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   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

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   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.
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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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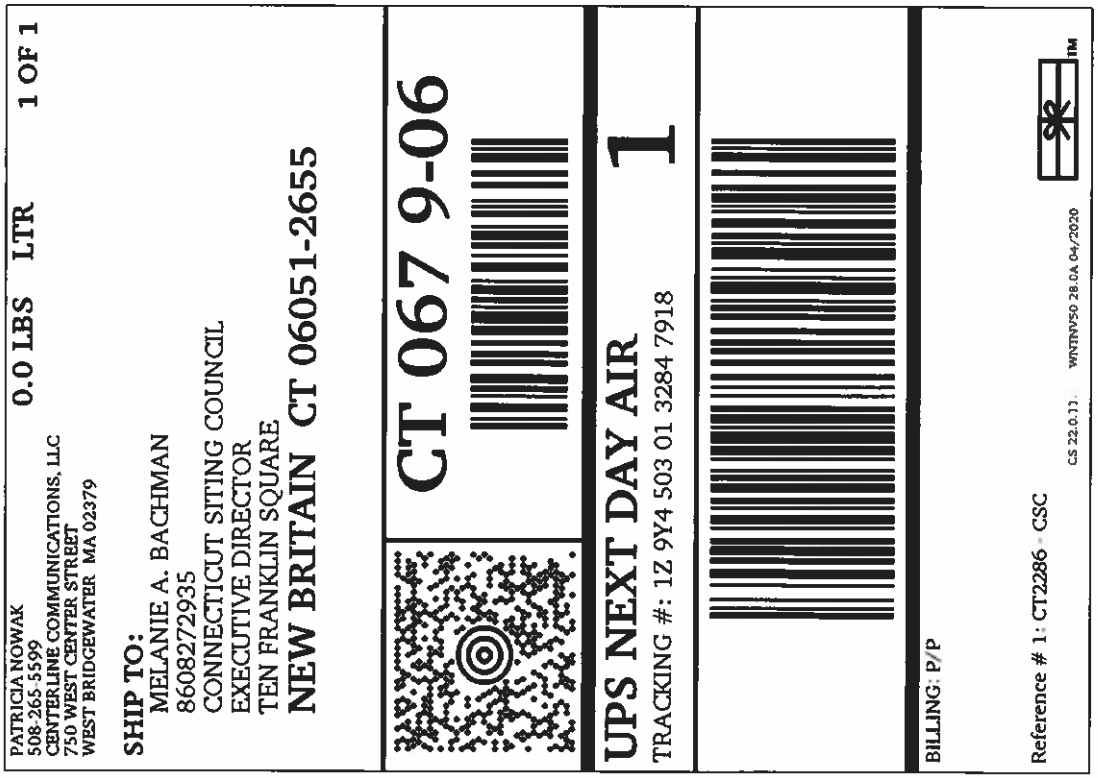

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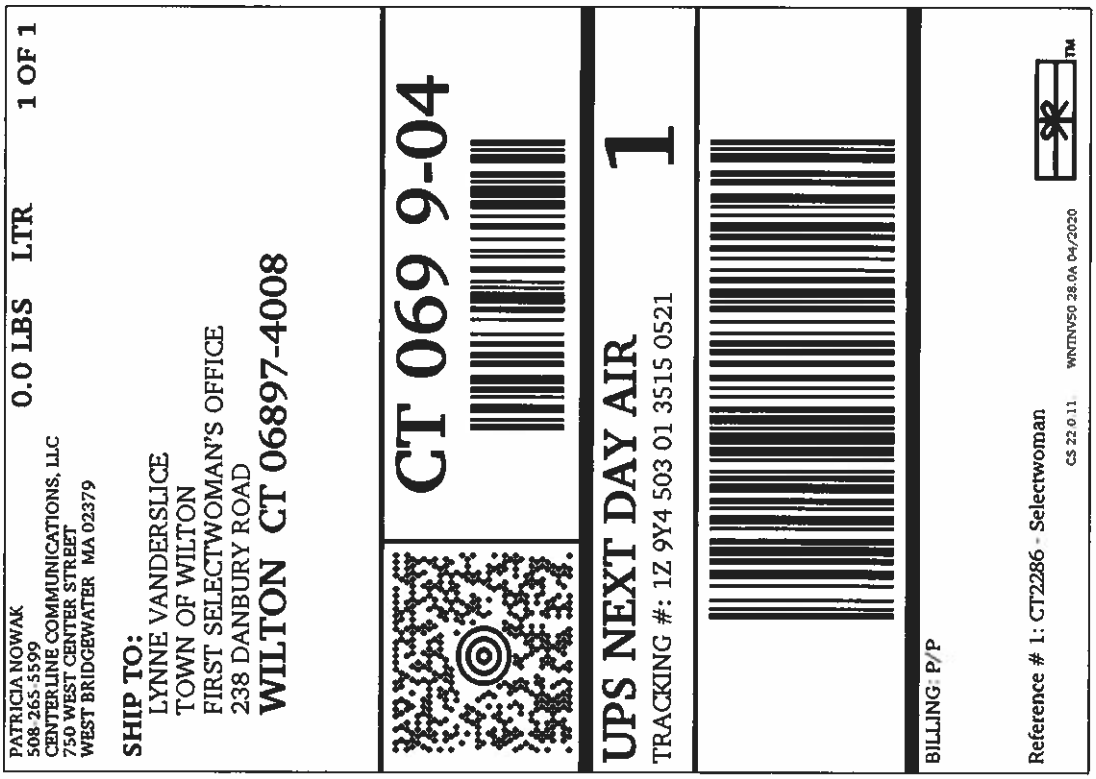

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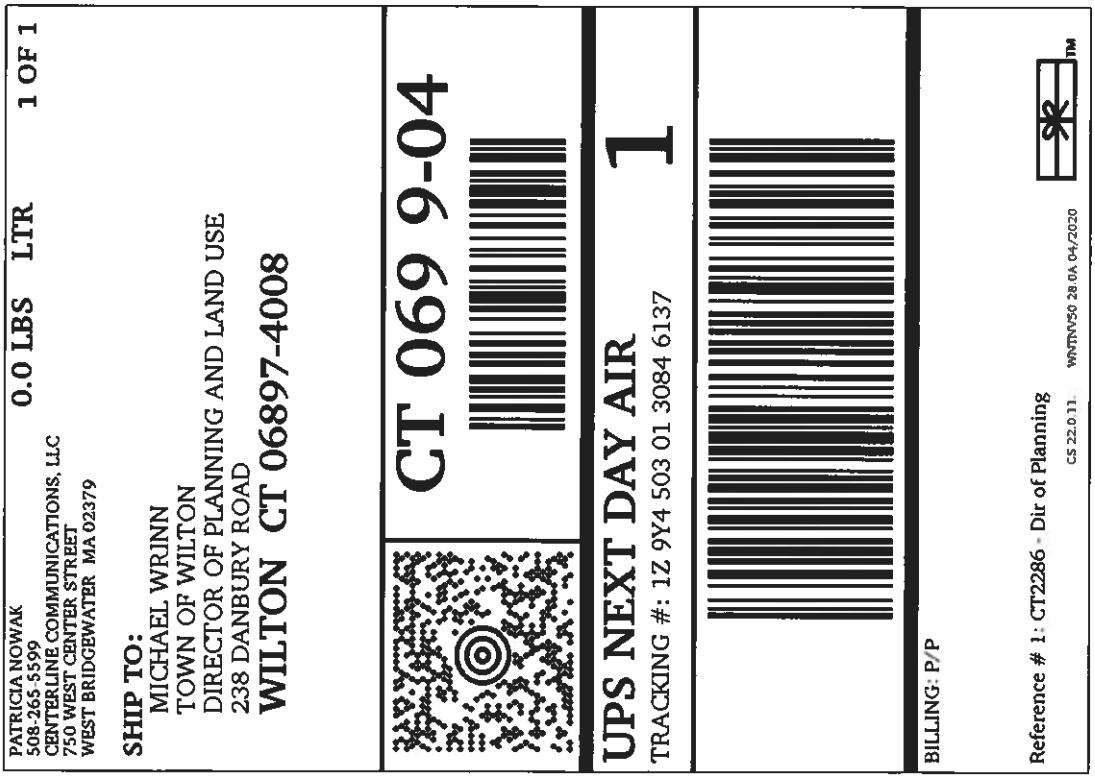

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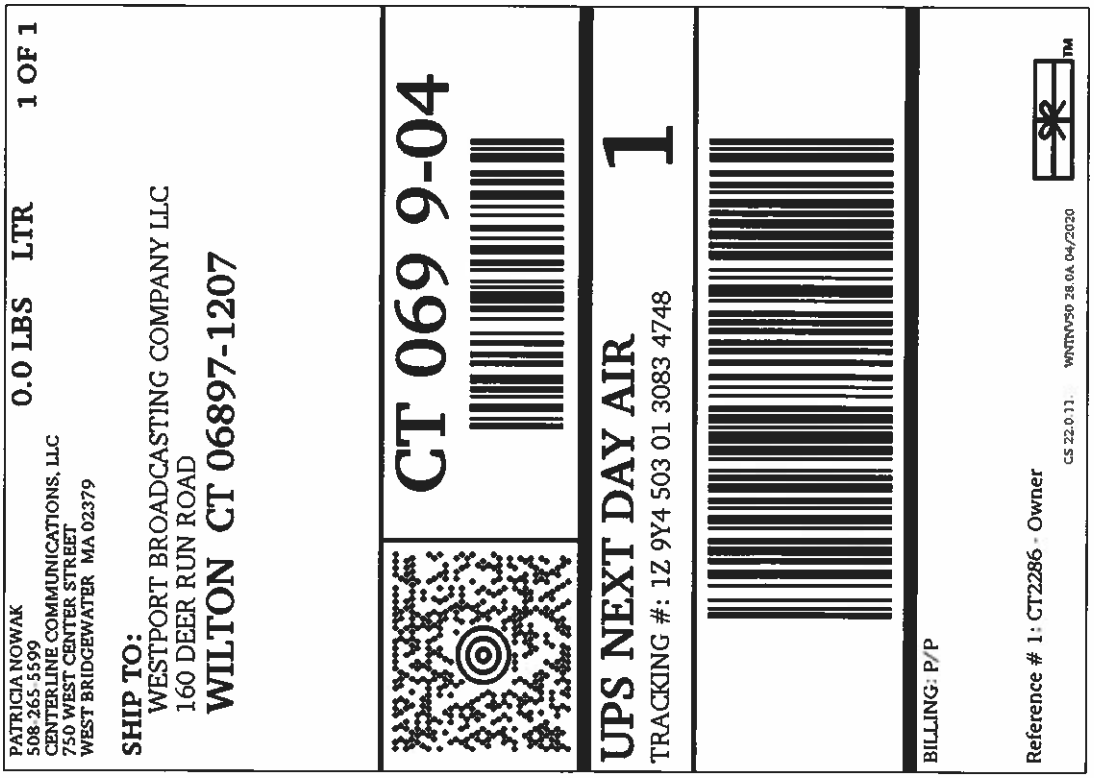

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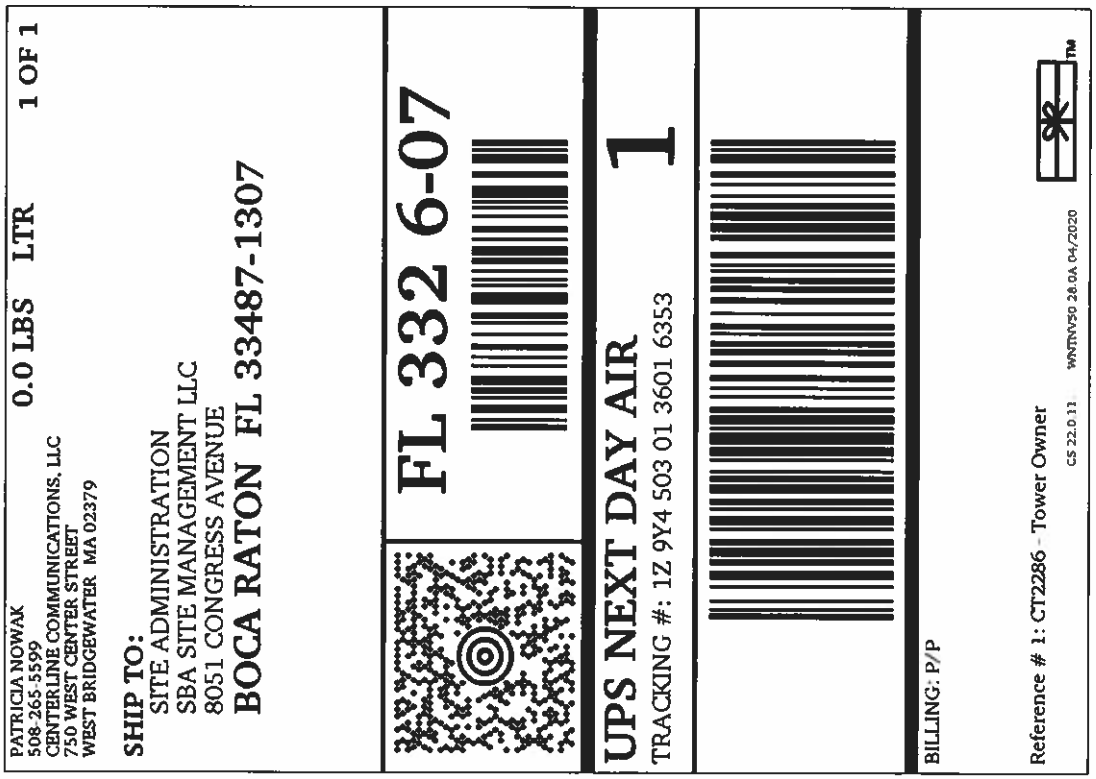


June 1, 2020

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

Regarding: Notice of Exempt Modification – AT&T Site CT2286
Address: 160 Deer Run Road, Wilton, CT 06897

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (hereinafter "AT&T") currently maintains a wireless telecommunications facility on an existing 120' self-support tower (the "Tower") at the above-referenced address, latitude 41.241470, longitude -73.469998. Said Tower is owned by SBA Site Management, LLC.

AT&T desires to modify its existing telecommunications facility on the Tower by adding (3) antennas and (3) remote radio units, as more particularly detailed and described in the enclosed Construction Drawings prepared by Hudson Design Group LLC dated April 20, 2020 and issued on May 13, 2020. Enclosed please find a Mount Analysis Report prepared by Hudson Design Group LLC dated May 7, 2020. The centerline height of the antennas will be at 110 feet.

The Council approved the Tower on August 31, 2006 in the Decision and Order under Docket No. 308. AT&T modifications were approved on June 20, 2011 under file number EM-CING-161-110602 and the Town of Wilton issued building permit number 20780A for such modifications on August 25, 2011. AT&T modifications were also approved by the Council on January 28, 2019 under file number EM-CING-161-190111 and the Town of Wilton issued building permit number 2019-00000095 for such modifications on February 22, 2019. Enclosed please find copies of the above-mentioned decision, filings and building permits.

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 Lynne Vanderslice, First Selectwoman of the Town of Wilton; Michael Wrinn, Town Planner and Director of Planning and Land Use Management of the Town of Wilton; SBA Site Management, LLC, as Tower owner; and Westport Broadcasting Company, LLC, as the property owner. Enclosed please find a property card and a GIS map of the property.

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 Safety Survey Report Prediction 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 May 22, 2020 and prepared by FDH Infrastructure Services, LLC.*

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 – CSC decision, CSC filings and Building Permits
Exhibit 4 – Property Cards and GIS Map
Exhibit 5 – RF Emissions Analysis Report
Exhibit 6 – Structural Analysis

cc: Honorable Lynne Vanderslice, First Selectwoman
Michael Wrinn, Town Planner and Director
SBA Site Management, LLC, as Tower owner
Westport Broadcasting Company, LLC, as the property owner

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING LATTICE TOWER: • NEW AT&T ANTENNAS: OPA65R-BU6DA @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • NEW AT&T RRUS: 4478 B14 (700) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • RELOCATED EXISTING AT&T ANTENNAS: 800-10965 FROM POS. 3 TO POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • RELOCATED EXISTING RRUS: 4478 B5 (850) FROM POS. 3 TO POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3). • RELOCATED EXISTING RRUS: 4415 B25 (PCS) FROM POS. 3 TO POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3). ITEMS TO BE REMOVED: • (6) 1-5/8" COAX CABLES ITEMS TO REMAIN: • (9) ANTENNAS, (9) RRU'S, (6) TMA'S (2) SURGE ARRESTORS, (6) 1-5/8" COAX CABLES, (4) DC POWER & (2) FIBER.
PTN:	2051A0VD90
SITE ADDRESS:	160 DEER RUN ROAD WILTON, CT 06897
LATITUDE:	41.241470° N, 41° 14' 29.29" N
LONGITUDE:	73.469998° W, 73° 28' 11.99" W
TYPE OF SITE:	LATTICE TOWER / EQUIPMENT SHELTER
STRUCTURE HEIGHT:	121'-0"±
RAD CENTER:	110'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2286

SITE NAME: WILTON DEER RUN ROAD

FA CODE: 10092833

PACE ID: MRCTB047322

PROJECT: LTE 4C 2020 UPGRADE

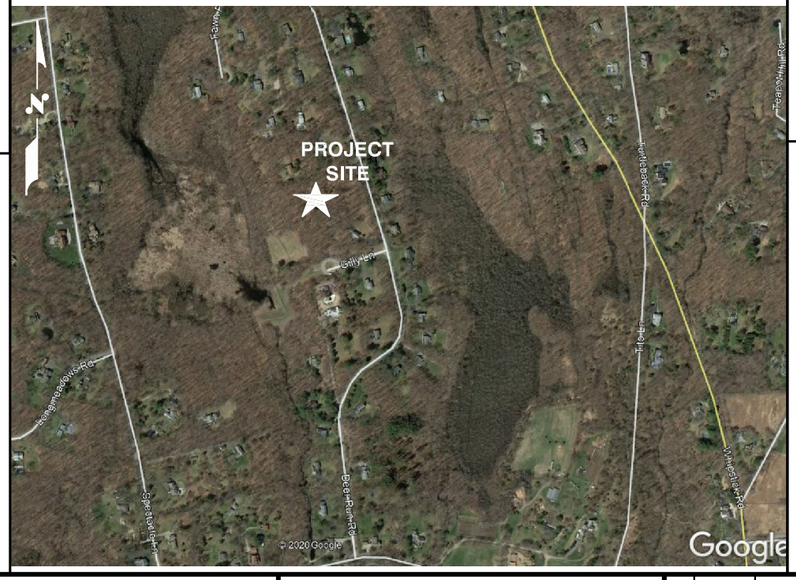
DRAWING INDEX

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

VICINITY MAP

DIRECTIONS TO SITE:

FROM THE ROCKY HILL AREA TAKE I 91 SOUTH TOWARD NEW HAVEN MERGE ONTO I 691 WEST EXIT 18 TOWARD MERIDEN WATERBURY MERGE ONTO I 84 WEST EXIT 1 ON THE LEFT TOWARD WATERBURY DANBURY KEEP LEFT TO TAKE US 7 SOUTH EXIT 3 TOWARD NORWALK TURN RIGHT ONTO BRANCHVILLE ROAD CT 102 TURN SLIGHT LEFT ONTO OLD BRANCHVILLE ROAD TURN LEFT ONTO NOD HILL ROAD TURN RIGTH ONTO PELHAM LANE TURN LEFT ONTO WHIPSTICK ROAD TURN RIGHT ONTO ANTLER LANE TURN LEFT ONTO DEER RUN ROAD. TURN ONTO GILLY ROAD. SITE ROAD IS OFF OF CIRCLE AT END OF GILLY ROAD.



