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2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
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WEST BRIDGEWATER ,MA 02379

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January 13, 2020

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

Regarding: Notice of Exempt Modification – AT&T Site CT1180
Address: 477 Route 7, Sharon, CT 06069

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (hereinafter "AT&T") currently maintains a wireless telecommunications facility on an existing 130' Monopine Tower (the "Tower") at the above-referenced address, latitude 41.909456, longitude -73.366031. Said Tower is owned by SBA Towers, LLC.

AT&T desires to modify its existing telecommunications facility on the Tower by swapping (6) antennas and (3) remote radio units as well as adding (6) remote radio units and (2) surge arrestors with (1) fiber cable and (4) DC power lines as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group LLC, dated December 9, 2019 and last revised December 30, 2019. Please also see the enclosed Mount Analysis prepared by Hudson Design Group LLC dated November 27, 2019. The centerline height of the antennas is and will remain at 100 feet.

The Tower was approved by the Town of Sharon, CT Planning and Zoning Commission and a building permit was issued on June 29, 2001. AT&T had a modification request approved by the Council on March 17, 2006, under file number EM-CING-125-060224 and on December 7, 2012 under file number EM-CING-125-121116. Additionally, on February 16, 2007, the Council approved a request by Cellco Partnership d/b/a Verizon Wireless to extend the height of the tower to 130 feet under Petition No. 798. Enclosed please find copies of the above-mentioned Council decisions. The proposed modifications comply with the conditions set forth by the Council.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: The Honorable, Brent Colley, First Selectman, Town of Sharon; Stanley MacMillan, Jr., Building Inspector, Town of Sharon; Barclay W. Prindle, Chair of the Planning and Zoning Commission,

Town of Sharon; SBA Towers, LLC as the Tower owner; and Theresa and Joel Meisel, as property owners. The Town of Sharon, CT property card and map are enclosed herein.

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

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

2. The proposed modifications will not require an 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 modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF Emissions Analysis Report for AT&T's modified facility enclosed herewith.*

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

6. The existing structure and its foundation can support the proposed loading. *Please see the Structural Analysis Report dated December 26, 2019 and prepared by Tower Engineering Solutions enclosed herewith.*

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).

Sincerely,

Patricia Nowak
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
pnowak@clinellc.com

Enclosures: Exhibit 1 – Construction Drawings
Exhibit 2 - Mount Analysis
Exhibit 3 – Prior CSC Approvals
Exhibit 4 – Property Card and Map

Exhibit 5 – RF Emissions Analysis Report
Exhibit 6 – Structural Analysis

cc: The Honorable Brent Colley, First Selectman, Town of Sharon;
Stanley MacMillan, Jr., Building Inspector, Town of Sharon;
Barclay W. Prindle, Chair of the Planning and Zoning Commission, Town of Sharon;
SBA Towers, LLC as the Tower owner; and
Theresa and Joel Meisel, as property owners

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPINE:
- NEW AT&T ANTENNAS: (DMP65R-BU6DA) @ POSITION 3 & 4 (TYP. OF 2 PER ALPHA & BETA SECTORS, TOTAL OF 4).
- NEW AT&T ANTENNAS: (DMP65R-BU4DA) @ POSITION 3 & 4 (TOTAL OF 2 FOR GAMMA SECTOR).
- NEW AT&T RRUS: B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 8843 B2/B66A (AWS/PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T DC & FIBER SURGE ARRESTOR (DC6-48-60-18-8C-EV) (TOTAL OF 1) AND DC ONLY SURGE ARRESTOR (DC6-48-60-0-8C-EV) (TOTAL OF 1) WITH (4) DC POWER & (1) FIBER RUN.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP BB WITH (2) 6630.
- ADD (1) XMU.
- ADD (1) IDLe
- INSTALL (1) FIBER MANAGEMENT BOX
- INSTALL (1) DC 12.
- INSTALL (1) NETSURE 7100 POWER PLANT TO REPLACE EXISTING.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: AM-X-CD-16-65-00T-RET (TYP. 1 PER ALPHA & BETA SECTORS, TOTAL OF 2).
- EXISTING AT&T ANTENNAS: 800-10764 (TOTAL OF 1 FOR GAMMA SECTOR).
- EXISTING AT&T RRUS: RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: POWERWAVE LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXERS: POWERWAVE LGP13519 (TYP. OF 2 PER SECTOR, TOTAL OF 6) IN EQUIPMENT SHELTER.

ITEMS TO REMAIN:
- EXISTING AT&T ANTENNAS: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: POWERWAVE LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXERS: POWERWAVE LGP13519 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 1).
- EXISTING (12) COAX CABLES, (2) DC POWER & (1) FIBER.

SITE ADDRESS:	477 ROUTE 7 SHARON, CT 06069
LATITUDE:	41.909450° N, 41° 54' 34.02" N
LONGITUDE:	73.366021° W, 73° 21' 57.67" W
TYPE OF SITE:	MONOPINE / INDOOR
STRUCTURE HEIGHT:	130'-0"±
RAD CENTER:	100'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

SBA SITE #: CT02408-S

SITE NUMBER: CT1180

SITE NAME: SHARON ROUTE 7

FA CODE: 10113272

PACE ID: MRCTB041397, MRCTB041500, MRCTB041719, MRCTB041564, MRCTB041503

PROJECT: LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:
HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. 0.3 MI. TURN LEFT ONTO CAPITAL BLVD. 0.3 MI. TURN LEFT ONTO WEST ST. 0.3 MI. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN. 1.8 MI. TAKE EXIT 22N TO MERGE ONTO CT-9 N TOWARD NEW BRITAIN. 6.5 MI. TAKE EXIT 28 ON THE LEFT TO MERGE ONTO CT-72 W TOWARD BRISTOL. 3.2 MI. MERGE ONTO I-84 W. 0.5 MI. TAKE EXIT 33 TO MERGE ONTO CT-72 W TOWARD BRISTOL. 1.9 MI. TAKE EXIT 1 FOR CT-177/NORTH WASHINGTON STREET. 0.2 MI. TURN RIGHT ONTO CT-177 N/IN WASHINGTON ST. CONTINUE TO FOLLOW CT-177 N. 2.0 MI. TURN LEFT ONTO US-6 W/SCOTT SWAMP RD. CONTINUE TO FOLLOW US-6 W. 10.3 MI. SLIGHT RIGHT TO MERGE ONTO CT-8 N TOWARD TORRINGTON. 10.1 MI. TAKE EXIT 44 FOR US-202 TOWARD DOWNTOWN TORRINGTON. 0.2 MI. TURN RIGHT ONTO US-202 E/E MAIN ST. 459 FT. TAKE THE 1ST LEFT ONTO E ELM ST. CONTINUE ONTO MIGEON AVE. 0.7 MI. CONTINUE ONTO CT-4 W/GOSHEN RD. CONTINUE TO FOLLOW CT-4 W. 4.6 MI. AT THE TRAFFIC CIRCLE, CONTINUE STRAIGHT ONTO CT-4/SHARON TURNPIKE. CONTINUE TO FOLLOW CT-4. 5.3 MI. CONTINUE ONTO CT-128 W/I SHARON-GOSHEN TURNPIKE. CONTINUE TO FOLLOW SHARON-GOSHEN TURNPIKE. 4.0 MI. SLIGHT RIGHT ONTO US-7 N. DESTINATION WILL BE ON THE LEFT.

GENERAL NOTES

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

UNDERGROUND SERVICE ALERT

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

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

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A	12/09/19	ISSUED FOR REVIEW	VP	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VP

AT&T

TITLE SHEET

LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	T-1	1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

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

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

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

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

ABBREVIATIONS

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

HUDSON Design Group LLC
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FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1180
SITE NAME: SHARON ROUTE 7
SBA SITE # ID: CT02408-S

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A	12/09/19	ISSUED FOR REVIEW	VP	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VP

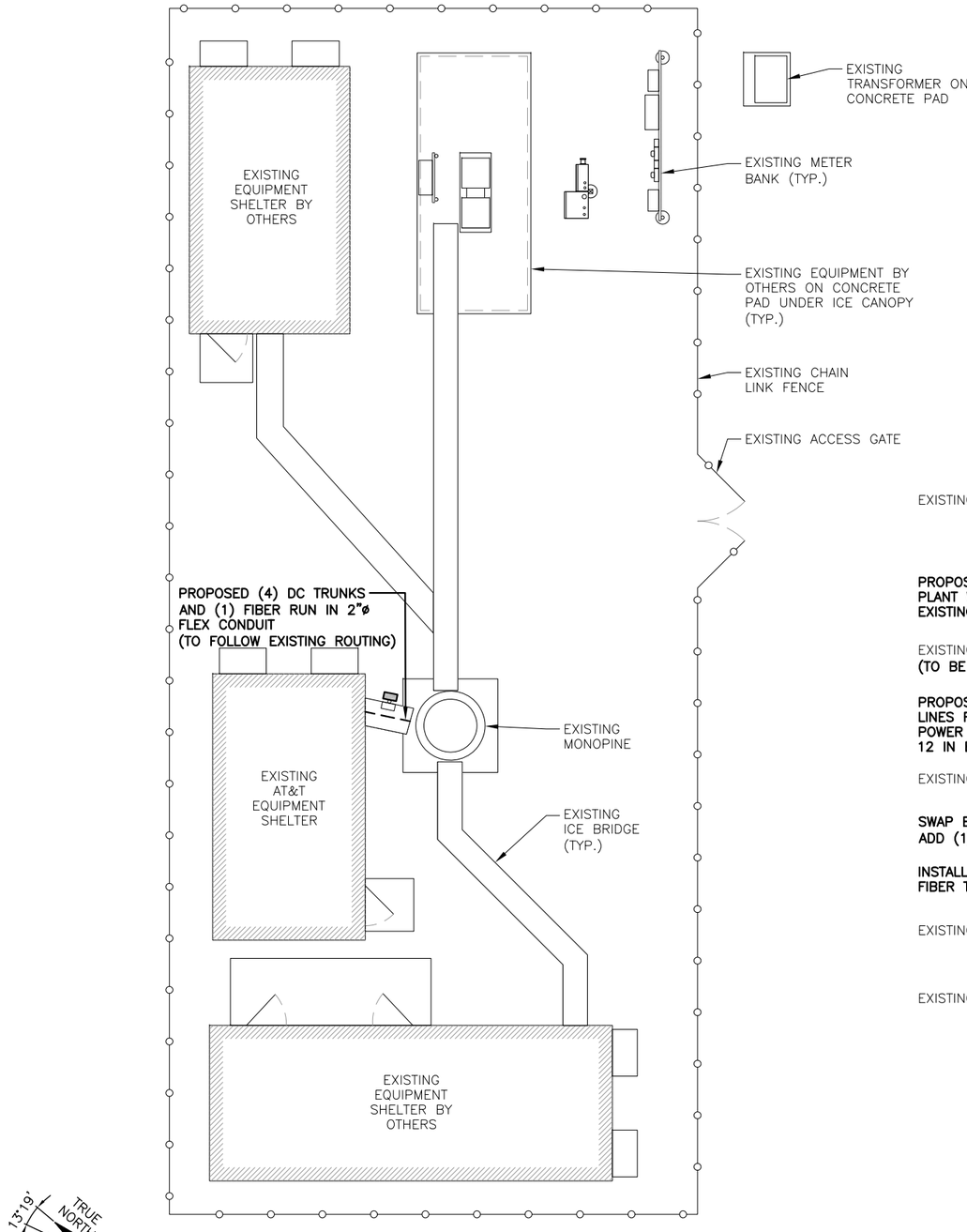
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES

LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	GN-1	1



COMPOUND PLAN 1 A–1
22x34 SCALE: 3/16"=1'–0"
11x17 SCALE: 3/32"=1'–0"

0 2'–8" 5'–4" 10'–8" 16'–0"

NOTE:

ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE–ROUTING BRACKETS AS REQUIRED.

NOTE:

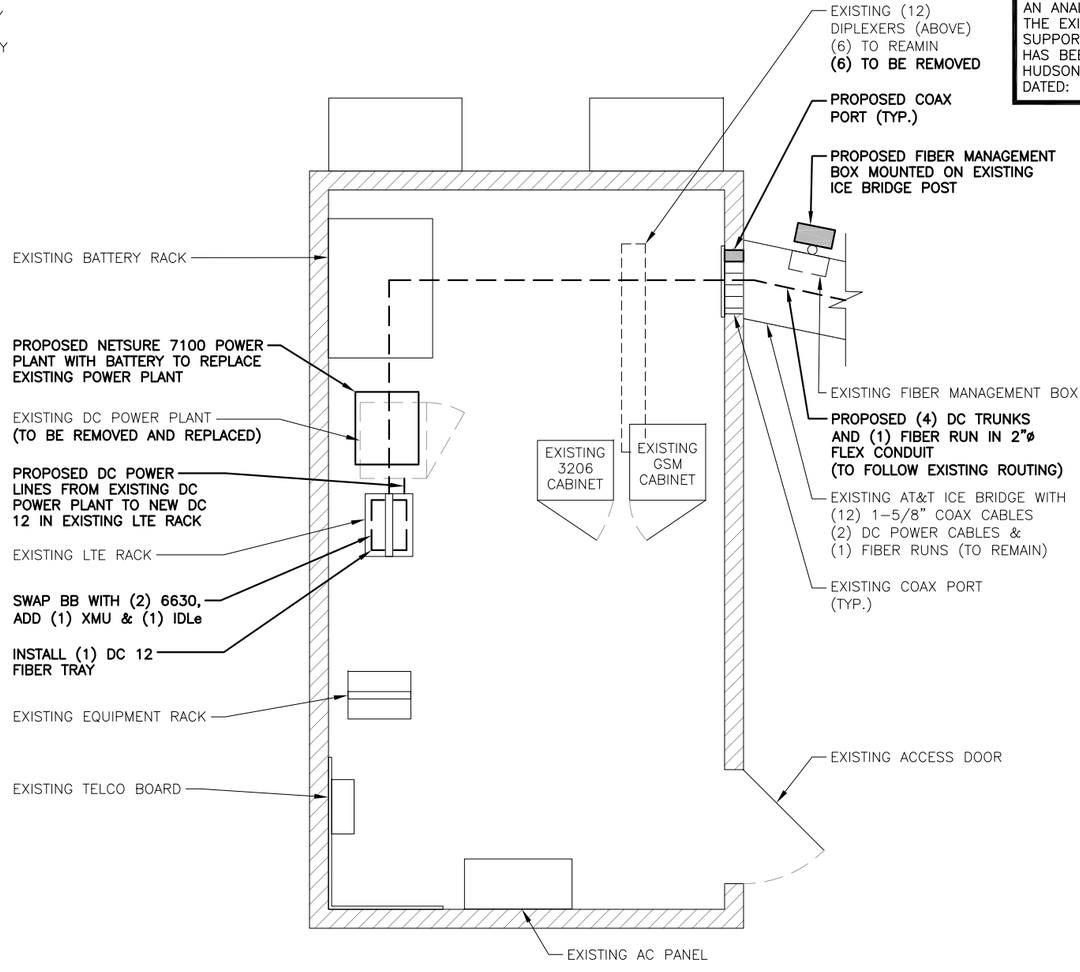
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: NOVEMBER 27, 2019



EQUIPMENT PLAN 2 A–1
22x34 SCALE: 1/2"=1'–0"
11x17 SCALE: 1/4"=1'–0"

0 1'–0" 2'–0" 4'–0" 6'–0"

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500 ENTERPRISE DRIVE, SUITE 3A
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NO.	DATE	REVISIONS	BY	CHK	APP'D
1	12/30/19	ISSUED FOR CONSTRUCTION	TR	AT	DPH
A	12/09/19	ISSUED FOR REVIEW	VP	AT	DPH

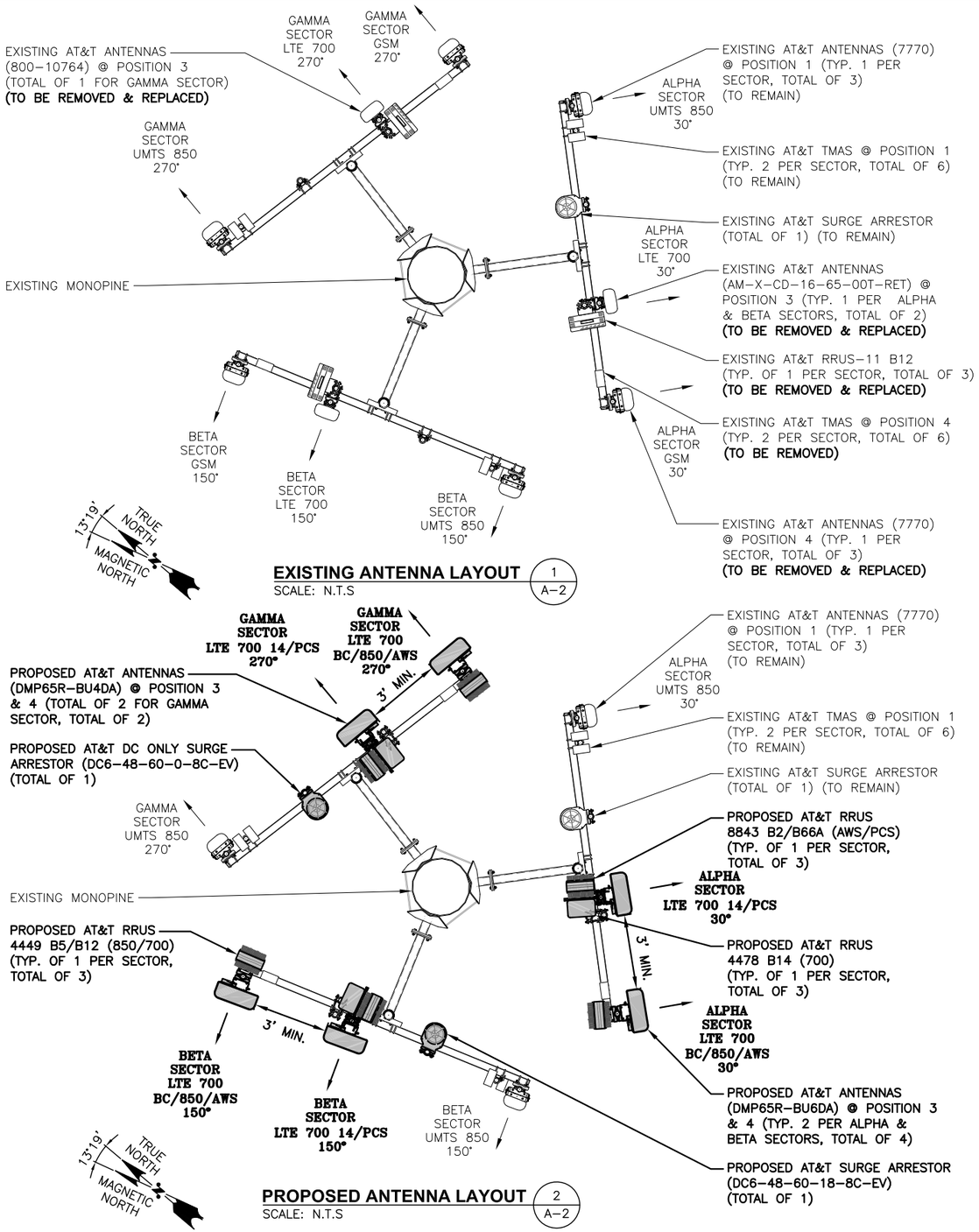
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VP

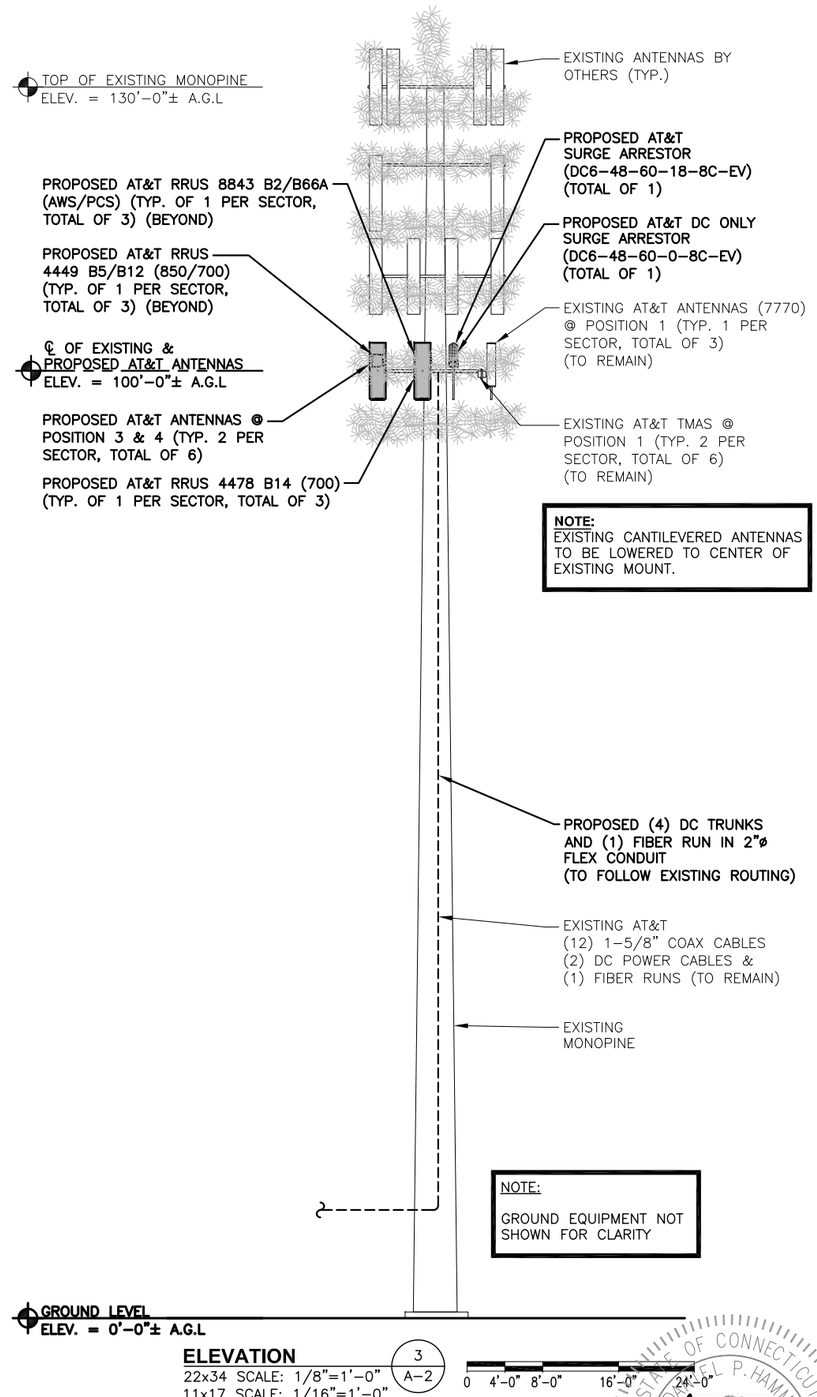
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	A–1	1





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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: NOVEMBER 27, 2019

NOTE:
ROTATION OF MOUNTS OR INSTALLATION OF MOUNT MODS MUST NOT ADVERSELY AFFECT, OBSTRUCT, BEND OR PINCH EXISTING SAFETY CABLE IN ANY WAY. GC, C/O AT&T, WILL PURCHASE AND INSTALL CABLE RE-ROUTING BRACKETS AS REQUIRED.

NOTE:
PAINT ALL VISIBLE PROPOSED EQUIPMENT TO MATCH EXISTING SURROUNDINGS

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

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1180
SITE NAME: SHARON ROUTE 7
SBA SITE # ID: CT02408-S

477 ROUTE 7
SHARON, CT 06069
LITCHFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	A-2	1

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55X11X5	100'-0"±	30°	(2)(E) LGP21401 (2)(E)(G) LGP 13519	–	–	(2) 1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F (P) (1) RAYCAP DC6-48-60-0-8C-EV
A2	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX	
A3	**PROPOSED**	**LTE 700 14/PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**100'-0"±**	**30°**	–	**(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (AWS/PCS)**	**18.1"X13.4"X8.3" 14.9"X13.2"X10.9"**	–	
A4	**PROPOSED**	**LTE 700 BC/850/AWS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**100'-0"±**	**30°**	–	**(P)(1) 4449 B5/B12 (850/700)**	**14.9"X13.2"X10.4"**	–	
B1	EXISTING	UMTS 850	7770	55X11X5	100'-0"±	150°	(2)(E) LGP21401 (2)(E)(G) LGP 13519	–	–	(2) 1-5/8 COAX	(P) (1) RAYCAP DC6-48-60-18-8C-EV
B2	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX	
B3	**PROPOSED**	**LTE 700 14/PCS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**100'-0"±**	**150°**	–	**(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (AWS/PCS)**	**18.1"X13.4"X8.3" 14.9"X13.2"X10.9"**	**(P)(2)DC & (1) FIBER**	
B4	**PROPOSED**	**LTE 700 BC/850/AWS**	**DMP65R-BU6DA**	**71.2X20.7X7.7**	**100'-0"±**	**150°**	–	**(P)(1) 4449 B5/B12 (850/700)**	**14.9"X13.2"X10.4"**	–	
C1	EXISTING	UMTS 850	7770	55X11X5	100'-0"±	270°	(2)(E) LGP21401 (2)(E)(G) LGP 13519	–	–	(2) 1-5/8 COAX	(P) (1) RAYCAP DC6-48-60-0-8C-EV
C2	–	–	–	–	–	–	–	–	–	(2) 1-5/8 COAX	
C3	**PROPOSED**	**LTE 700 14/PCS**	**DMP65R-BU4DA**	**48X20.7X7.7**	**100'-0"±**	**270°**	–	**(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (AWS/PCS)**	**18.1"X13.4"X8.3" 14.9"X13.2"X10.9"**	**(P)(2)DC LINES**	
C4	**PROPOSED**	**LTE 700 BC/850/AWS**	**DMP65R-BU4DA**	**48X20.7X7.7**	**100'-0"±**	**270°**	–	**(P)(1) 4449 B5/B12 (850/700)**	**14.9"X13.2"X10.4"**	–	

PROPOSED NETSURE 7100 POWER PLANT W/BATTERY TO REPLACE EXISTING POWER PLANT

PROPOSED NETSURE 7100 POWER PLANT DETAIL (6 / A-3)
SCALE: N.T.S

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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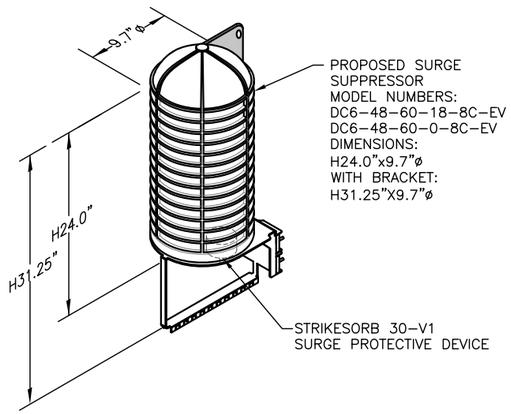
FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

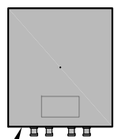


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (2 / A-3)
SCALE: N.T.S

RRU CHART		
QUANTITY	**MODEL**	**SIZE (L x W x D)**
P(3)	4449 (850/700)	14.9"x13.2"x10.4"
P(3)	8843 (AWS/PCS)	14.9"x13.2"x10.9"
P(3)	4478 B14 (700)	18.1"x13.4"x8.3"
NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS		

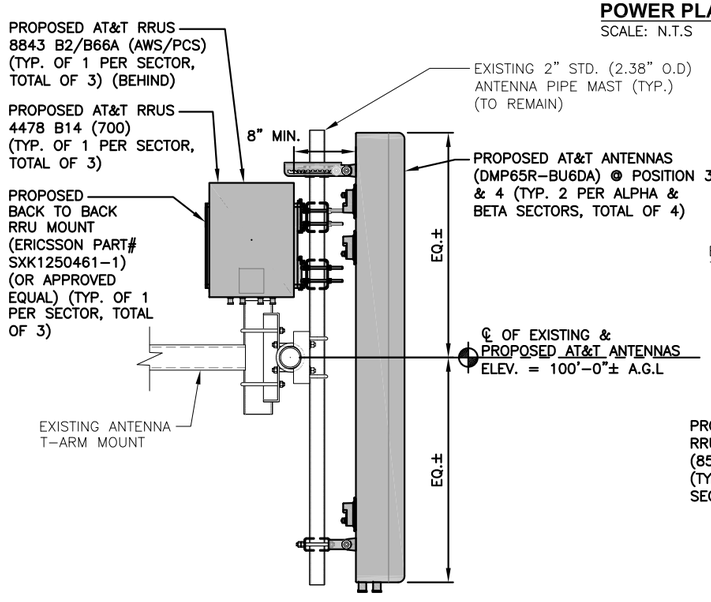
NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

