x	-0.018	0.00	0.00	No	0.00	No
	76	x	-0.018	0.00	0.00	No	0.00	No
	89	x	-0.015	0.00	0.00	No	0.00	No
	90	x	-0.015	0.00	0.00	No	0.00	No
	91	x	-0.015	0.00	0.00	No	0.00	No
	104	x	-0.01	0.00	0.00	No	0.00	No
	105	x	-0.01	0.00	0.00	No	0.00	No
	106	x	-0.01	0.00	0.00	No	0.00	No
	107	x	-0.01	0.00	0.00	No	0.00	No
	108	x	-0.01	0.00	0.00	No	0.00	No
	109	x	-0.01	0.00	0.00	No	0.00	No
	110	x	-0.01	0.00	0.00	No	0.00	No
	111	x	-0.01	0.00	0.00	No	0.00	No
	112	x	-0.01	0.00	0.00	No	0.00	No
	113	x	-0.01	0.00	0.00	No	0.00	No
	114	x	-0.01	0.00	0.00	No	0.00	No
	115	x	-0.01	0.00	0.00	No	0.00	No
	116	x	-0.01	0.00	0.00	No	0.00	No

	117	x	-0.01	0.00	0.00	No	0.00	No
Di	1	y	-0.013	0.00	0.00	No	0.00	No
	9	y	-0.013	0.00	0.00	No	0.00	No
	13	y	-0.013	0.00	0.00	No	0.00	No
	23	y	-0.016	0.00	0.00	No	0.00	No
	24	y	-0.016	0.00	0.00	No	0.00	No
	25	y	-0.016	0.00	0.00	No	0.00	No
	46	y	-0.016	0.00	0.00	No	0.00	No
	47	y	-0.016	0.00	0.00	No	0.00	No
	48	y	-0.016	0.00	0.00	No	0.00	No
	49	y	-0.016	0.00	0.00	No	0.00	No
	50	y	-0.016	0.00	0.00	No	0.00	No
	51	y	-0.016	0.00	0.00	No	0.00	No
	68	y	-0.013	0.00	0.00	No	0.00	No
	69	y	-0.013	0.00	0.00	No	0.00	No
	70	y	-0.013	0.00	0.00	No	0.00	No
	71	y	-0.016	0.00	0.00	No	0.00	No
	72	y	-0.016	0.00	0.00	No	0.00	No
	73	y	-0.016	0.00	0.00	No	0.00	No
	74	y	-0.016	0.00	0.00	No	0.00	No
	75	y	-0.016	0.00	0.00	No	0.00	No
	76	y	-0.016	0.00	0.00	No	0.00	No
	89	y	-0.01	0.00	0.00	No	0.00	No
	90	y	-0.01	0.00	0.00	No	0.00	No
	91	y	-0.01	0.00	0.00	No	0.00	No
	104	y	-0.009	0.00	0.00	No	0.00	No
	105	y	-0.009	0.00	0.00	No	0.00	No
	106	y	-0.009	0.00	0.00	No	0.00	No
	107	y	-0.009	0.00	0.00	No	0.00	No
	108	y	-0.009	0.00	0.00	No	0.00	No
	109	y	-0.009	0.00	0.00	No	0.00	No
	110	y	-0.009	0.00	0.00	No	0.00	No
	111	y	-0.009	0.00	0.00	No	0.00	No
	112	y	-0.009	0.00	0.00	No	0.00	No
	113	y	-0.009	0.00	0.00	No	0.00	No
	114	y	-0.009	0.00	0.00	No	0.00	No
	115	y	-0.009	0.00	0.00	No	0.00	No
	116	y	-0.009	0.00	0.00	No	0.00	No
	117	y	-0.009	0.00	0.00	No	0.00	No
	118	y	-0.009	0.00	0.00	No	0.00	No
	119	y	-0.009	0.00	0.00	No	0.00	No
	120	y	-0.009	0.00	0.00	No	0.00	No
	121	y	-0.009	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	105	y	0.00	0.00	No
	110	y	-0.018	1.00	No
		y	-0.018	4.50	No
		y	-0.038	5.50	No
	111	y	-0.038	0.50	No
		y	-0.038	7.50	No
		y	-0.06	4.50	No
	112	y	-0.058	0.50	No
		y	-0.058	7.50	No
		y	-0.06	2.00	No
		y	-0.049	5.50	No
	113	y	-0.03	0.50	No
		y	-0.03	7.50	No
		y	-0.06	2.00	No
	114	y	-0.018	1.00	No
		y	-0.018	4.50	No
		y	-0.038	5.50	No
	115	y	-0.038	0.50	No
		y	-0.038	7.50	No
		y	-0.06	4.50	No
	116	y	-0.058	0.50	No
		y	-0.058	7.50	No
		y	-0.06	2.00	No
		y	-0.049	5.50	No
	117	y	-0.03	0.50	No
		y	-0.03	7.50	No
		y	-0.06	2.00	No
	118	y	-0.018	1.00	No
		y	-0.018	4.50	No
		y	-0.038	5.50	No
	119	y	-0.038	0.50	No
		y	-0.038	7.50	No
		y	-0.06	4.50	No
	120	y	-0.058	0.50	No
		y	-0.058	7.50	No
		y	-0.06	2.00	No
		y	-0.049	5.50	No
	121	y	-0.03	0.50	No
		y	-0.03	7.50	No
		y	-0.06	2.00	No
W0	110	z	-0.12	1.00	No
		z	-0.12	4.50	No
	111	z	-0.29	0.50	No
		z	-0.29	7.50	No
	112	z	-0.378	0.50	No
		z	-0.378	7.50	No
	113	z	-0.247	0.50	No
		z	-0.247	7.50	No
		z	-0.014	2.00	No
	114	z	-0.078	1.00	No
		z	-0.078	4.50	No
		z	-0.039	2.00	No
	115	z	-0.217	0.50	No
		z	-0.217	7.50	No
		z	-0.077	4.50	No
	116	z	-0.217	0.50	No
		z	-0.217	7.50	No
		z	-0.057	2.00	No
		z	-0.037	5.50	No
	117	z	-0.173	0.50	No

