QC Development
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

January 11, 2019

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1110
154 Sayles Avenue, Putnam, CT 06260
N 41.9294444444444
W 71.8863888888889

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 134-foot level of the existing 175-foot Monopole at 154 Sayles Ave, Putnam, CT. The tower and the property are owned by SBA. AT&T now intends to add three (3) Kathrein 800-10966 antennas, (3) Ericsson 4478-B5 and (3) Ericsson 4426-B66 Remote Radio Units (RRU). The Antennas and RRUs would also be installed at the 134-foot level of the tower.

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

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

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

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

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

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

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

Cc: The Honorable Barney Seney - as Elected Official
Chad Sessums – as Local Building & Zoning Official
SBA - as Tower and 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*							2.93%
AT&T GSM	1	283	134	0.0062	880	0.5867	0.11%
AT&T UMTS	2	262	134	0.0115	880	0.5867	0.20%
AT&T UMTS	2	317	134	0.0139	1900	1.0000	0.14%
AT&T LTE	1	1476	134	0.0324	734	0.4893	0.66%
AT&T LTE	4	2421	134	0.2126	1900	1.0000	2.13%
Site Total							6.16%

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

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

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*							3.20%
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							7.51%

*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

SITE NUMBER: CT1110
SITE NAME: PUTNAM SAYLE AVE

154 SAYLE AVENUE
PUTNAM, CT 06260
WINDHAM COUNTY
PROJECT: LTE 4C/5C
FA SITE NUMBER: 10035406
PACE ID: MRCTB031710/MRCTB031850
STRUCTURE TYPE: MONOPOLE

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	154 SAYLE AVENUE PUTNAM, CT 06260
LATITUDE: LONGITUDE:	41° 55' 46" N 71° 53' 11" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
DESIGN GUIDELINE:	LTE 4C AWS, LTE 5C 850
SCOPE OF WORK:	–ADD LTE WIDER ANTENNA OCTOPORT ANTENNA –ADD LTE 850 4478 B5 –ADD LTE AWS 4426 B66 –ADD 2ND XMU, ADD LTE RBS 6630 –ADD 1 DC ONLY SQUID

DRAWING INDEX

LOCUS MAP

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

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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED
PROFESSIONAL ENGINEER

CONNECTICUT
CALL BEFORE YOU DIG
CALL TOLL FREE: 800–922–4455

UNDERGROUND SERVICE ALERT

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway, East Providence, RI 02914
Phone: (401) 354-2403 Fax: (401) 633-6354

SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM, NH 03079

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

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701–4681

NO.	DATE	REVISIONS	BY	CHK
0	07/20/18	ISSUED FOR REVIEW	AAB	MRC
1	10/12/18	ISSUED FOR CONSTRUCTION	AAB	MRC

TITLE SHEET

SHEET NO. T-1

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BUILDING CODE:

2012 INTERNATIONAL BUILDING CODE
2016 CT STATE BUILDING CODE
ELECTRICAL CODE: NEC 2014
NFPA 780 2014

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

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

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

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

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

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

ELECTRICAL AND GROUNDING NOTES

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

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

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

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

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

6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.

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

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

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

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

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

12. PPC SUPPLIED BY PROJECT OWNER.

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

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

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

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

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

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

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

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

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

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

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

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 29307
LICENSED
PROFESSIONAL ENGINEER

ABBREVIATIONS

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

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway, East Providence, RI 02914
Phone: (401) 354-2403 Fax: (401) 633-6354

SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM, NH 03079

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

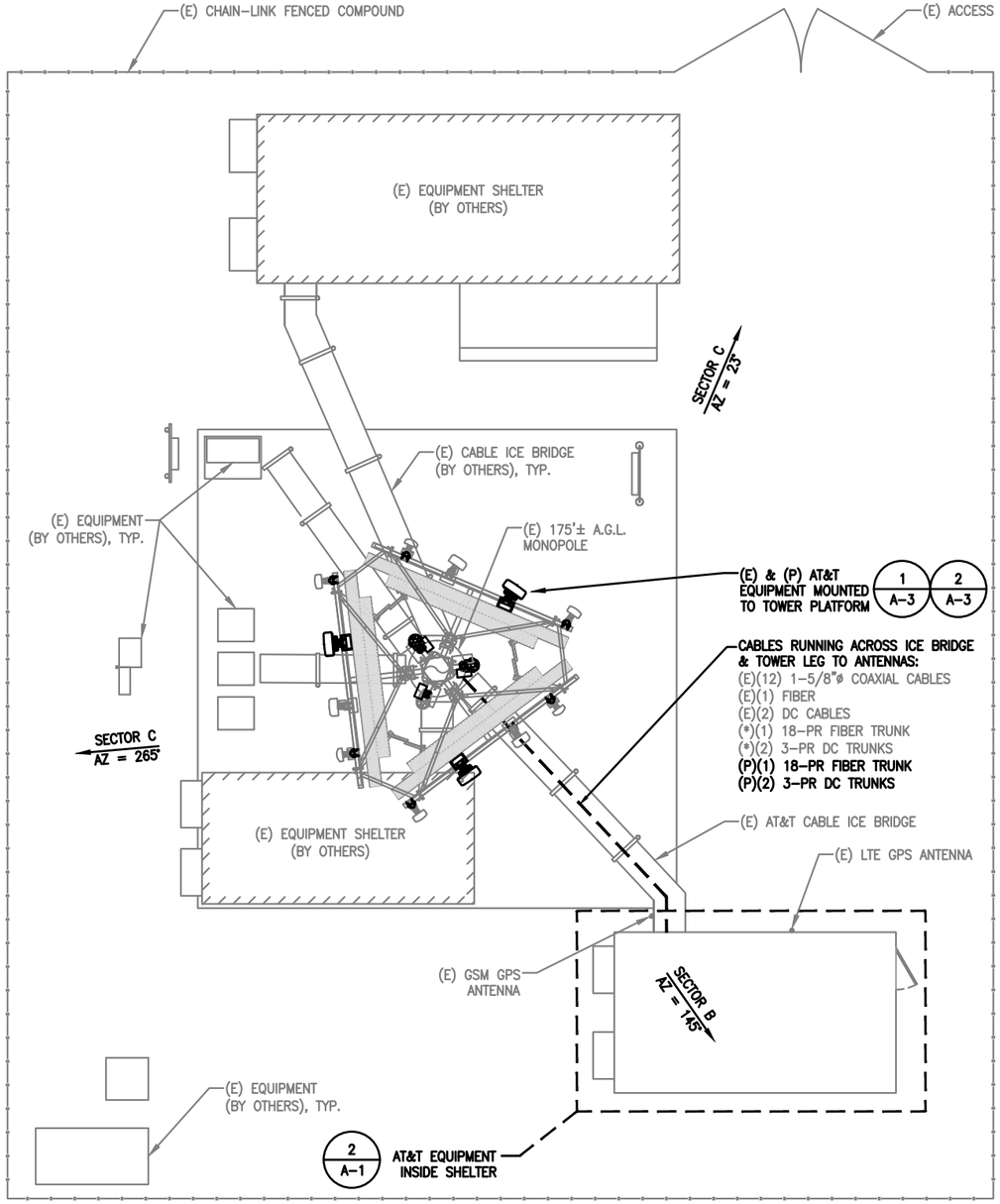
at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

NO.	DATE	REVISIONS	BY	CHK
0	07/20/18	ISSUED FOR REVIEW	AAB	MRC
1	10/12/18	ISSUED FOR CONSTRUCTION	AAB	MRC

GENERAL NOTES

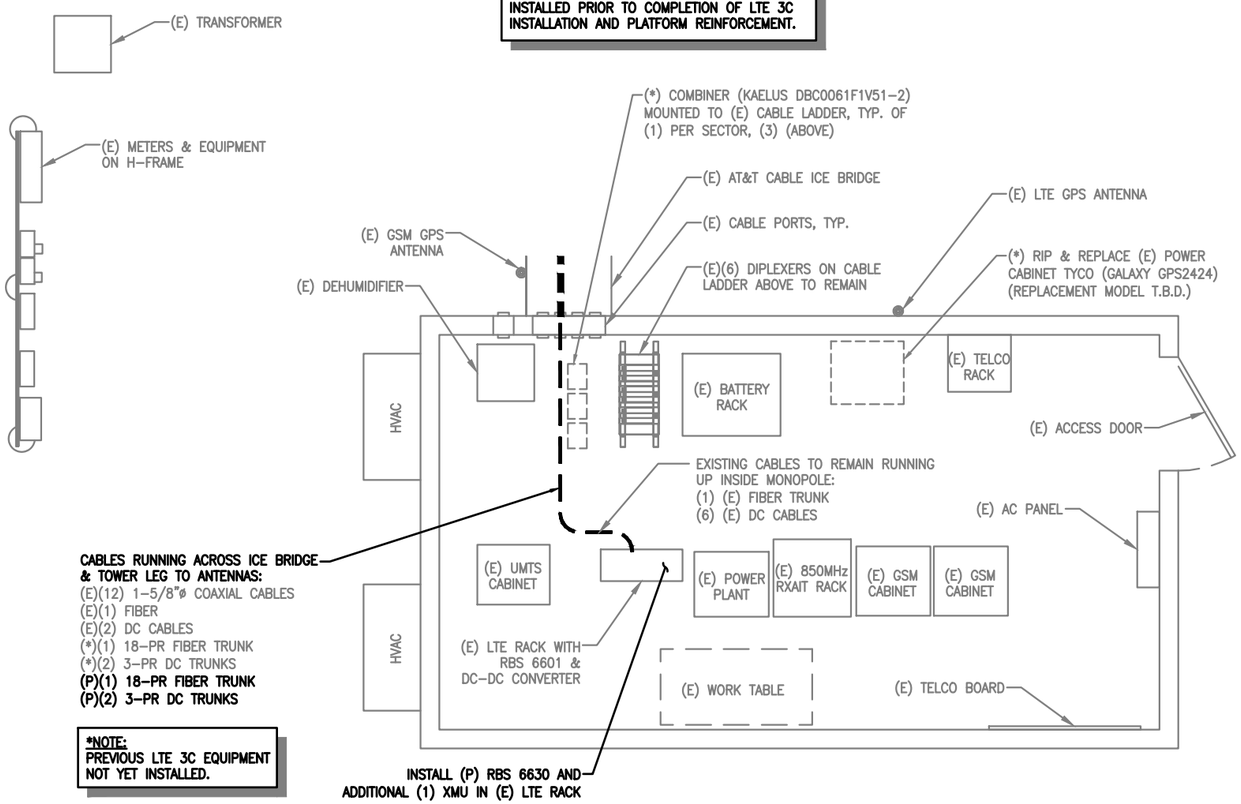
SHEET NO. GN-1

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



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

NOTE:
LTE 4C & LTE 5C EQUIPMENT IS NOT TO BE INSTALLED PRIOR TO COMPLETION OF LTE 3C INSTALLATION AND PLATFORM REINFORCEMENT.



*NOTE:
PREVIOUS LTE 3C EQUIPMENT NOT YET INSTALLED.

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

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway, East Providence, RI 02914
Phone: (401) 354-2403 Fax: (401) 633-6354

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at&t
550 COCHITUATE ROAD, SUITE 13,
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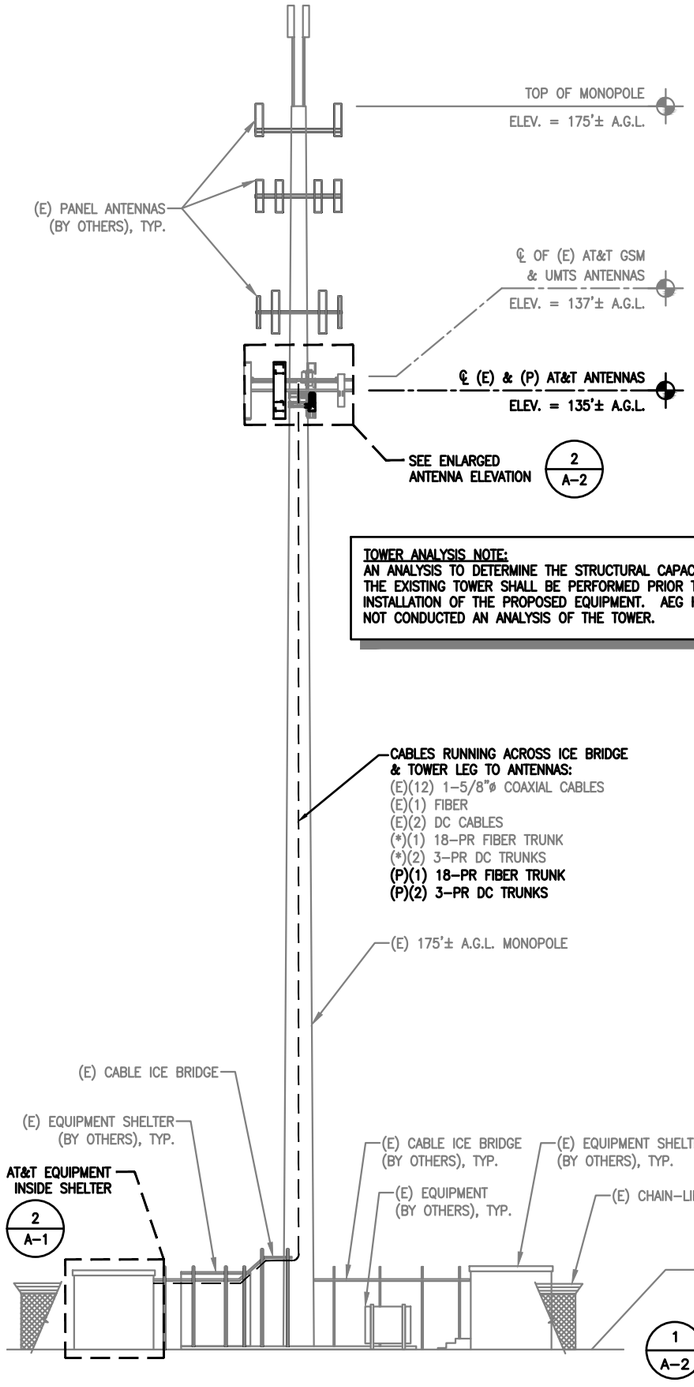
COMPOUND AND EQUIPMENT SHELTER PLANS

SHEET NO. A-1

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



1/A-2 ELEVATION
SCALE: 3/32" = 1'-0"

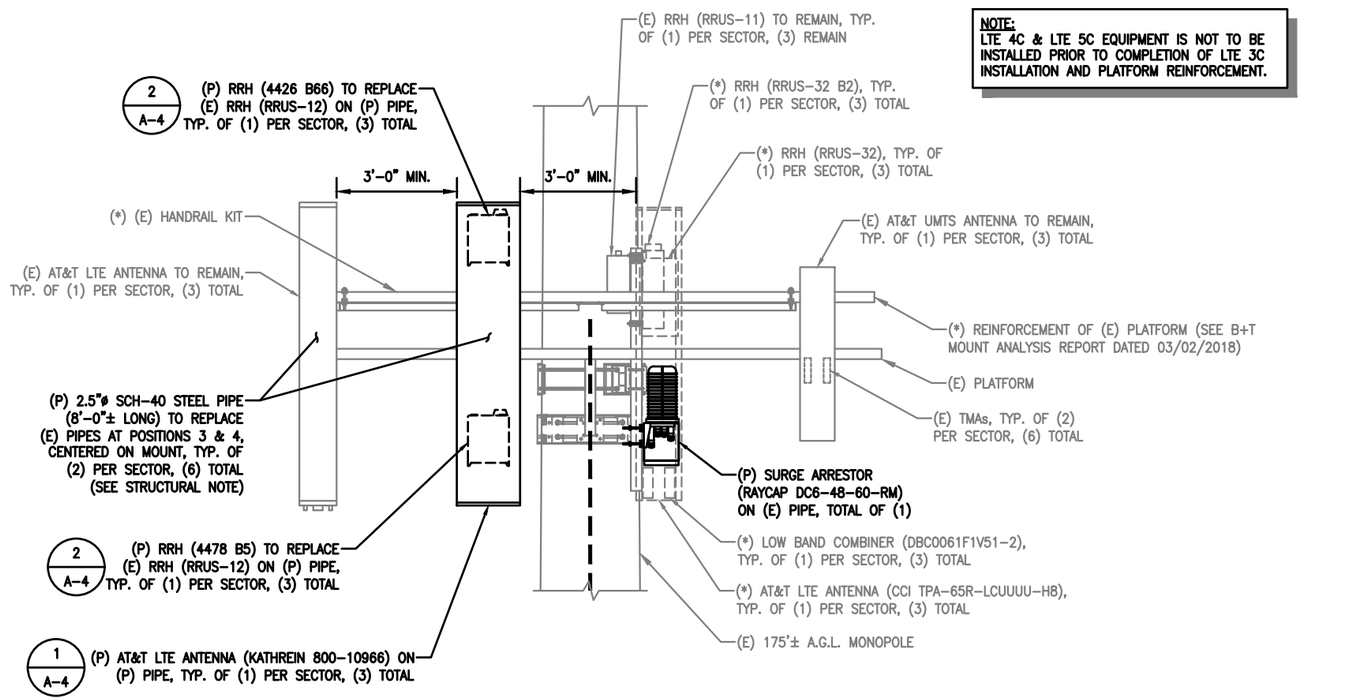
TOWER ANALYSIS NOTE:
AN ANALYSIS TO DETERMINE THE STRUCTURAL CAPACITY OF THE EXISTING TOWER SHALL BE PERFORMED PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT. AEG HAS NOT CONDUCTED AN ANALYSIS OF THE TOWER.

***NOTE:**
PREVIOUS LTE 3C EQUIPMENT NOT YET INSTALLED.

NOTE:
ALL EXISTING AND PROPOSED ANTENNAS ARE TO BE VERTICALLY CENTERED ON PLATFORM.

***STRUCTURAL NOTE:**
EXISTING ANTENNA MOUNTS ARE INCAPABLE OF SUPPORTING THE PROPOSED LOADS WITHOUT MODIFICATION. REFER TO B+T GROUP APPURTENANCE MOUNT ANALYSIS REPORT DATED 07/17/2018 ON REQUIRED MODIFICATIONS. PROPOSED EQUIPMENT SHALL NOT BE INSTALLED PRIOR TO MODIFICATION OF EXISTING MOUNTS.

NOTE:
LTE 4C & LTE 5C EQUIPMENT IS NOT TO BE INSTALLED PRIOR TO COMPLETION OF LTE 3C INSTALLATION AND PLATFORM REINFORCEMENT.



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

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Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway Phone: (401) 354-2403
East Providence, RI 02914 Fax: (401) 633-6354

SAI COMMUNICATIONS
12 INDUSTRIAL WAY
SALEM, NH 03079

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

at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

NO.	DATE	REVISIONS	BY	CHK
0	07/20/18	ISSUED FOR REVIEW	AAB	MRC
1	10/12/18	ISSUED FOR CONSTRUCTION	AAB	MRC

ELEVATIONS

SHEET NO. A-2

HALF SIZE PRINT
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***NOTE:**
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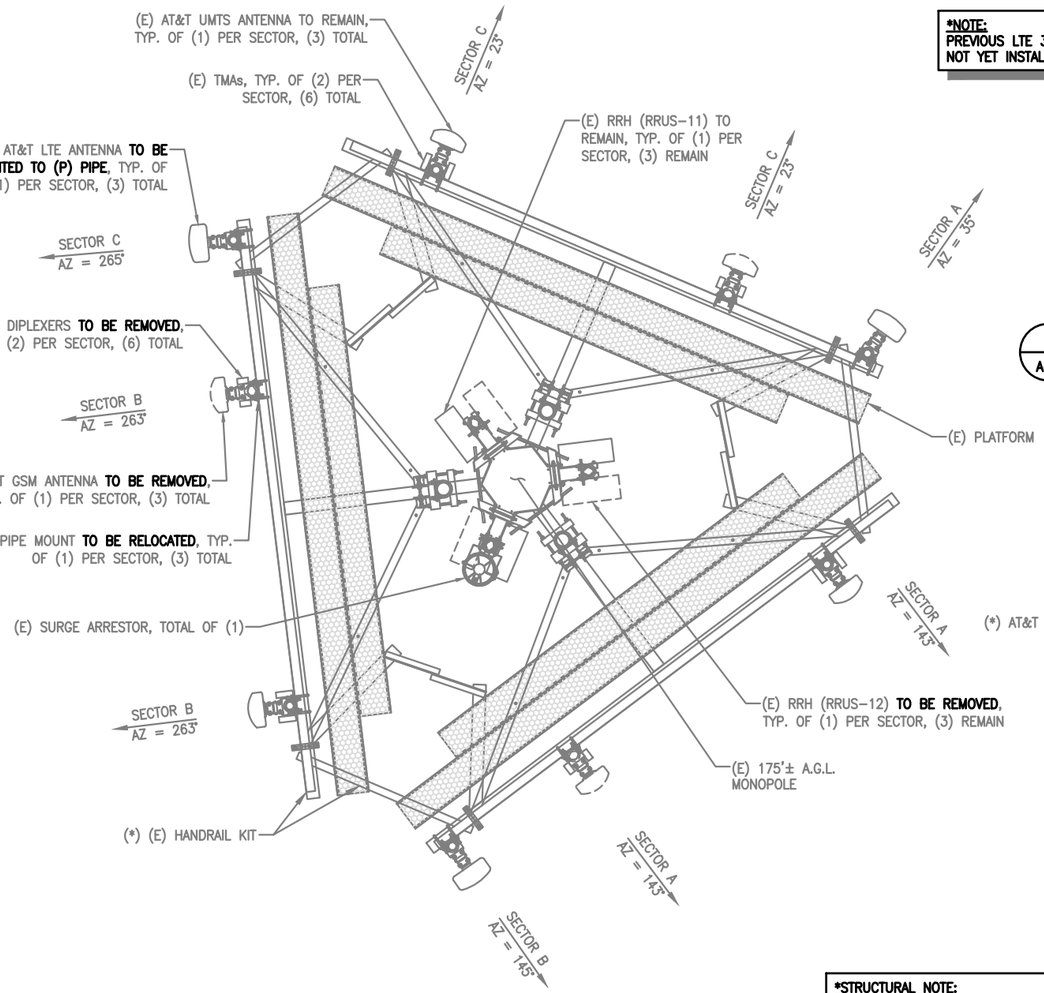

NORTH 1/A-3 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0"

***STRUCTURAL NOTE:**
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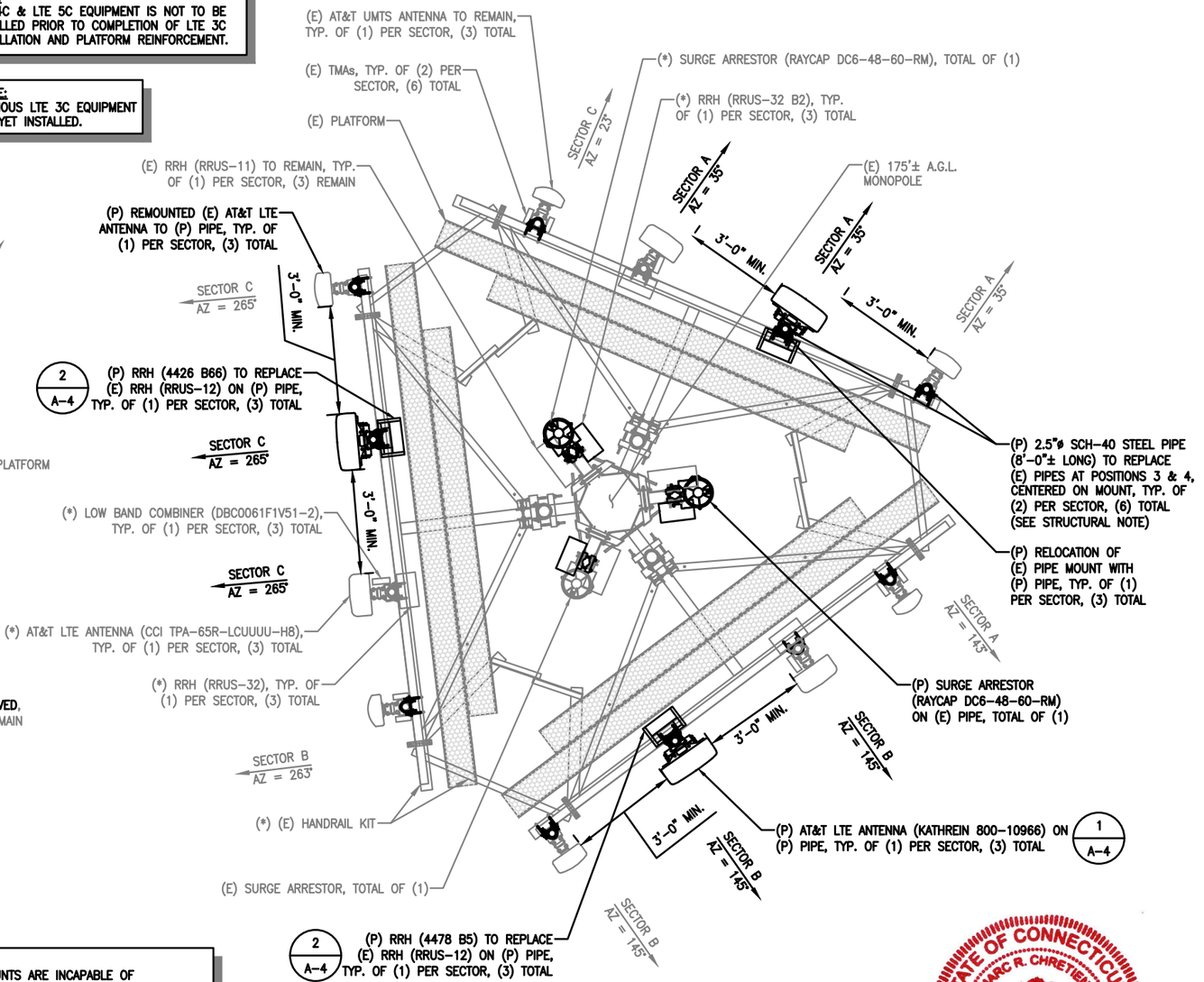

NORTH 2/A-3 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0"

STATE OF CONNECTICUT · MARC R. CHRETIEN · No. 28307 LICENSED PROFESSIONAL ENGINEER

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ANTENNA PLANS

SHEET NO. A-3

HALF SIZE PRINT
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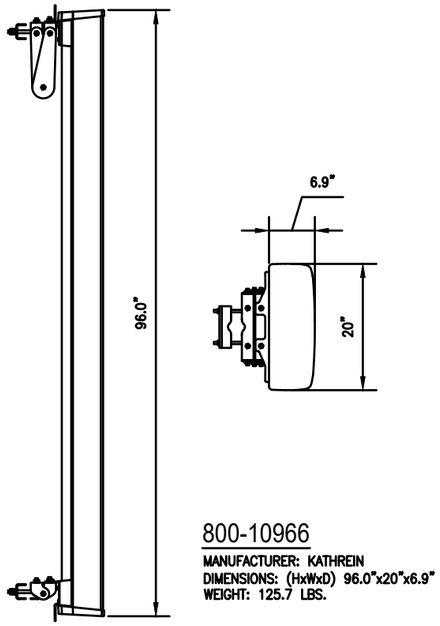
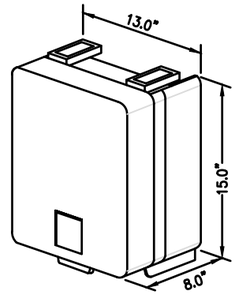
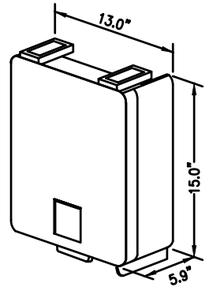


800-10966
MANUFACTURER: KATHREIN
DIMENSIONS: (HxWxD) 96.0"x20"x6.9"
WEIGHT: 125.7 LBS.

1 A-4 ANTENNA DETAIL
SCALE: N.T.S.



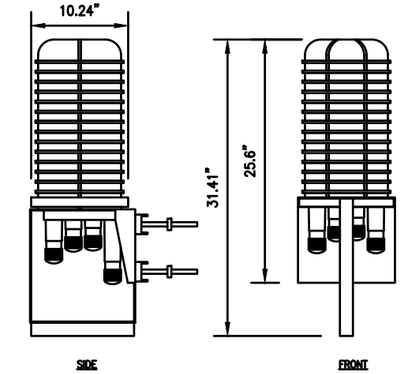
RRUS-4478 B5
MANUFACTURER: ERICSSON
DIMENSIONS (HxWxD): 15.0"x13.0"x8.0"
WEIGHT: 60 LBS



RRUS-4426 B66
MANUFACTURER: ERICSSON
DIMENSIONS (HxWxD): 15.0"x13.0"x5.9"
WEIGHT: 49 LBS

2 A-4 RRH DETAILS
SCALE: N.T.S.

RAYCAP DC6-48-60-18-8c
NUMBER OF RADIOS PROTECTED: 6
SUPPRESSION CONNECTION METHOD: COMPRESSION LUG, #2-#14 AWG
COPPER, #2-#12
ALUMINUM
ENVIRONMENTAL RATING: IP 66, 7M 72HRS
WEIGHT: 26.2 LBS



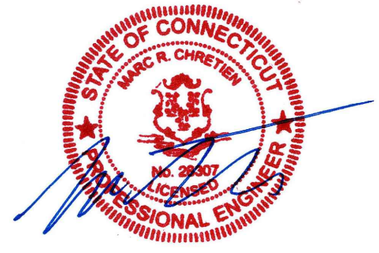
3 A-4 SURGE ARRESTOR DETAIL
SCALE: N.T.S.

RF SYSTEM SCHEDULE

SECTOR	ANTENNA INFORMATION					RRH INFORMATION		TMA & DIPLEXER INFORMATION		JUMPER INFO.	
	POSITION	STATUS	MODEL	AZIMUTH	RAD CTR (A.G.L.)	STATUS	MODEL	STATUS	MODEL	COAX	FIBER
ALPHA	I-A	EXISTING	7770	143°	137'	–	–	(2) EXISTING DIPLEXERS (2) EXISTING TMAS	(2) LGP 21901 (2) LGP 21401	2	–
	II-A	FUTURE	TPA-65R-LCUUUU-H8	35°	135'	* , *	RRUS-32 B2, RRUS-32	(2) FUTURE DIPLEXERS	(2) DBC0061F1V51-2	2	1
	III-A	PROPOSED	800-10966	35°	135'	PROPOSED, PROPOSED	4478 B5, 4426 B66	–	–	–	1
	IV-A	EXISTING	AM-X-CD-17-65-00T-RET	35°	135'	EXISTING	RRUS-11	–	–	–	1
BETA	I-B	EXISTING	7770	263°	137'	–	–	(2) EXISTING DIPLEXERS (2) EXISTING TMAS	(2) LGP 21901 (2) LGP 21401	2	–
	II-B	FUTURE	TPA-65R-LCUUUU-H8	145°	135'	FUTURE, FUTURE	RRUS-32 B2, RRUS-32	(2) FUTURE DIPLEXERS	(2) DBC0061F1V51-2	2	1
	III-B	PROPOSED	800-10966	145°	135'	PROPOSED, PROPOSED	4478 B5, 4426 B66	–	–	–	1
	IV-B	EXISTING	AM-X-CD-17-65-00T-RET	145°	135'	EXISTING	RRUS-11	–	–	–	1
GAMMA	I-C	EXISTING	7770	23°	137'	–	–	(2) EXISTING DIPLEXERS (2) EXISTING TMAS	(2) LGP 21901 (2) LGP 21401	2	–
	II-C	FUTURE	TPA-65R-LCUUUU-H8	265°	135'	FUTURE, FUTURE	RRUS-32 B2, RRUS-32	(2) FUTURE DIPLEXERS	(2) DBC0061F1V51-2	2	1
	III-C	PROPOSED	800-10966	265°	135'	PROPOSED, PROPOSED	4478 B5, 4426 B66	–	–	–	1
	IV-C	EXISTING	AM-X-CD-17-65-00T-RET	265°	135'	EXISTING	RRUS-11	–	–	–	1

* CONTRACTOR TO VERIFY FINAL RFDS PRIOR TO CONSTRUCTION

*NOTE:
PREVIOUS LTE 3C EQUIPMENT NOT YET INSTALLED.



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at&t
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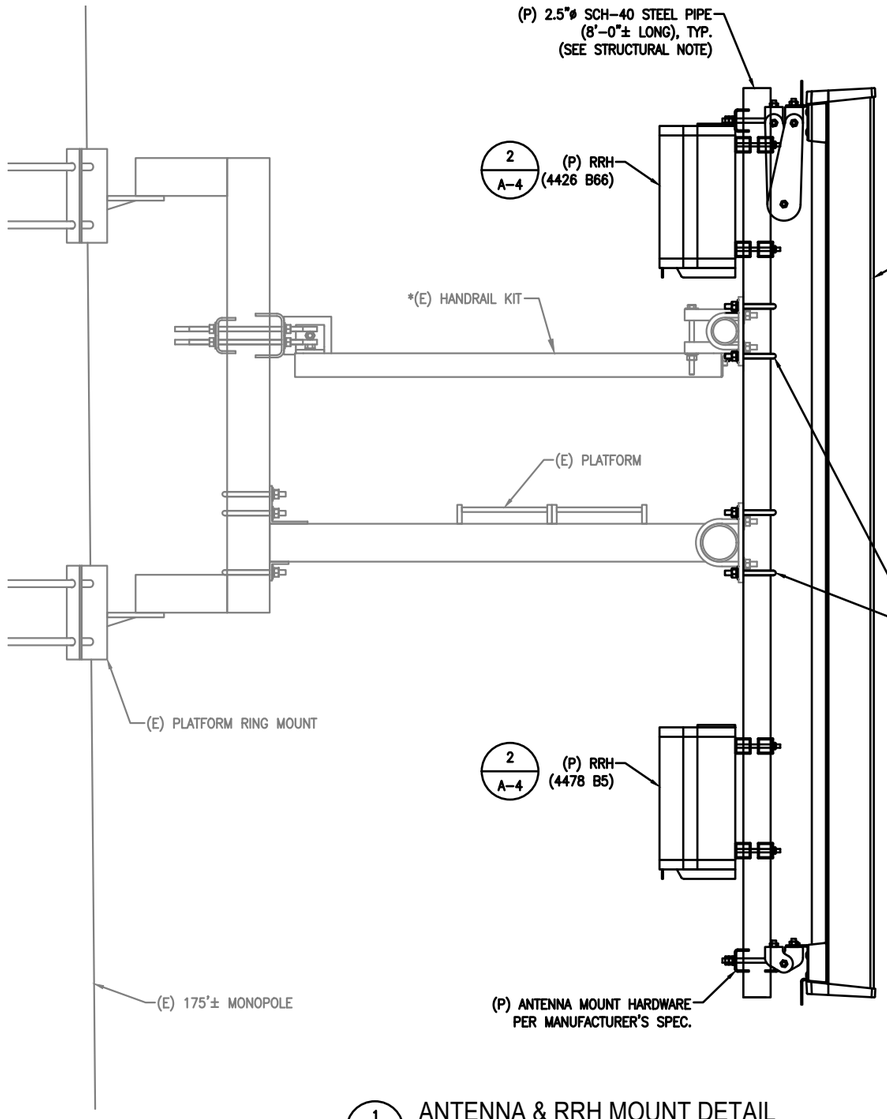
EQUIPMENT DETAILS & RF SYSTEM SCHEDULE

SHEET NO. A-4



℄ (P) AT&T LTE ANTENNAS
ELEV. = 135'± A.G.L.

NOTE:
LTE 4C & LTE 5C EQUIPMENT IS NOT TO BE INSTALLED PRIOR TO COMPLETION OF LTE 3C INSTALLATION AND PLATFORM REINFORCEMENT.

***NOTE:**
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NOTE:
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***STRUCTURAL NOTE:**
EXISTING ANTENNA MOUNTS ARE INCAPABLE OF SUPPORTING THE PROPOSED LOADS WITHOUT MODIFICATION. REFER TO B+T GROUP APPURTENANCE MOUNT ANALYSIS REPORT DATED 07/17/2018 ON REQUIRED MODIFICATIONS. PROPOSED EQUIPMENT SHALL NOT BE INSTALLED PRIOR TO MODIFICATION OF EXISTING MOUNTS.

1 / S-1 ANTENNA & RRH MOUNT DETAIL
SCALE: 1 1/2" = 1'-0"

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED
PROFESSIONAL ENGINEER

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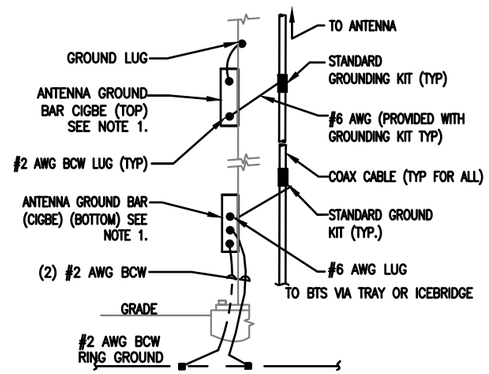
STRUCTURAL DETAILS

SHEET NO. S-1

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

1 G-1 ELEC. / GROUNDING LEGEND

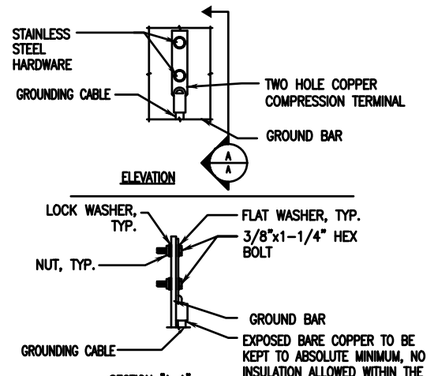
SCALE: N.T.S.



NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

2 G-1 TYP. ANTENNA CABLE GROUNDING

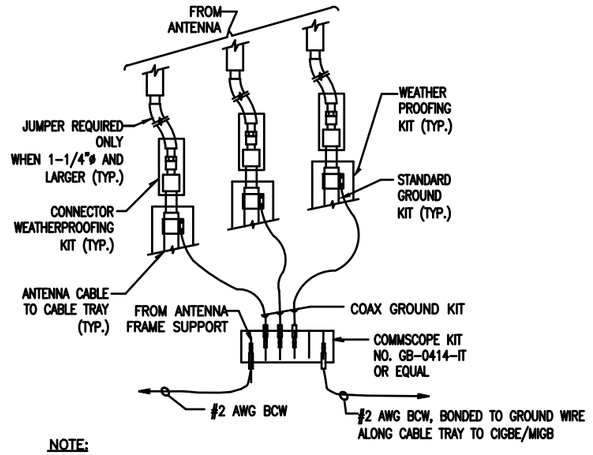
SCALE: N.T.S.



NOTES:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.
4. ALL GROUND LUGS MUST BE HEAT SHRUNK AT WIRE/LUG CONNECTION

3 G-1 TYP. GROUND BAR CONNECTION

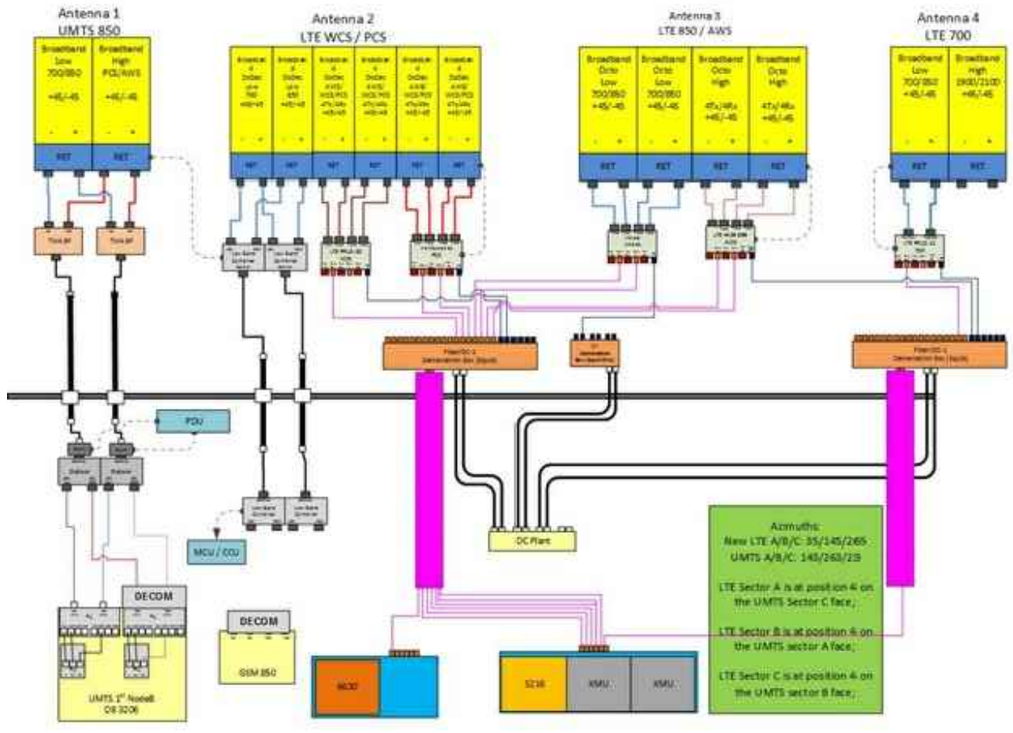
SCALE: N.T.S.