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.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

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: CT2286
SITE NAME: WILTON DEER RUN ROAD

160 DEER RUN ROAD
WILTON, CT 06897
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/13/20	ISSUED FOR CONSTRUCTION	TR	AT	DPH
A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

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

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

AT&T

TITLE SHEET
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	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		

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

SITE NUMBER: CT2286
SITE NAME: WILTON DEER RUN ROAD

160 DEER RUN ROAD
WILTON, CT 06897
FAIRFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	05/13/20	ISSUED FOR CONSTRUCTION	TR	AT	DPH
A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

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

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

AT&T

GENERAL NOTES
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	GN-1	1

NOTE:

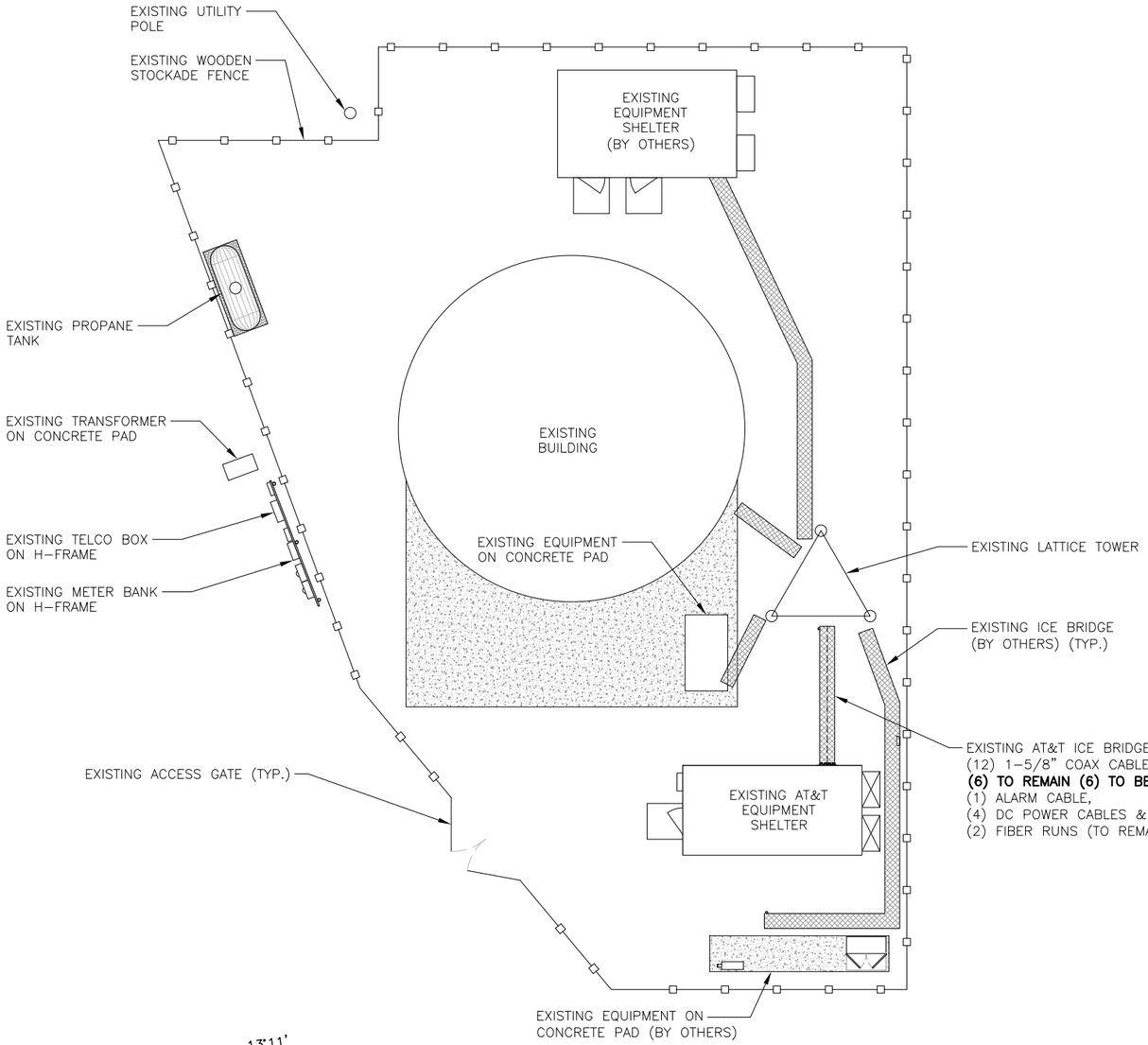
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

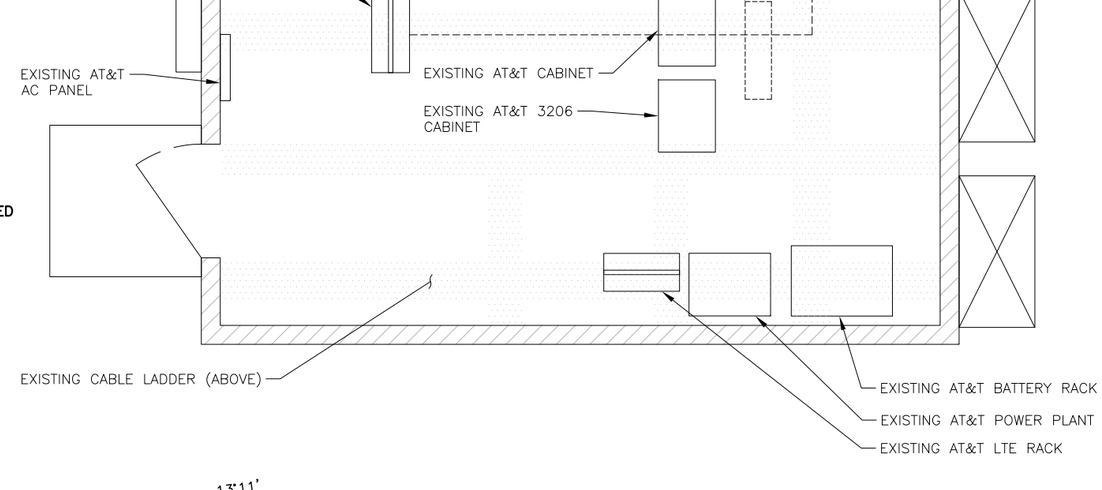
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: MAY 07, 2020

NOTE:

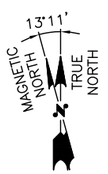
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.





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

0 2'-0" 4'-0" 8'-0" 12'-0"



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

0 1'-0" 2'-0" 4'-0" 6'-0"

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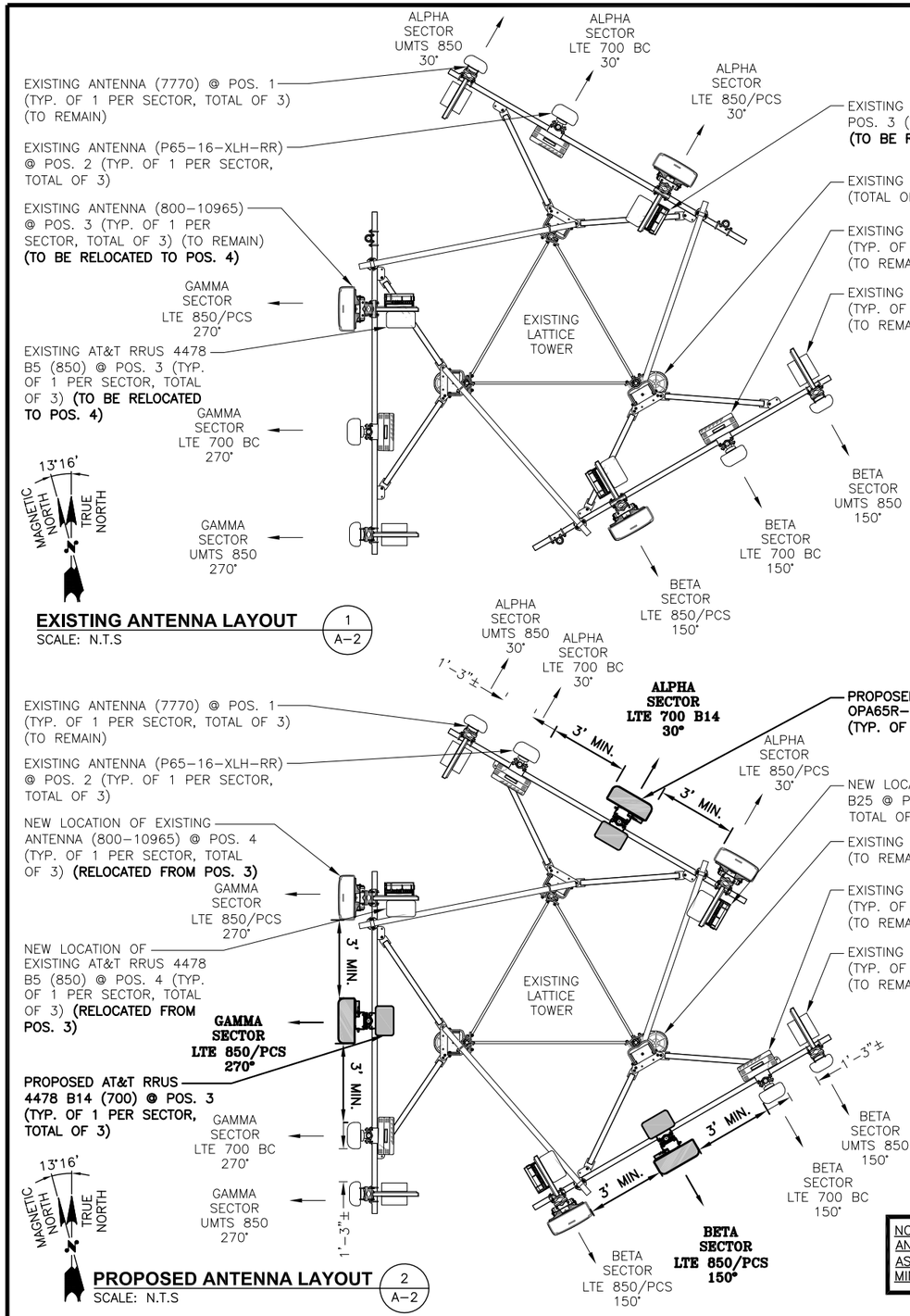
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

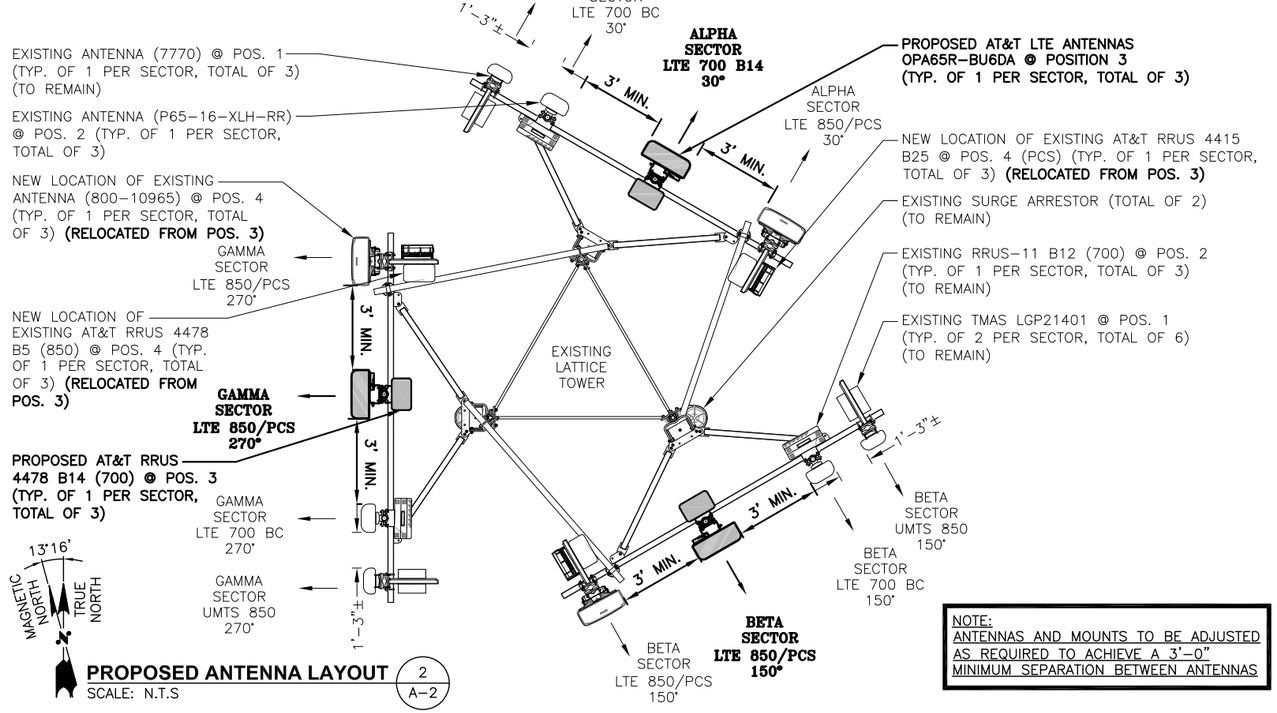
AT&T

COMPOUND & EQUIPMENT PLANS
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	A-1	1

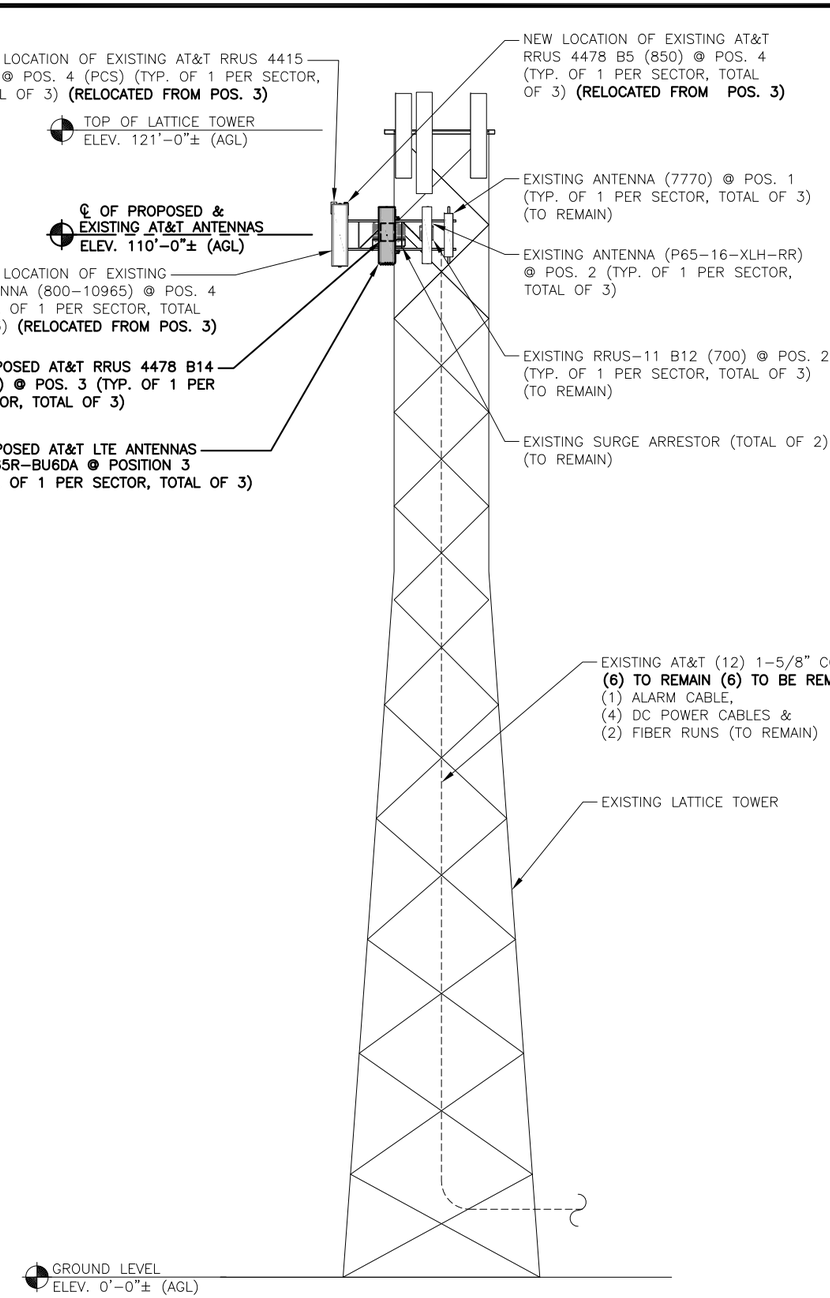


EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



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

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



ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

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

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: MAY 07, 2020

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

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

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

AT&T

ANTENNA LAYOUTS & ELEVATION
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	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	55.0X11.0X5.0	110'-0"±	30°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE 700 BC	P65-16-XLH-RR	72.0X12.0X6.0	110'-0"±	30°	–	(E)(1) RRUS-11 B12 (700)	–	–	
A3	**PROPOSED**	**LTE 700 B14**	**OPA65R-BU6DA**	**71.2X21X7.8**	**110'-0"±**	**30°**	–	**(P)(1) 4478 B14 (700)**	**18.1X13.4X8.3**	–	
A4	EXISTING	LTE 850/PCS	800-10965	78.7X20X6.9	110'-0"±	30°	–	(E)(1) 4478 B5 (850) (E)(1) 4415 B25 (PCS)	– –	–	
B1	EXISTING	UMTS 850	7770	55.0X11.0X5.0	110'-0"±	150°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE 700 BC	P65-16-XLH-RR	72.0X12.0X6.0	110'-0"±	150°	–	(E)(1) RRUS-11 B12 (700)	–	–	
B3	**PROPOSED**	**LTE 700 B14**	**OPA65R-BU6DA**	**71.2X21X7.8**	**110'-0"±**	**150°**	–	**(P)(1) 4478 B14 (700)**	**18.1X13.4X8.3**	–	
B4	EXISTING	LTE 850/PCS	800-10965	78.7X20X6.9	110'-0"±	150°	–	(E)(1) 4478 B5 (850) (E)(1) 4415 B25 (PCS)	– –	–	
C1	EXISTING	UMTS 850	7770	55.0X11.0X5.0	110'-0"±	270°	(2)(E) LGP21401	–	–	(2)1-5/8 COAX	SHARED
C2	EXISTING	LTE 700 BC	P65-16-XLH-RR	72.0X12.0X6.0	110'-0"±	270°	–	(E)(1) RRUS-11 B12 (700)	–	–	
C3	**PROPOSED**	**LTE 700 B14**	**OPA65R-BU6DA**	**71.2X21X7.8**	**110'-0"±**	**270°**	–	**(P)(1) 4478 B14 (700)**	**18.1X13.4X8.3**	–	
C4	EXISTING	LTE 850/PCS	800-10965	78.7X20X6.9	110'-0"±	270°	–	(E)(1) 4415 B25 (PCS)	–	–	