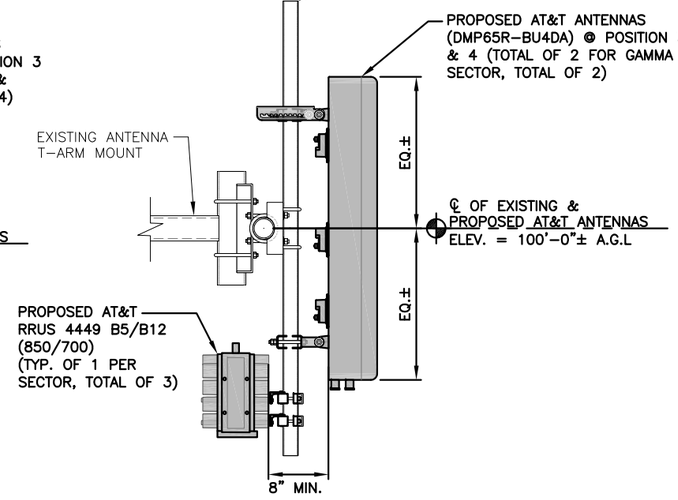
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



PROPOSED ANTENNA & RRU MOUNTING DETAIL (ALPHA & BETA SECTORS) (4 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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



PROPOSED ANTENNA & RRU MOUNTING DETAIL (GAMMA SECTOR) (5 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1180
SITE NAME: SHARON ROUTE 7
SBA SITE # ID: CT02408-S

477 ROUTE 7
SHARON, CT 06069
LITCHFIELD COUNTY

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

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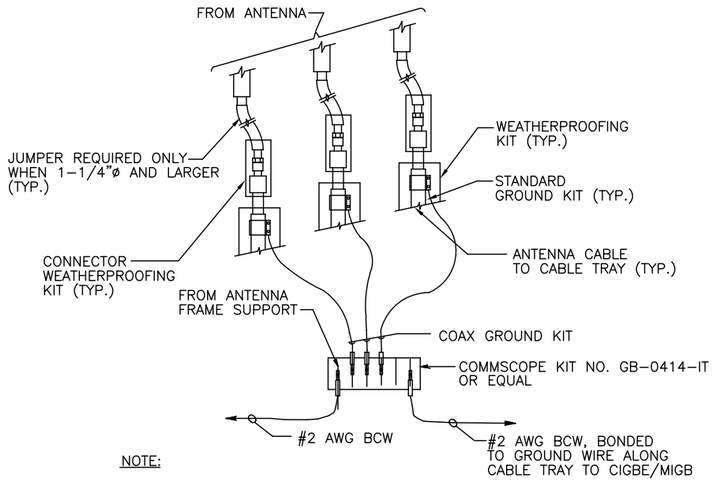
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS

LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	A-3	1

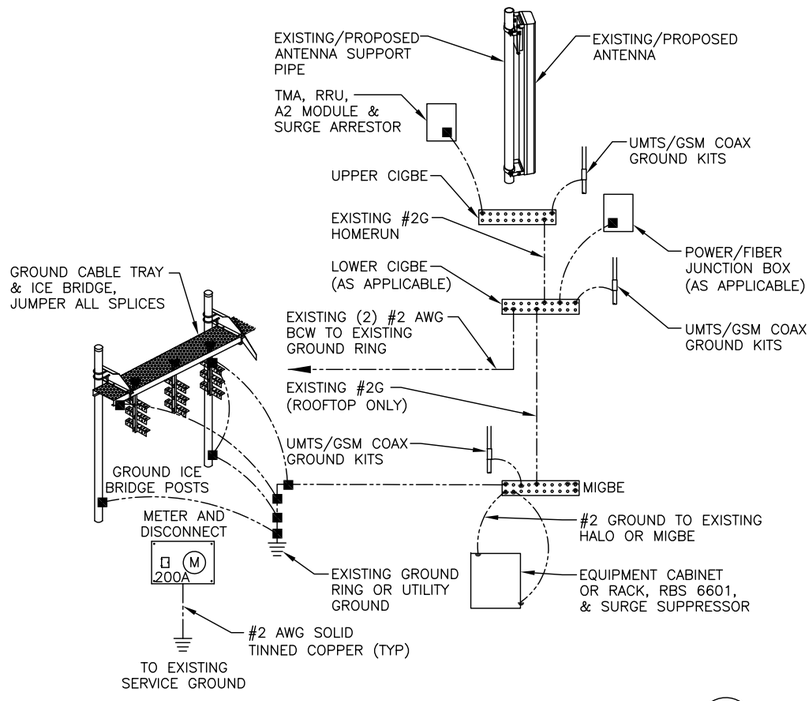


NOTE:

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

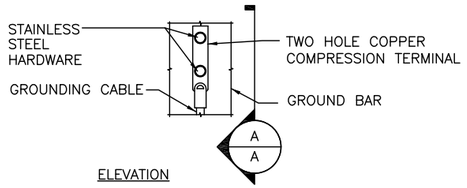
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:

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

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

SCALE: N.T.S

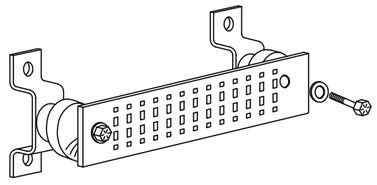
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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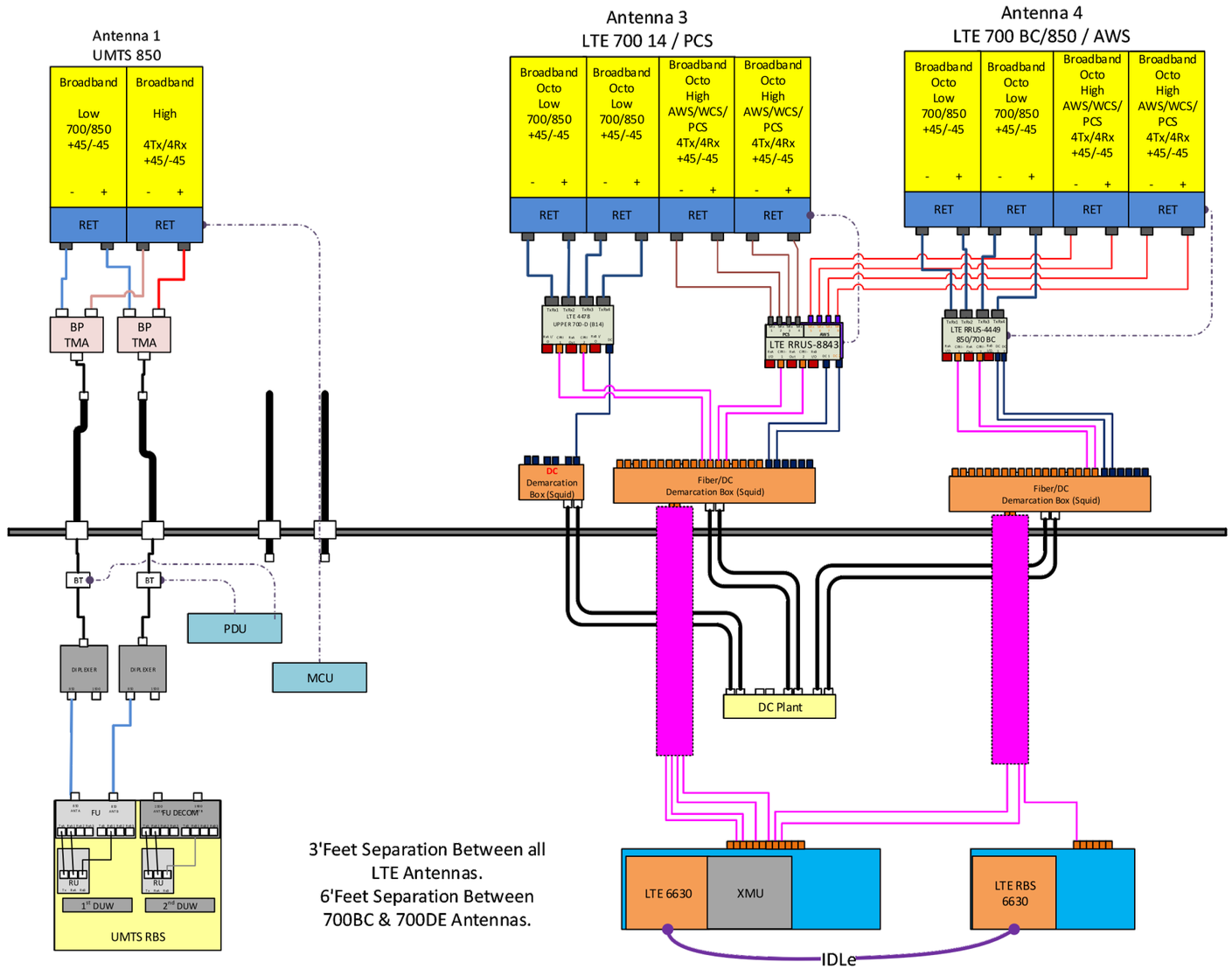
STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS

LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	G-1	1



3'Feet Separation Between all
LTE Antennas.
6'Feet Separation Between
700BC & 700DE Antennas.

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

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

NOTE:

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AT&T

RF PLUMBING DIAGRAM
LTE 2C_3C_4C_5C RETRO 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1180	RF–1	1

EXHIBIT 2

November 27, 2019

CENTERLINE COMMUNICATIONS at&t

Centerline Communications
750 West Center Street, Suite #301
West Bridgewater, MA 02379

RE:		
	Site Number:	CT1180 (LTE 2C/3C/4C/5C)
	FA Number:	10113272
	PACE Number:	MRCTB041397
	PT Number:	2051A0Q8T2
	Site Name:	SHARON ROUTE 7
	Site Address:	477 Route 7 Sharon, CT 06069

To Whom It May Concern:

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

- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs.)
- **(4) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(2) DMP65R-BU4DA Antennas (48.0"x20.7"x7.7" – Wt. = 68 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) B5/B12 4449 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each)**
- **(2) Squid Surge Arrestors (24.0"x9.7" Φ – Wt. = 33 lbs. /each)**

*Proposed equipment shown in bold

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on November 14, 2019.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 115 mph with a max basic wind speed with ice of 40 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.12 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- AT&T policy forbids walking on or suspending below T-arm mounts. This Analysis does not include live load conditions for this mount.
- The existing mount is secured to the existing monopine with ring mount and thru bolts. The connection is considered OK by visual inspection.

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

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 2C/3C/4C/5C) Mount Rating	1	LC7	69%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






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

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

		z=	100 (ft)
		z_g=	1200 (ft)
K_z=	**0.988**	α=	7.0

$Kzmin \le Kz \le 2.01$

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

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

K_h=	#DIV/0!	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	100	
z_s=	750	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.97	(from 2.6.8)

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

Category= **1**

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.00	in
Importance Factor =	I=	1.0	(from Table 2-3)
	K_{iz} =	1.12	(from Sec. 2.6.10)

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

t_{iz} = 1.12 in

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	134	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

q_z=	**30.93**	K_z=	0.988 (from 2.6.5.2)
$q_{z\ (Ice)}$=	**3.74**	K_{zt}=	1.0 (from 2.6.6.2.1)
$q_{z\ (30)}$=	**2.11**	K_s=	1.0 (from 2.6.7)
		K_e=	0.97 (from 2.6.8)
		K_d=	0.95 (from Table 2-2)
		V_{max}=	115 mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	40 mph
		V_{30}=	30 mph

Table 2-2

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

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

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

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

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

Ice Thickness = **1.12** in | **Angle = 0 (deg)** | **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**170**	**26**	**12**
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	**393**	**54**	**27**
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.32	1.20	**256**	**36**	**17**
B14 4478 RRH	18.1	8.3	13.4	1.04	2.18	1.20	**39**	**7**	**3**
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	**21**	**4**	**1**
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.20	**42**	**7**	**3**
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	**21**	**4**	**1**
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.13	1.20	**51**	**8**	**3**
B5/B12 4449 RRH (Shielded)	14.9	0.0	10.4	0.00	0.00	1.20	**0**	**1**	**0**
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	**11**	**3**	**1**
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**35**	**6**	**2**
2" Pipe	2.4	12.0		0.20	0.20	1.20	**7**	**2**	**1**
3-1/2" Pipe	4.0	12.0		0.33	0.33	1.20	**12**	**3**	**1**
4" Pipe	4.5	12.0		0.38	0.38	1.20	**14**	**3**	**1**
HSS 4x4	4.0	12.0		0.33	0.33	1.25	**13**	**3**	**1**

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Project Name: SHARON ROUTE 7
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Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.12	in.	Equivalent Angle =	210	(deg)

338.283

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
WIND LOADS WITH NO ICE:												
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	**170**	**91**	**150**
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	**393**	**174**	**338**
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	**256**	**108**	**219**
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	**39**	**63**	**45**
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	**21**	**63**	**31**
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	**42**	**51**	**44**
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	**21**	**51**	**29**
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	**51**	**40**	**48**
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	**25**	**40**	**29**
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	**11**	**33**	**17**
WIND LOADS WITH ICE:												
7770 Antenna	57.2	13.2	7.2	5.26	2.88	4.32	7.91	1.28	1.43	**25**	**15**	**23**
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.70	5.07	3.20	7.39	1.23	1.41	**54**	**27**	**47**
DMP65R-BU4DA Antenna	50.2	22.9	9.9	8.00	3.47	2.19	5.06	1.20	1.31	**36**	**17**	**31**
B14 4478 RRH	20.3	10.5	15.6	1.49	2.21	1.93	1.30	1.20	1.20	**7**	**10**	**7**
B14 4478 RRH (Shielded)	20.3	5.3	15.6	0.74	2.21	3.86	1.30	1.26	1.20	**4**	**10**	**5**
B2/B66A 8843 RRH	17.1	13.1	15.4	1.56	1.84	1.30	1.11	1.20	1.20	**7**	**8**	**7**
B2/B66A 8843 RRH (Shielded)	17.1	6.6	15.4	0.78	1.84	2.61	1.11	1.20	1.20	**4**	**8**	**5**
B5/B12 4449 RRH	17.1	15.4	12.6	1.84	1.50	1.11	1.36	1.20	1.20	**8**	**7**	**8**
B5/B12 4449 RRH (Shielded)	17.1	7.7	12.6	0.92	1.50	2.22	1.36	1.20	1.20	**4**	**7**	**5**
LGP21401 TMA	16.6	4.9	11.2	0.57	1.30	3.37	1.48	1.24	1.20	**3**	**6**	**3**
WIND LOADS AT 30 MPH:												
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	**12**	**6**	**10**
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	**27**	**12**	**23**
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	**17**	**7**	**15**
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	**3**	**4**	**3**
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	**1**	**4**	**2**
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	**3**	**3**	**3**
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	**1**	**3**	**2**
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	**3**	**3**	**3**
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	**2**	**3**	**2**
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	**1**	**2**	**1**

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.12	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	170	91	111
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	393	174	229
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	256	108	145
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	57
B14 4478 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	29	63	54
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	48
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	31	51	46
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	51	40	43
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	38	40	39
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	11	33	28

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.26	2.88	4.32	7.91	1.28	1.43	25	15	18
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.70	5.07	3.20	7.39	1.23	1.41	54	27	34
DMP65R-BU4DA Antenna	50.2	22.9	9.9	8.00	3.47	2.19	5.06	1.20	1.31	36	17	22
B14 4478 RRH	20.3	10.5	15.6	1.49	2.21	1.93	1.30	1.20	1.20	7	10	9
B14 4478 RRH (Shielded)	20.3	7.9	15.6	1.12	2.21	2.57	1.30	1.20	1.20	5	10	9
B2/B66A 8843 RRH	17.1	13.1	15.4	1.56	1.84	1.30	1.11	1.20	1.20	7	8	8
B2/B66A 8843 RRH (Shielded)	17.1	9.9	15.4	1.17	1.84	1.74	1.11	1.20	1.20	5	8	8
B5/B12 4449 RRH	17.1	15.4	12.6	1.84	1.50	1.11	1.36	1.20	1.20	8	7	7
B5/B12 4449 RRH (Shielded)	17.1	11.6	12.6	1.38	1.50	1.48	1.36	1.20	1.20	6	7	7
LGP21401 TMA	16.6	4.9	11.2	0.57	1.30	3.37	1.48	1.24	1.20	3	6	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	16
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	17	7	10
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
B14 4478 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	2	4	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	2	3	3
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	3	3	3
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	3	3	3
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	2	2

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.12 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	170	91	91
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	393	174	174
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	256	108	108
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	63
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	21	63	63
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	51
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	21	51	51
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	51	40	40
B5/B12 4449 RRH (Shielded)	14.9	0.0	10.4	0.00	1.08	0.00	1.43	1.20	1.20	0	40	40
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	11	33	33

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.26	2.88	4.32	7.91	1.28	1.43	25	15	15
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.70	5.07	3.20	7.39	1.23	1.41	54	27	27
DMP65R-BU4DA Antenna	50.2	22.9	9.9	8.00	3.47	2.19	5.06	1.20	1.31	36	17	17
B14 4478 RRH	20.3	10.5	15.6	1.49	2.21	1.93	1.30	1.20	1.20	7	10	10
B14 4478 RRH (Shielded)	20.3	6.4	15.6	0.90	2.21	3.18	1.30	1.23	1.20	4	10	10
B2/B66A 8843 RRH	17.1	13.1	15.4	1.56	1.84	1.30	1.11	1.20	1.20	7	8	8
B2/B66A 8843 RRH (Shielded)	17.1	7.7	15.4	0.91	1.84	2.23	1.11	1.20	1.20	4	8	8
B5/B12 4449 RRH	17.1	15.4	12.6	1.84	1.50	1.11	1.36	1.20	1.20	8	7	7
B5/B12 4449 RRH (Shielded)	17.1	2.2	12.6	0.27	1.50	7.67	1.36	1.42	1.20	1	7	7
LGP21401 TMA	16.6	4.9	11.2	0.57	1.30	3.37	1.48	1.24	1.20	3	6	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	6
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	12
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	17	7	7
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	3
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	3	3	3
B5/B12 4449 RRH (Shielded)	14.9	0.0	10.4	0.00	1.08	0.00	1.43	1.20	1.20	0	3	3
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	2	2

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.12 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	170	91	111
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	393	174	229
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	256	108	145
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	57
B14 4478 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	29	63	54
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	48
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	31	51	46
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	51	40	43
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	38	40	39
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	11	33	28

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.26	2.88	4.32	7.91	1.28	1.43	25	15	18
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.70	5.07	3.20	7.39	1.23	1.41	54	27	34
DMP65R-BU4DA Antenna	50.2	22.9	9.9	8.00	3.47	2.19	5.06	1.20	1.31	36	17	22
B14 4478 RRH	20.3	10.5	15.6	1.49	2.21	1.93	1.30	1.20	1.20	7	10	9
B14 4478 RRH (Shielded)	20.3	7.9	15.6	1.12	2.21	2.57	1.30	1.20	1.20	5	10	9
B2/B66A 8843 RRH	17.1	13.1	15.4	1.56	1.84	1.30	1.11	1.20	1.20	7	8	8
B2/B66A 8843 RRH (Shielded)	17.1	9.9	15.4	1.17	1.84	1.74	1.11	1.20	1.20	5	8	8
B5/B12 4449 RRH	17.1	15.4	12.6	1.84	1.50	1.11	1.36	1.20	1.20	8	7	7
B5/B12 4449 RRH (Shielded)	17.1	11.6	12.6	1.38	1.50	1.48	1.36	1.20	1.20	6	7	7
LGP21401 TMA	16.6	4.9	11.2	0.57	1.30	3.37	1.48	1.24	1.20	3	6	5

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	16
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	17	7	10
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
B14 4478 RRH (Shielded)	18.1	6.2	13.4	0.78	1.68	2.91	1.35	1.22	1.20	2	4	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	2	3	3
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	3	3	3
B5/B12 4449 RRH (Shielded)	14.9	9.9	10.4	1.02	1.08	1.51	1.43	1.20	1.20	3	3	3
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	2	2

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.12	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	170	91	150
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	393	174	338
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	256	108	219
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	39	63	45
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	21	63	31
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	42	51	44
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	21	51	29
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	51	40	48
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	25	40	29
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	11	33	17

WIND LOADS WITH ICE:

7770 Antenna	57.2	13.2	7.2	5.26	2.88	4.32	7.91	1.28	1.43	25	15	23
DMP65R-BU6DA Antenna	73.4	22.9	9.9	11.70	5.07	3.20	7.39	1.23	1.41	54	27	47
DMP65R-BU4DA Antenna	50.2	22.9	9.9	8.00	3.47	2.19	5.06	1.20	1.31	36	17	31
B14 4478 RRH	20.3	10.5	15.6	1.49	2.21	1.93	1.30	1.20	1.20	7	10	7
B14 4478 RRH (Shielded)	20.3	5.3	15.6	0.74	2.21	3.86	1.30	1.26	1.20	4	10	5
B2/B66A 8843 RRH	17.1	13.1	15.4	1.56	1.84	1.30	1.11	1.20	1.20	7	8	7
B2/B66A 8843 RRH (Shielded)	17.1	6.6	15.4	0.78	1.84	2.61	1.11	1.20	1.20	4	8	5
B5/B12 4449 RRH	17.1	15.4	12.6	1.84	1.50	1.11	1.36	1.20	1.20	8	7	8
B5/B12 4449 RRH (Shielded)	17.1	7.7	12.6	0.92	1.50	2.22	1.36	1.20	1.20	4	7	5
LGP21401 TMA	16.6	4.9	11.2	0.57	1.30	3.37	1.48	1.24	1.20	3	6	3

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	12	6	10
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	23
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	17	7	15
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	3
B14 4478 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	2
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	3	3
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	3	2
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	3	3	3
B5/B12 4449 RRH (Shielded)	14.9	6.6	10.4	0.68	1.08	2.26	1.43	1.20	1.20	2	3	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	2	1

Date: 11/27/2019
Project Name: SHARON ROUTE 7
Project No.: CT1180
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.12 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		83 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		118 lbs

DMP65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		188 lbs
Weight of object:	80.0 lbs	
Combined weight of ice and object:		268 lbs

DMP65R-BU4DA Antenna

Weight of ice based on total radial SF area:

Height (in):	48.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		127 lbs
Weight of object:	68.0 lbs	
Combined weight of ice and object:		195 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		35 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		95 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		31 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		103 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		30 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		103 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	2.7	
Depth (in):	9.0	
Total weight of ice on object:		17 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		36 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		30 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		63 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

3-1/2" Pipe

Per foot weight of ice:

diameter (in):	4	
Per foot weight of ice on object:		7 plf

4" Pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		8 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		9 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

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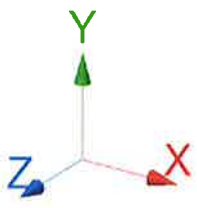

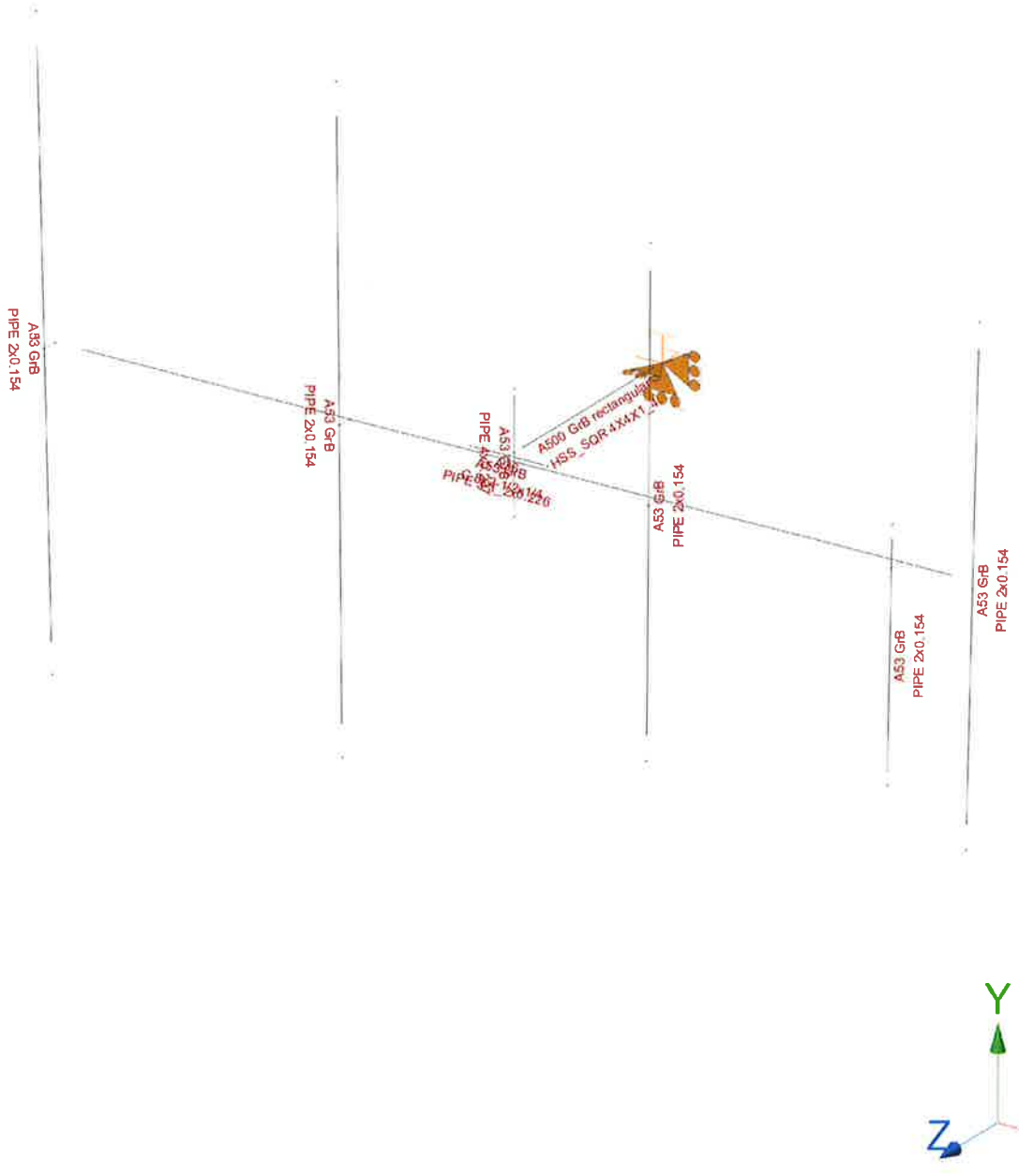
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Bentley

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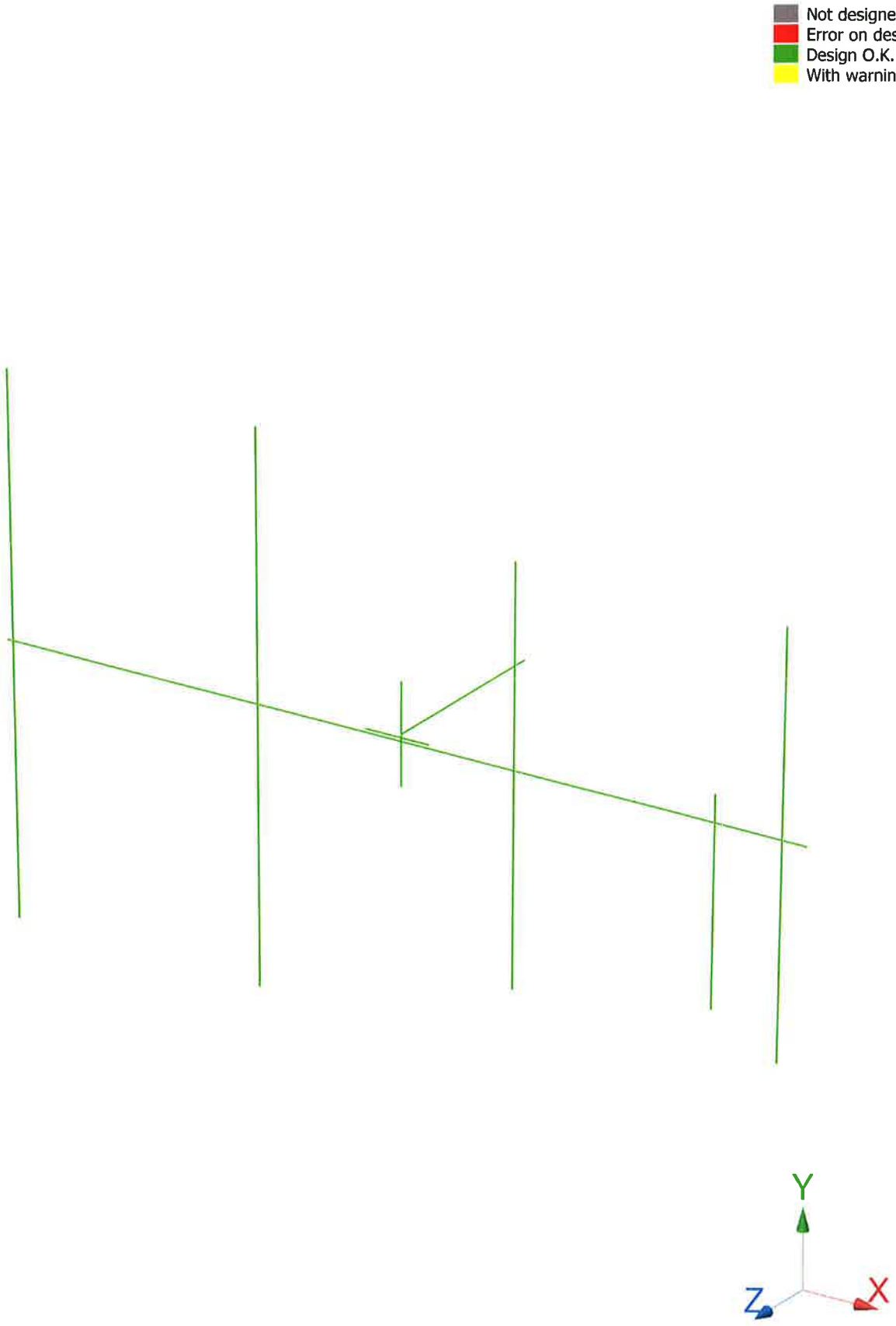