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

4 G-1 TYP. GROUND WIRE TO GROUND BAR CONN.

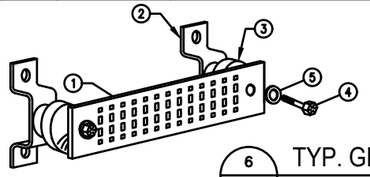
SCALE: N.T.S.



5 G-1 ONE LINE PLUMBING DIAGRAM

SCALE: N.T.S.

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



6 G-1 TYP. GROUND BAR CONN.

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.

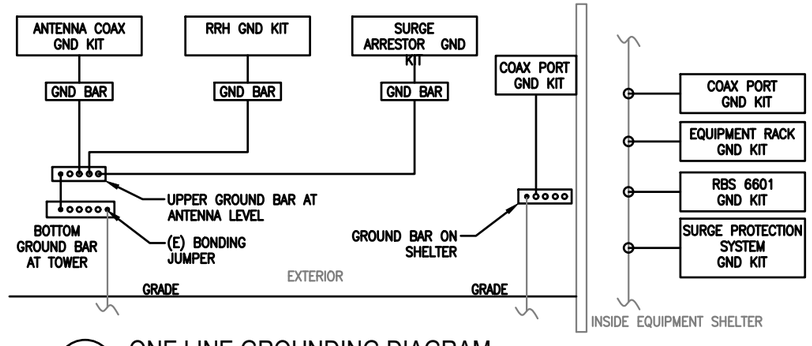
SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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

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



7 G-1 ONE LINE GROUNDING DIAGRAM

SCALE: N.T.S.

STATE OF CONNECTICUT
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1	10/12/18	ISSUED FOR CONSTRUCTION	AAB	MRC

GROUNDING DETAILS AND ONE LINE DIAGRAM

SHEET NO. G-1

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

Post-Mod Structural Analysis Report

Existing 175 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT00680-S

Customer Site Name: Putnam

Carrier Name: AT&T

Carrier Site ID/ Name: CT1110 / Putnam

Site Location: 154 Sayle Avenue

Putnam, Connecticut

Windham County

Latitude: 41.929449

Longitude: -71.886272

Analysis Result:

Max Structural Usage: 98.2% [Pass]

Max Foundation Usage: 51% [Pass]

Report Prepared By: Mariana Franco

12/11/18

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Report Prepared By: Mariana Franco

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 existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawing prepared by Fred A. Nudd, drawing #98-6220-1 dated 11/12/98
Foundation Drawing	Foundation Drawing prepared by Fred A. Nudd, drawing #98-6220-2 dated 11/12/98
Geotechnical Report	Geotechnical Report prepared by Jaworski Geotech, Project #C98291G dated 8/4/98
Existing Modification	Modification Drawing prepared by o2wirelss Solutions, Job #2230-019 dated 5/30/02 Modification Drawing prepared by FDH, Project #12-01602E S2 dated 4/30/12 Modification Drawing prepared by TES, Job #17447 dated 12/21/15
Proposed Modification	**TES** Job # 62823

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Basic Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
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	177.0	3	ALU 1900 Mhz - RRUs	(3) T-Arms w/ (1) SitePro PRK-1245L reinforcement kit, (1) SitePro PRK-SFS-L V-brace kit, (3) 2" std. pipe x 12.5' horizontal rails, (3) 2" std. pipe x 4' corner braces, and (6) Puck Brackets and (12) 2.0" Pipe Mast	(4) 1 1/4" Fiber	Sprint Nextel
4		6	ALU 800 Mhz - RRUs			
5		3	ALU TD-RRH8x20-25 - RRUs			
6		3	RFS APXVTM14-C-I20 - Panel			
7		3	Commscope NNVV-65B-R4 - Panel			
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	Powerwave 7770 - Panel	Low Profile Platform	(12) 1 5/8" ** (4) 3/4" DC **(2) 7/16" Fiber	AT&T
-		3	KMW AM-X-CD-17-65-00T-RET - Panel			
-		6	Powerwave LGP21401 TMA			
-		3	Ericsson RRUS 11			
-		1	Raycap DC6-48-60-18-8F - Surge			
-		3	Cci Antennas TPA-65R-LCUUUU-H8 - Panel			
-		6	Ericsson RRUS-32			
-		3	Kaelus DBC0061F1V51-2- Combiner			
-		1	Raycap DC6-48-60-18-8C - Surge			
30	124.0	6	Kathrein - 742 351 - Panel	Low Profile Platform	(12) 1 5/8" (1) 3/8" RET	Metro PCS
31	55.5	1	Lucent - GPS	Standoff	(1) 1/2"	Sprint

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

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
16	137.5	3	Kathrein 800 10966 - Panel	(1) Low Profile Platform w/ handrail	(12) 1 5/8" (1) 1/2" **(4) 3/4" DC Power **(2) 7/16" Fiber	AT&T
17		6	Powerwave LGP21901 Diplexer			
18		3	Ericsson 4478 B5			
19		3	Ericsson 4426 B66			
20		3	Powerwave 7770 - Panel			
21		3	KMW AM-X-CD-17-65-00T-RET (96") - Panel			
22		6	Powerwave LGP21401 TMA			
23		3	Ericsson RRUS 11			
24		1	Raycap DC6-48-60-18-8F			
25		3	CCI TPA-65R-LCUUUU-H8 - Panel			
26		6	Ericsson RRUS 32			
27		6	Kaelus dbc0061F1V51-2			
28		1	Raycap DC6-48-60-18-8C			
29	12.0	1	Nokia CS72188.01 LMU GPS	Direct		

**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:	**98.2%**	**63.5%**	**83.9%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	5737.2	45.6	87.0

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 1.4681 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the structure and its foundation will be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the design ANSI/TIA/EIA 222-G standards under a basic wind speed of 101 mph no ice and 50 mph with 3/4" radial ice after the following proposed modification is successfully completed.

- Proposed modification design drawing by **TES** Job # 62823

Pre-Mod Installation Determination

We have also checked this tower to determine if the proposed AT&T equipment loading can be installed prior to the completion of the required modifications. We ran a reduced wind loading case as required by TIA-322 considering a construction period of no more than 6 months.

The tower and foundations passed, so the Carrier can proceed and install their proposed loading prior to the mods completion. Please be aware that this approval is being provided and is based on the method outlined in TIA-322. This approval is not a blanket approval and there is still a risk that the tower will experience a wind event that cannot be predicted by TIA-322 or our Engineers. In the event of an unforeseen wind event, Tower Engineering Solutions will not be liable nor responsible for damage to the tower or the Carriers equipment. Additionally, the tower cannot go beyond the 6 month construction period without the modifications being completed. If the modifications cannot be completed within 6 months from the completed installation of the Carrier's proposed equipment, TES must be notified immediately for further review.

Standard Conditions

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

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

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

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

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

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

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

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

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

Usage Diagram - Max Ratio 94.94% at 105.0ft

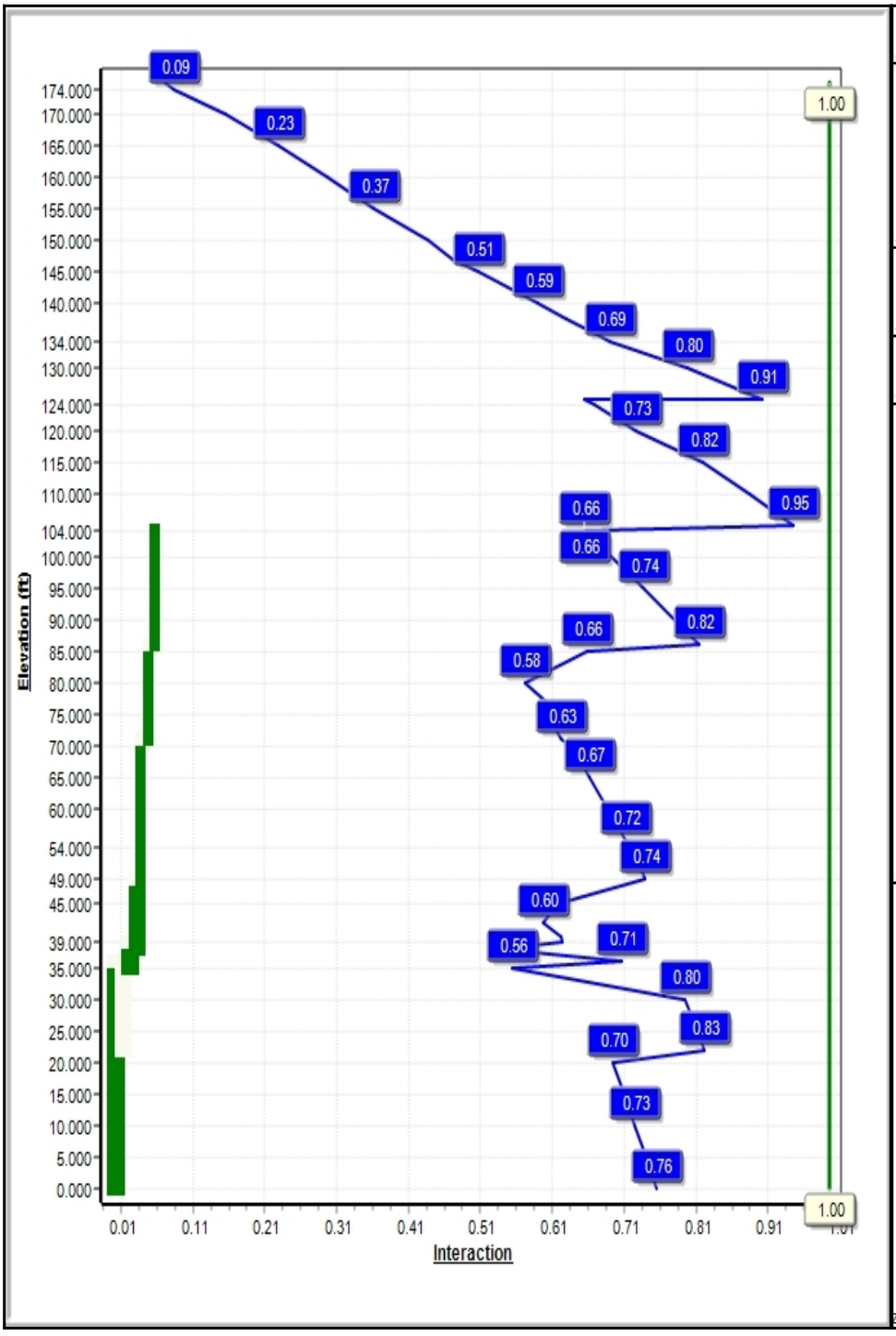
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam	**Exposure:**	B	
Height:	175.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

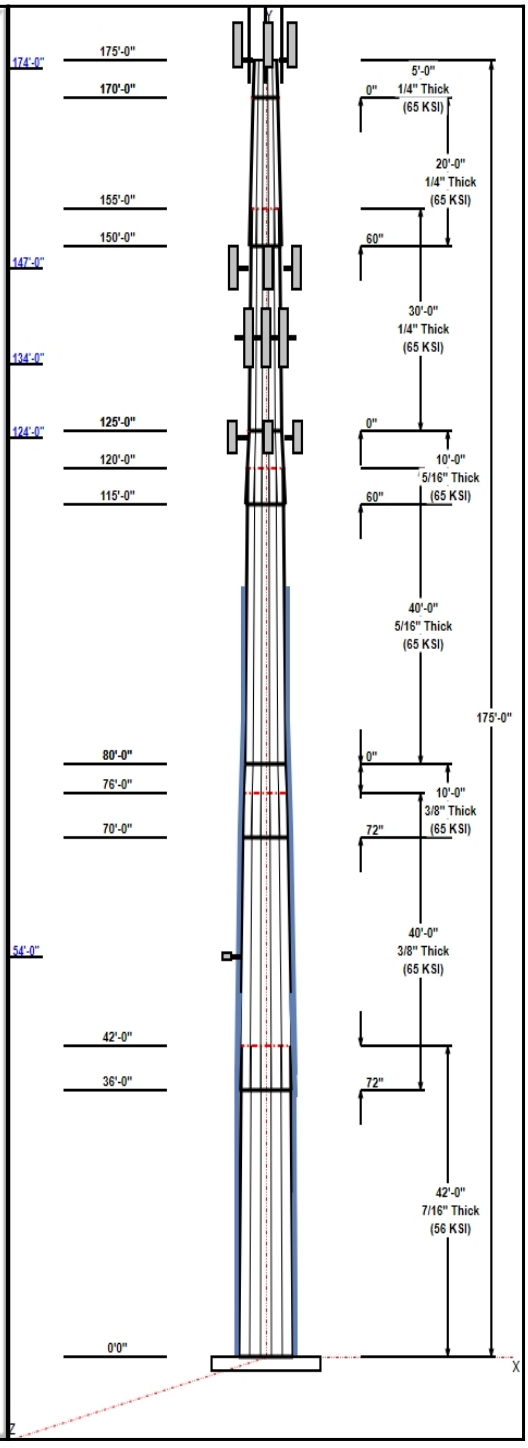
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 101 mph Wind

Iterations: 25





Structure: CT00680-S-SBA

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

Base Shape: 12 Sided
Taper: 1.15000

12/11/2018

Tower Engineering Solutions

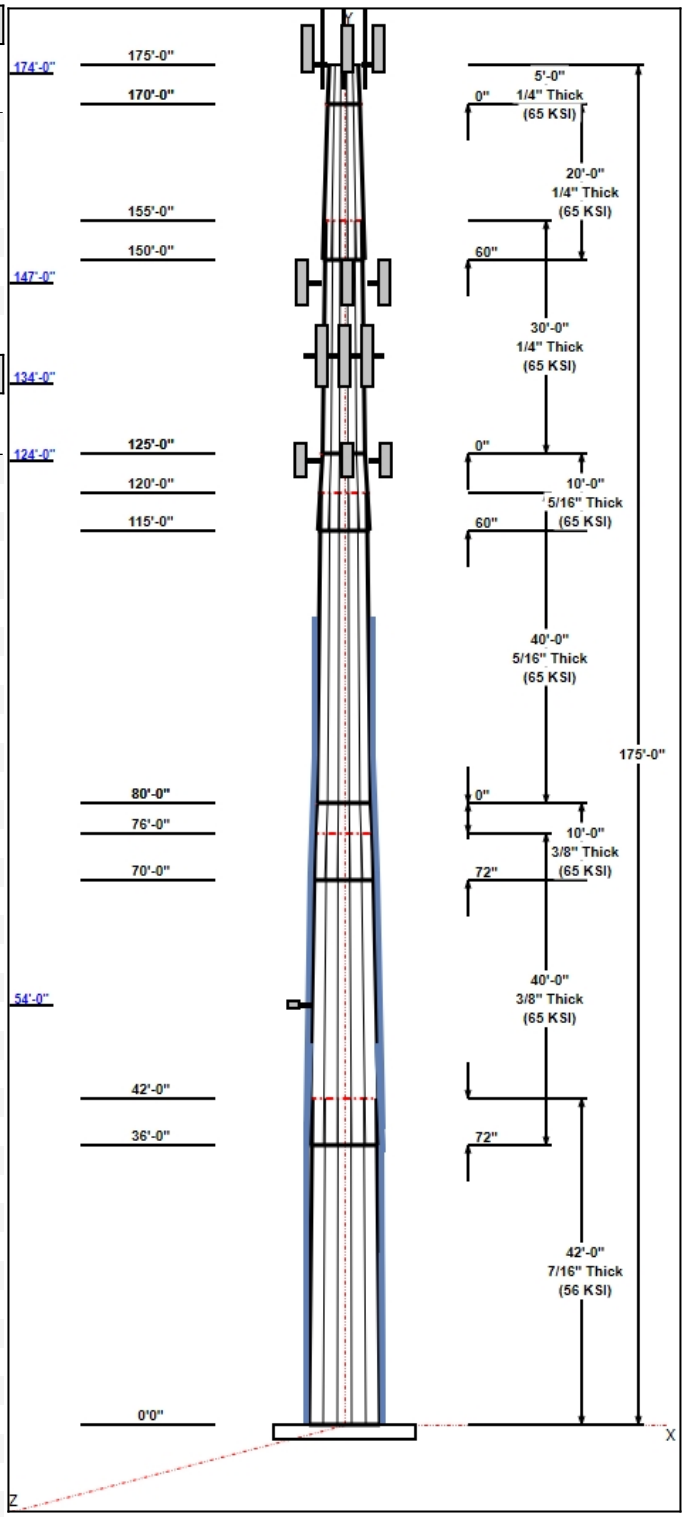
Shaft Properties

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	175.00	3	T-Arms	Sprint Nextel
175.00	177.00	3	APXVTM14-C-I20	Sprint Nextel
175.00	177.00	3	NNVV-65B-R4	Sprint Nextel
175.00	175.00	1	PRK-SFS-L	Sprint Nextel
175.00	175.00	1	Handrail	Sprint Nextel
175.00	175.00	1	PRK-1245L	Sprint Nextel
175.00	175.00	12	Pipes	Sprint Nextel
175.00	177.00	3	1900MHz	Sprint Nextel
175.00	177.00	6	800 MHz	Sprint Nextel
175.00	177.00	3	TD-RRH8x20-25	Sprint Nextel
174.00	184.00	3	4.5" x 24 FT Pipe	T-Mobile
147.00	147.00	3	BXA-70063-6CF-EDIN-X	Verizon
147.00	147.00	3	BXA-80080-4CF	Verizon
147.00	147.00	6	SBNHH-1D65B	Verizon
147.00	147.00	6	FD9R6004/2C-3L	Verizon
147.00	147.00	2	DB-T1-6Z-8AB-0Z	Verizon
147.00	144.00	3	RRH2X60-AWS	Verizon
147.00	144.00	3	RRH2X60-PCS	Verizon
147.00	144.00	3	RRH2X60-700	Verizon
147.00	147.00	3	T-Arms	Verizon
137.50	137.50	1	Platform w/ Hand Rail	AT&T
134.00	137.50	3	TPA-65R-LCUUUU-H8	AT&T
134.00	137.50	6	RRUS-32	AT&T
134.00	137.50	6	DBC0061F1V51-2	AT&T
134.00	137.50	1	DC6-48-60-18-8C	AT&T
134.00	137.50	3	800 10966	AT&T
134.00	137.50	6	LGP21901	AT&T
134.00	137.50	3	RRUS 4478 B5	AT&T
134.00	137.50	3	RRUS 32 B66a	AT&T
134.00	137.50	3	7770.00	AT&T
134.00	137.50	3	AM-X-CD-17-65-00T-RET	AT&T
134.00	137.50	6	LGP21401	AT&T
134.00	137.50	3	RRUS 11	AT&T
134.00	137.50	1	DC6-48-60-18-8F	AT&T
124.00	124.00	6	742 351	Metro PCS
124.00	124.00	3	T-Arms	Metro PCS
54.00	54.00	1	GPS	Sprint
54.00	54.00	1	Standoff	Sprint

Linear Appurtenances



Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	192.00	Inside	1 5/8" Coax	T-Mobile
0.00	177.00	Inside	1-1/4" Fiber	Sprint Nextel
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	7/16" Fiber	AT&T
0.00	124.00	Inside	1 5/8" Coax	Metro PCS
0.00	124.00	Inside	3/8" RET	Metro PCS
0.00	105.00	Outside	3" Chanel	
0.00	54.00	Inside	1/2" Coax	Sprint

Anchor Bolts

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

Base Plate

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

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	5737.2	45.6	57.9
0.9D + 1.6W 101 mph Wind	5675.6	45.5	43.4
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1320.8	9.9	87.0
1.2D + 1.0E	272.0	2.0	58.0
0.9D + 1.0E	268.8	2.0	43.5
1.0D + 1.0W 60 mph Wind	1259.0	10.0	48.3

Structure: CT00680-S-SBA - Coax Line Placement

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

12/11/2018

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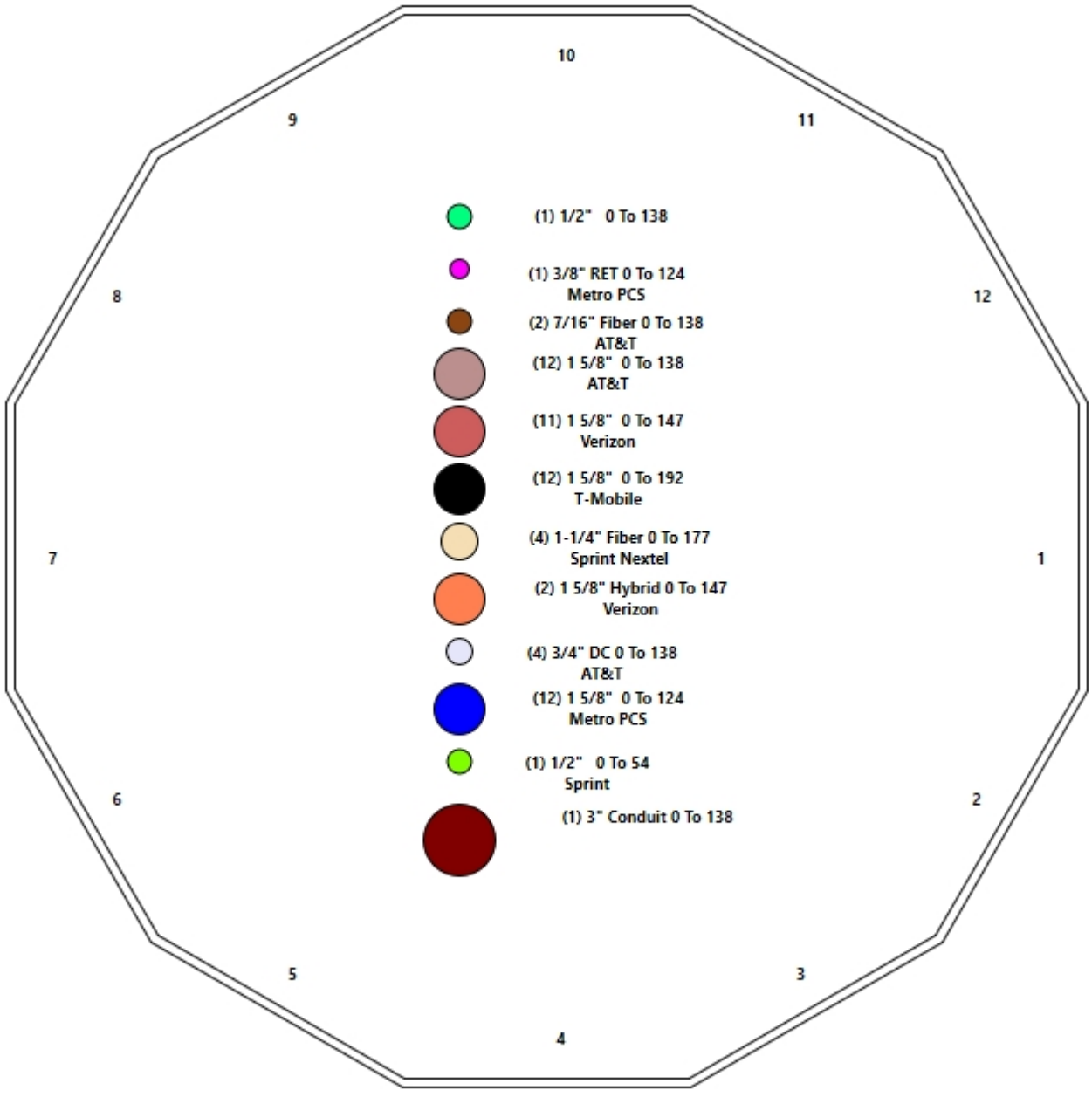

Shaft Properties

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	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		
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
35.00	49.00	3	LNP LP6X100-G-20TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	10	10
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	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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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	T-Arms	3	242.00	11.00	0.75	451.13	24.997	0.75	0.00	0.00
4	175.00	APXVTM14-C-I20	3	56.20	6.34	0.77	219.62	7.472	0.77	0.00	2.00
5	175.00	NNVV-65B-R4	3	77.40	12.27	0.74	367.39	13.749	0.74	0.00	2.00
6	175.00	PRK-SFS-L	1	230.00	7.70	1.00	556.11	15.888	1.00	0.00	0.00
7	175.00	Handrail	1	415.06	9.85	1.00	827.01	22.419	1.00	0.00	0.00
8	175.00	PRK-1245L	1	464.91	9.50	1.00	794.50	19.602	1.00	0.00	0.00
9	175.00	Pipes	12	33.00	1.90	0.80	84.47	4.311	0.80	0.00	0.00
10	175.00	1900MHz	3	60.00	2.77	0.67	144.73	4.058	0.67	0.00	2.00
11	175.00	800 MHz	6	53.00	2.49	0.67	128.11	3.651	0.67	0.00	2.00
12	175.00	TD-RRH8x20-25	3	70.00	4.05	0.67	182.54	4.877	0.67	0.00	2.00
13	174.00	4.5" x 24 FT Pipe	3	259.20	13.50	1.00	513.18	20.585	1.00	0.00	10.00
14	147.00	BXA-70063-6CF-EDIN-X	3	17.00	7.57	0.77	165.00	10.328	0.77	0.00	0.00
15	147.00	BXA-80080-4CF	3	12.00	3.56	0.88	100.05	5.398	0.88	0.00	0.00
16	147.00	SBNHH-1D65B	6	50.71	8.08	0.82	251.83	9.369	0.82	0.00	0.00
17	147.00	FD9R6004/2C-3L	6	3.10	0.36	0.50	11.11	0.802	0.50	0.00	0.00
18	147.00	DB-T1-6Z-8AB-0Z	2	44.00	4.80	1.00	187.39	5.672	1.00	0.00	0.00
19	147.00	RRH2X60-AWS	3	60.00	3.50	0.67	147.11	4.288	0.67	0.00	-3.00
20	147.00	RRH2X60-PCS	3	55.00	2.20	0.67	139.32	2.835	0.67	0.00	-3.00
21	147.00	RRH2X60-700	3	60.00	3.50	0.67	147.11	4.288	0.67	0.00	-3.00
22	147.00	T-Arms	3	242.00	11.00	0.75	447.52	24.755	0.75	0.00	0.00
23	137.50	Platform w/ Hand Rail (round)	1	1600.00	32.00	1.00	3681.65	59.681	1.00	0.00	0.00
24	134.00	TPA-65R-LCUUUU-H8	3	75.00	13.30	0.83	383.08	14.927	0.83	0.00	3.50
25	134.00	RRUS-32	6	77.00	3.87	0.67	189.06	4.097	0.67	0.00	3.50
26	134.00	DBC0061F1V51-2 Combiner	6	10.00	0.60	0.69	31.13	0.960	0.69	0.00	3.50
27	134.00	DC6-48-60-18-8C	1	11.80	3.17	1.00	61.48	3.864	1.00	0.00	3.50
28	134.00	800 10966	3	125.70	17.36	0.72	478.74	19.146	0.72	0.00	3.50
29	134.00	LGP21901	6	5.50	0.23	0.50	13.10	0.594	0.50	0.00	3.50
30	134.00	RRUS 4478 B5	3	59.90	1.84	0.67	108.23	2.382	0.67	0.00	3.50
31	134.00	RRUS 32 B66a	3	53.00	2.74	0.67	139.78	3.460	0.67	0.00	3.50
32	134.00	7770.00	3	35.00	5.50	0.73	168.32	6.552	0.75	0.00	3.50
33	134.00	AM-X-CD-17-65-00T-RET	3	30.80	11.31	0.75	141.54	15.502	0.77	0.00	3.50
34	134.00	LGP21401	6	14.10	1.29	0.50	38.82	2.116	0.50	0.00	3.50
35	134.00	RRUS 11	3	50.70	2.52	0.67	138.67	3.163	0.67	0.00	3.50
36	134.00	DC6-48-60-18-8F	1	14.50	2.92	1.00	77.02	4.121	1.00	0.00	3.50
37	124.00	742 351	6	29.80	5.38	0.61	123.30	7.329	0.63	0.00	0.00
38	124.00	T-Arms	3	242.00	8.19	0.75	444.05	18.258	0.75	0.00	0.00
39	54.00	GPS	1	10.00	1.00	1.00	36.47	1.643	1.00	0.00	0.00
40	54.00	Standoff	1	40.00	2.63	1.00	112.48	8.019	1.00	0.00	0.00
		Totals:	**142**	**10,609.83**			**28,480.25**				

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	(4) 3/4" DC			0.00	Inside					
0.00	137.50	(2) 7/16" Fiber			0.00	Inside					
0.00	124.00	(12) 1 5/8" Coax			0.00	Inside					
0.00	124.00	(1) 3/8" RET			0.00	Inside					
0.00	105.00	(1) 3" Chanel			3.25	Outside					
0.00	54.00	(1) 1/2" Coax			0.00	Inside					

Shaft Section Properties

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Increment Length: **5 (ft)**

											Additional Reinforcing			
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)	Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00	RB1 RB2	0.4375	54.000	75.456	27631.4	30.93	123.43	56	63	0.0	52.92	24301.7	17345.4	
5.00		0.4375	53.033	74.094	26161.8	30.34	121.22	56	64	1272.2	52.92	23473.1	16754.3	900.0
10.00		0.4375	52.066	72.732	24745.3	29.74	119.01	56	64	1249.0	52.92	22658.9	16173.5	900.0
15.00		0.4375	51.099	71.370	23380.9	29.15	116.80	56	65	1225.9	52.92	21859.1	15603.0	900.0
20.00		0.4375	50.132	70.008	22067.5	28.56	114.59	56	65	1202.7	52.92	21073.7	15042.8	900.0
22.00	RT2	0.4375	49.746	69.463	21556.3	28.32	113.70	56	66	474.6	26.46	8941.3	8941.3	180.0
25.00		0.4375	49.165	68.645	20804.3	27.97	112.38	56	66	704.9	26.46	8743.1	8743.1	270.0
30.00		0.4375	48.199	67.283	19590.3	27.38	110.17	56	66	1156.3	26.46	8417.8	8417.8	450.0
35.00	RB3 RB4	0.4375	47.232	65.921	18424.4	26.78	107.96	56	67	1133.2	62.46	18622.4	18622.4	1062.5
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	RB5	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	RT3	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
49.00	RT4	0.3750	45.274	54.216	13950.5	30.21	120.73	65	72	744.3	26.46	7471.5	7471.5	360.0
50.00		0.3750	45.081	53.982	13771.1	30.07	120.22	65	72	184.1	26.46	7410.9	7410.9	90.0
54.00		0.3750	44.307	53.048	13068.5	29.52	118.15	65	73	728.4	26.46	7171.0	7171.0	360.0
55.00		0.3750	44.114	52.815	12896.7	29.38	117.64	65	73	180.1	26.46	7111.6	7111.6	90.0
60.00		0.3750	43.147	51.647	12060.2	28.69	115.06	65	73	888.7	26.46	6818.6	6818.6	450.0
65.00		0.3750	42.180	50.480	11260.6	28.00	112.48	65	74	868.8	26.46	6531.8	6531.8	450.0
70.00	Bot - Section 3	0.3750	41.213	49.312	10497.2	27.30	109.90	65	75	848.9	26.46	6251.1	6251.1	450.0
71.25	RT5 RB6	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	RT6 RB7	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	RT7	0.3125	35.388	35.295	5542.6	28.20	113.24	65	74	485.7	13.47	2548.7	2548.7	183.6
105.00		0.3125	35.195	35.100	5451.4	28.03	112.62	65	74	119.8				
110.00		0.3125	34.228	34.127	5010.5	27.20	109.53	65	75	588.9				
115.00	Bot - Section 5	0.3125	33.261	33.154	4594.1	26.38	106.44	65	76	572.4				
120.00	Top - Section 4	0.3125	32.919	32.810	4452.6	26.08	105.34	65	76	1122.3				
124.00		0.3125	32.146	32.032	4143.1	25.42	102.87	65	77	441.3				
125.00	Top - Section 5	0.3125	31.952	31.837	4068.1	25.25	102.25	65	77	108.7				
125.00	Bot - Section 6	0.2500	31.952	25.520	3273.8	31.57	127.81	65	70					
130.00		0.2500	30.985	24.742	2983.3	31.07	123.94	65	71	427.6				
134.00		0.2500	30.212	24.119	2763.7	30.24	120.85	65	72	332.5				
135.00		0.2500	30.018	23.964	2710.5	30.03	120.07	65	72	81.8				
137.50		0.2500	29.535	23.574	2580.6	29.51	118.14	65	73	202.2				
140.00		0.2500	29.051	23.185	2454.9	28.99	116.21	65	73	198.9				
145.00		0.2500	28.085	22.407	2215.8	27.96	112.34	65	74	387.8				
147.00		0.2500	27.698	22.095	2124.7	27.54	110.79	65	75	151.4				
150.00	Bot - Section 7	0.2500	27.118	21.628	1992.8	26.92	108.47	65	75	223.2				
155.00	Top - Section 6	0.2500	26.651	21.253	1890.7	26.42	106.60	65	76	729.6				
160.00		0.2500	25.684	20.474	1690.5	25.38	102.74	65	77	355.0				

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)
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**				**11640.8**

Wind Loading - Shaft

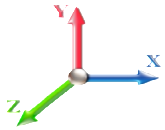
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.70	17.366	19.10	393.68	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	386.63	1.000	0.000	5.00	23.085	23.09	705.6	0.0	1526.7
10.00		1.00	0.70	17.366	19.10	379.58	1.000	0.000	5.00	22.668	22.67	692.8	0.0	1498.8
15.00		1.00	0.70	17.366	19.10	372.53	1.000	0.000	5.00	22.251	22.25	680.1	0.0	1471.0
20.00		1.00	0.70	17.366	19.10	365.48	1.000	0.000	5.00	21.834	21.83	667.3	0.0	1443.2
22.00	RT2	1.00	0.70	17.366	19.10	362.66	1.000	0.000	2.00	8.617	8.62	263.4	0.0	569.5
25.00		1.00	0.70	17.366	19.10	358.43	1.000	0.000	3.00	12.800	12.80	391.2	0.0	845.9
30.00		1.00	0.70	17.381	19.12	351.53	1.000	0.000	5.00	21.000	21.00	642.4	0.0	1387.6
35.00	RB3 RB4	1.00	0.73	18.163	19.98	352.15	1.000	0.000	5.00	20.583	20.58	658.0	0.0	1359.8
36.00	Bot - Section 2 RT1	1.00	0.74	18.310	20.14	352.12	1.000	0.000	1.00	4.066	4.07	131.0	0.0	268.6
38.00	RB5	1.00	0.75	18.595	20.45	351.93	1.000	0.000	2.00	8.212	8.21	268.8	0.0	999.6
39.00	RT3	1.00	0.76	18.734	20.61	351.78	1.000	0.000	1.00	4.081	4.08	134.6	0.0	496.7
40.00		1.00	0.76	18.870	20.76	351.58	1.000	0.000	1.00	4.064	4.06	135.0	0.0	494.6
42.00	Top - Section 1	1.00	0.77	19.135	21.05	351.08	1.000	0.000	2.00	8.079	8.08	272.1	0.0	983.0
45.00		1.00	0.79	19.516	21.47	355.87	1.000	0.000	3.00	11.993	11.99	411.9	0.0	679.9
49.00	RT4	1.00	0.81	19.996	22.00	354.18	1.000	0.000	4.00	15.757	15.76	554.6	0.0	893.2
50.00		1.00	0.81	20.112	22.12	353.68	1.000	0.000	1.00	3.898	3.90	138.0	0.0	220.9
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	RT5 RB6	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	RT6 RB7	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	RT7	1.00	1.00	24.793	27.27	308.26	1.000	0.000	4.00	12.346	12.35	538.7	0.0	582.8
105.00		1.00	1.00	24.861	27.35	307.00	1.000	0.000	1.00	3.045	3.04	133.2	0.0	143.7
110.00		1.00	1.02	25.194	27.71	300.55	1.000	0.000	5.00	14.973	14.97	663.9	0.0	706.7
115.00	Bot - Section 5	1.00	1.03	25.516	28.07	293.92	1.000	0.000	5.00	14.556	14.56	653.7	0.0	686.8
120.00	Top - Section 4	1.00	1.04	25.828	28.41	287.12	1.000	0.000	5.00	14.409	14.41	655.0	0.0	1346.8
124.00	Appurtenance(s)	1.00	1.05	26.071	28.68	287.14	1.000	0.000	4.00	11.227	11.23	515.1	0.0	529.5
125.00	Top - Section 5	1.00	1.05	26.131	28.74	285.74	1.000	0.000	1.00	2.765	2.76	127.2	0.0	130.4
130.00		1.00	1.07	26.425	29.07	278.65	1.000	0.000	5.00	13.575	13.57	631.3	0.0	513.1
134.00	Appurtenance(s)	1.00	1.07	26.655	29.32	272.87	1.000	0.000	4.00	10.559	10.56	495.4	0.0	399.0
135.00		1.00	1.08	26.712	29.38	271.41	1.000	0.000	1.00	2.598	2.60	122.1	0.0	98.2
137.50	Appurtenance(s)	1.00	1.08	26.852	29.54	267.74	1.000	0.000	2.50	6.422	6.42	303.5	0.0	242.6
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	2.50	6.318	6.32	300.1	0.0	238.7
145.00		1.00	1.10	27.263	29.99	256.53	1.000	0.000	5.00	12.323	12.32	591.3	0.0	465.4
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	253.50	1.000	0.000	2.00	4.813	4.81	231.8	0.0	181.7
150.00	Bot - Section 7	1.00	1.11	27.528	30.28	248.90	1.000	0.000	3.00	7.094	7.09	343.7	0.0	267.8
155.00	Top - Section 6	1.00	1.12	27.787	30.57	241.16	1.000	0.000	5.00	11.705	11.70	572.4	0.0	875.5

Wind Loading - Shaft

Structure: CT00680-S-SBA | **Code:** EIA/TIA-222-G | 12/11/2018

Site Name: Putnam | **Exposure:** B

Height: 175.00 (ft) | **Crest Height:** 0.00

Base Elev: 0.000 (ft) | **Site Class:** D - Stiff Soil

Gh: 1.1 | **Topography:** 1 | **Struct Class:** II | Page: 11

TES Tower Engineering Solutions

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**			**22,689.0**		**34,633.7**

Discrete Appurtenance Forces

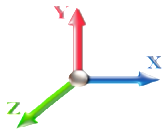
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	PRK-SFS-L	1	28.768	31.644	0.75	0.75	5.78	276.00	0.000	0.000	292.39	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	29.518	32.470	0.67	1.00	23.36	172.80	0.000	16.500	1213.39	0.00	20020.89
3	175.00	E15S09P94	6	29.385	32.323	0.60	1.00	2.38	105.12	0.000	13.500	122.88	0.00	1658.89
4	175.00	T-Arms	3	28.768	31.644	0.75	1.00	24.75	871.20	0.000	0.000	1253.12	0.00	0.00
5	175.00	APXVTM14-C-I20	3	28.861	31.747	0.77	1.00	14.65	202.32	0.000	2.000	743.92	0.00	1487.85
6	175.00	NNVV-65B-R4	3	28.861	31.747	0.74	1.00	27.24	278.64	0.000	2.000	1383.64	0.00	2767.29
7	175.00	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
8	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
9	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
10	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
11	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
12	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
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	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
15	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
16	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
17	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
18	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
19	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
20	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
21	147.00	BXA-80080-4CF	3	27.370	30.107	0.70	0.80	7.50	43.20	0.000	0.000	361.36	0.00	0.00
22	147.00	BXA-70063-6CF-EDIN-X	3	27.370	30.107	0.62	0.80	13.97	61.20	0.000	0.000	673.00	0.00	0.00
23	137.50	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
24	134.00	RRUS 4478 B5	3	26.852	29.537	0.50	0.75	2.77	215.64	0.000	3.500	131.09	0.00	458.81
25	134.00	TPA-65R-LCUUUU-H8	3	26.852	29.537	0.62	0.75	24.84	270.00	0.000	3.500	1173.83	0.00	4108.40
26	134.00	RRUS-32	6	26.852	29.537	0.50	0.75	11.67	554.40	0.000	3.500	551.43	0.00	1930.01
27	134.00	DBC0061F1V51-2	6	26.852	29.537	0.52	0.75	1.86	72.00	0.000	3.500	88.05	0.00	308.16
28	134.00	DC6-48-60-18-8C	1	26.852	29.537	1.00	1.00	3.17	14.16	0.000	3.500	149.81	0.00	524.35
29	134.00	800 10966	3	26.852	29.537	0.54	0.75	28.12	452.52	0.000	3.500	1329.10	0.00	4651.85
30	134.00	LGP21901	6	26.852	29.537	0.38	0.75	0.52	39.60	0.000	3.500	24.46	0.00	85.60
31	134.00	RRUS 32 B66a	3	26.852	29.537	0.50	0.75	4.13	190.80	0.000	3.500	195.21	0.00	683.23
32	134.00	7770.00	3	26.852	29.537	0.55	0.75	9.03	126.00	0.000	3.500	426.93	0.00	1494.27
33	134.00	AM-X-CD-17-65-00T-RET	3	26.852	29.537	0.56	0.75	19.09	110.88	0.000	3.500	901.98	0.00	3156.95
34	134.00	LGP21401	6	26.852	29.537	0.38	0.75	2.90	101.52	0.000	3.500	137.17	0.00	480.10
35	134.00	RRUS 11	3	26.852	29.537	0.50	0.75	3.80	182.52	0.000	3.500	179.54	0.00	628.37
36	134.00	DC6-48-60-18-8F	1	26.852	29.537	1.00	1.00	2.92	17.40	0.000	3.500	138.00	0.00	483.00
37	124.00	T-Arms	3	26.071	28.678	0.56	0.75	13.82	871.20	0.000	0.000	634.16	0.00	0.00
38	124.00	742 351	6	26.071	28.678	0.49	0.80	15.75	214.56	0.000	0.000	722.81	0.00	0.00
39	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
40	54.00	GPS	1	20.559	22.615	1.00	1.00	1.00	12.00	0.000	0.000	36.18	0.00	0.00
							Totals:		**12,731.80**			**22,779.32**		