		z	-0.173	7.50	No
		z	-0.057	2.00	No
	118	z	-0.078	1.00	No
		z	-0.078	4.50	No
		z	-0.039	2.00	No
	119	z	-0.217	0.50	No
		z	-0.217	7.50	No
		z	-0.077	4.50	No
	120	z	-0.217	0.50	No
		z	-0.217	7.50	No
		z	-0.057	2.00	No
		z	-0.037	5.50	No
	121	z	-0.173	0.50	No
		z	-0.173	7.50	No
		z	-0.057	2.00	No
W30	110	x	-0.064	1.00	No
		x	-0.064	4.50	No
		x	-0.047	2.00	No
	111	x	-0.192	0.50	No
		x	-0.192	7.50	No
		x	-0.073	4.50	No
	112	x	-0.164	0.50	No
		x	-0.164	7.50	No
		x	-0.054	2.00	No
		x	-0.031	5.50	No
	113	x	-0.148	0.50	No
		x	-0.148	7.50	No
		x	-0.054	2.00	No
	114	x	-0.106	1.00	No
		x	-0.106	4.50	No
		x	-0.023	2.00	No
	115	x	-0.266	0.50	No
		x	-0.266	7.50	No
		x	-0.066	4.50	No
	116	x	-0.325	0.50	No
		x	-0.325	7.50	No
		x	-0.047	2.00	No
		x	-0.035	5.50	No
	117	x	-0.222	0.50	No
		x	-0.222	7.50	No
		x	-0.047	2.00	No
	118	x	-0.106	1.00	No
		x	-0.106	4.50	No
		x	-0.023	2.00	No
	119	x	-0.266	0.50	No
		x	-0.266	7.50	No
		x	-0.066	4.50	No
	120	x	-0.325	0.50	No
		x	-0.325	7.50	No
		x	-0.047	2.00	No
		x	-0.035	5.50	No
	121	x	-0.222	0.50	No
		x	-0.222	7.50	No
		x	-0.047	2.00	No
Di	110	y	-0.067	1.00	No
		y	-0.067	4.50	No
		y	-0.056	5.50	No
	111	y	-0.156	0.50	No
		y	-0.156	7.50	No
		y	-0.075	4.50	No