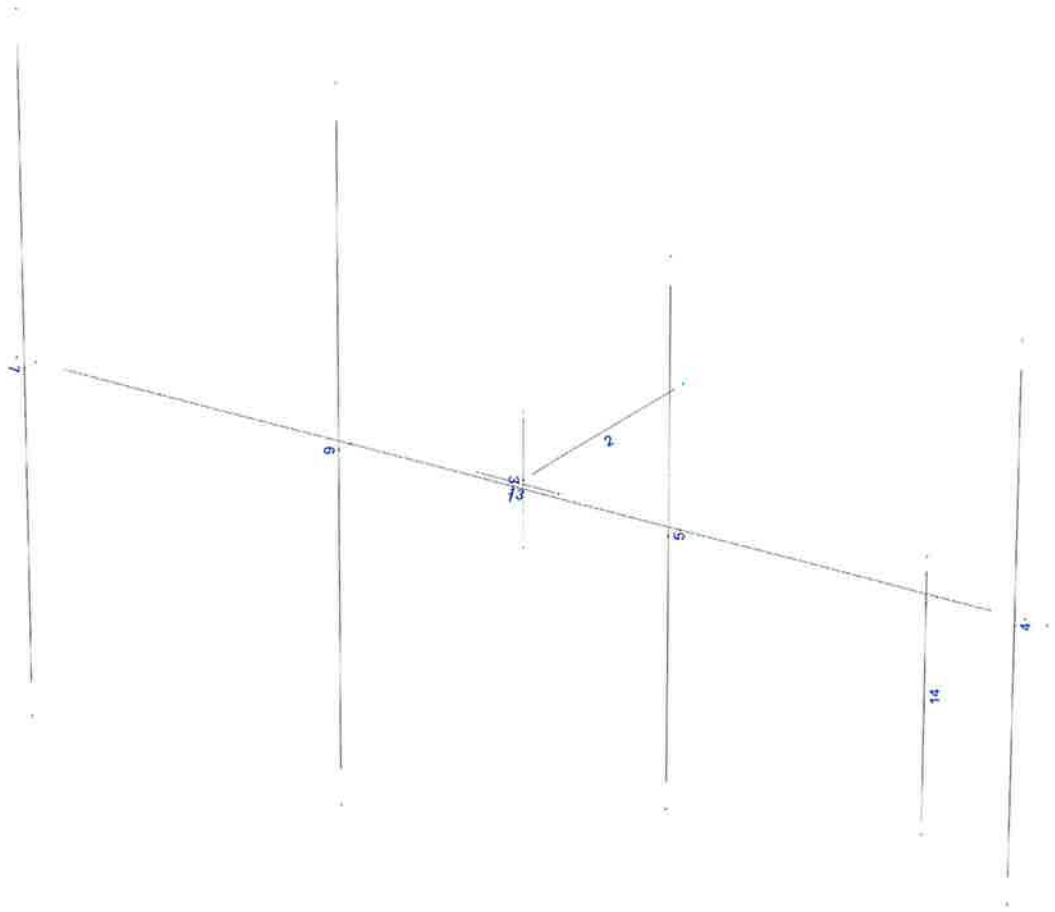
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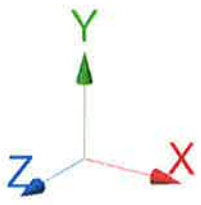
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Load data

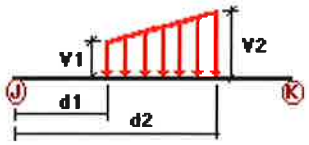
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND

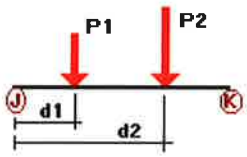
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	5	z	-0.007	-0.007	0.00	No	100.00	Yes
	14	z	-0.007	-0.007	0.00	No	100.00	Yes
	3	z	-0.014	-0.014	0.00	No	100.00	Yes
	1	z	-0.007	-0.007	0.00	No	100.00	Yes
W30	5	z	-0.007	-0.007	0.00	No	100.00	Yes
	14	z	-0.007	-0.007	0.00	No	100.00	Yes
	2	z	-0.014	-0.014	0.00	No	100.00	Yes
	3	z	-0.014	-0.014	0.00	No	100.00	Yes

	1	z	-0.012	-0.012	0.00	No	100.00	Yes
W60	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.007	-0.007	0.00	No	100.00	Yes
	6	x	-0.007	-0.007	0.00	No	100.00	Yes
	7	x	-0.007	-0.007	0.00	No	100.00	Yes
	14	x	-0.007	-0.007	0.00	No	100.00	Yes
	2	x	-0.013	-0.013	0.00	No	100.00	Yes
	3	x	-0.014	-0.014	0.00	No	100.00	Yes
	1	x	-0.012	-0.012	0.00	No	100.00	Yes
W90	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.007	-0.007	0.00	No	100.00	Yes
	6	x	-0.007	-0.007	0.00	No	100.00	Yes
	7	x	-0.007	-0.007	0.00	No	100.00	Yes
	14	x	-0.007	-0.007	0.00	No	100.00	Yes
	2	x	-0.013	-0.013	0.00	No	100.00	Yes
	3	x	-0.014	-0.014	0.00	No	100.00	Yes
W120	4	x	-0.007	-0.007	0.00	No	100.00	Yes
	5	x	-0.007	-0.007	0.00	No	100.00	Yes
	6	x	-0.007	-0.007	0.00	No	100.00	Yes
	7	x	-0.007	-0.007	0.00	No	100.00	Yes
	14	x	-0.007	-0.007	0.00	No	100.00	Yes
	2	x	-0.013	-0.013	0.00	No	100.00	Yes
	3	x	-0.014	-0.014	0.00	No	100.00	Yes
	1	x	-0.012	-0.012	0.00	No	100.00	Yes
W150	4	z	0.007	0.007	0.00	No	100.00	Yes
	5	z	0.007	0.007	0.00	No	100.00	Yes
	6	z	0.007	0.007	0.00	No	100.00	Yes
	7	z	0.007	0.007	0.00	No	100.00	Yes
	14	z	0.007	0.007	0.00	No	100.00	Yes
	2	z	0.013	0.013	0.00	No	100.00	Yes
	3	z	0.014	0.014	0.00	No	100.00	Yes
	1	z	0.012	0.012	0.00	No	100.00	Yes
Di	4	y	-0.005	-0.005	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	6	y	-0.005	-0.005	0.00	No	100.00	Yes
	7	y	-0.005	-0.005	0.00	No	100.00	Yes
	14	y	-0.005	-0.005	0.00	No	100.00	Yes
	2	y	-0.009	-0.009	0.00	No	100.00	Yes
	3	y	-0.008	-0.008	0.00	No	100.00	Yes
	1	y	-0.007	-0.007	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	4	y	-0.018	1.00	No
		y	-0.018	4.50	No
	5	y	-0.033	2.00	No
	6	y	-0.04	0.50	No
		y	-0.04	7.50	No

		y	-0.132	2.50	No
	7	y	-0.04	0.50	No
		y	-0.04	7.50	No
		y	-0.073	2.50	No
	14	y	-0.038	1.50	No
Wo	4	z	-0.086	1.00	No
		z	-0.086	4.50	No
	5	z	-0.035	2.00	No
	6	z	-0.197	0.50	No
		z	-0.197	7.50	No
		z	-0.042	2.50	No
	7	z	-0.197	0.50	No
		z	-0.197	7.50	No
	14	z	-0.022	1.50	No
W30	4	3	-0.076	1.00	No
		3	-0.076	4.50	No
	5	3	-0.035	2.00	No
	6	3	-0.17	0.50	No
		3	-0.17	7.50	No
		3	-0.031	2.50	No
	7	3	-0.17	0.50	No
		3	-0.17	7.50	No
		3	-0.029	2.50	No
	14	3	-0.017	1.50	No
W60	4	3	-0.056	1.00	No
		3	-0.056	4.50	No
	5	3	-0.035	2.00	No
	6	3	-0.115	0.50	No
		3	-0.115	7.50	No
		3	-0.054	2.50	No
	7	3	-0.115	0.50	No
		3	-0.115	7.50	No
		3	-0.039	2.50	No
	14	3	-0.028	1.50	No
W90	4	x	-0.046	1.00	No
		x	-0.046	4.50	No
	5	x	-0.035	2.00	No
	6	x	-0.087	0.50	No
		x	-0.087	7.50	No
		x	-0.063	2.50	No
	7	x	-0.087	0.50	No
		x	-0.087	7.50	No
		x	-0.04	2.50	No
	14	x	-0.033	1.50	No
W120	4	2	-0.056	1.00	No
		2	-0.056	4.50	No
	5	2	-0.035	2.00	No
	6	2	-0.115	0.50	No
		2	-0.115	7.50	No
		2	-0.054	2.50	No
	7	2	-0.115	0.50	No
		2	-0.115	7.50	No
		2	-0.039	2.50	No
	14	2	-0.028	1.50	No
W150	4	2	-0.076	1.00	No
		2	-0.076	4.50	No
	5	2	-0.035	2.00	No
	6	2	-0.17	0.50	No
		2	-0.17	7.50	No
		2	-0.031	2.50	No

	7	2	-0.17	0.50	No
		2	-0.17	7.50	No
		2	-0.029	2.50	No
	14	2	-0.017	1.50	No
Di	4	y	-0.041	1.00	No
		y	-0.041	4.50	No
	5	y	-0.03	2.00	No
	6	y	-0.094	0.50	No
		y	-0.094	7.50	No
		y	-0.066	2.50	No
	7	y	-0.094	0.50	No
		y	-0.094	7.50	No
		y	-0.03	2.50	No
	14	y	-0.035	1.50	No
WI0	4	z	-0.013	1.00	No
		z	-0.013	4.50	No
	5	z	-0.006	2.00	No
	6	z	-0.028	0.50	No
		z	-0.028	7.50	No
		z	-0.008	2.50	No
	7	z	-0.028	0.50	No
		z	-0.028	7.50	No
	14	z	-0.006	1.50	No
WI30	4	3	-0.012	1.00	No
		3	-0.012	4.50	No
	5	3	-0.006	2.00	No
	6	3	-0.024	0.50	No
		3	-0.024	7.50	No
		3	-0.005	2.50	No
	7	3	-0.024	0.50	No
		3	-0.024	7.50	No
		3	-0.005	2.50	No
	14	3	-0.003	1.50	No
WI60	4	3	-0.009	1.00	No
		3	-0.009	4.50	No
	5	3	-0.006	2.00	No
	6	3	-0.017	0.50	No
		3	-0.017	7.50	No
		3	-0.009	2.50	No
	7	3	-0.017	0.50	No
		3	-0.017	7.50	No
		3	-0.007	2.50	No
	14	3	-0.005	1.50	No
WI90	4	x	-0.008	1.00	No
		x	-0.008	4.50	No
	5	x	-0.006	2.00	No
	6	x	-0.014	0.50	No
		x	-0.014	7.50	No
		x	-0.01	2.50	No
	7	x	-0.014	0.50	No
		x	-0.014	7.50	No
		x	-0.007	2.50	No
	14	x	-0.006	1.50	No
WI120	4	2	-0.009	1.00	No
		2	-0.009	4.50	No
	5	2	-0.006	2.00	No
	6	2	-0.017	0.50	No
		2	-0.017	7.50	No
		2	-0.009	2.50	No
	7	2	-0.017	0.50	No

		2	-0.017	7.50	No
		2	-0.007	2.50	No
	14	2	-0.005	1.50	No
WI150	4	2	-0.012	1.00	No
		2	-0.012	4.50	No
	5	2	-0.006	2.00	No
	6	2	-0.024	0.50	No
		2	-0.024	7.50	No
		2	-0.005	2.50	No
	7	2	-0.024	0.50	No
		2	-0.024	7.50	No
		2	-0.005	2.50	No
	14	2	-0.003	1.50	No
WL0	4	z	-0.006	1.00	No
		z	-0.006	4.50	No
	5	z	-0.002	2.00	No
	6	z	-0.014	0.50	No
		z	-0.014	7.50	No
		z	-0.003	2.50	No
	7	z	-0.014	0.50	No
		z	-0.014	7.50	No
	14	z	-0.002	1.50	No
WL30	4	3	-0.006	1.00	No
		3	-0.006	4.50	No
	5	3	-0.002	2.00	No
	6	3	-0.012	0.50	No
		3	-0.012	7.50	No
		3	-0.002	2.50	No
	7	3	-0.012	0.50	No
		3	-0.012	7.50	No
		3	-0.002	2.50	No
	14	3	-0.001	1.50	No
WL60	4	3	-0.004	1.00	No
		3	-0.004	4.50	No
	5	3	-0.002	2.00	No
	6	3	-0.008	0.50	No
		3	-0.008	7.50	No
		3	-0.004	2.50	No
	7	3	-0.008	0.50	No
		3	-0.008	7.50	No
		3	-0.003	2.50	No
	14	3	-0.002	1.50	No
WL90	4	x	-0.004	1.00	No
		x	-0.004	4.50	No
	5	x	-0.002	2.00	No
	6	x	-0.006	0.50	No
		x	-0.006	7.50	No
		x	-0.004	2.50	No
	7	x	-0.006	0.50	No
		x	-0.006	7.50	No
		x	-0.003	2.50	No
	14	x	-0.002	1.50	No
WL120	4	2	-0.004	1.00	No
		2	-0.004	4.50	No
	5	2	-0.002	2.00	No
	6	2	-0.008	0.50	No
		2	-0.008	7.50	No
		2	-0.004	2.50	No
	7	2	-0.008	0.50	No
		2	-0.008	7.50	No

		2	-0.003	2.50	No
	14	2	-0.002	1.50	No
WL150	4	2	-0.006	1.00	No
		2	-0.006	4.50	No
	5	2	-0.002	2.00	No
	6	2	-0.012	0.50	No
		2	-0.012	7.50	No
		2	-0.002	2.50	No
	7	2	-0.012	0.50	No
		2	-0.012	7.50	No
		2	-0.002	2.50	No
	14	2	-0.001	1.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00

WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00

Bentley

Current Date: 11/27/2019 12:23 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1180\LTE (2C 3C 4C 5C)\CT1180 (L 2C 3C 4C 5C).retx\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 8x2-1/2x1/4	**13**	LC27 at 50.00%	**0.00**	**OK**	
	HSS_SQR 4X4X1_4	**2**	LC9 at 100.00%	**0.43**	**OK**	
	PIPE 2x0.154	**4**	LC1 at 46.88%	0.12	OK	
		5	LC4 at 46.88%	0.04	OK	
		6	LC7 at 46.88%	**0.53**	**OK**	
		7	LC7 at 50.00%	0.52	OK	
		14	LC4 at 18.75%	0.04	OK	

PIPE 3-1_2x0.226	1	LC7 at 50.00%	**0.69**	**OK**
PIPE 4x0.237	3	LC1 at 50.00%	**0.00**	**OK**

Bentley

Current Date: 11/27/2019 12:23 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1180\LTE (2C 3C 4C 5C)\CT1180 (L 2C 3C 4C 5C).retx\

Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
4	0.00	0.00	-3.20	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
4	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
4	18	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	19	23		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	16	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	17	21		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
14	29	30		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
2	5	4		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
3	6	7		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
1	2	3		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
13	25	26		C 8x2-1/2x1/4	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
4	315.00	0	0.00	0.00	0.00
5	315.00	0	0.00	0.00	0.00
6	315.00	0	0.00	0.00	0.00
7	315.00	0	0.00	0.00	0.00
14	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
2	0.00	0.00	-3.00	0.00	0.00	-3.00
3	0.00	0.00	-3.00	0.00	0.00	-3.00
13	0.00	0.00	-1.50	0.00	0.00	-1.50

EXHIBIT 3

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
www.ct.gov/csc

March 17, 2006

Steven Levine
Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-125-060224**- New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 477 Route 7, Sharon, Connecticut.

Dear Mr. Levine:

At a public meeting held on March 8, 2006, the Connecticut Siting Council (Council) acknowledged your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated February 24, 2006, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz /fre

Pamela B. Katz, P.E.
Chairman

PBK/laf

c: The Honorable Malcom M. Brown, First Selectman, Town of Sharon
Elizabeth H. Casey, Zoning Enforcement Officer, Town of Sharon
Thomas F. Flynn III, Nextel Communications Inc.
Thomas J. Regan, Esq., Brown Rudnick Berlack Israels, LLP
Christopher B. Fisher, Esq., Cuddy & Feder LLP

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@po.state.ct.us
www.ct.gov/csc

February 28, 2006

The Honorable Malcom M. Brown
First Selectman
Town of Sharon
Town Hall
63 Main Street
P. O. Box 224
Sharon, CT 06069-0224

RE: **EM-CING-125-060224** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 477 Route 7, Sharon, Connecticut.

Dear Mr. Brown:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

The Council will consider this item at the next meeting scheduled for Wednesday, March 8, 2006 at 1:30 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by March 7, 2006.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/ap

Enclosure: Notice of Intent

c: Elizabeth H. Casey, Zoning Enforcement Officer, Town of Sharon

G:\EM\CINGULAR\Sharon\Brown.DOC

CSC
CONNECTICUT SITING COUNCIL

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

December 7, 2012

Melanie Howlett – CT1180
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-CING-125-121116** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 477 Route 7, Sharon, Connecticut.

Dear Ms. Howlett:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The coax lines and accessory equipment shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by FDH Engineering dated August 29, 2012 and stamped by Christopher Murphy; and
- Not more than 45 days following completion of the antenna installation, AT&T shall provide documentation certifying that its installation complied with the engineer's recommendation.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not more than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 14, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

CSC
CONNECTICUT SITING COUNCIL

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts VAB

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Robert John Loucks, First Selectman, Town of Sharon
Barclay W. Prindle, Chm, Planning and Zoning Comm.,, Town of Sharon

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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Internet: ct.gov/csc

Daniel F. Caruso
Chairman

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

February 16, 2007

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **PETITION NO. 798** - Cellco Partnership d/b/a Verizon Wireless petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modification of an existing telecommunications facility located at 477 Route 7, Sharon, Connecticut.

Dear Attorney Baldwin:

At a public meeting held on February 6, 2007, the Connecticut Siting Council (Council) considered and ruled that this proposal would not have a substantial adverse environmental effect, and pursuant to General Statutes § 16-50k would not require a Certificate of Environmental Compatibility and Public Need.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated December 5, 2006.

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,

Daniel F. Caruso
Chairman

DFC/MP/laf

c: The Honorable Malcom M. Brown, First Selectman, Town of Sharon
Elizabeth H. Casey, Zoning Enforcement Officer, Town of Sharon

Enclosure: Staff Report dated February 6, 2007

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Internet: ct.gov/csc

Daniel F. Caruso
Chairman

Petition No. 798
Staff Report
Verizon Wireless
477 Route 7, Sharon
February 6, 2007

On December 5, 2006, the Connecticut Siting Council (Council) received a petition (Petition) from Cellco Partnership d/b/a Verizon Wireless (Verizon Wireless) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing "tree" monopole (monopine) at 477 Route 7, Sharon. The monopine was originally approved by the Sharon Planning and Zoning Commission in 2001. In this Petition, Verizon Wireless seeks to extend the existing 120-foot monopine to 130 feet tall.

Verizon Wireless would install 12 panel antennas at the 130-foot level of the tower. Simulated branches at the top of the monopine would extend to a total height of 135 feet. A structural analysis certifies that the tower is capable of supporting the proposed modifications. The power density would also be within applicable limits.

Verizon Wireless currently has no wireless service in the Town of Sharon. At 130 feet, Verizon Wireless can provide reliable service to 3.83 square miles of area, including a 2.4 mile portion of Route 7 in Sharon.

A 12-foot by 30-foot equipment shelter would be installed inside the fenced compound. A 10-foot by 12-foot section of the equipment shelter would contain a backup generator. The generator would be located inside the shelter and would only operate during emergencies, so noise is not expected to be significant.

Currently, only seven acres of land have year-round views of the tower. If the tower is extended to 130 feet, the total area of year-round visibility would increase to nine acres. The views of the existing and modified tower are distant views, above the tree line, from locations in excess of ¼ mile from the tower site.

This petition was field reviewed by Council member Colin Tait and Mike Perrone of the Council staff on January 11, 2007. Mark Gauger from Verizon Wireless and Rachel Mayo of Robinson & Cole LLP also attended the field review. The surrounding area is residential, but has significant tree cover. The nearest home is roughly 400 feet to the south of the monopine. The site is not in the vicinity of wetlands. Also, the Federal Aviation Administration does not require the tower to be marked or lit.

The property owner has been notified, and he informed Council staff that he has no objection. All abutters were noticed and asked to contact S. Derek Phelps with any questions or concerns by January 12, 2007. No responses were received. By letter dated January 9, 2007, the First Selectman of Sharon indicated that he does not object to the proposal.

The applicant was asked to determine if the tower would be visible from the Mohawk or Appalachian Trails. By letter dated January 12, 2007, Verizon Wireless indicated that neither the existing nor the extended monopine would be visible from the Appalachian Trail. Regarding the Mohawk Trail, the only area of the concern was the Lookout Point on the trail. However, VHB (Verizon Wireless' visual resource consultant) believes that views of the existing and/or extended monopine from the Lookout Point are not likely. Furthermore, even if such a view is possible, the monopine would likely blend into the landscape, given that the Lookout Point is at a much higher elevation than the tower and is nearly two miles away.

Council staff also contacted the Department of Environmental Protection (DEP) staff and confirmed that the proposal's visual impact would not significantly affect the Greenway near the Housatonic River, and the tower extension is not expected to harmful to migratory birds.

EXHIBIT 4

477 ROUTE 7

Location	477 ROUTE 7	**Mblu**	23/ 13/ / /
Acct#	00139700	**Owner**	MEISEL THERESA & JOEL
Assessment	$393,250	**Appraisal**	$652,600
PID	819	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$358,500	$294,100	$652,600
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$251,100	$142,150	$393,250

Owner of Record

Owner	MEISEL THERESA & JOEL	**Sale Price**	$0
Co-Owner		**Certificate**	
		Book & Page	199/ 815
		Sale Date	02/08/2016
		Instrument	29

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
MEISEL THERESA & JOEL	$0		199/ 815	29	02/08/2016
MEISEL THERESA C	$0		93/ 896	01	03/16/1977
PRESTIPINO PETER J	$15,000		93/ 37	08	07/02/1976

Building Information

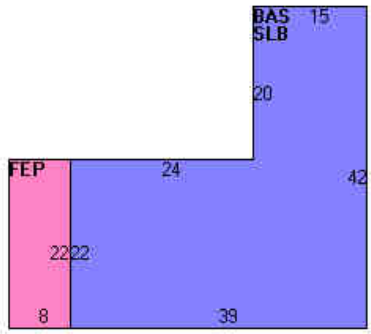
Building 1 : Section 1

Year Built:	1968
Living Area:	1,158
Building Percent Good:	82
Replacement Cost Less Depreciation:	$90,400

Building Attributes

Field	Description
Style	Ranch
Model	Residential
Grade:	C
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asphalt Shngl.
Interior Wall 1	Drywall
Interior Wall 2	Plywood Panel
Interior Flr 1	Carpet
Interior Flr 2	Slate
Heat Fuel	Gas
Heat Type:	Forced Air
AC Type:	None
Total Bedrooms:	2 Bedrooms
Total Bthrms:	1
Total Half Baths:	0
Total Rooms:	4
Bath Style:	Average
Kitchen Style:	Average

Building Layout



(http://images.vgsi.com/photos/SharonCTPhotos//Sketches/819_

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,158	1,158
FEP	Enclosed Porch	176	0
SLB	Slab	1,158	0
		2,492	1,158

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
FPL	Fireplace	1 Units	$4,100	1

Land

Land Use

Use Code 101
Description Single Family
Zone RR
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 20
Frontage
Depth
Assessed Value $142,150
Appraised Value $294,100

Special Land			
Land Use Code	Land Use Description	Units	Unit Type
800	Open Space	12	AC

Outbuildings

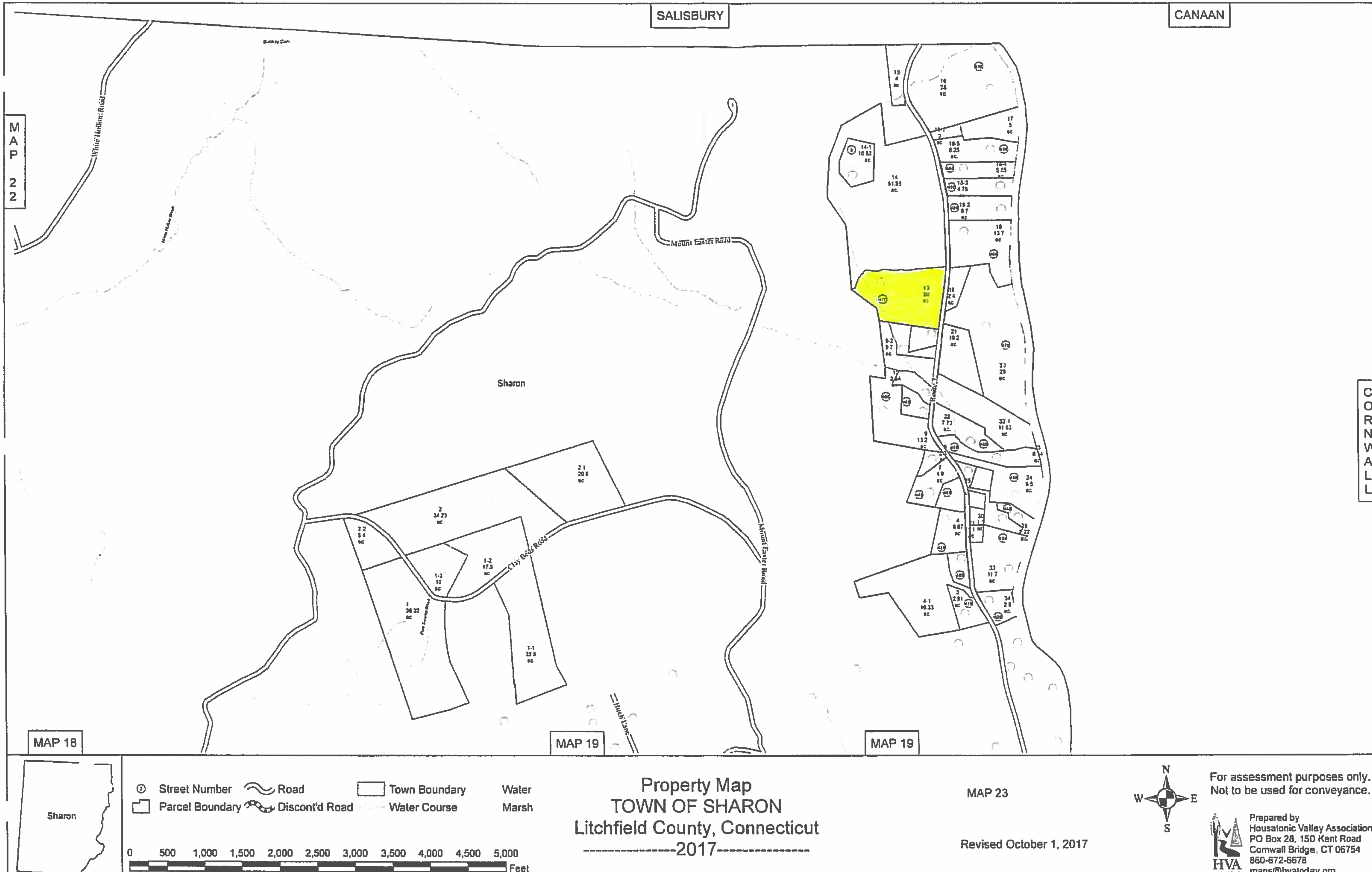
Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD1	Shed			132 S.F.	$1,800	1
CELL	Cell Tower site			1 UNITS	$205,200	1
CAB5	Cabin Exc.			230 S.F.	$13,100	1
FN4	Fence 8'			720 L.F.	$10,300	1
CAB5	Cabin Exc.			230 S.F.	$13,100	1
CAB5	Cabin Exc.			360 S.F.	$20,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$358,500	$294,100	$652,600
2017	$323,300	$357,300	$680,600

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$251,100	$142,150	$393,250
2017	$226,400	$174,810	$401,210



Property Map
TOWN OF SHARON
Litchfield County, Connecticut
---------------2017---------------

MAP 23

Revised October 1, 2017

For assessment purposes only.
Not to be used for conveyance.