Total Applied Force Summary

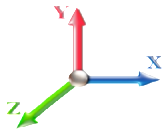
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		705.59	1891.19	0.00	0.00
10.00		692.84	1863.38	0.00	0.00
15.00		680.09	1835.57	0.00	0.00
20.00		667.34	1807.76	0.00	0.00
22.00		263.37	715.32	0.00	0.00
25.00		391.23	1064.63	0.00	0.00
30.00		642.39	1752.14	0.00	0.00
35.00		657.98	1724.33	0.00	0.00
36.00		131.05	341.53	0.00	0.00
38.00		268.77	1145.37	0.00	0.00
39.00		134.56	569.59	0.00	0.00
40.00		134.98	567.52	0.00	0.00
42.00		272.07	1128.84	0.00	0.00
45.00		411.93	898.60	0.00	0.00
49.00		554.55	1184.78	0.00	0.00
50.00		137.96	293.81	0.00	0.00
54.00	(2) attachments	689.44	1225.71	0.00	0.00
55.00		138.74	288.85	0.00	0.00
60.00		701.82	1429.96	0.00	0.00
65.00		702.14	1406.12	0.00	0.00
70.00		700.92	1382.28	0.00	0.00
71.25		176.73	597.42	0.00	0.00
75.00		531.81	1774.39	0.00	0.00
76.00		140.77	468.64	0.00	0.00
80.00		564.65	1080.57	0.00	0.00
85.00		702.68	1169.60	0.00	0.00
86.00		138.94	231.54	0.00	0.00
90.00		556.03	918.20	0.00	0.00
95.00		689.90	1129.87	0.00	0.00
100.00		682.09	1110.01	0.00	0.00
104.00		538.71	873.70	0.00	0.00
105.00		133.22	216.44	0.00	0.00
110.00		663.93	1059.60	0.00	0.00
115.00		653.68	1039.73	0.00	0.00
120.00		654.98	1699.68	0.00	0.00
124.00	(9) attachments	1872.10	1897.62	0.00	0.00
125.00		127.16	185.93	0.00	0.00
130.00		631.33	790.75	0.00	0.00
134.00	(47) attachments	5921.97	2968.60	0.00	18993.09
135.00		122.14	153.70	0.00	0.00
137.50	(1) attachments	1815.83	2301.47	0.00	0.00
140.00		300.13	328.48	0.00	0.00
145.00		591.30	645.03	0.00	0.00
147.00	(32) attachments	4816.05	2352.20	0.00	-2125.29
150.00		343.68	326.47	0.00	0.00
155.00		572.43	973.26	0.00	0.00

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

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:	**45,468.36**	**57,990.46**	**0.00**	**66,013.77**

Linear Appurtenance Segment Forces (Factored)

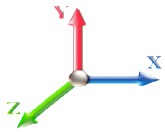
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.059	0.000	17.366	0.00	10.68
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	17.366	0.00	10.68
15.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.061	0.000	17.366	0.00	10.68
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	17.366	0.00	10.68
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	17.366	0.00	4.27
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	17.366	0.00	6.41
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	17.381	0.00	10.68
35.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.066	0.000	18.163	0.00	10.68
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.310	0.00	2.14
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	18.595	0.00	4.27
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.734	0.00	2.14
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	18.870	0.00	2.14
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	19.135	0.00	4.27
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	19.516	0.00	6.41
49.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.069	0.000	19.996	0.00	8.54
50.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.069	0.000	20.112	0.00	2.14
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

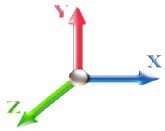
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-57.92	-45.56	0.00	-5737.2	0.00	5737.22	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.759
5.00	-55.89	-45.03	0.00	-5509.4	0.00	5509.42	4251.62	2125.81	9227.39	4557.06	0.10	-0.178	0.000	0.744
10.00	-53.89	-44.49	0.00	-5284.3	0.00	5284.30	4207.27	2103.63	8961.88	4425.94	0.38	-0.356	0.000	0.729
15.00	-51.92	-43.96	0.00	-5061.8	0.00	5061.84	4161.65	2080.83	8697.29	4295.27	0.85	-0.536	0.000	0.714
20.00	-50.03	-43.38	0.00	-4842.0	0.00	4842.04	4114.76	2057.38	8433.78	4165.13	1.50	-0.717	0.000	0.698
22.00	-49.24	-43.20	0.00	-4755.2	0.00	4755.27	4095.66	2047.83	8328.71	4113.24	1.82	-0.790	0.000	0.826
25.00	-48.05	-42.94	0.00	-4625.6	0.00	4625.67	4066.61	2033.31	8171.50	4035.59	2.36	-0.921	0.000	0.816
30.00	-46.14	-42.44	0.00	-4410.9	0.00	4410.97	4017.20	2008.60	7910.59	3906.74	3.44	-1.139	0.000	0.798
35.00	-44.34	-41.84	0.00	-4198.7	0.00	4198.76	3966.51	1983.26	7651.22	3778.65	4.75	-1.358	0.000	0.559
36.00	-43.96	-41.75	0.00	-4156.9	0.00	4156.92	3956.22	1978.11	7599.55	3753.13	5.04	-1.390	0.000	0.711
38.00	-42.79	-41.49	0.00	-4073.4	0.00	4073.43	3935.49	1967.75	7496.40	3702.19	5.64	-1.471	0.000	0.541
39.00	-42.19	-41.37	0.00	-4031.9	0.00	4031.93	3925.05	1962.53	7444.93	3676.77	5.95	-1.503	0.000	0.629
40.00	-41.59	-41.26	0.00	-3990.5	0.00	3990.56	3914.56	1957.28	7393.54	3651.39	6.27	-1.540	0.000	0.626
42.00	-40.40	-41.02	0.00	-3908.0	0.00	3908.05	3554.53	1777.27	6785.59	3351.15	6.93	-1.614	0.000	0.601
45.00	-39.42	-40.67	0.00	-3784.9	0.00	3784.99	3532.39	1766.19	6658.05	3288.16	7.98	-1.723	0.000	0.623
49.00	-38.19	-40.15	0.00	-3622.2	0.00	3622.29	3501.98	1750.99	6488.03	3204.19	9.49	-1.877	0.000	0.744
50.00	-37.82	-40.08	0.00	-3582.1	0.00	3582.15	3494.22	1747.11	6445.54	3183.21	9.89	-1.925	0.000	0.739
54.00	-36.53	-39.42	0.00	-3421.8	0.00	3421.83	3462.54	1731.27	6275.67	3099.32	11.58	-2.113	0.000	0.720
55.00	-36.15	-39.36	0.00	-3382.4	0.00	3382.41	3454.46	1727.23	6233.23	3078.36	12.03	-2.161	0.000	0.716
60.00	-34.60	-38.75	0.00	-3185.5	0.00	3185.59	3413.12	1706.56	6021.34	2973.71	14.42	-2.394	0.000	0.692
65.00	-33.07	-38.12	0.00	-2991.8	0.00	2991.87	3370.20	1685.10	5810.04	2869.36	17.05	-2.627	0.000	0.667
70.00	-31.63	-37.43	0.00	-2801.2	0.00	2801.29	3325.69	1662.84	5599.53	2765.40	19.92	-2.859	0.000	0.642
71.25	-30.96	-37.29	0.00	-2754.5	0.00	2754.50	3314.31	1657.16	5547.04	2739.48	20.68	-2.918	0.000	0.627
75.00	-29.15	-36.72	0.00	-2614.6	0.00	2614.68	3279.60	1639.80	5389.99	2661.91	23.04	-3.089	0.000	0.608
76.00	-28.62	-36.61	0.00	-2577.9	0.00	2577.96	3306.32	1653.16	5510.48	2721.42	23.69	-3.135	0.000	0.618
80.00	-27.44	-36.08	0.00	-2431.5	0.00	2431.53	3269.04	1634.52	5343.14	2638.78	26.39	-3.316	0.000	0.576
80.00	-27.44	-36.08	0.00	-2431.5	0.00	2431.53	2504.08	1252.04	4105.75	2027.68	26.39	-3.316	0.000	0.628
85.00	-26.24	-35.37	0.00	-2251.1	0.00	2251.13	2474.85	1237.43	3958.27	1954.84	29.98	-3.531	0.000	0.663
86.00	-25.93	-35.28	0.00	-2215.7	0.00	2215.77	2468.82	1234.41	3928.75	1940.26	30.73	-3.579	0.000	0.818
90.00	-24.89	-34.78	0.00	-2074.6	0.00	2074.65	2444.04	1222.02	3810.67	1881.94	33.82	-3.814	0.000	0.784
95.00	-23.64	-34.13	0.00	-1900.7	0.00	1900.76	2411.64	1205.82	3663.14	1809.09	37.97	-4.101	0.000	0.741
100.00	-22.44	-33.47	0.00	-1730.1	0.00	1730.10	2377.66	1188.83	3515.87	1736.36	42.41	-4.382	0.000	0.696
104.00	-21.53	-32.91	0.00	-1596.2	0.00	1596.24	2349.34	1174.67	3398.38	1678.33	46.18	-4.603	0.000	0.659
104.00	-21.53	-32.91	0.00	-1596.2	0.00	1596.24	2349.34	1174.67	3398.38	1678.33	46.18	-4.603	0.000	0.659
105.00	-21.20	-32.85	0.00	-1563.3	0.00	1563.33	2342.10	1171.05	3369.07	1663.86	47.15	-4.659	0.000	0.949
110.00	-19.98	-32.23	0.00	-1399.1	0.00	1399.10	2304.95	1152.47	3222.91	1591.67	52.23	-5.045	0.000	0.888
115.00	-18.81	-31.60	0.00	-1237.9	0.00	1237.96	2266.22	1133.11	3077.59	1519.90	57.71	-5.420	0.000	0.824
120.00	-17.01	-30.88	0.00	-1079.9	0.00	1079.94	2252.14	1126.07	3026.44	1494.64	63.57	-5.779	0.000	0.731
124.00	-15.23	-28.87	0.00	-956.43	0.00	956.43	2219.57	1109.78	2911.24	1437.75	68.52	-6.054	0.000	0.673
125.00	-14.96	-28.77	0.00	-927.56	0.00	927.56	2211.27	1105.63	2882.56	1423.59	69.80	-6.119	0.000	0.659
125.00	-14.96	-28.77	0.00	-927.56	0.00	927.56	1600.93	800.47	2095.19	1034.73	69.80	-6.119	0.000	0.907
130.00	-14.11	-28.13	0.00	-783.72	0.00	783.72	1577.27	788.64	2000.77	988.11	76.36	-6.418	0.000	0.803
134.00	-11.77	-21.94	0.00	-652.22	0.00	652.22	1557.20	778.60	1925.20	950.79	81.84	-6.696	0.000	0.694
135.00	-11.59	-21.82	0.00	-630.28	0.00	630.28	1552.03	776.01	1906.32	941.46	83.25	-6.762	0.000	0.678
137.50	-9.47	-19.77	0.00	-575.72	0.00	575.72	1538.81	769.41	1859.13	918.16	86.83	-6.920	0.000	0.634
140.00	-9.10	-19.47	0.00	-526.30	0.00	526.30	1525.20	762.60	1812.01	894.88	90.48	-7.072	0.000	0.595
145.00	-8.48	-18.83	0.00	-428.96	0.00	428.96	1496.79	748.40	1718.05	848.48	98.02	-7.349	0.000	0.512
147.00	-6.73	-13.76	0.00	-391.31	0.00	391.31	1484.98	742.49	1680.60	829.98	101.12	-7.454	0.000	0.476

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

150.00	-6.41	-13.40	0.00	-350.02	0.00	350.02	1466.80	733.40	1624.61	802.34	105.83	-7.603	0.000	0.441
155.00	-5.48	-12.72	0.00	-283.01	0.00	283.01	1451.75	725.87	1579.74	780.18	113.90	-7.829	0.000	0.367
160.00	-5.00	-12.12	0.00	-219.39	0.00	219.39	1419.41	709.70	1487.45	734.60	122.18	-8.029	0.000	0.302
165.00	-4.54	-11.52	0.00	-158.81	0.00	158.81	1385.48	692.74	1396.17	689.51	130.65	-8.188	0.000	0.234
170.00	-4.11	-10.94	0.00	-101.21	0.00	101.21	1349.97	674.99	1306.08	645.02	139.27	-8.311	0.000	0.160
170.00	-4.11	-10.94	0.00	-101.21	0.00	101.21	1349.97	674.99	1306.08	645.02	139.27	-8.311	0.000	0.160
174.00	-3.19	-8.32	0.00	-36.67	0.00	36.67	1121.46	560.73	870.39	429.85	146.24	-8.379	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	147.99	-8.392	0.000	0.075

Wind Loading - Shaft

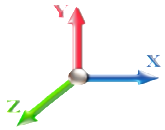
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1 RB2	1.00	0.70	17.366	19.10	393.68	1.000	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	386.63	1.000	0.000	5.00	23.085	23.09	705.6	0.0	1145.0
10.00		1.00	0.70	17.366	19.10	379.58	1.000	0.000	5.00	22.668	22.67	692.8	0.0	1124.1
15.00		1.00	0.70	17.366	19.10	372.53	1.000	0.000	5.00	22.251	22.25	680.1	0.0	1103.3
20.00		1.00	0.70	17.366	19.10	365.48	1.000	0.000	5.00	21.834	21.83	667.3	0.0	1082.4
22.00	RT2	1.00	0.70	17.366	19.10	362.66	1.000	0.000	2.00	8.617	8.62	263.4	0.0	427.1
25.00		1.00	0.70	17.366	19.10	358.43	1.000	0.000	3.00	12.800	12.80	391.2	0.0	634.4
30.00		1.00	0.70	17.381	19.12	351.53	1.000	0.000	5.00	21.000	21.00	642.4	0.0	1040.7
35.00	RB3 RB4	1.00	0.73	18.163	19.98	352.15	1.000	0.000	5.00	20.583	20.58	658.0	0.0	1019.8
36.00	Bot - Section 2 RT1	1.00	0.74	18.310	20.14	352.12	1.000	0.000	1.00	4.066	4.07	131.0	0.0	201.5
38.00	RB5	1.00	0.75	18.595	20.45	351.93	1.000	0.000	2.00	8.212	8.21	268.8	0.0	749.7
39.00	RT3	1.00	0.76	18.734	20.61	351.78	1.000	0.000	1.00	4.081	4.08	134.6	0.0	372.5
40.00		1.00	0.76	18.870	20.76	351.58	1.000	0.000	1.00	4.064	4.06	135.0	0.0	371.0
42.00	Top - Section 1	1.00	0.77	19.135	21.05	351.08	1.000	0.000	2.00	8.079	8.08	272.1	0.0	737.3
45.00		1.00	0.79	19.516	21.47	355.87	1.000	0.000	3.00	11.993	11.99	411.9	0.0	509.9
49.00	RT4	1.00	0.81	19.996	22.00	354.18	1.000	0.000	4.00	15.757	15.76	554.6	0.0	669.9
50.00		1.00	0.81	20.112	22.12	353.68	1.000	0.000	1.00	3.898	3.90	138.0	0.0	165.7
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	RT5 RB6	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	RT6 RB7	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	RT7	1.00	1.00	24.793	27.27	308.26	1.000	0.000	4.00	12.346	12.35	538.7	0.0	437.1
105.00		1.00	1.00	24.861	27.35	307.00	1.000	0.000	1.00	3.045	3.04	133.2	0.0	107.8
110.00		1.00	1.02	25.194	27.71	300.55	1.000	0.000	5.00	14.973	14.97	663.9	0.0	530.0
115.00	Bot - Section 5	1.00	1.03	25.516	28.07	293.92	1.000	0.000	5.00	14.556	14.56	653.7	0.0	515.1
120.00	Top - Section 4	1.00	1.04	25.828	28.41	287.12	1.000	0.000	5.00	14.409	14.41	655.0	0.0	1010.1
124.00	Appurtenance(s)	1.00	1.05	26.071	28.68	287.14	1.000	0.000	4.00	11.227	11.23	515.1	0.0	397.2
125.00	Top - Section 5	1.00	1.05	26.131	28.74	285.74	1.000	0.000	1.00	2.765	2.76	127.2	0.0	97.8
130.00		1.00	1.07	26.425	29.07	278.65	1.000	0.000	5.00	13.575	13.57	631.3	0.0	384.8
134.00	Appurtenance(s)	1.00	1.07	26.655	29.32	272.87	1.000	0.000	4.00	10.559	10.56	495.4	0.0	299.3
135.00		1.00	1.08	26.712	29.38	271.41	1.000	0.000	1.00	2.598	2.60	122.1	0.0	73.6
137.50	Appurtenance(s)	1.00	1.08	26.852	29.54	267.74	1.000	0.000	2.50	6.422	6.42	303.5	0.0	182.0
140.00		1.00	1.09	26.991	29.69	264.04	1.000	0.000	2.50	6.318	6.32	300.1	0.0	179.0
145.00		1.00	1.10	27.263	29.99	256.53	1.000	0.000	5.00	12.323	12.32	591.3	0.0	349.1
147.00	Appurtenance(s)	1.00	1.10	27.370	30.11	253.50	1.000	0.000	2.00	4.813	4.81	231.8	0.0	136.3
150.00	Bot - Section 7	1.00	1.11	27.528	30.28	248.90	1.000	0.000	3.00	7.094	7.09	343.7	0.0	200.9
155.00	Top - Section 6	1.00	1.12	27.787	30.57	241.16	1.000	0.000	5.00	11.705	11.70	572.4	0.0	656.6

Wind Loading - Shaft

Structure: CT00680-S-SBA | **Code:** EIA/TIA-222-G | 12/11/2018

Site Name: Putnam | **Exposure:** B

Height: 175.00 (ft) | **Crest Height:** 0.00

Base Elev: 0.000 (ft) | **Site Class:** D - Stiff Soil

Gh: 1.1 | **Topography:** 1 | **Struct Class:** II | Page: 19

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**			**22,689.0**		**25,975.3**

Discrete Appurtenance Forces

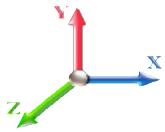
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	PRK-SFS-L	1	28.768	31.644	0.75	0.75	5.78	207.00	0.000	0.000	292.39	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	29.518	32.470	0.67	1.00	23.36	129.60	0.000	16.500	1213.39	0.00	20020.89
3	175.00	E15S09P94	6	29.385	32.323	0.60	1.00	2.38	78.84	0.000	13.500	122.88	0.00	1658.89
4	175.00	T-Arms	3	28.768	31.644	0.75	1.00	24.75	653.40	0.000	0.000	1253.12	0.00	0.00
5	175.00	APXVTM14-C-I20	3	28.861	31.747	0.77	1.00	14.65	151.74	0.000	2.000	743.92	0.00	1487.85
6	175.00	NNVV-65B-R4	3	28.861	31.747	0.74	1.00	27.24	208.98	0.000	2.000	1383.64	0.00	2767.29
7	175.00	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
8	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
9	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
10	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
11	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
12	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
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	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
15	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
16	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
17	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
18	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
19	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
20	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
21	147.00	BXA-80080-4CF	3	27.370	30.107	0.70	0.80	7.50	32.40	0.000	0.000	361.36	0.00	0.00
22	147.00	BXA-70063-6CF-EDIN-X	3	27.370	30.107	0.62	0.80	13.97	45.90	0.000	0.000	673.00	0.00	0.00
23	137.50	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
24	134.00	RRUS 4478 B5	3	26.852	29.537	0.50	0.75	2.77	161.73	0.000	3.500	131.09	0.00	458.81
25	134.00	TPA-65R-LCUUUU-H8	3	26.852	29.537	0.62	0.75	24.84	202.50	0.000	3.500	1173.83	0.00	4108.40
26	134.00	RRUS-32	6	26.852	29.537	0.50	0.75	11.67	415.80	0.000	3.500	551.43	0.00	1930.01
27	134.00	DBC0061F1V51-2	6	26.852	29.537	0.52	0.75	1.86	54.00	0.000	3.500	88.05	0.00	308.16
28	134.00	DC6-48-60-18-8C	1	26.852	29.537	1.00	1.00	3.17	10.62	0.000	3.500	149.81	0.00	524.35
29	134.00	800 10966	3	26.852	29.537	0.54	0.75	28.12	339.39	0.000	3.500	1329.10	0.00	4651.85
30	134.00	LGP21901	6	26.852	29.537	0.38	0.75	0.52	29.70	0.000	3.500	24.46	0.00	85.60
31	134.00	RRUS 32 B66a	3	26.852	29.537	0.50	0.75	4.13	143.10	0.000	3.500	195.21	0.00	683.23
32	134.00	7770.00	3	26.852	29.537	0.55	0.75	9.03	94.50	0.000	3.500	426.93	0.00	1494.27
33	134.00	AM-X-CD-17-65-00T-RET	3	26.852	29.537	0.56	0.75	19.09	83.16	0.000	3.500	901.98	0.00	3156.95
34	134.00	LGP21401	6	26.852	29.537	0.38	0.75	2.90	76.14	0.000	3.500	137.17	0.00	480.10
35	134.00	RRUS 11	3	26.852	29.537	0.50	0.75	3.80	136.89	0.000	3.500	179.54	0.00	628.37
36	134.00	DC6-48-60-18-8F	1	26.852	29.537	1.00	1.00	2.92	13.05	0.000	3.500	138.00	0.00	483.00
37	124.00	T-Arms	3	26.071	28.678	0.56	0.75	13.82	653.40	0.000	0.000	634.16	0.00	0.00
38	124.00	742 351	6	26.071	28.678	0.49	0.80	15.75	160.92	0.000	0.000	722.81	0.00	0.00
39	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
40	54.00	GPS	1	20.559	22.615	1.00	1.00	1.00	9.00	0.000	0.000	36.18	0.00	0.00
							Totals:		**9,548.85**			**22,779.32**		

Total Applied Force Summary

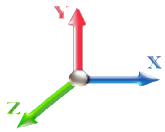
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		705.59	1418.40	0.00	0.00
10.00		692.84	1397.54	0.00	0.00
15.00		680.09	1376.68	0.00	0.00
20.00		667.34	1355.82	0.00	0.00
22.00		263.37	536.49	0.00	0.00
25.00		391.23	798.48	0.00	0.00
30.00		642.39	1314.11	0.00	0.00
35.00		657.98	1293.25	0.00	0.00
36.00		131.05	256.15	0.00	0.00
38.00		268.77	859.03	0.00	0.00
39.00		134.56	427.19	0.00	0.00
40.00		134.98	425.64	0.00	0.00
42.00		272.07	846.63	0.00	0.00
45.00		411.93	673.95	0.00	0.00
49.00		554.55	888.59	0.00	0.00
50.00		137.96	220.36	0.00	0.00
54.00	(2) attachments	689.44	919.28	0.00	0.00
55.00		138.74	216.64	0.00	0.00
60.00		701.82	1072.47	0.00	0.00
65.00		702.14	1054.59	0.00	0.00
70.00		700.92	1036.71	0.00	0.00
71.25		176.73	448.07	0.00	0.00
75.00		531.81	1330.79	0.00	0.00
76.00		140.77	351.48	0.00	0.00
80.00		564.65	810.43	0.00	0.00
85.00		702.68	877.20	0.00	0.00
86.00		138.94	173.65	0.00	0.00
90.00		556.03	688.65	0.00	0.00
95.00		689.90	847.40	0.00	0.00
100.00		682.09	832.50	0.00	0.00
104.00		538.71	655.28	0.00	0.00
105.00		133.22	162.33	0.00	0.00
110.00		663.93	794.70	0.00	0.00
115.00		653.68	779.80	0.00	0.00
120.00		654.98	1274.76	0.00	0.00
124.00	(9) attachments	1872.10	1423.22	0.00	0.00
125.00		127.16	139.45	0.00	0.00
130.00		631.33	593.06	0.00	0.00
134.00	(47) attachments	5921.97	2226.45	0.00	18993.09
135.00		122.14	115.28	0.00	0.00
137.50	(1) attachments	1815.83	1726.10	0.00	0.00
140.00		300.13	246.36	0.00	0.00
145.00		591.30	483.78	0.00	0.00
147.00	(32) attachments	4816.05	1764.15	0.00	-2125.29
150.00		343.68	244.86	0.00	0.00
155.00		572.43	729.95	0.00	0.00

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

Tower Engineering Solutions

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:	**45,468.36**	**43,492.85**	**0.00**	**66,013.77**

Linear Appurtenance Segment Forces (Factored)

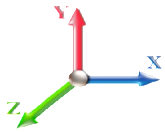
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.059	0.000	17.366	0.00	8.01
10.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.060	0.000	17.366	0.00	8.01
15.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.061	0.000	17.366	0.00	8.01
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	17.366	0.00	8.01
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	17.366	0.00	3.20
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	17.366	0.00	4.81
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	17.381	0.00	8.01
35.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.066	0.000	18.163	0.00	8.01
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.310	0.00	1.60
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	18.595	0.00	3.20
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	18.734	0.00	1.60
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	18.870	0.00	1.60
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	19.135	0.00	3.20
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	19.516	0.00	4.81
49.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.069	0.000	19.996	0.00	6.41
50.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.069	0.000	20.112	0.00	1.60
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

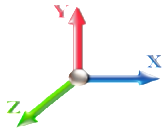
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-43.42	-45.54	0.00	-5675.5	0.00	5675.58	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.749
5.00	-41.87	-44.96	0.00	-5447.9	0.00	5447.90	4251.62	2125.81	9227.39	4557.06	0.09	-0.176	0.000	0.734
10.00	-40.33	-44.38	0.00	-5223.1	0.00	5223.12	4207.27	2103.63	8961.88	4425.94	0.37	-0.352	0.000	0.719
15.00	-38.83	-43.81	0.00	-5001.2	0.00	5001.21	4161.65	2080.83	8697.29	4295.27	0.84	-0.530	0.000	0.704
20.00	-37.38	-43.21	0.00	-4782.1	0.00	4782.15	4114.76	2057.38	8433.78	4165.13	1.49	-0.708	0.000	0.688
22.00	-36.78	-43.01	0.00	-4695.7	0.00	4695.72	4095.66	2047.83	8328.71	4113.24	1.80	-0.781	0.000	0.814
25.00	-35.85	-42.71	0.00	-4566.7	0.00	4566.70	4066.61	2033.31	8171.50	4035.59	2.33	-0.911	0.000	0.804
30.00	-34.39	-42.18	0.00	-4353.1	0.00	4353.14	4017.20	2008.60	7910.59	3906.74	3.40	-1.125	0.000	0.786
35.00	-33.03	-41.56	0.00	-4142.2	0.00	4142.26	3966.51	1983.26	7651.22	3778.65	4.70	-1.341	0.000	0.550
36.00	-32.73	-41.46	0.00	-4100.7	0.00	4100.70	3956.22	1978.11	7599.55	3753.13	4.98	-1.373	0.000	0.700
38.00	-31.84	-41.20	0.00	-4017.7	0.00	4017.79	3935.49	1967.75	7496.40	3702.19	5.57	-1.453	0.000	0.532
39.00	-31.39	-41.07	0.00	-3976.5	0.00	3976.59	3925.05	1962.53	7444.93	3676.77	5.88	-1.484	0.000	0.619
40.00	-30.93	-40.95	0.00	-3935.5	0.00	3935.52	3914.56	1957.28	7393.54	3651.39	6.20	-1.521	0.000	0.616
42.00	-30.03	-40.71	0.00	-3853.6	0.00	3853.61	3554.53	1777.27	6785.59	3351.15	6.85	-1.593	0.000	0.591
45.00	-29.27	-40.34	0.00	-3731.4	0.00	3731.49	3532.39	1766.19	6658.05	3288.16	7.88	-1.702	0.000	0.613
49.00	-28.33	-39.81	0.00	-3570.1	0.00	3570.12	3501.98	1750.99	6488.03	3204.19	9.38	-1.853	0.000	0.732
50.00	-28.04	-39.72	0.00	-3530.3	0.00	3530.32	3494.22	1747.11	6445.54	3183.21	9.77	-1.900	0.000	0.727
54.00	-27.06	-39.06	0.00	-3371.4	0.00	3371.43	3462.54	1731.27	6275.67	3099.32	11.44	-2.086	0.000	0.708
55.00	-26.76	-38.97	0.00	-3332.3	0.00	3332.38	3454.46	1727.23	6233.23	3078.36	11.88	-2.133	0.000	0.703
60.00	-25.56	-38.33	0.00	-3137.5	0.00	3137.51	3413.12	1706.56	6021.34	2973.71	14.24	-2.363	0.000	0.679
65.00	-24.39	-37.68	0.00	-2945.8	0.00	2945.84	3370.20	1685.10	5810.04	2869.36	16.84	-2.592	0.000	0.655
70.00	-23.29	-36.99	0.00	-2757.4	0.00	2757.42	3325.69	1662.84	5599.53	2765.40	19.67	-2.820	0.000	0.630
71.25	-22.78	-36.84	0.00	-2711.1	0.00	2711.18	3314.31	1657.16	5547.04	2739.48	20.42	-2.878	0.000	0.616
75.00	-21.41	-36.28	0.00	-2573.0	0.00	2573.04	3279.60	1639.80	5389.99	2661.91	22.75	-3.047	0.000	0.596
76.00	-21.00	-36.16	0.00	-2536.7	0.00	2536.76	3306.32	1653.16	5510.48	2721.42	23.39	-3.092	0.000	0.607
80.00	-20.10	-35.62	0.00	-2392.1	0.00	2392.12	3269.04	1634.52	5343.14	2638.78	26.06	-3.270	0.000	0.566
80.00	-20.10	-35.62	0.00	-2392.1	0.00	2392.12	2504.08	1252.04	4105.75	2027.68	26.06	-3.270	0.000	0.617
85.00	-19.19	-34.91	0.00	-2214.0	0.00	2214.01	2474.85	1237.43	3958.27	1954.84	29.59	-3.481	0.000	0.650
86.00	-18.94	-34.81	0.00	-2179.1	0.00	2179.10	2468.82	1234.41	3928.75	1940.26	30.33	-3.529	0.000	0.803
90.00	-18.13	-34.29	0.00	-2039.8	0.00	2039.87	2444.04	1222.02	3810.67	1881.94	33.38	-3.760	0.000	0.769
95.00	-17.17	-33.63	0.00	-1868.4	0.00	1868.42	2411.64	1205.82	3663.14	1809.09	37.47	-4.043	0.000	0.726
100.00	-16.25	-32.96	0.00	-1700.2	0.00	1700.27	2377.66	1188.83	3515.87	1736.36	41.85	-4.319	0.000	0.682
104.00	-15.56	-32.41	0.00	-1568.4	0.00	1568.44	2349.34	1174.67	3398.38	1678.33	45.56	-4.536	0.000	0.646
104.00	-15.56	-32.41	0.00	-1568.4	0.00	1568.44	2349.34	1174.67	3398.38	1678.33	45.56	-4.536	0.000	0.646
105.00	-15.28	-32.32	0.00	-1536.0	0.00	1536.04	2342.10	1171.05	3369.07	1663.86	46.51	-4.590	0.000	0.930
110.00	-14.34	-31.69	0.00	-1374.4	0.00	1374.43	2304.95	1152.47	3222.91	1591.67	51.52	-4.970	0.000	0.870
115.00	-13.43	-31.05	0.00	-1216.0	0.00	1216.00	2266.22	1133.11	3077.59	1519.90	56.92	-5.338	0.000	0.807
120.00	-12.06	-30.34	0.00	-1060.7	0.00	1060.75	2252.14	1126.07	3026.44	1494.64	62.69	-5.690	0.000	0.716
124.00	-10.75	-28.37	0.00	-939.38	0.00	939.38	2219.57	1109.78	2911.24	1437.75	67.57	-5.961	0.000	0.659
125.00	-10.53	-28.26	0.00	-911.01	0.00	911.01	2211.27	1105.63	2882.56	1423.59	68.82	-6.025	0.000	0.645
125.00	-10.53	-28.26	0.00	-911.01	0.00	911.01	1600.93	800.47	2095.19	1034.73	68.82	-6.025	0.000	0.888
130.00	-9.88	-27.62	0.00	-769.72	0.00	769.72	1577.27	788.64	2000.77	988.11	75.28	-6.319	0.000	0.786
134.00	-8.27	-21.51	0.00	-640.26	0.00	640.26	1557.20	778.60	1925.20	950.79	80.68	-6.591	0.000	0.679
135.00	-8.13	-21.39	0.00	-618.75	0.00	618.75	1552.03	776.01	1906.32	941.46	82.07	-6.656	0.000	0.663
137.50	-6.57	-19.40	0.00	-565.29	0.00	565.29	1538.81	769.41	1859.13	918.16	85.59	-6.811	0.000	0.621
140.00	-6.29	-19.09	0.00	-516.79	0.00	516.79	1525.20	762.60	1812.01	894.88	89.18	-6.960	0.000	0.582
145.00	-5.83	-18.47	0.00	-421.32	0.00	421.32	1496.79	748.40	1718.05	848.48	96.61	-7.232	0.000	0.501
147.00	-4.66	-13.48	0.00	-384.39	0.00	384.39	1484.98	742.49	1680.60	829.98	99.65	-7.336	0.000	0.467

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 25

Tower Engineering Solutions

150.00	-4.42	-13.12	0.00	-343.96	0.00	343.96	1466.80	733.40	1624.61	802.34	104.29	-7.482	0.000	0.432
155.00	-3.73	-12.47	0.00	-278.37	0.00	278.37	1451.75	725.87	1579.74	780.18	112.23	-7.704	0.000	0.360
160.00	-3.38	-11.87	0.00	-216.03	0.00	216.03	1419.41	709.70	1487.45	734.60	120.38	-7.901	0.000	0.297
165.00	-3.05	-11.29	0.00	-156.66	0.00	156.66	1385.48	692.74	1396.17	689.51	128.72	-8.058	0.000	0.230
170.00	-2.74	-10.72	0.00	-100.20	0.00	100.20	1349.97	674.99	1306.08	645.02	137.20	-8.179	0.000	0.158
170.00	-2.74	-10.72	0.00	-100.20	0.00	100.20	1349.97	674.99	1306.08	645.02	137.20	-8.179	0.000	0.158
174.00	-2.13	-8.16	0.00	-36.50	0.00	36.50	1121.46	560.73	870.39	429.85	144.06	-8.246	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	145.78	-8.260	0.000	0.075

Wind Loading - Shaft

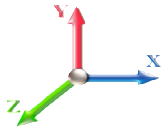
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

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
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	23.406	28.09	131.5	471.2	1942.2
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	23.023	27.63	129.3	476.4	1919.6
22.00	RT2	1.00	0.70	4.256	4.68	0.00	1.200	1.440	2.00	9.097	10.92	51.1	191.0	760.5
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	3.00	13.529	16.24	76.0	287.0	1132.9
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	22.238	26.69	125.0	478.0	1865.6
35.00	RB3 RB4	1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	21.840	26.21	128.3	476.2	1836.0
36.00	Bot - Section 2 RT1	1.00	0.74	4.487	4.94	0.00	1.200	1.513	1.00	4.319	5.18	25.6	95.1	363.8
38.00	RB5	1.00	0.75	4.557	5.01	0.00	1.200	1.521	2.00	8.719	10.46	52.5	192.8	1192.3
39.00	RT3	1.00	0.76	4.591	5.05	0.00	1.200	1.525	1.00	4.335	5.20	26.3	96.3	592.9
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	1.00	4.319	5.18	26.4	96.1	590.7
42.00	Top - Section 1	1.00	0.77	4.689	5.16	0.00	1.200	1.537	2.00	8.591	10.31	53.2	191.7	1174.7
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	3.00	12.767	15.32	80.6	286.1	966.0
49.00	RT4	1.00	0.81	4.901	5.39	0.00	1.200	1.560	4.00	16.798	20.16	108.7	378.6	1271.7
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	1.00	4.158	4.99	27.1	94.4	315.3
54.00	Appurtenance(s)	1.00	0.83	5.039	5.54	0.00	1.200	1.576	4.00	16.474	19.77	109.6	374.5	1248.6
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	1.00	4.077	4.89	27.3	93.4	309.5
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	20.148	24.18	138.1	461.2	1527.6
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	19.741	23.69	138.4	455.0	1497.6
70.00	Bot - Section 3	1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	19.334	23.20	138.5	448.4	1467.1
71.25	RT5 RB6	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	RT6 RB7	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	RT7	1.00	1.00	6.076	6.68	0.00	1.200	1.682	4.00	13.467	16.16	108.0	322.9	905.8
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	1.00	3.325	3.99	26.7	80.4	224.1
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	5.00	16.383	19.66	133.5	393.3	1100.0
115.00	Bot - Section 5	1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	15.972	19.17	131.8	384.5	1071.3
120.00	Top - Section 4	1.00	1.04	6.330	6.96	0.00	1.200	1.707	5.00	15.831	19.00	132.3	382.4	1729.2
124.00	Appurtenance(s)	1.00	1.05	6.389	7.03	0.00	1.200	1.712	4.00	12.368	14.84	104.3	300.1	829.7
125.00	Top - Section 5	1.00	1.05	6.404	7.04	0.00	1.200	1.714	1.00	3.051	3.66	25.8	74.7	205.1
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	5.00	15.008	18.01	128.3	364.1	877.2
134.00	Appurtenance(s)	1.00	1.07	6.532	7.19	0.00	1.200	1.726	4.00	11.710	14.05	101.0	285.3	684.3
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	1.00	2.886	3.46	24.9	70.9	169.1
137.50	Appurtenance(s)	1.00	1.08	6.581	7.24	0.00	1.200	1.730	2.50	7.143	8.57	62.1	175.0	417.6
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	2.50	7.040	8.45	61.5	172.6	411.3
145.00		1.00	1.10	6.681	7.35	0.00	1.200	1.739	5.00	13.773	16.53	121.5	335.6	801.0
147.00	Appurtenance(s)	1.00	1.10	6.708	7.38	0.00	1.200	1.742	2.00	5.393	6.47	47.8	132.7	314.4
150.00	Bot - Section 7	1.00	1.11	6.746	7.42	0.00	1.200	1.745	3.00	7.966	9.56	70.9	195.5	463.3
155.00	Top - Section 6	1.00	1.12	6.810	7.49	0.00	1.200	1.751	5.00	13.164	15.80	118.3	321.7	1197.2

Wind Loading - Shaft

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

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**			**4,529.1**		**48,892.9**

Discrete Appurtenance Forces

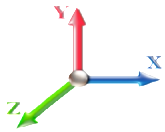
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