	112	y	-0.193	0.50	No
		y	-0.193	7.50	No
		y	-0.056	2.00	No
		y	-0.042	5.50	No
	113	y	-0.127	0.50	No
		y	-0.127	7.50	No
		y	-0.056	2.00	No
	114	y	-0.067	1.00	No
		y	-0.067	4.50	No
		y	-0.056	5.50	No
	115	y	-0.156	0.50	No
		y	-0.156	7.50	No
		y	-0.075	4.50	No
	116	y	-0.193	0.50	No
		y	-0.193	7.50	No
		y	-0.056	2.00	No
		y	-0.042	5.50	No
	117	y	-0.127	0.50	No
		y	-0.127	7.50	No
		y	-0.056	2.00	No
	118	y	-0.067	1.00	No
		y	-0.067	4.50	No
		y	-0.056	5.50	No
	119	y	-0.156	0.50	No
		y	-0.156	7.50	No
		y	-0.075	4.50	No
	120	y	-0.193	0.50	No
		y	-0.193	7.50	No
		y	-0.056	2.00	No
		y	-0.042	5.50	No
	121	y	-0.127	0.50	No
		y	-0.127	7.50	No
		y	-0.056	2.00	No
Wi0	110	z	-0.025	1.00	No
		z	-0.025	4.50	No
		z	-0.007	2.00	No
	111	z	-0.055	0.50	No
		z	-0.055	7.50	No
		z	-0.006	4.50	No
	112	z	-0.068	0.50	No
		z	-0.068	7.50	No
		z	-0.004	2.00	No
		z	-0.003	5.50	No
	113	z	-0.049	0.50	No
		z	-0.049	7.50	No
		z	-0.008	2.00	No
	114	z	-0.018	1.00	No
		z	-0.018	4.50	No
		z	-0.01	2.00	No
	115	z	-0.043	0.50	No
		z	-0.043	7.50	No
		z	-0.018	4.50	No
	116	z	-0.043	0.50	No
		z	-0.043	7.50	No
		z	-0.014	2.00	No
		z	-0.01	5.50	No
	117	z	-0.036	0.50	No
		z	-0.036	7.50	No
		z	-0.014	2.00	No
	118	z	-0.018	1.00	No

		z	-0.018	4.50	No
		z	-0.01	2.00	No
	119	z	-0.043	0.50	No
		z	-0.043	7.50	No
		z	-0.018	4.50	No
	120	z	-0.043	0.50	No
		z	-0.043	7.50	No
		z	-0.014	2.00	No
		z	-0.01	5.50	No
	121	z	-0.036	0.50	No
		z	-0.036	7.50	No
		z	-0.014	2.00	No
Wi30	110	x	-0.016	1.00	No
		x	-0.016	4.50	No
		x	-0.012	2.00	No
	111	x	-0.039	0.50	No
		x	-0.039	7.50	No
		x	-0.017	4.50	No
	112	x	-0.035	0.50	No
		x	-0.035	7.50	No
		x	-0.014	2.00	No
		x	-0.009	5.50	No
	113	x	-0.032	0.50	No
		x	-0.032	7.50	No
		x	-0.014	2.00	No
	114	x	-0.022	1.00	No
		x	-0.022	4.50	No
		x	-0.007	2.00	No
	115	x	-0.05	0.50	No
		x	-0.05	7.50	No
		x	-0.014	4.50	No
	116	x	-0.059	0.50	No
		x	-0.059	7.50	No
		x	-0.011	2.00	No
		x	-0.008	5.50	No
	117	x	-0.044	0.50	No
		x	-0.044	7.50	No
		x	-0.011	2.00	No
	118	x	-0.022	1.00	No
		x	-0.022	4.50	No
		x	-0.007	2.00	No
	119	x	-0.05	0.50	No
		x	-0.05	7.50	No
		x	-0.014	4.50	No
	120	x	-0.059	0.50	No
		x	-0.059	7.50	No
		x	-0.011	2.00	No
		x	-0.008	5.50	No
	121	x	-0.044	0.50	No
		x	-0.044	7.50	No
		x	-0.011	2.00	No
WL0	110	z	-0.007	1.00	No
		z	-0.007	4.50	No
		z	-0.001	2.00	No
	111	z	-0.016	0.50	No
		z	-0.016	7.50	No
	112	z	-0.021	0.50	No
		z	-0.021	7.50	No
	113	z	-0.014	0.50	No
		z	-0.014	7.50	No