Prepared by
Housatonic Valley Association
PO Box 28, 150 Kent Road
Cornwall Bridge, CT 06754
860-672-6678
maps@hvatoday org

EXHIBIT 5

Radio Frequency Emissions Analysis Report

AT&T

Site Name: **CT1180**

477 Route 7
Sharon, Connecticut 06069

December 3, 2019

Centerline Communications Project Number: 950012-334

Site Compliance Summary	
Compliance Status:	**Compliant**
Site total MPE% of FCC general population allowable limit:	**23.38%**

750 West Center St. Suite 301 | West Bridgewater, MA 02379

January 13, 2020

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 01701

Emissions Analysis for Site: **CT1180**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility to be located on **a monopine** near **477 Route 7, Sharon Connecticut 06069** for the purpose of determining whether the emissions from the proposed facility are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (∝W/cm2). The number of ∝W/cm^2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (μW/cm^2). The general population exposure limits for the 1900 MHz (PCS) and 5 GHz (B46) bands is 1000 μW/cm^2.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed facility using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing focused omnidirectional antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. This is a very conservative estimate since the gain reduction in actual applications is typically greater than 10 dB in the direction of ground immediately surrounding the facility. Real world emissions values from this facility are expected to be lower than values listed in this report at ground level. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Antenna #	Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
1	UMTS	850 UMTS	1	40
2	LTE	700 LTE	4	40
2	LTE	1900 LTE	2	40
2	LTE	1900 LTE	2	40
3	LTE	700 LTE	2	40
3	LTE	2100 AWS	4	40
3	LTE	850 LTE	1	40
3	LTE	850 5G	1	40
4	UMTS	850 UMTS	1	40
5	LTE	700 LTE	4	40
5	LTE	1900 LTE	2	40
5	LTE	1900 LTE	2	40
6	LTE	700 LTE	2	40
6	LTE	2100 AWS	4	40
6	LTE	850 LTE	1	40
6	LTE	850 5G	1	40
7	UMTS	850 UMTS	1	40
8	LTE	700 LTE	4	40
8	LTE	1900 LTE	2	40
8	LTE	1900 LTE	2	40
9	LTE	700 LTE	2	40

9	LTE	2100 AWS	4	40
9	LTE	850 LTE	1	40
9	LTE	850 5G	1	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 1900 MHz (PCS), 2100 MHz (AWS) and 5 GHz (Band 46) frequency bands. This is based on information from the carrier with regard to anticipated antenna selection. Maximum gain values for all antennas are listed in the AT&T Antenna Inventory & Power Levels table (Table 3) below in the Results section. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	100
A	2	CCI DMP65R-BU6DA	100
A	2	CCI DMP65R-BU6DA	100
A	2	CCI DMP65R-BU6DA	100
A	3	CCI DMP65R-BU6DA	100
A	3	CCI DMP65R-BU6DA	100
A	3	CCI DMP65R-BU6DA	100
A	3	CCI DMP65R-BU6DA	100
B	4	Powerwave 7770	100
B	5	CCI DMP65R-BU6DA	100
B	5	CCI DMP65R-BU6DA	100
B	5	CCI DMP65R-BU6DA	100
B	6	CCI DMP65R-BU6DA	100
B	6	CCI DMP65R-BU6DA	100
B	6	CCI DMP65R-BU6DA	100
B	6	CCI DMP65R-BU6DA	100
C	7	Powerwave 7770	100
C	8	CCI DMP65R-BU4DA	100
C	8	CCI DMP65R-BU4DA	100
C	8	CCI DMP65R-BU4DA	100
C	9	CCI DMP65R-BU4DA	100
C	9	CCI DMP65R-BU4DA	100
C	9	CCI DMP65R-BU4DA	100
C	9	CCI DMP65R-BU4DA	100

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Antenna Height (ft)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz (UMTS Band)	13.5	100	1	40	895.49	0.5678%
Antenna A3	CCI DMP65R-BU6DA	700 MHz (LTE Band)	11.45	100	4	40	2234.19	1.7200%
Antenna A3	CCI DMP65R-BU6DA	1900 MHz (PCS Band)	14.85	100	2	40	2443.94	0.8786%
Antenna A3	CCI DMP65R-BU6DA	1900 MHz (PCS Band)	14.85	100	2	40	2443.94	0.8786%
Antenna A4	CCI DMP65R-BU6DA	700 MHz (LTE Band)	11.45	100	2	40	1117.09	0.8600%
Antenna A4	CCI DMP65R-BU6DA	2100 MHz (AWS Band)	15.25	100	4	40	5359.45	1.9268%
Antenna A4	CCI DMP65R-BU6DA	850 MHz (LTE Band)	11.35	100	1	40	545.83	0.3461%
Antenna A4	CCI DMP65R-BU6DA	5 GHz (Band 46)	11.35	100	1	40	545.83	0.3461%
Antenna B1	Powerwave 7770	850 MHz (UMTS Band)	13.5	100	1	40	895.49	0.5678%
Antenna B3	CCI DMP65R-BU6DA	700 MHz (LTE Band)	11.45	100	4	40	2234.19	1.7200%
Antenna B3	CCI DMP65R-BU6DA	1900 MHz (PCS Band)	14.85	100	2	40	2443.94	0.8786%
Antenna B3	CCI DMP65R-BU6DA	1900 MHz (PCS Band)	14.85	100	2	40	2443.94	0.8786%
Antenna B4	CCI DMP65R-BU6DA	700 MHz (LTE Band)	11.45	100	2	40	1117.09	0.8600%
Antenna B4	CCI DMP65R-BU6DA	2100 MHz (AWS Band)	15.25	100	4	40	5359.45	1.9268%
Antenna B4	CCI DMP65R-BU6DA	850 MHz (LTE Band)	11.35	100	1	40	545.83	0.3461%
Antenna B4	CCI DMP65R-BU6DA	5 GHz (Band 46)	11.35	100	1	40	545.83	0.3461%
Antenna C1	Powerwave 7770	850 MHz (UMTS Band)	13.5	100	1	40	895.49	0.5678%
Antenna C3	CCI DMP65R-BU4DA	700 MHz (LTE Band)	10.55	100	4	40	1816.02	1.3980%
Antenna C3	CCI DMP65R-BU4DA	1900 MHz (PCS Band)	14.25	100	2	40	2128.58	0.7653%
Antenna C3	CCI DMP65R-BU4DA	1900 MHz (PCS Band)	14.25	100	2	40	2128.58	0.7653%
Antenna C4	CCI DMP65R-BU4DA	700 MHz (LTE Band)	10.55	100	2	40	908.01	0.6990%
Antenna C4	CCI DMP65R-BU4DA	2100 MHz (AWS Band)	14.75	100	4	40	4776.61	1.7173%

Antenna C4	CCI DMP65R-BU4DA	850 MHz (LTE Band)	10.85	100	1	40	486.47	0.3085%
Antenna C4	CCI DMP65R-BU4DA	5 GHz (Band 46)	10.85	100	1	40	486.47	0.3085%
	Sector A Composite MPE%							**21.58 %**

Table 3: AT&T Antenna Inventory & Power Levels

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). Since this proposed facility is utilizing an omnidirectional antenna there is only one sector for this site (Sector A).

AT&T _ Frequency Band / Technology Max Power Levels	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (□W/cm²)	Frequency (MHz)	Allowable MPE (□W/cm²)	Calculated % MPE
AT&T 850 MHz	1	895.49	100	3.2194	850 MHz	1000	0.57%
AT&T 700 MHz	4	2234.19	100	8.0322	700 MHz	1000	1.72%
AT&T 1900 MHz	2	2443.94	100	8.7863	1900 MHz	1000	0.88%
AT&T 1900 MHz	2	2443.94	100	8.7863	1900 MHz	1000	0.88%
AT&T 700 MHz	2	1117.09	100	4.0161	700 MHz	1000	0.86%
AT&T 2100 MHz	4	5359.45	100	19.2680	2100 MHz	1000	1.93%
AT&T 850 MHz	1	545.83	100	1.9624	850 MHz	1000	0.35%
AT&T 850 MHz	1	545.83	100	1.9624	850 MHz	1000	0.35%
AT&T 850 MHz	1	895.49	100	3.2194	850 MHz	1000	0.57%
AT&T 700 MHz	4	2234.19	100	8.0322	700 MHz	1000	1.72%
AT&T 1900 MHz	2	2443.94	100	8.7863	1900 MHz	1000	0.88%
AT&T 1900 MHz	2	2443.94	100	8.7863	1900 MHz	1000	0.88%
AT&T 700 MHz	2	1117.09	100	4.0161	700 MHz	1000	0.86%
AT&T 2100 MHz	4	5359.45	100	19.2680	2100 MHz	1000	1.93%
AT&T 850 MHz	1	545.83	100	1.9624	850 MHz	1000	0.35%
AT&T 850 MHz	1	545.83	100	1.9624	850 MHz	1000	0.35%
AT&T 850 MHz	1	895.49	100	3.2194	850 MHz	1000	0.57%
AT&T 700 MHz	4	1816.02	100	6.5288	700 MHz	1000	1.3980%
AT&T 1900 MHz	2	2128.58	100	7.6526	1900 MHz	1000	0.7653%
AT&T 1900 MHz	2	2128.58	100	7.6526	1900 MHz	1000	0.7653%
AT&T 700 MHz	2	908.01	100	3.2644	700 MHz	1000	0.6990%
AT&T 2100 MHz	4	4776.61	100	17.1726	2100 MHz	1000	1.7173%
AT&T 850 MHz	1	486.47	100	1.7489	850 MHz	1000	0.3085%
AT&T 850 MHz	1	486.47	100	1.7489	850 MHz	1000	0.3085%
						Sector A Total:	**21.58%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	7.52%
Sector B:	7.52%
Sector C:	6.53%
AT&T Maximum Site Total:	21.58%
Unknown Antennas @ 109':	0.85%
Unknown Antennas @ 118':	0.36%
Unknown Antennas @ 130':	0.59%
Site Total:	**23.38%**
Site Compliance Status:	**Compliant**

The anticipated composite MPE value for this site assuming all carriers present is **23.38%** of the allowable FCC established general population limit sampled at the ground level.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Michelle Stone
RF Compliance Consultant
Centerline Communications, LLC
750 West Center St. Suite 301
West Bridgewater, MA 02379

EXHIBIT 6

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

Structural Analysis Report

Existing 130 ft Nudd Corporation Monopine

Customer Name: SBA Communications Corp

Customer Site Number: CT02408-S

Customer Site Name: Sharon 3 CT

Carrier Name: AT&T (App#: 127613, V1)

Carrier Site ID / Name: CT1180 / Sharon Route 7

Site Location: 477 Route 7

Sharon, Connecticut

Litchfield County

Latitude: 41.909456

Longitude: -73.366031

Analysis Result:

Max Structural Usage: 37.8% [Pass]

Max Foundation Usage: 26.0% [Pass]

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

Report Prepared By: Younus Alkarawi

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

Structural Analysis Report

Existing 130 ft Nudd Corporation Monopine

Customer Name: SBA Communications Corp

Customer Site Number: CT02408-S

Customer Site Name: Sharon 3 CT

Carrier Name: AT&T (App#: 127613, V1)

Carrier Site ID / Name: CT1180 / Sharon Route 7

Site Location: 477 Route 7

Sharon, Connecticut

Litchfield County

Latitude: 41.909456

Longitude: -73.366031

Analysis Result:

Max Structural Usage: 37.8% [Pass]

Max Foundation Usage: 26.0% [Pass]

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

Report Prepared By: Younus Alkarawi

Introduction

The purpose of this report is to summarize the analysis results on the 130 ft Nudd Corporation Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Fred A. Nudd Corporation, Project #8318;10125-029; Dated 04/2001
Foundation Drawing	Fred A. Nudd Corporation, Project #8318;10125-029; Dated 04/2001
Geotechnical Report	Jaworski Geotech, Inc., Project #00133G; Dated 04/05/2001
Modification Drawings	N/A

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} = 115.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 89.0 mph (3-Sec. Gust)
Wind Speed with Ice:	40 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.179, S_1 = 0.065

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	130.0	2	Antel - BXA-70063-6CF_2 - Panel	(3) T-Arm	(12) 1 5/8"	Verizon
2		6	Antel - LPA80080/6CF - Panel			
3		3	Antel - BXA-171085-12BF_2 - Panel			
4		1	Antel - BXA-70040-6CF - Panel			
5		6	RFS - FD9R6004/2C-3L - Diplexer			
6	118.0	2	Commscope - DT465B-2XR - Panel	(3) T-Arm w/ Modifications [(1) Platform Reinforcement Kit SitePro1 Part PRK-1245L; (1) Handrail Components-V-Brace Kit SitePro1 Park PRK-SFS-L; (1) Handrail Components-(3) Pipe2.0 STD x 6.5 Horiz. Rail; Sitepro1SCX x-K [(12) total] cross-over plates]	(3) 1-1/4" Fiber	Sprint Nextel
7		2	RFS - APXVSPP18-C-A20 - Panel			
8		4	RFS - ACU-A20-N RET – RETs			
9		2	ALU - 1900 Mhz - RRUs			
10		4	ALU - 800 Mhz - RRUs			
11		2	ALU - TD-RRH8x20-25 - RRUs			
12		2	ALU – 800 Mhz Filter - Filters			
-	100.0	6	Powerwave - 7770 - Panel	(3) T-Arm	(12) 1 5/8" (2) 3/4" DC (1) 7/16" Fiber	AT&T
-		2	KMW - AM-X-CD-16-65-00T-RET - Panel			
-		1	Kathrein - 800 10764 - Panel			
-		1	Raycap - DC6-48-60-18-8F - DC Surge			
-		3	Andrew - ABT-DF-DMADBH – Bias-T			
-		12	Powerwave - LGP21401 – Tma			
-		6	Powerwave - LGP21901 – Diplexer			
-		6	Ericsson - RRUS11 - RRU			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
13	100.0	3	Powerwave 7770- Panel	(3) T-Arms	(12) 1-5/8" (6) 3/4" DC Power (2) 7/16" Fiber (3) 3" Conduit*	AT&T
14		4	CCI DMP65R-BU6DA- Panel			
15		2	CCI DMP65R-BU4DA- Panel			
16		12	Powerwave LGP21401			
17		6	Powerwave LGP13519			
18		3	Ericsson 4449 B5/B12			
19		3	Ericsson 8843 B2/B66A			
20		3	Ericsson RRUS 4478 B14			
21		3	Raycap DC6-48-60-18-8F			
22		3	Andrew ABT-DF-DMADBH – Bias-T			

*(Housing (6) 3/4" DC power & (2) 7/16 Fiber cables)

See the attached coax layout for the line placement considered in the analysis.

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:	**35.2%**	**37.8%**	**37.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3129.2	33.0	81.6

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 0.4757 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

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

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

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

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

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

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

Usage Diagram - Max Ratio 35.22% at 0.0ft

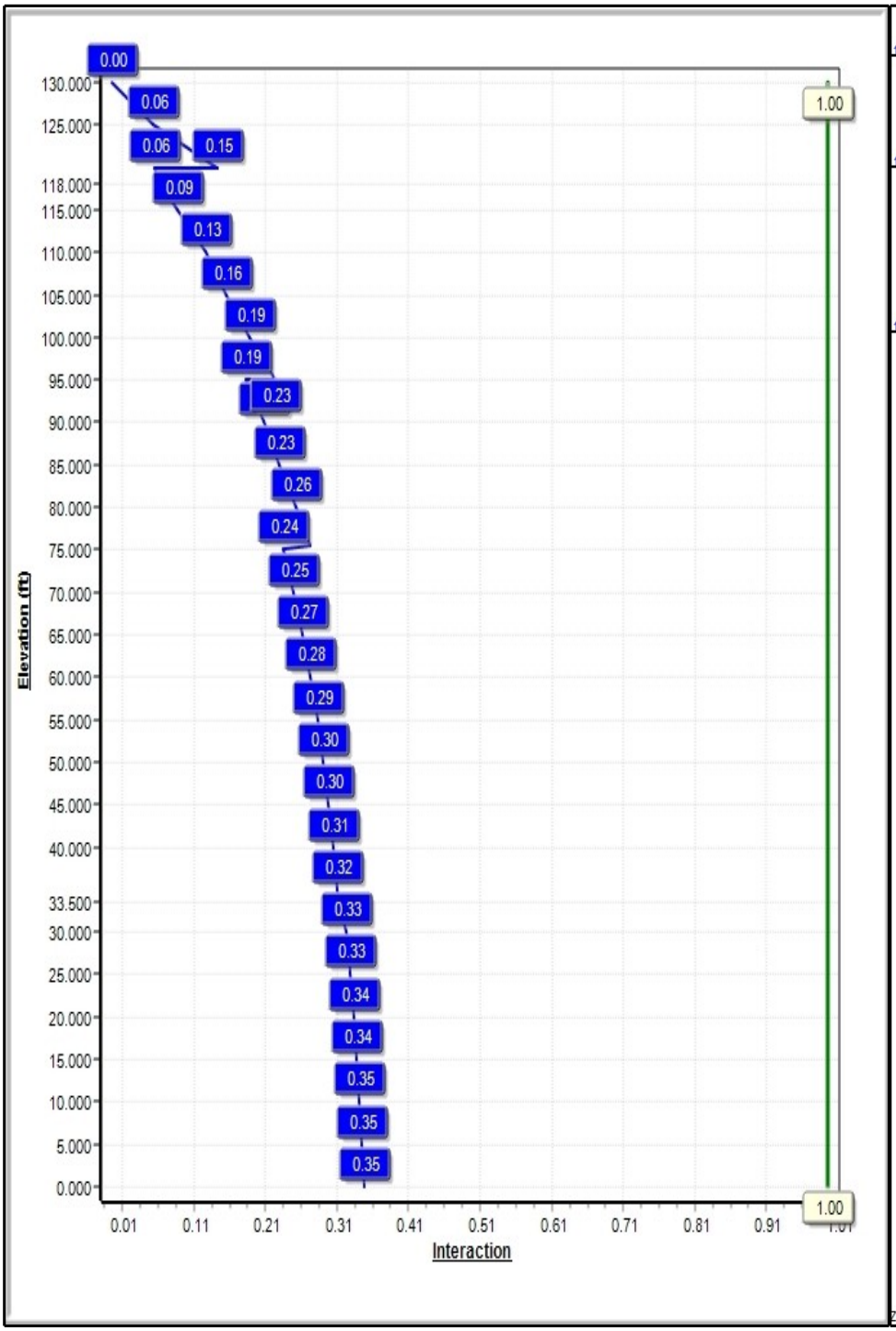
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT	**Exposure:**	B	
Height:	130.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

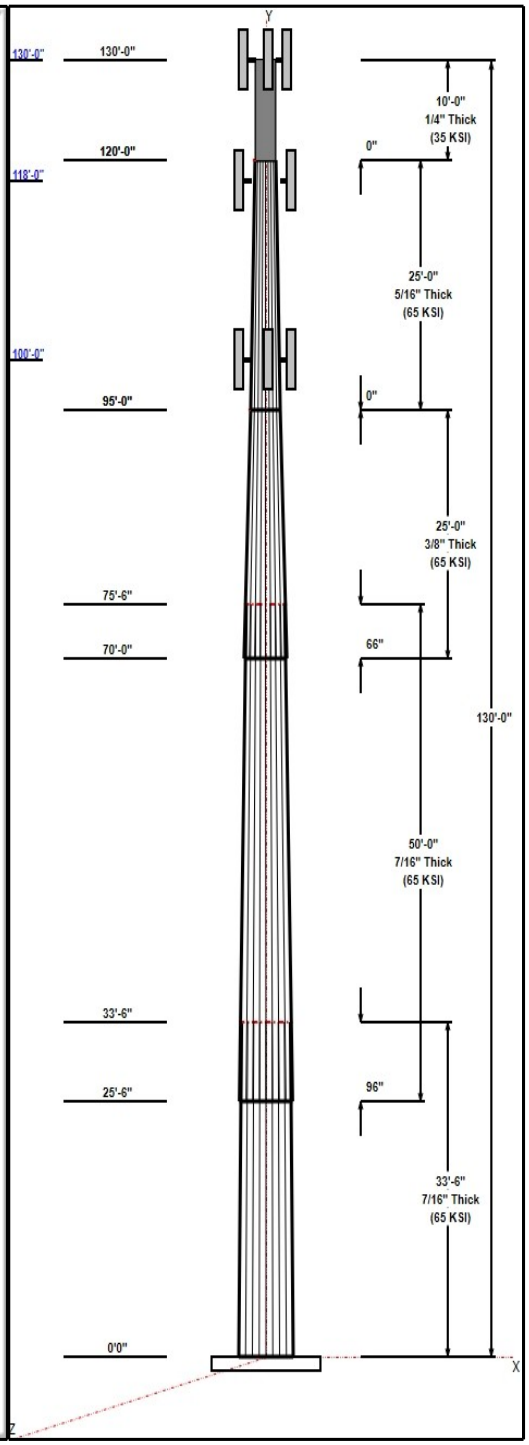
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 89 mph Wind

Iterations: 17





Structure: CT02408-S-SBA

Type: Custom
Site Name: Sharon 3 CT
Height: 130.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

12/20/2019

Tower Engineering Solutions

Shaft Properties

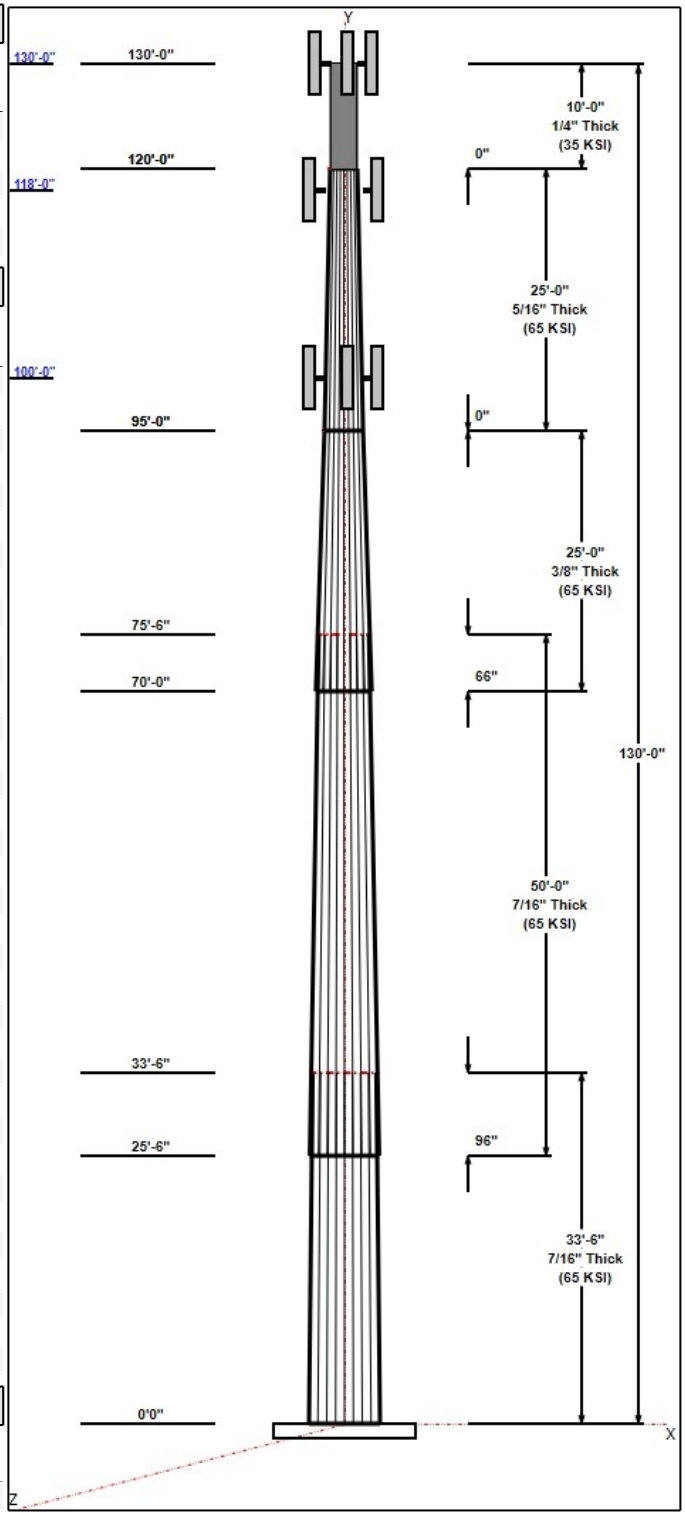
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	33.50	58.15	72.00	0.438		0.41354	65
2	50.00	41.65	62.33	0.438	Slip	0.41354	65
3	25.00	34.34	44.68	0.375	Slip	0.41354	65
4	25.00	24.00	34.34	0.313	Butt	0.41354	65
5	10.00	24.00	24.00	0.250	Butt	0.00000	35

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
130.00	130.00	2	BXA-70063-6CF_2	Verizon
130.00	130.00	6	LPA80080/6CF	Verizon
130.00	130.00	3	BXA-171085-12BF_2	Verizon
130.00	130.00	1	BXA-70040-6CF	Verizon
130.00	130.00	6	FD9R6004/2C-3L	Verizon
130.00	130.00	1	Tree Pole Branchs	
130.00	130.00	3	T-Arm	Verizon
125.00	125.00	1	Tree Pole Branchs	
118.00	118.00	3	T-Arm	Sprint Nextel
118.00	118.00	2	DT465B-2XR	Sprint Nextel
118.00	118.00	2	TD-RRH8x20-25	Sprint Nextel
118.00	118.00	1	(3) Pipe 2.0 STD	Sprint Nextel
118.00	118.00	2	PRK-SFS-L	Sprint Nextel
118.00	118.00	1	PRK-1245L (kicker kit)	Sprint Nextel
118.00	118.00	2	APXVSPP18-C-A20	Sprint Nextel
118.00	118.00	2	1900 MHz	Sprint Nextel
118.00	118.00	4	800 MHz	Sprint Nextel
118.00	118.00	2	800MHz Filter	Sprint Nextel
118.00	118.00	4	ACU-A20-N RET	Sprint Nextel
115.00	115.00	1	Tree Pole Branchs	
105.00	105.00	1	Tree Pole Branchs	
100.00	100.00	3	T-Arm	AT&T
100.00	100.00	4	DMP65R-BU6DA	AT&T
100.00	100.00	2	DMP65R-BU4DA	AT&T
100.00	100.00	3	4449 B5/B12	AT&T
100.00	100.00	3	8843 B2/B66A	AT&T
100.00	100.00	3	RRUS 4478 B14	AT&T
100.00	100.00	3	7770	AT&T
100.00	100.00	3	DC6-48-60-18-8F	AT&T
100.00	100.00	3	ABT-DF-DMADBH	AT&T
100.00	100.00	12	LGP21401	AT&T
100.00	100.00	6	LGP21901	AT&T
95.00	95.00	1	Tree Pole Branchs	
85.00	85.00	1	Tree Pole Branchs	
77.50	77.50	1	Tree Pole Branchs	