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)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	PRK-SFS-L	1	7.050	7.755	0.75	0.75	11.92	501.11	0.000	0.000	92.41	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	7.234	7.957	0.69	1.00	28.50	981.06	0.000	16.500	226.80	0.00	3742.19
3	175.00	E15S09P94	6	7.201	7.922	0.60	1.00	4.58	180.80	0.000	13.500	36.30	0.00	490.07
4	175.00	T-Arms	3	7.050	7.755	0.75	1.00	56.24	1321.60	0.000	0.000	436.18	0.00	0.00
5	175.00	APXVTM14-C-I20	3	7.073	7.780	0.77	1.00	17.26	692.57	0.000	2.000	134.29	0.00	268.58
6	175.00	NNVV-65B-R4	3	7.073	7.780	0.74	1.00	30.52	951.22	0.000	2.000	237.48	0.00	474.95
7	175.00	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
8	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
9	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
10	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
11	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
12	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
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	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
15	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
16	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
17	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
18	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
19	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
20	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
21	147.00	BXA-80080-4CF	3	6.708	7.378	0.70	0.80	11.37	239.55	0.000	0.000	83.92	0.00	0.00
22	147.00	BXA-70063-6CF-EDIN-X	3	6.708	7.378	0.62	0.80	19.16	386.57	0.000	0.000	141.38	0.00	0.00
23	137.50	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
24	134.00	RRUS 4478 B5	3	6.581	7.239	0.50	0.75	3.59	325.54	0.000	3.500	26.00	0.00	90.99
25	134.00	TPA-65R-LCUUUU-H8	3	6.581	7.239	0.62	0.75	27.88	1194.23	0.000	3.500	201.79	0.00	706.25
26	134.00	RRUS-32	6	6.581	7.239	0.50	0.75	12.35	1226.73	0.000	3.500	89.41	0.00	312.93
27	134.00	DBC0061F1V51-2	6	6.581	7.239	0.52	0.75	2.98	198.79	0.000	3.500	21.58	0.00	75.51
28	134.00	DC6-48-60-18-8C	1	6.581	7.239	1.00	1.00	3.86	47.14	0.000	3.500	27.97	0.00	97.89
29	134.00	800 10966	3	6.581	7.239	0.54	0.75	31.02	1511.65	0.000	3.500	224.53	0.00	785.85
30	134.00	LGP21901	6	6.581	7.239	0.38	0.75	1.34	72.03	0.000	3.500	9.67	0.00	33.85
31	134.00	RRUS 32 B66a	3	6.581	7.239	0.50	0.75	5.22	451.16	0.000	3.500	37.76	0.00	132.15
32	134.00	7770.00	3	6.581	7.239	0.56	0.75	11.06	525.95	0.000	3.500	80.04	0.00	280.15
33	134.00	AM-X-CD-17-65-00T-RET	3	6.581	7.239	0.58	0.75	26.86	346.51	0.000	3.500	194.42	0.00	680.47
34	134.00	LGP21401	6	6.581	7.239	0.38	0.75	4.76	207.25	0.000	3.500	34.47	0.00	120.64
35	134.00	RRUS 11	3	6.581	7.239	0.50	0.75	4.77	446.43	0.000	3.500	34.52	0.00	120.82
36	134.00	DC6-48-60-18-8F	1	6.581	7.239	1.00	1.00	4.12	61.82	0.000	3.500	29.83	0.00	104.42
37	124.00	T-Arms	3	6.389	7.028	0.56	0.75	30.81	1300.36	0.000	0.000	216.55	0.00	0.00
38	124.00	742 351	6	6.389	7.028	0.50	0.80	22.16	611.77	0.000	0.000	155.77	0.00	0.00
39	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
40	54.00	GPS	1	5.039	5.542	1.00	1.00	1.64	30.47	0.000	0.000	9.11	0.00	0.00
							Totals:		**26,690.86**			**5,296.98**		

Total Applied Force Summary

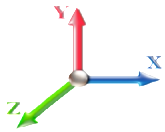
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

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	2355.63	0.00	0.00
10.00		133.58	2354.01	0.00	0.00
15.00		131.49	2338.60	0.00	0.00
20.00		129.34	2317.13	0.00	0.00
22.00		51.11	919.66	0.00	0.00
25.00		76.01	1371.96	0.00	0.00
30.00		125.04	2264.89	0.00	0.00
35.00		128.33	2235.96	0.00	0.00
36.00		25.58	443.78	0.00	0.00
38.00		52.45	1352.46	0.00	0.00
39.00		26.27	673.03	0.00	0.00
40.00		26.37	670.86	0.00	0.00
42.00		53.18	1335.04	0.00	0.00
45.00		80.60	1206.65	0.00	0.00
49.00		108.66	1592.95	0.00	0.00
50.00		27.05	395.68	0.00	0.00
54.00	(2) attachments	163.12	1698.12	0.00	0.00
55.00		27.26	389.77	0.00	0.00
60.00		138.09	1929.20	0.00	0.00
65.00		138.44	1899.53	0.00	0.00
70.00		138.49	1869.44	0.00	0.00
71.25		34.91	720.77	0.00	0.00
75.00		105.18	2140.72	0.00	0.00
76.00		27.87	566.06	0.00	0.00
80.00		111.92	1465.79	0.00	0.00
85.00		139.56	1643.89	0.00	0.00
86.00		27.63	326.10	0.00	0.00
90.00		110.71	1291.63	0.00	0.00
95.00		137.67	1588.91	0.00	0.00
100.00		136.45	1561.06	0.00	0.00
104.00		108.01	1229.31	0.00	0.00
105.00		26.74	305.01	0.00	0.00
110.00		133.52	1452.90	0.00	0.00
115.00		131.84	1424.21	0.00	0.00
120.00		132.27	2082.09	0.00	0.00
124.00	(9) attachments	476.63	3024.11	0.00	0.00
125.00		25.79	260.59	0.00	0.00
130.00		128.30	1154.82	0.00	0.00
134.00	(47) attachments	1112.95	7521.65	0.00	3541.92
135.00		24.94	224.64	0.00	0.00
137.50	(1) attachments	494.08	3958.10	0.00	0.00
140.00		61.47	501.07	0.00	0.00
145.00		121.47	980.61	0.00	0.00
147.00	(32) attachments	1070.44	5632.54	0.00	-403.73
150.00		70.94	521.98	0.00	0.00
155.00		118.33	1294.93	0.00	0.00

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

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:	**9,826.06**	**86,977.71**	**0.00**	**13,480.28**

Linear Appurtenance Segment Forces (Factored)

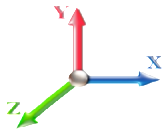
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

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
15.00	3" Chanel	Yes	5.00	0.000	3.25	2.51	0.00	0.061	0.000	4.256	0.00	42.51
20.00	3" Chanel	Yes	5.00	0.000	3.25	2.54	0.00	0.062	0.000	4.256	0.00	43.68
22.00	3" Chanel	Yes	2.00	0.000	3.25	1.02	0.00	0.063	0.000	4.256	0.00	17.63
25.00	3" Chanel	Yes	3.00	0.000	3.25	1.54	0.00	0.063	0.000	4.256	0.00	26.77
30.00	3" Chanel	Yes	5.00	0.000	3.25	2.59	0.00	0.064	0.000	4.260	0.00	45.42
35.00	3" Chanel	Yes	5.00	0.000	3.25	2.61	0.00	0.066	0.000	4.451	0.00	46.11
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.52	0.00	0.067	0.000	4.487	0.00	9.25
38.00	3" Chanel	Yes	2.00	0.000	3.25	1.05	0.00	0.067	0.000	4.557	0.00	18.60
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.067	0.000	4.591	0.00	9.32
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.068	0.000	4.625	0.00	9.35
42.00	3" Chanel	Yes	2.00	0.000	3.25	1.05	0.00	0.068	0.000	4.689	0.00	18.78
45.00	3" Chanel	Yes	3.00	0.000	3.25	1.59	0.00	0.068	0.000	4.783	0.00	28.37
49.00	3" Chanel	Yes	4.00	0.000	3.25	2.12	0.00	0.069	0.000	4.901	0.00	38.15
50.00	3" Chanel	Yes	1.00	0.000	3.25	0.53	0.00	0.069	0.000	4.929	0.00	9.56
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**	**993.2**

Calculated Forces

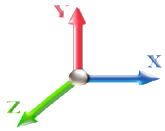
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

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	-86.97	-9.86	0.00	-1320.8	0.00	1320.81	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.185
5.00	-84.61	-9.78	0.00	-1271.5	0.00	1271.53	4251.62	2125.81	9227.39	4557.06	0.02	-0.041	0.000	0.182
10.00	-82.25	-9.71	0.00	-1222.6	0.00	1222.62	4207.27	2103.63	8961.88	4425.94	0.09	-0.082	0.000	0.178
15.00	-79.91	-9.63	0.00	-1174.1	0.00	1174.10	4161.65	2080.83	8697.29	4295.27	0.20	-0.124	0.000	0.175
20.00	-77.58	-9.53	0.00	-1125.9	0.00	1125.96	4114.76	2057.38	8433.78	4165.13	0.35	-0.166	0.000	0.171
22.00	-76.66	-9.51	0.00	-1106.8	0.00	1106.89	4095.66	2047.83	8328.71	4113.24	0.42	-0.183	0.000	0.204
25.00	-75.28	-9.48	0.00	-1078.3	0.00	1078.36	4066.61	2033.31	8171.50	4035.59	0.55	-0.213	0.000	0.202
30.00	-73.01	-9.41	0.00	-1030.9	0.00	1030.95	4017.20	2008.60	7910.59	3906.74	0.80	-0.264	0.000	0.198
35.00	-70.77	-9.31	0.00	-983.88	0.00	983.88	3966.51	1983.26	7651.22	3778.65	1.10	-0.315	0.000	0.139
36.00	-70.32	-9.30	0.00	-974.57	0.00	974.57	3956.22	1978.11	7599.55	3753.13	1.17	-0.323	0.000	0.177
38.00	-68.97	-9.25	0.00	-955.98	0.00	955.98	3935.49	1967.75	7496.40	3702.19	1.31	-0.342	0.000	0.135
39.00	-68.29	-9.23	0.00	-946.72	0.00	946.72	3925.05	1962.53	7444.93	3676.77	1.38	-0.350	0.000	0.157
40.00	-67.62	-9.22	0.00	-937.49	0.00	937.49	3914.56	1957.28	7393.54	3651.39	1.45	-0.358	0.000	0.156
42.00	-66.28	-9.18	0.00	-919.05	0.00	919.05	3554.53	1777.27	6785.59	3351.15	1.61	-0.376	0.000	0.149
45.00	-65.07	-9.13	0.00	-891.51	0.00	891.51	3532.39	1766.19	6658.05	3288.16	1.85	-0.401	0.000	0.155
49.00	-63.48	-9.03	0.00	-855.00	0.00	855.00	3501.98	1750.99	6488.03	3204.19	2.20	-0.438	0.000	0.186
50.00	-63.08	-9.03	0.00	-845.97	0.00	845.97	3494.22	1747.11	6445.54	3183.21	2.30	-0.449	0.000	0.185
54.00	-61.38	-8.89	0.00	-809.83	0.00	809.83	3462.54	1731.27	6275.67	3099.32	2.69	-0.493	0.000	0.181
55.00	-60.98	-8.89	0.00	-800.94	0.00	800.94	3454.46	1727.23	6233.23	3078.36	2.80	-0.505	0.000	0.179
60.00	-59.05	-8.79	0.00	-756.48	0.00	756.48	3413.12	1706.56	6021.34	2973.71	3.35	-0.560	0.000	0.174
65.00	-57.14	-8.69	0.00	-712.52	0.00	712.52	3370.20	1685.10	5810.04	2869.36	3.97	-0.615	0.000	0.168
70.00	-55.27	-8.56	0.00	-669.06	0.00	669.06	3325.69	1662.84	5599.53	2765.40	4.64	-0.671	0.000	0.162
71.25	-54.54	-8.55	0.00	-658.36	0.00	658.36	3314.31	1657.16	5547.04	2739.48	4.82	-0.685	0.000	0.159
75.00	-52.40	-8.44	0.00	-626.31	0.00	626.31	3279.60	1639.80	5389.99	2661.91	5.38	-0.726	0.000	0.154
76.00	-51.83	-8.43	0.00	-617.87	0.00	617.87	3306.32	1653.16	5510.48	2721.42	5.53	-0.737	0.000	0.157
80.00	-50.36	-8.34	0.00	-584.15	0.00	584.15	3269.04	1634.52	5343.14	2638.78	6.17	-0.780	0.000	0.147
80.00	-50.36	-8.34	0.00	-584.15	0.00	584.15	2504.08	1252.04	4105.75	2027.68	6.17	-0.780	0.000	0.160
85.00	-48.71	-8.20	0.00	-542.46	0.00	542.46	2474.85	1237.43	3958.27	1954.84	7.01	-0.832	0.000	0.170
86.00	-48.38	-8.20	0.00	-534.25	0.00	534.25	2468.82	1234.41	3928.75	1940.26	7.19	-0.844	0.000	0.210
90.00	-47.08	-8.12	0.00	-501.45	0.00	501.45	2444.04	1222.02	3810.67	1881.94	7.92	-0.900	0.000	0.202
95.00	-45.49	-8.01	0.00	-460.84	0.00	460.84	2411.64	1205.82	3663.14	1809.09	8.90	-0.970	0.000	0.192
100.00	-43.92	-7.90	0.00	-420.78	0.00	420.78	2377.66	1188.83	3515.87	1736.36	9.95	-1.038	0.000	0.181
104.00	-42.69	-7.79	0.00	-389.19	0.00	389.19	2349.34	1174.67	3398.38	1678.33	10.84	-1.092	0.000	0.172
104.00	-42.69	-7.79	0.00	-389.19	0.00	389.19	2349.34	1174.67	3398.38	1678.33	10.84	-1.092	0.000	0.172
105.00	-42.38	-7.80	0.00	-381.40	0.00	381.40	2342.10	1171.05	3369.07	1663.86	11.07	-1.105	0.000	0.247
110.00	-40.91	-7.70	0.00	-342.42	0.00	342.42	2304.95	1152.47	3222.91	1591.67	12.28	-1.200	0.000	0.233
115.00	-39.48	-7.60	0.00	-303.91	0.00	303.91	2266.22	1133.11	3077.59	1519.90	13.59	-1.292	0.000	0.217
120.00	-37.39	-7.47	0.00	-265.90	0.00	265.90	2252.14	1126.07	3026.44	1494.64	14.99	-1.380	0.000	0.195
124.00	-34.38	-6.94	0.00	-236.02	0.00	236.02	2219.57	1109.78	2911.24	1437.75	16.17	-1.448	0.000	0.180
125.00	-34.11	-6.94	0.00	-229.07	0.00	229.07	2211.27	1105.63	2882.56	1423.59	16.48	-1.464	0.000	0.176
125.00	-34.11	-6.94	0.00	-229.07	0.00	229.07	1600.93	800.47	2095.19	1034.73	16.48	-1.464	0.000	0.243
130.00	-32.95	-6.82	0.00	-194.38	0.00	194.38	1577.27	788.64	2000.77	988.11	18.05	-1.538	0.000	0.218
134.00	-25.46	-5.52	0.00	-163.54	0.00	163.54	1557.20	778.60	1925.20	950.79	19.37	-1.607	0.000	0.188
135.00	-25.23	-5.50	0.00	-158.02	0.00	158.02	1552.03	776.01	1906.32	941.46	19.71	-1.623	0.000	0.184
137.50	-21.29	-4.91	0.00	-144.27	0.00	144.27	1538.81	769.41	1859.13	918.16	20.57	-1.663	0.000	0.171
140.00	-20.78	-4.85	0.00	-131.99	0.00	131.99	1525.20	762.60	1812.01	894.88	21.45	-1.701	0.000	0.161
145.00	-19.80	-4.72	0.00	-107.72	0.00	107.72	1496.79	748.40	1718.05	848.48	23.27	-1.770	0.000	0.140
147.00	-14.20	-3.48	0.00	-98.28	0.00	98.28	1484.98	742.49	1680.60	829.98	24.02	-1.797	0.000	0.128

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 33

Tower Engineering Solutions

150.00	-13.68	-3.41	0.00	-87.84	0.00	87.84	1466.80	733.40	1624.61	802.34	25.16	-1.834	0.000	0.119
155.00	-12.39	-3.26	0.00	-70.81	0.00	70.81	1451.75	725.87	1579.74	780.18	27.11	-1.891	0.000	0.099
160.00	-11.55	-3.12	0.00	-54.53	0.00	54.53	1419.41	709.70	1487.45	734.60	29.12	-1.941	0.000	0.082
165.00	-10.75	-2.99	0.00	-38.92	0.00	38.92	1385.48	692.74	1396.17	689.51	31.17	-1.980	0.000	0.064
170.00	-9.97	-2.85	0.00	-23.98	0.00	23.98	1349.97	674.99	1306.08	645.02	33.26	-2.010	0.000	0.045
170.00	-9.97	-2.85	0.00	-23.98	0.00	23.98	1349.97	674.99	1306.08	645.02	33.26	-2.010	0.000	0.045
174.00	-7.96	-2.22	0.00	-7.70	0.00	7.70	1121.46	560.73	870.39	429.85	34.95	-2.025	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	35.38	-2.028	0.000	0.014

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	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**	0.27		**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	22.98	
10.00		1249.0	0.01	0.05	0.03	32.85	
15.00		1225.8	0.01	0.06	0.03	37.50	
20.00		1202.6	0.02	0.07	0.04	39.59	
22.00	RT2	474.59	0.03	0.07	0.04	15.92	
25.00		704.93	0.04	0.07	0.04	24.15	
30.00		1156.3	0.06	0.07	0.04	40.65	
35.00	RB3 RB4	1133.1	0.08	0.07	0.04	40.68	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	8.07	
38.00	RB5	832.96	0.09	0.07	0.04	30.28	
39.00	RT3	413.90	0.09	0.07	0.04	15.11	
40.00		412.18	0.10	0.07	0.04	15.11	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	30.28	
45.00		566.56	0.12	0.07	0.03	21.20	
49.00	RT4	744.29	0.15	0.07	0.03	28.28	
50.00		184.09	0.15	0.07	0.03	7.02	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	29.95	
55.00		180.11	0.19	0.06	0.02	6.94	
60.00		888.65	0.22	0.06	0.02	34.04	
65.00		868.79	0.26	0.05	0.02	32.12	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	28.83	
71.25	RT5 RB6	422.11	0.31	0.04	0.01	13.88	
75.00		1251.4	0.35	0.03	0.01	35.82	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.98	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.46	
85.00		671.69	0.45	0.00	0.01	6.35	
86.00	RT6 RB7	132.35	0.46	0.00	0.01	0.92	
90.00		522.78	0.50	-0.02	0.01	-1.83	
95.00		638.58	0.56	-0.04	0.01	-10.64	
100.00		622.02	0.62	-0.06	0.02	-17.47	
104.00	RT7	485.70	0.67	-0.08	0.02	-17.00	
105.00		119.77	0.68	-0.08	0.03	-4.35	
110.00		588.92	0.75	-0.10	0.04	-24.06	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-23.73	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-43.00	
124.00	Appurtenance(s)	1346.0	0.95	-0.12	0.11	-44.69	
125.00	Top - Section 5	108.67	0.96	-0.12	0.11	-3.43	
130.00		427.58	1.04	-0.10	0.15	-9.12	
134.00	Appurtenance(s)	2288.7	1.11	-0.07	0.19	-24.45	
135.00		81.81	1.12	-0.05	0.20	-0.63	
137.50	Appurtenance(s)	1802.2	1.17	-0.02	0.23	0.79	
140.00		198.89	1.21	0.01	0.26	1.87	
145.00		387.85	1.30	0.12	0.33	11.62	
147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	74.38	
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.05	

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 35

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155.00	Top - Section 6	729.57	1.48	0.46	0.52	59.54		
160.00		354.97	1.58	0.72	0.64	40.07		
165.00		341.72	1.68	1.05	0.78	50.54		
170.00	Top - Section 7	328.48	1.78	1.46	0.95	61.33		
174.00	Appurtenance(s)	1009.8	1.87	1.87	1.10	222.75		
175.00	Appurtenance(s)	3622.5	1.89	1.98	1.14	831.10		
		Totals: **39,471.3**				**1,762.6**	**Total Wind:**	**45,468.4**

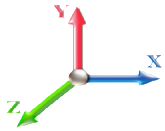
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 36	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.27	**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	-57.99	-1.99	0.00	-272.03	0.00	272.03	4294.71	2147.35	9493.67	4688.57		0.00	0.00	0.044
5.00	-56.10	-1.98	0.00	-262.08	0.00	262.08	4251.62	2125.81	9227.39	4557.06		0.00	-0.01	0.043
10.00	-54.24	-1.95	0.00	-252.20	0.00	252.20	4207.27	2103.63	8961.88	4425.94		0.02	-0.02	0.042
15.00	-52.40	-1.92	0.00	-242.45	0.00	242.45	4161.65	2080.83	8697.29	4295.27		0.04	-0.03	0.041
20.00	-50.59	-1.88	0.00	-232.85	0.00	232.85	4114.76	2057.38	8433.78	4165.13		0.07	-0.03	0.040
22.00	-49.88	-1.87	0.00	-229.08	0.00	229.08	4095.66	2047.83	8328.71	4113.24		0.09	-0.04	0.048
25.00	-48.81	-1.86	0.00	-223.46	0.00	223.46	4066.61	2033.31	8171.50	4035.59		0.11	-0.04	0.048
30.00	-47.06	-1.82	0.00	-214.19	0.00	214.19	4017.20	2008.60	7910.59	3906.74		0.16	-0.05	0.047
35.00	-45.33	-1.78	0.00	-205.08	0.00	205.08	3966.51	1983.26	7651.22	3778.65		0.23	-0.07	0.033
36.00	-44.99	-1.78	0.00	-203.30	0.00	203.30	3956.22	1978.11	7599.55	3753.13		0.24	-0.07	0.042
38.00	-43.85	-1.75	0.00	-199.74	0.00	199.74	3935.49	1967.75	7496.40	3702.19		0.27	-0.07	0.032
39.00	-43.28	-1.73	0.00	-197.99	0.00	197.99	3925.05	1962.53	7444.93	3676.77		0.28	-0.07	0.037
40.00	-42.71	-1.72	0.00	-196.26	0.00	196.26	3914.56	1957.28	7393.54	3651.39		0.30	-0.07	0.037
42.00	-41.58	-1.69	0.00	-192.82	0.00	192.82	3554.53	1777.27	6785.59	3351.15		0.33	-0.08	0.035
45.00	-40.68	-1.67	0.00	-187.75	0.00	187.75	3532.39	1766.19	6658.05	3288.16		0.38	-0.08	0.037
49.00	-39.50	-1.65	0.00	-181.05	0.00	181.05	3501.98	1750.99	6488.03	3204.19		0.46	-0.09	0.044
50.00	-39.20	-1.64	0.00	-179.41	0.00	179.41	3494.22	1747.11	6445.54	3183.21		0.48	-0.09	0.044
54.00	-37.98	-1.62	0.00	-172.83	0.00	172.83	3462.54	1731.27	6275.67	3099.32		0.56	-0.10	0.043
55.00	-37.69	-1.61	0.00	-171.22	0.00	171.22	3454.46	1727.23	6233.23	3078.36		0.58	-0.11	0.043
60.00	-36.26	-1.58	0.00	-163.15	0.00	163.15	3413.12	1706.56	6021.34	2973.71		0.70	-0.12	0.042
65.00	-34.85	-1.56	0.00	-155.24	0.00	155.24	3370.20	1685.10	5810.04	2869.36		0.82	-0.13	0.041
70.00	-33.47	-1.53	0.00	-147.46	0.00	147.46	3325.69	1662.84	5599.53	2765.40		0.97	-0.14	0.040
71.25	-32.87	-1.52	0.00	-145.55	0.00	145.55	3314.31	1657.16	5547.04	2739.48		1.00	-0.14	0.039
75.00	-31.10	-1.48	0.00	-139.87	0.00	139.87	3279.60	1639.80	5389.99	2661.91		1.12	-0.15	0.038
76.00	-30.63	-1.47	0.00	-138.39	0.00	138.39	3306.32	1653.16	5510.48	2721.42		1.15	-0.16	0.039
80.00	-29.55	-1.46	0.00	-132.50	0.00	132.50	3269.04	1634.52	5343.14	2638.78		1.29	-0.17	0.037
80.00	-29.55	-1.46	0.00	-132.50	0.00	132.50	2504.08	1252.04	4105.75	2027.68		1.29	-0.17	0.040
85.00	-28.38	-1.45	0.00	-125.20	0.00	125.20	2474.85	1237.43	3958.27	1954.84		1.47	-0.18	0.043
86.00	-28.15	-1.46	0.00	-123.74	0.00	123.74	2468.82	1234.41	3928.75	1940.26		1.51	-0.18	0.054
90.00	-27.23	-1.46	0.00	-117.91	0.00	117.91	2444.04	1222.02	3810.67	1881.94		1.66	-0.19	0.052
95.00	-26.10	-1.46	0.00	-110.61	0.00	110.61	2411.64	1205.82	3663.14	1809.09		1.87	-0.21	0.051
100.00	-24.99	-1.47	0.00	-103.29	0.00	103.29	2377.66	1188.83	3515.87	1736.36		2.10	-0.23	0.049
104.00	-24.11	-1.47	0.00	-97.42	0.00	97.42	2349.34	1174.67	3398.38	1678.33		2.30	-0.24	0.047
104.00	-24.11	-1.47	0.00	-97.42	0.00	97.42	2349.34	1174.67	3398.38	1678.33		2.30	-0.24	0.047
105.00	-23.90	-1.47	0.00	-95.95	0.00	95.95	2342.10	1171.05	3369.07	1663.86		2.35	-0.24	0.068
110.00	-22.84	-1.48	0.00	-88.59	0.00	88.59	2304.95	1152.47	3222.91	1591.67		2.62	-0.27	0.066
115.00	-21.80	-1.48	0.00	-81.21	0.00	81.21	2266.22	1133.11	3077.59	1519.90		2.91	-0.29	0.063
120.00	-20.10	-1.48	0.00	-73.81	0.00	73.81	2252.14	1126.07	3026.44	1494.64		3.23	-0.32	0.058
124.00	-18.20	-1.47	0.00	-67.89	0.00	67.89	2219.57	1109.78	2911.24	1437.75		3.50	-0.33	0.055
125.00	-18.01	-1.48	0.00	-66.42	0.00	66.42	2211.27	1105.63	2882.56	1423.59		3.57	-0.34	0.055
125.00	-18.01	-1.48	0.00	-66.42	0.00	66.42	1600.93	800.47	2095.19	1034.73		3.57	-0.34	0.075
130.00	-17.22	-1.48	0.00	-59.04	0.00	59.04	1577.27	788.64	2000.77	988.11		3.94	-0.36	0.071
134.00	-14.25	-1.46	0.00	-53.13	0.00	53.13	1557.20	778.60	1925.20	950.79		4.25	-0.38	0.065
135.00	-14.10	-1.46	0.00	-51.67	0.00	51.67	1552.03	776.01	1906.32	941.46		4.33	-0.39	0.064
137.50	-11.80	-1.45	0.00	-48.01	0.00	48.01	1538.81	769.41	1859.13	918.16		4.54	-0.40	0.060
140.00	-11.47	-1.45	0.00	-44.39	0.00	44.39	1525.20	762.60	1812.01	894.88		4.75	-0.41	0.057
145.00	-10.82	-1.43	0.00	-37.15	0.00	37.15	1496.79	748.40	1718.05	848.48		5.20	-0.44	0.051

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 37

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147.00	-8.47	-1.34	0.00	-34.28	0.00	34.28	1484.98	742.49	1680.60	829.98	5.38	-0.45	0.047
150.00	-8.14	-1.33	0.00	-30.25	0.00	30.25	1466.80	733.40	1624.61	802.34	5.67	-0.46	0.043
155.00	-7.17	-1.27	0.00	-23.59	0.00	23.59	1451.75	725.87	1579.74	780.18	6.16	-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	6.67	-0.49	0.028
165.00	-6.14	-1.17	0.00	-11.14	0.00	11.14	1385.48	692.74	1396.17	689.51	7.19	-0.51	0.021
170.00	-5.65	-1.10	0.00	-5.29	0.00	5.29	1349.97	674.99	1306.08	645.02	7.73	-0.51	0.012
170.00	-5.65	-1.10	0.00	-5.29	0.00	5.29	1349.97	674.99	1306.08	645.02	7.73	-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	8.16	-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	8.27	-0.52	0.000

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 38

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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**	0.27		**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	22.98	
10.00		1249.0	0.01	0.05	0.03	32.85	
15.00		1225.8	0.01	0.06	0.03	37.50	
20.00		1202.6	0.02	0.07	0.04	39.59	
22.00	RT2	474.59	0.03	0.07	0.04	15.92	
25.00		704.93	0.04	0.07	0.04	24.15	
30.00		1156.3	0.06	0.07	0.04	40.65	
35.00	RB3 RB4	1133.1	0.08	0.07	0.04	40.68	
36.00	Bot - Section 2 RT1	223.85	0.08	0.07	0.04	8.07	
38.00	RB5	832.96	0.09	0.07	0.04	30.28	
39.00	RT3	413.90	0.09	0.07	0.04	15.11	
40.00		412.18	0.10	0.07	0.04	15.11	
42.00	Top - Section 1	819.19	0.11	0.07	0.04	30.28	
45.00		566.56	0.12	0.07	0.03	21.20	
49.00	RT4	744.29	0.15	0.07	0.03	28.28	
50.00		184.09	0.15	0.07	0.03	7.02	
54.00	Appurtenance(s)	778.40	0.18	0.07	0.03	29.95	
55.00		180.11	0.19	0.06	0.02	6.94	
60.00		888.65	0.22	0.06	0.02	34.04	
65.00		868.79	0.26	0.05	0.02	32.12	
70.00	Bot - Section 3	848.92	0.30	0.04	0.01	28.83	
71.25	RT5 RB6	422.11	0.31	0.04	0.01	13.88	
75.00		1251.4	0.35	0.03	0.01	35.82	
76.00	Top - Section 2	329.94	0.36	0.03	0.01	8.98	
80.00	Top - Section 3	658.09	0.39	0.02	0.01	13.46	
85.00		671.69	0.45	0.00	0.01	6.35	
86.00	RT6 RB7	132.35	0.46	0.00	0.01	0.92	
90.00		522.78	0.50	-0.02	0.01	-1.83	
95.00		638.58	0.56	-0.04	0.01	-10.64	
100.00		622.02	0.62	-0.06	0.02	-17.47	
104.00	RT7	485.70	0.67	-0.08	0.02	-17.00	
105.00		119.77	0.68	-0.08	0.03	-4.35	
110.00		588.92	0.75	-0.10	0.04	-24.06	
115.00	Bot - Section 5	572.36	0.82	-0.11	0.06	-23.73	
120.00	Top - Section 4	1122.3	0.89	-0.12	0.08	-43.00	
124.00	Appurtenance(s)	1346.0	0.95	-0.12	0.11	-44.69	
125.00	Top - Section 5	108.67	0.96	-0.12	0.11	-3.43	
130.00		427.58	1.04	-0.10	0.15	-9.12	
134.00	Appurtenance(s)	2288.7	1.11	-0.07	0.19	-24.45	
135.00		81.81	1.12	-0.05	0.20	-0.63	
137.50	Appurtenance(s)	1802.2	1.17	-0.02	0.23	0.79	
140.00		198.89	1.21	0.01	0.26	1.87	
145.00		387.85	1.30	0.12	0.33	11.62	
147.00	Appurtenance(s)	1900.2	1.33	0.17	0.37	74.38	
150.00	Bot - Section 7	223.17	1.39	0.26	0.42	12.05	

Seismic Segment Forces (Factored)

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 39

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155.00	Top - Section 6	729.57	1.48	0.46	0.52	59.54		
160.00		354.97	1.58	0.72	0.64	40.07		
165.00		341.72	1.68	1.05	0.78	50.54		
170.00	Top - Section 7	328.48	1.78	1.46	0.95	61.33		
174.00	Appurtenance(s)	1009.8	1.87	1.87	1.10	222.75		
175.00	Appurtenance(s)	3622.5	1.89	1.98	1.14	831.10		
		Totals: **39,471.3**				**1,762.6**	**Total Wind:**	**45,468.4**

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	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 40	

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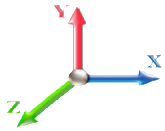
Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.18	**Iterations**	22		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.17		
Wind Load Factor	0.00	**Structure Frequency**	0.27	**SA**	0.03	**S1**	0.06	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-43.49	-1.99	0.00	-268.75	0.00	268.75	4294.71	2147.35	9493.67	4688.57		0.00	0.00	0.041
5.00	-42.07	-1.97	0.00	-258.81	0.00	258.81	4251.62	2125.81	9227.39	4557.06		0.00	-0.01	0.040
10.00	-40.68	-1.95	0.00	-248.95	0.00	248.95	4207.27	2103.63	8961.88	4425.94		0.02	-0.02	0.040
15.00	-39.30	-1.91	0.00	-239.22	0.00	239.22	4161.65	2080.83	8697.29	4295.27		0.04	-0.03	0.039
20.00	-37.94	-1.88	0.00	-229.66	0.00	229.66	4114.76	2057.38	8433.78	4165.13		0.07	-0.03	0.038
22.00	-37.41	-1.86	0.00	-225.90	0.00	225.90	4095.66	2047.83	8328.71	4113.24		0.09	-0.04	0.045
25.00	-36.61	-1.84	0.00	-220.31	0.00	220.31	4066.61	2033.31	8171.50	4035.59		0.11	-0.04	0.045
30.00	-35.29	-1.81	0.00	-211.09	0.00	211.09	4017.20	2008.60	7910.59	3906.74		0.16	-0.05	0.044
35.00	-34.00	-1.77	0.00	-202.05	0.00	202.05	3966.51	1983.26	7651.22	3778.65		0.22	-0.06	0.031
36.00	-33.74	-1.76	0.00	-200.28	0.00	200.28	3956.22	1978.11	7599.55	3753.13		0.24	-0.07	0.039
38.00	-32.88	-1.73	0.00	-196.75	0.00	196.75	3935.49	1967.75	7496.40	3702.19		0.27	-0.07	0.030
39.00	-32.46	-1.72	0.00	-195.02	0.00	195.02	3925.05	1962.53	7444.93	3676.77		0.28	-0.07	0.035
40.00	-32.03	-1.71	0.00	-193.30	0.00	193.30	3914.56	1957.28	7393.54	3651.39		0.30	-0.07	0.035
42.00	-31.19	-1.68	0.00	-189.89	0.00	189.89	3554.53	1777.27	6785.59	3351.15		0.33	-0.08	0.033
45.00	-30.51	-1.66	0.00	-184.86	0.00	184.86	3532.39	1766.19	6658.05	3288.16		0.38	-0.08	0.035
49.00	-29.62	-1.63	0.00	-178.23	0.00	178.23	3501.98	1750.99	6488.03	3204.19		0.45	-0.09	0.042
50.00	-29.40	-1.63	0.00	-176.60	0.00	176.60	3494.22	1747.11	6445.54	3183.21		0.47	-0.09	0.042
54.00	-28.48	-1.60	0.00	-170.10	0.00	170.10	3462.54	1731.27	6275.67	3099.32		0.55	-0.10	0.041
55.00	-28.27	-1.59	0.00	-168.50	0.00	168.50	3454.46	1727.23	6233.23	3078.36		0.57	-0.10	0.041
60.00	-27.19	-1.56	0.00	-160.53	0.00	160.53	3413.12	1706.56	6021.34	2973.71		0.69	-0.12	0.040
65.00	-26.14	-1.53	0.00	-152.72	0.00	152.72	3370.20	1685.10	5810.04	2869.36		0.81	-0.13	0.039
70.00	-25.10	-1.51	0.00	-145.04	0.00	145.04	3325.69	1662.84	5599.53	2765.40		0.95	-0.14	0.038
71.25	-24.65	-1.49	0.00	-143.16	0.00	143.16	3314.31	1657.16	5547.04	2739.48		0.99	-0.14	0.037
75.00	-23.32	-1.46	0.00	-137.56	0.00	137.56	3279.60	1639.80	5389.99	2661.91		1.10	-0.15	0.036
76.00	-22.97	-1.45	0.00	-136.10	0.00	136.10	3306.32	1653.16	5510.48	2721.42		1.14	-0.15	0.037
80.00	-22.16	-1.44	0.00	-130.31	0.00	130.31	3269.04	1634.52	5343.14	2638.78		1.27	-0.16	0.035
80.00	-22.16	-1.44	0.00	-130.31	0.00	130.31	2504.08	1252.04	4105.75	2027.68		1.27	-0.16	0.038
85.00	-21.28	-1.43	0.00	-123.12	0.00	123.12	2474.85	1237.43	3958.27	1954.84		1.45	-0.17	0.041
86.00	-21.11	-1.43	0.00	-121.69	0.00	121.69	2468.82	1234.41	3928.75	1940.26		1.48	-0.18	0.051
90.00	-20.42	-1.44	0.00	-115.95	0.00	115.95	2444.04	1222.02	3810.67	1881.94		1.64	-0.19	0.050
95.00	-19.57	-1.44	0.00	-108.77	0.00	108.77	2411.64	1205.82	3663.14	1809.09		1.85	-0.21	0.048
100.00	-18.74	-1.44	0.00	-101.58	0.00	101.58	2377.66	1188.83	3515.87	1736.36		2.07	-0.22	0.046
104.00	-18.08	-1.44	0.00	-95.82	0.00	95.82	2349.34	1174.67	3398.38	1678.33		2.26	-0.24	0.045
104.00	-18.08	-1.44	0.00	-95.82	0.00	95.82	2349.34	1174.67	3398.38	1678.33		2.26	-0.24	0.045
105.00	-17.92	-1.44	0.00	-94.38	0.00	94.38	2342.10	1171.05	3369.07	1663.86		2.31	-0.24	0.064
110.00	-17.13	-1.45	0.00	-87.16	0.00	87.16	2304.95	1152.47	3222.91	1591.67		2.58	-0.26	0.062
115.00	-16.35	-1.45	0.00	-79.92	0.00	79.92	2266.22	1133.11	3077.59	1519.90		2.87	-0.29	0.060
120.00	-15.07	-1.45	0.00	-72.67	0.00	72.67	2252.14	1126.07	3026.44	1494.64		3.18	-0.31	0.055
124.00	-13.65	-1.44	0.00	-66.87	0.00	66.87	2219.57	1109.78	2911.24	1437.75		3.45	-0.33	0.053
125.00	-13.51	-1.45	0.00	-65.43	0.00	65.43	2211.27	1105.63	2882.56	1423.59		3.52	-0.33	0.052
125.00	-13.51	-1.45	0.00	-65.43	0.00	65.43	1600.93	800.47	2095.19	1034.73		3.52	-0.33	0.072
130.00	-12.91	-1.45	0.00	-58.19	0.00	58.19	1577.27	788.64	2000.77	988.11		3.88	-0.36	0.067
134.00	-10.69	-1.44	0.00	-52.40	0.00	52.40	1557.20	778.60	1925.20	950.79		4.18	-0.38	0.062
135.00	-10.57	-1.44	0.00	-50.96	0.00	50.96	1552.03	776.01	1906.32	941.46		4.26	-0.38	0.061
137.50	-8.84	-1.43	0.00	-47.37	0.00	47.37	1538.81	769.41	1859.13	918.16		4.47	-0.39	0.057
140.00	-8.60	-1.43	0.00	-43.80	0.00	43.80	1525.20	762.60	1812.01	894.88		4.68	-0.41	0.055
145.00	-8.11	-1.41	0.00	-36.68	0.00	36.68	1496.79	748.40	1718.05	848.48		5.12	-0.43	0.049

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 41

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147.00	-6.35	-1.33	0.00	-33.85	0.00	33.85	1484.98	742.49	1680.60	829.98	5.30	-0.44	0.045
150.00	-6.10	-1.31	0.00	-29.87	0.00	29.87	1466.80	733.40	1624.61	802.34	5.58	-0.45	0.041
155.00	-5.37	-1.25	0.00	-23.30	0.00	23.30	1451.75	725.87	1579.74	780.18	6.06	-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	6.57	-0.49	0.027
165.00	-4.60	-1.16	0.00	-11.00	0.00	11.00	1385.48	692.74	1396.17	689.51	7.08	-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	7.61	-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	7.61	-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	8.04	-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	8.15	-0.51	0.000

Wind Loading - Shaft

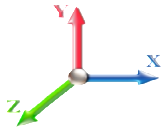
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