		z	-0.001	2.00	No
	114	z	-0.005	1.00	No
		z	-0.005	4.50	No
		z	-0.002	2.00	No
	115	z	-0.012	0.50	No
		z	-0.012	7.50	No
		z	-0.004	4.50	No
	116	z	-0.012	0.50	No
		z	-0.012	7.50	No
		z	-0.003	2.00	No
		z	-0.002	5.50	No
	117	z	-0.01	0.50	No
		z	-0.01	7.50	No
		z	-0.003	2.00	No
	118	z	-0.005	1.00	No
		z	-0.005	4.50	No
		z	-0.002	2.00	No
	119	z	-0.012	0.50	No
		z	-0.012	7.50	No
		z	-0.004	4.50	No
	120	z	-0.012	0.50	No
		z	-0.012	7.50	No
		z	-0.003	2.00	No
		z	-0.002	5.50	No
	121	z	-0.01	0.50	No
		z	-0.01	7.50	No
		z	-0.003	2.00	No
WL30	110	x	-0.004	1.00	No
		x	-0.004	4.50	No
		x	-0.003	2.00	No
	111	x	-0.011	0.50	No
		x	-0.011	7.50	No
		x	-0.004	4.50	No
	112	x	-0.009	0.50	No
		x	-0.009	7.50	No
		x	-0.003	2.00	No
		x	-0.002	5.50	No
	113	x	-0.008	0.50	No
		x	-0.008	7.50	No
		x	-0.003	2.00	No
	114	x	-0.006	1.00	No
		x	-0.006	4.50	No
		x	-0.001	2.00	No
	115	x	-0.015	0.50	No
		x	-0.015	7.50	No
		x	-0.004	4.50	No
	116	x	-0.018	0.50	No
		x	-0.018	7.50	No
		x	-0.002	2.00	No
		x	-0.002	5.50	No
	117	x	-0.012	0.50	No
		x	-0.012	7.50	No
		x	-0.002	2.00	No
	118	x	-0.006	1.00	No
		x	-0.006	4.50	No
		x	-0.001	2.00	No
	119	x	-0.015	0.50	No
		x	-0.015	7.50	No
		x	-0.004	4.50	No
	120	x	-0.018	0.50	No

		x	-0.018	7.50	No
		x	-0.002	2.00	No
		x	-0.002	5.50	No
	121	x	-0.012	0.50	No
		x	-0.012	7.50	No
		x	-0.002	2.00	No
LL1	13	y	-0.25	50.00	Yes
LL2	13	y	-0.25	0.00	Yes
LLa1	110	y	-0.25	50.00	Yes
LLa2	111	y	-0.25	50.00	Yes
LLa3	112	y	-0.25	50.00	Yes
LLa4	113	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC15=1.2DL+1.5LL1
LC16=1.2DL+1.5LL2
LC17=1.2DL+WL0+1.5LLa1
LC18=1.2DL+WL30+1.5LLa1
LC19=1.2DL-WL0+1.5LLa1
LC20=1.2DL-WL30+1.5LLa1
LC21=1.2DL+WL0+1.5LLa2
LC22=1.2DL+WL30+1.5LLa2
LC23=1.2DL-WL0+1.5LLa2
LC24=1.2DL-WL30+1.5LLa2
LC25=1.2DL+WL0+1.5LLa3
LC26=1.2DL+WL30+1.5LLa3
LC27=1.2DL-WL0+1.5LLa3
LC28=1.2DL-WL30+1.5LLa3
LC29=1.2DL+WL0+1.5LLa4
LC30=1.2DL+WL30+1.5LLa4
LC31=1.2DL-WL0+1.5LLa4
LC32=1.2DL-WL30+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**23**	LC11 at 0.00%	0.82	OK	Eq. H1-1b
		24	LC10 at 0.00%	**0.82**	**OK**	Eq. H1-1b
		25	LC9 at 0.00%	0.80	OK	Eq. H1-1b
		71	LC2 at 100.00%	0.00	OK	Eq. H1-1b
		72	LC11 at 100.00%	0.22	OK	Eq. H1-1b
		73	LC1 at 100.00%	0.00	OK	Eq. H1-1b
		74	LC9 at 100.00%	0.22	OK	Eq. H1-1b
		75	LC1 at 100.00%	0.00	OK	Eq. H1-1b
		76	LC10 at 0.00%	0.23	OK	Eq. H1-1b
	L 2-1_2X2-1_2X3_16	**122**	LC9 at 100.00%	0.93	OK	Eq. H2-1
		123	LC10 at 100.00%	0.95	OK	Eq. H2-1
		124	LC12 at 100.00%	0.92	OK	Eq. H2-1
		125	LC9 at 100.00%	**0.96**	**OK**	Eq. H2-1
		126	LC10 at 100.00%	0.92	OK	Eq. H2-1
		127	LC11 at 100.00%	0.95	OK	Eq. H2-1
	L 2X2X3_16	**89**	LC4 at 0.00%	0.42	OK	Eq. H2-1