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

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

NOTE:
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HUDSON DESIGN GROUP, LLC.
DATED: MAY 07, 2020

NOTE:
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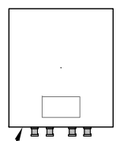
RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
3(E)	RRUS-11 B12 (700)	19.7"x17.0"x7.2"
3(P)	**4478 B14 (700)**	**18.1"x13.4"x8.3"**
3(E)	4478 B5 (850)	18.1"x13.4"x8.3"
3(E)	4415 B25 (PCS)	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

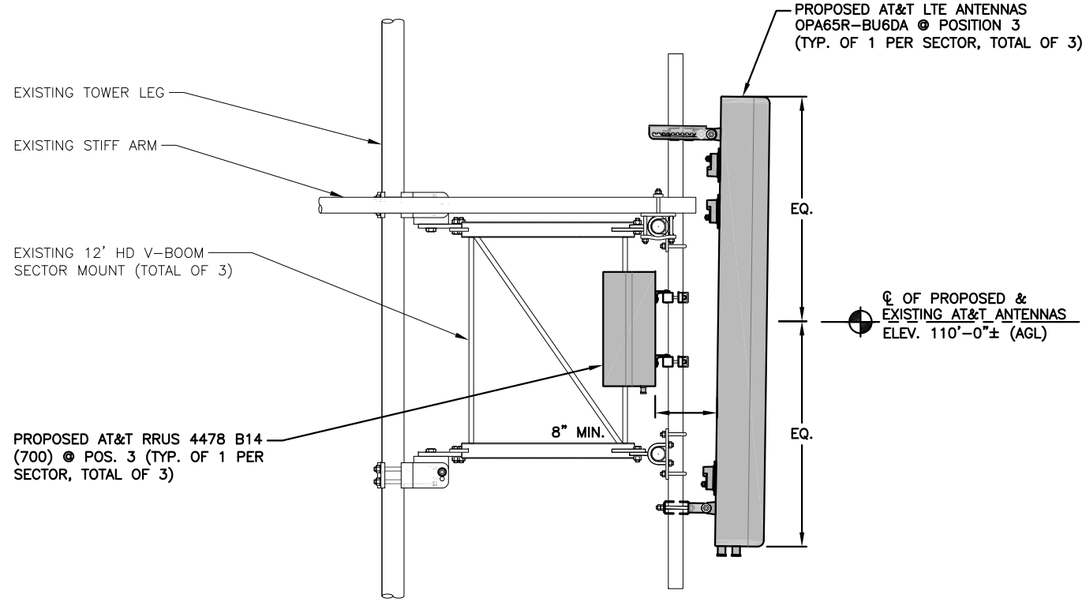
NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



PROPOSED LTE ANTENNA MOUNTING DETAIL (3 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"

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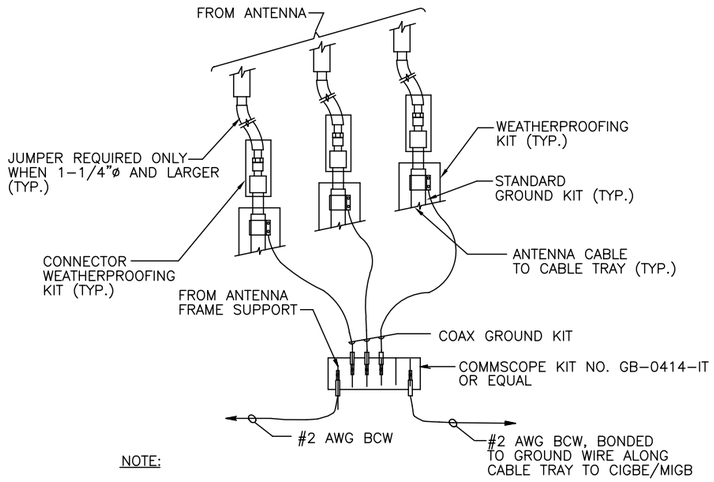
STATE OF CONNECTICUT — DANIEL P. HAMM — No.24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	A-3	1



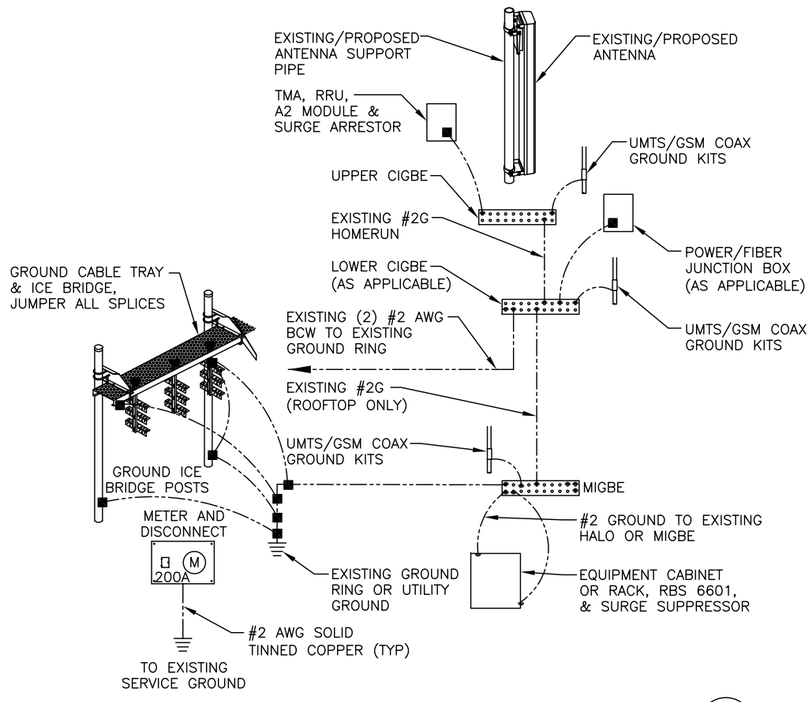
NOTE:

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

SCALE: N.T.S

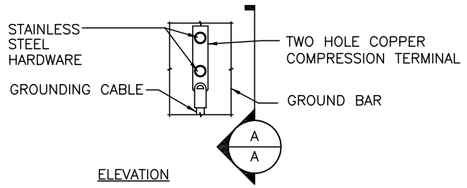
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



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

SCALE: N.T.S

3 / G-1

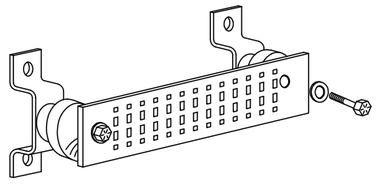
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

4 / G-1

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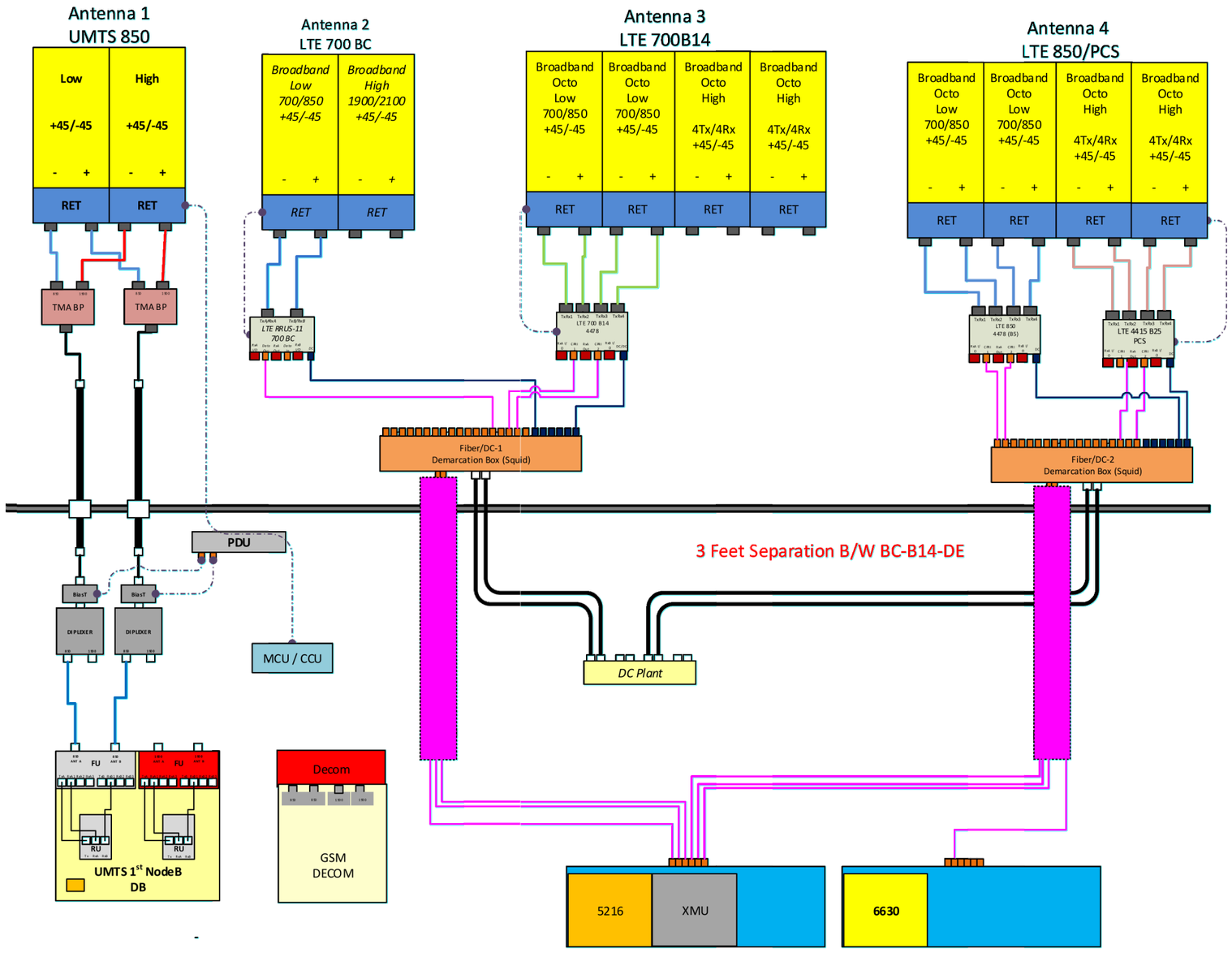
AT&T

GROUNDING DETAILS
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	G-1	1



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

NOTE:

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

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

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AT&T

RF PLUMBING DIAGRAM
LTE 4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2286	RF–1	1

EXHIBIT 2

May 07, 2020

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

RE:	Site Number:	CT2286
	FA Number:	10092833
	PACE Number:	MRCTB047322
	PT Number:	2051A0VD90
	Site Name:	WILTON DEER RUN ROAD
	Site Address:	160 Deer Run Road Wilton, CT 06897

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)
- (3) P65-16-XLH-RR Antennas (72.0"x12.0"x6.0"– Wt. = 53 lbs. /each)
- (3) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)
- (3) RRUS-11 B12 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) 4478 B5 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (2) Squid Surge Arrestors (24.0"x9.7"Ø – Wt. = 33 lbs.) (tower mounted)
- **(3) OPA65R-BU6DA Antennas (71.2"x21.0"x7.8" – Wt. = 64 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on March 24, 2020.

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 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.14 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing tower with bent plates. 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 4C) Mount Rating	29	LC1	63%	**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

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: 5/7/2020
Project Name: WILTON DEER RUN ROAD
Project No.: CT2286
Designed By: CL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	110	(ft)
z_g=	900	(ft)
α=	9.5	
K_z=	**1.291**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

K_{zt}=	**1.025624684**	
K_h=	41.629688	
K_c=	1	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2	(from Table 2-5)
z=	110	
z_s=	634	(Mean elevation of base of structure above sea level)
H=	59	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.03	(from 2.6.6.2.1)
K_e=	0.98	(from 2.6.8)

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

Category= **3**

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} =	1.13	(from Sec. 2.6.10)

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

t_{iz} = 1.14 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	121	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.291	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**40.56**	K_e=	0.98	(from 2.6.8)
$q_{z\,(ice)}$=	**7.04**	K_d=	0.85	(from Table 2-2)
$q_{z\,(30)}$=	**2.53**	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

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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 = 1.14 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	223	49	14
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	6.00	1.36	330	70	21
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	560	111	35
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.39	1.24	522	104	33
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	2.80	1.21	33	9	2
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	5.59	1.34	18	6	1
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	2.18	1.20	51	13	3
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	4.36	1.28	27	8	2
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	82	19	5
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	0.00	1.20	0	3	0
RRUS-11 B12	19.7	17.0	7.2	2.33	1.16	1.20	113	25	7
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	3.94	1.26	35	10	2
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	5.33	1.33	15	5	1
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	10.67	1.52	8	5	1
2.0" Pipe	2.4	12.0		0.20	0.20	1.20	10	4	1
3/4" Round Bar	0.8	12.0		0.06	0.06	1.20	3	3	0

Date: 5/7/2020
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Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	223	119	197
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	330	191	295
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	560	237	479
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	522	230	449
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	33	75	44
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	18	75	32
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	51	82	59
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	27	82	41
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	82	51	74
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	51	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	113	48	97
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	35	48	38
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	15	44	22
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	8	44	17

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	48	29	43
P65-16-XLH-RR Antenna	74.3	14.3	8.3	7.36	4.27	5.20	8.97	1.32	1.47	68	44	62
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.82	1.25	1.46	110	53	96
OPA65R-BU6DA Antenna	73.5	23.3	10.1	11.88	5.14	3.16	7.29	1.23	1.41	103	51	90
RRUS 4415 B25 (Back to Back)	18.8	8.2	15.7	1.07	2.04	2.30	1.20	1.20	1.20	9	17	11
RRUS 4415 B25 (Shielded BTB)	18.8	5.2	15.7	0.68	2.04	3.59	1.20	1.25	1.20	6	17	9
RRUS 4478 B5 (Back to Back)	20.4	10.6	15.7	1.50	2.22	1.93	1.30	1.20	1.20	13	19	14
RRUS 4478 B5 (Shielded BTB)	20.4	6.4	15.7	0.91	2.22	3.17	1.30	1.23	1.20	8	19	11
B14 4478 RRH	20.4	15.7	10.6	2.22	1.50	1.30	1.93	1.20	1.20	19	13	17
B14 4478 RRH (Shielded)	20.4	2.3	10.6	0.32	1.50	8.95	1.93	1.47	1.20	3	13	6
RRUS-11 B12	22.0	19.3	9.5	2.94	1.45	1.14	2.32	1.20	1.20	25	12	22
RRUS-11 B12 (Shielded)	22.0	7.3	9.5	1.11	1.45	3.02	2.32	1.22	1.20	10	12	10
LGP21401 TMA (Back to Back)	16.7	5.0	11.3	0.58	1.31	3.35	1.48	1.24	1.20	5	11	7
LGP21401 TMA (Shielded BTB)	16.7	3.6	11.3	0.42	1.31	4.60	1.48	1.29	1.20	4	11	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	14	7	12
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	21	12	18
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	30
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	33	14	28
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	3
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	2
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	3	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	6
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	2	3	2
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	1

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Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	223	119	145
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	330	191	225
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	560	237	317
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	522	230	303
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	33	75	64
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	18	75	61
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	51	82	74
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	27	82	68
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	82	51	59
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	51	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	113	48	65
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	35	48	45
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	15	44	36
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	8	44	35

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	48	29	34
P65-16-XLH-RR Antenna	74.3	14.3	8.3	7.36	4.27	5.20	8.97	1.32	1.47	68	44	50
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.82	1.25	1.46	110	53	67
OPA65R-BU6DA Antenna	73.5	23.3	10.1	11.88	5.14	3.16	7.29	1.23	1.41	103	51	64
RRUS 4415 B25 (Back to Back)	18.8	8.2	15.7	1.07	2.04	2.30	1.20	1.20	1.20	9	17	15
RRUS 4415 B25 (Shielded BTB)	18.8	5.2	15.7	0.68	2.04	3.59	1.20	1.25	1.20	6	17	14
RRUS 4478 B5 (Back to Back)	20.4	10.6	15.7	1.50	2.22	1.93	1.30	1.20	1.20	13	19	17
RRUS 4478 B5 (Shielded BTB)	20.4	6.4	15.7	0.91	2.22	3.17	1.30	1.23	1.20	8	19	16
B14 4478 RRH	20.4	15.7	10.6	2.22	1.50	1.30	1.93	1.20	1.20	19	13	14
B14 4478 RRH (Shielded)	20.4	2.3	10.6	0.32	1.50	8.95	1.93	1.47	1.20	3	13	10
RRUS-11 B12	22.0	19.3	9.5	2.94	1.45	1.14	2.32	1.20	1.20	25	12	15
RRUS-11 B12 (Shielded)	22.0	7.3	9.5	1.11	1.45	3.02	2.32	1.22	1.20	10	12	12
LGP21401 TMA (Back to Back)	16.7	5.0	11.3	0.58	1.31	3.35	1.48	1.24	1.20	5	11	10
LGP21401 TMA (Shielded BTB)	16.7	3.6	11.3	0.42	1.31	4.60	1.48	1.29	1.20	4	11	9