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	130.00	Inside	1 5/8" Coax	Verizon
0.00	118.00	Inside	1 1/4" Fiber	Sprint Nextel
0.00	100.00	Inside	1 5/8" Coax	AT&T
0.00	100.00	Inside	3/4" DC	AT&T
0.00	100.00	Inside	7/16" Fiber	AT&T



Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
25	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.0000	73.0	60.0	Round

Reactions

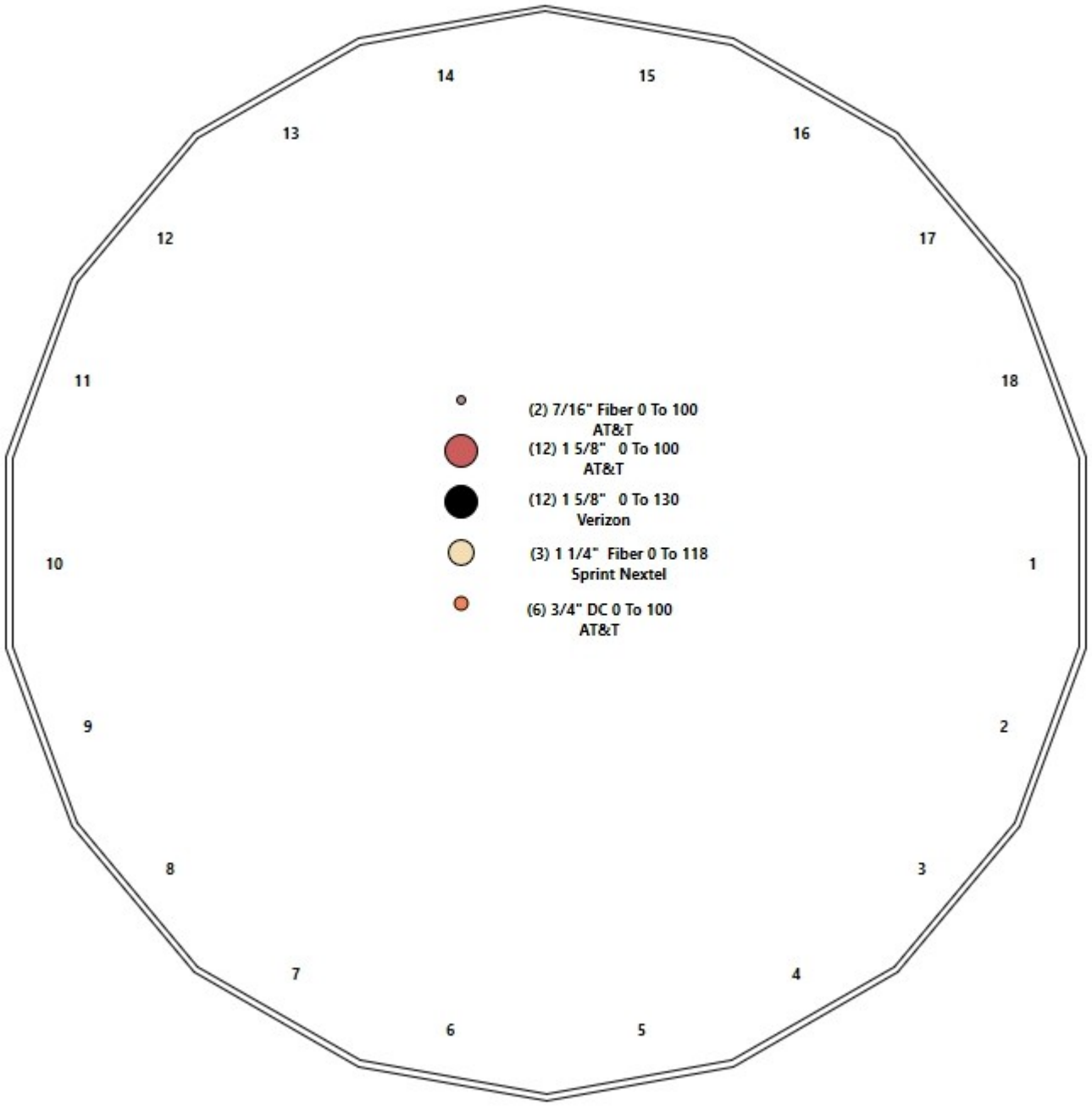
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 89 mph Wind	3129.2	33.0	48.7
0.9D + 1.6W 89 mph Wind	3119.8	33.0	36.5
1.2D + 1.0Di + 1.0Wi 40 mph Wind	611.1	6.5	81.6
1.2D + 1.0E	167.7	1.7	48.8
0.9D + 1.0E	167.2	1.7	36.6
1.0D + 1.0W 60 mph Wind	887.1	9.4	40.6

Structure: CT02408-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Sharon 3 CT
Height: 130.00 (ft)

12/20/2019

Tower Engineering Solutions



Shaft Properties

Structure:	CT02408-S-SBA		**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT		**Exposure:**	B	
Height:	130.00 (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	18	33.500	0.4375	65		0.00	10,231
2	18	50.000	0.4375	65	Slip	96.00	12,180
3	18	25.000	0.3750	65	Slip	66.00	3,962
4	18	25.000	0.3125	65	Flange	0.00	2,435
5	R	10.000	0.2500	35	Flange	0.00	635
					Total Shaft Weight:		**29,442**

	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	72.00	0.00	99.37	64295.26	27.61	164.57	58.15	33.50	80.13	33717.0	22.02	132.9	0.413542
2	62.33	25.50	85.94	41593.93	23.71	142.47	41.65	75.50	57.23	12282.6	15.38	95.21	0.413542
3	44.68	70.00	52.73	13075.19	19.60	119.14	34.34	95.00	40.42	5891.35	14.74	91.57	0.413542
4	34.34	95.00	33.75	4936.61	17.96	109.88	24.00	120.00	23.49	1665.53	12.13	76.80	0.413542
5	24.00	120.0	18.65	1316.20	0.00	96.00	24.00	130.00	18.65	1316.20	0.00	96.00	0.000000

Load Summary

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	130.00	BXA-70063-6CF_2	2	17.00	7.57	0.78	211.92	11.203	0.81	0.00	0.00
2	130.00	LPA80080/6CF	6	21.00	4.33	1.70	293.16	5.927	1.70	0.00	0.00
3	130.00	BXA-171085-12BF_2	3	15.00	4.74	0.88	139.78	7.828	0.90	0.00	0.00
4	130.00	BXA-70040-6CF	1	38.00	14.40	0.70	417.67	18.126	0.72	0.00	0.00
5	130.00	FD9R6004/2C-3L	6	3.10	0.36	1.00	13.65	0.943	1.00	0.00	0.00
6	130.00	Tree Pole Branchs	1	100.00	12.00	1.00	1017.56	14.753	1.00	0.00	0.00
7	130.00	T-Arm	3	400.00	10.00	0.75	767.02	21.470	0.75	0.00	0.00
8	125.00	Tree Pole Branchs	1	100.00	60.00	1.00	1013.97	73.710	1.00	0.00	0.00
9	118.00	T-Arm	3	400.00	11.50	0.75	763.49	24.563	0.75	0.00	0.00
10	118.00	DT465B-2XR	2	58.00	9.10	0.83	373.44	10.878	0.85	0.00	0.00
11	118.00	TD-RRH8x20-25	2	70.00	4.05	0.67	223.01	5.133	0.67	0.00	0.00
12	118.00	(3) Pipe 2.0 STD	1	302.36	8.13	1.00	769.45	18.473	1.00	0.00	0.00
13	118.00	PRK-SFS-L	2	140.00	3.70	1.00	369.00	8.743	1.00	0.00	0.00
14	118.00	PRK-1245L (kicker kit)	1	464.91	9.50	1.00	887.38	22.449	1.00	0.00	0.00
15	118.00	APXVSPP18-C-A20	2	57.00	8.02	0.83	282.00	11.657	0.86	0.00	0.00
16	118.00	1900 MHz	2	60.00	2.77	0.67	168.61	4.421	0.67	0.00	0.00
17	118.00	800 MHz	4	59.50	2.64	0.67	161.04	4.147	0.67	0.00	0.00
18	118.00	800MHz Filter	2	8.80	0.78	1.00	31.77	1.622	1.00	0.00	0.00
19	118.00	ACU-A20-N RET	4	1.00	0.14	0.79	6.59	0.526	0.79	0.00	0.00
20	115.00	Tree Pole Branchs	1	100.00	76.00	1.00	1006.38	93.221	1.00	0.00	0.00
21	105.00	Tree Pole Branchs	1	100.00	70.00	1.00	998.17	85.718	1.00	0.00	0.00
22	100.00	T-Arm	3	400.00	10.00	0.75	757.52	21.172	0.75	0.00	0.00
23	100.00	DMP65R-BU6DA	4	79.40	12.71	0.73	462.70	14.640	0.73	0.00	0.00
24	100.00	DMP65R-BU4DA	2	67.90	8.00	0.76	482.65	9.580	0.76	0.00	0.00
25	100.00	4449 B5/B12	3	71.00	1.97	0.67	139.35	2.671	0.67	0.00	0.00
26	100.00	8843 B2/B66A	3	72.00	1.64	0.67	131.98	2.276	0.67	0.00	0.00
27	100.00	RRUS 4478 B14	3	59.90	1.84	0.67	120.08	2.514	0.67	0.00	0.00
28	100.00	7770	3	35.00	5.50	0.73	219.26	6.889	0.73	0.00	0.00
29	100.00	DC6-48-60-18-8F	3	31.80	0.92	1.00	110.96	1.481	1.00	0.00	0.00
30	100.00	ABT-DF-DMADBH	3	1.10	0.05	1.00	3.96	0.296	1.00	0.00	0.00
31	100.00	LGP21401	12	14.10	1.29	1.00	46.11	2.360	1.00	0.00	0.00
32	100.00	LGP21901	6	5.50	0.23	0.75	15.35	0.701	0.75	0.00	0.00
33	95.00	Tree Pole Branchs	1	100.00	80.00	1.00	989.22	97.784	1.00	0.00	0.00
34	85.00	Tree Pole Branchs	1	100.00	80.00	1.00	979.39	97.588	1.00	0.00	0.00
35	77.50	Tree Pole Branchs	1	100.00	66.00	1.00	971.30	80.376	1.00	0.00	0.00
		Totals:	**98**	**7,826.47**			**27,802.97**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	130.00	(12) 1 5/8" Coax	0.00	Inside
0.00	118.00	(3) 1 1/4" Fiber	0.00	Inside
0.00	100.00	(12) 1 5/8" Coax	0.00	Inside
0.00	100.00	(6) 3/4" DC	0.00	Inside
0.00	100.00	(2) 7/16" Fiber	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)

Shaft Section Properties

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (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)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.4375	72.000	99.370	64295.3	27.61	164.57	68.9	1758.	0.0
5.00		0.4375	69.932	96.499	58881.5	26.77	159.85	69.9	1658.	1666.2
10.00		0.4375	67.865	93.628	53780.6	25.94	155.12	70.9	1560.	1617.4
15.00		0.4375	65.797	90.756	48983.1	25.11	150.39	71.9	1466.	1568.5
20.00		0.4375	63.729	87.885	44479.7	24.27	145.67	72.8	1374.	1519.7
25.00		0.4375	61.661	85.014	40261.2	23.44	140.94	73.8	1286.	1470.8
25.50	Bot - Section 2	0.4375	61.455	84.727	39854.6	23.36	140.47	73.9	1277.	144.4
30.00		0.4375	59.594	82.143	36318.2	22.61	136.21	74.8	1200.	2573.8
33.50	Top - Section 1	0.4375	59.021	81.348	35274.1	22.38	134.91	0.0	0.0	1947.1
35.00		0.4375	58.401	80.487	34165.5	22.13	133.49	75.4	1152.	413.0
40.00		0.4375	56.333	77.616	30638.0	21.29	128.76	76.4	1071.	1345.0
45.00		0.4375	54.266	74.744	27362.1	20.46	124.04	77.3	993.1	1296.1
50.00		0.4375	52.198	71.873	24328.5	19.63	119.31	78.3	918.0	1247.3
55.00		0.4375	50.130	69.002	21527.8	18.79	114.58	79.3	845.8	1198.4
60.00		0.4375	48.062	66.131	18950.8	17.96	109.86	80.3	776.6	1149.6
65.00		0.4375	45.995	63.260	16588.1	17.13	105.13	81.3	710.3	1100.7
70.00	Bot - Section 3	0.4375	43.927	60.389	14430.4	16.29	100.40	82.2	647.0	1051.9
75.00		0.4375	41.859	57.517	12468.4	15.46	95.68	82.5	586.7	1879.2
75.50	Top - Section 2	0.3750	42.403	50.022	11163.0	18.53	113.07	0.0	0.0	182.9
77.50		0.3750	41.576	49.037	10516.8	18.14	110.87	80.1	498.2	337.1
80.00		0.3750	40.542	47.807	9744.8	17.65	108.11	80.6	473.4	411.9
85.00		0.3750	38.474	45.346	8316.0	16.68	102.60	81.8	425.7	792.4
90.00		0.3750	36.406	42.885	7034.2	15.71	97.08	82.5	380.6	750.6
95.00	Top - Section 3	0.3750	34.339	40.424	5891.3	14.74	91.57	82.5	337.9	708.7
95.00	Bot - Section 4	0.3125	34.339	33.748	4936.6	17.68	109.88	80.3	283.2	
100.00		0.3125	32.271	31.698	4090.2	16.80	103.27	81.6	249.6	556.7
105.00		0.3125	30.203	29.647	3346.6	15.63	96.65	82.5	218.2	521.9
110.00		0.3125	28.135	27.596	2699.0	14.46	90.03	82.5	188.9	487.0
115.00		0.3125	26.068	25.545	2140.9	13.30	83.42	82.5	161.8	452.1
118.00		0.3125	24.827	24.315	1846.2	12.60	79.45	82.5	146.5	254.5
120.00	Top - Section 4	0.3125	24.000	23.494	1665.5	12.13	76.80	82.5	136.7	162.7
120.00	Bot - Section 5	0.2500	24.000	18.653	1316.2	15.16	96.00	34.8	109.7	
125.00		0.2500	24.000	18.653	1316.2	0.00	96.00	34.8	109.7	317.4
130.00		0.2500	24.000	18.653	1316.2	0.00	96.00	34.8	109.7	317.4
										29442.4

Wind Loading - Shaft

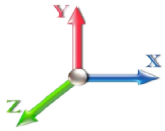
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 17

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	13.485	14.83	453.67	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	13.485	14.83	440.64	0.650	0.000	5.00	30.025	19.52	463.2	0.0	1999.5
10.00		1.00	0.70	13.485	14.83	427.61	0.650	0.000	5.00	29.151	18.95	449.7	0.0	1940.9
15.00		1.00	0.70	13.485	14.83	414.58	0.650	0.000	5.00	28.276	18.38	436.2	0.0	1882.3
20.00		1.00	0.70	13.485	14.83	401.55	0.650	0.000	5.00	27.401	17.81	422.7	0.0	1823.6
25.00		1.00	0.70	13.485	14.83	388.53	0.650	0.000	5.00	26.526	17.24	409.2	0.0	1765.0
25.50	Bot - Section 2	1.00	0.70	13.485	14.83	387.22	0.650	0.000	0.50	2.604	1.69	40.2	0.0	173.3
30.00		1.00	0.70	13.496	14.85	375.66	0.650	0.000	4.50	23.380	15.20	361.0	0.0	3088.6
33.50	Top - Section 1	1.00	0.72	13.928	15.32	372.36	0.650	0.000	3.50	17.694	11.50	281.9	0.0	2336.6
35.00		1.00	0.73	14.104	15.51	376.33	0.650	0.000	1.50	7.452	4.84	120.2	0.0	495.6
40.00		1.00	0.76	14.652	16.12	370.00	0.650	0.000	5.00	24.272	15.78	406.8	0.0	1614.0
45.00		1.00	0.79	15.154	16.67	362.47	0.650	0.000	5.00	23.397	15.21	405.6	0.0	1555.3
50.00		1.00	0.81	15.617	17.18	353.94	0.650	0.000	5.00	22.522	14.64	402.4	0.0	1496.7
55.00		1.00	0.83	16.048	17.65	344.58	0.650	0.000	5.00	21.647	14.07	397.4	0.0	1438.1
60.00		1.00	0.85	16.452	18.10	334.50	0.650	0.000	5.00	20.772	13.50	391.0	0.0	1379.5
65.00		1.00	0.87	16.833	18.52	323.79	0.650	0.000	5.00	19.898	12.93	383.2	0.0	1320.9
70.00	Bot - Section 3	1.00	0.89	17.193	18.91	312.53	0.650	0.000	5.00	19.023	12.36	374.1	0.0	1262.2
75.00		1.00	0.91	17.535	19.29	300.77	0.650	0.000	5.00	18.465	12.00	370.4	0.0	2255.0
75.50	Top - Section 2	1.00	0.91	17.568	19.33	299.57	0.650	0.000	0.50	1.798	1.17	36.1	0.0	219.5
77.50	Appurtenance(s)	1.00	0.92	17.700	19.47	300.13	0.650	0.000	2.00	7.106	4.62	143.9	0.0	404.5
80.00		1.00	0.93	17.861	19.65	294.00	0.650	0.000	2.50	8.686	5.65	177.5	0.0	494.3
85.00	Appurtenance(s)	1.00	0.94	18.173	19.99	281.43	0.650	0.000	5.00	16.716	10.87	347.5	0.0	950.9
90.00		1.00	0.96	18.473	20.32	268.49	0.650	0.000	5.00	15.841	10.30	334.8	0.0	900.7
95.00	Top - Section 3	1.00	0.97	18.760	20.64	255.20	0.650	0.000	5.00	14.966	9.73	321.2	0.0	850.4
100.00	Appurtenance(s)	1.00	0.99	19.037	20.94	241.60	0.650	0.000	5.00	14.091	9.16	306.9	0.0	668.1
105.00	Appurtenance(s)	1.00	1.00	19.304	21.23	227.70	0.650	0.000	5.00	13.216	8.59	291.9	0.0	626.2
110.00		1.00	1.02	19.563	21.52	213.53	0.650	0.000	5.00	12.341	8.02	276.2	0.0	584.4
115.00	Appurtenance(s)	1.00	1.03	19.813	21.79	199.10	0.650	0.000	5.00	11.467	7.45	259.9	0.0	542.5
118.00	Appurtenance(s)	1.00	1.04	19.959	21.95	190.32	0.650	0.000	3.00	6.460	4.20	147.5	0.0	305.4
120.00	Top - Section 4	1.00	1.04	20.055	22.06	184.42	0.650	0.000	2.00	4.132	2.69	94.8	0.0	195.2
125.00	Appurtenance(s)	1.00	1.05	20.290	22.32	182.68	0.600	0.000	5.00	10.000	6.00	214.3	0.0	380.8
130.00	Appurtenance(s)	1.00	1.07	20.519	22.57	183.71	0.600	0.000	5.00	10.000	6.00	216.7	0.0	380.8
								Totals:	**130.00**			**9,284.3**		**35,330.8**

Discrete Appurtenance Forces

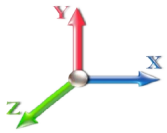
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 17

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	Tree Pole Branchs	1	20.519	22.571	1.00	1.00	12.00	120.00	0.000	0.000	433.36	0.00	0.00
2	130.00	FD9R6004/2C-3L	6	20.519	22.571	0.80	0.80	1.73	22.32	0.000	0.000	62.40	0.00	0.00
3	130.00	BXA-70040-6CF	1	20.519	22.571	0.56	0.80	8.05	45.60	0.000	0.000	290.80	0.00	0.00
4	130.00	BXA-171085-12BF_2	3	20.519	22.571	0.70	0.80	9.98	54.00	0.000	0.000	360.30	0.00	0.00
5	130.00	LPA80080/6CF	6	20.519	22.571	1.36	0.80	35.33	151.20	0.000	0.000	1275.99	0.00	0.00
6	130.00	BXA-70063-6CF_2	2	20.519	22.571	0.62	0.80	9.39	40.80	0.000	0.000	338.99	0.00	0.00
7	130.00	T-Arm	3	20.519	22.571	0.56	0.75	16.88	1440.00	0.000	0.000	609.42	0.00	0.00
8	125.00	Tree Pole Branchs	1	20.290	22.319	1.00	1.00	60.00	120.00	0.000	0.000	2142.67	0.00	0.00
9	118.00	(3) Pipe 2.0 STD	1	19.959	21.955	1.00	1.00	8.13	362.83	0.000	0.000	285.59	0.00	0.00
10	118.00	PRK-SFS-L	2	19.959	21.955	1.00	1.00	7.40	336.00	0.000	0.000	259.95	0.00	0.00
11	118.00	PRK-1245L (kicker kit)	1	19.959	21.955	1.00	1.00	9.50	557.89	0.000	0.000	333.72	0.00	0.00
12	118.00	TD-RRH8x20-25	2	19.959	21.955	0.54	0.80	4.34	168.00	0.000	0.000	152.51	0.00	0.00
13	118.00	ACU-A20-N RET	4	19.959	21.955	0.63	0.80	0.35	4.80	0.000	0.000	12.43	0.00	0.00
14	118.00	APXVSPP18-C-A20	2	19.959	21.955	0.66	0.80	10.64	136.80	0.000	0.000	373.68	0.00	0.00
15	118.00	1900 MHz	2	19.959	21.955	0.54	0.80	2.97	144.00	0.000	0.000	104.31	0.00	0.00
16	118.00	800 MHz	4	19.959	21.955	0.54	0.80	5.66	285.60	0.000	0.000	198.83	0.00	0.00
17	118.00	800MHz Filter	2	19.959	21.955	1.00	1.00	1.56	21.12	0.000	0.000	54.80	0.00	0.00
18	118.00	DT465B-2XR	2	19.959	21.955	0.66	0.80	12.06	139.20	0.000	0.000	423.49	0.00	0.00
19	118.00	T-Arm	3	19.959	21.955	0.56	0.75	19.41	1440.00	0.000	0.000	681.70	0.00	0.00
20	115.00	Tree Pole Branchs	1	19.813	21.794	1.00	1.00	76.00	120.00	0.000	0.000	2650.15	0.00	0.00
21	105.00	Tree Pole Branchs	1	19.304	21.235	1.00	1.00	70.00	120.00	0.000	0.000	2378.30	0.00	0.00
22	100.00	T-Arm	3	19.037	20.941	0.56	0.75	16.88	1440.00	0.000	0.000	565.40	0.00	0.00
23	100.00	DMP65R-BU6DA	4	19.037	20.941	0.58	0.80	29.69	381.12	0.000	0.000	994.79	0.00	0.00
24	100.00	DMP65R-BU4DA	2	19.037	20.941	0.61	0.80	9.73	162.96	0.000	0.000	325.94	0.00	0.00
25	100.00	4449 B5/B12	3	19.037	20.941	0.54	0.80	3.17	255.60	0.000	0.000	106.14	0.00	0.00
26	100.00	8843 B2/B66A	3	19.037	20.941	0.54	0.80	2.64	259.20	0.000	0.000	88.36	0.00	0.00
27	100.00	RRUS 4478 B14	3	19.037	20.941	0.54	0.80	2.96	215.64	0.000	0.000	99.13	0.00	0.00
28	100.00	7770	3	19.037	20.941	0.58	0.80	9.64	126.00	0.000	0.000	322.86	0.00	0.00
29	100.00	DC6-48-60-18-8F	3	19.037	20.941	1.00	1.00	2.76	114.48	0.000	0.000	92.47	0.00	0.00
30	100.00	ABT-DF-DMADBH	3	19.037	20.941	1.00	1.00	0.15	3.96	0.000	0.000	5.03	0.00	0.00
31	100.00	LGP21401	12	19.037	20.941	0.80	0.80	12.38	203.04	0.000	0.000	414.93	0.00	0.00
32	100.00	LGP21901	6	19.037	20.941	0.60	0.80	0.83	39.60	0.000	0.000	27.74	0.00	0.00
33	95.00	Tree Pole Branchs	1	18.760	20.636	1.00	1.00	80.00	120.00	0.000	0.000	2641.44	0.00	0.00
34	85.00	Tree Pole Branchs	1	18.173	19.991	1.00	1.00	80.00	120.00	0.000	0.000	2558.81	0.00	0.00
35	77.50	Tree Pole Branchs	1	17.700	19.470	1.00	1.00	66.00	120.00	0.000	0.000	2056.04	0.00	0.00
							Totals:		**9,391.76**			**23,722.48**		

Total Applied Force Summary

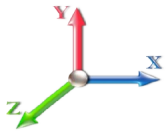
Structure:	CT02408-S-SBA		**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT		**Exposure:**	B	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 17

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		463.19	2176.49	0.00	0.00
10.00		449.69	2117.87	0.00	0.00
15.00		436.20	2059.25	0.00	0.00
20.00		422.70	2000.63	0.00	0.00
25.00		409.20	1942.01	0.00	0.00
25.50		40.18	190.98	0.00	0.00
30.00		360.97	3247.86	0.00	0.00
33.50		281.94	2460.46	0.00	0.00
35.00		120.24	548.72	0.00	0.00
40.00		406.85	1790.96	0.00	0.00
45.00		405.61	1732.34	0.00	0.00
50.00		402.37	1673.72	0.00	0.00
55.00		397.42	1615.10	0.00	0.00
60.00		390.96	1556.48	0.00	0.00
65.00		383.16	1497.86	0.00	0.00
70.00		374.15	1439.24	0.00	0.00
75.00		370.41	2432.04	0.00	0.00
75.50		36.14	237.22	0.00	0.00
77.50	(1) attachments	2199.93	595.29	0.00	0.00
80.00		177.48	582.81	0.00	0.00
85.00	(1) attachments	2906.34	1247.93	0.00	0.00
90.00		334.76	1077.68	0.00	0.00
95.00	(1) attachments	2962.63	1147.44	0.00	0.00
100.00	(45) attachments	3349.68	4046.69	0.00	0.00
105.00	(1) attachments	2670.17	832.98	0.00	0.00
110.00		276.20	671.11	0.00	0.00
115.00	(1) attachments	2910.05	749.24	0.00	0.00
118.00	(25) attachments	3028.51	3953.69	0.00	0.00
120.00		94.79	225.17	0.00	0.00
125.00	(1) attachments	2356.93	575.72	0.00	0.00
130.00	(22) attachments	3587.95	2329.64	0.00	0.00
	Totals:	**33,006.78**	**48,754.64**	**0.00**	**0.00**

Calculated Forces

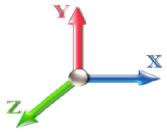
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 89 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 17