	90	LC4 at 100.00%	**0.60**	**OK**	Eq. H2-1
	91	LC3 at 0.00%	0.38	OK	Eq. H2-1
L 2X2X3_8	**128**	LC11 at 46.88%	**0.50**	**With warnings**	Eq. H2-1
	129	LC12 at 46.88%	0.49	With warnings	Eq. H2-1
	130	LC9 at 46.88%	0.49	With warnings	Eq. H2-1
L 4X4X3_8	**46**	LC12 at 100.00%	0.14	OK	Eq. H2-1
	47	LC12 at 50.00%	0.17	OK	Eq. H3-8
	48	LC10 at 50.00%	0.18	OK	Eq. H3-8
	49	LC2 at 100.00%	0.17	OK	Eq. H2-1
	50	LC4 at 50.00%	**0.22**	**OK**	Eq. H2-1
	51	LC3 at 100.00%	0.18	OK	Eq. H2-1
PIPE 2x0.154	**104**	LC2 at 13.89%	0.90	With warnings	Eq. H1-1b
	105	LC12 at 86.11%	0.87	With warnings	Eq. H1-1b
	106	LC7 at 14.58%	**0.98**	**With warnings**	Eq. H1-1a
	107	LC12 at 100.00%	0.76	OK	Eq. H1-1b
	108	LC11 at 100.00%	0.77	OK	Eq. H1-1b
	109	LC10 at 100.00%	0.77	OK	Eq. H1-1b
	110	LC1 at 45.83%	0.44	OK	Eq. H1-1b
	111	LC1 at 33.33%	0.51	OK	Eq. H1-1b
	112	LC3 at 35.42%	0.67	OK	Eq. H1-1b
	113	LC3 at 35.42%	0.66	OK	Eq. H1-1b
	114	LC2 at 45.83%	0.46	OK	Eq. H1-1b
	115	LC4 at 70.83%	0.57	OK	Eq. H1-1b
	116	LC4 at 33.33%	0.63	OK	Eq. H1-1b
	117	LC9 at 70.83%	0.63	OK	Eq. H1-1b
	118	LC1 at 45.83%	0.35	OK	Eq. H1-1b
	119	LC2 at 70.83%	0.54	OK	Eq. H1-1b
	120	LC4 at 33.33%	0.60	OK	Eq. H1-1b
	121	LC4 at 35.42%	0.56	OK	Eq. H1-1b
PIPE 4x0.237	**1**	LC12 at 49.22%	0.41	OK	Eq. H1-1b
	9	LC10 at 49.22%	0.41	OK	Eq. H1-1b
	13	LC11 at 49.22%	0.41	OK	Eq. H1-1b
	68	LC11 at 12.50%	0.73	OK	Eq. H1-1b
	69	LC12 at 85.42%	0.89	OK	Eq. H1-1b
	70	LC10 at 85.42%	**0.90**	**OK**	Eq. H1-1b

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
3	1.3844	0.00	-8.8822	0
4	8.3844	0.00	3.2422	0
19	-8.3844	0.00	3.2422	0
20	-1.3844	0.00	-8.8822	0
27	7.00	0.00	5.64	0
28	-7.00	0.00	5.64	0
38	3.6552	0.00	2.7496	0
39	-0.5536	0.00	-4.5403	0
40	-3.6552	0.00	2.7496	0
49	0.00	0.00	5.64	0
50	4.8844	0.00	-2.82	0
51	-4.8844	0.00	-2.82	0
52	1.6714	0.00	-0.965	0
54	-1.6714	0.00	-0.965	0
55	0.00	0.00	1.93	0
97	-5.50	0.00	5.64	0
98	5.50	0.00	5.64	0
101	6.0927	0.00	-0.7271	0
115	2.1344	0.00	-7.5831	0
116	-7.6344	0.00	1.9431	0
117	7.6344	0.00	1.9431	0
118	-2.1344	0.00	-7.5831	0