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	14	7	9
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	21	12	14
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	20
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	33	14	19
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	4
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	4
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	4
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	3	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	4
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	2	3	3
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	2

Date: 5/7/2020
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Project No.: CT2286
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 90 (deg) | Ice Thickness = 1.14 in. | Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	223	119	119
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	330	191	191
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	560	237	237
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	522	230	230
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	33	75	75
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	18	75	75
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	51	82	82
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	27	82	82
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	82	51	51
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	51	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	113	48	48
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	35	48	48
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	15	44	44
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	8	44	44

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	48	29	29
P65-16-XLH-RR Antenna	74.3	14.3	8.3	7.36	4.27	5.20	8.97	1.32	1.47	68	44	44
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.82	1.25	1.46	110	53	53
OPA65R-BU6DA Antenna	73.5	23.3	10.1	11.88	5.14	3.16	7.29	1.23	1.41	103	51	51
RRUS 4415 B25 (Back to Back)	18.8	8.2	15.7	1.07	2.04	2.30	1.20	1.20	1.20	9	17	17
RRUS 4415 B25 (Shielded BTB)	18.8	5.2	15.7	0.68	2.04	3.59	1.20	1.25	1.20	6	17	17
RRUS 4478 B5 (Back to Back)	20.4	10.6	15.7	1.50	2.22	1.93	1.30	1.20	1.20	13	19	19
RRUS 4478 B5 (Shielded BTB)	20.4	6.4	15.7	0.91	2.22	3.17	1.30	1.23	1.20	8	19	19
B14 4478 RRH	20.4	15.7	10.6	2.22	1.50	1.30	1.93	1.20	1.20	19	13	13
B14 4478 RRH (Shielded)	20.4	2.3	10.6	0.32	1.50	8.95	1.93	1.47	1.20	3	13	13
RRUS-11 B12	22.0	19.3	9.5	2.94	1.45	1.14	2.32	1.20	1.20	25	12	12
RRUS-11 B12 (Shielded)	22.0	7.3	9.5	1.11	1.45	3.02	2.32	1.22	1.20	10	12	12
LGP21401 TMA (Back to Back)	16.7	5.0	11.3	0.58	1.31	3.35	1.48	1.24	1.20	5	11	11
LGP21401 TMA (Shielded BTB)	16.7	3.6	11.3	0.42	1.31	4.60	1.48	1.29	1.20	4	11	11

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	14	7	7
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	21	12	12
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	15
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	33	14	14
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	5
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	5
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	5
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	3	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	3
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	2	3	3
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	3
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	3

Date: 5/7/2020
Project Name: WILTON DEER RUN ROAD
Project No.: CT2286
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	223	119	145
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	330	191	225
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	560	237	317
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	522	230	303
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	33	75	64
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	18	75	61
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	51	82	74
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	27	82	68
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	82	51	59
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	51	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	113	48	65
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	35	48	45
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	15	44	36
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	8	44	35

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	48	29	34
P65-16-XLH-RR Antenna	74.3	14.3	8.3	7.36	4.27	5.20	8.97	1.32	1.47	68	44	50
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.82	1.25	1.46	110	53	67
OPA65R-BU6DA Antenna	73.5	23.3	10.1	11.88	5.14	3.16	7.29	1.23	1.41	103	51	64
RRUS 4415 B25 (Back to Back)	18.8	8.2	15.7	1.07	2.04	2.30	1.20	1.20	1.20	9	17	15
RRUS 4415 B25 (Shielded BTB)	18.8	5.2	15.7	0.68	2.04	3.59	1.20	1.25	1.20	6	17	14
RRUS 4478 B5 (Back to Back)	20.4	10.6	15.7	1.50	2.22	1.93	1.30	1.20	1.20	13	19	17
RRUS 4478 B5 (Shielded BTB)	20.4	6.4	15.7	0.91	2.22	3.17	1.30	1.23	1.20	8	19	16
B14 4478 RRH	20.4	15.7	10.6	2.22	1.50	1.30	1.93	1.20	1.20	19	13	14
B14 4478 RRH (Shielded)	20.4	2.3	10.6	0.32	1.50	8.95	1.93	1.47	1.20	3	13	10
RRUS-11 B12	22.0	19.3	9.5	2.94	1.45	1.14	2.32	1.20	1.20	25	12	15
RRUS-11 B12 (Shielded)	22.0	7.3	9.5	1.11	1.45	3.02	2.32	1.22	1.20	10	12	12
LGP21401 TMA (Back to Back)	16.7	5.0	11.3	0.58	1.31	3.35	1.48	1.24	1.20	5	11	10
LGP21401 TMA (Shielded BTB)	16.7	3.6	11.3	0.42	1.31	4.60	1.48	1.29	1.20	4	11	9

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	14	7	9
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	21	12	14
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	20
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	33	14	19
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	4
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	4
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	4
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	3	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	4
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	2	3	3
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	2

Date: 5/7/2020
Project Name: WILTON DEER RUN ROAD
Project No.: CT2286
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.14 in. | Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	223	119	197
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	330	191	295
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	560	237	479
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	522	230	449
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	33	75	44
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	18	75	32
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	51	82	59
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	27	82	41
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	82	51	74
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	51	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	113	48	97
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	35	48	38
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	15	44	22
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	8	44	17

WIND LOADS WITH ICE:

7770 Antenna	57.3	13.3	7.3	5.28	2.89	4.31	7.87	1.28	1.43	48	29	43
P65-16-XLH-RR Antenna	74.3	14.3	8.3	7.36	4.27	5.20	8.97	1.32	1.47	68	44	62
800-10965 Antenna	81.0	22.3	9.2	12.53	5.16	3.64	8.82	1.25	1.46	110	53	96
OPA65R-BU6DA Antenna	73.5	23.3	10.1	11.88	5.14	3.16	7.29	1.23	1.41	103	51	90
RRUS 4415 B25 (Back to Back)	18.8	8.2	15.7	1.07	2.04	2.30	1.20	1.20	1.20	9	17	11
RRUS 4415 B25 (Shielded BTB)	18.8	5.2	15.7	0.68	2.04	3.59	1.20	1.25	1.20	6	17	9
RRUS 4478 B5 (Back to Back)	20.4	10.6	15.7	1.50	2.22	1.93	1.30	1.20	1.20	13	19	14
RRUS 4478 B5 (Shielded BTB)	20.4	6.4	15.7	0.91	2.22	3.17	1.30	1.23	1.20	8	19	11
B14 4478 RRH	20.4	15.7	10.6	2.22	1.50	1.30	1.93	1.20	1.20	19	13	17
B14 4478 RRH (Shielded)	20.4	2.3	10.6	0.32	1.50	8.95	1.93	1.47	1.20	3	13	6
RRUS-11 B12	22.0	19.3	9.5	2.94	1.45	1.14	2.32	1.20	1.20	25	12	22
RRUS-11 B12 (Shielded)	22.0	7.3	9.5	1.11	1.45	3.02	2.32	1.22	1.20	10	12	10
LGP21401 TMA (Back to Back)	16.7	5.0	11.3	0.58	1.31	3.35	1.48	1.24	1.20	5	11	7
LGP21401 TMA (Shielded BTB)	16.7	3.6	11.3	0.42	1.31	4.60	1.48	1.29	1.20	4	11	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	14	7	12
P65-16-XLH-RR Antenna	72.0	12.0	6.0	6.00	3.00	6.00	12.00	1.36	1.57	21	12	18
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	30
OPA65R-BU6DA Antenna	71.2	21.0	7.8	10.38	3.86	3.39	9.13	1.24	1.47	33	14	28
RRUS 4415 B25 (Back to Back)	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	3
RRUS 4415 B25 (Shielded BTB)	16.5	3.0	13.4	0.34	1.54	5.59	1.23	1.34	1.20	1	5	2
RRUS 4478 B5 (Back to Back)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
RRUS 4478 B5 (Shielded BTB)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	2	5	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	#DIV/0!	2.18	#DIV/0!	1.20	#DIV/0!	3	#DIV/0!
RRUS-11 B12	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	7	3	6
RRUS-11 B12 (Shielded)	19.7	5.0	7.2	0.68	0.99	3.94	2.74	1.26	1.21	2	3	2
LGP21401 TMA (Back to Back)	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1
LGP21401 TMA (Shielded BTB)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	1

Date: 5/6/2020
Project Name: WILTON DEER RUN ROAD
Project No.: CT2286
Designed By: CL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.14 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: 84 lbs
Weight of object: 35.0 lbs
Combined weight of ice and object: 119 lbs

P65-16-XLH-RR Antenna
Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 12.0
Depth (in): 6.0
Total weight of ice on object: 122 lbs
Weight of object: 53.0 lbs
Combined weight of ice and object: 175 lbs

800-10965 Antenna
Weight of ice based on total radial SF area:
Height (in): 78.7
Width (in): 20.0
Depth (in): 6.9
Total weight of ice on object: 204 lbs
Weight of object: 109.0 lbs
Combined weight of ice and object: 313 lbs

OPA65R-BU6DA Antenna
Weight of ice based on total radial SF area:
Height (in): 71.2
Width (in): 21.0
Depth (in): 7.8
Total weight of ice on object: 195 lbs
Weight of object: 64.0 lbs
Combined weight of ice and object: 259 lbs

RRUS 4415 B25
Weight of ice based on total radial SF area:
Height (in): 16.5
Width (in): 13.4
Depth (in): 5.9
Total weight of ice on object: 30 lbs
Weight of object: 46.0 lbs
Combined weight of ice and object: 76 lbs

RRUS 4478 B5
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: 36 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 96 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: 36 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 96 lbs

RRUS-11 B12
Weight of ice based on total radial SF area:
Height (in): 19.7
Width (in): 17.0
Depth (in): 7.2
Total weight of ice on object: 45 lbs
Weight of object: 51.0 lbs
Combined weight of ice and object: 96 lbs

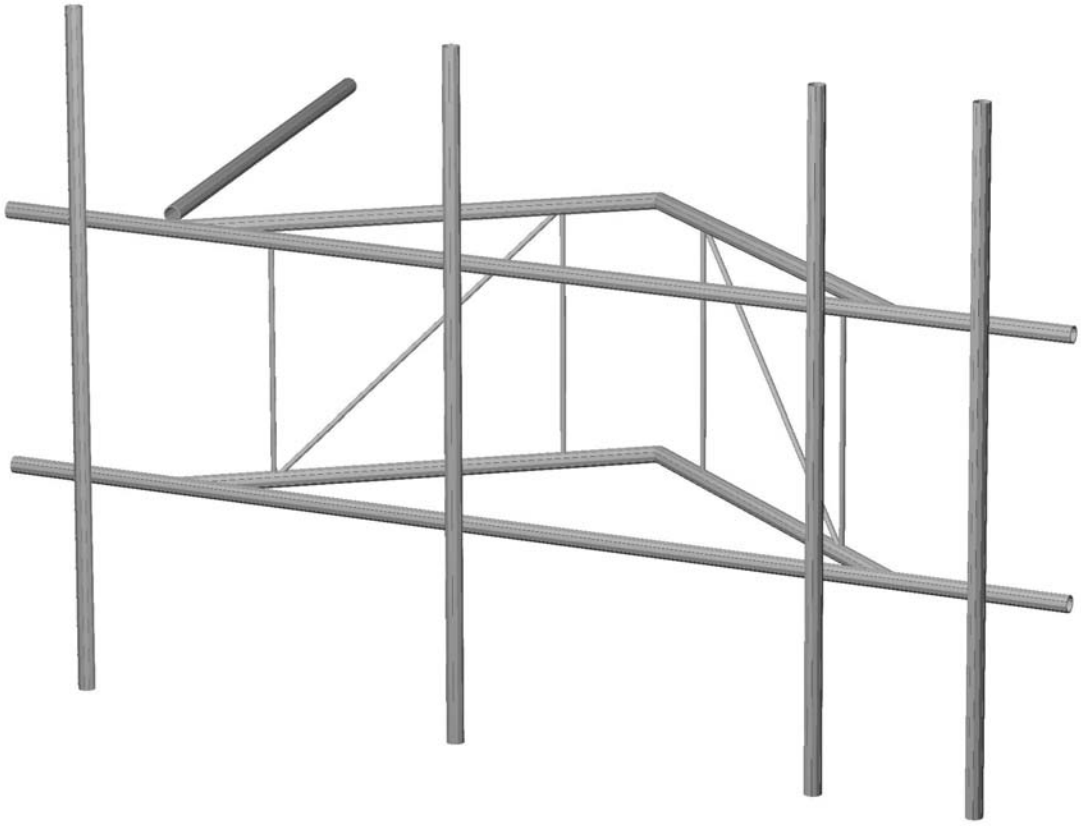
LGP21401 TMA
Weight of ice based on total radial SF area:
Height (in): 14.4
Width (in): 9.0
Depth (in): 2.7
Total weight of ice on object: 18 lbs
Weight of object: 19.0 lbs
Combined weight of ice and object: 37 lbs

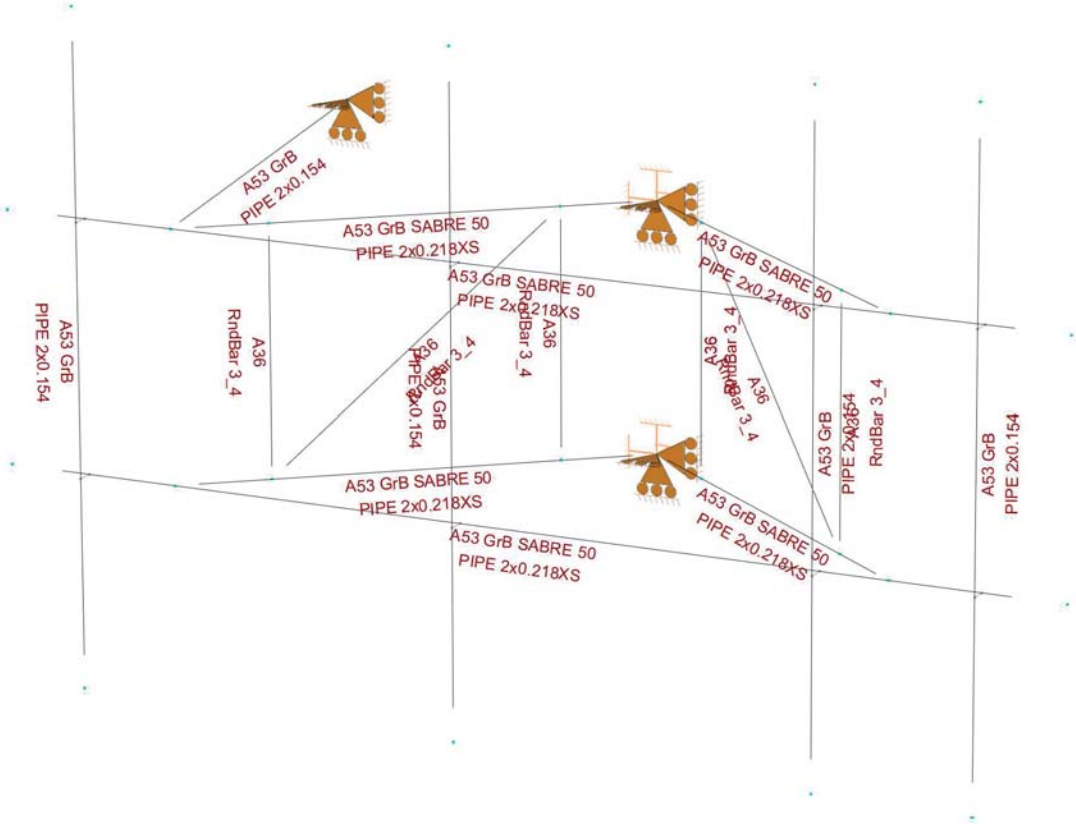
2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 5 plf

3/4" Round Bar
Per foot weight of ice:
diameter (in): 0.75
Per foot weight of ice on object: 3 plf

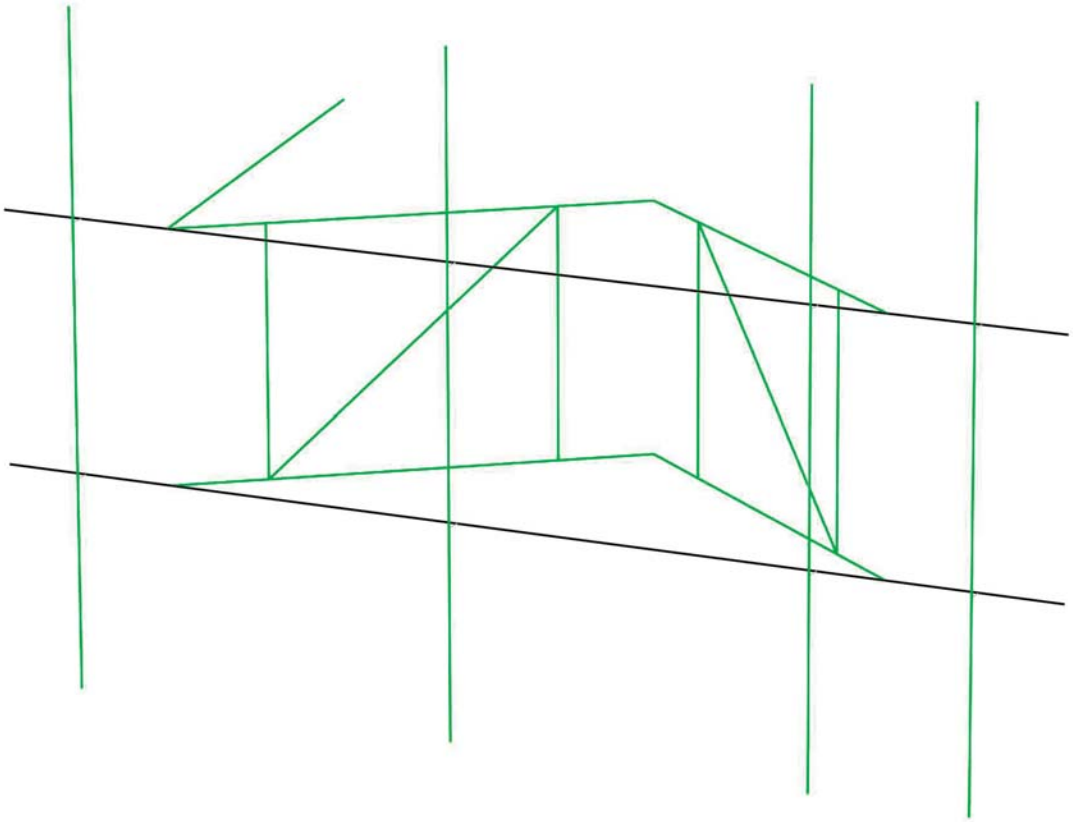
HUDSON
Design Group LLC

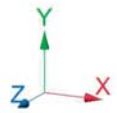
Mount Calculations
(Existing Conditions)