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
15.00		1.00	0.70	6.129	6.74	221.30	1.000	0.000	5.00	22.251	22.25	150.0	0.0	1225.9
20.00		1.00	0.70	6.129	6.74	217.12	1.000	0.000	5.00	21.834	21.83	147.2	0.0	1202.7
22.00	RT2	1.00	0.70	6.129	6.74	215.44	1.000	0.000	2.00	8.617	8.62	58.1	0.0	474.6
25.00		1.00	0.70	6.129	6.74	212.93	1.000	0.000	3.00	12.800	12.80	86.3	0.0	704.9
30.00		1.00	0.70	6.134	6.75	208.83	1.000	0.000	5.00	21.000	21.00	141.7	0.0	1156.3
35.00	RB3 RB4	1.00	0.73	6.410	7.05	209.20	1.000	0.000	5.00	20.583	20.58	145.1	0.0	1133.2
36.00	Bot - Section 2 RT1	1.00	0.74	6.462	7.11	209.18	1.000	0.000	1.00	4.066	4.07	28.9	0.0	223.9
38.00	RB5	1.00	0.75	6.562	7.22	209.07	1.000	0.000	2.00	8.212	8.21	59.3	0.0	833.0
39.00	RT3	1.00	0.76	6.611	7.27	208.98	1.000	0.000	1.00	4.081	4.08	29.7	0.0	413.9
40.00		1.00	0.76	6.659	7.33	208.86	1.000	0.000	1.00	4.064	4.06	29.8	0.0	412.2
42.00	Top - Section 1	1.00	0.77	6.753	7.43	208.56	1.000	0.000	2.00	8.079	8.08	60.0	0.0	819.2
45.00		1.00	0.79	6.887	7.58	211.41	1.000	0.000	3.00	11.993	11.99	90.9	0.0	566.6
49.00	RT4	1.00	0.81	7.057	7.76	210.40	1.000	0.000	4.00	15.757	15.76	122.3	0.0	744.3
50.00		1.00	0.81	7.098	7.81	210.11	1.000	0.000	1.00	3.898	3.90	30.4	0.0	184.1
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	RT5 RB6	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	RT6 RB7	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	RT7	1.00	1.00	8.750	9.62	183.13	1.000	0.000	4.00	12.346	12.35	118.8	0.0	485.7
105.00		1.00	1.00	8.774	9.65	182.37	1.000	0.000	1.00	3.045	3.04	29.4	0.0	119.8
110.00		1.00	1.02	8.891	9.78	178.55	1.000	0.000	5.00	14.973	14.97	146.4	0.0	588.9
115.00	Bot - Section 5	1.00	1.03	9.005	9.91	174.61	1.000	0.000	5.00	14.556	14.56	144.2	0.0	572.4
120.00	Top - Section 4	1.00	1.04	9.115	10.03	170.57	1.000	0.000	5.00	14.409	14.41	144.5	0.0	1122.3
124.00	Appurtenance(s)	1.00	1.05	9.201	10.12	170.58	1.000	0.000	4.00	11.227	11.23	113.6	0.0	441.3
125.00	Top - Section 5	1.00	1.05	9.222	10.14	169.75	1.000	0.000	1.00	2.765	2.76	28.0	0.0	108.7
130.00		1.00	1.07	9.326	10.26	165.53	1.000	0.000	5.00	13.575	13.57	139.3	0.0	427.6
134.00	Appurtenance(s)	1.00	1.07	9.407	10.35	162.10	1.000	0.000	4.00	10.559	10.56	109.3	0.0	332.5
135.00		1.00	1.08	9.427	10.37	161.24	1.000	0.000	1.00	2.598	2.60	26.9	0.0	81.8
137.50	Appurtenance(s)	1.00	1.08	9.476	10.42	159.06	1.000	0.000	2.50	6.422	6.42	66.9	0.0	202.2
140.00		1.00	1.09	9.525	10.48	156.86	1.000	0.000	2.50	6.318	6.32	66.2	0.0	198.9
145.00		1.00	1.10	9.621	10.58	152.40	1.000	0.000	5.00	12.323	12.32	130.4	0.0	387.8
147.00	Appurtenance(s)	1.00	1.10	9.659	10.62	150.59	1.000	0.000	2.00	4.813	4.81	51.1	0.0	151.4
150.00	Bot - Section 7	1.00	1.11	9.715	10.69	147.86	1.000	0.000	3.00	7.094	7.09	75.8	0.0	223.2
155.00	Top - Section 6	1.00	1.12	9.806	10.79	143.26	1.000	0.000	5.00	11.705	11.70	126.3	0.0	729.6

Wind Loading - Shaft

Structure: CT00680-S-SBA | **Code:** EIA/TIA-222-G | 12/11/2018

Site Name: Putnam | **Exposure:** B

Height: 175.00 (ft) | **Crest Height:** 0.00

Base Elev: 0.000 (ft) | **Site Class:** D - Stiff Soil

Gh: 1.1 | **Topography:** 1 | **Struct Class:** II | Page: 43

TES Tower Engineering Solutions

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**			**5,004.4**		**28,861.4**

Discrete Appurtenance Forces

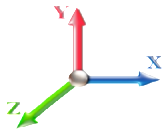
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 44	

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)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	PRK-SFS-L	1	10.152	11.168	0.75	0.75	5.78	230.00	0.000	0.000	64.49	0.00	0.00
2	175.00	DR65-18-02DPL2Q	6	10.417	11.459	0.67	1.00	23.36	144.00	0.000	16.500	267.63	0.00	4415.94
3	175.00	E15S09P94	6	10.370	11.407	0.60	1.00	2.38	87.60	0.000	13.500	27.10	0.00	365.90
4	175.00	T-Arms	3	10.152	11.168	0.75	1.00	24.75	726.00	0.000	0.000	276.40	0.00	0.00
5	175.00	APXVTM14-C-I20	3	10.185	11.204	0.77	1.00	14.65	168.60	0.000	2.000	164.08	0.00	328.17
6	175.00	NNVV-65B-R4	3	10.185	11.204	0.74	1.00	27.24	232.20	0.000	2.000	305.19	0.00	610.37
7	175.00	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
8	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
9	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
10	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
11	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
12	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
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	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
15	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
16	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
17	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
18	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
19	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
20	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
21	147.00	BXA-80080-4CF	3	9.659	10.625	0.70	0.80	7.50	36.00	0.000	0.000	79.70	0.00	0.00
22	147.00	BXA-70063-6CF-EDIN-X	3	9.659	10.625	0.62	0.80	13.97	51.00	0.000	0.000	148.44	0.00	0.00
23	137.50	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
24	134.00	RRUS 4478 B5	3	9.476	10.424	0.50	0.75	2.77	179.70	0.000	3.500	28.91	0.00	101.20
25	134.00	TPA-65R-LCUUUU-H8	3	9.476	10.424	0.62	0.75	24.84	225.00	0.000	3.500	258.91	0.00	906.18
26	134.00	RRUS-32	6	9.476	10.424	0.50	0.75	11.67	462.00	0.000	3.500	121.63	0.00	425.70
27	134.00	DBC0061F1V51-2	6	9.476	10.424	0.52	0.75	1.86	60.00	0.000	3.500	19.42	0.00	67.97
28	134.00	DC6-48-60-18-8C	1	9.476	10.424	1.00	1.00	3.17	11.80	0.000	3.500	33.04	0.00	115.65
29	134.00	800 10966	3	9.476	10.424	0.54	0.75	28.12	377.10	0.000	3.500	293.15	0.00	1026.04
30	134.00	LGP21901	6	9.476	10.424	0.38	0.75	0.52	33.00	0.000	3.500	5.39	0.00	18.88
31	134.00	RRUS 32 B66a	3	9.476	10.424	0.50	0.75	4.13	159.00	0.000	3.500	43.06	0.00	150.70
32	134.00	7770.00	3	9.476	10.424	0.55	0.75	9.03	105.00	0.000	3.500	94.17	0.00	329.59
33	134.00	AM-X-CD-17-65-00T-RET	3	9.476	10.424	0.56	0.75	19.09	92.40	0.000	3.500	198.95	0.00	696.32
34	134.00	LGP21401	6	9.476	10.424	0.38	0.75	2.90	84.60	0.000	3.500	30.26	0.00	105.89
35	134.00	RRUS 11	3	9.476	10.424	0.50	0.75	3.80	152.10	0.000	3.500	39.60	0.00	138.60
36	134.00	DC6-48-60-18-8F	1	9.476	10.424	1.00	1.00	2.92	14.50	0.000	3.500	30.44	0.00	106.53
37	124.00	T-Arms	3	9.201	10.121	0.56	0.75	13.82	726.00	0.000	0.000	139.87	0.00	0.00
38	124.00	742 351	6	9.201	10.121	0.49	0.80	15.75	178.80	0.000	0.000	159.43	0.00	0.00
39	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
40	54.00	GPS	1	7.255	7.981	1.00	1.00	1.00	10.00	0.000	0.000	7.98	0.00	0.00
							Totals:		**10,609.83**			**5,024.36**		

Total Applied Force Summary

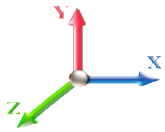
Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 45

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	1576.00	0.00	0.00
10.00		152.82	1552.82	0.00	0.00
15.00		150.01	1529.64	0.00	0.00
20.00		147.19	1506.47	0.00	0.00
22.00		58.09	596.10	0.00	0.00
25.00		86.29	887.20	0.00	0.00
30.00		141.69	1460.12	0.00	0.00
35.00		145.13	1436.94	0.00	0.00
36.00		28.90	284.61	0.00	0.00
38.00		59.28	954.47	0.00	0.00
39.00		29.68	474.65	0.00	0.00
40.00		29.77	472.93	0.00	0.00
42.00		60.01	940.70	0.00	0.00
45.00		90.86	748.83	0.00	0.00
49.00		122.32	987.32	0.00	0.00
50.00		30.43	244.84	0.00	0.00
54.00	(2) attachments	152.07	1021.43	0.00	0.00
55.00		30.60	240.71	0.00	0.00
60.00		154.80	1191.63	0.00	0.00
65.00		154.87	1171.77	0.00	0.00
70.00		154.60	1151.90	0.00	0.00
71.25		38.98	497.85	0.00	0.00
75.00		117.30	1478.66	0.00	0.00
76.00		31.05	390.53	0.00	0.00
80.00		124.54	900.48	0.00	0.00
85.00		154.99	974.67	0.00	0.00
86.00		30.65	192.95	0.00	0.00
90.00		122.64	765.17	0.00	0.00
95.00		152.17	941.56	0.00	0.00
100.00		150.45	925.00	0.00	0.00
104.00		118.82	728.08	0.00	0.00
105.00		29.38	180.37	0.00	0.00
110.00		146.44	883.00	0.00	0.00
115.00		144.18	866.44	0.00	0.00
120.00		144.47	1416.40	0.00	0.00
124.00	(9) attachments	412.92	1581.35	0.00	0.00
125.00		28.05	154.94	0.00	0.00
130.00		139.25	658.96	0.00	0.00
134.00	(47) attachments	1306.19	2473.83	0.00	4189.24
135.00		26.94	128.08	0.00	0.00
137.50	(1) attachments	400.51	1917.89	0.00	0.00
140.00		66.20	273.73	0.00	0.00
145.00		130.42	537.53	0.00	0.00
147.00	(32) attachments	1062.26	1960.16	0.00	-468.77
150.00		75.81	272.06	0.00	0.00
155.00		126.26	811.05	0.00	0.00

Total Applied Force Summary

Structure:	CT00680-S-SBA		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 46

Tower Engineering Solutions

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:	**10,028.80**	**48,325.39**	**0.00**	**14,560.43**

Linear Appurtenance Segment Forces (Factored)

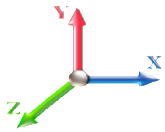
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 47	

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
15.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.061	0.000	6.129	0.00	8.90
20.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.062	0.000	6.129	0.00	8.90
22.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.063	0.000	6.129	0.00	3.56
25.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.063	0.000	6.129	0.00	5.34
30.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.064	0.000	6.134	0.00	8.90
35.00	3" Chanel	Yes	5.00	0.000	3.25	1.35	0.00	0.066	0.000	6.410	0.00	8.90
36.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	6.462	0.00	1.78
38.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.067	0.000	6.562	0.00	3.56
39.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.067	0.000	6.611	0.00	1.78
40.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.068	0.000	6.659	0.00	1.78
42.00	3" Chanel	Yes	2.00	0.000	3.25	0.54	0.00	0.068	0.000	6.753	0.00	3.56
45.00	3" Chanel	Yes	3.00	0.000	3.25	0.81	0.00	0.068	0.000	6.887	0.00	5.34
49.00	3" Chanel	Yes	4.00	0.000	3.25	1.08	0.00	0.069	0.000	7.057	0.00	7.12
50.00	3" Chanel	Yes	1.00	0.000	3.25	0.27	0.00	0.069	0.000	7.098	0.00	1.78
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

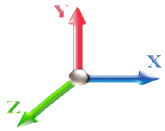
Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 48	

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	-48.32	-10.04	0.00	-1258.9	0.00	1258.98	4294.71	2147.35	9493.67	4688.57	0.00	0.000	0.000	0.171
5.00	-46.74	-9.92	0.00	-1208.7	0.00	1208.76	4251.62	2125.81	9227.39	4557.06	0.02	-0.039	0.000	0.168
10.00	-45.18	-9.80	0.00	-1159.1	0.00	1159.16	4207.27	2103.63	8961.88	4425.94	0.08	-0.078	0.000	0.164
15.00	-43.64	-9.67	0.00	-1110.1	0.00	1110.17	4161.65	2080.83	8697.29	4295.27	0.19	-0.118	0.000	0.161
20.00	-42.13	-9.54	0.00	-1061.8	0.00	1061.80	4114.76	2057.38	8433.78	4165.13	0.33	-0.157	0.000	0.157
22.00	-41.53	-9.50	0.00	-1042.7	0.00	1042.72	4095.66	2047.83	8328.71	4113.24	0.40	-0.173	0.000	0.187
25.00	-40.64	-9.44	0.00	-1014.2	0.00	1014.22	4066.61	2033.31	8171.50	4035.59	0.52	-0.202	0.000	0.184
30.00	-39.17	-9.32	0.00	-967.03	0.00	967.03	4017.20	2008.60	7910.59	3906.74	0.75	-0.250	0.000	0.180
35.00	-37.73	-9.19	0.00	-920.41	0.00	920.41	3966.51	1983.26	7651.22	3778.65	1.04	-0.298	0.000	0.126
36.00	-37.45	-9.17	0.00	-911.22	0.00	911.22	3956.22	1978.11	7599.55	3753.13	1.11	-0.305	0.000	0.160
38.00	-36.49	-9.11	0.00	-892.89	0.00	892.89	3935.49	1967.75	7496.40	3702.19	1.24	-0.323	0.000	0.122
39.00	-36.01	-9.08	0.00	-883.78	0.00	883.78	3925.05	1962.53	7444.93	3676.77	1.31	-0.330	0.000	0.142
40.00	-35.54	-9.06	0.00	-874.69	0.00	874.69	3914.56	1957.28	7393.54	3651.39	1.38	-0.338	0.000	0.141
42.00	-34.60	-9.00	0.00	-856.58	0.00	856.58	3554.53	1777.27	6785.59	3351.15	1.52	-0.354	0.000	0.135
45.00	-33.84	-8.93	0.00	-829.57	0.00	829.57	3532.39	1766.19	6658.05	3288.16	1.75	-0.378	0.000	0.140
49.00	-32.85	-8.81	0.00	-793.86	0.00	793.86	3501.98	1750.99	6488.03	3204.19	2.08	-0.412	0.000	0.168
50.00	-32.60	-8.79	0.00	-785.05	0.00	785.05	3494.22	1747.11	6445.54	3183.21	2.17	-0.422	0.000	0.167
54.00	-31.58	-8.65	0.00	-749.89	0.00	749.89	3462.54	1731.27	6275.67	3099.32	2.54	-0.463	0.000	0.162
55.00	-31.34	-8.63	0.00	-741.24	0.00	741.24	3454.46	1727.23	6233.23	3078.36	2.64	-0.474	0.000	0.161
60.00	-30.14	-8.49	0.00	-698.09	0.00	698.09	3413.12	1706.56	6021.34	2973.71	3.16	-0.525	0.000	0.156
65.00	-28.96	-8.35	0.00	-655.63	0.00	655.63	3370.20	1685.10	5810.04	2869.36	3.74	-0.576	0.000	0.150
70.00	-27.81	-8.20	0.00	-613.87	0.00	613.87	3325.69	1662.84	5599.53	2765.40	4.37	-0.627	0.000	0.145
71.25	-27.30	-8.17	0.00	-603.62	0.00	603.62	3314.31	1657.16	5547.04	2739.48	4.54	-0.640	0.000	0.141
75.00	-25.82	-8.04	0.00	-572.99	0.00	572.99	3279.60	1639.80	5389.99	2661.91	5.05	-0.677	0.000	0.137
76.00	-25.43	-8.02	0.00	-564.94	0.00	564.94	3306.32	1653.16	5510.48	2721.42	5.20	-0.687	0.000	0.139
80.00	-24.53	-7.90	0.00	-532.86	0.00	532.86	3269.04	1634.52	5343.14	2638.78	5.79	-0.727	0.000	0.130
80.00	-24.53	-7.90	0.00	-532.86	0.00	532.86	2504.08	1252.04	4105.75	2027.68	5.79	-0.727	0.000	0.142
85.00	-23.55	-7.75	0.00	-493.35	0.00	493.35	2474.85	1237.43	3958.27	1954.84	6.58	-0.774	0.000	0.149
86.00	-23.35	-7.73	0.00	-485.60	0.00	485.60	2468.82	1234.41	3928.75	1940.26	6.74	-0.785	0.000	0.184
90.00	-22.58	-7.62	0.00	-454.70	0.00	454.70	2444.04	1222.02	3810.67	1881.94	7.42	-0.836	0.000	0.177
95.00	-21.63	-7.47	0.00	-416.62	0.00	416.62	2411.64	1205.82	3663.14	1809.09	8.33	-0.899	0.000	0.167
100.00	-20.70	-7.33	0.00	-379.26	0.00	379.26	2377.66	1188.83	3515.87	1736.36	9.30	-0.961	0.000	0.157
104.00	-19.97	-7.21	0.00	-349.95	0.00	349.95	2349.34	1174.67	3398.38	1678.33	10.13	-1.009	0.000	0.149
104.00	-19.97	-7.21	0.00	-349.95	0.00	349.95	2349.34	1174.67	3398.38	1678.33	10.13	-1.009	0.000	0.149
105.00	-19.79	-7.19	0.00	-342.74	0.00	342.74	2342.10	1171.05	3369.07	1663.86	10.34	-1.021	0.000	0.214
110.00	-18.90	-7.06	0.00	-306.79	0.00	306.79	2304.95	1152.47	3222.91	1591.67	11.46	-1.106	0.000	0.201
115.00	-18.03	-6.92	0.00	-271.51	0.00	271.51	2266.22	1133.11	3077.59	1519.90	12.66	-1.188	0.000	0.187
120.00	-16.60	-6.76	0.00	-236.91	0.00	236.91	2252.14	1126.07	3026.44	1494.64	13.95	-1.267	0.000	0.166
124.00	-15.03	-6.33	0.00	-209.86	0.00	209.86	2219.57	1109.78	2911.24	1437.75	15.03	-1.327	0.000	0.153
125.00	-14.87	-6.30	0.00	-203.53	0.00	203.53	2211.27	1105.63	2882.56	1423.59	15.31	-1.342	0.000	0.150
125.00	-14.87	-6.30	0.00	-203.53	0.00	203.53	1600.93	800.47	2095.19	1034.73	15.31	-1.342	0.000	0.206
130.00	-14.21	-6.17	0.00	-172.01	0.00	172.01	1577.27	788.64	2000.77	988.11	16.75	-1.407	0.000	0.183
134.00	-11.76	-4.81	0.00	-143.16	0.00	143.16	1557.20	778.60	1925.20	950.79	17.96	-1.468	0.000	0.158
135.00	-11.63	-4.78	0.00	-138.35	0.00	138.35	1552.03	776.01	1906.32	941.46	18.27	-1.483	0.000	0.154
137.50	-9.73	-4.34	0.00	-126.40	0.00	126.40	1538.81	769.41	1859.13	918.16	19.06	-1.517	0.000	0.144
140.00	-9.45	-4.27	0.00	-115.56	0.00	115.56	1525.20	762.60	1812.01	894.88	19.86	-1.551	0.000	0.135
145.00	-8.91	-4.13	0.00	-94.21	0.00	94.21	1496.79	748.40	1718.05	848.48	21.52	-1.611	0.000	0.117
147.00	-6.98	-3.02	0.00	-85.95	0.00	85.95	1484.98	742.49	1680.60	829.98	22.20	-1.635	0.000	0.108

Calculated Forces

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 49

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150.00	-6.71	-2.94	0.00	-76.90	0.00	76.90	1466.80	733.40	1624.61	802.34	23.23	-1.667	0.000	0.100
155.00	-5.90	-2.79	0.00	-62.21	0.00	62.21	1451.75	725.87	1579.74	780.18	25.01	-1.717	0.000	0.084
160.00	-5.47	-2.66	0.00	-48.25	0.00	48.25	1419.41	709.70	1487.45	734.60	26.83	-1.761	0.000	0.070
165.00	-5.05	-2.53	0.00	-34.94	0.00	34.94	1385.48	692.74	1396.17	689.51	28.69	-1.796	0.000	0.054
170.00	-4.64	-2.40	0.00	-22.29	0.00	22.29	1349.97	674.99	1306.08	645.02	30.59	-1.823	0.000	0.038
170.00	-4.64	-2.40	0.00	-22.29	0.00	22.29	1349.97	674.99	1306.08	645.02	30.59	-1.823	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	32.12	-1.838	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	32.51	-1.841	0.000	0.017

Final Analysis Summary

Structure:	CT00680-S-SBA	**Code:**	EIA/TIA-222-G	12/11/2018	
Site Name:	Putnam	**Exposure:**	B		
Height:	175.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	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	45.6	0.00	57.92	0.00	0.00	5737.22
0.9D + 1.6W 101 mph Wind	45.5	0.00	43.42	0.00	0.00	5675.58
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.9	0.00	86.97	0.00	0.00	1320.81
1.2D + 1.0E	2.0	0.00	57.99	0.00	0.00	272.03
0.9D + 1.0E	2.0	0.00	43.49	0.00	0.00	268.75
1.0D + 1.0W 60 mph Wind	10.0	0.00	48.32	0.00	0.00	1258.98

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	-21.20	-32.85	0.00	-1563.3	0.00	-1563.3	2342.10	1171.0	3369.07	1663.86	105.00	0.949
0.9D + 1.6W 101 mph Wind	-15.28	-32.32	0.00	-1536.0	0.00	-1536.0	2342.10	1171.0	3369.07	1663.86	105.00	0.930
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-42.38	-7.80	0.00	-381.40	0.00	-381.40	2342.10	1171.0	3369.07	1663.86	105.00	0.247
1.2D + 1.0E	-18.01	-1.48	0.00	-66.42	0.00	-66.42	2211.27	1105.6	2882.56	1423.59	125.00	0.075
0.9D + 1.0E	-13.51	-1.45	0.00	-65.43	0.00	-65.43	2211.27	1105.6	2882.56	1423.59	125.00	0.072
1.0D + 1.0W 60 mph Wind	-19.79	-7.19	0.00	-342.74	0.00	-342.74	2342.10	1171.0	3369.07	1663.86	105.00	0.214

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)	343.8	0.00	37.1	379.6	37.1	11	0	295.3	37.1	8	0	428.50	516.0	468.64	0.914
0.0	22.0	(3) PLT-C10x30(1.5" Hole)	253.8	6.09	37.1	355.1	37.1	10	0	335.3	37.1	10	0	355.09	500.4	468.64	0.758
35.0	39.0	(3) LNP-LP6X100-G-10TT	212.6	5.10	25.3	196.8	25.3	8	11	193.7	25.3	8	11	251.04	297.8	292.50	0.858
35.0	49.0	(3) LNP-LP6X100-G-20TT	-212.6	-5.10	25.3	196.8	25.3	8	10	229.7	25.3	10	10	251.04	297.8	292.50	0.858
38.0	71.3	(3) PLT-C10x30(1.5" Hole)	432.1	10.37	37.1	292.9	37.1	8	0	383.0	37.1			424.68	500.4	468.64	0.906
71.3	86.0	(3) PLT-C10x30(1.5" Hole)	492.9	11.83	37.1	383.0	37.1			371.5	37.1			383.01	500.4	468.64	0.817
86.0	104.0	(3) PLT-C10x15.3(1.5" Hole)	492.9	11.83	37.1	243.4	37.1			206.6	37.1	6	0	243.37	255.7	247.80	0.982

Base Plate Summary

Structure:	CT00680-S-SB		**Code:**	EIA/TIA-222-G	12/11/2018
Site Name:	Putnam		**Exposure:**	B	
Height:	175.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 51

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Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	50.00	**Bolt Circle:**	61.00
Moment (kip-ft):	1.00	**Width (in):**	67.00	**Number Bolts:**	18.00
Axial (kip):	1.00	**Style:**	Round	**Bolt Type:**	2.00" A687
Shear (kip):	1.00	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	2.00
Analysis		**Clip Length (in):**	0.00	**Yield (ksi):**	105.00
Moment (kip-ft):	5737.22	**Effective Len (in):**	12.64	**Ultimate (ksi):**	150.00
Axial (kip):	86.97	**Moment (kip-in):**	268.42	**Arrangement:**	Radial
Shear (kip):	45.56	**Allow Stress (ksi):**	67.50	**Cluster Dist (in):**	0.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	0.00
Moment Design %:	573721.65	**Stress Ratio:**	0.84	Compression	
				Force (kip):	185.58
				Allowable (kip):	300.00
				Ratio:	0.64
				Tension	
				Force (kip):	175.91
				Allowable (kip):	300.00
				Ratio:	0.60

Monopole Mat Foundation Design

			Date: 12/11/2018
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	175
Site Number:	CT00680-S-SBA	**Engineer Name:**	M. Franco
Engr. Number:	62823	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

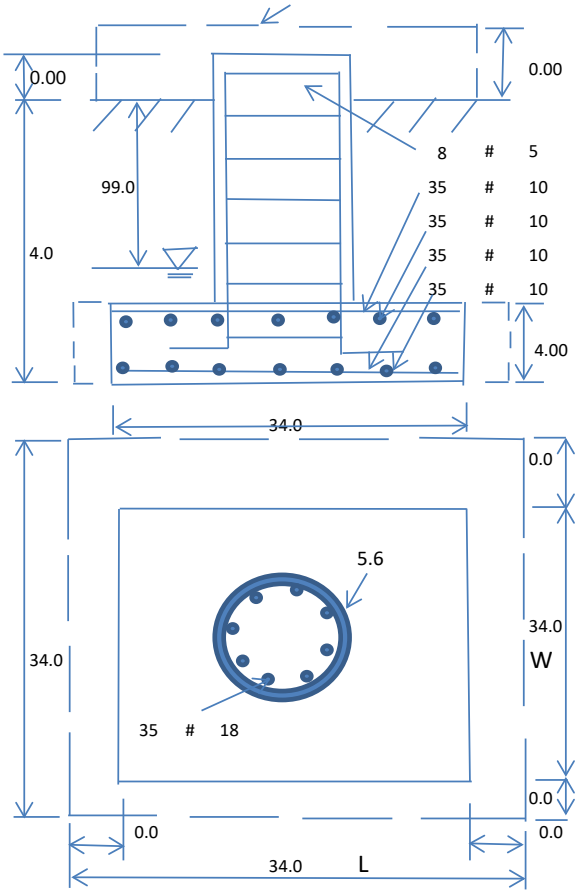
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	58.0	Shear Force (Kips):	45.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5737.2
Allowable overstress %:	5.0%		

Foundation Geometries:

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



Material Properties and 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):	751.59

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1777	<	Allowable Factored Soil Bearing (psf):	30000	0.06	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	11597.9	>	Design Factored Momont (kips-ft):	5920	0.51	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.96	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		

(1) Concrete Pier:

					Load/ Capacity Ratio	
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	5737.2	0.40	OK!
Calculated Shear Capacity (Kips):	624.7	>	Design Factored Shear (Kips):	45.6	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):	58.0	0.01	OK!
Moment & Axial Strength Combination:	0.40	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):	356.8	0.24	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1487.5	>	One-Way Factored Shear (W-D., Kips)	356.8	0.24	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1535.1	>	One-Way Factored Shear (C-C, Kips):	351.0	0.23	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):	2974.8	0.35	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	8619.7	>	Moment at Bottom (W-Dir. K-Ft):	2974.8	0.35	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	12142.4	>	Moment at Bottom (C-C Dir. K-Ft):	4207.1	0.35	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):	1259.8	0.15	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	8619.7	>	Moment at the top (W-Dir K-Ft):	1259.8	0.15	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	12142.4	>	Moment at the top (C-C Dir. K-Ft):	1174.1	0.10	OK!

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

Moment transferred by punching shear:	2294.9	k-ft.	Max. factored shear stress v_{u_CD}:	9.9	Psi
Max. factored shear stress v_{u_AB}:	15.3	Psi	Factored shear Strength ϕv_n:	164.3	Psi
Max. factored shear stress v_u:	15.3	Psi	Check Usage of Punching Shear Capacity:	0.09	OK!

PER THE INTERNATIONAL BUILDING CODE THIS STRUCTURE IS CLASSIFIED AS:

1. CONSTRUCTION TYPE V-B (TABLE 601)
2. GROUP U OCCUPANCY (SECTION 312.1 UNOCCUPIED TOWER SITE)

MODIFICATION AND DESIGN DRAWINGS FOR AN EXISTING 175' NUDD CORP. MONOPOLE TOWER

PROPOSED CARRIER: AT&T

SITE: CT00680-S-SBA / PUTNAM

COORDINATES (LATITUDE: 41.929449°, LONGITUDE: -71.886272°)

CONSTRUCTION CLASS

TES HAS DETERMINED THIS AS A CLASS **III** CONSTRUCTION PROJECT PER ANSI/ASSP A10.48

COMPLETE FABRICATION DRAWINGS FOR ALL MATERIALS REQUIRED FOR THIS PROJECT ARE AVAILABLE FROM TOWER ENGINEERING SOLUTIONS (TES). PLEASE CONTACT TES FOR MORE INFORMATION.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	TOWER PROFILE	0
A-2	REINFORCEMENT ASSEMBLY	0

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. **61394R1**, DATED **10/10/18**.

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(800)-487-SITE

TES JOB NO: 62823

CUSTOMER SITE NO: CT00680-S-SBA

CUSTOMER SITE NAME: PUTNAM

154 SAYLE AVENUE
PUTNAM, CT 06260

STATE OF CONNECTICUT
HANMING YOU
28931
LICENSED PROFESSIONAL ENGINEER
12/21/18

DRAWN BY: CHLE | CHECKED BY: MF/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	12/21/18

SHEET TITLE: TITLE SHEET

SHEET NUMBER: T-1 | REV #: 0

BILL OF MATERIALS

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	LENGTH	SHEET LIST (INSTALLATION)	SHEET LIST (FABRICATE)	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES
			MATERIAL & HARDWARE						
2	2	LP6X100-G-20TT	6" x 1.00" Flat Bar, 20 ft. Long, Standard, Termination at both ends	20'-0"	A-2	LP6X100-G-20TT	408.3	816.6	Galvanized
1	1	LP6X100-S-20TT	6" x 1.00" Flat Bar, 20 ft. Long with Step Bolt Brackets, Termination at both ends	20'-0"	A-2	LP6X100-S-20TT	417.9	417.9	Galvanized
16	17	STEP BOLT	Step Bolt 5/8" Dia x 8 1/4" Long	---		F-A	0.75	12.8	Galvanized
81	86	HB16-2	Lindapter 5/8" Type HB Hollo-Bolt (HCF)	---		---	---	---	Galvanized
3	5	SHIM-M16-3	1/8" Thick Shim For HB16-2 Hollo-Bolt	---	A-1	FC	0.2	0.5	Galvanized
			Following Items are Non-standard Parts						
3	3	SH5000-11	PL 1/2" x 4" x 2'-9" A36	---	A-1	F-1	18.9	56.7	Galvanized
2	2	---	LANCO /HENRY 287 WHITE ACRYLIC ELASTOMERIC COATING AND SEALER OR EQUIV (GALLON)	---	A-1	---	---	---	PROVIDED BY CONTRACTOR

ALL APLXXXX, LPXXXX AND RLPXXXX ARE PATENTED PRODUCTS AND CANNOT BE FABRICATED BY THIRD PARTIES. THESE PARTS ARE AVAILABLE FROM:

METROSITE, LLC.
180 IND PARK BLVD COMMERCE, GA 30529
OFFICE: (706) 335-7045
FAX: (706) 335-7056

NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

TOTAL WEIGHT (LBS) = 1304.4

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(800)-487-SITE

TES JOB NO:
62823

CUSTOMER SITE NO:
CT00680-S-SBA
CUSTOMER SITE NAME:
PUTNAM
154 SAYLE AVENUE
PUTNAM, CT 06260

DRAWN BY: CHLE | CHECKED BY: MF/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	12/21/18

SHEET TITLE:
BILL OF MATERIALS

SHEET NUMBER: BOM
REV #: 0

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE, AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.

FABRICATION

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 - FOR STEEL CONSTRUCTION & TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

POST INSTALLED EPOXY INJECTED ANCHOR BOLTS:

1. CONCRETE MUST BE A MINIMUM OF 28 DAYS OLD.
2. FOLLOW MANUFACTURER'S REQUIREMENTS FOR CURE TIME VS. AMBIENT TEMPERATURE.
3. DRILL HOLE TO REQUIRED DIAMETER AND DEPTH. ALL WATER, DIRT, OIL, DEBRIS, GREASE OR DUST MUST BE REMOVED FROM EACH CORE HOLE. FOLLOW MANUFACTURER'S RECOMMENDATION FOR CORRECT TYPE OF CORE BIT. AVOID DAMAGING EXISTING REINFORCING STEEL OR OTHER EMBEDDED ITEMS. NOTIFY TES ENGINEERING IF VOIDS IN THE CONCRETE, REINFORCING STEEL OR OTHER EMBEDDED ITEMS ARE ENCOUNTERED. STOP CORING IMMEDIATELY IF THIS OCCURS.
4. A HOLE ROUGHENING DEVICE FROM EITHER HILTI OR ALLFASTENERS SHALL BE USED WITH ALL HOLES. FOLLOW ALL MANUFACTURER'S RECOMMENDED CORING AND INSTALLATION INSTRUCTIONS.
5. AFTER CORING AND ROUGHENING, FLUSH EACH HOLE WITH RUNNING WATER TO REMOVE ANY SLURRY OR DEBRIS. REMOVE ALL WATER FROM THE HOLE BY MECHANICAL PUMPING.
6. BRUSH EACH HOLE WITH AN APPROPRIATE SIZED NYLON BRUSH AND FLUSH WITH RUNNING WATER A SECOND TIME. REMOVE ALL WATER FROM THE HOLE.
7. AFTER THE SECOND WATER FLUSH BRUSH THE HOLE AGAIN WITH THE APPROPRIATE SIZED NYLON BRUSH.
8. BLOW EACH HOLE WITH COMPRESSED AIR TWO TIMES MINIMUM.
9. CONFIRM THAT EACH HOLE IS PROPERLY ROUGHED AND DRY.
10. NO EPOXY INJECTION SHALL TAKE PLACE IN RAINY CONDITIONS.
11. EPOXY SHOULD BE VISIBLE AT THE TOP OF THE CORE HOLE AFTER INSTALLATION.
12. CONTRACTOR TO SUPPLY ONE PHOTO OF EACH ROUGHED AND CLEANED HOLE IN CLOSEOUT PHOTO PACKAGE.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING [a,b]

BOLT LENGTH [c]	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 [d]	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS [d]
NOT MORE THAN $4d_b$	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN $4d_b$ BUT NOT MORE THAN $8d_b$	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN $8d_b$ BUT NOT MORE THAN $12d_b$	2/3 TURN	5/6 TURN	1 TURN

[a] NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

[b] APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

[c] WHEN THE BOLT LENGTH EXCEEDS $12d_b$, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

[d] BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.

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TES JOB NO:
62823

CUSTOMER SITE NO:
CT00680-S-SBA
CUSTOMER SITE NAME:
PUTNAM
154 SAYLE AVENUE
PUTNAM, CT 06260

DRAWN BY: CHLE | CHECKED BY: MF/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	12/21/18

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER: GN-1
REV #: 0

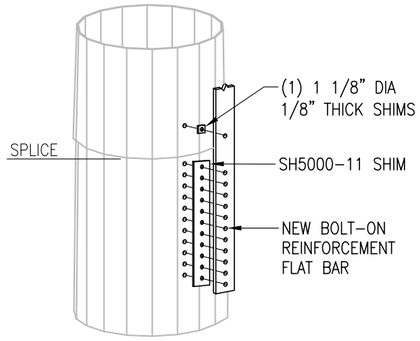
NOTE:

1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE MONOPOLE AND ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.

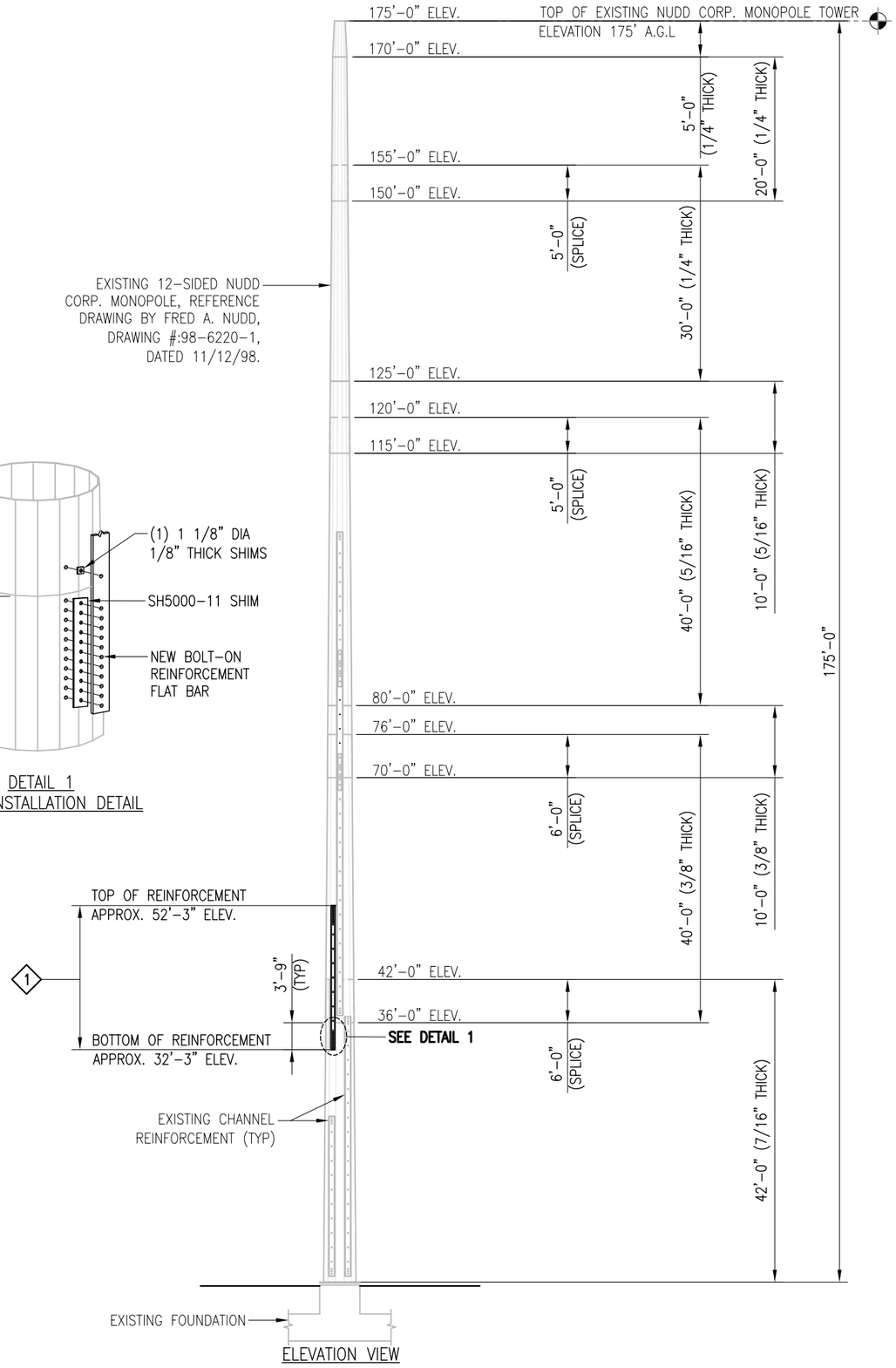
SCOPE OF WORK

1. INSTALL NEW (2) LP6X100-G-20TT AND (1) LP6X100-S-20TT FLAT BAR REINFORCEMENTS FROM APPROX. 32'-3" TO 52'-3" ELEV., SEE SHEET A-2 FOR DETAILS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.

TOWER BASE/FOUNDATION PHOTO



DETAIL 1
SHIMS INSTALLATION DETAIL



ELEVATION VIEW

FOUNDATION COATING NOTES:

1. THE COATING MATERIALS SHALL BE LANCO WHITE ACRYLIC ELASTOMERIC COATING AND SEALER, OR HYDRO ARMOR COATING.
2. THE COATING CAN BE PLACED AT LEAST (2) DAYS AFTER THE PLACEMENT OF THE CONCRETE FOR FOUNDATION REINFORCEMENT, AND MINIMUM (4) DAYS FOR NEW FOUNDATION CONSTRUCTION.
3. THE CONCRETE SURFACE SHALL BE CLEAN AND DRY PRIOR TO THE APPLICATION OF THE COATING.
4. THE COATING SHALL BE APPLIED TO ALL THE SURFACES OF THE CONCRETE ABOVE THE GROUND AND 6" BELOW THE GRADE SURFACE IF APPLICABLE.
5. MINIMUM 30 MILS COATING IS REQUIRED.
6. APPLY COLD GALVANIZE AT LEAST 2'-3' ABOVE FOUNDATION.