135	0.00	3.50	1.93	0
136	0.00	-0.50	1.93	0
137	1.6714	-0.50	-0.965	0
138	-1.6714	-0.50	-0.965	0
139	-1.6714	3.50	-0.965	0
140	1.6714	3.50	-0.965	0
141	0.00	-0.50	0.9633	0
142	0.00	3.50	0.9633	0
143	0.8343	-0.50	-0.4817	0
144	-0.8343	-0.50	-0.4817	0
145	0.8343	3.50	-0.4817	0
146	-0.8343	3.50	-0.4817	0
147	-6.375	-2.25	5.84	0
148	-2.4167	-2.25	5.84	0
149	1.3749	-2.25	5.84	0
150	4.4582	-0.50	5.84	0
151	8.2451	-2.25	2.6009	0
152	6.2659	-2.25	-0.8271	0
153	4.3701	-2.25	-4.1107	0
154	2.8285	-0.50	-6.7809	0
155	-1.8701	-2.25	-8.4409	0
156	-3.8492	-2.25	-5.0129	0
157	-5.745	-2.25	-1.7293	0
158	-7.2867	-0.50	0.9409	0
159	-6.375	5.75	5.84	0
160	-2.4167	5.75	5.84	0
161	1.3749	5.75	5.84	0
162	4.4582	5.75	5.84	0
163	8.2451	5.75	2.6009	0
164	6.2659	5.75	-0.8271	0
165	4.3701	5.75	-4.1107	0
166	2.8285	5.75	-6.7809	0
167	-1.8701	5.75	-8.4409	0
168	-3.8492	5.75	-5.0129	0
169	-5.745	5.75	-1.7293	0
170	-7.2867	5.75	0.9409	0
171	-4.2088	0.00	1.7907	0
172	4.2088	0.00	1.7907	0
173	0.5536	0.00	-4.5403	0
183	1.3844	3.00	-8.8822	0
193	-8.3844	3.00	3.2422	0
194	-7.00	3.00	5.64	0
201	7.00	3.00	5.64	0
204	-8.1344	3.00	2.8092	0
205	-2.0094	3.00	-7.7996	0
206	1.6344	3.00	-8.4492	0
207	7.7594	3.00	2.1596	0
208	6.50	3.00	5.64	0
209	-5.75	3.00	5.64	0
211	0.00	2.00	1.93	0
212	-1.6714	2.00	-0.965	0
213	1.6714	2.00	-0.965	0
214	-5.00	3.00	5.64	0
215	5.00	3.00	5.64	0
216	-2.3844	3.00	-7.1501	0
217	-7.3844	3.00	1.5101	0
218	7.3844	3.00	1.5101	0
219	2.3844	3.00	-7.1501	0
220	-4.5776	0.00	4.1948	0
221	4.5776	0.00	4.1948	0

222	-1.344	0.00	-6.0617	0
223	-5.9216	0.00	1.8669	0
224	5.9216	0.00	1.8669	0
225	1.344	0.00	-6.0617	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
141	1	1	1	1	1	1
142	1	1	1	1	1	1
143	1	1	1	1	1	1
144	1	1	1	1	1	1
145	1	1	1	1	1	1
146	1	1	1	1	1	1
211	1	1	1	1	1	1
212	1	1	1	1	1	1
213	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	4	3		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
9	20	19		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
13	28	27		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
23	55	49		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
24	54	51		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
25	52	50		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
46	40	97		L 4X4X3_8	A36	0.00	0.00	0.00
47	98	38		L 4X4X3_8	A36	0.00	0.00	0.00
48	116	171		L 4X4X3_8	A36	0.00	0.00	0.00
49	172	117		L 4X4X3_8	A36	0.00	0.00	0.00
50	115	173		L 4X4X3_8	A36	0.00	0.00	0.00
51	39	118		L 4X4X3_8	A36	0.00	0.00	0.00
68	136	135		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
69	140	137		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
70	139	138		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
71	135	142		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
72	141	136		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
73	140	145		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
74	143	137		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
75	139	146		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
76	138	144		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
89	171	40		L 2X2X3_16	A36	0.00	0.00	0.00
90	173	39		L 2X2X3_16	A36	0.00	0.00	0.00
91	172	38		L 2X2X3_16	A36	0.00	0.00	0.00
104	174	183		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
105	184	193		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
106	194	201		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	209	204		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
108	205	206		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