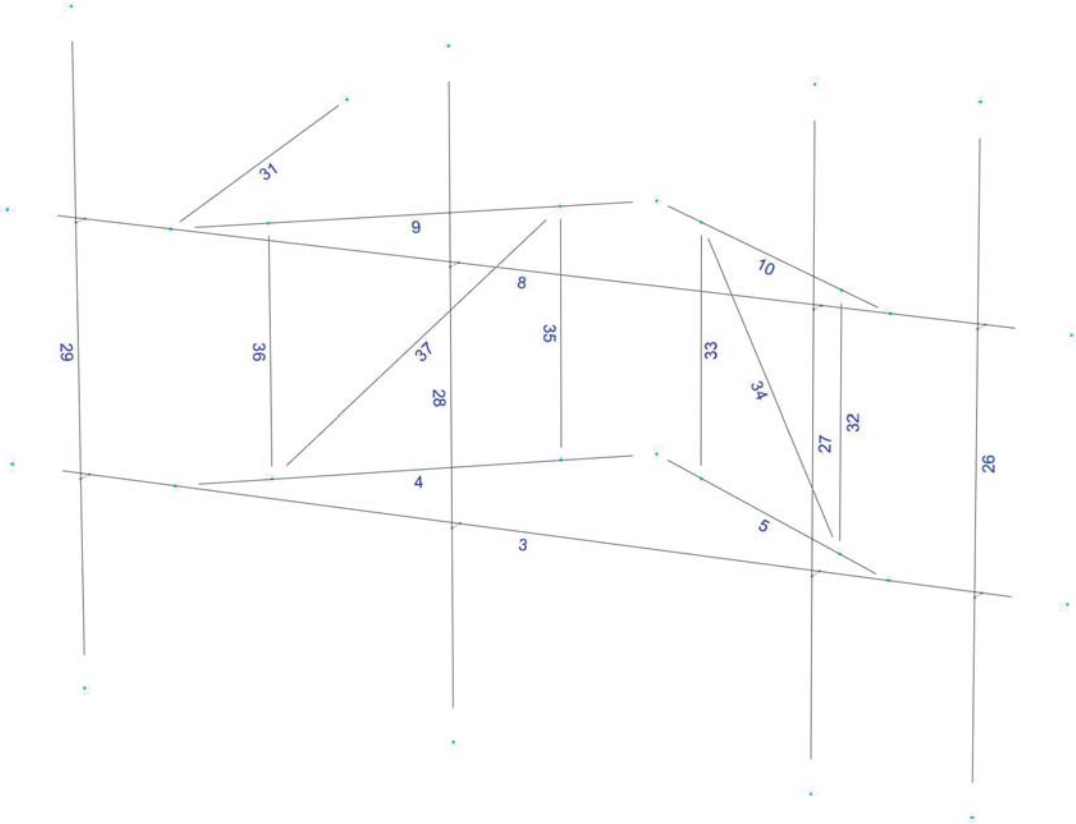

Y
Z
X


A53 GrB
PIPE 2x0.154
A53 GrB SABRE 50
PIPE 2x0.218XS
A36
RndBar 3_4
Y
Z
X

Not designed
Error on design
Design O.K.
With warnings



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Current Date: 5/7/2020 11:03 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2286\LTE 4C\CT2286 (Existing).retx\

Load data

GLOSSARY

Comb : Indicates if load condition is a load combination

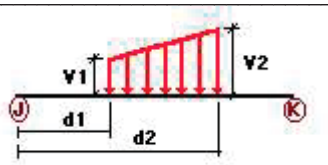
Load Conditions

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
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 lb Live Load Antenna 4	No	LL
LC1	1.2D+Wo	Yes	
LC2	1.2D+W30	Yes	
LC3	1.2D+W60	Yes	
LC4	1.2D+W90	Yes	
LC5	1.2D+W120	Yes	
LC6	1.2D+W150	Yes	
LC7	1.2D-Wo	Yes	
LC8	1.2D-W30	Yes	
LC9	1.2D-W60	Yes	
LC10	1.2D-W90	Yes	
LC11	1.2D-W120	Yes	
LC12	1.2D-W150	Yes	
LC13	0.9D+Wo	Yes	
LC14	0.9D+W30	Yes	
LC15	0.9D+W60	Yes	
LC16	0.9D+W90	Yes	
LC17	0.9D+W120	Yes	
LC18	0.9D+W150	Yes	

LC19	0.9D-Wo	Yes
LC20	0.9D-W30	Yes
LC21	0.9D-W60	Yes
LC22	0.9D-W90	Yes
LC23	0.9D-W120	Yes
LC24	0.9D-W150	Yes
LC25	1.2D+Di+WI0	Yes
LC26	1.2D+Di+WI30	Yes
LC27	1.2D+Di+WI60	Yes
LC28	1.2D+Di+WI90	Yes
LC29	1.2D+Di+WI120	Yes
LC30	1.2D+Di+WI150	Yes
LC31	1.2D+Di-WI0	Yes
LC32	1.2D+Di-WI30	Yes
LC33	1.2D+Di-WI60	Yes
LC34	1.2D+Di-WI90	Yes
LC35	1.2D+Di-WI120	Yes
LC36	1.2D+Di-WI150	Yes
LC38	1.2D+1.5LL1	Yes
LC39	1.2D+1.5LL2	Yes
LC40	1.2D+1.5LL3	Yes
LC41	1.2D+WL0+1.5LLa1	Yes
LC42	1.2D+WL30+1.5LLa1	Yes
LC43	1.2D+WL60+1.5LLa1	Yes
LC44	1.2D+WL90+1.5LLa1	Yes
LC45	1.2D+WL120+1.5LLa1	Yes
LC46	1.2D+WL150+1.5LLa1	Yes
LC47	1.2D-WL0+1.5LLa1	Yes
LC48	1.2D-WL30+1.5LLa1	Yes
LC49	1.2D-WL60+1.5LLa1	Yes
LC50	1.2D-WL90+1.5LLa1	Yes
LC51	1.2D-WL120+1.5LLa1	Yes
LC52	1.2D-WL150+1.5LLa1	Yes
LC53	1.2D+WL0+1.5LLa2	Yes
LC54	1.2D+WL30+1.5LLa2	Yes
LC55	1.2D+WL60+1.5LLa2	Yes
LC56	1.2D+WL90+1.5LLa2	Yes
LC57	1.2D+WL120+1.5LLa2	Yes
LC58	1.2D+WL150+1.5LLa2	Yes
LC59	1.2D-WL0+1.5LLa2	Yes
LC60	1.2D-WL30+1.5LLa2	Yes
LC61	1.2D-WL60+1.5LLa2	Yes
LC62	1.2D-WL90+1.5LLa2	Yes
LC63	1.2D-WL120+1.5LLa2	Yes
LC64	1.2D-WL150+1.5LLa2	Yes
LC65	1.2D+WL0+1.5LLa3	Yes
LC66	1.2D+WL30+1.5LLa3	Yes
LC67	1.2D+WL60+1.5LLa3	Yes
LC68	1.2D+WL90+1.5LLa3	Yes
LC69	1.2D+WL120+1.5LLa3	Yes
LC70	1.2D+WL150+1.5LLa3	Yes
LC71	1.2D-WL0+1.5LLa3	Yes
LC72	1.2D-WL30+1.5LLa3	Yes
LC73	1.2D-WL60+1.5LLa3	Yes
LC74	1.2D-WL90+1.5LLa3	Yes
LC75	1.2D-WL120+1.5LLa3	Yes
LC76	1.2D-WL150+1.5LLa3	Yes
LC77	1.2D+WL0+1.5LLa4	Yes
LC78	1.2D+WL30+1.5LLa4	Yes
LC79	1.2D+WL60+1.5LLa4	Yes

LC80	1.2D+WL90+1.5LLa4	Yes
LC81	1.2D+WL120+1.5LLa4	Yes
LC82	1.2D+WL150+1.5LLa4	Yes
LC83	1.2D-WL0+1.5LLa4	Yes
LC84	1.2D-WL30+1.5LLa4	Yes
LC85	1.2D-WL60+1.5LLa4	Yes
LC86	1.2D-WL90+1.5LLa4	Yes
LC87	1.2D-WL120+1.5LLa4	Yes
LC88	1.2D-WL150+1.5LLa4	Yes

Distributed force on members

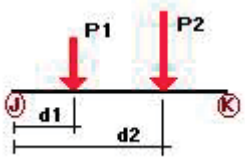


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.01	-0.01	0.00	No	100.00	Yes
	4	z	-0.01	-0.01	0.00	No	100.00	Yes
	5	z	-0.01	-0.01	0.00	No	100.00	Yes
	8	z	-0.01	-0.01	0.00	No	100.00	Yes
	9	z	-0.01	-0.01	0.00	No	100.00	Yes
	10	z	-0.01	-0.01	0.00	No	100.00	Yes
	26	z	-0.01	-0.01	0.00	No	100.00	Yes
	27	z	-0.01	-0.01	0.00	No	100.00	Yes
	28	z	-0.01	-0.01	0.00	No	100.00	Yes
	29	z	-0.01	-0.01	0.00	No	100.00	Yes
	31	z	-0.01	-0.01	0.00	No	100.00	Yes
	32	z	-0.003	-0.003	0.00	No	100.00	Yes
	33	z	-0.003	-0.003	0.00	No	100.00	Yes
	34	z	-0.003	-0.003	0.00	No	100.00	Yes
	35	z	-0.003	-0.003	0.00	No	100.00	Yes
	36	z	-0.003	-0.003	0.00	No	100.00	Yes
	37	z	-0.003	-0.003	0.00	No	100.00	Yes
W30	3	z	-0.01	-0.01	0.00	No	100.00	Yes
	4	z	-0.01	-0.01	0.00	No	100.00	Yes
	5	z	-0.01	-0.01	0.00	No	100.00	Yes
	8	z	-0.01	-0.01	0.00	No	100.00	Yes
	9	z	-0.01	-0.01	0.00	No	100.00	Yes
	10	z	-0.01	-0.01	0.00	No	100.00	Yes
	26	z	-0.01	-0.01	0.00	No	100.00	Yes
	27	z	-0.01	-0.01	0.00	No	100.00	Yes
	28	z	-0.01	-0.01	0.00	No	100.00	Yes
	29	z	-0.01	-0.01	0.00	No	100.00	Yes
	31	z	-0.01	-0.01	0.00	No	100.00	Yes
	32	z	-0.003	-0.003	0.00	No	100.00	Yes
	33	z	-0.003	-0.003	0.00	No	100.00	Yes
	34	z	-0.003	-0.003	0.00	No	100.00	Yes
	35	z	-0.003	-0.003	0.00	No	100.00	Yes
	36	z	-0.003	-0.003	0.00	No	100.00	Yes
	37	z	-0.003	-0.003	0.00	No	100.00	Yes
W60	3	x	-0.01	-0.01	0.00	No	100.00	Yes
	4	x	-0.01	-0.01	0.00	No	100.00	Yes

	5	x	-0.01	-0.01	0.00	No	100.00	Yes
	8	x	-0.01	-0.01	0.00	No	100.00	Yes
	9	x	-0.01	-0.01	0.00	No	100.00	Yes
	10	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.01	-0.01	0.00	No	100.00	Yes
	27	x	-0.01	-0.01	0.00	No	100.00	Yes
	28	x	-0.01	-0.01	0.00	No	100.00	Yes
	29	x	-0.01	-0.01	0.00	No	100.00	Yes
	31	x	-0.01	-0.01	0.00	No	100.00	Yes
	32	x	-0.003	-0.003	0.00	No	100.00	Yes
	33	x	-0.003	-0.003	0.00	No	100.00	Yes
	34	x	-0.003	-0.003	0.00	No	100.00	Yes
	35	x	-0.003	-0.003	0.00	No	100.00	Yes
	36	x	-0.003	-0.003	0.00	No	100.00	Yes
	37	x	-0.003	-0.003	0.00	No	100.00	Yes
W90	3	x	-0.01	-0.01	0.00	No	100.00	Yes
	4	x	-0.01	-0.01	0.00	No	100.00	Yes
	5	x	-0.01	-0.01	0.00	No	100.00	Yes
	8	x	-0.01	-0.01	0.00	No	100.00	Yes
	9	x	-0.01	-0.01	0.00	No	100.00	Yes
	10	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.01	-0.01	0.00	No	100.00	Yes
	27	x	-0.01	-0.01	0.00	No	100.00	Yes
	28	x	-0.01	-0.01	0.00	No	100.00	Yes
	29	x	-0.01	-0.01	0.00	No	100.00	Yes
	31	x	-0.01	-0.01	0.00	No	100.00	Yes
	32	x	-0.003	-0.003	0.00	No	100.00	Yes
	33	x	-0.003	-0.003	0.00	No	100.00	Yes
	34	x	-0.003	-0.003	0.00	No	100.00	Yes
	35	x	-0.003	-0.003	0.00	No	100.00	Yes
	36	x	-0.003	-0.003	0.00	No	100.00	Yes
	37	x	-0.003	-0.003	0.00	No	100.00	Yes
W120	3	x	-0.01	-0.01	0.00	No	100.00	Yes
	4	x	-0.01	-0.01	0.00	No	100.00	Yes
	5	x	-0.01	-0.01	0.00	No	100.00	Yes
	8	x	-0.01	-0.01	0.00	No	100.00	Yes
	9	x	-0.01	-0.01	0.00	No	100.00	Yes
	10	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.01	-0.01	0.00	No	100.00	Yes
	27	x	-0.01	-0.01	0.00	No	100.00	Yes
	28	x	-0.01	-0.01	0.00	No	100.00	Yes
	29	x	-0.01	-0.01	0.00	No	100.00	Yes
	31	x	-0.01	-0.01	0.00	No	100.00	Yes
	32	x	-0.003	-0.003	0.00	No	100.00	Yes
	33	x	-0.003	-0.003	0.00	No	100.00	Yes
	34	x	-0.003	-0.003	0.00	No	100.00	Yes
	35	x	-0.003	-0.003	0.00	No	100.00	Yes
	36	x	-0.003	-0.003	0.00	No	100.00	Yes
	37	x	-0.003	-0.003	0.00	No	100.00	Yes
W150	3	z	0.01	0.01	0.00	No	100.00	Yes
	4	z	0.01	0.01	0.00	No	100.00	Yes
	5	z	0.01	0.01	0.00	No	100.00	Yes
	8	z	0.01	0.01	0.00	No	100.00	Yes
	9	z	0.01	0.01	0.00	No	100.00	Yes
	10	z	0.01	0.01	0.00	No	100.00	Yes
	26	z	0.01	0.01	0.00	No	100.00	Yes
	27	z	0.01	0.01	0.00	No	100.00	Yes
	28	z	0.01	0.01	0.00	No	100.00	Yes
	29	z	0.01	0.01	0.00	No	100.00	Yes
	31	z	0.01	0.01	0.00	No	100.00	Yes

	32	z	0.003	0.003	0.00	No	100.00	Yes
	33	z	0.003	0.003	0.00	No	100.00	Yes
	34	z	0.003	0.003	0.00	No	100.00	Yes
	35	z	0.003	0.003	0.00	No	100.00	Yes
	36	z	0.003	0.003	0.00	No	100.00	Yes
	37	z	0.003	0.003	0.00	No	100.00	Yes
Di	3	y	-0.005	-0.005	0.00	No	100.00	Yes
	4	y	-0.005	-0.005	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	8	y	-0.005	-0.005	0.00	No	100.00	Yes
	9	y	-0.005	-0.005	0.00	No	100.00	Yes
	10	y	-0.005	-0.005	0.00	No	100.00	Yes
	26	y	-0.005	-0.005	0.00	No	100.00	Yes
	27	y	-0.005	-0.005	0.00	No	100.00	Yes
	28	y	-0.005	-0.005	0.00	No	100.00	Yes
	29	y	-0.005	-0.005	0.00	No	100.00	Yes
	31	y	-0.005	-0.005	0.00	No	100.00	Yes
	32	y	-0.003	-0.003	0.00	No	100.00	Yes
	33	y	-0.003	-0.003	0.00	No	100.00	Yes
	34	y	-0.003	-0.003	0.00	No	100.00	Yes
	35	y	-0.003	-0.003	0.00	No	100.00	Yes
	36	y	-0.003	-0.003	0.00	No	100.00	Yes
	37	y	-0.003	-0.003	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	26	y	-0.018	2.00	No
		y	-0.018	6.00	No
		y	-0.019	4.00	No
		y	-0.019	4.00	No
	27	y	-0.053	1.50	No
		y	-0.053	6.50	No
		y	-0.051	4.00	No
	28	y	-0.032	1.50	No
		y	-0.032	6.50	No
		y	-0.06	4.00	No
	29	y	-0.055	0.50	No
		y	-0.055	7.50	No
		y	-0.06	4.00	No
		y	-0.046	4.00	No
Wo	26	z	-0.112	2.00	No
		z	-0.112	6.00	No
		z	-0.008	4.00	No
		z	-0.008	4.00	No
	27	z	-0.165	1.50	No
		z	-0.165	6.50	No
		z	-0.035	4.00	No
	28	z	-0.28	1.50	No

		z	-0.28	6.50	No
		z	-0.001	4.00	No
	29	z	-0.261	0.50	No
		z	-0.261	7.50	No
		z	-0.027	4.00	No
		z	-0.018	4.00	No
W30	26	3	-0.099	2.00	No
		3	-0.099	6.00	No
		3	-0.022	4.00	No
		3	-0.022	4.00	No
	27	3	-0.148	1.50	No
		3	-0.148	6.50	No
		3	-0.097	4.00	No
	28	3	-0.24	1.50	No
		3	-0.24	6.50	No
		3	-0.074	4.00	No
	29	3	-0.225	0.50	No
		3	-0.225	7.50	No
		3	-0.059	4.00	No
		3	-0.044	4.00	No
W60	26	3	-0.073	2.00	No
		3	-0.073	6.00	No
		3	-0.036	4.00	No
		3	-0.036	4.00	No
	27	3	-0.113	1.50	No
		3	-0.113	6.50	No
		3	-0.065	4.00	No
	28	3	-0.159	1.50	No
		3	-0.159	6.50	No
		3	-0.059	4.00	No
	29	3	-0.152	0.50	No
		3	-0.152	7.50	No
		3	-0.074	4.00	No
		3	-0.064	4.00	No
W90	26	x	-0.06	2.00	No
		x	-0.06	6.00	No
		x	-0.044	4.00	No
		x	-0.044	4.00	No
	27	x	-0.096	1.50	No
		x	-0.096	6.50	No
		x	-0.048	4.00	No
	28	x	-0.119	1.50	No
		x	-0.119	6.50	No
		x	-0.051	4.00	No
	29	x	-0.115	0.50	No
		x	-0.115	7.50	No
		x	-0.082	4.00	No
		x	-0.075	4.00	No
W120	26	2	-0.073	2.00	No
		2	-0.073	6.00	No
		2	-0.036	4.00	No
		2	-0.036	4.00	No
	27	2	-0.113	1.50	No
		2	-0.113	6.50	No
		2	-0.065	4.00	No
	28	2	-0.159	1.50	No
		2	-0.159	6.50	No
		2	-0.059	4.00	No
	29	2	-0.152	0.50	No
		2	-0.152	7.50	No