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TES JOB NO:
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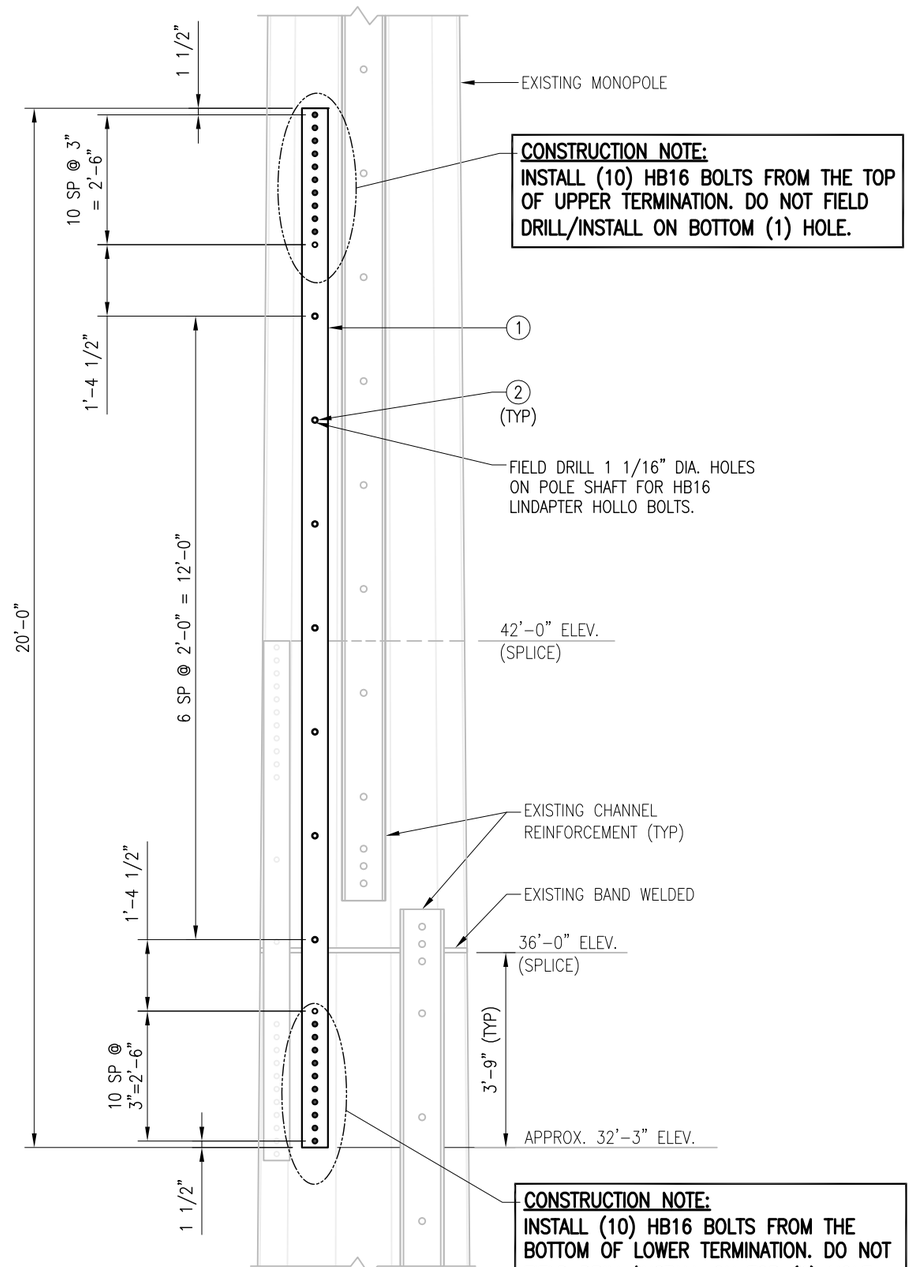
DRAWN BY: CHLE | CHECKED BY: MF/HMA

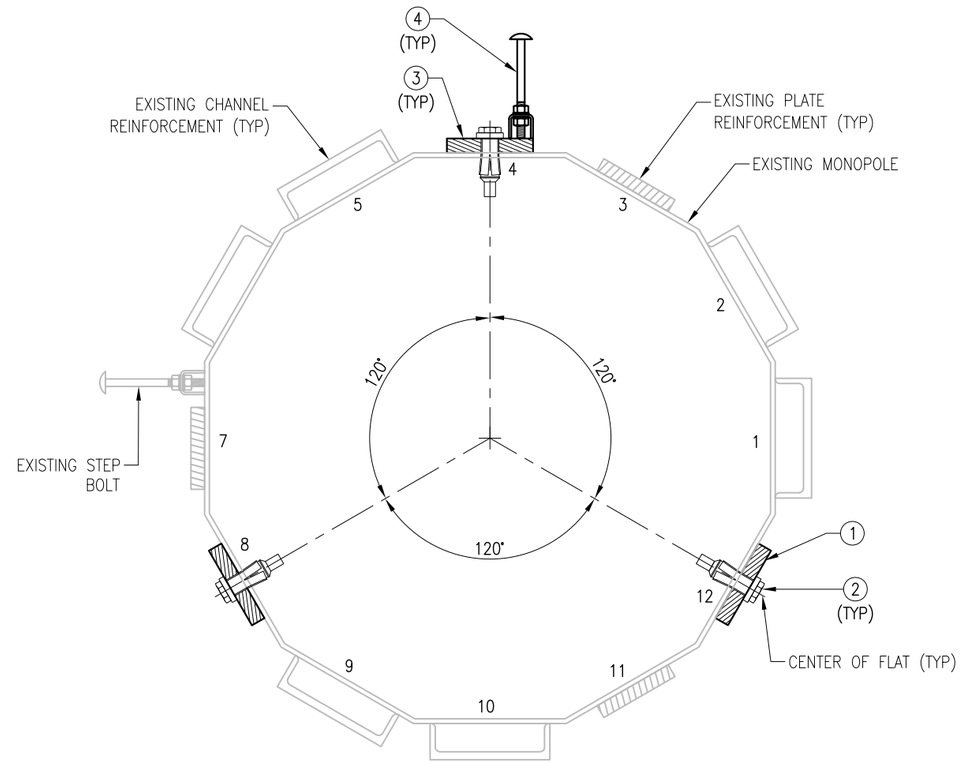
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	12/21/18

SHEET TITLE:
TOWER PROFILE

SHEET NUMBER: A-1
REV #: 0



ELEVATION VIEW
REFER TO PLAN VIEW



1 A-1 PLAN VIEW

NOTES:
1. REFER TO SHEET A-2 FOR FLAT BAR ORIENTATION.
2. INSTALLATION TORQUE FOR HOLLO/AJAX-BOLTS: SEE SHEET GN-1.
3. REMOVE EXISTING STEP BOLTS THAT INTERFERE WITH NEW REINFORCEMENT PLATES PRIOR TO INSTALLATION.

ITEM NO.	QTY.	PART NO.	DESCRIPTION (PER SECTION)
1	2	LP6X100-G-20TT	PL 1" X 6" X 20'-0" A572-65
2	81	HB16-2	LINDAPTER TYPE HB HOLLO-BOLT (HCF)
3	1	LP6X100-S-20TT	PL 1" X 6" X 20'-0" A572-65 WELDMENT WITH STEP BOLT
4	16	STEP BOLTS	STEP BOLT 5/8" X 8 1/4" W/ (2) NUT-LKW EA.

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CT00680-S-SBA
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154 SAYLE AVENUE
PUTNAM, CT 06260

DRAWN BY: CHLE | CHECKED BY: MF/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	CHLE	12/21/18

SHEET TITLE:
REINFORCEMENT ASSEMBLY

SHEET NUMBER: A-2
REV #: 0

July 17, 2018

Tim Burks
SAI Communications, LLC.
12 Industrial Way
Salem, NH 03079
(806) 989-0001

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Appurtenance Mount Analysis Report**	
Carrier Designation:	**Site Number:**	10035406
	Site Name:	Putnam Sayle Ave
Engineering Firm Designation:	**B+T Group Project Number:**	121618.004.01
Site Data:	**154 Sayle Avenue, Putnam, CT 06260, Windham County** **Latitude *41.92944*°, Longitude *-71.88638*°** **Monopole**	

Dear Mr. Burks,

B+T Group is pleased to submit this **"Appurtenance Mount Analysis Report"** to determine the structural integrity of the antenna mount on the above-mentioned structure.

The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level for the mount under the following load case to be:

Existing + Proposed Equipment Note: See Table 1 for the final loading configuration	**Sufficient Capacity with Recommended Modifications per Section 5 (Passing at 89.7%)**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

All the equipment proposed in this report shall be installed in accordance with the drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and *SAI Communications, LLC*. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Suman Rana, E.I.T

Respectfully submitted by: B&T Engineering, Inc.
COA#: PEC.0001564, Expires: 02/10/2019

STATE OF CONNECTICUT
SCOTT VANCE
31627
LICENSED
PROFESSIONAL ENGINEER

7/17/18

Scott S. Vance, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

The appurtenance mount consists of modified T-Arm mounts at 135 ft., attached to monopole at 154 Sayle Avenue, Putnam, CT 06260, Windham County. The proposed antenna loading information was obtained from SAI Communications, LLC. All information provided to B+T Group was assumed accurate and complete.

2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-G-2-2005 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 using a 3-second gust nominal wind speed of 101 mph with no ice and 50 mph with 0.75 in radial ice. In addition, the T-Arm mount has been analyzed for load combinations consisting of 500 lbs. live load using Service wind speed of 30 mph. The analyzed loading is detailed in Table 1.

Table 1 – Proposed and Existing Equipment Information

Loading	RAD Ctr. Elev. (ft.)	Qty.	Position on sector	Manufacturer	Model / Type	Note
Proposed	135	3	4	Kathrien	800-10966	-
		3		Ericsson	4478 B5	1
		3		Ericsson	4426 B66	
		1	-	Raycap	DC6-48-60-18-8F	3
Existing	137	3	1	Powerwave	7770	2
		6		Powerwave	LGP21401	
	135	3	3	CCI	TPA-65R-LCUUUU-H8	
		6		Kaelus	DBC0061F1V51-2	
		3		Ericsson	RRUS-32 B2	
		3		Ericsson	RRUS-32	
		3	5	KMW	AM-X-CD-17-65-00T-RET	
		3	-	Ericsson	RRUS-11	4
		2		Raycap	DC6-48-60-18-8F	3

Note:
1. Proposed Equipment to be Installed directly behind the antenna, back to back
2. Existing Equipment Installed on Mount to remain
3. One on each sector
4. Equipment installed on a separate mount. Not considered in the analysis.

Table 2 - Documents Provided

Documents	Remarks	Reference	Source
RFDS	Existing Loading Proposed Loading	Date:06/14/2018	SAI Communications, LLC.
Mount Modification Design	B+T Group	Date:03/02/2018	On File

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 16.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
   To accommodate the proposed antennas, the following assumptions have been included in the analysis of the mount;

Component	Section	Length	Note
Mount Pipes	2.0" std. Pipe	8'-0"	Position 3 & 4

6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. **All prior structural modifications recommended in the referenced mount modification design are assumed to be correctly installed and fully effective.**
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The following material grades were assumed (Unless Noted Otherwise):
   a. Channels — ASTM A36 (GR 36)
   b. Solid Rods — ASTM A36 (GR 36)
   c. Angles — ASTM A36 (GR 36)
   d. Plates — ASTM A36 (GR 36)
   e. HSS (Rectangular) — ASTM 500 (GR B-46)
   f. HSS (Round) — ASTM 500 (GR B-42)
   g. Pipes — ASTM A53 (GR 35)
   h. Connection Bolts — ASTM A325
   i. Unistruts – P1000 — ASTM A570 (GR 33)

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

Notes	Component	Elevation (ft.)	% Capacity*	Pass / Fail
-	Face Horizontals	135	89.7	Pass
-	Supporting Tubes	135	86.0	Pass
-	Supporting Angles	135	24.9	Pass
-	Existing Mount Pipes	135	66.2	Pass
-	Connection Pipes	135	58.6	Pass
-	Connection Tubes	135	32.9	Pass
-	Horizontal Pipes	135	53.2	Pass
-	Reinforcement Kits	135	39.9	Pass
-	Bracing Pipes	135	26.0	Pass
-	New Mount Pipes	135	53.8	Pass

Note: *Member Capacity based on Recommended Modification on Section 5

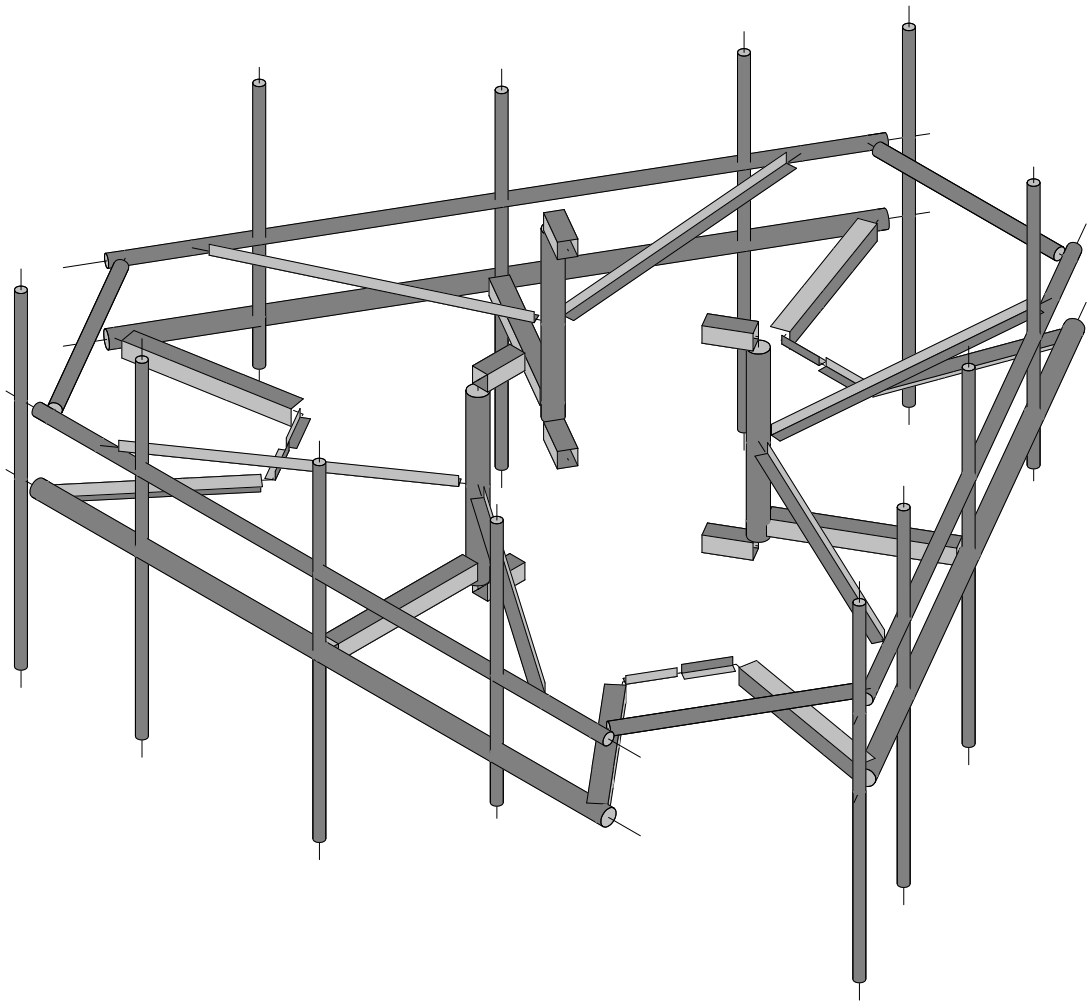
5) RECOMMENDATIONS

The existing modified mount does not have sufficient capacity to support the existing and proposed loading. To bring the mount in compliance with the ANSI/TIA-222-G standard for the proposed and existing loading, the following modification is recommended:

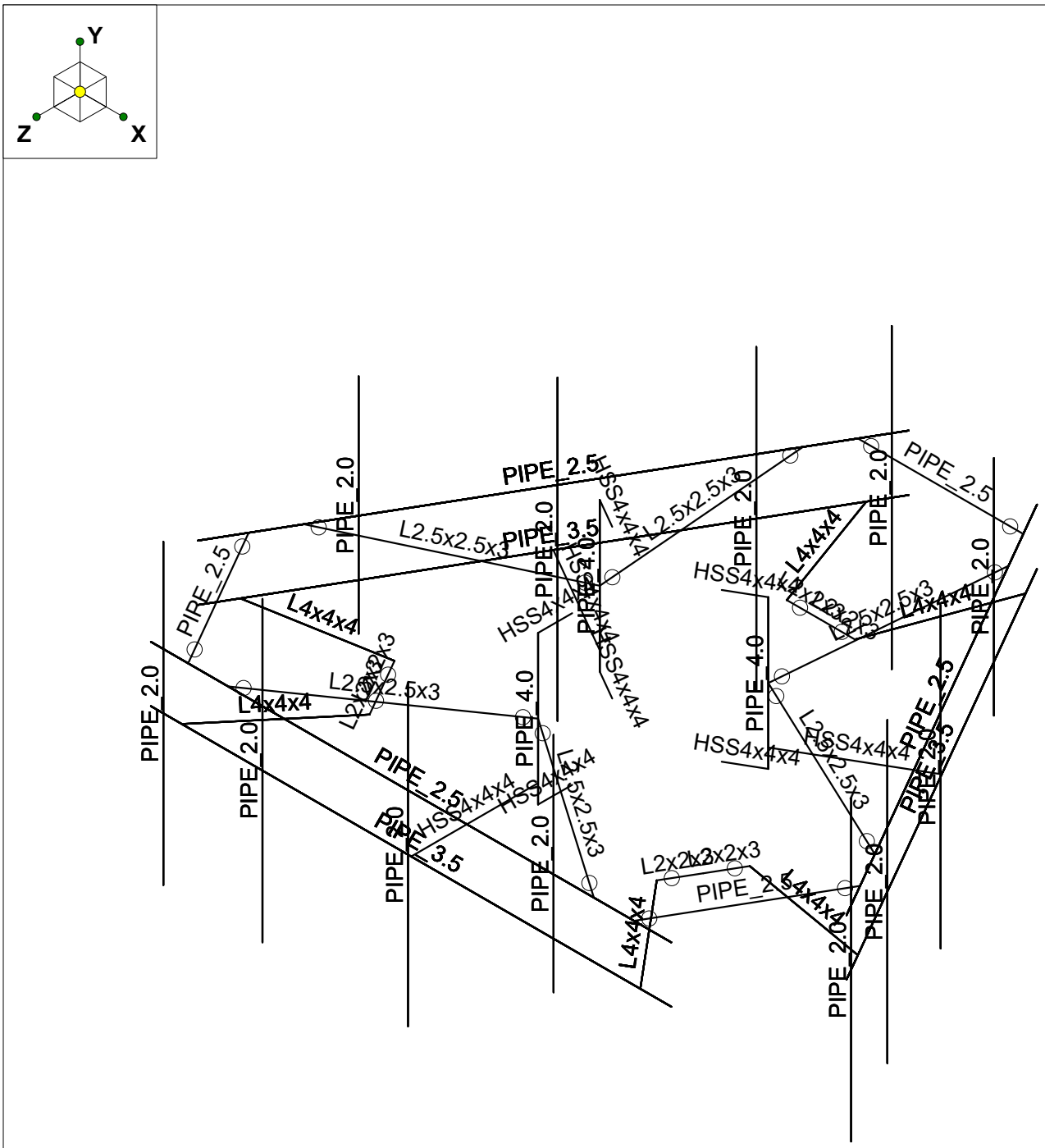
a. **Replace the mount pipes at positions 3 and 4 (2" std. pipes assumed) with new 2.5" std. pipes, 8' long, centered to the mount.**

APPENDIX A

RISA-3D Output (Existing)



B+T Group	10035406 - Putnam Sayle Ave	SK - 1
SR		July 17, 2018 at 11:18 AM
121618.004.01		121618_004_01_Putnam Sayle Av...



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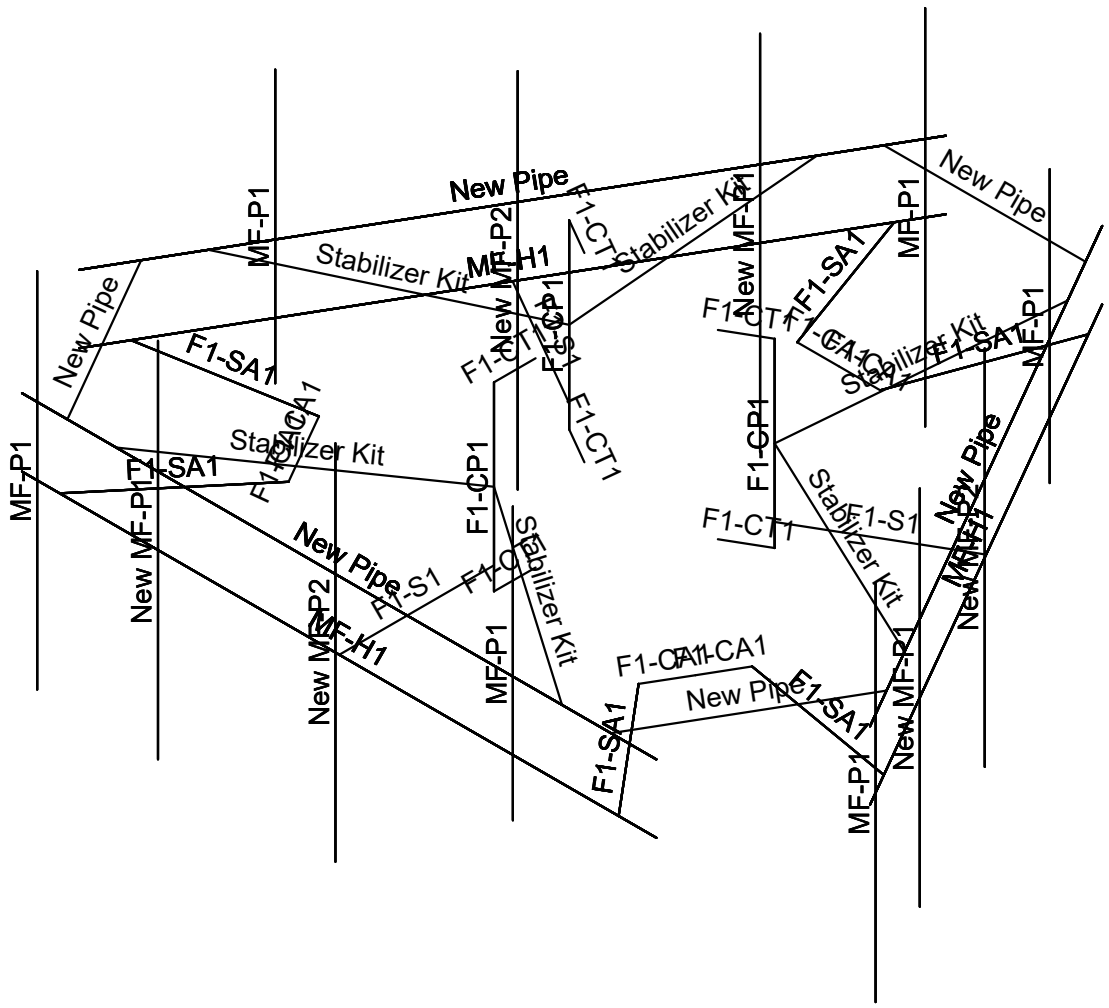

B+T Group	10035406 - Putnam Sayle Ave	SK - 4
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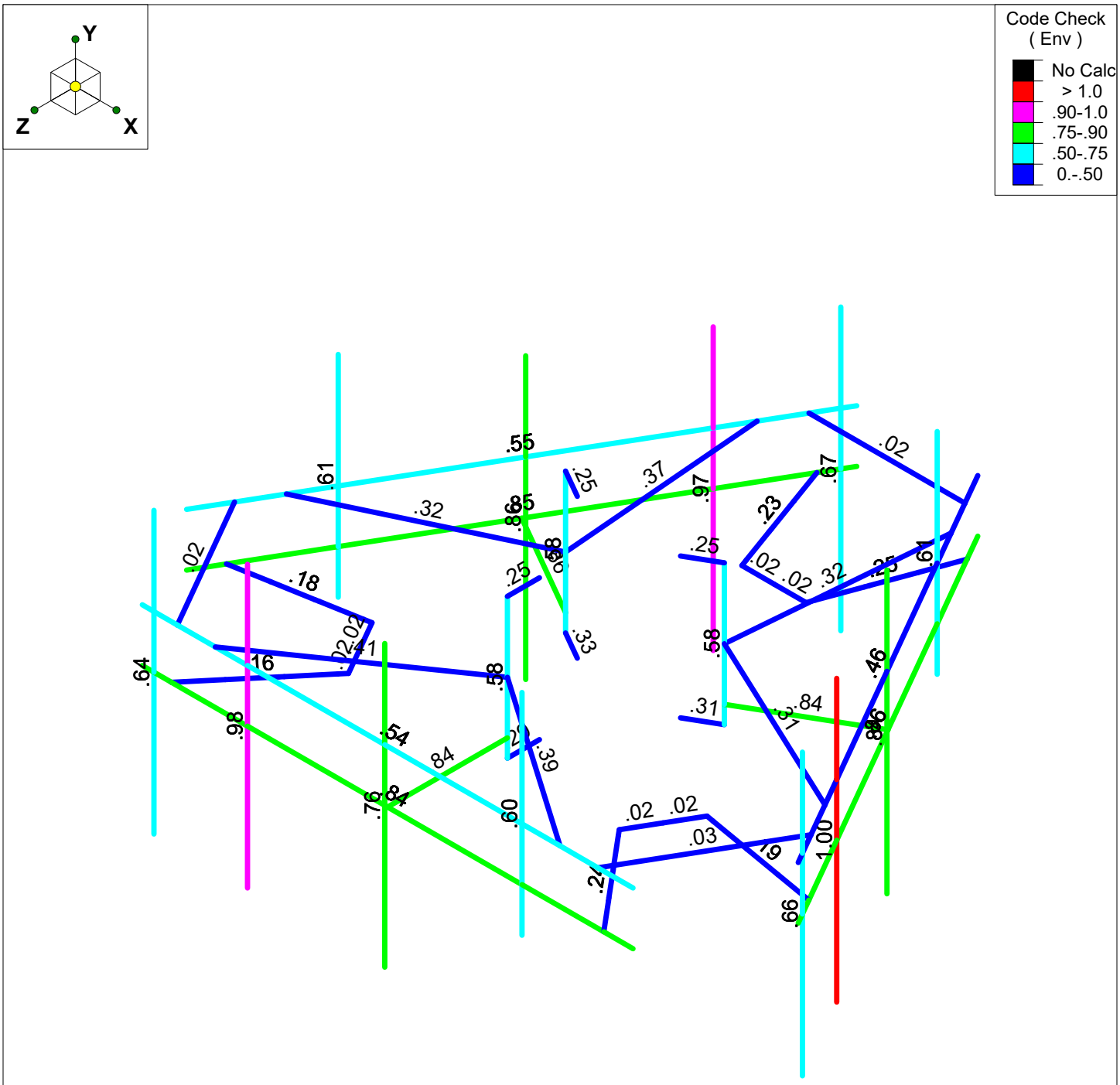

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 5
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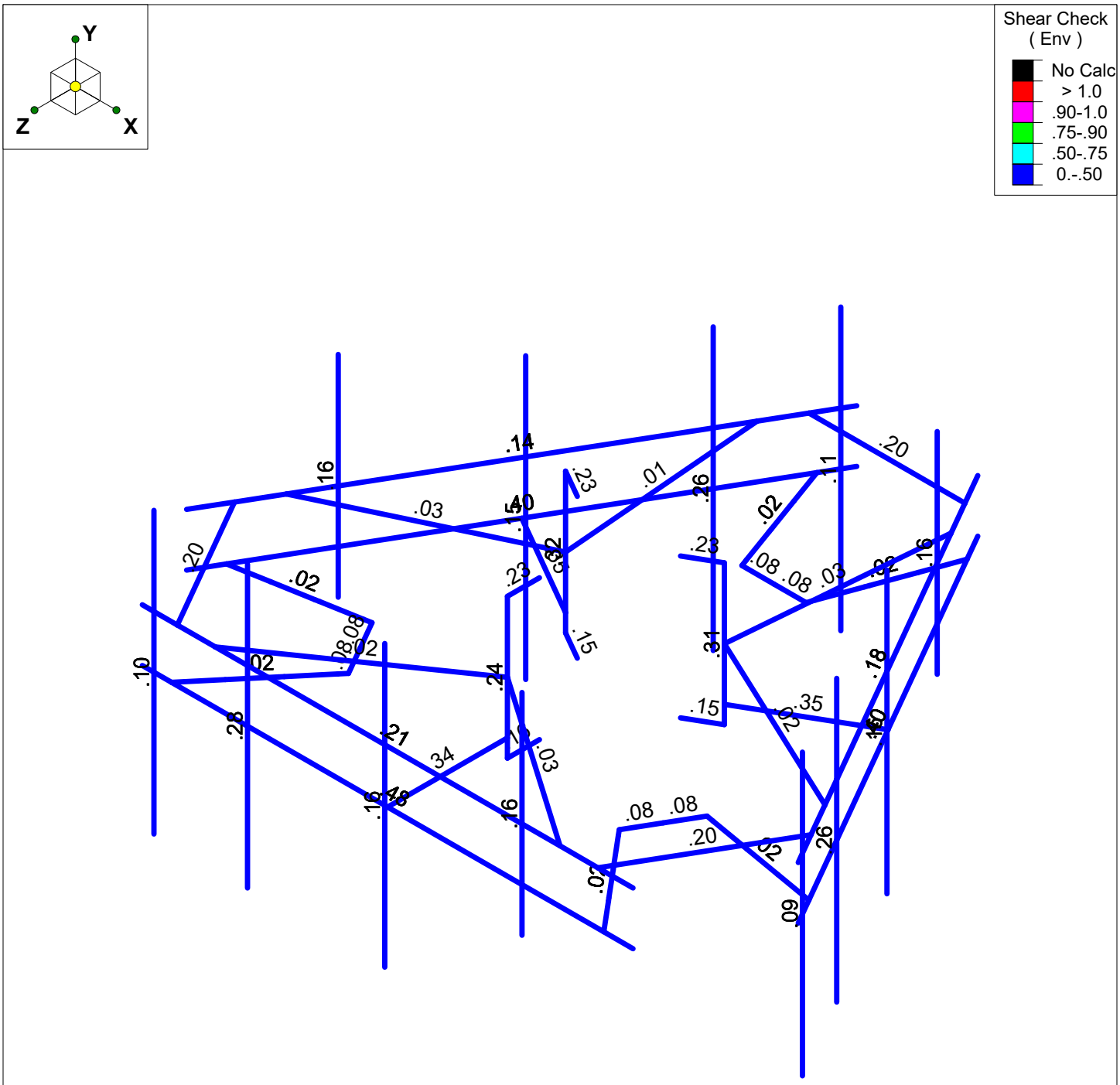
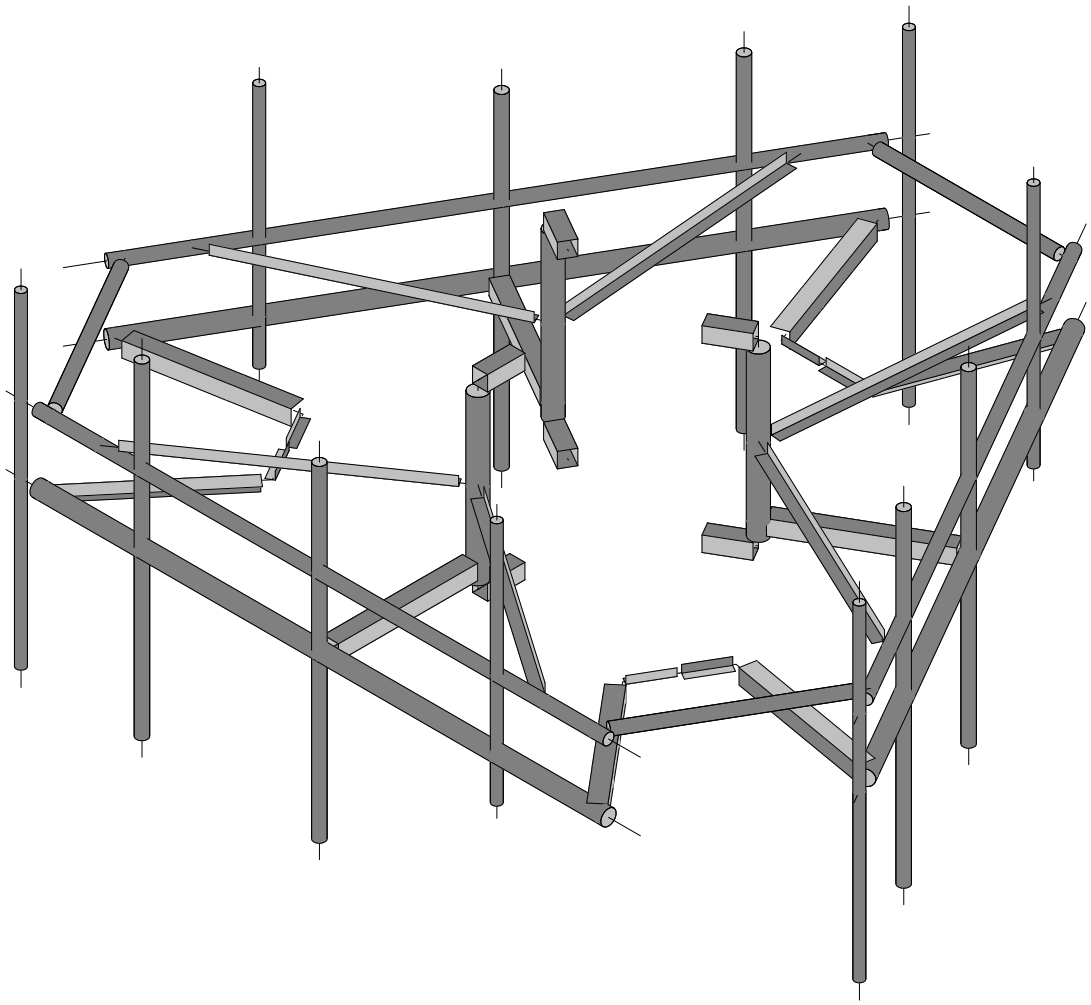


Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 6
SR		July 17, 2018 at 11:21 AM
121618.004.01		121618_004_01_Putnam Sayle Av...

APPENDIX B

RISA-3D Output (Existing with Recommendation)



Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 2
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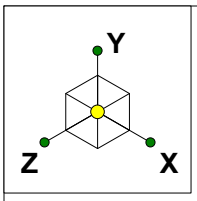

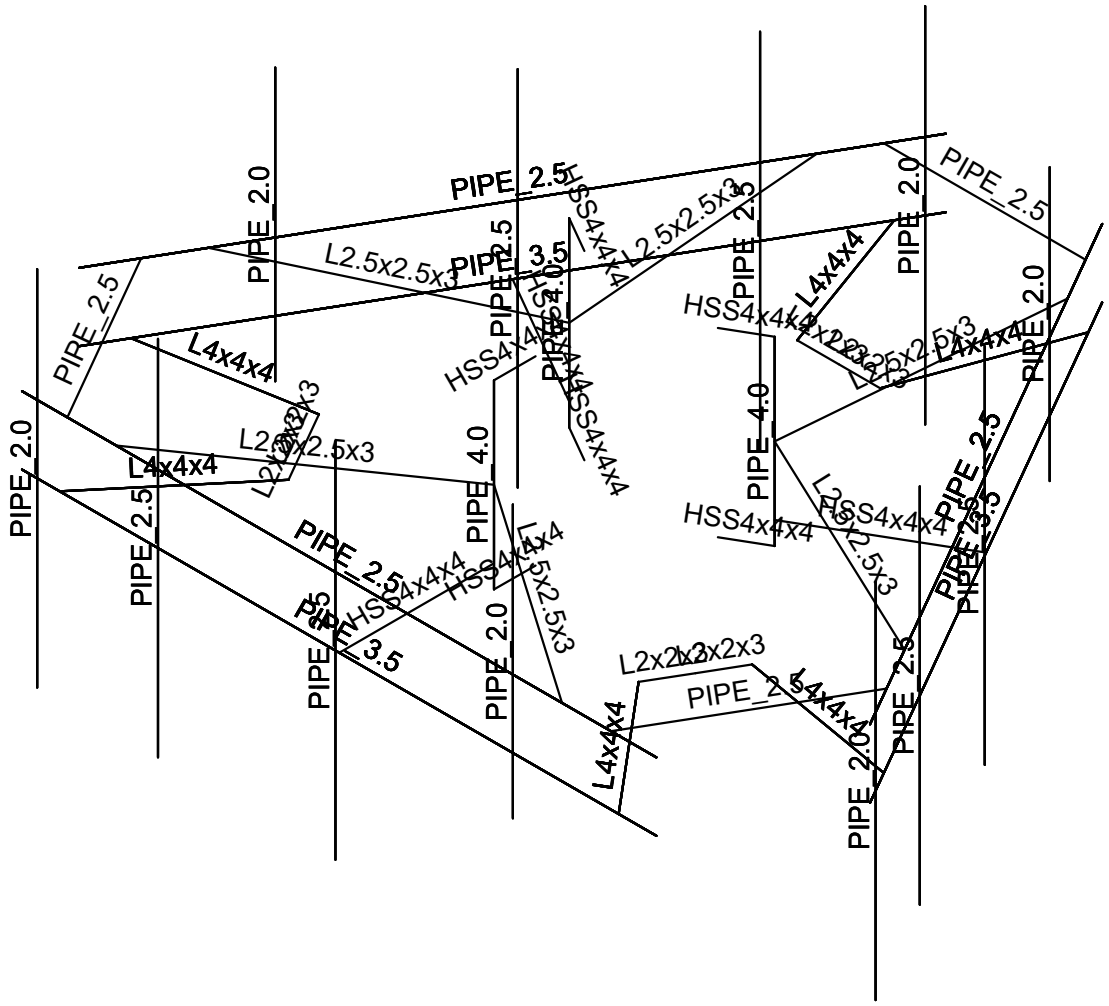

Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 3
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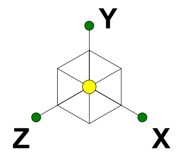