109	207	208	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
110	162	150	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
111	161	149	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
112	160	148	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
113	159	147	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
114	170	158	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
115	169	157	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
116	168	156	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
117	167	155	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
118	166	154	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
119	165	153	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
120	164	152	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
121	163	151	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
122	214	211	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
123	211	215	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
124	216	212	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
125	212	217	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
126	218	213	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
127	213	219	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
128	220	221	L 2X2X3_8	A36	0.00	0.00	0.00
129	224	225	L 2X2X3_8	A36	0.00	0.00	0.00
130	222	223	L 2X2X3_8	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
46	90.00	0	0.00	0.00	0.00
47	90.00	0	0.00	0.00	0.00
48	90.00	0	0.00	0.00	0.00
49	90.00	0	0.00	0.00	0.00
50	90.00	0	0.00	0.00	0.00
51	90.00	0	0.00	0.00	0.00
68	0.00	2	-1.00	0.00	0.00
69	0.00	2	1.00	0.00	0.00
70	0.00	2	1.00	0.00	0.00
110	0.00	2	1.00	0.00	0.00
111	0.00	2	1.00	0.00	0.00
112	0.00	2	1.00	0.00	0.00
113	0.00	2	1.00	0.00	0.00
114	0.00	2	1.00	0.00	0.00
115	0.00	2	1.00	0.00	0.00
116	0.00	2	1.00	0.00	0.00
117	0.00	2	1.00	0.00	0.00
118	0.00	2	1.00	0.00	0.00
119	0.00	2	1.00	0.00	0.00
120	0.00	2	1.00	0.00	0.00
121	0.00	2	1.00	0.00	0.00
122	90.00	0	0.00	0.00	0.00
123	90.00	0	0.00	0.00	0.00
124	90.00	0	0.00	0.00	0.00
125	90.00	0	0.00	0.00	0.00
126	90.00	0	0.00	0.00	0.00
127	90.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
107	0.00	2.00	0.00	0.00	2.00	0.00
108	0.00	2.00	0.00	0.00	2.00	0.00
109	0.00	2.00	0.00	0.00	2.00	0.00
122	0.00	-2.00	0.00	0.00	-2.00	0.00
123	0.00	-2.00	0.00	0.00	-2.00	0.00
124	0.00	-2.00	0.00	0.00	-2.00	0.00
125	0.00	-2.00	0.00	0.00	-2.00	0.00
126	0.00	-2.00	0.00	0.00	-2.00	0.00
127	0.00	-2.00	0.00	0.00	-2.00	0.00