		2	-0.074	4.00	No
		2	-0.064	4.00	No
W150	26	2	-0.099	2.00	No
		2	-0.099	6.00	No
		2	-0.022	4.00	No
		2	-0.022	4.00	No
	27	2	-0.148	1.50	No
		2	-0.148	6.50	No
		2	-0.097	4.00	No
	28	2	-0.24	1.50	No
		2	-0.24	6.50	No
		2	-0.074	4.00	No
	29	2	-0.225	0.50	No
		2	-0.225	7.50	No
		2	-0.059	4.00	No
		2	-0.044	4.00	No
Di	26	y	-0.042	2.00	No
		y	-0.042	6.00	No
		y	-0.018	4.00	No
		y	-0.018	4.00	No
	27	y	-0.061	1.50	No
		y	-0.061	6.50	No
		y	-0.045	4.00	No
	28	y	-0.098	1.50	No
		y	-0.098	6.50	No
		y	-0.036	4.00	No
	29	y	-0.102	0.50	No
		y	-0.102	7.50	No
		y	-0.036	4.00	No
		y	-0.03	4.00	No
WI0	26	z	-0.025	2.00	No
		z	-0.025	6.00	No
		z	-0.005	4.00	No
		z	-0.005	4.00	No
	27	z	-0.035	1.50	No
		z	-0.035	6.50	No
		z	-0.01	4.00	No
	28	z	-0.056	1.50	No
		z	-0.056	6.50	No
		z	-0.003	4.00	No
	29	z	-0.052	0.50	No
		z	-0.052	7.50	No
		z	-0.008	4.00	No
		z	-0.006	4.00	No
WI30	26	3	-0.022	2.00	No
		3	-0.022	6.00	No
		3	-0.007	4.00	No
		3	-0.007	4.00	No
	27	3	-0.031	1.50	No
		3	-0.031	6.50	No
		3	-0.022	4.00	No
	28	3	-0.048	1.50	No
		3	-0.048	6.50	No
		3	-0.017	4.00	No
	29	3	-0.045	0.50	No
		3	-0.045	7.50	No
		3	-0.014	4.00	No
		3	-0.011	4.00	No
WI60	26	3	-0.017	2.00	No
		3	-0.017	6.00	No

		3	-0.01	4.00	No
		3	-0.01	4.00	No
	27	3	-0.025	1.50	No
		3	-0.025	6.50	No
		3	-0.015	4.00	No
	28	3	-0.034	1.50	No
		3	-0.034	6.50	No
		3	-0.014	4.00	No
	29	3	-0.032	0.50	No
		3	-0.032	7.50	No
		3	-0.017	4.00	No
		3	-0.015	4.00	No
WI90	26	x	-0.015	2.00	No
		x	-0.015	6.00	No
		x	-0.011	4.00	No
		x	-0.011	4.00	No
	27	x	-0.022	1.50	No
		x	-0.022	6.50	No
		x	-0.012	4.00	No
	28	x	-0.027	1.50	No
		x	-0.027	6.50	No
		x	-0.013	4.00	No
	29	x	-0.026	0.50	No
		x	-0.026	7.50	No
		x	-0.019	4.00	No
		x	-0.017	4.00	No
WI120	26	2	-0.017	2.00	No
		2	-0.017	6.00	No
		2	-0.01	4.00	No
		2	-0.01	4.00	No
	27	2	-0.025	1.50	No
		2	-0.025	6.50	No
		2	-0.015	4.00	No
	28	2	-0.034	1.50	No
		2	-0.034	6.50	No
		2	-0.014	4.00	No
	29	2	-0.032	0.50	No
		2	-0.032	7.50	No
		2	-0.017	4.00	No
		2	-0.015	4.00	No
WI150	26	2	-0.022	2.00	No
		2	-0.022	6.00	No
		2	-0.007	4.00	No
		2	-0.007	4.00	No
	27	2	-0.031	1.50	No
		2	-0.031	6.50	No
		2	-0.022	4.00	No
	28	2	-0.048	1.50	No
		2	-0.048	6.50	No
		2	-0.017	4.00	No
	29	2	-0.045	0.50	No
		2	-0.045	7.50	No
		2	-0.014	4.00	No
		2	-0.011	4.00	No
WL0	26	z	-0.007	2.00	No
		z	-0.007	6.00	No
		z	-0.001	4.00	No
		z	-0.001	4.00	No
	27	z	-0.011	1.50	No
		z	-0.011	6.50	No

		z	-0.002	4.00	No
	28	z	-0.018	1.50	No
		z	-0.018	6.50	No
		z	-0.001	4.00	No
	29	z	-0.017	0.50	No
		z	-0.017	7.50	No
		z	-0.002	4.00	No
		z	-0.001	4.00	No
WL30	26	3	-0.006	2.00	No
		3	-0.006	6.00	No
		3	-0.001	4.00	No
		3	-0.001	4.00	No
	27	3	-0.009	1.50	No
		3	-0.009	6.50	No
		3	-0.006	4.00	No
	28	3	-0.015	1.50	No
		3	-0.015	6.50	No
		3	-0.005	4.00	No
	29	3	-0.014	0.50	No
		3	-0.014	7.50	No
		3	-0.004	4.00	No
		3	-0.003	4.00	No
WL60	26	3	-0.005	2.00	No
		3	-0.005	6.00	No
		3	-0.002	4.00	No
		3	-0.002	4.00	No
	27	3	-0.007	1.50	No
		3	-0.007	6.50	No
		3	-0.004	4.00	No
	28	3	-0.01	1.50	No
		3	-0.01	6.50	No
		3	-0.004	4.00	No
	29	3	-0.01	0.50	No
		3	-0.01	7.50	No
		3	-0.005	4.00	No
		3	-0.004	4.00	No
WL90	26	x	-0.004	2.00	No
		x	-0.004	6.00	No
		x	-0.003	4.00	No
		x	-0.003	4.00	No
	27	x	-0.006	1.50	No
		x	-0.006	6.50	No
		x	-0.003	4.00	No
	28	x	-0.008	1.50	No
		x	-0.008	6.50	No
		x	-0.003	4.00	No
	29	x	-0.007	0.50	No
		x	-0.007	7.50	No
		x	-0.005	4.00	No
		x	-0.005	4.00	No
WL120	26	2	-0.005	2.00	No
		2	-0.005	6.00	No
		2	-0.002	4.00	No
		2	-0.002	4.00	No
	27	2	-0.007	1.50	No
		2	-0.007	6.50	No
		2	-0.004	4.00	No
	28	2	-0.01	1.50	No
		2	-0.01	6.50	No
		2	-0.004	4.00	No

	29	2	-0.01	0.50	No
		2	-0.01	7.50	No
		2	-0.005	4.00	No
		2	-0.004	4.00	No
WL150	26	2	-0.006	2.00	No
		2	-0.006	6.00	No
		2	-0.001	4.00	No
		2	-0.001	4.00	No
	27	2	-0.009	1.50	No
		2	-0.009	6.50	No
		2	-0.006	4.00	No
	28	2	-0.015	1.50	No
		2	-0.015	6.50	No
		2	-0.005	4.00	No
	29	2	-0.014	0.50	No
		2	-0.014	7.50	No
		2	-0.004	4.00	No
		2	-0.003	4.00	No
LL1	3	y	-0.25	6.50	No
LL2	3	y	-0.25	13.00	No
LL3	3	y	-0.25	0.00	No
LLa1	26	y	-0.25	4.00	No
LLa2	27	y	-0.25	4.00	No
LLa3	28	y	-0.25	4.00	No
LLa4	29	y	-0.25	4.00	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
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00

LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00
LC1	1.2D+Wo	Yes	0.00	0.00	0.00
LC2	1.2D+W30	Yes	0.00	0.00	0.00
LC3	1.2D+W60	Yes	0.00	0.00	0.00
LC4	1.2D+W90	Yes	0.00	0.00	0.00
LC5	1.2D+W120	Yes	0.00	0.00	0.00
LC6	1.2D+W150	Yes	0.00	0.00	0.00
LC7	1.2D-Wo	Yes	0.00	0.00	0.00
LC8	1.2D-W30	Yes	0.00	0.00	0.00
LC9	1.2D-W60	Yes	0.00	0.00	0.00
LC10	1.2D-W90	Yes	0.00	0.00	0.00
LC11	1.2D-W120	Yes	0.00	0.00	0.00
LC12	1.2D-W150	Yes	0.00	0.00	0.00
LC13	0.9D+Wo	Yes	0.00	0.00	0.00
LC14	0.9D+W30	Yes	0.00	0.00	0.00
LC15	0.9D+W60	Yes	0.00	0.00	0.00
LC16	0.9D+W90	Yes	0.00	0.00	0.00
LC17	0.9D+W120	Yes	0.00	0.00	0.00
LC18	0.9D+W150	Yes	0.00	0.00	0.00
LC19	0.9D-Wo	Yes	0.00	0.00	0.00
LC20	0.9D-W30	Yes	0.00	0.00	0.00
LC21	0.9D-W60	Yes	0.00	0.00	0.00
LC22	0.9D-W90	Yes	0.00	0.00	0.00
LC23	0.9D-W120	Yes	0.00	0.00	0.00
LC24	0.9D-W150	Yes	0.00	0.00	0.00
LC25	1.2D+Di+WI0	Yes	0.00	0.00	0.00
LC26	1.2D+Di+WI30	Yes	0.00	0.00	0.00
LC27	1.2D+Di+WI60	Yes	0.00	0.00	0.00
LC28	1.2D+Di+WI90	Yes	0.00	0.00	0.00
LC29	1.2D+Di+WI120	Yes	0.00	0.00	0.00
LC30	1.2D+Di+WI150	Yes	0.00	0.00	0.00
LC31	1.2D+Di-WI0	Yes	0.00	0.00	0.00
LC32	1.2D+Di-WI30	Yes	0.00	0.00	0.00
LC33	1.2D+Di-WI60	Yes	0.00	0.00	0.00
LC34	1.2D+Di-WI90	Yes	0.00	0.00	0.00
LC35	1.2D+Di-WI120	Yes	0.00	0.00	0.00
LC36	1.2D+Di-WI150	Yes	0.00	0.00	0.00
LC38	1.2D+1.5LL1	Yes	0.00	0.00	0.00
LC39	1.2D+1.5LL2	Yes	0.00	0.00	0.00
LC40	1.2D+1.5LL3	Yes	0.00	0.00	0.00
LC41	1.2D+WL0+1.5LLa1	Yes	0.00	0.00	0.00
LC42	1.2D+WL30+1.5LLa1	Yes	0.00	0.00	0.00
LC43	1.2D+WL60+1.5LLa1	Yes	0.00	0.00	0.00
LC44	1.2D+WL90+1.5LLa1	Yes	0.00	0.00	0.00
LC45	1.2D+WL120+1.5LLa1	Yes	0.00	0.00	0.00
LC46	1.2D+WL150+1.5LLa1	Yes	0.00	0.00	0.00
LC47	1.2D-WL0+1.5LLa1	Yes	0.00	0.00	0.00
LC48	1.2D-WL30+1.5LLa1	Yes	0.00	0.00	0.00
LC49	1.2D-WL60+1.5LLa1	Yes	0.00	0.00	0.00
LC50	1.2D-WL90+1.5LLa1	Yes	0.00	0.00	0.00
LC51	1.2D-WL120+1.5LLa1	Yes	0.00	0.00	0.00
LC52	1.2D-WL150+1.5LLa1	Yes	0.00	0.00	0.00
LC53	1.2D+WL0+1.5LLa2	Yes	0.00	0.00	0.00
LC54	1.2D+WL30+1.5LLa2	Yes	0.00	0.00	0.00
LC55	1.2D+WL60+1.5LLa2	Yes	0.00	0.00	0.00
LC56	1.2D+WL90+1.5LLa2	Yes	0.00	0.00	0.00
LC57	1.2D+WL120+1.5LLa2	Yes	0.00	0.00	0.00
LC58	1.2D+WL150+1.5LLa2	Yes	0.00	0.00	0.00

LC59	1.2D-WL0+1.5LLa2	Yes	0.00	0.00	0.00
LC60	1.2D-WL30+1.5LLa2	Yes	0.00	0.00	0.00
LC61	1.2D-WL60+1.5LLa2	Yes	0.00	0.00	0.00
LC62	1.2D-WL90+1.5LLa2	Yes	0.00	0.00	0.00
LC63	1.2D-WL120+1.5LLa2	Yes	0.00	0.00	0.00
LC64	1.2D-WL150+1.5LLa2	Yes	0.00	0.00	0.00
LC65	1.2D+WL0+1.5LLa3	Yes	0.00	0.00	0.00
LC66	1.2D+WL30+1.5LLa3	Yes	0.00	0.00	0.00
LC67	1.2D+WL60+1.5LLa3	Yes	0.00	0.00	0.00
LC68	1.2D+WL90+1.5LLa3	Yes	0.00	0.00	0.00
LC69	1.2D+WL120+1.5LLa3	Yes	0.00	0.00	0.00
LC70	1.2D+WL150+1.5LLa3	Yes	0.00	0.00	0.00
LC71	1.2D-WL0+1.5LLa3	Yes	0.00	0.00	0.00
LC72	1.2D-WL30+1.5LLa3	Yes	0.00	0.00	0.00
LC73	1.2D-WL60+1.5LLa3	Yes	0.00	0.00	0.00
LC74	1.2D-WL90+1.5LLa3	Yes	0.00	0.00	0.00
LC75	1.2D-WL120+1.5LLa3	Yes	0.00	0.00	0.00
LC76	1.2D-WL150+1.5LLa3	Yes	0.00	0.00	0.00
LC77	1.2D+WL0+1.5LLa4	Yes	0.00	0.00	0.00
LC78	1.2D+WL30+1.5LLa4	Yes	0.00	0.00	0.00
LC79	1.2D+WL60+1.5LLa4	Yes	0.00	0.00	0.00
LC80	1.2D+WL90+1.5LLa4	Yes	0.00	0.00	0.00
LC81	1.2D+WL120+1.5LLa4	Yes	0.00	0.00	0.00
LC82	1.2D+WL150+1.5LLa4	Yes	0.00	0.00	0.00
LC83	1.2D-WL0+1.5LLa4	Yes	0.00	0.00	0.00
LC84	1.2D-WL30+1.5LLa4	Yes	0.00	0.00	0.00
LC85	1.2D-WL60+1.5LLa4	Yes	0.00	0.00	0.00
LC86	1.2D-WL90+1.5LLa4	Yes	0.00	0.00	0.00
LC87	1.2D-WL120+1.5LLa4	Yes	0.00	0.00	0.00
LC88	1.2D-WL150+1.5LLa4	Yes	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

LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00
LC1	0.00	0.00	0.00
LC2	0.00	0.00	0.00
LC3	0.00	0.00	0.00
LC4	0.00	0.00	0.00
LC5	0.00	0.00	0.00
LC6	0.00	0.00	0.00
LC7	0.00	0.00	0.00
LC8	0.00	0.00	0.00
LC9	0.00	0.00	0.00
LC10	0.00	0.00	0.00
LC11	0.00	0.00	0.00
LC12	0.00	0.00	0.00
LC13	0.00	0.00	0.00
LC14	0.00	0.00	0.00
LC15	0.00	0.00	0.00
LC16	0.00	0.00	0.00
LC17	0.00	0.00	0.00
LC18	0.00	0.00	0.00
LC19	0.00	0.00	0.00
LC20	0.00	0.00	0.00
LC21	0.00	0.00	0.00
LC22	0.00	0.00	0.00
LC23	0.00	0.00	0.00
LC24	0.00	0.00	0.00
LC25	0.00	0.00	0.00
LC26	0.00	0.00	0.00
LC27	0.00	0.00	0.00
LC28	0.00	0.00	0.00
LC29	0.00	0.00	0.00
LC30	0.00	0.00	0.00
LC31	0.00	0.00	0.00
LC32	0.00	0.00	0.00
LC33	0.00	0.00	0.00
LC34	0.00	0.00	0.00
LC35	0.00	0.00	0.00
LC36	0.00	0.00	0.00
LC38	0.00	0.00	0.00
LC39	0.00	0.00	0.00
LC40	0.00	0.00	0.00
LC41	0.00	0.00	0.00
LC42	0.00	0.00	0.00
LC43	0.00	0.00	0.00
LC44	0.00	0.00	0.00
LC45	0.00	0.00	0.00
LC46	0.00	0.00	0.00
LC47	0.00	0.00	0.00
LC48	0.00	0.00	0.00
LC49	0.00	0.00	0.00
LC50	0.00	0.00	0.00
LC51	0.00	0.00	0.00
LC52	0.00	0.00	0.00
LC53	0.00	0.00	0.00
LC54	0.00	0.00	0.00

LC55	0.00	0.00	0.00
LC56	0.00	0.00	0.00
LC57	0.00	0.00	0.00
LC58	0.00	0.00	0.00
LC59	0.00	0.00	0.00
LC60	0.00	0.00	0.00
LC61	0.00	0.00	0.00
LC62	0.00	0.00	0.00
LC63	0.00	0.00	0.00
LC64	0.00	0.00	0.00
LC65	0.00	0.00	0.00
LC66	0.00	0.00	0.00
LC67	0.00	0.00	0.00
LC68	0.00	0.00	0.00
LC69	0.00	0.00	0.00
LC70	0.00	0.00	0.00
LC71	0.00	0.00	0.00
LC72	0.00	0.00	0.00
LC73	0.00	0.00	0.00
LC74	0.00	0.00	0.00
LC75	0.00	0.00	0.00
LC76	0.00	0.00	0.00
LC77	0.00	0.00	0.00
LC78	0.00	0.00	0.00
LC79	0.00	0.00	0.00
LC80	0.00	0.00	0.00
LC81	0.00	0.00	0.00
LC82	0.00	0.00	0.00
LC83	0.00	0.00	0.00
LC84	0.00	0.00	0.00
LC85	0.00	0.00	0.00
LC86	0.00	0.00	0.00
LC87	0.00	0.00	0.00
LC88	0.00	0.00	0.00