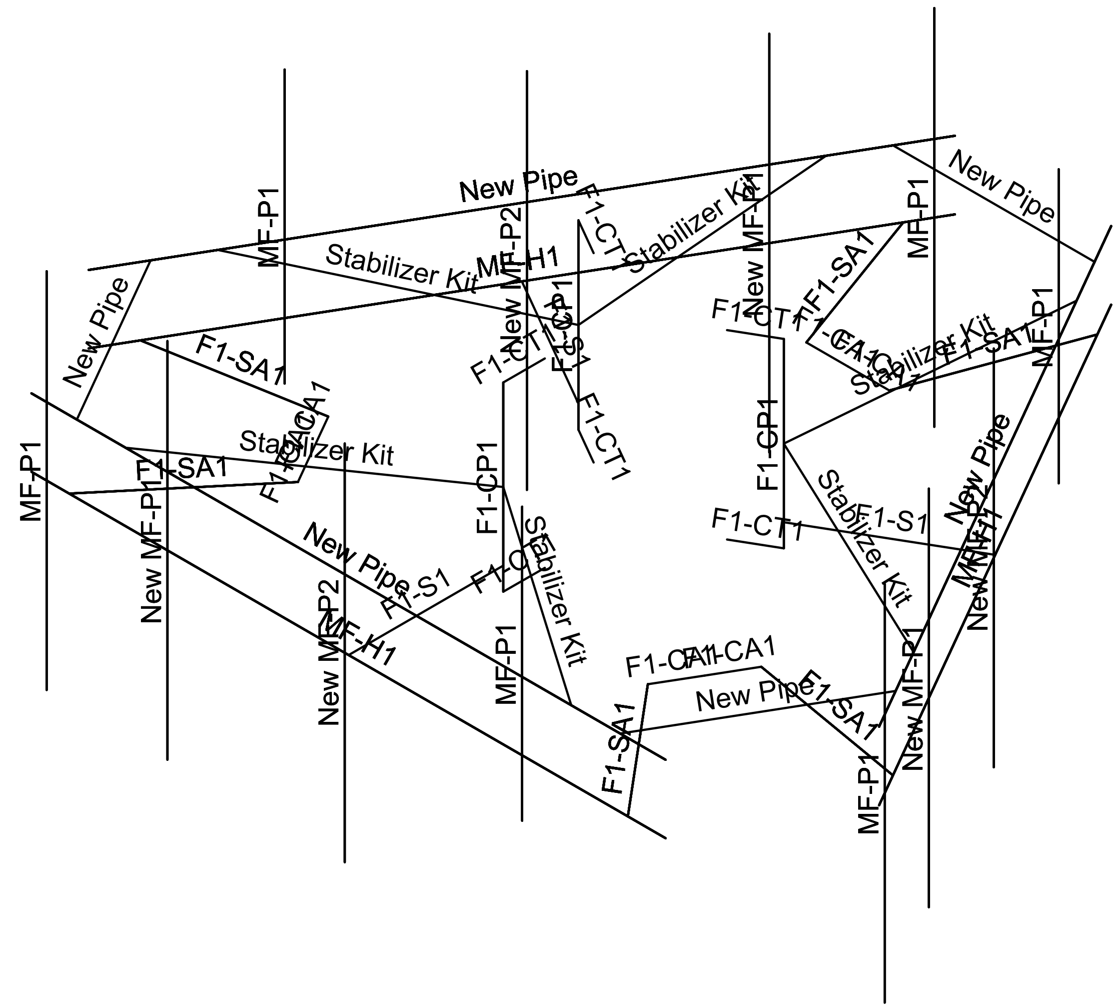

Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 4
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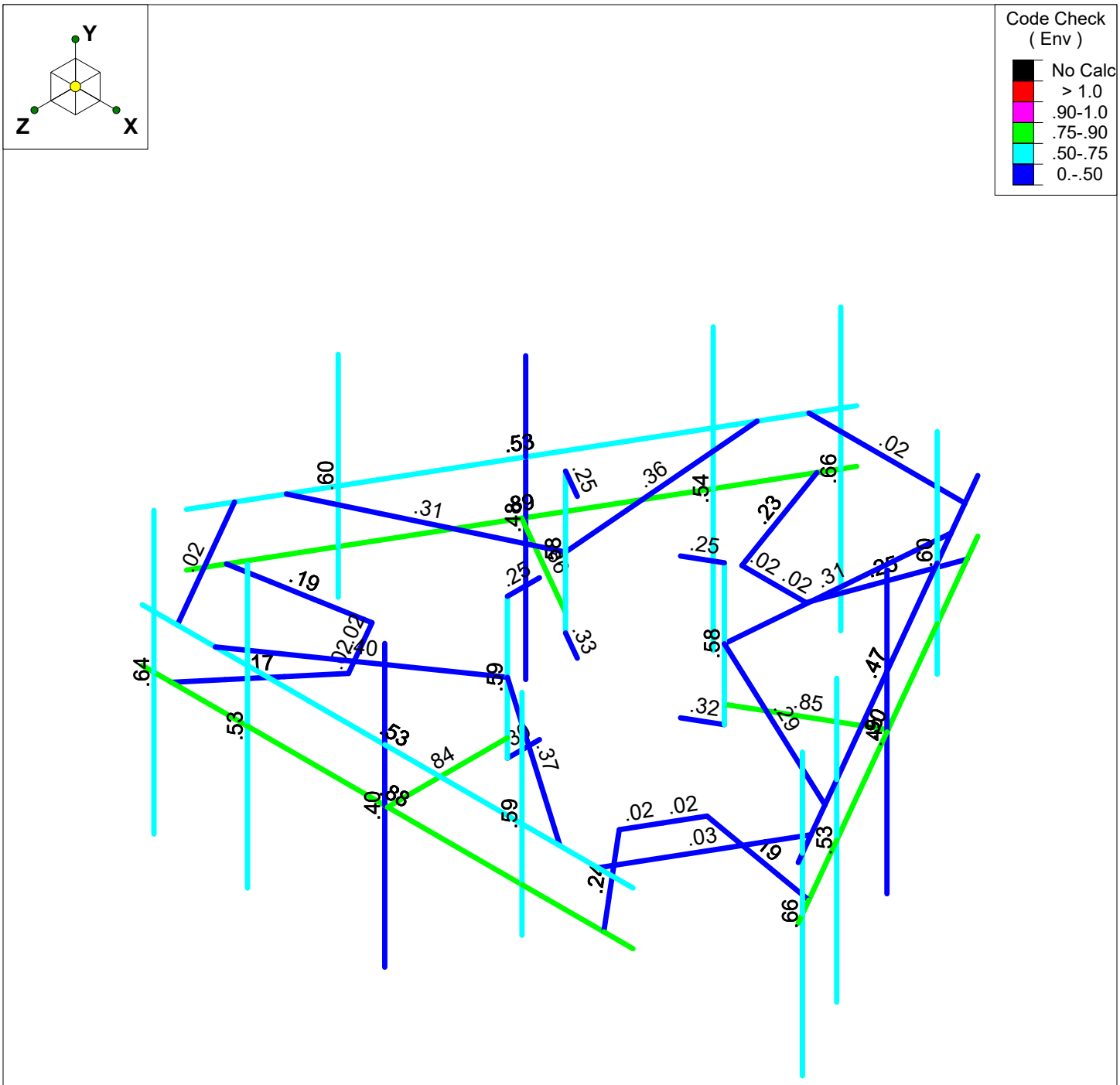

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 5
SR		July 17, 2018 at 11:17 AM
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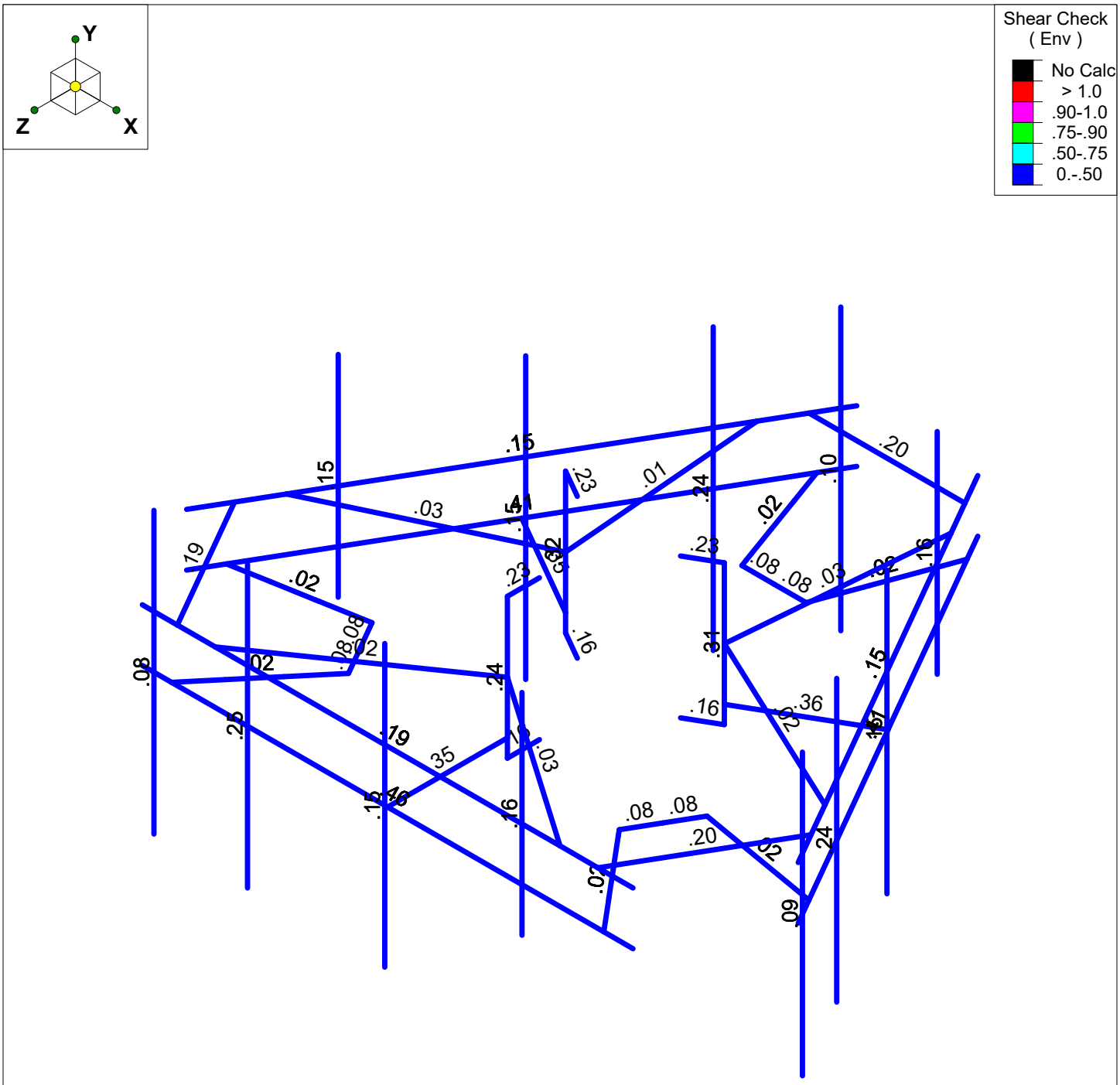


Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	10035406 - Putnam Sayle Ave	SK - 6
SR		July 17, 2018 at 11:17 AM
121618.004.01		121618_004_01_Putnam Sayle Av...

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MF-H1	PIPE_3.5	Beam	Pipe	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
2	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	F1-S1	HSS4x4x4	Beam	Tube	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
4	F1-CP1	PIPE_4.0	Column	Pipe	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
5	F1-CT1	HSS4x4x4	Beam	Tube	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
6	F1-SA1	L4x4x4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
7	F1-CA1	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
8	New Pipe	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
9	Stabilizer Kit	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
10	New MF-P1	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
11	New MF-P2	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			MF-H1	Beam	Pipe	A53 Gr.B	Typical
2	M2	N3	N12			F1-S1	Beam	Tube	A500 Gr.B...	Typical
3	M12	N14	N13			F1-CT1	Beam	Tube	A500 Gr.B...	Typical
4	M13	N15	N14			F1-CP1	Column	Pipe	A53 Gr.B	Typical
5	M14	N15	N16			F1-CT1	Beam	Tube	A500 Gr.B...	Typical
6	M15	N17	N56		90	F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
7	M16	N18	N58		180	F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
8	M17	N19	N20			MF-H1	Beam	Pipe	A53 Gr.B	Typical
9	M18	N21	N30			F1-S1	Beam	Tube	A500 Gr.B...	Typical
10	M28	N32	N31			F1-CT1	Beam	Tube	A500 Gr.B...	Typical
11	M29	N32	N33			F1-CP1	Column	Pipe	A53 Gr.B	Typical
12	M30	N33	N34			F1-CT1	Beam	Tube	A500 Gr.B...	Typical
13	M31	N35	N55		180	F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
14	M32	N36	N62		90	F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
15	M33	N37	N38			MF-H1	Beam	Pipe	A53 Gr.B	Typical
16	M34	N39	N48			F1-S1	Beam	Tube	A500 Gr.B...	Typical
17	M44	N50	N49			F1-CT1	Beam	Tube	A500 Gr.B...	Typical
18	M45	N50	N51			F1-CP1	Column	Pipe	A53 Gr.B	Typical
19	M46	N51	N52			F1-CT1	Beam	Tube	A500 Gr.B...	Typical
20	M47	N53	N59		90	F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
21	M48	N54	N61		180	F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
22	M58	N65	N66			MF-P1	Column	Pipe	A53 Gr.B	Typical
23	M59	N67	N68			New MF-P1	Column	Pipe	A53 Gr.B	Typical
24	M60	N69	N70			MF-P1	Column	Pipe	A53 Gr.B	Typical
25	M61	N71	N72			MF-P1	Column	Pipe	A53 Gr.B	Typical
26	M62	N73	N74			New MF-P1	Column	Pipe	A53 Gr.B	Typical
27	M63	N75	N76			MF-P1	Column	Pipe	A53 Gr.B	Typical
28	M64	N77	N78			MF-P1	Column	Pipe	A53 Gr.B	Typical
29	M65	N79	N80			New MF-P1	Column	Pipe	A53 Gr.B	Typical
30	M66	N81	N82			MF-P1	Column	Pipe	A53 Gr.B	Typical
31	M33A	N93	N55			F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
32	M34A	N56	N93		270	F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
33	M33B	N93A	N58			F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
34	M34B	N59	N93A		270	F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
35	M35	N96	N61			F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
36	M36	N62	N96		270	F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
37	M37	N97	N98A			New Pipe	Beam	Pipe	A53 Gr.B	Typical
38	M38	N93B	N94			New Pipe	Beam	Pipe	A53 Gr.B	Typical
39	M39	N96A	N95			New Pipe	Beam	Pipe	A53 Gr.B	Typical
40	M49	N135	N138			Stabilizer Kit	Beam	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
41	M50	N135	N139			Stabilizer Kit	Beam	Single Angle	A36 Gr.36	Typical
42	M51	N137	N141			Stabilizer Kit	Beam	Single Angle	A36 Gr.36	Typical
43	M52	N137	N142			Stabilizer Kit	Beam	Single Angle	A36 Gr.36	Typical
44	M53	N136	N144			Stabilizer Kit	Beam	Single Angle	A36 Gr.36	Typical
45	M54	N136	N145			Stabilizer Kit	Beam	Single Angle	A36 Gr.36	Typical
46	M52A	N109	N140			New Pipe	Beam	Pipe	A53 Gr.B	Typical
47	M53A	N141A	N142A			New Pipe	Beam	Pipe	A53 Gr.B	Typical
48	M54A	N143	N108			New Pipe	Beam	Pipe	A53 Gr.B	Typical
49	M55	N145A	N146			New MF-P2	Column	Pipe	A53 Gr.B	Typical
50	M56	N148	N149			New MF-P2	Column	Pipe	A53 Gr.B	Typical
51	M57	N151	N152			New MF-P2	Column	Pipe	A53 Gr.B	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL		-1			70		6	
2	0 Wind - No Ice	WLZ					70	51		
3	90 Wind - No Ice	WLX					70	51		
4	0 Wind - Ice	WLZ					70	51		
5	90 Wind - Ice	WLX					70	51		
6	0 Wind - Service	WLZ					70	51		
7	90 Wind - Service	WLX					70	51		
8	Ice	OL1					70	51	6	
9	Live Load a	LL				1				
10	Live Load b	LL				1				
11	Live Load c	LL				1				
12	Live Load d	LL				1				
13	Maint LL 1	LL					1			
14	Maint LL 2	LL					1			
15	Maint LL 3	LL					1			
16	Maint LL 4	LL					1			
17	Maint LL 5	LL					1			
18	Maint LL 6	LL					1			
19	Maint LL 7	LL					1			
20	Maint LL 8	LL					1			
21	Maint LL 9	LL					1			
22	Maint LL 10	LL								
23	Maint LL 11	LL								
24	Maint LL 12	LL								
25	Maint LL 13	LL								
26	Maint LL 14	LL								
27	Maint LL 15	LL								
28	BLC 1 Transient Area...	None						65		
29	BLC 8 Transient Area...	None						65		

Load Combinations

	Description	S...	PDelta	S...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 Dead	Y...	Y		1	1.4																				
2	0.9 D + 1.6 - 0 W	Y...	Y		1	.9	2	1.6																		
3	0.9 D + 1.6 - 30 W	Y...	Y		1	.9	2	1....	3	.8																
4	0.9 D + 1.6 - 60 W	Y...	Y		1	.9	3	1....	2	.8																
5	0.9 D + 1.6 - 90 W	Y...	Y		1	.9	3	1.6																		
6	0.9 D + 1.6 - 120 W	Y...	Y		1	.9	3	1....	2	-.8																
7	0.9 D + 1.6 - 150 W	Y...	Y		1	.9	2	-1....	3	.8																
8	0.9 D + 1.6 - 180 W	Y...	Y		1	.9	2	-1.6																		

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
9	0.9 D + 1.6 - 210 W	Y...	Y		1	.9	2	-1....	3	-.8																
10	0.9 D + 1.6 - 240 W	Y...	Y		1	.9	3	-1....	2	-.8																
11	0.9 D + 1.6 - 270 W	Y...	Y		1	.9	3	-1.6																		
12	0.9 D + 1.6 - 300 W	Y...	Y		1	.9	3	-1....	2	.8																
13	0.9 D + 1.6 - 330 W	Y...	Y		1	.9	2	1....	3	-.8																
14	1.2 D + 1.6 - 0 W	Y...	Y		1	1.2	2	1.6																		
15	1.2 D + 1.6 - 30 W	Y...	Y		1	1.2	2	1....	3	.8																
16	1.2 D + 1.6 - 60 W	Y...	Y		1	1.2	3	1....	2	.8																
17	1.2 D + 1.6 - 90 W	Y...	Y		1	1.2	3	1.6																		
18	1.2 D + 1.6 - 120 W	Y...	Y		1	1.2	3	1....	2	-.8																
19	1.2 D + 1.6 - 150 W	Y...	Y		1	1.2	2	-1....	3	.8																
20	1.2 D + 1.6 - 180 W	Y...	Y		1	1.2	2	-1.6																		
21	1.2 D + 1.6 - 210 W	Y...	Y		1	1.2	2	-1....	3	-.8																
22	1.2 D + 1.6 - 240 W	Y...	Y		1	1.2	3	-1....	2	-.8																
23	1.2 D + 1.6 - 270 W	Y...	Y		1	1.2	3	-1.6																		
24	1.2 D + 1.6 - 300 W	Y...	Y		1	1.2	3	-1....	2	.8																
25	1.2 D + 1.6 - 330 W	Y...	Y		1	1.2	2	1....	3	-.8																
26	0.9 D + 1.6 - 0 W/Ice	Y...	Y		1	.9	4	1.6			8	1														
27	0.9 D + 1.6 - 30 W/Ice	Y...	Y		1	.9	4	1....	5	.8	8	1														
28	0.9 D + 1.6 - 60 W/Ice	Y...	Y		1	.9	5	1....	4	.8	8	1														
29	0.9 D + 1.6 - 90 W/Ice	Y...	Y		1	.9	5	1.6			8	1														
30	0.9 D + 1.6 - 120 W/Ice	Y...	Y		1	.9	5	1....	4	-.8	8	1														
31	0.9 D + 1.6 - 150 W/Ice	Y...	Y		1	.9	4	-1....	5	.8	8	1														
32	0.9 D + 1.6 - 180 W/Ice	Y...	Y		1	.9	4	-1.6			8	1														
33	0.9 D + 1.6 - 210 W/Ice	Y...	Y		1	.9	4	-1....	5	-.8	8	1														
34	0.9 D + 1.6 - 240 W/Ice	Y...	Y		1	.9	5	-1....	4	-.8	8	1														
35	0.9 D + 1.6 - 270 W/Ice	Y...	Y		1	.9	5	-1.6			8	1														
36	0.9 D + 1.6 - 300 W/Ice	Y...	Y		1	.9	5	-1....	4	.8	8	1														
37	0.9 D + 1.6 - 330 W/Ice	Y...	Y		1	.9	4	1....	5	-.8	8	1														
38	1.2 D + 1.0 - 0 W/Ice	Y...	Y		1	1.2	4	1			8	1														
39	1.2 D + 1.0 - 30 W/Ice	Y...	Y		1	1.2	4	.866	5	.5	8	1														
40	1.2 D + 1.0 - 60 W/Ice	Y...	Y		1	1.2	5	.866	4	.5	8	1														
41	1.2 D + 1.0 - 90 W/Ice	Y...	Y		1	1.2	5	1			8	1														
42	1.2 D + 1.0 - 120 W/Ice	Y...	Y		1	1.2	5	.866	4	-.5	8	1														
43	1.2 D + 1.0 - 150 W/Ice	Y...	Y		1	1.2	4	-.8...	5	.5	8	1														
44	1.2 D + 1.0 - 180 W/Ice	Y...	Y		1	1.2	4	-1			8	1														
45	1.2 D + 1.0 - 210 W/Ice	Y...	Y		1	1.2	4	-.8...	5	-.5	8	1														
46	1.2 D + 1.0 - 240 W/Ice	Y...	Y		1	1.2	5	-.8...	4	-.5	8	1														
47	1.2 D + 1.0 - 270 W/Ice	Y...	Y		1	1.2	5	-1			8	1														
48	1.2 D + 1.0 - 300 W/Ice	Y...	Y		1	1.2	5	-.8...	4	.5	8	1														
49	1.2 D + 1.0 - 330 W/Ice	Y...	Y		1	1.2	4	.866	5	-.5	8	1														
50	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	6	1			9	1.5														
51	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	6	.866	7	.5	9	1.5														
52	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	7	.866	6	.5	9	1.5														
53	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	7	1			9	1.5														
54	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	7	.866	6	-.5	9	1.5														
55	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	6	-.8...	7	.5	9	1.5														
56	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	6	-1			9	1.5														
57	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	6	-.8...	7	-.5	9	1.5														
58	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	7	-.8...	6	-.5	9	1.5														
59	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	7	-1			9	1.5														
60	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	7	-.8...	6	.5	9	1.5														
61	1.2 D + 1.5 LL a + Service -...	Y...	Y		1	1.2	6	.866	7	-.5	9	1.5														
62	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	6	1			10	1.5														
63	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	6	.866	7	.5	10	1.5														
64	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	7	.866	6	.5	10	1.5														
65	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	7	1			10	1.5														

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
66	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	7	.866	6	-.5	10	1.5												
67	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	6	-.8...	7	.5	10	1.5												
68	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	6	-1			10	1.5												
69	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	6	-.8...	7	-.5	10	1.5												
70	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	7	-.8...	6	-.5	10	1.5												
71	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	7	-1			10	1.5												
72	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	7	-.8...	6	.5	10	1.5												
73	1.2 D + 1.5 LL b + Service -...	Y...	Y		1	1.2	6	.866	7	-.5	10	1.5												
74	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	6	1			11	1.5												
75	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	6	.866	7	.5	11	1.5												
76	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	7	.866	6	.5	11	1.5												
77	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	7	1			11	1.5												
78	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	7	.866	6	-.5	11	1.5												
79	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	6	-.8...	7	.5	11	1.5												
80	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	6	-1			11	1.5												
81	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	6	-.8...	7	-.5	11	1.5												
82	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	7	-.8...	6	-.5	11	1.5												
83	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	7	-1			11	1.5												
84	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	7	-.8...	6	.5	11	1.5												
85	1.2 D + 1.5 LL c + Service - ...	Y...	Y		1	1.2	6	.866	7	-.5	11	1.5												
86	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	6	1			12	1.5												
87	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	6	.866	7	.5	12	1.5												
88	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	7	.866	6	.5	12	1.5												
89	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	7	1			12	1.5												
90	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	7	.866	6	-.5	12	1.5												
91	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	6	-.8...	7	.5	12	1.5												
92	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	6	-1			12	1.5												
93	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	6	-.8...	7	-.5	12	1.5												
94	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	7	-.8...	6	-.5	12	1.5												
95	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	7	-1			12	1.5												
96	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	7	-.8...	6	.5	12	1.5												
97	1.2 D + 1.5 LL d + Service -...	Y...	Y		1	1.2	6	.866	7	-.5	12	1.5												
98	1.2 D + 1.5 LL Maint (1)	Y...	Y		1	1.2					13	1.5												
99	1.2 D + 1.5 LL Maint (2)	Y...	Y		1	1.2					14	1.5												
100	1.2 D + 1.5 LL Maint (3)	Y...	Y		1	1.2					15	1.5												
101	1.2 D + 1.5 LL Maint (4)	Y...	Y		1	1.2					16	1.5												
102	1.2 D + 1.5 LL Maint (5)	Y...	Y		1	1.2					17	1.5												
103	1.2 D + 1.5 LL Maint (6)	Y...	Y		1	1.2					18	1.5												
104	1.2 D + 1.5 LL Maint (7)	Y...	Y		1	1.2					19	1.5												
105	1.2 D + 1.5 LL Maint (8)	Y...	Y		1	1.2					20	1.5												
106	1.2 D + 1.5 LL Maint (9)	Y...	Y		1	1.2					21	1.5												
107	1.2 D + 1.5 LL Maint (10)	Y...	Y		1	1.2					22	1.5												
108	1.2 D + 1.5 LL Maint (11)	Y...	Y		1	1.2					23	1.5												
109	1.2 D + 1.5 LL Maint (12)	Y...	Y		1	1.2					24	1.5												
110	1.2 D + 1.5 LL Maint (13)	Y...	Y		1	1.2					25	1.5												
111	1.2 D + 1.5 LL Maint (14)	Y...	Y		1	1.2					26	1.5												
112	1.2 D + 1.5 LL Maint (15)	Y...	Y		1	1.2					27	1.5												

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	Y	-.018	%5
2	M58	Y	-.018	%75
3	M58	Y	-.028	%55
4	M58	Y	0	0
5	M58	Y	0	0

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
6	M55	Y	-.037	%5
7	M55	Y	-.037	%95
8	M55	Y	-.051	%25
9	M55	Y	-.053	%40
10	M55	Y	-.055	%40
11	M59	Y	-.057	%5
12	M59	Y	-.057	%95
13	M59	Y	-.06	%30
14	M59	Y	-.048	%30
15	M59	Y	0	0
16	M60	Y	-.03	%5
17	M60	Y	-.03	%95
18	M60	Y	0	0
19	M60	Y	0	0
20	M60	Y	0	0
21	M13	Y	-.033	%40
22	M13	Y	0	0
23	M13	Y	0	0
24	M13	Y	0	0
25	M13	Y	0	0
26	M29	Y	-.033	%40
27	M29	Y	0	0
28	M29	Y	0	0
29	M29	Y	0	0
30	M29	Y	0	0
31	M64	Y	-.018	%5
32	M64	Y	-.018	%75
33	M64	Y	-.028	%55
34	M64	Y	0	0
35	M64	Y	0	0
36	M57	Y	-.037	%5
37	M57	Y	-.037	%95
38	M57	Y	-.051	%25
39	M57	Y	-.053	%40
40	M57	Y	-.055	%40
41	M65	Y	-.057	%5
42	M65	Y	-.057	%95
43	M65	Y	-.06	%30
44	M65	Y	-.048	%30
45	M65	Y	0	0
46	M66	Y	-.03	%5
47	M66	Y	-.03	%95
48	M66	Y	0	0
49	M66	Y	0	0
50	M66	Y	0	0
51	M61	Y	-.018	%5
52	M61	Y	-.018	%75
53	M61	Y	-.028	%55
54	M61	Y	0	0
55	M61	Y	0	0
56	M56	Y	-.037	%5
57	M56	Y	-.037	%95
58	M56	Y	-.051	%25
59	M56	Y	-.053	%40
60	M56	Y	-.055	%40
61	M62	Y	-.057	%5
62	M62	Y	-.057	%95

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
63	M62	Y	-.06	%30
64	M62	Y	-.048	%30
65	M62	Y	0	0
66	M63	Y	-.03	%5
67	M63	Y	-.03	%95
68	M63	Y	0	0
69	M63	Y	0	0
70	M63	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	Z	-.092	%5
2	M58	Z	-.092	%75
3	M58	Z	-.074	%55
4	M58	Z	0	0
5	M58	Z	0	0
6	M55	Z	-.223	%5
7	M55	Z	-.223	%95
8	M55	Z	-.029	%25
9	M55	Z	-.056	%40
10	M55	Z	-.059	%40
11	M59	Z	-.291	%5
12	M59	Z	-.291	%95
13	M59	Z	-.035	%30
14	M59	Z	-.024	%30
15	M59	Z	0	0
16	M60	Z	-.19	%5
17	M60	Z	-.19	%95
18	M60	Z	0	0
19	M60	Z	0	0
20	M60	Z	0	0
21	M13	Z	-.041	%40
22	M13	Z	0	0
23	M13	Z	0	0
24	M13	Z	0	0
25	M13	Z	0	0
26	M29	Z	-.041	%40
27	M29	Z	0	0
28	M29	Z	0	0
29	M29	Z	0	0
30	M29	Z	0	0
31	M64	Z	-.092	%5
32	M64	Z	-.092	%75
33	M64	Z	-.074	%55
34	M64	Z	0	0
35	M64	Z	0	0
36	M57	Z	-.223	%5
37	M57	Z	-.223	%95
38	M57	Z	-.029	%25
39	M57	Z	-.056	%40
40	M57	Z	-.059	%40
41	M65	Z	-.291	%5
42	M65	Z	-.291	%95
43	M65	Z	-.035	%30
44	M65	Z	-.024	%30
45	M65	Z	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
46	M66	Z	-.19	%5
47	M66	Z	-.19	%95
48	M66	Z	0	0
49	M66	Z	0	0
50	M66	Z	0	0
51	M61	Z	-.092	%5
52	M61	Z	-.092	%75
53	M61	Z	-.074	%55
54	M61	Z	0	0
55	M61	Z	0	0
56	M56	Z	-.223	%5
57	M56	Z	-.223	%95
58	M56	Z	-.029	%25
59	M56	Z	-.056	%40
60	M56	Z	-.059	%40
61	M62	Z	-.291	%5
62	M62	Z	-.291	%95
63	M62	Z	-.035	%30
64	M62	Z	-.024	%30
65	M62	Z	0	0
66	M63	Z	-.19	%5
67	M63	Z	-.19	%95
68	M63	Z	0	0
69	M63	Z	0	0
70	M63	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	X	-.042	%5
2	M58	X	-.042	%75
3	M58	X	-.021	%55
4	M58	X	0	0
5	M58	X	0	0
6	M55	X	-.133	%5
7	M55	X	-.133	%95
8	M55	X	-.028	%25
9	M55	X	-.096	%40
10	M55	X	-.1	%40
11	M59	X	-.1	%5
12	M59	X	-.1	%95
13	M59	X	-.062	%30
14	M59	X	-.055	%30
15	M59	X	0	0
16	M60	X	-.095	%5
17	M60	X	-.095	%95
18	M60	X	0	0
19	M60	X	0	0
20	M60	X	0	0
21	M13	X	-.041	%40
22	M13	X	0	0
23	M13	X	0	0
24	M13	X	0	0
25	M13	X	0	0
26	M29	X	-.041	%40
27	M29	X	0	0
28	M29	X	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
29	M29	X	0	0
30	M29	X	0	0
31	M64	X	-.042	%5
32	M64	X	-.042	%75
33	M64	X	-.021	%55
34	M64	X	0	0
35	M64	X	0	0
36	M57	X	-.133	%5
37	M57	X	-.133	%95
38	M57	X	-.028	%25
39	M57	X	-.096	%40
40	M57	X	-.1	%40
41	M65	X	-.1	%5
42	M65	X	-.1	%95
43	M65	X	-.062	%30
44	M65	X	-.055	%30
45	M65	X	0	0
46	M66	X	-.095	%5
47	M66	X	-.095	%95
48	M66	X	0	0
49	M66	X	0	0
50	M66	X	0	0
51	M61	X	-.042	%5
52	M61	X	-.042	%75
53	M61	X	-.021	%55
54	M61	X	0	0
55	M61	X	0	0
56	M56	X	-.133	%5
57	M56	X	-.133	%95
58	M56	X	-.028	%25
59	M56	X	-.096	%40
60	M56	X	-.1	%40
61	M62	X	-.1	%5
62	M62	X	-.1	%95
63	M62	X	-.062	%30
64	M62	X	-.055	%30
65	M62	X	0	0
66	M63	X	-.095	%5
67	M63	X	-.095	%95
68	M63	X	0	0
69	M63	X	0	0
70	M63	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	Z	-.031	%5
2	M58	Z	-.031	%75
3	M58	Z	-.031	%55
4	M58	Z	0	0
5	M58	Z	0	0
6	M55	Z	-.068	%5
7	M55	Z	-.068	%95
8	M55	Z	-.016	%25
9	M55	Z	-.023	%40
10	M55	Z	-.024	%40
11	M59	Z	-.085	%5

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
12	M59	Z	-.085	%95
13	M59	Z	-.015	%30
14	M59	Z	-.012	%30
15	M59	Z	0	0
16	M60	Z	-.061	%5
17	M60	Z	-.061	%95
18	M60	Z	0	0
19	M60	Z	0	0
20	M60	Z	0	0
21	M13	Z	-.014	%40
22	M13	Z	0	0
23	M13	Z	0	0
24	M13	Z	0	0
25	M13	Z	0	0
26	M29	Z	-.014	%40
27	M29	Z	0	0
28	M29	Z	0	0
29	M29	Z	0	0
30	M29	Z	0	0
31	M64	Z	-.031	%5
32	M64	Z	-.031	%75
33	M64	Z	-.031	%55
34	M64	Z	0	0
35	M64	Z	0	0
36	M57	Z	-.068	%5
37	M57	Z	-.068	%95
38	M57	Z	-.016	%25
39	M57	Z	-.023	%40
40	M57	Z	-.024	%40
41	M65	Z	-.085	%5
42	M65	Z	-.085	%95
43	M65	Z	-.015	%30
44	M65	Z	-.012	%30
45	M65	Z	0	0
46	M66	Z	-.061	%5
47	M66	Z	-.061	%95
48	M66	Z	0	0
49	M66	Z	0	0
50	M66	Z	0	0
51	M61	Z	-.031	%5
52	M61	Z	-.031	%75
53	M61	Z	-.031	%55
54	M61	Z	0	0
55	M61	Z	0	0
56	M56	Z	-.068	%5
57	M56	Z	-.068	%95
58	M56	Z	-.016	%25
59	M56	Z	-.023	%40
60	M56	Z	-.024	%40
61	M62	Z	-.085	%5
62	M62	Z	-.085	%95
63	M62	Z	-.015	%30
64	M62	Z	-.012	%30
65	M62	Z	0	0
66	M63	Z	-.061	%5
67	M63	Z	-.061	%95
68	M63	Z	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
69	M63	Z	0	0
70	M63	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	X	-.018	%5
2	M58	X	-.018	%75
3	M58	X	-.015	%55
4	M58	X	0	0
5	M58	X	0	0
6	M55	X	-.046	%5
7	M55	X	-.046	%95
8	M55	X	-.015	%25
9	M55	X	-.034	%40
10	M55	X	-.035	%40
11	M59	X	-.038	%5
12	M59	X	-.038	%95
13	M59	X	-.023	%30
14	M59	X	-.021	%30
15	M59	X	0	0
16	M60	X	-.037	%5
17	M60	X	-.037	%95
18	M60	X	0	0
19	M60	X	0	0
20	M60	X	0	0
21	M13	X	-.014	%40
22	M13	X	0	0
23	M13	X	0	0
24	M13	X	0	0
25	M13	X	0	0
26	M29	X	-.014	%40
27	M29	X	0	0
28	M29	X	0	0
29	M29	X	0	0
30	M29	X	0	0
31	M64	X	-.018	%5
32	M64	X	-.018	%75
33	M64	X	-.015	%55
34	M64	X	0	0
35	M64	X	0	0
36	M57	X	-.046	%5
37	M57	X	-.046	%95
38	M57	X	-.015	%25
39	M57	X	-.034	%40
40	M57	X	-.035	%40
41	M65	X	-.038	%5
42	M65	X	-.038	%95
43	M65	X	-.023	%30
44	M65	X	-.021	%30
45	M65	X	0	0
46	M66	X	-.037	%5
47	M66	X	-.037	%95
48	M66	X	0	0
49	M66	X	0	0
50	M66	X	0	0
51	M61	X	-.018	%5

Member Point Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
52	M61	X	-.018	%75
53	M61	X	-.015	%55
54	M61	X	0	0
55	M61	X	0	0
56	M56	X	-.046	%5
57	M56	X	-.046	%95
58	M56	X	-.015	%25
59	M56	X	-.034	%40
60	M56	X	-.035	%40
61	M62	X	-.038	%5
62	M62	X	-.038	%95
63	M62	X	-.023	%30
64	M62	X	-.021	%30
65	M62	X	0	0
66	M63	X	-.037	%5
67	M63	X	-.037	%95
68	M63	X	0	0
69	M63	X	0	0
70	M63	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	Z	-.008	%5
2	M58	Z	-.008	%75
3	M58	Z	-.006	%55
4	M58	Z	0	0
5	M58	Z	0	0
6	M55	Z	-.019	%5
7	M55	Z	-.019	%95
8	M55	Z	-.003	%25
9	M55	Z	-.005	%40
10	M55	Z	-.005	%40
11	M59	Z	-.025	%5
12	M59	Z	-.025	%95
13	M59	Z	-.003	%30
14	M59	Z	-.002	%30
15	M59	Z	0	0
16	M60	Z	-.016	%5
17	M60	Z	-.016	%95
18	M60	Z	0	0
19	M60	Z	0	0
20	M60	Z	0	0
21	M13	Z	-.004	%40
22	M13	Z	0	0
23	M13	Z	0	0
24	M13	Z	0	0
25	M13	Z	0	0
26	M29	Z	-.004	%40
27	M29	Z	0	0
28	M29	Z	0	0
29	M29	Z	0	0
30	M29	Z	0	0
31	M64	Z	-.008	%5
32	M64	Z	-.008	%75
33	M64	Z	-.006	%55
34	M64	Z	0	0

Member Point Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
35	M64	Z	0	0
36	M57	Z	-.019	%5
37	M57	Z	-.019	%95
38	M57	Z	-.003	%25
39	M57	Z	-.005	%40
40	M57	Z	-.005	%40
41	M65	Z	-.025	%5
42	M65	Z	-.025	%95
43	M65	Z	-.003	%30
44	M65	Z	-.002	%30
45	M65	Z	0	0
46	M66	Z	-.016	%5
47	M66	Z	-.016	%95
48	M66	Z	0	0
49	M66	Z	0	0
50	M66	Z	0	0
51	M61	Z	-.008	%5
52	M61	Z	-.008	%75
53	M61	Z	-.006	%55
54	M61	Z	0	0
55	M61	Z	0	0
56	M56	Z	-.019	%5
57	M56	Z	-.019	%95
58	M56	Z	-.003	%25
59	M56	Z	-.005	%40
60	M56	Z	-.005	%40
61	M62	Z	-.025	%5
62	M62	Z	-.025	%95
63	M62	Z	-.003	%30
64	M62	Z	-.002	%30
65	M62	Z	0	0
66	M63	Z	-.016	%5
67	M63	Z	-.016	%95
68	M63	Z	0	0
69	M63	Z	0	0
70	M63	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	X	-.004	%5
2	M58	X	-.004	%75
3	M58	X	-.002	%55
4	M58	X	0	0
5	M58	X	0	0
6	M55	X	-.011	%5
7	M55	X	-.011	%95
8	M55	X	-.002	%25
9	M55	X	-.008	%40
10	M55	X	-.009	%40
11	M59	X	-.009	%5
12	M59	X	-.009	%95
13	M59	X	-.005	%30
14	M59	X	-.005	%30
15	M59	X	0	0
16	M60	X	-.008	%5
17	M60	X	-.008	%95

Member Point Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
18	M60	X	0	0
19	M60	X	0	0
20	M60	X	0	0
21	M13	X	-.004	%40
22	M13	X	0	0
23	M13	X	0	0
24	M13	X	0	0
25	M13	X	0	0
26	M29	X	-.004	%40
27	M29	X	0	0
28	M29	X	0	0
29	M29	X	0	0
30	M29	X	0	0
31	M64	X	-.004	%5
32	M64	X	-.004	%75
33	M64	X	-.002	%55
34	M64	X	0	0
35	M64	X	0	0
36	M57	X	-.011	%5
37	M57	X	-.011	%95
38	M57	X	-.002	%25
39	M57	X	-.008	%40
40	M57	X	-.009	%40
41	M65	X	-.009	%5
42	M65	X	-.009	%95
43	M65	X	-.005	%30
44	M65	X	-.005	%30
45	M65	X	0	0
46	M66	X	-.008	%5
47	M66	X	-.008	%95
48	M66	X	0	0
49	M66	X	0	0
50	M66	X	0	0
51	M61	X	-.004	%5
52	M61	X	-.004	%75
53	M61	X	-.002	%55
54	M61	X	0	0
55	M61	X	0	0
56	M56	X	-.011	%5
57	M56	X	-.011	%95
58	M56	X	-.002	%25
59	M56	X	-.008	%40
60	M56	X	-.009	%40
61	M62	X	-.009	%5
62	M62	X	-.009	%95
63	M62	X	-.005	%30
64	M62	X	-.005	%30
65	M62	X	0	0
66	M63	X	-.008	%5
67	M63	X	-.008	%95
68	M63	X	0	0
69	M63	X	0	0
70	M63	X	0	0

Member Point Loads (BLC 8 : Ice)

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M58	Y	-.067	%5
2	M58	Y	-.067	%75
3	M58	Y	-.057	%55
4	M58	Y	0	0
5	M58	Y	0	0
6	M55	Y	-.156	%5
7	M55	Y	-.156	%95
8	M55	Y	-.03	%25
9	M55	Y	-.075	%40
10	M55	Y	-.079	%40
11	M59	Y	-.193	%5
12	M59	Y	-.193	%95
13	M59	Y	-.05	%30
14	M59	Y	-.043	%30
15	M59	Y	0	0
16	M60	Y	-.126	%5
17	M60	Y	-.126	%95
18	M60	Y	0	0
19	M60	Y	0	0
20	M60	Y	0	0
21	M13	Y	-.07	%40
22	M13	Y	0	0
23	M13	Y	0	0
24	M13	Y	0	0
25	M13	Y	0	0
26	M29	Y	-.07	%40
27	M29	Y	0	0
28	M29	Y	0	0
29	M29	Y	0	0
30	M29	Y	0	0
31	M64	Y	-.067	%5
32	M64	Y	-.067	%75
33	M64	Y	-.057	%55
34	M64	Y	0	0
35	M64	Y	0	0
36	M57	Y	-.156	%5
37	M57	Y	-.156	%95
38	M57	Y	-.03	%25
39	M57	Y	-.075	%40
40	M57	Y	-.079	%40
41	M65	Y	-.193	%5
42	M65	Y	-.193	%95
43	M65	Y	-.05	%30
44	M65	Y	-.043	%30
45	M65	Y	0	0
46	M66	Y	-.126	%5
47	M66	Y	-.126	%95
48	M66	Y	0	0
49	M66	Y	0	0
50	M66	Y	0	0
51	M61	Y	-.067	%5
52	M61	Y	-.067	%75
53	M61	Y	-.057	%55
54	M61	Y	0	0
55	M61	Y	0	0
56	M56	Y	-.156	%5
57	M56	Y	-.156	%95