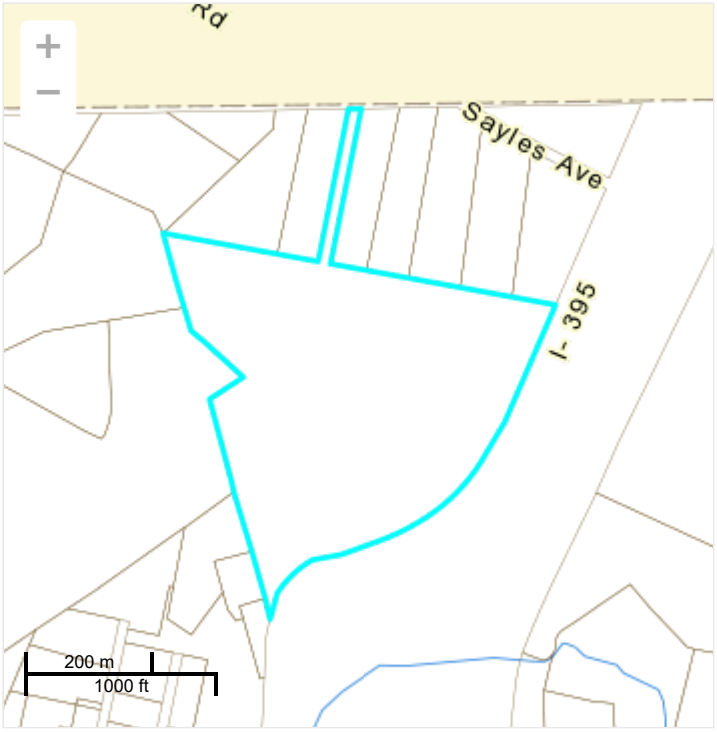
Town of Putnam, Connecticut

Property Record Card

Card 1 of 1

154 SAYLES AVE

ID: **021-023** Account #: **003961**



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

Assessment: Total: $618,000
Building: 0 Land: 0 Ext. Features: 0 Other: 618000

Sales History

Grantor	Book / Page	Sale Date	Sale Price
SBA TOWER INC	811/ 076	2001-01-01	

MainStreetGIS, LLC
www.mainstreetgis.com

Land Information
Land Area: 0 AC Zoning: R-40
Land Use: 5-1 - Res. Land
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	1	$618,000

Sub Areas

Description	Living Area	Gross Area

PUTNAM, CONNECTICUT 06260

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 16-8
   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 Record:

   Ronald Blain
   587 Riverside Dr.
   N. Grosvenordale, CT 06255

   Bill Moser
   34 Totem Pole Drive
   Thompson, CT 06277

5. Name and Address of Applicant

   SBA Inc.
   125 Shaw Street, Suite 116
   New London, CT 06320

   Nextel Communications
   100 Corporate Place
   Rocky Hill, CT 06067

This information is certified by:

11-20-98
Zoning Enforcement Officer Date

TOWN CLERK PUTNAM
99 APR 28 AM 9:54

SBA Communications Corporation
8051 Congress Avenue
Boca Raton, FL 33487-1307

T + 561.995.7670
F + 561.995.7626

sbasite.com

LETTER OF AUTHORIZATION

SBA Site ID: CT00680-S, Putnam

Property Located at: 154 Sayle Avenue, Putnam, CT, 06260-2417

THE CITY/COUNTY OF: Putnam / Windham

APPLICATION FOR ZONING/USE/BUILDING PERMIT

This letter authorizes AT&T and its authorized agents to file for all necessary zoning, planning and building permits (local, state and federal) for the purposes of installing, operating and maintaining a telecommunications facility on the existing tower on the property referenced above on behalf of William F. Moser.

All approval conditions that may be granted to AT&T in connection with above referenced facility relating to this specific application are the sole responsibility of AT&T.

SBA Towers, LLC

Jason Silberstein

Executive VP, Site Leasing

Date: 4/23/2020

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39 WESTVIEW DR
MERIDEN CT 06450-4723

Expected Delivery Date: 05/22/20

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Carrier -- Leave if No Response

C003

SHIP TO: HONORABLE BARNEY SENEY
TOWN OF PUTNAM, MAYOR'S OFFICE
126 CHURCH ST
PUTNAM CT 06260-1831

USPS TRACKING #

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Electronic Rate Approved #038555749

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MERIDEN CT 06450-4723

Expected Delivery Date: 05/22/20

0005

Carrier -- Leave if No Response

C003

SHIP TO: MS ELAINE SISTARE
THE TOWN OF PUTNAM, PLANNING/ENGINEERING
126 CHURCH ST
PUTNAM CT 06260-1831

USPS TRACKING #

9405 5036 9930 0385 6763 94

Electronic Rate Approved #038555749

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HOLLIS REDDING
39 WESTVIEW DR
MERIDEN CT 06450-4723

Expected Delivery Date: 05/22/20

0005

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C006

SHIP TO:

CT SITING COUNCIL
10 FRANKLIN SQ
NEW BRITAIN CT 06051-2655

USPS TRACKING #

9405 5036 9930 0385 6764 17

Electronic Rate Approved #038555749

Cut on dotted line.

Hollis Redding

To: Michael McNamara
Subject: CSC Exempt Mod filing SBA ID CT00680-S Putnam AT&T ID CT1110 Putnam-Sayles Ave

Mike-

Attached please find an Exempt Modification which was filed with the CT Siting Council on May 21, 2020. Thank you.
Hollis

Hollis M. Redding

SAI Communications LLC
Mobile: 860-834-6964
hredding@saigrp.com