Current Date: 5/7/2020 11:04 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2286\LTE 4C\CT2286 (Existing).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
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2

LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	**26**	LC39 at 66.67%	0.31	OK	Eq. H1-1b
		27	LC4 at 31.25%	0.26	OK	Eq. H1-1b
		28	LC10 at 31.25%	0.40	OK	Eq. H1-1b
		29	LC1 at 68.75%	**0.63**	**OK**	Eq. H1-1b
		31	LC4 at 100.00%	0.18	OK	Eq. H1-1b
	PIPE 2x0.218XS	**3**	LC7 at 16.96%	**0.40**	**With warnings**	Eq. H1-1b
		4	LC10 at 100.00%	0.26	OK	Eq. H1-1b
		5	LC4 at 100.00%	0.23	OK	Eq. H1-1b
		8	LC6 at 16.96%	0.39	With warnings	Eq. H1-1a
		9	LC32 at 100.00%	0.24	OK	Eq. H1-1b
		10	LC30 at 100.00%	0.22	OK	Eq. H1-1b
	RndBar 3_4	**32**	LC41 at 100.00%	0.43	OK	Eq. H1-1a
		33	LC26 at 100.00%	0.37	OK	Eq. H1-1a
		34	LC26 at 100.00%	0.19	OK	Eq. Sec. D2
		35	LC31 at 0.00%	0.44	OK	Eq. H1-1a
		36	LC36 at 100.00%	**0.56**	**OK**	Eq. H1-1a
		37	LC36 at 100.00%	0.32	OK	Eq. H1-1a

Current Date: 5/7/2020 11:04 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2286\LTE 4C\CT2286 (Existing).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
2	6.50	0.00	0.00	0
3	-6.50	0.00	0.00	0
8	-4.40	0.00	0.00	0
9	4.40	0.00	0.00	0
10	0.00	0.00	-3.50	0
16	6.50	3.00	0.00	0
17	-6.50	3.00	0.00	0
22	-4.40	3.00	0.00	0
23	4.40	3.00	0.00	0
24	0.00	3.00	-3.50	0
33	-5.50	5.50	0.20	0
34	5.50	5.50	0.20	0
35	-5.50	-2.50	0.20	0
36	5.50	-2.50	0.20	0
42	3.583	5.50	0.20	0
43	3.583	-2.50	0.20	0
48	-0.792	5.50	0.20	0
49	-0.792	-2.50	0.20	0
51	-5.50	3.00	-6.50	0
52	0.88	3.00	-2.80	0
55	3.52	3.00	-0.70	0
56	3.52	0.00	-0.70	0

57	0.88	0.00	-2.80	0
58	-0.88	3.00	-2.80	0
61	-3.52	3.00	-0.70	0
62	-0.88	0.00	-2.80	0
63	-3.52	0.00	-0.70	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
10	1	1	1	1	1	1
24	1	1	1	1	1	1
51	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
3	3	2		PIPE 2x0.218XS	A53 GrB SABRE 50	0.00	0.00	0.00
4	8	10		PIPE 2x0.218XS	A53 GrB SABRE 50	0.00	0.00	0.00
5	9	10		PIPE 2x0.218XS	A53 GrB SABRE 50	0.00	0.00	0.00
8	17	16		PIPE 2x0.218XS	A53 GrB SABRE 50	0.00	0.00	0.00
9	22	24		PIPE 2x0.218XS	A53 GrB SABRE 50	0.00	0.00	0.00
10	23	24		PIPE 2x0.218XS	A53 GrB SABRE 50	0.00	0.00	0.00
26	34	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	42	43		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
28	48	49		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	33	35		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
31	22	51		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	55	56		RndBar 3_4	A36	0.00	0.00	0.00
33	52	57		RndBar 3_4	A36	0.00	0.00	0.00
34	56	52		RndBar 3_4	A36	0.00	0.00	0.00
35	58	62		RndBar 3_4	A36	0.00	0.00	0.00
36	61	63		RndBar 3_4	A36	0.00	0.00	0.00
37	58	63		RndBar 3_4	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
26	315.00	0	0.00	0.00	0.00
27	315.00	0	0.00	0.00	0.00
28	315.00	0	0.00	0.00	0.00
29	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]
31	0.00	2.00	0.00	0.00	2.00	0.00

EXHIBIT 3

DOCKET NO. 308 – Westport Broadcasting Co., LLC, Optasite, Inc., and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a wireless telecommunications facility located at 160 Deer Run Road, Wilton, Connecticut.	}	Connecticut Siting Council August 31, 2006

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Westport Broadcasting Co., LLC (WBC), Optasite, Inc. (Optasite) and New Cingular Wireless PCS, LLC (New Cingular), hereinafter referred to as the Certificate Holder, for a telecommunications facility at 160 Deer Run Road, Wilton, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a self-supporting lattice tower, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of New Cingular and other entities, both public and private, but such tower shall not exceed a height of 118 feet above ground level. The height at the top of the antennas shall not exceed 122 feet above ground level.

2. Whip antennas that are to be relocated onto the replacement structure shall be combined into shared antennas, where possible.

3. The Certificate Holder shall remove the existing guyed lattice tower upon commencement of operation of the 120-foot self-supporting lattice tower.

4. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Wilton for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
    a. a final site plan(s) of site development to include specifications for the tower including a yield point, tower foundation, antennas, expanded equipment compound, radio equipment, placement of cables within the tower, utility line, and landscaping; and
    b. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

5. The Certificate Holder shall notify the Council, parties and intervenors in this proceeding within ten business days of receiving notice from the Connecticut Department of Environmental Protection that use of the existing access road will be terminated. At which time the Certificate Holder shall submit a D&M Plan for the new access road extending from Deer Run Road.

6. The Certificate Holder shall, prior to commencement of construction of the new access road, provide the Council, parties and intervenors with a D&M Plan for the new access road, including construction plans for clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

7. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

8. Upon the establishment of any new state or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

9. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

10. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Wilton public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

11. If the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

12. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

13. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

14. Any request for extension of the time periods referred to in Conditions 7 & 8 shall be filed with the Council not later than sixty days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

15. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Wilton Bulletin, The Norwalk Hour, and The Wilton Villager.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Representatives**
Westport Broadcasting Co., LLC Optasite, Inc. New Cingular Wireless PCS, LLC	Christopher B. Fisher, Esq. Cuddy & Feder LLP 90 Maple Avenue White Plains, NY 10601 Dennis Morrissey, P.E., Esq. 3380 Main Street – Suite 201 Stratford, CT 06614
Party	**Representative**
Wilton Environmental Trust	Keith R. Ainsworth, Esq. Evans Feldman & Boyer, LLC # 101240 261 Bradley Street P.O. Box 1694 New Haven, CT 06507-1694
Party	**Representatives**
Town of Wilton	Carrie L. Larson, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604 Monte E. Frank, Esq. Cohen and Wolf, P.C. 158 Deer Hill Avenue Danbury, CT 06810

Intervenor	**Representative**
Omnipoint Communications, Inc. (T-Mobile USA, Inc.)	Kenneth Ira Spigle 687 Highland Avenue, Suite 1 Needham, MA 02494

Intervenor	**Representative**
Cellco Partnership d/b/a Verizon Wireless (Cellco)	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597

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

June 20, 2011

Douglas L. Culp, Real Estate Consultant
New Cingular Wireless PCS, LLC
500 Enterprise Drive
Rocky Hill, CT 06067-3900

RE: **EM-CING-161-110602** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 160 Deer Run Road, Wilton, Connecticut.

Dear Mr. Culp:

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:

- 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 less 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 June 1, 2011. 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. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable William Francis Brennan, First Selectman, Town of Wilton
Robert Nerney, Town Planner, Town of Wilton
SBA, Inc.

CSC
CONNECTICUT SITING COUNCIL

MUST BE POSTED IN PROMINENT PLACE ON PREMISES

TOWN OF WILTON
BUILDING PERMIT

DATE: 8/25/2011

PERMIT NO.: 20780A

PERMISSION IS HEREBY GRANTED TO:

Westport Broadcasting Company LLC

IN ACCORDANCE WITH THE COMPLETED APPLICATION FILED ON:

8/25/2011 Builder: Site Aquistions Inc

FOR THE PURPOSE OF:

Add additional antennas to existing cell tower for AT&T

(Estimated cost, plumbing, heating, and electrical):

Estimated Cost:	$20,000.00
Plan Review:	$100.00
Cert. of Occup.:	$75.00
Building Fee:	$200.00
State Zoning:	$60.00
Local Zoning:	$75.00
Septic System:	$0.00
Misc. Fee:	$0.00
Education Fund:	$6.00
Records Maint	$0.00
Total Fee:	$516.00

Address: 160 Deer Run Road As shown on Lot No.: Zone: R-2A

WLR Map No.: Assessors Map No.: 81 Assessors Card No.: 28

size ft.: long: ft. wide: stories high:

**RESTRICTIONS/ NOTES:

Building Inspector Robert E Root

INSPECTION LOG

		INSPECTED BY:	DATE:
Elec. Svc:			
Footing:			
Ftg Drain:			
Framing:			
Electrical:			
Plumbing:			
HVAC:			
Rough All:			
Insulation:			
C/O Inspection:			

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

January 28, 2019

Michael Gentile
Site Acquisition
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02739

RE: **EM-CING-161-190111** – New Cingualr Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 160 Deer Run Road, Wilton, Connecticut.

Dear Mr. Gentile:

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:

1. Prior to AT&T&'s antenna installation, the antenna mount modifications shall be installed in accordance with the Mount Analysis prepared by Hudson Design Group, LLC, dated August 29, 2018 and stamped and signed by Daniel Hamm;

2. Within 45 days following completion of equipment installations, AT&T shall provide documentation that its installation complied with the recommendations of the Mount Analysis;

3. Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;

4. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;

5. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

6. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function;

7. The validity of this action shall expire one year from the date of this letter; and

8. 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 January 9, 2019. 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 by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission

pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut 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. Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/FOC/emr

c: The Honorable Lynne Vanderslice, First Selectman, Town of Wilton
Robert Nerney, AICP, Director of Planning and Land Use Management, Town of Wilton
SBA Communications, Tower Owner
Westport Broadcasting Co., LLC, Property Owner

MINOR BUILDING PERMIT

MUST BE POSTED IN PROMINENT PLACE ON PREMISES

DATE: 2/22/2019
PERMIT NO.: 2019-00000095

CONTRACTOR: Empire Telecom USA

PERMISSION IS HEREBY GRANTED TO:
WESTPORT BROADCASTING CO LLC

IN ACCORDANCE WITH THE COMPLETED APPLICATION FILED ON: 2/22/2019

FOR THE PURPOSE OF:
Replace antennas and associated equipment.

Improvement Value: $25000.00
(Estimated cost; Plumbing, HVAC & Electrical)

Fee Description	Fee
Building	$250.00
Commercial C/O (SF)	$75.00
Commercial Plan Review	$100.00
Education Fund	$6.50
Records Maintenance	$40.00
TOTALS:	$471.50

Address: 160 DEER RUN RD **AKA:** **Zone:** R-2

Parcel Number: 81-28-0-0

Building Inspector: Robert E Root

EXHIBIT 4

Town of Wilton, CT

Property Listing Report

Map Block Lot **81-28** Account **001780**

Property Information

Property Location	160 DEER RUN RD
Owner	WESTPORT BROADCASTING CO LLC
Co-Owner	
Mailing Address	PO BOX 1041 VIRGINIA BEACH VA 23451
Land Use	2-1V Commercial
Land Class	C
Zoning Code	R-2
Census Tract	
Sub Lot	

Neighborhood	05
Acreage	2
Utilities	
Lot Setting/Desc	Above Street
Survey Map	
Foundation	1

Photo

Sketch

Primary Construction Details

Year Built		Bedrooms		Exterior Walls	
Stories		Full Bathrooms		Interior Walls	
Building Style		Half Bathrooms		Heating Type	
Building Use		Bath Style		Heating Fuel	
Building Condition		Kitchen Style		AC Type	
Floors		Roof Style		Gross Bldg Area	
Total Rooms		Roof Cover		Total Living Area	

Report Created On **5/28/2020**

Town of Wilton, CT

Property Listing Report | Map Block Lot **81-28** | Account **001780**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Outbuildings	286800	200760
Land	733200	513240
Total	1020000	714000

Outbuilding and Extra Items

Type	Description
Shed Good	476 S.F.
CELL TOWER	1 UNITS
Patio	892 S.F.
Fence 6'	180 L.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		0

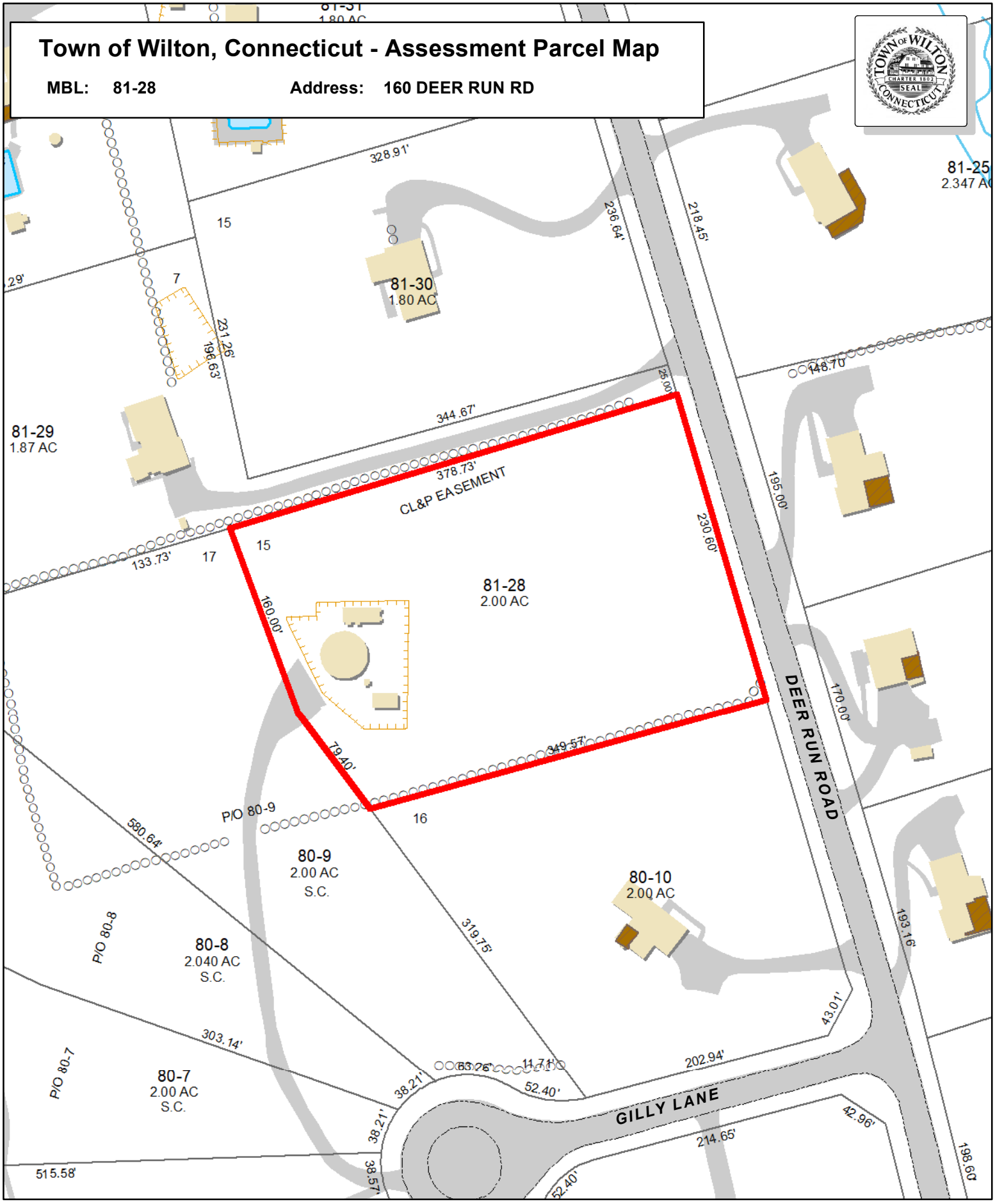
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
WESTPORT BROADCASTING CO LLC	1081/0146	2/11/1998	400000
FLAMM, DONALD	0177/0277	6/27/1972	50000

Report Created On **5/28/2020**

Town of Wilton, Connecticut - Assessment Parcel Map

MBL: 81-28 **Address:** 160 DEER RUN RD



Approximate Scale:

1 inch = 100 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Wilton and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Grand List Date: Oct 2017

0 50 100 150 Feet

EXHIBIT 5

Radio Frequency Safety Survey Report Prediction (RFSSRP)

AT&T Wireless Tower Facility

Site ID: CT2286 **Site Name:** Wilton Deer Run Road **Address:** 160 Deer Run Road, Wilton, CT 06897 **Latitude:** 41.241470 **Longitude:** -73.469999 **USID:** 93158 **FA**: 10092833	**Prepared for:** AT&T Mobility 550 Cochituate Road, Suite 13 Framingham, MA 01701 Report Writer: Alex Van Abbema Date: May 19, 2020 Report Reviewer: Brandon Green

Statement of Compliance

AT&T is compliant with FCC Regulations.