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	-48.73	-33.04	0.00	-3129.1	0.00	3129.17	6164.54	3082.27	18158.3	9092.69	0.00	0.000	0.000	0.352
5.00	-46.52	-32.63	0.00	-2963.9	0.00	2963.99	6071.55	3035.77	17364.5	8695.20	0.04	-0.067	0.000	0.349
10.00	-44.36	-32.23	0.00	-2800.8	0.00	2800.86	5973.49	2986.74	16572.6	8298.64	0.15	-0.137	0.000	0.345
15.00	-42.26	-31.84	0.00	-2639.7	0.00	2639.71	5870.37	2935.18	15783.8	7903.67	0.33	-0.209	0.000	0.341
20.00	-40.22	-31.46	0.00	-2480.5	0.00	2480.51	5762.18	2881.09	14999.6	7510.95	0.59	-0.283	0.000	0.337
25.00	-38.26	-31.07	0.00	-2323.2	0.00	2323.21	5648.92	2824.46	14221.0	7121.12	0.93	-0.360	0.000	0.333
25.50	-38.05	-31.06	0.00	-2307.6	0.00	2307.67	5637.32	2818.66	14143.6	7082.32	0.97	-0.368	0.000	0.333
30.00	-34.77	-30.71	0.00	-2167.9	0.00	2167.92	5530.60	2765.30	13449.6	6734.83	1.35	-0.440	0.000	0.328
33.50	-32.29	-30.43	0.00	-2060.4	0.00	2060.44	5496.96	2748.48	13237.5	6628.61	1.69	-0.498	0.000	0.317
35.00	-31.71	-30.34	0.00	-2014.7	0.00	2014.79	5460.05	2730.03	13008.4	6513.87	1.85	-0.524	0.000	0.315
40.00	-29.88	-29.96	0.00	-1863.1	0.00	1863.11	5333.74	2666.87	12250.7	6134.50	2.45	-0.605	0.000	0.309
45.00	-28.11	-29.57	0.00	-1713.3	0.00	1713.33	5202.37	2601.19	11503.5	5760.34	3.13	-0.688	0.000	0.303
50.00	-26.40	-29.19	0.00	-1565.4	0.00	1565.48	5065.93	2532.97	10768.1	5392.07	3.89	-0.773	0.000	0.296
55.00	-24.75	-28.81	0.00	-1419.5	0.00	1419.54	4924.43	2462.22	10045.7	5030.32	4.75	-0.860	0.000	0.287
60.00	-23.15	-28.43	0.00	-1275.5	0.00	1275.52	4777.86	2388.93	9337.60	4675.74	5.70	-0.949	0.000	0.278
65.00	-21.62	-28.05	0.00	-1133.3	0.00	1133.39	4626.23	2313.11	8645.15	4329.00	6.75	-1.040	0.000	0.267
70.00	-20.14	-27.68	0.00	-993.14	0.00	993.14	4469.53	2234.76	7969.63	3990.74	7.88	-1.131	0.000	0.254
75.00	-17.69	-27.28	0.00	-854.73	0.00	854.73	4273.25	2136.63	7253.77	3632.28	9.12	-1.222	0.000	0.240
75.50	-17.44	-27.24	0.00	-841.09	0.00	841.09	3583.96	1791.98	6182.69	3095.94	9.25	-1.232	0.000	0.277
77.50	-16.88	-25.04	0.00	-786.61	0.00	786.61	3533.61	1766.81	5974.82	2991.85	9.77	-1.269	0.000	0.268
80.00	-16.27	-24.87	0.00	-724.00	0.00	724.00	3469.54	1734.77	5717.95	2863.23	10.45	-1.320	0.000	0.258
85.00	-15.05	-21.96	0.00	-599.63	0.00	599.63	3337.60	1668.80	5214.74	2611.24	11.89	-1.417	0.000	0.234
90.00	-13.95	-21.62	0.00	-489.81	0.00	489.81	3186.12	1593.06	4705.25	2356.12	13.42	-1.510	0.000	0.212
95.00	-12.85	-18.65	0.00	-381.69	0.00	381.69	3003.28	1501.64	4178.09	2092.15	15.06	-1.598	0.000	0.187
95.00	-12.85	-18.65	0.00	-381.69	0.00	381.69	2438.11	1219.05	3404.33	1704.70	15.06	-1.598	0.000	0.229
100.00	-8.88	-15.20	0.00	-288.44	0.00	288.44	2329.09	1164.55	3052.69	1528.62	16.78	-1.679	0.000	0.193
105.00	-8.11	-12.52	0.00	-212.45	0.00	212.45	2202.60	1101.30	2698.31	1351.16	18.58	-1.766	0.000	0.161
110.00	-7.44	-12.23	0.00	-149.87	0.00	149.87	2050.23	1025.12	2336.11	1169.79	20.48	-1.843	0.000	0.132
115.00	-6.78	-9.30	0.00	-88.72	0.00	88.72	1897.87	948.93	2000.01	1001.49	22.45	-1.906	0.000	0.092
118.00	-2.92	-6.14	0.00	-60.82	0.00	60.82	1806.45	903.22	1810.87	906.78	23.65	-1.936	0.000	0.069
120.00	-2.70	-6.04	0.00	-48.54	0.00	48.54	1745.50	872.75	1690.00	846.25	24.47	-1.953	0.000	0.059
120.00	-2.70	-6.04	0.00	-48.54	0.00	48.54	583.92	291.96	571.48	339.36	24.47	-1.953	0.000	0.148
125.00	-2.20	-3.67	0.00	-18.33	0.00	18.33	583.92	291.96	571.48	339.36	26.53	-1.981	0.000	0.058
130.00	0.00	-3.59	0.00	0.00	0.00	0.00	583.92	291.96	571.48	339.36	28.61	-1.991	0.000	0.000

Wind Loading - Shaft

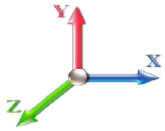
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 17

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	13.485	14.83	453.67	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	13.485	14.83	440.64	0.650	0.000	5.00	30.025	19.52	463.2	0.0	1499.6
10.00		1.00	0.70	13.485	14.83	427.61	0.650	0.000	5.00	29.151	18.95	449.7	0.0	1455.7
15.00		1.00	0.70	13.485	14.83	414.58	0.650	0.000	5.00	28.276	18.38	436.2	0.0	1411.7
20.00		1.00	0.70	13.485	14.83	401.55	0.650	0.000	5.00	27.401	17.81	422.7	0.0	1367.7
25.00		1.00	0.70	13.485	14.83	388.53	0.650	0.000	5.00	26.526	17.24	409.2	0.0	1323.8
25.50	Bot - Section 2	1.00	0.70	13.485	14.83	387.22	0.650	0.000	0.50	2.604	1.69	40.2	0.0	130.0
30.00		1.00	0.70	13.496	14.85	375.66	0.650	0.000	4.50	23.380	15.20	361.0	0.0	2316.4
33.50	Top - Section 1	1.00	0.72	13.928	15.32	372.36	0.650	0.000	3.50	17.694	11.50	281.9	0.0	1752.4
35.00		1.00	0.73	14.104	15.51	376.33	0.650	0.000	1.50	7.452	4.84	120.2	0.0	371.7
40.00		1.00	0.76	14.652	16.12	370.00	0.650	0.000	5.00	24.272	15.78	406.8	0.0	1210.5
45.00		1.00	0.79	15.154	16.67	362.47	0.650	0.000	5.00	23.397	15.21	405.6	0.0	1166.5
50.00		1.00	0.81	15.617	17.18	353.94	0.650	0.000	5.00	22.522	14.64	402.4	0.0	1122.5
55.00		1.00	0.83	16.048	17.65	344.58	0.650	0.000	5.00	21.647	14.07	397.4	0.0	1078.6
60.00		1.00	0.85	16.452	18.10	334.50	0.650	0.000	5.00	20.772	13.50	391.0	0.0	1034.6
65.00		1.00	0.87	16.833	18.52	323.79	0.650	0.000	5.00	19.898	12.93	383.2	0.0	990.6
70.00	Bot - Section 3	1.00	0.89	17.193	18.91	312.53	0.650	0.000	5.00	19.023	12.36	374.1	0.0	946.7
75.00		1.00	0.91	17.535	19.29	300.77	0.650	0.000	5.00	18.465	12.00	370.4	0.0	1691.3
75.50	Top - Section 2	1.00	0.91	17.568	19.33	299.57	0.650	0.000	0.50	1.798	1.17	36.1	0.0	164.6
77.50	Appurtenance(s)	1.00	0.92	17.700	19.47	300.13	0.650	0.000	2.00	7.106	4.62	143.9	0.0	303.4
80.00		1.00	0.93	17.861	19.65	294.00	0.650	0.000	2.50	8.686	5.65	177.5	0.0	370.7
85.00	Appurtenance(s)	1.00	0.94	18.173	19.99	281.43	0.650	0.000	5.00	16.716	10.87	347.5	0.0	713.2
90.00		1.00	0.96	18.473	20.32	268.49	0.650	0.000	5.00	15.841	10.30	334.8	0.0	675.5
95.00	Top - Section 3	1.00	0.97	18.760	20.64	255.20	0.650	0.000	5.00	14.966	9.73	321.2	0.0	637.8
100.00	Appurtenance(s)	1.00	0.99	19.037	20.94	241.60	0.650	0.000	5.00	14.091	9.16	306.9	0.0	501.1
105.00	Appurtenance(s)	1.00	1.00	19.304	21.23	227.70	0.650	0.000	5.00	13.216	8.59	291.9	0.0	469.7
110.00		1.00	1.02	19.563	21.52	213.53	0.650	0.000	5.00	12.341	8.02	276.2	0.0	438.3
115.00	Appurtenance(s)	1.00	1.03	19.813	21.79	199.10	0.650	0.000	5.00	11.467	7.45	259.9	0.0	406.9
118.00	Appurtenance(s)	1.00	1.04	19.959	21.95	190.32	0.650	0.000	3.00	6.460	4.20	147.5	0.0	229.0
120.00	Top - Section 4	1.00	1.04	20.055	22.06	184.42	0.650	0.000	2.00	4.132	2.69	94.8	0.0	146.4
125.00	Appurtenance(s)	1.00	1.05	20.290	22.32	182.68	0.600	0.000	5.00	10.000	6.00	214.3	0.0	285.6
130.00	Appurtenance(s)	1.00	1.07	20.519	22.57	183.71	0.600	0.000	5.00	10.000	6.00	216.7	0.0	285.6
								Totals:	**130.00**			**9,284.3**		**26,498.1**

Discrete Appurtenance Forces

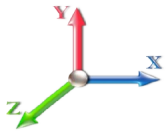
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 17

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	Tree Pole Branchs	1	20.519	22.571	1.00	1.00	12.00	90.00	0.000	0.000	433.36	0.00	0.00
2	130.00	FD9R6004/2C-3L	6	20.519	22.571	0.80	0.80	1.73	16.74	0.000	0.000	62.40	0.00	0.00
3	130.00	BXA-70040-6CF	1	20.519	22.571	0.56	0.80	8.05	34.20	0.000	0.000	290.80	0.00	0.00
4	130.00	BXA-171085-12BF_2	3	20.519	22.571	0.70	0.80	9.98	40.50	0.000	0.000	360.30	0.00	0.00
5	130.00	LPA80080/6CF	6	20.519	22.571	1.36	0.80	35.33	113.40	0.000	0.000	1275.99	0.00	0.00
6	130.00	BXA-70063-6CF_2	2	20.519	22.571	0.62	0.80	9.39	30.60	0.000	0.000	338.99	0.00	0.00
7	130.00	T-Arm	3	20.519	22.571	0.56	0.75	16.88	1080.00	0.000	0.000	609.42	0.00	0.00
8	125.00	Tree Pole Branchs	1	20.290	22.319	1.00	1.00	60.00	90.00	0.000	0.000	2142.67	0.00	0.00
9	118.00	(3) Pipe 2.0 STD	1	19.959	21.955	1.00	1.00	8.13	272.12	0.000	0.000	285.59	0.00	0.00
10	118.00	PRK-SFS-L	2	19.959	21.955	1.00	1.00	7.40	252.00	0.000	0.000	259.95	0.00	0.00
11	118.00	PRK-1245L (kicker kit)	1	19.959	21.955	1.00	1.00	9.50	418.42	0.000	0.000	333.72	0.00	0.00
12	118.00	TD-RRH8x20-25	2	19.959	21.955	0.54	0.80	4.34	126.00	0.000	0.000	152.51	0.00	0.00
13	118.00	ACU-A20-N RET	4	19.959	21.955	0.63	0.80	0.35	3.60	0.000	0.000	12.43	0.00	0.00
14	118.00	APXVSPP18-C-A20	2	19.959	21.955	0.66	0.80	10.64	102.60	0.000	0.000	373.68	0.00	0.00
15	118.00	1900 MHz	2	19.959	21.955	0.54	0.80	2.97	108.00	0.000	0.000	104.31	0.00	0.00
16	118.00	800 MHz	4	19.959	21.955	0.54	0.80	5.66	214.20	0.000	0.000	198.83	0.00	0.00
17	118.00	800MHz Filter	2	19.959	21.955	1.00	1.00	1.56	15.84	0.000	0.000	54.80	0.00	0.00
18	118.00	DT465B-2XR	2	19.959	21.955	0.66	0.80	12.06	104.40	0.000	0.000	423.49	0.00	0.00
19	118.00	T-Arm	3	19.959	21.955	0.56	0.75	19.41	1080.00	0.000	0.000	681.70	0.00	0.00
20	115.00	Tree Pole Branchs	1	19.813	21.794	1.00	1.00	76.00	90.00	0.000	0.000	2650.15	0.00	0.00
21	105.00	Tree Pole Branchs	1	19.304	21.235	1.00	1.00	70.00	90.00	0.000	0.000	2378.30	0.00	0.00
22	100.00	T-Arm	3	19.037	20.941	0.56	0.75	16.88	1080.00	0.000	0.000	565.40	0.00	0.00
23	100.00	DMP65R-BU6DA	4	19.037	20.941	0.58	0.80	29.69	285.84	0.000	0.000	994.79	0.00	0.00
24	100.00	DMP65R-BU4DA	2	19.037	20.941	0.61	0.80	9.73	122.22	0.000	0.000	325.94	0.00	0.00
25	100.00	4449 B5/B12	3	19.037	20.941	0.54	0.80	3.17	191.70	0.000	0.000	106.14	0.00	0.00
26	100.00	8843 B2/B66A	3	19.037	20.941	0.54	0.80	2.64	194.40	0.000	0.000	88.36	0.00	0.00
27	100.00	RRUS 4478 B14	3	19.037	20.941	0.54	0.80	2.96	161.73	0.000	0.000	99.13	0.00	0.00
28	100.00	7770	3	19.037	20.941	0.58	0.80	9.64	94.50	0.000	0.000	322.86	0.00	0.00
29	100.00	DC6-48-60-18-8F	3	19.037	20.941	1.00	1.00	2.76	85.86	0.000	0.000	92.47	0.00	0.00
30	100.00	ABT-DF-DMADBH	3	19.037	20.941	1.00	1.00	0.15	2.97	0.000	0.000	5.03	0.00	0.00
31	100.00	LGP21401	12	19.037	20.941	0.80	0.80	12.38	152.28	0.000	0.000	414.93	0.00	0.00
32	100.00	LGP21901	6	19.037	20.941	0.60	0.80	0.83	29.70	0.000	0.000	27.74	0.00	0.00
33	95.00	Tree Pole Branchs	1	18.760	20.636	1.00	1.00	80.00	90.00	0.000	0.000	2641.44	0.00	0.00
34	85.00	Tree Pole Branchs	1	18.173	19.991	1.00	1.00	80.00	90.00	0.000	0.000	2558.81	0.00	0.00
35	77.50	Tree Pole Branchs	1	17.700	19.470	1.00	1.00	66.00	90.00	0.000	0.000	2056.04	0.00	0.00
							Totals:		**7,043.82**			**23,722.48**		

Total Applied Force Summary

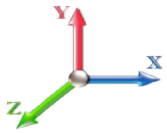
Structure:	CT02408-S-SBA		**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT		**Exposure:**	B	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 15

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 17

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		463.19	1632.37	0.00	0.00
10.00		449.69	1588.40	0.00	0.00
15.00		436.20	1544.44	0.00	0.00
20.00		422.70	1500.47	0.00	0.00
25.00		409.20	1456.51	0.00	0.00
25.50		40.18	143.23	0.00	0.00
30.00		360.97	2435.89	0.00	0.00
33.50		281.94	1845.34	0.00	0.00
35.00		120.24	411.54	0.00	0.00
40.00		406.85	1343.22	0.00	0.00
45.00		405.61	1299.26	0.00	0.00
50.00		402.37	1255.29	0.00	0.00
55.00		397.42	1211.33	0.00	0.00
60.00		390.96	1167.36	0.00	0.00
65.00		383.16	1123.40	0.00	0.00
70.00		374.15	1079.43	0.00	0.00
75.00		370.41	1824.03	0.00	0.00
75.50		36.14	177.91	0.00	0.00
77.50	(1) attachments	2199.93	446.47	0.00	0.00
80.00		177.48	437.11	0.00	0.00
85.00	(1) attachments	2906.34	935.95	0.00	0.00
90.00		334.76	808.26	0.00	0.00
95.00	(1) attachments	2962.63	860.58	0.00	0.00
100.00	(45) attachments	3349.68	3035.02	0.00	0.00
105.00	(1) attachments	2670.17	624.74	0.00	0.00
110.00		276.20	503.33	0.00	0.00
115.00	(1) attachments	2910.05	561.93	0.00	0.00
118.00	(25) attachments	3028.51	2965.27	0.00	0.00
120.00		94.79	168.88	0.00	0.00
125.00	(1) attachments	2356.93	431.79	0.00	0.00
130.00	(22) attachments	3587.95	1747.23	0.00	0.00
	Totals:	**33,006.78**	**36,565.98**	**0.00**	**0.00**

Calculated Forces

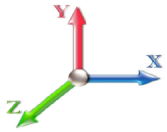
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 89 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 17

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	-36.55	-33.03	0.00	-3119.7	0.00	3119.79	6164.54	3082.27	18158.3	9092.69	0.00	0.000	0.000	0.349
5.00	-34.87	-32.61	0.00	-2954.6	0.00	2954.65	6071.55	3035.77	17364.5	8695.20	0.04	-0.067	0.000	0.346
10.00	-33.25	-32.19	0.00	-2791.6	0.00	2791.62	5973.49	2986.74	16572.6	8298.64	0.15	-0.137	0.000	0.342
15.00	-31.66	-31.79	0.00	-2630.6	0.00	2630.65	5870.37	2935.18	15783.8	7903.67	0.33	-0.208	0.000	0.338
20.00	-30.12	-31.40	0.00	-2471.6	0.00	2471.68	5762.18	2881.09	14999.6	7510.95	0.59	-0.282	0.000	0.334
25.00	-28.65	-31.01	0.00	-2314.6	0.00	2314.66	5648.92	2824.46	14221.0	7121.12	0.92	-0.359	0.000	0.330
25.50	-28.48	-30.99	0.00	-2299.1	0.00	2299.15	5637.32	2818.66	14143.6	7082.32	0.96	-0.367	0.000	0.330
30.00	-26.01	-30.64	0.00	-2159.7	0.00	2159.71	5530.60	2765.30	13449.6	6734.83	1.34	-0.439	0.000	0.326
33.50	-24.15	-30.36	0.00	-2052.4	0.00	2052.48	5496.96	2748.48	13237.5	6628.61	1.69	-0.496	0.000	0.314
35.00	-23.71	-30.26	0.00	-2006.9	0.00	2006.94	5460.05	2730.03	13008.4	6513.87	1.85	-0.522	0.000	0.313
40.00	-22.33	-29.87	0.00	-1855.6	0.00	1855.66	5333.74	2666.87	12250.7	6134.50	2.44	-0.603	0.000	0.307
45.00	-20.99	-29.48	0.00	-1706.3	0.00	1706.32	5202.37	2601.19	11503.5	5760.34	3.12	-0.685	0.000	0.300
50.00	-19.70	-29.09	0.00	-1558.9	0.00	1558.92	5065.93	2532.97	10768.1	5392.07	3.88	-0.770	0.000	0.293
55.00	-18.45	-28.70	0.00	-1413.4	0.00	1413.47	4924.43	2462.22	10045.7	5030.32	4.73	-0.857	0.000	0.285
60.00	-17.24	-28.32	0.00	-1269.9	0.00	1269.95	4777.86	2388.93	9337.60	4675.74	5.68	-0.946	0.000	0.275
65.00	-16.08	-27.94	0.00	-1128.3	0.00	1128.34	4626.23	2313.11	8645.15	4329.00	6.72	-1.036	0.000	0.264
70.00	-14.97	-27.57	0.00	-988.62	0.00	988.62	4469.53	2234.76	7969.63	3990.74	7.86	-1.126	0.000	0.251
75.00	-13.13	-27.18	0.00	-850.75	0.00	850.75	4273.25	2136.63	7253.77	3632.28	9.09	-1.217	0.000	0.237
75.50	-12.94	-27.14	0.00	-837.16	0.00	837.16	3583.96	1791.98	6182.69	3095.94	9.21	-1.227	0.000	0.274
77.50	-12.52	-24.94	0.00	-782.87	0.00	782.87	3533.61	1766.81	5974.82	2991.85	9.74	-1.264	0.000	0.265
80.00	-12.06	-24.77	0.00	-720.52	0.00	720.52	3469.54	1734.77	5717.95	2863.23	10.41	-1.315	0.000	0.255
85.00	-11.15	-21.86	0.00	-596.66	0.00	596.66	3337.60	1668.80	5214.74	2611.24	11.84	-1.411	0.000	0.232
90.00	-10.32	-21.52	0.00	-487.34	0.00	487.34	3186.12	1593.06	4705.25	2356.12	13.37	-1.504	0.000	0.210
95.00	-9.51	-18.55	0.00	-379.72	0.00	379.72	3003.28	1501.64	4178.09	2092.15	15.00	-1.592	0.000	0.185
95.00	-9.51	-18.55	0.00	-379.72	0.00	379.72	2438.11	1219.05	3404.33	1704.70	15.00	-1.592	0.000	0.227
100.00	-6.55	-15.13	0.00	-286.96	0.00	286.96	2329.09	1164.55	3052.69	1528.62	16.71	-1.672	0.000	0.191
105.00	-5.99	-12.45	0.00	-211.32	0.00	211.32	2202.60	1101.30	2698.31	1351.16	18.51	-1.759	0.000	0.159
110.00	-5.48	-12.16	0.00	-149.08	0.00	149.08	2050.23	1025.12	2336.11	1169.79	20.40	-1.835	0.000	0.130
115.00	-5.01	-9.24	0.00	-88.26	0.00	88.26	1897.87	948.93	2000.01	1001.49	22.36	-1.898	0.000	0.091
118.00	-2.14	-6.12	0.00	-60.54	0.00	60.54	1806.45	903.22	1810.87	906.78	23.56	-1.928	0.000	0.068
120.00	-1.97	-6.02	0.00	-48.31	0.00	48.31	1745.50	872.75	1690.00	846.25	24.37	-1.944	0.000	0.058
120.00	-1.97	-6.02	0.00	-48.31	0.00	48.31	583.92	291.96	571.48	339.36	24.37	-1.944	0.000	0.146
125.00	-1.62	-3.65	0.00	-18.23	0.00	18.23	583.92	291.96	571.48	339.36	26.42	-1.973	0.000	0.057
130.00	0.00	-3.59	0.00	0.00	0.00	0.00	583.92	291.96	571.48	339.36	28.50	-1.983	0.000	0.000

Wind Loading - Shaft

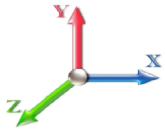
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 16

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	2.724	3.00	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	2.724	3.00	0.00	1.200	1.656	5.00	31.405	37.69	112.9	735.1	2734.6
10.00		1.00	0.70	2.724	3.00	0.00	1.200	1.775	5.00	30.630	36.76	110.1	766.4	2707.3
15.00		1.00	0.70	2.724	3.00	0.00	1.200	1.848	5.00	29.816	35.78	107.2	775.2	2657.5
20.00		1.00	0.70	2.724	3.00	0.00	1.200	1.902	5.00	28.986	34.78	104.2	774.1	2597.7
25.00		1.00	0.70	2.724	3.00	0.00	1.200	1.945	5.00	28.147	33.78	101.2	767.1	2532.1
25.50	Bot - Section 2	1.00	0.70	2.724	3.00	0.00	1.200	1.949	0.50	2.767	3.32	9.9	76.6	249.9
30.00		1.00	0.70	2.726	3.00	0.00	1.200	1.981	4.50	24.866	29.84	89.5	690.3	3778.9
33.50	Top - Section 1	1.00	0.72	2.813	3.09	0.00	1.200	2.003	3.50	18.863	22.64	70.1	530.5	2867.0
35.00		1.00	0.73	2.849	3.13	0.00	1.200	2.012	1.50	7.955	9.55	29.9	226.1	721.7
40.00		1.00	0.76	2.960	3.26	0.00	1.200	2.039	5.00	25.971	31.16	101.5	737.8	2351.8
45.00		1.00	0.79	3.061	3.37	0.00	1.200	2.063	5.00	25.116	30.14	101.5	720.4	2275.8
50.00		1.00	0.81	3.155	3.47	0.00	1.200	2.085	5.00	24.259	29.11	101.0	701.6	2198.3
55.00		1.00	0.83	3.242	3.57	0.00	1.200	2.105	5.00	23.401	28.08	100.1	681.6	2119.7
60.00		1.00	0.85	3.323	3.66	0.00	1.200	2.123	5.00	22.542	27.05	98.9	660.5	2040.0
65.00		1.00	0.87	3.400	3.74	0.00	1.200	2.140	5.00	21.681	26.02	97.3	638.6	1959.5
70.00	Bot - Section 3	1.00	0.89	3.473	3.82	0.00	1.200	2.156	5.00	20.820	24.98	95.4	615.9	1878.2
75.00		1.00	0.91	3.542	3.90	0.00	1.200	2.171	5.00	20.274	24.33	94.8	602.6	2857.7
75.50	Top - Section 2	1.00	0.91	3.549	3.90	0.00	1.200	2.173	0.50	1.979	2.38	9.3	60.0	279.5
77.50	Appurtenance(s)	1.00	0.92	3.575	3.93	0.00	1.200	2.178	2.00	7.832	9.40	37.0	236.3	640.8
80.00		1.00	0.93	3.608	3.97	0.00	1.200	2.185	2.50	9.596	11.52	45.7	289.3	783.7
85.00	Appurtenance(s)	1.00	0.94	3.671	4.04	0.00	1.200	2.198	5.00	18.548	22.26	89.9	554.2	1505.1
90.00		1.00	0.96	3.731	4.10	0.00	1.200	2.211	5.00	17.683	21.22	87.1	529.2	1429.9
95.00	Top - Section 3	1.00	0.97	3.789	4.17	0.00	1.200	2.223	5.00	16.818	20.18	84.1	503.7	1354.1
100.00	Appurtenance(s)	1.00	0.99	3.845	4.23	0.00	1.200	2.234	5.00	15.953	19.14	81.0	477.8	1145.9
105.00	Appurtenance(s)	1.00	1.00	3.899	4.29	0.00	1.200	2.245	5.00	15.087	18.10	77.7	451.5	1077.7
110.00		1.00	1.02	3.952	4.35	0.00	1.200	2.256	5.00	14.221	17.07	74.2	424.8	1009.1
115.00	Appurtenance(s)	1.00	1.03	4.002	4.40	0.00	1.200	2.266	5.00	13.355	16.03	70.5	397.8	940.2
118.00	Appurtenance(s)	1.00	1.04	4.032	4.43	0.00	1.200	2.272	3.00	7.596	9.12	40.4	228.8	534.2
120.00	Top - Section 4	1.00	1.04	4.051	4.46	0.00	1.200	2.276	2.00	4.890	5.87	26.1	148.2	343.4
125.00	Appurtenance(s)	1.00	1.05	4.099	4.51	0.00	1.200	2.285	5.00	11.904	14.28	64.4	366.9	747.7
130.00	Appurtenance(s)	1.00	1.07	4.145	4.56	0.00	1.200	2.294	5.00	11.912	14.29	65.2	368.4	749.3
								Totals:	**130.00**			**2,378.1**		**51,068.2**

Discrete Appurtenance Forces

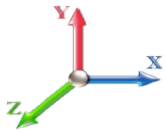
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 16