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
58	M56	Y	-.03	%25
59	M56	Y	-.075	%40
60	M56	Y	-.079	%40
61	M62	Y	-.193	%5
62	M62	Y	-.193	%95
63	M62	Y	-.05	%30
64	M62	Y	-.043	%30
65	M62	Y	0	0
66	M63	Y	-.126	%5
67	M63	Y	-.126	%95
68	M63	Y	0	0
69	M63	Y	0	0
70	M63	Y	0	0

Member Point Loads (BLC 13 : Maint LL 1)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.25	%5

Member Point Loads (BLC 14 : Maint LL 2)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.25	%95

Member Point Loads (BLC 15 : Maint LL 3)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Y	-.25	%5

Member Point Loads (BLC 16 : Maint LL 4)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Y	-.25	%95

Member Point Loads (BLC 17 : Maint LL 5)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M33	Y	-.25	%95

Member Point Loads (BLC 18 : Maint LL 6)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M33	Y	-.25	%5

Member Point Loads (BLC 19 : Maint LL 7)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.25	%50

Member Point Loads (BLC 20 : Maint LL 8)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M18	Y	-.25	%50

Member Point Loads (BLC 21 : Maint LL 9)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M34	Y	-.25	%50

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.011	-.011	0	0
2	M2	Z	-.017	-.017	0	0
3	M12	Z	-.013	-.013	0	0
4	M13	Z	-.008	-.008	0	0
5	M14	Z	-.013	-.013	0	0
6	M15	Z	-.017	-.017	0	0
7	M16	Z	-.017	-.017	0	0
8	M17	Z	-.011	-.011	0	0
9	M18	Z	-.017	-.017	0	0
10	M28	Z	-.013	-.013	0	0
11	M29	Z	-.008	-.008	0	0
12	M30	Z	-.013	-.013	0	0
13	M31	Z	-.017	-.017	0	0
14	M32	Z	-.017	-.017	0	0
15	M33	Z	-.011	-.011	0	0
16	M34	Z	-.017	-.017	0	0
17	M44	Z	-.013	-.013	0	0
18	M45	Z	-.008	-.008	0	0
19	M46	Z	-.013	-.013	0	0
20	M47	Z	-.017	-.017	0	0
21	M48	Z	-.017	-.017	0	0
22	M58	Z	-.008	-.008	0	0
23	M59	Z	-.008	-.008	0	0
24	M60	Z	-.008	-.008	0	0
25	M61	Z	-.008	-.008	0	0
26	M62	Z	-.008	-.008	0	0
27	M63	Z	-.008	-.008	0	0
28	M64	Z	-.008	-.008	0	0
29	M65	Z	-.008	-.008	0	0
30	M66	Z	-.008	-.008	0	0
31	M33A	Z	-.007	-.007	0	0
32	M34A	Z	-.007	-.007	0	0
33	M33B	Z	-.007	-.007	0	0
34	M34B	Z	-.007	-.007	0	0
35	M35	Z	-.007	-.007	0	0
36	M36	Z	-.007	-.007	0	0
37	M37	Z	-.01	-.01	0	0
38	M38	Z	-.01	-.01	0	0
39	M39	Z	-.01	-.01	0	0
40	M49	Z	-.014	-.014	0	0
41	M50	Z	-.014	-.014	0	0
42	M51	Z	-.014	-.014	0	0
43	M52	Z	-.014	-.014	0	0
44	M53	Z	-.014	-.014	0	0
45	M54	Z	-.014	-.014	0	0
46	M52A	Z	-.009	-.009	0	0
47	M53A	Z	-.009	-.009	0	0
48	M54A	Z	-.009	-.009	0	0
49	M55	Z	-.008	-.008	0	0
50	M56	Z	-.008	-.008	0	0
51	M57	Z	-.008	-.008	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.011	-.011	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
2	M2	X	-.017	-.017	0	0
3	M12	X	-.013	-.013	0	0
4	M13	X	-.008	-.008	0	0
5	M14	X	-.013	-.013	0	0
6	M15	X	-.017	-.017	0	0
7	M16	X	-.017	-.017	0	0
8	M17	X	-.011	-.011	0	0
9	M18	X	-.017	-.017	0	0
10	M28	X	-.013	-.013	0	0
11	M29	X	-.008	-.008	0	0
12	M30	X	-.013	-.013	0	0
13	M31	X	-.017	-.017	0	0
14	M32	X	-.017	-.017	0	0
15	M33	X	-.011	-.011	0	0
16	M34	X	-.017	-.017	0	0
17	M44	X	-.013	-.013	0	0
18	M45	X	-.008	-.008	0	0
19	M46	X	-.013	-.013	0	0
20	M47	X	-.017	-.017	0	0
21	M48	X	-.017	-.017	0	0
22	M58	X	-.008	-.008	0	0
23	M59	X	-.008	-.008	0	0
24	M60	X	-.008	-.008	0	0
25	M61	X	-.008	-.008	0	0
26	M62	X	-.008	-.008	0	0
27	M63	X	-.008	-.008	0	0
28	M64	X	-.008	-.008	0	0
29	M65	X	-.008	-.008	0	0
30	M66	X	-.008	-.008	0	0
31	M33A	X	-.007	-.007	0	0
32	M34A	X	-.007	-.007	0	0
33	M33B	X	-.007	-.007	0	0
34	M34B	X	-.007	-.007	0	0
35	M35	X	-.007	-.007	0	0
36	M36	X	-.007	-.007	0	0
37	M37	X	-.01	-.01	0	0
38	M38	X	-.01	-.01	0	0
39	M39	X	-.01	-.01	0	0
40	M49	X	-.014	-.014	0	0
41	M50	X	-.014	-.014	0	0
42	M51	X	-.014	-.014	0	0
43	M52	X	-.014	-.014	0	0
44	M53	X	-.014	-.014	0	0
45	M54	X	-.014	-.014	0	0
46	M52A	X	-.009	-.009	0	0
47	M53A	X	-.009	-.009	0	0
48	M54A	X	-.009	-.009	0	0
49	M55	X	-.008	-.008	0	0
50	M56	X	-.008	-.008	0	0
51	M57	X	-.008	-.008	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.003	-.003	0	0
2	M2	Z	-.008	-.008	0	0
3	M12	Z	-.008	-.008	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
4	M13	Z	-.003	-.003	0	0
5	M14	Z	-.008	-.008	0	0
6	M15	Z	-.008	-.008	0	0
7	M16	Z	-.008	-.008	0	0
8	M17	Z	-.003	-.003	0	0
9	M18	Z	-.008	-.008	0	0
10	M28	Z	-.008	-.008	0	0
11	M29	Z	-.003	-.003	0	0
12	M30	Z	-.008	-.008	0	0
13	M31	Z	-.008	-.008	0	0
14	M32	Z	-.008	-.008	0	0
15	M33	Z	-.003	-.003	0	0
16	M34	Z	-.008	-.008	0	0
17	M44	Z	-.008	-.008	0	0
18	M45	Z	-.003	-.003	0	0
19	M46	Z	-.008	-.008	0	0
20	M47	Z	-.008	-.008	0	0
21	M48	Z	-.008	-.008	0	0
22	M58	Z	-.003	-.003	0	0
23	M59	Z	-.003	-.003	0	0
24	M60	Z	-.003	-.003	0	0
25	M61	Z	-.003	-.003	0	0
26	M62	Z	-.003	-.003	0	0
27	M63	Z	-.003	-.003	0	0
28	M64	Z	-.003	-.003	0	0
29	M65	Z	-.003	-.003	0	0
30	M66	Z	-.003	-.003	0	0
31	M33A	Z	-.006	-.006	0	0
32	M34A	Z	-.006	-.006	0	0
33	M33B	Z	-.006	-.006	0	0
34	M34B	Z	-.006	-.006	0	0
35	M35	Z	-.006	-.006	0	0
36	M36	Z	-.006	-.006	0	0
37	M37	Z	-.003	-.003	0	0
38	M38	Z	-.003	-.003	0	0
39	M39	Z	-.003	-.003	0	0
40	M49	Z	-.009	-.009	0	0
41	M50	Z	-.009	-.009	0	0
42	M51	Z	-.009	-.009	0	0
43	M52	Z	-.009	-.009	0	0
44	M53	Z	-.009	-.009	0	0
45	M54	Z	-.009	-.009	0	0
46	M52A	Z	-.003	-.003	0	0
47	M53A	Z	-.003	-.003	0	0
48	M54A	Z	-.003	-.003	0	0
49	M55	Z	-.003	-.003	0	0
50	M56	Z	-.003	-.003	0	0
51	M57	Z	-.003	-.003	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.003	-.003	0	0
2	M2	X	-.008	-.008	0	0
3	M12	X	-.008	-.008	0	0
4	M13	X	-.003	-.003	0	0
5	M14	X	-.008	-.008	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
6	M15	X	-.008	-.008	0	0
7	M16	X	-.008	-.008	0	0
8	M17	X	-.003	-.003	0	0
9	M18	X	-.008	-.008	0	0
10	M28	X	-.008	-.008	0	0
11	M29	X	-.003	-.003	0	0
12	M30	X	-.008	-.008	0	0
13	M31	X	-.008	-.008	0	0
14	M32	X	-.008	-.008	0	0
15	M33	X	-.003	-.003	0	0
16	M34	X	-.008	-.008	0	0
17	M44	X	-.008	-.008	0	0
18	M45	X	-.003	-.003	0	0
19	M46	X	-.008	-.008	0	0
20	M47	X	-.008	-.008	0	0
21	M48	X	-.008	-.008	0	0
22	M58	X	-.003	-.003	0	0
23	M59	X	-.003	-.003	0	0
24	M60	X	-.003	-.003	0	0
25	M61	X	-.003	-.003	0	0
26	M62	X	-.003	-.003	0	0
27	M63	X	-.003	-.003	0	0
28	M64	X	-.003	-.003	0	0
29	M65	X	-.003	-.003	0	0
30	M66	X	-.003	-.003	0	0
31	M33A	X	-.006	-.006	0	0
32	M34A	X	-.006	-.006	0	0
33	M33B	X	-.006	-.006	0	0
34	M34B	X	-.006	-.006	0	0
35	M35	X	-.006	-.006	0	0
36	M36	X	-.006	-.006	0	0
37	M37	X	-.003	-.003	0	0
38	M38	X	-.003	-.003	0	0
39	M39	X	-.003	-.003	0	0
40	M49	X	-.009	-.009	0	0
41	M50	X	-.009	-.009	0	0
42	M51	X	-.009	-.009	0	0
43	M52	X	-.009	-.009	0	0
44	M53	X	-.009	-.009	0	0
45	M54	X	-.009	-.009	0	0
46	M52A	X	-.003	-.003	0	0
47	M53A	X	-.003	-.003	0	0
48	M54A	X	-.003	-.003	0	0
49	M55	X	-.003	-.003	0	0
50	M56	X	-.003	-.003	0	0
51	M57	X	-.003	-.003	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.003	-.003	0	0
2	M2	Z	-.008	-.008	0	0
3	M12	Z	-.008	-.008	0	0
4	M13	Z	-.003	-.003	0	0
5	M14	Z	-.008	-.008	0	0
6	M15	Z	-.008	-.008	0	0
7	M16	Z	-.008	-.008	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
8	M17	Z	-.003	-.003	0	0
9	M18	Z	-.008	-.008	0	0
10	M28	Z	-.008	-.008	0	0
11	M29	Z	-.003	-.003	0	0
12	M30	Z	-.008	-.008	0	0
13	M31	Z	-.008	-.008	0	0
14	M32	Z	-.008	-.008	0	0
15	M33	Z	-.003	-.003	0	0
16	M34	Z	-.008	-.008	0	0
17	M44	Z	-.008	-.008	0	0
18	M45	Z	-.003	-.003	0	0
19	M46	Z	-.008	-.008	0	0
20	M47	Z	-.008	-.008	0	0
21	M48	Z	-.008	-.008	0	0
22	M58	Z	-.003	-.003	0	0
23	M59	Z	-.003	-.003	0	0
24	M60	Z	-.003	-.003	0	0
25	M61	Z	-.003	-.003	0	0
26	M62	Z	-.003	-.003	0	0
27	M63	Z	-.003	-.003	0	0
28	M64	Z	-.003	-.003	0	0
29	M65	Z	-.003	-.003	0	0
30	M66	Z	-.003	-.003	0	0
31	M33A	Z	-.006	-.006	0	0
32	M34A	Z	-.006	-.006	0	0
33	M33B	Z	-.006	-.006	0	0
34	M34B	Z	-.006	-.006	0	0
35	M35	Z	-.006	-.006	0	0
36	M36	Z	-.006	-.006	0	0
37	M37	Z	-.003	-.003	0	0
38	M38	Z	-.003	-.003	0	0
39	M39	Z	-.003	-.003	0	0
40	M49	Z	-.009	-.009	0	0
41	M50	Z	-.009	-.009	0	0
42	M51	Z	-.009	-.009	0	0
43	M52	Z	-.009	-.009	0	0
44	M53	Z	-.009	-.009	0	0
45	M54	Z	-.009	-.009	0	0
46	M52A	Z	-.003	-.003	0	0
47	M53A	Z	-.003	-.003	0	0
48	M54A	Z	-.003	-.003	0	0
49	M55	Z	-.003	-.003	0	0
50	M56	Z	-.003	-.003	0	0
51	M57	Z	-.003	-.003	0	0

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.0006	-.0006	0	0
2	M2	X	-.002	-.002	0	0
3	M12	X	-.001	-.001	0	0
4	M13	X	-.0006	-.0006	0	0
5	M14	X	-.001	-.001	0	0
6	M15	X	-.002	-.002	0	0
7	M16	X	-.002	-.002	0	0
8	M17	X	-.0006	-.0006	0	0
9	M18	X	-.002	-.002	0	0

Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
10	M28	X	-.001	-.001	0	0
11	M29	X	-.0006	-.0006	0	0
12	M30	X	-.001	-.001	0	0
13	M31	X	-.002	-.002	0	0
14	M32	X	-.002	-.002	0	0
15	M33	X	-.0006	-.0006	0	0
16	M34	X	-.002	-.002	0	0
17	M44	X	-.001	-.001	0	0
18	M45	X	-.0006	-.0006	0	0
19	M46	X	-.001	-.001	0	0
20	M47	X	-.002	-.002	0	0
21	M48	X	-.002	-.002	0	0
22	M58	X	-.0004	-.0004	0	0
23	M59	X	-.0004	-.0004	0	0
24	M60	X	-.0004	-.0004	0	0
25	M61	X	-.0004	-.0004	0	0
26	M62	X	-.0004	-.0004	0	0
27	M63	X	-.0004	-.0004	0	0
28	M64	X	-.0004	-.0004	0	0
29	M65	X	-.0004	-.0004	0	0
30	M66	X	-.0004	-.0004	0	0
31	M33A	X	-.0006	-.0006	0	0
32	M34A	X	-.0006	-.0006	0	0
33	M33B	X	-.0006	-.0006	0	0
34	M34B	X	-.0006	-.0006	0	0
35	M35	X	-.0006	-.0006	0	0
36	M36	X	-.0006	-.0006	0	0
37	M37	X	-.0004	-.0004	0	0
38	M38	X	-.0004	-.0004	0	0
39	M39	X	-.0004	-.0004	0	0
40	M49	X	-.001	-.001	0	0
41	M50	X	-.001	-.001	0	0
42	M51	X	-.001	-.001	0	0
43	M52	X	-.001	-.001	0	0
44	M53	X	-.001	-.001	0	0
45	M54	X	-.001	-.001	0	0
46	M52A	X	-.0004	-.0004	0	0
47	M53A	X	-.0004	-.0004	0	0
48	M54A	X	-.0004	-.0004	0	0
49	M55	X	-.0004	-.0004	0	0
50	M56	X	-.0004	-.0004	0	0
51	M57	X	-.0004	-.0004	0	0

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.012	-.012	0	0
2	M2	Y	-.016	-.016	0	0
3	M12	Y	-.016	-.016	0	0
4	M13	Y	-.013	-.013	0	0
5	M14	Y	-.016	-.016	0	0
6	M15	Y	-.016	-.016	0	0
7	M16	Y	-.016	-.016	0	0
8	M17	Y	-.012	-.012	0	0
9	M18	Y	-.016	-.016	0	0
10	M28	Y	-.016	-.016	0	0
11	M29	Y	-.013	-.013	0	0

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
12	M30	Y	-.016	-.016	0	0
13	M31	Y	-.016	-.016	0	0
14	M32	Y	-.016	-.016	0	0
15	M33	Y	-.012	-.012	0	0
16	M34	Y	-.016	-.016	0	0
17	M44	Y	-.016	-.016	0	0
18	M45	Y	-.013	-.013	0	0
19	M46	Y	-.016	-.016	0	0
20	M47	Y	-.016	-.016	0	0
21	M48	Y	-.016	-.016	0	0
22	M58	Y	-.009	-.009	0	0
23	M59	Y	-.009	-.009	0	0
24	M60	Y	-.009	-.009	0	0
25	M61	Y	-.009	-.009	0	0
26	M62	Y	-.009	-.009	0	0
27	M63	Y	-.009	-.009	0	0
28	M64	Y	-.009	-.009	0	0
29	M65	Y	-.009	-.009	0	0
30	M66	Y	-.009	-.009	0	0
31	M33A	Y	-.01	-.01	0	0
32	M34A	Y	-.01	-.01	0	0
33	M33B	Y	-.01	-.01	0	0
34	M34B	Y	-.01	-.01	0	0
35	M35	Y	-.01	-.01	0	0
36	M36	Y	-.01	-.01	0	0
37	M37	Y	-.01	-.01	0	0
38	M38	Y	-.01	-.01	0	0
39	M39	Y	-.01	-.01	0	0
40	M49	Y	-.011	-.011	0	0
41	M50	Y	-.011	-.011	0	0
42	M51	Y	-.011	-.011	0	0
43	M52	Y	-.011	-.011	0	0
44	M53	Y	-.011	-.011	0	0
45	M54	Y	-.011	-.011	0	0
46	M52A	Y	-.01	-.01	0	0
47	M53A	Y	-.01	-.01	0	0
48	M54A	Y	-.01	-.01	0	0
49	M55	Y	-.009	-.009	0	0
50	M56	Y	-.009	-.009	0	0
51	M57	Y	-.009	-.009	0	0

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.004	-.005	2.8	4.48
2	M1	Y	-.005	-.003	4.48	6.16
3	M1	Y	-.003	-.002	6.16	7.84
4	M1	Y	-.002	-.005	7.84	9.52
5	M1	Y	-.005	-.006	9.52	11.2
6	M2	Y	-.028	-.028	.88	1.663
7	M15	Y	-.000283	-.004	.717	1.433
8	M15	Y	-.004	-.009	1.433	2.15
9	M15	Y	-.009	-.006	2.15	2.867
10	M15	Y	-.006	-.000283	2.867	3.583
11	M16	Y	-.000261	-.003	.717	1.433
12	M16	Y	-.003	-.008	1.433	2.15
13	M16	Y	-.008	-.005	2.15	2.867

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
14	M16	Y	-.005	-.000261	2.867	3.583
15	M2	Y	-.039	-.039	1.75	2.583
16	M15	Y	.002	.000176	1.792	2.389
17	M15	Y	.000176	-.015	2.389	2.986
18	M15	Y	-.015	-.04	2.986	3.583
19	M16	Y	.002	.000179	1.792	2.389
20	M16	Y	.000179	-.015	2.389	2.986
21	M16	Y	-.015	-.04	2.986	3.583
22	M33	Y	-.00034	-.004	1.4	3.64
23	M33	Y	-.004	-.004	3.64	5.88
24	M33	Y	-.004	-.004	5.88	8.12
25	M33	Y	-.004	-.004	8.12	10.36
26	M33	Y	-.004	-.00034	10.36	12.6
27	M34	Y	-.025	-.025	.833	1.667
28	M47	Y	-.00027	-.004	.717	1.433
29	M47	Y	-.004	-.008	1.433	2.15
30	M47	Y	-.008	-.005	2.15	2.867
31	M47	Y	-.005	-.00083	2.867	3.583
32	M48	Y	-.00027	-.004	.717	1.433
33	M48	Y	-.004	-.008	1.433	2.15
34	M48	Y	-.008	-.005	2.15	2.867
35	M48	Y	-.005	-.00083	2.867	3.583
36	M34	Y	-.039	-.039	1.75	2.583
37	M47	Y	.002	.000179	1.792	2.389
38	M47	Y	.000179	-.015	2.389	2.986
39	M47	Y	-.015	-.04	2.986	3.583
40	M48	Y	.002	-5.7e-5	1.792	2.389
41	M48	Y	-5.7e-5	-.013	2.389	2.986
42	M48	Y	-.013	-.036	2.986	3.583
43	M35	Y	-.003	-.003	.416	.917
44	M18	Y	-.039	-.039	1.75	2.583
45	M31	Y	.002	-4.6e-5	1.792	2.389
46	M31	Y	-4.6e-5	-.013	2.389	2.986
47	M31	Y	-.013	-.036	2.986	3.583
48	M32	Y	.002	.000176	1.792	2.389
49	M32	Y	.000176	-.015	2.389	2.986
50	M32	Y	-.015	-.04	2.986	3.583
51	M33A	Y	-.003	-.003	.416	.917
52	M17	Y	-.00034	-.004	1.4	3.64
53	M17	Y	-.004	-.004	3.64	5.88
54	M17	Y	-.004	-.004	5.88	8.12
55	M17	Y	-.004	-.004	8.12	10.36
56	M17	Y	-.004	-.00034	10.36	12.6
57	M18	Y	-.025	-.025	.833	1.667
58	M31	Y	-.00027	-.004	.717	1.433
59	M31	Y	-.004	-.008	1.433	2.15
60	M31	Y	-.008	-.005	2.15	2.867
61	M31	Y	-.005	-.00083	2.867	3.583
62	M32	Y	-.00027	-.004	.717	1.433
63	M32	Y	-.004	-.008	1.433	2.15
64	M32	Y	-.008	-.005	2.15	2.867
65	M32	Y	-.005	-.00083	2.867	3.583

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.004	-.004	2.8	4.48

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
2	M1	Y	-.004	-.002	4.48	6.16
3	M1	Y	-.002	-.002	6.16	7.84
4	M1	Y	-.002	-.004	7.84	9.52
5	M1	Y	-.004	-.005	9.52	11.2
6	M2	Y	-.023	-.023	.88	1.663
7	M15	Y	-.000233	-.003	.717	1.433
8	M15	Y	-.003	-.007	1.433	2.15
9	M15	Y	-.007	-.005	2.15	2.867
10	M15	Y	-.005	-.000233	2.867	3.583
11	M16	Y	-.000215	-.003	.717	1.433
12	M16	Y	-.003	-.006	1.433	2.15
13	M16	Y	-.006	-.005	2.15	2.867
14	M16	Y	-.005	-.000215	2.867	3.583
15	M2	Y	-.031	-.031	1.75	2.583
16	M15	Y	.002	.000141	1.792	2.389
17	M15	Y	.000141	-.012	2.389	2.986
18	M15	Y	-.012	-.032	2.986	3.583
19	M16	Y	.002	.000143	1.792	2.389
20	M16	Y	.000143	-.012	2.389	2.986
21	M16	Y	-.012	-.032	2.986	3.583
22	M33	Y	-.000272	-.003	1.4	3.64
23	M33	Y	-.003	-.003	3.64	5.88
24	M33	Y	-.003	-.003	5.88	8.12
25	M33	Y	-.003	-.003	8.12	10.36
26	M33	Y	-.003	-.000272	10.36	12.6
27	M34	Y	-.02	-.02	.833	1.667
28	M47	Y	-.000216	-.003	.717	1.433
29	M47	Y	-.003	-.006	1.433	2.15
30	M47	Y	-.006	-.004	2.15	2.867
31	M47	Y	-.004	-.000664	2.867	3.583
32	M48	Y	-.000216	-.003	.717	1.433
33	M48	Y	-.003	-.006	1.433	2.15
34	M48	Y	-.006	-.004	2.15	2.867
35	M48	Y	-.004	-.000664	2.867	3.583
36	M34	Y	-.031	-.031	1.75	2.583
37	M47	Y	.002	.000143	1.792	2.389
38	M47	Y	.000143	-.012	2.389	2.986
39	M47	Y	-.012	-.032	2.986	3.583
40	M48	Y	.002	-4.5e-5	1.792	2.389
41	M48	Y	-4.5e-5	-.011	2.389	2.986
42	M48	Y	-.011	-.029	2.986	3.583
43	M35	Y	-.003	-.003	.416	.917
44	M18	Y	-.031	-.031	1.75	2.583
45	M31	Y	.002	-3.7e-5	1.792	2.389
46	M31	Y	-3.7e-5	-.011	2.389	2.986
47	M31	Y	-.011	-.029	2.986	3.583
48	M32	Y	.002	.000141	1.792	2.389
49	M32	Y	.000141	-.012	2.389	2.986
50	M32	Y	-.012	-.032	2.986	3.583
51	M33A	Y	-.003	-.003	.416	.917
52	M17	Y	-.000272	-.003	1.4	3.64
53	M17	Y	-.003	-.003	3.64	5.88
54	M17	Y	-.003	-.003	5.88	8.12
55	M17	Y	-.003	-.003	8.12	10.36
56	M17	Y	-.003	-.000272	10.36	12.6
57	M18	Y	-.02	-.02	.833	1.667
58	M31	Y	-.000216	-.003	.717	1.433

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
59	M31	Y	-.003	-.006	1.433	2.15
60	M31	Y	-.006	-.004	2.15	2.867
61	M31	Y	-.004	-.000664	2.867	3.583
62	M32	Y	-.000216	-.003	.717	1.433
63	M32	Y	-.003	-.006	1.433	2.15
64	M32	Y	-.006	-.004	2.15	2.867
65	M32	Y	-.004	-.000664	2.867	3.583

Member Area Loads (BLC 1 : Dead)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N100A	N128	N105	N101	Y	Two Way	-.01
2	N102	N106A	N107	N103	Y	Two Way	-.01
3	N125	N122	N123	N126A	Y	Two Way	-.01
4	N127A	N124	N126	N127	Y	Two Way	-.01
5	N117	N114A	N115A	N112	Y	Two Way	-.01
6	N116	N106	N112A	N113A	Y	Two Way	-.01

Member Area Loads (BLC 8 : Ice)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N100A	N128	N105	N101	Y	Two Way	-.008
2	N102	N106A	N107	N103	Y	Two Way	-.008
3	N125	N122	N123	N126A	Y	Two Way	-.008
4	N127A	N124	N126	N127	Y	Two Way	-.008
5	N117	N114A	N115A	N112	Y	Two Way	-.008
6	N116	N106	N112A	N113A	Y	Two Way	-.008

Joint Loads and Enforced Displacements (BLC 9 : Live Load a)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N85	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 10 : Live Load b)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N84	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 11 : Live Load c)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N153	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 12 : Live Load d)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N83	L	Y	-.5

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N49	max	3.71	17	.546	6	2.647	2	.617	102	3.884	9	2.427	45
2		min	-1.988	11	-2.597	48	-3.06	20	-.26	103	-4.321	15	.542	3
3	N13	max	1.741	5	.807	2	4.96	14	-.456	8	2.832	5	.283	97
4		min	-2.257	23	-2.575	44	-3.243	8	-2.158	38	-3.262	23	-1.451	55
5	N31	max	1.975	5	.685	10	2.769	2	2.139	38	3.935	13	-.143	2
6		min	-3.198	23	-2.562	40	-4.079	20	.302	8	-4.39	19	-1.319	45

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
7	N16	max	1.275	54	6.782	44	.701	2	-.646	13	1.379	17	.834	54
8		min	-.571	12	.397	2	-3.519	44	-2.443	42	-.977	11	-.385	12
9	N52	max	.351	5	6.701	48	1.114	14	1.89	45	1.609	21	1.806	39
10		min	-3.508	47	.625	6	-.55	8	-.025	3	-1.205	3	.255	9
11	N34	max	2.532	40	6.779	40	2.691	38	.819	19	1.703	25	-.318	8
12		min	-.399	10	.515	10	-.663	8	-.351	13	-1.298	7	-2.522	38
13	Totals:	max	10.118	17	12.546	43	13.801	2						
14		min	-10.118	11	3.53	2	-13.801	20						

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear C...	Loc[ft]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	M33	PIPE_3.5	.897	7	39	.413	7		49	35.4...	78.75	7.954	7.954	...	H3-6
2	M17	PIPE_3.5	.889	7	43	.414	7		39	35.4...	78.75	7.954	7.954	...	H3-6
3	M1	PIPE_3.5	.879	7	46	.457	7		20	35.4...	78.75	7.954	7.954	...	H3-6
4	M18	HSS4x4x4	.860	3.417	44	.354	3.417	y	43	132....	139....	16.1...	16.1...	...	H3-6
5	M34	HSS4x4x4	.848	3.417	39	.356	3.417	y	39	132....	139....	16.1...	16.1...	...	H3-6
6	M2	HSS4x4x4	.844	3.417	48	.349	3.417	y	47	132....	139....	16.1...	16.1...	...	H3-6
7	M66	PIPE_2.0	.662	4	2	.100	4		20	14.9...	32.13	1.872	1.872	...	H1-...
8	M63	PIPE_2.0	.656	4	14	.086	4		15	14.9...	32.13	1.872	1.872	...	H1-...
9	M60	PIPE_2.0	.640	4	20	.084	4		25	14.9...	32.13	1.872	1.872	...	H1-...
10	M64	PIPE_2.0	.602	3.25	44	.154	4.75		38	20.8...	32.13	1.872	1.872	3	H1-...
11	M61	PIPE_2.0	.601	3.25	39	.157	4.75		45	20.8...	32.13	1.872	1.872	...	H1-...
12	M58	PIPE_2.0	.592	3.25	47	.161	3.25		92	20.8...	32.13	1.872	1.872	...	H1-...
13	M13	PIPE_4.0	.586	3.5	38	.241	4		15	88.5...	93.24	10.6...	10.6...	...	H1-...
14	M29	PIPE_4.0	.585	.5	45	.317	0		20	88.5...	93.24	10.6...	10.6...	...	H1-...
15	M45	PIPE_4.0	.584	.5	42	.308	0		20	88.5...	93.24	10.6...	10.6...	...	H1-...
16	M65	PIPE_2.5	.538	4	44	.235	2.5		40	30.0...	50.7...	3.596	3.596	...	H1-...
17	M62	PIPE_2.5	.534	4	20	.236	2.5		48	30.0...	50.7...	3.596	3.596	...	H1-...
18	M39	PIPE_2.5	.532	2.187	15	.148	6.854		28	11.6...	50.7...	3.596	3.596	...	H1-...
19	M59	PIPE_2.5	.528	4	49	.247	2.5		20	30.0...	50.7...	3.596	3.596	...	H1-...
20	M38	PIPE_2.5	.528	2.188	19	.188	3.063		20	11.6...	50.7...	3.596	3.596	...	H1-...
21	M57	PIPE_2.5	.481	4	20	.148	2.5		42	30.0...	50.7...	3.596	3.596	...	H1-...
22	M37	PIPE_2.5	.472	11.812	25	.151	3.062		24	11.6...	50.7...	3.596	3.596	...	H1-...
23	M56	PIPE_2.5	.453	4	20	.154	2.5		26	30.0...	50.7...	3.596	3.596	...	H1-...
24	M55	PIPE_2.5	.401	4	20	.155	2.5		57	30.0...	50.7...	3.596	3.596	...	H1-...
25	M49	L2.5x2.5x3	.399	2.931	2	.019	5.987	z	21	9.161	29.1...	.873	1.578	...	H2-1
26	M50	L2.5x2.5x3	.375	2.931	2	.031	5.987	y	46	9.161	29.1...	.873	1.578	...	H2-1
27	M53	L2.5x2.5x3	.361	2.807	9	.014	5.987	z	17	9.161	29.1...	.873	1.578	...	H2-1
28	M28	HSS4x4x4	.329	.917	19	.158	0	y	39	139....	139....	16.1...	16.1...	...	H1-...
29	M44	HSS4x4x4	.316	.917	15	.158	0	y	47	139....	139....	16.1...	16.1...	...	H1-...
30	M52	L2.5x2.5x3	.313	2.931	6	.031	5.987	y	38	9.161	29.1...	.873	1.578	...	H2-1
31	M54	L2.5x2.5x3	.307	2.931	10	.031	5.987	y	43	9.161	29.1...	.873	1.578	...	H2-1
32	M12	HSS4x4x4	.296	0	42	.159	0	y	43	139....	139....	16.1...	16.1...	...	H1-...
33	M51	L2.5x2.5x3	.294	2.931	6	.019	0	z	25	9.161	29.1...	.873	1.578	...	H2-1
34	M14	HSS4x4x4	.254	0	44	.232	.917	y	43	139....	139....	16.1...	16.1...	...	H1-...
35	M46	HSS4x4x4	.253	0	49	.230	.917	y	46	139....	139....	16.1...	16.1...	...	H1-...
36	M30	HSS4x4x4	.252	0	40	.234	.917	y	38	139....	139....	16.1...	16.1...	...	H1-...
37	M48	L4x4x4	.249	0	25	.016	0	y	45	49.3...	62.5...	3.138	6.715	...	H2-1
38	M16	L4x4x4	.243	0	21	.016	0	y	41	49.3...	62.5...	3.138	6.715	...	H2-1
39	M32	L4x4x4	.234	0	14	.016	0	z	46	49.3...	62.5...	3.138	6.715	...	H2-1
40	M47	L4x4x4	.194	0	22	.016	0	z	43	49.3...	62.5...	3.138	6.715	...	H2-1
41	M31	L4x4x4	.187	0	17	.016	0	y	49	49.3...	62.5...	3.138	6.715	...	H2-1
42	M15	L4x4x4	.166	0	18	.016	0	z	38	49.3...	62.5...	3.138	6.715	...	H2-1
43	M52A	PIPE_2.5	.026	0	21	.196	4.451		38	43.1...	50.7...	3.596	3.596	...	H1-...
44	M53A	PIPE_2.5	.024	0	25	.196	0		43	43.1...	50.7...	3.596	3.596	...	H1-...

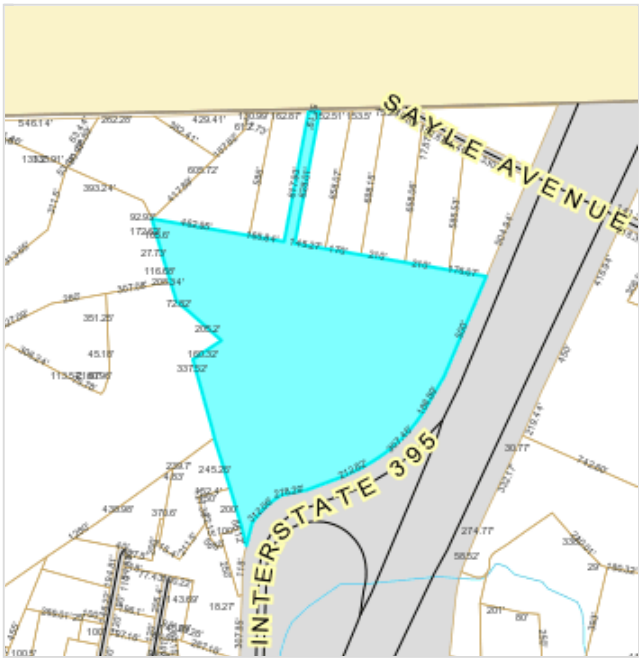
Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear C...	Loc[ft]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
45	M36	L2x2x3	.020	.917	20	.082	0	z	45	22.4...	23.3...	.558	1.239	...	H2-1
46	M54A	PIPE_2.5	.020	0	17	.194	0		47	43.1...	50.7...	3.596	3.596	...	H1-...
47	M35	L2x2x3	.019	.01	14	.083	.917	y	45	22.4...	23.3...	.558	1.239	...	H2-1
48	M34B	L2x2x3	.018	.917	16	.082	0	z	42	22.4...	23.3...	.558	1.239	...	H2-1
49	M33B	L2x2x3	.018	0	22	.082	.917	y	42	22.4...	23.3...	.558	1.239	...	H2-1
50	M34A	L2x2x3	.017	.917	24	.083	0	z	38	22.4...	23.3...	.558	1.239	...	H2-1
51	M33A	L2x2x3	.017	.01	18	.083	.917	y	38	22.4...	23.3...	.558	1.239	...	H2-1

Property Record Card

154 SAYLES AVE

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



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

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

Sales History

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

MainStreetGIS, LLC
www.mainstreetgis.com

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

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

Extra Features

Description	Area / Units	Assessment
Cell Tower		618000

Sub Areas

Description	Living Area	Gross Area

Property information last updated: - Printed from: http://www.mainstreetmaps.com/ct/putnam/

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

99 APR 28 AM 9:54
TOWN CLERK PUTNAM

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0386 1130 34 0067 0000 0010 6260

usps.com
$6.70
US POSTAGE
Flat Rate Env

01/12/2019 Mailed from 06268 062S0000001307

P

PRIORITY MAIL 1-DAY™

MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

Expected Delivery Date: 01/14/19

0024

Carrier -- Leave if No Response

C003

SHIP TO: MAYOR BARNEY SENEY
TOWN OF PUTNAM
126 CHURCH ST
CC: CHAD SESSUMS, BUILDING OFFICIAL
PUTNAM CT 06260-1831

USPS TRACKING #

9405 5036 9930 0386 1130 34

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0386 1130 34

Trans. #:	454119641
Print Date:	01/11/2019
Ship Date:	01/12/2019
Expected Delivery Date:	01/14/2019

Priority Mail® Postage:	**$6.70**
Total	**$6.70**

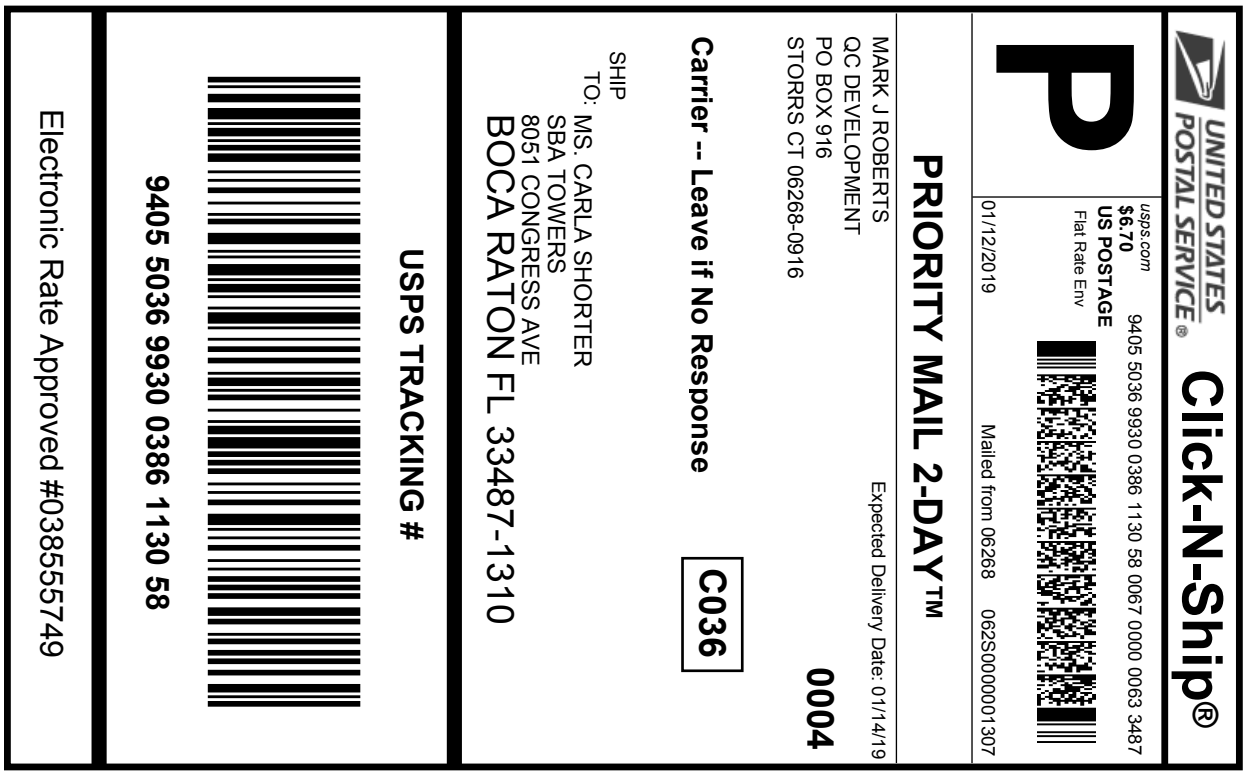
From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: MAYOR BARNEY SENEY
TOWN OF PUTNAM
126 CHURCH ST
CC: CHAD SESSUMS, BUILDING OFFICIAL
PUTNAM CT 06260-1831

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

UNITED STATES POSTAL SERVICE®

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



Cut on dotted line.

Instructions

1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
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5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0386 1130 58

Trans. #:	454119641
Print Date:	01/11/2019
Ship Date:	01/12/2019
Expected Delivery Date:	01/14/2019

Priority Mail® Postage:	**$6.70**
Total	**$6.70**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: MS. CARLA SHORTER
SBA TOWERS
8051 CONGRESS AVE
BOCA RATON FL 33487-1310

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com