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	Tree Pole Branchs	1	4.145	4.559	1.00	1.00	14.75	837.56	0.000	0.000	67.26	0.00	0.00
2	130.00	FD9R6004/2C-3L	6	4.145	4.559	0.80	0.80	4.52	71.82	0.000	0.000	20.63	0.00	0.00
3	130.00	BXA-70040-6CF	1	4.145	4.559	0.58	0.80	10.50	342.47	0.000	0.000	47.87	0.00	0.00
4	130.00	BXA-171085-12BF_2	3	4.145	4.559	0.72	0.80	16.95	346.74	0.000	0.000	77.26	0.00	0.00
5	130.00	LPA80080/6CF	6	4.145	4.559	1.36	0.80	48.36	1784.17	0.000	0.000	220.49	0.00	0.00
6	130.00	BXA-70063-6CF_2	2	4.145	4.559	0.65	0.80	14.52	345.64	0.000	0.000	66.19	0.00	0.00
7	130.00	T-Arm	3	4.145	4.559	0.56	0.75	36.23	2301.07	0.000	0.000	165.18	0.00	0.00
8	125.00	Tree Pole Branchs	1	4.099	4.508	1.00	1.00	73.71	833.97	0.000	0.000	332.31	0.00	0.00
9	118.00	(3) Pipe 2.0 STD	1	4.032	4.435	1.00	1.00	18.47	1132.28	0.000	0.000	81.92	0.00	0.00
10	118.00	PRK-SFS-L	2	4.032	4.435	1.00	1.00	17.49	673.99	0.000	0.000	77.55	0.00	0.00
11	118.00	PRK-1245L (kicker kit)	1	4.032	4.435	1.00	1.00	22.45	885.27	0.000	0.000	99.56	0.00	0.00
12	118.00	TD-RRH8x20-25	2	4.032	4.435	0.54	0.80	5.50	474.01	0.000	0.000	24.40	0.00	0.00
13	118.00	ACU-A20-N RET	4	4.032	4.435	0.63	0.80	1.33	21.97	0.000	0.000	5.90	0.00	0.00
14	118.00	APXVSPP18-C-A20	2	4.032	4.435	0.68	0.80	15.96	487.81	0.000	0.000	70.80	0.00	0.00
15	118.00	1900 MHz	2	4.032	4.435	0.54	0.80	4.74	313.42	0.000	0.000	21.02	0.00	0.00
16	118.00	800 MHz	4	4.032	4.435	0.54	0.80	8.89	602.16	0.000	0.000	39.43	0.00	0.00
17	118.00	800MHz Filter	2	4.032	4.435	1.00	1.00	3.24	57.05	0.000	0.000	14.39	0.00	0.00
18	118.00	DT465B-2XR	2	4.032	4.435	0.68	0.80	14.81	770.07	0.000	0.000	65.68	0.00	0.00
19	118.00	T-Arm	3	4.032	4.435	0.56	0.75	41.45	2290.46	0.000	0.000	183.82	0.00	0.00
20	115.00	Tree Pole Branchs	1	4.002	4.402	1.00	1.00	93.22	826.38	0.000	0.000	410.38	0.00	0.00
21	105.00	Tree Pole Branchs	1	3.899	4.289	1.00	1.00	85.72	818.17	0.000	0.000	367.67	0.00	0.00
22	100.00	T-Arm	3	3.845	4.230	0.56	0.75	35.73	2272.56	0.000	0.000	151.13	0.00	0.00
23	100.00	DMP65R-BU6DA	4	3.845	4.230	0.58	0.80	34.20	1914.30	0.000	0.000	144.66	0.00	0.00
24	100.00	DMP65R-BU4DA	2	3.845	4.230	0.61	0.80	11.65	968.25	0.000	0.000	49.28	0.00	0.00
25	100.00	4449 B5/B12	3	3.845	4.230	0.54	0.80	4.29	419.84	0.000	0.000	18.17	0.00	0.00
26	100.00	8843 B2/B66A	3	3.845	4.230	0.54	0.80	3.66	403.13	0.000	0.000	15.48	0.00	0.00
27	100.00	RRUS 4478 B14	3	3.845	4.230	0.54	0.80	4.04	361.07	0.000	0.000	17.10	0.00	0.00
28	100.00	7770	3	3.845	4.230	0.58	0.80	12.07	678.78	0.000	0.000	51.05	0.00	0.00
29	100.00	DC6-48-60-18-8F	3	3.845	4.230	1.00	1.00	4.44	298.85	0.000	0.000	18.79	0.00	0.00
30	100.00	ABT-DF-DMADBH	3	3.845	4.230	1.00	1.00	0.89	10.43	0.000	0.000	3.76	0.00	0.00
31	100.00	LGP21401	12	3.845	4.230	0.80	0.80	22.66	501.97	0.000	0.000	95.83	0.00	0.00
32	100.00	LGP21901	6	3.845	4.230	0.60	0.80	2.52	85.48	0.000	0.000	10.68	0.00	0.00
33	95.00	Tree Pole Branchs	1	3.789	4.168	1.00	1.00	97.78	809.22	0.000	0.000	407.61	0.00	0.00
34	85.00	Tree Pole Branchs	1	3.671	4.038	1.00	1.00	97.59	799.39	0.000	0.000	394.06	0.00	0.00
35	77.50	Tree Pole Branchs	1	3.575	3.933	1.00	1.00	80.38	791.30	0.000	0.000	316.11	0.00	0.00
							Totals:		**26,531.03**			**4,153.43**		

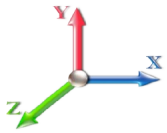
Total Applied Force Summary

Structure:	CT02408-S-SBA		**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT		**Exposure:**	B	
Height:	130.00 (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

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 16

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		112.92	2911.61	0.00	0.00
10.00		110.13	2884.28	0.00	0.00
15.00		107.20	2834.50	0.00	0.00
20.00		104.22	2774.73	0.00	0.00
25.00		101.20	2709.14	0.00	0.00
25.50		9.95	267.60	0.00	0.00
30.00		89.48	3938.18	0.00	0.00
33.50		70.05	2990.93	0.00	0.00
35.00		29.92	774.77	0.00	0.00
40.00		101.46	2528.79	0.00	0.00
45.00		101.48	2452.75	0.00	0.00
50.00		101.02	2375.30	0.00	0.00
55.00		100.13	2296.66	0.00	0.00
60.00		98.88	2217.01	0.00	0.00
65.00		97.31	2136.47	0.00	0.00
70.00		95.44	2055.15	0.00	0.00
75.00		94.79	3034.67	0.00	0.00
75.50		9.27	297.24	0.00	0.00
77.50	(1) attachments	353.07	1502.88	0.00	0.00
80.00		45.70	872.15	0.00	0.00
85.00	(1) attachments	483.94	2481.51	0.00	0.00
90.00		87.10	1606.86	0.00	0.00
95.00	(1) attachments	491.73	2340.36	0.00	0.00
100.00	(45) attachments	656.91	9237.53	0.00	0.00
105.00	(1) attachments	445.33	1982.62	0.00	0.00
110.00		74.18	1095.90	0.00	0.00
115.00	(1) attachments	480.93	1853.37	0.00	0.00
118.00	(25) attachments	724.90	8294.77	0.00	0.00
120.00		26.15	373.33	0.00	0.00
125.00	(1) attachments	396.71	1656.56	0.00	0.00
130.00	(22) attachments	730.05	6853.62	0.00	0.00
	Totals:	**6,531.55**	**81,631.25**	**0.00**	**0.00**

Calculated Forces

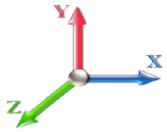
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 16

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	-81.63	-6.54	0.00	-611.12	0.00	611.12	6164.54	3082.27	18158.3	9092.69	0.00	0.000	0.000	0.080
5.00	-78.72	-6.45	0.00	-578.42	0.00	578.42	6071.55	3035.77	17364.5	8695.20	0.01	-0.013	0.000	0.079
10.00	-75.83	-6.35	0.00	-546.19	0.00	546.19	5973.49	2986.74	16572.6	8298.64	0.03	-0.027	0.000	0.079
15.00	-73.00	-6.26	0.00	-514.43	0.00	514.43	5870.37	2935.18	15783.8	7903.67	0.06	-0.041	0.000	0.078
20.00	-70.22	-6.17	0.00	-483.12	0.00	483.12	5762.18	2881.09	14999.6	7510.95	0.11	-0.055	0.000	0.077
25.00	-67.51	-6.08	0.00	-452.25	0.00	452.25	5648.92	2824.46	14221.0	7121.12	0.18	-0.070	0.000	0.075
25.50	-67.24	-6.08	0.00	-449.21	0.00	449.21	5637.32	2818.66	14143.6	7082.32	0.19	-0.072	0.000	0.075
30.00	-63.30	-6.00	0.00	-421.86	0.00	421.86	5530.60	2765.30	13449.6	6734.83	0.26	-0.086	0.000	0.074
33.50	-60.31	-5.93	0.00	-400.87	0.00	400.87	5496.96	2748.48	13237.5	6628.61	0.33	-0.097	0.000	0.071
35.00	-59.53	-5.91	0.00	-391.97	0.00	391.97	5460.05	2730.03	13008.4	6513.87	0.36	-0.102	0.000	0.071
40.00	-57.00	-5.82	0.00	-362.42	0.00	362.42	5333.74	2666.87	12250.7	6134.50	0.48	-0.118	0.000	0.070
45.00	-54.55	-5.73	0.00	-333.32	0.00	333.32	5202.37	2601.19	11503.5	5760.34	0.61	-0.134	0.000	0.068
50.00	-52.17	-5.64	0.00	-304.68	0.00	304.68	5065.93	2532.97	10768.1	5392.07	0.76	-0.151	0.000	0.067
55.00	-49.88	-5.55	0.00	-276.49	0.00	276.49	4924.43	2462.22	10045.7	5030.32	0.93	-0.168	0.000	0.065
60.00	-47.66	-5.45	0.00	-248.76	0.00	248.76	4777.86	2388.93	9337.60	4675.74	1.11	-0.185	0.000	0.063
65.00	-45.52	-5.36	0.00	-221.49	0.00	221.49	4626.23	2313.11	8645.15	4329.00	1.31	-0.203	0.000	0.061
70.00	-43.46	-5.27	0.00	-194.67	0.00	194.67	4469.53	2234.76	7969.63	3990.74	1.54	-0.220	0.000	0.059
75.00	-40.43	-5.17	0.00	-168.30	0.00	168.30	4273.25	2136.63	7253.77	3632.28	1.78	-0.238	0.000	0.056
75.50	-40.13	-5.17	0.00	-165.71	0.00	165.71	3583.96	1791.98	6182.69	3095.94	1.80	-0.240	0.000	0.065
77.50	-38.63	-4.81	0.00	-155.38	0.00	155.38	3533.61	1766.81	5974.82	2991.85	1.90	-0.248	0.000	0.063
80.00	-37.75	-4.77	0.00	-143.34	0.00	143.34	3469.54	1734.77	5717.95	2863.23	2.04	-0.258	0.000	0.061
85.00	-35.27	-4.29	0.00	-119.48	0.00	119.48	3337.60	1668.80	5214.74	2611.24	2.32	-0.277	0.000	0.056
90.00	-33.67	-4.21	0.00	-98.02	0.00	98.02	3186.12	1593.06	4705.25	2356.12	2.62	-0.295	0.000	0.052
95.00	-31.33	-3.71	0.00	-77.00	0.00	77.00	3003.28	1501.64	4178.09	2092.15	2.94	-0.313	0.000	0.047
95.00	-31.33	-3.71	0.00	-77.00	0.00	77.00	2438.11	1219.05	3404.33	1704.70	2.94	-0.313	0.000	0.058
100.00	-22.09	-3.01	0.00	-58.44	0.00	58.44	2329.09	1164.55	3052.69	1528.62	3.27	-0.330	0.000	0.048
105.00	-20.11	-2.56	0.00	-43.40	0.00	43.40	2202.60	1101.30	2698.31	1351.16	3.63	-0.347	0.000	0.041
110.00	-19.02	-2.48	0.00	-30.61	0.00	30.61	2050.23	1025.12	2336.11	1169.79	4.00	-0.363	0.000	0.035
115.00	-17.17	-1.99	0.00	-18.20	0.00	18.20	1897.87	948.93	2000.01	1001.49	4.39	-0.376	0.000	0.027
118.00	-8.88	-1.21	0.00	-12.23	0.00	12.23	1806.45	903.22	1810.87	906.78	4.63	-0.382	0.000	0.018
120.00	-8.50	-1.18	0.00	-9.81	0.00	9.81	1745.50	872.75	1690.00	846.25	4.79	-0.385	0.000	0.016
120.00	-8.50	-1.18	0.00	-9.81	0.00	9.81	583.92	291.96	571.48	339.36	4.79	-0.385	0.000	0.043
125.00	-6.85	-0.78	0.00	-3.88	0.00	3.88	583.92	291.96	571.48	339.36	5.20	-0.391	0.000	0.023
130.00	0.00	-0.73	0.00	0.00	0.00	0.00	583.92	291.96	571.48	339.36	5.61	-0.393	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (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:	1.2D + 1.0E							**Iterations**	15
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.71		**SA**	0.07	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1666.2	0.00	0.04	0.02	18.98	
10.00		1617.3	0.01	0.06	0.03	28.12	
15.00		1568.5	0.03	0.07	0.04	32.36	
20.00		1519.6	0.04	0.07	0.04	34.31	
25.00		1470.8	0.07	0.07	0.04	35.34	
25.50	Bot - Section 2	144.40	0.07	0.07	0.04	3.49	
30.00		2573.8	0.10	0.07	0.04	65.33	
33.50	Top - Section 1	1947.1	0.13	0.07	0.03	51.28	
35.00		413.02	0.14	0.07	0.03	11.04	
40.00		1344.9	0.18	0.07	0.03	37.61	
45.00		1296.1	0.23	0.06	0.02	37.30	
50.00		1247.2	0.28	0.05	0.01	35.91	
55.00		1198.4	0.34	0.04	0.01	33.08	
60.00		1149.5	0.40	0.02	0.01	28.64	
65.00		1100.7	0.47	-0.01	0.01	22.75	
70.00	Bot - Section 3	1051.8	0.55	-0.03	0.01	16.00	
75.00		1879.2	0.63	-0.06	0.02	17.57	
75.50	Top - Section 2	182.93	0.64	-0.07	0.02	1.61	
77.50	Appurtenance(s)	437.07	0.67	-0.08	0.02	2.91	
80.00		411.92	0.72	-0.09	0.03	1.80	
85.00	Appurtenance(s)	892.44	0.81	-0.11	0.06	1.64	
90.00		750.57	0.91	-0.12	0.09	2.49	
95.00	Top - Section 3	808.70	1.01	-0.11	0.14	8.16	
100.00	Appurtenance(s)	3224.7	1.12	-0.06	0.20	74.53	
105.00	Appurtenance(s)	621.85	1.23	0.04	0.28	26.72	
110.00		486.96	1.35	0.20	0.39	34.10	
115.00	Appurtenance(s)	552.07	1.48	0.45	0.52	57.68	
118.00	Appurtenance(s)	3251.3	1.56	0.65	0.61	418.67	
120.00	Top - Section 4	162.68	1.61	0.81	0.68	23.83	
125.00	Appurtenance(s)	417.36	1.75	1.31	0.89	81.85	
130.00	Appurtenance(s)	1878.9	1.89	1.98	1.14	476.30	
	Totals:	**37,268.8**				**1,721.4**	**Total Wind:** **33,006.8**

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

Calculated Forces

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (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

Load Case:	1.2D + 1.0E							**Iterations**	15
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.71		**SA**	0.07	**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	-48.75	-1.72	0.00	-167.75	0.00	167.75	6164.54	3082.27	18158.3	9092.69		0.00	0.00	0.026
5.00	-46.58	-1.71	0.00	-159.14	0.00	159.14	6071.55	3035.77	17364.5	8695.20		0.00	0.00	0.026
10.00	-44.46	-1.68	0.00	-150.61	0.00	150.61	5973.49	2986.74	16572.6	8298.64		0.01	-0.01	0.026
15.00	-42.40	-1.65	0.00	-142.21	0.00	142.21	5870.37	2935.18	15783.8	7903.67		0.02	-0.01	0.025
20.00	-40.40	-1.62	0.00	-133.95	0.00	133.95	5762.18	2881.09	14999.6	7510.95		0.03	-0.02	0.025
25.00	-38.46	-1.58	0.00	-125.86	0.00	125.86	5648.92	2824.46	14221.0	7121.12		0.05	-0.02	0.024
25.50	-38.27	-1.58	0.00	-125.06	0.00	125.06	5637.32	2818.66	14143.6	7082.32		0.05	-0.02	0.024
30.00	-35.02	-1.52	0.00	-117.94	0.00	117.94	5530.60	2765.30	13449.6	6734.83		0.07	-0.02	0.024
33.50	-32.56	-1.47	0.00	-112.63	0.00	112.63	5496.96	2748.48	13237.5	6628.61		0.09	-0.03	0.023
35.00	-32.01	-1.46	0.00	-110.43	0.00	110.43	5460.05	2730.03	13008.4	6513.87		0.10	-0.03	0.023
40.00	-30.22	-1.42	0.00	-103.14	0.00	103.14	5333.74	2666.87	12250.7	6134.50		0.13	-0.03	0.022
45.00	-28.49	-1.39	0.00	-96.04	0.00	96.04	5202.37	2601.19	11503.5	5760.34		0.17	-0.04	0.022
50.00	-26.81	-1.35	0.00	-89.11	0.00	89.11	5065.93	2532.97	10768.1	5392.07		0.21	-0.04	0.022
55.00	-25.20	-1.32	0.00	-82.36	0.00	82.36	4924.43	2462.22	10045.7	5030.32		0.26	-0.05	0.021
60.00	-23.64	-1.29	0.00	-75.77	0.00	75.77	4777.86	2388.93	9337.60	4675.74		0.31	-0.05	0.021
65.00	-22.14	-1.27	0.00	-69.31	0.00	69.31	4626.23	2313.11	8645.15	4329.00		0.37	-0.06	0.021
70.00	-20.70	-1.25	0.00	-62.97	0.00	62.97	4469.53	2234.76	7969.63	3990.74		0.43	-0.06	0.020
75.00	-18.27	-1.23	0.00	-56.71	0.00	56.71	4273.25	2136.63	7253.77	3632.28		0.50	-0.07	0.020
75.50	-18.03	-1.23	0.00	-56.09	0.00	56.09	3583.96	1791.98	6182.69	3095.94		0.51	-0.07	0.023
77.50	-17.44	-1.23	0.00	-53.62	0.00	53.62	3533.61	1766.81	5974.82	2991.85		0.54	-0.07	0.023
80.00	-16.86	-1.23	0.00	-50.55	0.00	50.55	3469.54	1734.77	5717.95	2863.23		0.58	-0.08	0.023
85.00	-15.61	-1.23	0.00	-44.41	0.00	44.41	3337.60	1668.80	5214.74	2611.24		0.66	-0.08	0.022
90.00	-14.53	-1.23	0.00	-38.27	0.00	38.27	3186.12	1593.06	4705.25	2356.12		0.75	-0.09	0.021
95.00	-13.38	-1.22	0.00	-32.14	0.00	32.14	3003.28	1501.64	4178.09	2092.15		0.85	-0.10	0.020
95.00	-13.38	-1.22	0.00	-32.14	0.00	32.14	2438.11	1219.05	3404.33	1704.70		0.85	-0.10	0.024
100.00	-9.34	-1.14	0.00	-26.06	0.00	26.06	2329.09	1164.55	3052.69	1528.62		0.96	-0.10	0.021
105.00	-8.50	-1.11	0.00	-20.38	0.00	20.38	2202.60	1101.30	2698.31	1351.16		1.07	-0.11	0.019
110.00	-7.83	-1.07	0.00	-14.83	0.00	14.83	2050.23	1025.12	2336.11	1169.79		1.19	-0.12	0.017
115.00	-7.08	-1.02	0.00	-9.46	0.00	9.46	1897.87	948.93	2000.01	1001.49		1.32	-0.13	0.013
118.00	-3.13	-0.59	0.00	-6.41	0.00	6.41	1806.45	903.22	1810.87	906.78		1.40	-0.13	0.009
120.00	-2.90	-0.56	0.00	-5.23	0.00	5.23	1745.50	872.75	1690.00	846.25		1.46	-0.13	0.008
120.00	-2.90	-0.56	0.00	-5.23	0.00	5.23	583.92	291.96	571.48	339.36		1.46	-0.13	0.020
125.00	-2.33	-0.48	0.00	-2.41	0.00	2.41	583.92	291.96	571.48	339.36		1.60	-0.13	0.011
130.00	0.00	-0.48	0.00	0.00	0.00	0.00	583.92	291.96	571.48	339.36		1.74	-0.14	0.000

Seismic Segment Forces (Factored)

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (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 + 1.0E							**Iterations**	15
Gust Response Factor	1.10				**Sds**	0.19		**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.71		**SA**	0.07	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1666.2	0.00	0.04	0.02	18.98	
10.00		1617.3	0.01	0.06	0.03	28.12	
15.00		1568.5	0.03	0.07	0.04	32.36	
20.00		1519.6	0.04	0.07	0.04	34.31	
25.00		1470.8	0.07	0.07	0.04	35.34	
25.50	Bot - Section 2	144.40	0.07	0.07	0.04	3.49	
30.00		2573.8	0.10	0.07	0.04	65.33	
33.50	Top - Section 1	1947.1	0.13	0.07	0.03	51.28	
35.00		413.02	0.14	0.07	0.03	11.04	
40.00		1344.9	0.18	0.07	0.03	37.61	
45.00		1296.1	0.23	0.06	0.02	37.30	
50.00		1247.2	0.28	0.05	0.01	35.91	
55.00		1198.4	0.34	0.04	0.01	33.08	
60.00		1149.5	0.40	0.02	0.01	28.64	
65.00		1100.7	0.47	-0.01	0.01	22.75	
70.00	Bot - Section 3	1051.8	0.55	-0.03	0.01	16.00	
75.00		1879.2	0.63	-0.06	0.02	17.57	
75.50	Top - Section 2	182.93	0.64	-0.07	0.02	1.61	
77.50	Appurtenance(s)	437.07	0.67	-0.08	0.02	2.91	
80.00		411.92	0.72	-0.09	0.03	1.80	
85.00	Appurtenance(s)	892.44	0.81	-0.11	0.06	1.64	
90.00		750.57	0.91	-0.12	0.09	2.49	
95.00	Top - Section 3	808.70	1.01	-0.11	0.14	8.16	
100.00	Appurtenance(s)	3224.7	1.12	-0.06	0.20	74.53	
105.00	Appurtenance(s)	621.85	1.23	0.04	0.28	26.72	
110.00		486.96	1.35	0.20	0.39	34.10	
115.00	Appurtenance(s)	552.07	1.48	0.45	0.52	57.68	
118.00	Appurtenance(s)	3251.3	1.56	0.65	0.61	418.67	
120.00	Top - Section 4	162.68	1.61	0.81	0.68	23.83	
125.00	Appurtenance(s)	417.36	1.75	1.31	0.89	81.85	
130.00	Appurtenance(s)	1878.9	1.89	1.98	1.14	476.30	
	Totals:	**37,268.8**				**1,721.4**	**Total Wind:** **33,006.8**

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

Calculated Forces

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (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 + 1.0E

Gust Response Factor	1.10			**Sds**	0.19			**Iterations**	15
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.71	**SA**	0.07			**S1**	0.07
								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	-36.57	-1.72	0.00	-167.21	0.00	167.21	6164.54	3082.27	18158.3	9092.69		0.00	0.00	0.024
5.00	-34.93	-1.70	0.00	-158.60	0.00	158.60	6071.55	3035.77	17364.5	8695.20		0.00	0.00	0.024
10.00	-33.34	-1.68	0.00	-150.08	0.00	150.08	5973.49	2986.74	16572.6	8298.64		0.01	-0.01	0.024
15.00	-31.80	-1.65	0.00	-141.68	0.00	141.68	5870.37	2935.18	15783.8	7903.67		0.02	-0.01	0.023
20.00	-30.30	-1.62	0.00	-133.44	0.00	133.44	5762.18	2881.09	14999.6	7510.95		0.03	-0.02	0.023
25.00	-28.84	-1.58	0.00	-125.36	0.00	125.36	5648.92	2824.46	14221.0	7121.12		0.05	-0.02	0.023
25.50	-28.70	-1.58	0.00	-124.57	0.00	124.57	5637.32	2818.66	14143.6	7082.32		0.05	-0.02	0.023
30.00	-26.26	-1.51	0.00	-117.47	0.00	117.47	5530.60	2765.30	13449.6	6734.83		0.07	-0.02	0.022
33.50	-24.42	-1.46	0.00	-112.17	0.00	112.17	5496.96	2748.48	13237.5	6628.61		0.09	-0.03	0.021
35.00	-24.01	-1.45	0.00	-109.97	0.00	109.97	5460.05	2730.03	13008.4	6513.87		0.10	-0.03	0.021
40.00	-22.66	-1.42	0.00	-102.71	0.00	102.71	5333.74	2666.87	12250.7	6134.50		0.13	-0.03	0.021
45.00	-21.36	-1.38	0.00	-95.62	0.00	95.62	5202.37	2601.19	11503.5	5760.34		0.17	-0.04	0.021
50.00	-20.11	-1.35	0.00	-88.72	0.00	88.72	5065.93	2532.97	10768.1	5392.07		0.21	-0.04	0.020
55.00	-18.90	-1.31	0.00	-82.00	0.00	82.00	4924.43	2462.22	10045.7	5030.32		0.26	-0.05	0.020
60.00	-17.73	-1.28	0.00	-75.43	0.00	75.43	4777.86	2388.93	9337.60	4675.74		0.31	-0.05	0.020
65.00	-16.61	-1.26	0.00	-69.01	0.00	69.01	4626.23	2313.11	8645.15	4329.00		0.37	-0.06	0.020
70.00	-15.53	-1.25	0.00	-62.70	0.00	62.70	4469.53	2234.76	7969.63	3990.74		0.43	-0.06	0.019
75.00	-13.70	-1.23	0.00	-56.46	0.00	56.46	4273.25	2136.63	7253.77	3632.28		0.50	-0.07	0.019
75.50	-13.53	-1.23	0.00	-55.85	0.00	55.85	3583.96	1791.98	6182.69	3095.94		0.51	-0.07	0.022
77.50	-13.08	-1.22	0.00	-53.39	0.00	53.39	3533.61	1766.81	5974.82	2991.85		0.54	-0.07	0.022
80.00	-12.64	-1.22	0.00	-50.33	0.00	50.33	3469.54	1734.77	5717.95	2863.23		0.58	-0.08	0.021
85.00	-11.71	-1.22	0.00	-44.22	0.00	44.22	3337.60	1668.80	5214.74	2611.24		0.66	-0.08	0.020
90.00	-10.90	-1.22	0.00	-38.11	0.00	38.11	3186.12	1593.06	4705.25	2356.12		0.75	-0.09	0.020
95.00	-10.04	-1.21	0.00	-32.02	0.00	32.02	3003.28	1501.64	4178.09	2092.15		0.85	-0.10	0.019
95.00	-10.04	-1.21	0.00	-32.02	0.00	32.02	2438.11	1219.05	3404.33	1704.70		0.85	-0.10	0.023
100.00	-7.00	-1.13	0.00	-25.96	0.00	25.96	2329.09	1164.55	3052.69	1528.62		0.95	-0.10	0.020
105.00	-6.38	-1.10	0.00	-20.30	0.00	20.30	2202.60	1101.30	2698.31	1351.16		1.07	-0.11	0.018
110.00	-5.87	-1.07	0.00	-14.78	0.00	14.78	2050.23	1025.12	2336.11	1169.79		1.19	-0.12	0.016
115.00	-5.31	-1.01	0.00	-9.43	0.00	9.43	1897.87	948.93	2000.01	1001.49		1.32	-0.13	0.012
118.00	-2.35	-0.59	0.00	-6.39	0.00	6.39	1806.45	903.22	1810.87	906.78		1.40	-0.13	0.008
120.00	-2.18	-0.56	0.00	-5.22	0.00	5.22	1745.50	872.75	1690.00	846.25		1.45	-0.13	0.007
120.00	-2.18	-0.56	0.00	-5.22	0.00	5.22	583.92	291.96	571.48	339.36		1.45	-0.13	0.019
125.00	-1.75	-0.48	0.00	-2.40	0.00	2.40	583.92	291.96	571.48	339.36		1.59	-0.13	0.010
130.00	0.00	-0.48	0.00	0.00	0.00	0.00	583.92	291.96	571.48	339.36		1.73	-0.14	0.000

Wind Loading - Shaft

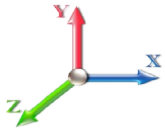
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 16

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	305.84	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	297.06	0.650	0.000	5.00	30.025	19.52	131.6	0.0	1666.2
10.00		1.00	0.70	6.129	6.74	288.28	0.650	0.000	5.00	29.151	18.95	127.7	0.0	1617.4
15.00		1.00	0.70	6.129	6.74	279.49	0.650	0.000	5.00	28.276	18.38	123.9	0.0	1568.5
20.00		1.00	0.70	6.129	6.74	270.71	0.650	0.000	5.00	27.401	17.81	120.1	0.0	1519.7
25.00		1.00	0.70	6.129	6.74	261.93	0.650	0.000	5.00	26.526	17.24	116.2	0.0	1470.8
25.50	Bot - Section 2	1.00	0.70	6.129	6.74	261.05	0.650	0.000	0.50	2.604	1.69	11.4	0.0	144.4
30.00		1.00	0.70	6.134	6.75	253.25	0.650	0.000	4.50	23.380	15.20	102.5	0.0	2573.8
33.50	Top - Section 1	1.00	0.72	6.330	6.96	251.03	0.650	0.000	3.50	17.694	11.50	80.1	0.0	1947.1
35.00		1.00	0.73	6.410	7.05	253.71	0.650	0.000	1.50	7.452	4.84	34.2	0.0	413.0
40.00		1.00	0.76	6.659	7.33	249.44	0.650	0.000	5.00	24.272	15.78	115.6	0.0	1345.0
45.00		1.00	0.79	6.887	7.58	244.36	0.650	0.000	5.00	23.397	15.21	115.2	0.0	1296.1
50.00		1.00	0.81	7.098	7.81	238.61	0.650	0.000	5.00	22.522	14.64	114.3	0.0	1247.3
55.00		1.00	0.83	7.294	8.02	232.30	0.650	0.000	5.00	21.647	14.07	112.9	0.0	1198.4
60.00		1.00	0.85	7.477	8.22	225.51	0.650	0.000	5.00	20.772	13.50	111.1	0.0	1149.6
65.00		1.00	0.87	7.650	8.42	218.29	0.650	0.000	5.00	19.898	12.93	108.8	0.0	1100.7
70.00	Bot - Section 3	1.00	0.89	7.814	8.60	210.69	0.650	0.000	5.00	19.023	12.36	106.3	0.0	1051.9
75.00		1.00	0.91	7.969	8.77	202.76	0.650	0.000	5.00	18.465	12.00	105.2	0.0	1879.2
75.50	Top - Section 2	1.00	0.91	7.985	8.78	201.95	0.650	0.000	0.50	1.798	1.17	10.3	0.0	182.9
77.50	Appurtenance(s)	1.00	0.92	8.044	8.85	202.34	0.650	0.000	2.00	7.106	4.62	40.9	0.0	337.1
80.00		1.00	0.93	8.118	8.93	198.20	0.650	0.000	2.50	8.686	5.65	50.4	0.0	411.9
85.00	Appurtenance(s)	1.00	0.94	8.260	9.09	189.73	0.650	0.000	5.00	16.716	10.87	98.7	0.0	792.4
90.00		1.00	0.96	8.396	9.24	181.00	0.650	0.000	5.00	15.841	10.30	95.1	0.0	750.6
95.00	Top - Section 3	1.00	0.97	8.526	9.38	172.05	0.650	0.000	5.00	14.966	9.73	91.2	0.0	708.7
100.00	Appurtenance(s)	1.00	0.99	8.652	9.52	162.88	0.650	0.000	5.00	14.091	9.16	87.2	0.0	556.7
105.00	Appurtenance(s)	1.00	1.00	8.774	9.65	153.51	0.650	0.000	5.00	13.216	8.59	82.9	0.0	521.9
110.00		1.00	1.02	8.891	9.78	143.95	0.650	0.000	5.00	12.341	8.02	78.5	0.0	487.0
115.00	Appurtenance(s)	1.00	1.03	9.005	9.91	134.22	0.650	0.000	5.00	11.467	7.45	73.8	0.0	452.1
118.00	Appurtenance(s)	1.00	1.04	9.071	9.98	128.30	0.650	0.000	3.00	6.460	4.20	41.9	0.0	254.5
120.00	Top - Section 4	1.00	1.04	9.115	10.03	124.33	0.650	0.000	2.00	4.132	2.69	26.9	0.0	162.7
125.00	Appurtenance(s)	1.00	1.05	9.222	10.14	123.16	0.600	0.000	5.00	10.000	6.00	60.9	0.0	317.4
130.00	Appurtenance(s)	1.00	1.07	9.326	10.26	123.85	0.600	0.000	5.00	10.000	6.00	61.5	0.0	317.4
								Totals:	**130.00**			**2,637.3**		**29,442.4**

Discrete Appurtenance Forces

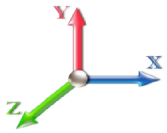
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 16

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	130.00	Tree Pole Branchs	1	9.326	10.258	1.00	1.00	12.00	100.00	0.000	0.000	123.10	0.00	0.00
2	130.00	FD9R6004/2C-3L	6	9.326	10.258	0.80	0.80	1.73	18.60	0.000	0.000	17.73	0.00	0.00
3	130.00	BXA-70040-6CF	1	9.326	10.258	0.56	0.80	8.05	38.00	0.000	0.000	82.60	0.00	0.00
4	130.00	BXA-171085-12BF_2	3	9.326	10.258	0.70	0.80	9.98	45.00	0.000	0.000	102.34	0.00	0.00
5	130.00	LPA80080/6CF	6	9.326	10.258	1.36	0.80	35.33	126.00	0.000	0.000	362.45	0.00	0.00
6	130.00	BXA-70063-6CF_2	2	9.326	10.258	0.62	0.80	9.39	34.00	0.000	0.000	96.29	0.00	0.00
7	130.00	T-Arm	3	9.326	10.258	0.56	0.75	16.88	1200.00	0.000	0.000	173.11	0.00	0.00
8	125.00	Tree Pole Branchs	1	9.222	10.144	1.00	1.00	60.00	100.00	0.000	0.000	608.64	0.00	0.00
9	118.00	(3) Pipe 2.0 STD	1	9.071	9.978	1.00	1.00	8.13	302.36	0.000	0.000	81.12	0.00	0.00
10	118.00	PRK-SFS-L	2	9.071	9.978	1.00	1.00	7.40	280.00	0.000	0.000	73.84	0.00	0.00
11	118.00	PRK-1245L (kicker kit)	1	9.071	9.978	1.00	1.00	9.50	464.91	0.000	0.000	94.79	0.00	0.00
12	118.00	TD-RRH8x20-25	2	9.071	9.978	0.54	0.80	4.34	140.00	0.000	0.000	43.32	0.00	0.00
13	118.00	ACU-A20-N RET	4	9.071	9.978	0.63	0.80	0.35	4.00	0.000	0.000	3.53	0.00	0.00
14	118.00	APXVSPP18-C-A20	2	9.071	9.978	0.66	0.80	10.64	114.00	0.000	0.000	106.15	0.00	0.00
15	118.00	1900 MHz	2	9.071	9.978	0.54	0.80	2.97	120.00	0.000	0.000	29.63	0.00	0.00
16	118.00	800 MHz	4	9.071	9.978	0.54	0.80	5.66	238.00	0.000	0.000	56.48	0.00	0.00
17	118.00	800MHz Filter	2	9.071	9.978	1.00	1.00	1.56	17.60	0.000	0.000	15.57	0.00	0.00
18	118.00	DT465B-2XR	2	9.071	9.978	0.66	0.80	12.06	116.00	0.000	0.000	120.29	0.00	0.00
19	118.00	T-Arm	3	9.071	9.978	0.56	0.75	19.41	1200.00	0.000	0.000	193.64	0.00	0.00
20	115.00	Tree Pole Branchs	1	9.005	9.905	1.00	1.00	76.00	100.00	0.000	0.000	752.79	0.00	0.00
21	105.00	Tree Pole Branchs	1	8.774	9.651	1.00	1.00	70.00	100.00	0.000	0.000	675.57	0.00	0.00
22	100.00	T-Arm	3	8.652	9.517	0.56	0.75	16.88	1200.00	0.000	0.000	160.61	0.00	0.00
23	100.00	DMP65R-BU6DA	4	8.652	9.517	0.58	0.80	29.69	317.60	0.000	0.000	282.58	0.00	0.00
24	100.00	DMP65R-BU4DA	2	8.652	9.517	0.61	0.80	9.73	135.80	0.000	0.000	92.59	0.00	0.00
25	100.00	4449 B5/B12	3	8.652	9.517	0.54	0.80	3.17	213.00	0.000	0.000	30.15	0.00	0.00
26	100.00	8843 B2/B66A	3	8.652	9.517	0.54	0.80	2.64	216.00	0.000	0.000	25.10	0.00	0.00
27	100.00	RRUS 4478 B14	3	8.652	9.517	0.54	0.80	2.96	179.70	0.000	0.000	28.16	0.00	0.00
28	100.00	7770	3	8.652	9.517	0.58	0.80	9.64	105.00	0.000	0.000	91.71	0.00	0.00
29	100.00	DC6-48-60-18-8F	3	8.652	9.517	1.00	1.00	2.76	95.40	0.000	0.000	26.27	0.00	0.00
30	100.00	ABT-DF-DMADBH	3	8.652	9.517	1.00	1.00	0.15	3.30	0.000	0.000	1.43	0.00	0.00
31	100.00	LGP21401	12	8.652	9.517	0.80	0.80	12.38	169.20	0.000	0.000	117.86	0.00	0.00
32	100.00	LGP21901	6	8.652	9.517	0.60	0.80	0.83	33.00	0.000	0.000	7.88	0.00	0.00
33	95.00	Tree Pole Branchs	1	8.526	9.379	1.00	1.00	80.00	100.00	0.000	0.000	750.31	0.00	0.00
34	85.00	Tree Pole Branchs	1	8.260	9.086	1.00	1.00	80.00	100.00	0.000	0.000	726.84	0.00	0.00
35	77.50	Tree Pole Branchs	1	8.044	8.849	1.00	1.00	66.00	100.00	0.000	0.000	584.03	0.00	0.00
							Totals:		**7,826.47**			**6,738.49**		

Total Applied Force Summary

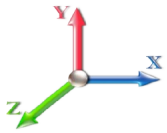
Structure:	CT02408-S-SBA		**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT		**Exposure:**	B	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 27

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 16

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		131.57	1813.74	0.00	0.00
10.00		127.74	1764.89	0.00	0.00
15.00		123.90	1716.04	0.00	0.00
20.00		120.07	1667.19	0.00	0.00
25.00		116.24	1618.34	0.00	0.00
25.50		11.41	159.15	0.00	0.00
30.00		102.54	2706.55	0.00	0.00
33.50		80.09	2050.38	0.00	0.00
35.00		34.15	457.27	0.00	0.00
40.00		115.57	1492.47	0.00	0.00
45.00		115.21	1443.62	0.00	0.00
50.00		114.30	1394.77	0.00	0.00
55.00		112.89	1345.92	0.00	0.00
60.00		111.05	1297.07	0.00	0.00
65.00		108.84	1248.22	0.00	0.00
70.00		106.28	1199.37	0.00	0.00
75.00		105.22	2026.70	0.00	0.00
75.50		10.27	197.68	0.00	0.00
77.50	(1) attachments	624.90	496.07	0.00	0.00
80.00		50.41	485.67	0.00	0.00
85.00	(1) attachments	825.56	1039.94	0.00	0.00
90.00		95.09	898.07	0.00	0.00
95.00	(1) attachments	841.55	956.20	0.00	0.00
100.00	(45) attachments	951.49	3372.24	0.00	0.00
105.00	(1) attachments	758.48	694.15	0.00	0.00
110.00		78.45	559.26	0.00	0.00
115.00	(1) attachments	826.61	624.37	0.00	0.00
118.00	(25) attachments	860.26	3294.74	0.00	0.00
120.00		26.93	187.64	0.00	0.00
125.00	(1) attachments	669.50	479.76	0.00	0.00
130.00	(22) attachments	1019.17	1941.36	0.00	0.00
	Totals:	**9,375.74**	**40,628.87**	**0.00**	**0.00**

Calculated Forces

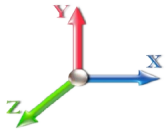
Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 16

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	-40.63	-9.38	0.00	-887.13	0.00	887.13	6164.54	3082.27	18158.3	9092.69	0.00	0.000	0.000	0.104
5.00	-38.81	-9.26	0.00	-840.22	0.00	840.22	6071.55	3035.77	17364.5	8695.20	0.01	-0.019	0.000	0.103
10.00	-37.04	-9.15	0.00	-793.91	0.00	793.91	5973.49	2986.74	16572.6	8298.64	0.04	-0.039	0.000	0.102
15.00	-35.32	-9.04	0.00	-748.17	0.00	748.17	5870.37	2935.18	15783.8	7903.67	0.09	-0.059	0.000	0.101
20.00	-33.65	-8.93	0.00	-702.99	0.00	702.99	5762.18	2881.09	14999.6	7510.95	0.17	-0.080	0.000	0.099
25.00	-32.03	-8.81	0.00	-658.37	0.00	658.37	5648.92	2824.46	14221.0	7121.12	0.26	-0.102	0.000	0.098
25.50	-31.87	-8.81	0.00	-653.96	0.00	653.96	5637.32	2818.66	14143.6	7082.32	0.27	-0.104	0.000	0.098
30.00	-29.16	-8.71	0.00	-614.33	0.00	614.33	5530.60	2765.30	13449.6	6734.83	0.38	-0.125	0.000	0.096
33.50	-27.11	-8.63	0.00	-583.84	0.00	583.84	5496.96	2748.48	13237.5	6628.61	0.48	-0.141	0.000	0.093
35.00	-26.65	-8.60	0.00	-570.90	0.00	570.90	5460.05	2730.03	13008.4	6513.87	0.53	-0.149	0.000	0.093
40.00	-25.16	-8.49	0.00	-527.89	0.00	527.89	5333.74	2666.87	12250.7	6134.50	0.69	-0.171	0.000	0.091
45.00	-23.71	-8.38	0.00	-485.43	0.00	485.43	5202.37	2601.19	11503.5	5760.34	0.89	-0.195	0.000	0.089
50.00	-22.31	-8.27	0.00	-443.52	0.00	443.52	5065.93	2532.97	10768.1	5392.07	1.10	-0.219	0.000	0.087
55.00	-20.96	-8.16	0.00	-402.15	0.00	402.15	4924.43	2462.22	10045.7	5030.32	1.35	-0.244	0.000	0.084
60.00	-19.66	-8.06	0.00	-361.34	0.00	361.34	4777.86	2388.93	9337.60	4675.74	1.62	-0.269	0.000	0.081
65.00	-18.41	-7.95	0.00	-321.06	0.00	321.06	4626.23	2313.11	8645.15	4329.00	1.91	-0.295	0.000	0.078
70.00	-17.21	-7.84	0.00	-281.32	0.00	281.32	4469.53	2234.76	7969.63	3990.74	2.23	-0.320	0.000	0.074
75.00	-15.18	-7.73	0.00	-242.10	0.00	242.10	4273.25	2136.63	7253.77	3632.28	2.58	-0.346	0.000	0.070
75.50	-14.98	-7.72	0.00	-238.24	0.00	238.24	3583.96	1791.98	6182.69	3095.94	2.62	-0.349	0.000	0.081
77.50	-14.49	-7.10	0.00	-222.79	0.00	222.79	3533.61	1766.81	5974.82	2991.85	2.77	-0.360	0.000	0.079
80.00	-14.00	-7.05	0.00	-205.05	0.00	205.05	3469.54	1734.77	5717.95	2863.23	2.96	-0.374	0.000	0.076
85.00	-12.96	-6.22	0.00	-169.82	0.00	169.82	3337.60	1668.80	5214.74	2611.24	3.37	-0.401	0.000	0.069
90.00	-12.06	-6.13	0.00	-138.71	0.00	138.71	3186.12	1593.06	4705.25	2356.12	3.80	-0.428	0.000	0.063
95.00	-11.11	-5.28	0.00	-108.09	0.00	108.09	3003.28	1501.64	4178.09	2092.15	4.27	-0.453	0.000	0.055
95.00	-11.11	-5.28	0.00	-108.09	0.00	108.09	2438.11	1219.05	3404.33	1704.70	4.27	-0.453	0.000	0.068
100.00	-7.74	-4.31	0.00	-81.68	0.00	81.68	2329.09	1164.55	3052.69	1528.62	4.75	-0.476	0.000	0.057
105.00	-7.06	-3.54	0.00	-60.16	0.00	60.16	2202.60	1101.30	2698.31	1351.16	5.27	-0.500	0.000	0.048
110.00	-6.50	-3.46	0.00	-42.44	0.00	42.44	2050.23	1025.12	2336.11	1169.79	5.80	-0.522	0.000	0.039
115.00	-5.88	-2.63	0.00	-25.13	0.00	25.13	1897.87	948.93	2000.01	1001.49	6.36	-0.540	0.000	0.028
118.00	-2.59	-1.74	0.00	-17.23	0.00	17.23	1806.45	903.22	1810.87	906.78	6.70	-0.548	0.000	0.020
120.00	-2.40	-1.71	0.00	-13.75	0.00	13.75	1745.50	872.75	1690.00	846.25	6.93	-0.553	0.000	0.018
120.00	-2.40	-1.71	0.00	-13.75	0.00	13.75	583.92	291.96	571.48	339.36	6.93	-0.553	0.000	0.045
125.00	-1.93	-1.04	0.00	-5.19	0.00	5.19	583.92	291.96	571.48	339.36	7.52	-0.561	0.000	0.019
130.00	0.00	-1.02	0.00	0.00	0.00	0.00	583.92	291.96	571.48	339.36	8.11	-0.564	0.000	0.000

Final Analysis Summary

Structure:	CT02408-S-SBA	**Code:**	EIA/TIA-222-G	12/20/2019	
Site Name:	Sharon 3 CT	**Exposure:**	B		
Height:	130.00 (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

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 89 mph Wind	33.0	0.00	48.73	0.00	0.00	3129.17
0.9D + 1.6W 89 mph Wind	33.0	0.00	36.55	0.00	0.00	3119.79
1.2D + 1.0Di + 1.0Wi 40 mph Wind	6.5	0.00	81.63	0.00	0.00	611.12
1.2D + 1.0E	1.7	0.00	48.75	0.00	0.00	167.75
0.9D + 1.0E	1.7	0.00	36.57	0.00	0.00	167.21
1.0D + 1.0W 60 mph Wind	9.4	0.00	40.63	0.00	0.00	887.13

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 89 mph Wind	-48.73	-33.04	0.00	-3129.1	0.00	-3129.1	6164.54	3082.2	18158.3	9092.69	0.00	0.352
0.9D + 1.6W 89 mph Wind	-36.55	-33.03	0.00	-3119.7	0.00	-3119.7	6164.54	3082.2	18158.3	9092.69	0.00	0.349
1.2D + 1.0Di + 1.0Wi 40 mph Wind	-81.63	-6.54	0.00	-611.12	0.00	-611.12	6164.54	3082.2	18158.3	9092.69	0.00	0.080
1.2D + 1.0E	-48.75	-1.72	0.00	-167.75	0.00	-167.75	6164.54	3082.2	18158.3	9092.69	0.00	0.026
0.9D + 1.0E	-36.57	-1.72	0.00	-167.21	0.00	-167.21	6164.54	3082.2	18158.3	9092.69	0.00	0.024
1.0D + 1.0W 60 mph Wind	-40.63	-9.38	0.00	-887.13	0.00	-887.13	6164.54	3082.2	18158.3	9092.69	0.00	0.104

Base Plate Summary

Structure:	CT02408-S-SB		**Code:**	EIA/TIA-222-G	12/20/2019
Site Name:	Sharon 3 CT		**Exposure:**	B	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Tower Engineering Solutions

Reactions	
Original Design	
Moment (kip-ft):	5810.00
Axial (kip):	0.00
Shear (kip):	56.40
Analysis	
Moment (kip-ft):	3129.17
Axial (kip):	81.63
Shear (kip):	33.04
Moment Design %:	53.86

Base Plate	
Yield (ksi):	60.00
Width (in):	73.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	13.56
Moment (kip-in):	125.06
Allow Stress (ksi):	81.00
Applied Stress (ksi):	0.00
Stress Ratio:	0.17

Anchor Bolts	
Bolt Circle:	75.00
Number Bolts:	25.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00
Compression	
Force (kip):	83.37
Allowable (kip):	260.00
Ratio:	0.33
Tension	
Force (kip):	76.84
Allowable (kip):	260.00
Ratio:	0.31

Monopole Mat Foundation Design

			Date: 12/20/2019
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	130
Site Number:	CT02408-S-SBA	**Engineer Name:**	T. Alajaj
Engr. Number:	90621	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

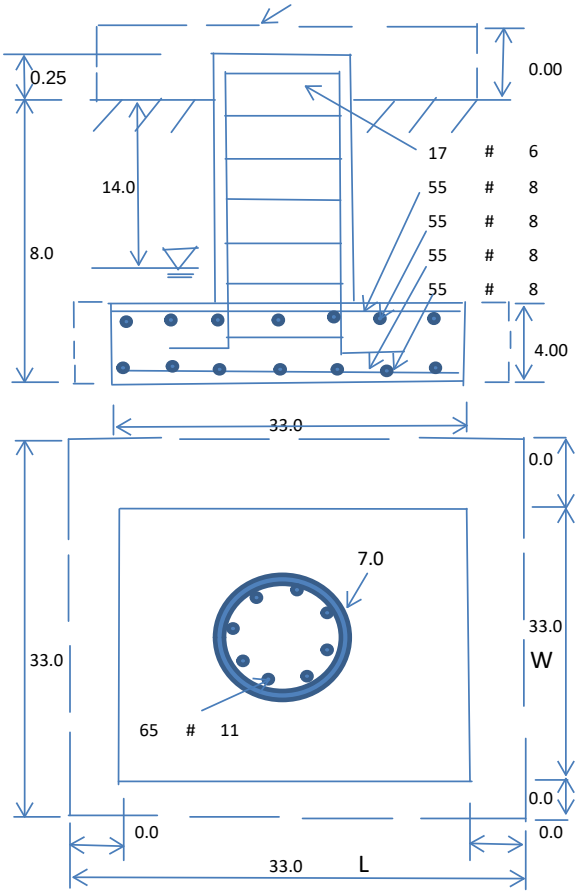
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	81.6	Shear Force (Kips):	33.0
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3129.2
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	8.0
Pier Height A. G. (ft.):	0.25	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	33	Width of Pad (ft.):	33
Final Length of pad (ft)	33.0	Final width of pad (ft):	33.0
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 #:	11	Tie / Stirrup Size #:	6	
Qty. of Vertical Rebars:	65	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
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):	55	Qty. of Rebar in Pad (W):	55	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	55	Qty. of Rebar in Pad (W):	55	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	14.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	7000	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.):	4202.06	Total Dry Soil Weight (Kips):	525.26
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	525.26	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4519.56	Total Dry Concrete Weight (Kips):	677.93
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	677.93	Total Vertical Load on Base (Kips):	1284.79

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1357	<	Allowable Factored Soil Bearing (psf):	5250	0.26	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	19213.8	>	Design Factored Momont (kips-ft):	3401	0.18	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	5.65	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.44	
Calculated Moment Capacity (Mn,Kips-Ft):	16125.6	>	Design Factored Moment (Mu, Kips-F	3269.5	0.20 OK!
Calculated Shear Capacity (Kips):	1046.7	>	Design Factored Shear (Kips):	33.0	0.03 OK!
Calculated Tension Capacity (Tn, Kips):	5475.6	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	7213.9	>	Design Factored Axial Load (Pu Kips):	81.6	0.01 OK!
Moment & Axial Strength Combination:	0.20	OK!	Check Tie Spacing (Design/Required):		0.5 OK!
Pier Reinforcement Ratio:	0.018	Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:					
One-Way Design Shear Capacity (L-Direction, Kips):	1447.8	>	One-Way Factored Shear (L-D. Kips):	251.5	0.17 OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1447.8	>	One-Way Factored Shear (W-D., Kips)	251.5	0.17 OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1415.0	>	One-Way Factored Shear (C-C, Kips):	211.7	0.15 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):	8448.5	>	Moment at Bottom (L-Dir. K-Ft):	1954.9	0.23 OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	8448.5	>	Moment at Bottom (W-Dir. K-Ft):	1954.9	0.23 OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	11885.0	>	Moment at Bottom (C-C Dir. K-Ft):	2764.7	0.23 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):	8448.5	>	Moment at the top (L-Dir K-Ft):	651.6	0.08 OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	8448.5	>	Moment at the top (W-Dir K-Ft):	651.6	0.08 OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	11885.0	>	Moment at the top (C-C Dir. K-Ft):	607.8	0.05 OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:					
Moment transferred by punching shear:	1251.7	k-ft.	Max. factored shear stress v_{u_CD}:		1.1 Psi
Max. factored shear stress v_{u_AB}:	7.8	Psi	Factored shear Strength ϕv_n:		164.3 Psi
Max. factored shear stress v_u:	7.8	Psi	Check Usage of Punching Shear Capacity:		0.05 OK!

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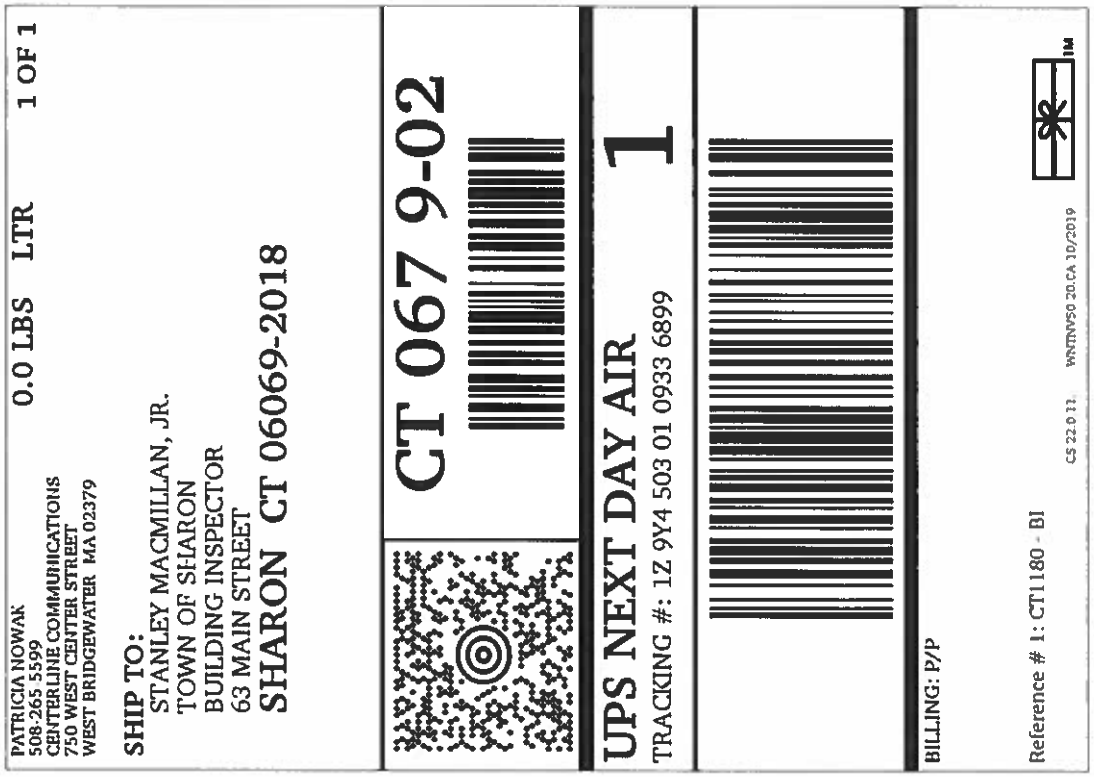

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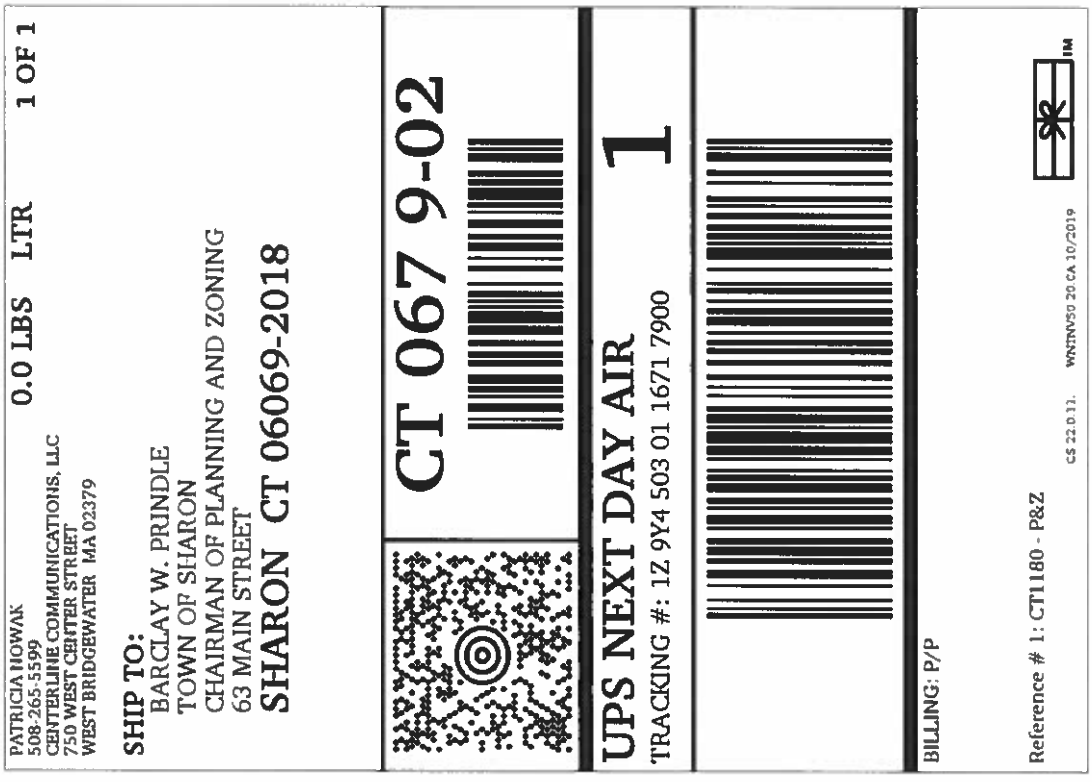

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UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
CVS STORE # 972
555 WASHINGTON ST
SOUTH EASTON ,MA 02375

UPS Access Point™
CVS STORE # 7232
689 DEPOT ST
NORTH EASTON ,MA 02356

UPS Access Point™
TOWN LINE GENERAL STORE
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

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