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1.0 GENERAL SUMMARY

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following AT&T Mobility wireless tower facility to determine whether the facility is in compliance with federal standards and regulations regarding RF emissions. This analysis includes theoretical emissions calculations, for all equipment for AT&T Mobility

1.1 SITE SUMMARY

Analysis Site Data	
Site USID:	93158
Site FA#:	10092833
Site Name:	Wilton Deer Run Road
Site Address:	160 Deer Run Road, Wilton CT 06897
Site Latitude:	41.241470 N
Site Longitude:	-73.469999 W
Facility Type:	Tower
Compliance Summary	
Compliance Status:	Compliant
Maximum Modeled MPE% on Walking Surface AT&T (General Public Limit):	0.16 %
Maximum Modeled MPE% at Ground Level AT&T (General Public Limit):	0.07 %
Maximum Modeled MPE% on Walking Surface Composite (General Public Limit):	0.16 %
Maximum Modeled MPE% at Ground Level Composite (General Public Limit):	0.07 %
Site Survey Data	
Is Access Locked or Controlled? :	Controlled
Lock or Control Measures if Present:	N/A
Parapet Height:	N/A"

Site Data Information	
CD:	MRCTB030824.AE202.AS-BUILT.LTE2C.CT2286
RFDS:	NEW-ENGLAND_CONNECTICUT_CTL02286_2021-LTE-Next-Carrier_LTE_MM093Q_2051A0VD90_10092833_93158_03-09-2020_Preliminary-Approved_v1.0

There are no additional system operators located on this facility or considered as part of this analysis.

Signage and barriers are the primary means of mitigating access to accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

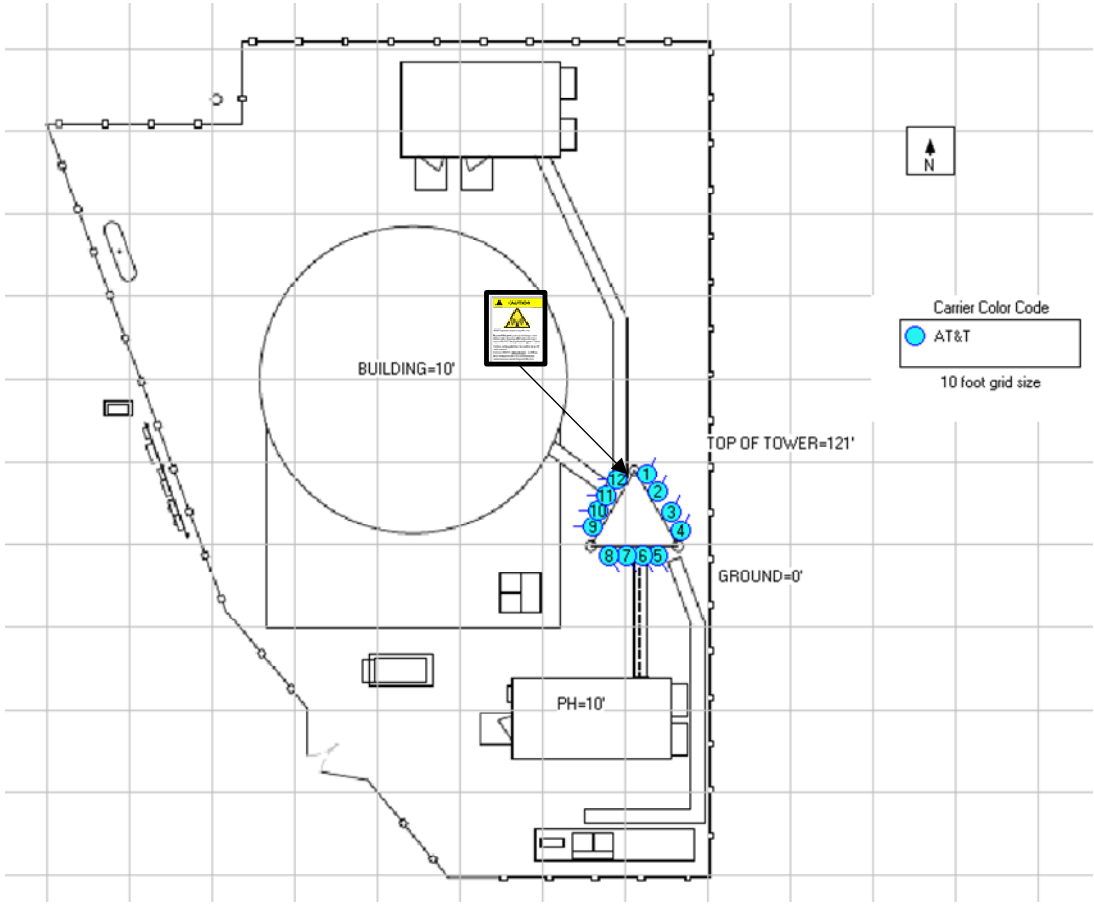
	Existing Signage and Barriers (AT&T Sectors)							
Location	Green Info 1	Green Info 2	Blue Notice	Blue Notice 2	Yellow Caution	Yellow Caution 2B	Red Warning 2	Barriers
Alpha	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0
Tower Access	0	0	0	0	0	1	0	0

Recommended Signage and Barriers (AT&T Sectors)								
Location	Green Info 1	Green Info 2	Blue Notice	Blue Notice 2	Yellow Caution	Yellow Caution 2	Red Warning 2	Barriers
Alpha	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0
Tower Access	0	0	0	0	0	0	0	0

Notes:

- There are no further actions required, this site is compliant.

2.0 SITE SCALE MAP



Operator Antenna Identifiers

- AT&T Mobility
- Verizon
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

 INFO 1 Sign	 Caution 1 Sign
 INFO 2 Sign	 Tower Caution Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign

Items to be Removed

Existing Sign

Proposed/ Installed Sign

Existing Barrier

Proposed Barrier

Signage/ Mitigation Plan

Wilton Deer Run Road / 10092833

3.0 ANTENNA INVENTORY

ANT ID	Operator	Antenna Make	Antenna Model	Type	Freq (MHz)	TPO (Watts)	# of TX	Azimuth (°)	BW (°)	Gain (dBd)	Total ERP (Watts)	Length (ft.)	Antenna Z Value (ft.) NWS*	Antenna Z Value (ft.) AGL**
1	AT&T	POWERWAVE	7770 00	Panel	850	40	1	30	85	11.35	545.83	4.6	107.7	107.7
2	AT&T	POWERWAVE	P65-16-XLH-RR	Panel	700	60	2	30	71	12.2	1991.50	6.0	107.0	107.0
3	AT&T	CCI	OPA65R-BU6D	Panel	700	40	4	30	61	11.85	2449.74	5.9	107.0	107.0
4	AT&T	KATHREIN	80010965	Panel	850	40	4	30	61.1	13.45	3540.95	6.6	106.7	106.7
4	AT&T	KATHREIN	80010965	Panel	850	40	4	30	61.1	13.45	3540.95	6.6	106.7	106.7
4	AT&T	KATHREIN	80010965	Panel	1900	40	4	30	64.5	15.75	6013.40	6.6	106.7	106.7
5	AT&T	POWERWAVE	7770 00	Panel	850	40	1	150	85	11.35	545.83	4.6	107.7	107.7
6	AT&T	POWERWAVE	P65-16-XLH-RR	Panel	700	60	2	150	71	12.1	1946.17	6.0	107.0	107.0
7	AT&T	CCI	OPA65R-BU6D	Panel	700	40	4	150	64	11.35	2183.33	5.9	107.0	107.0
8	AT&T	KATHREIN	80010965	Panel	850	40	4	150	61.6	13.45	3540.95	6.6	106.7	106.7
8	AT&T	KATHREIN	80010965	Panel	850	40	4	150	61.6	13.45	3540.95	6.6	106.7	106.7
8	AT&T	KATHREIN	80010965 2	Panel	1900	40	4	150	63.8	15.65	5876.52	6.6	106.7	106.7
9	AT&T	POWERWAVE	7770 00	Panel	850	40	1	270	85	11.35	545.83	4.6	107.7	107.7
10	AT&T	POWERWAVE	P65-16-XLH-RR	Panel	700	60	2	270	71	12.2	1991.50	6.0	107.0	107.0
11	AT&T	CCI	OPA65R-BU6D	Panel	700	40	4	270	61	11.85	2449.74	5.9	107.0	107.0
12	AT&T	KATHREIN	80010965	Panel	850	40	4	270	61.1	13.45	3540.95	6.6	106.7	106.7
12	AT&T	KATHREIN	80010965	Panel	850	40	4	270	61.1	13.45	3540.95	6.6	106.7	106.7
12	AT&T	KATHREIN	80010965 2	Panel	1900	40	4	270	63.8	15.65	5876.52	6.6	106.7	106.7

*Table 1: Total Site Data Table (*NWS = Nearest Walking Surface, **AGL = Above Ground Level)*

4.0 PREDICTED EMISSION LEVELS AND DISCUSSION

All calculations performed based upon the data listed for this facility have produced results that are within allowable limits for General Population for exposure to RF emissions as specified by federal standards.

AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document states that microwave dishes are compliant if they are mounted 20 feet or greater above any accessible walking or working surface.

Maximum Predicted MPE Level on Site:	% of MPE Limit:	Location:
Accessible **General Population** MPE Limits:	**0.16%**	**AT&T Sector G**
Accessible **Occupational** MPE Limits:	**0.03%**	

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**0.07%**
Ground Level **Occupational** MPE Limits:	**0.01%**

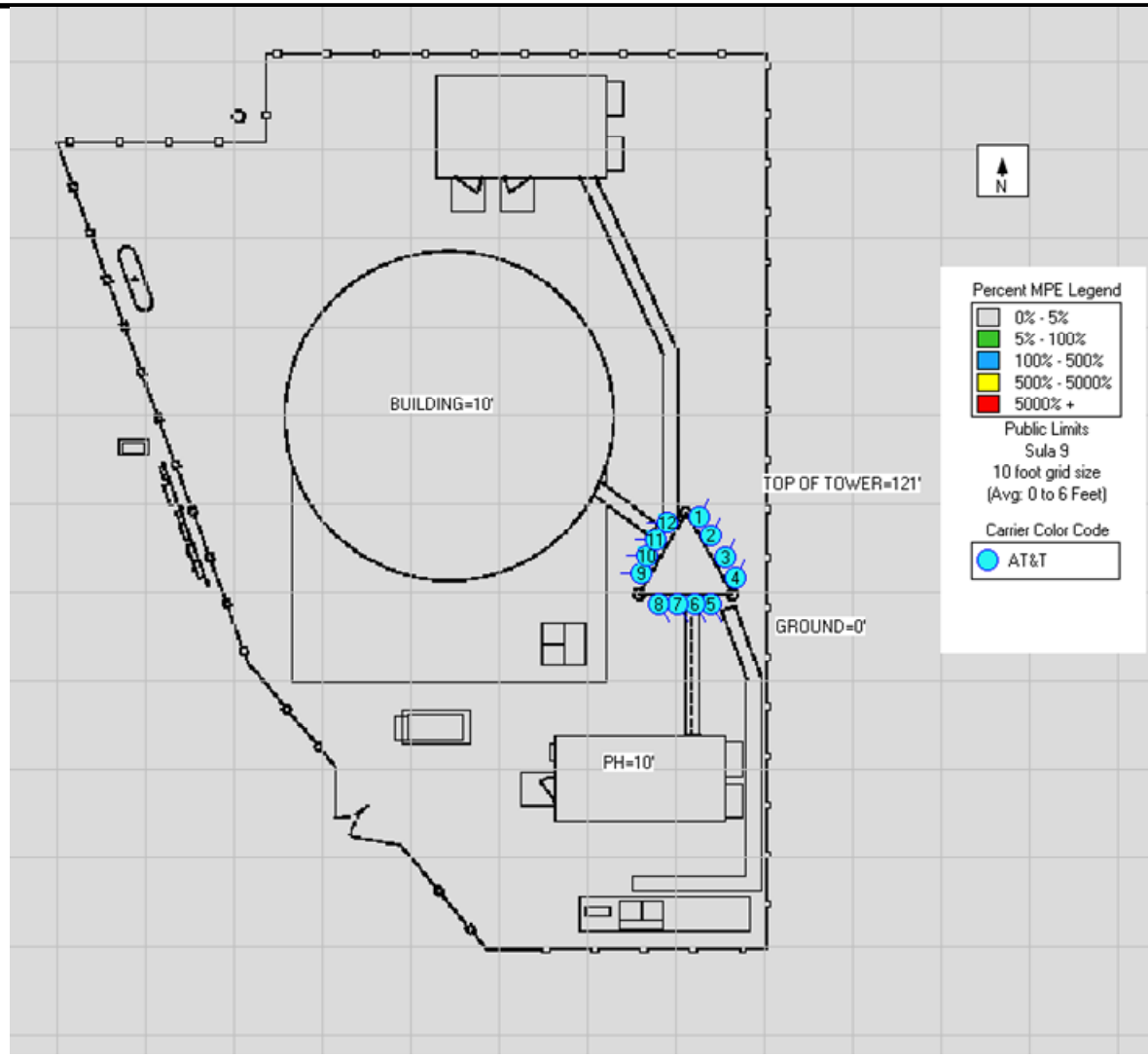
Sector A: Transmitting over Main Roof Level	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.07%**	**0**
Accessible **Occupational** MPE Limits:	**0.01%**	**0**

Sector B: Transmitting over Adjacent Penthouse	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.08%**	**0**
Accessible **Occupational** MPE Limits:	**0.02%**	**0**

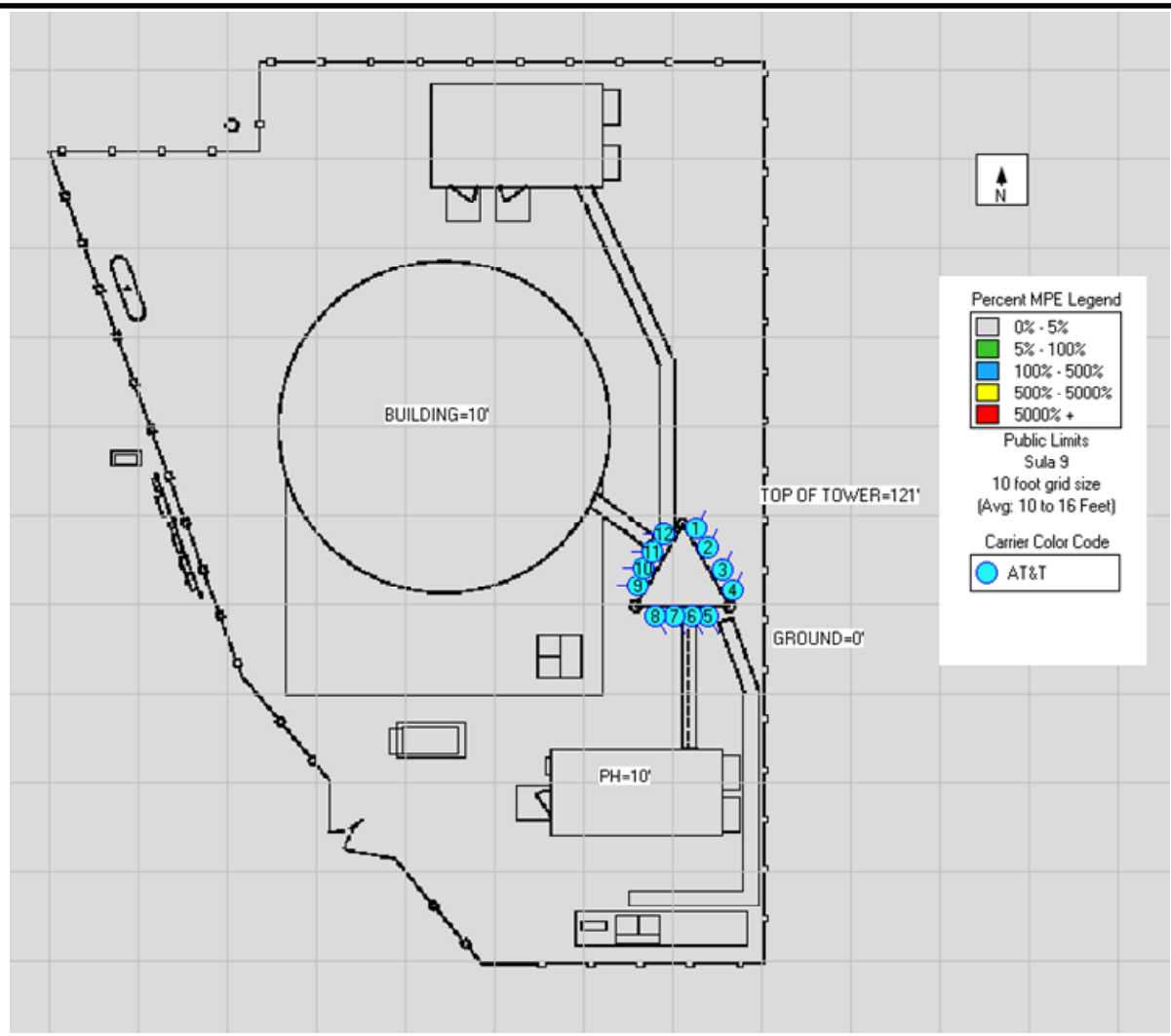
Sector G: Transmitting over Adjacent Building	% of MPE Limit:	*Distance from Antenna:
Accessible **General Population** MPE Limits:	**0.16%**	**0**
Accessible **Occupational** MPE Limits:	**0.03%**	**0**

**Distance from Antenna is the distance that the MPE limits are exceeded from the front face of the antenna, outward across an accessible area.*

5.0 EMISSIONS DIAGRAMS



Emissions Thresholds for AT&T (Ground Level 0ft.) Wilton Deer Run Road / 10092833



Emissions Thresholds for All Sources (Adjacent Level 10ft.) Wilton Deer Run Road / 10092833

6.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the tower facility located at 160 Deer Run Road in Wilton, Connecticut is in compliance with FCC Regulations.

6.1 STATEMENT OF AT&T MOBILITY COMPLIANCE

Based on the information analyzed, AT&T is in compliance with FCC Regulations. No additional action is required by AT&T.

6.2 RECOMMENDATIONS

Recommended Signage and Barriers (AT&T Sectors)								
Location	Green Info 1	Green Info 2	Blue Notice	Blue Notice 2	Yellow Caution	Yellow Caution 2	Red Warning 2	Barriers
Alpha	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0
Tower Access	0	0	0	0	0	0	0	0

Notes:

- There are no further actions required, this site is compliant.

7.0 FALL ARREST AND PARAPET INFORMATION

As per AT&T barrier policy, rooftop edges that are protected with a 39-inch parapet wall or guardrail are safe for work activity within six (6) feet of the edge. OSHA has stated that an existing 39-inch guardrail or parapet provides sufficient protection for employees. The height of the top rail or equivalent component of guardrail systems in new construction shall be at least 42 inches above the walking or working surface. It should also be noted that the height of the parapet or guardrail may be reduced to no less than 30 inches at any point provided the sum of the depth (horizontal distance) of the top edge, and the height of the top edge (vertical distance from the work surface to the top edge of the top member, is at least 48 inches. If there is no reason for working atop the roof, then edge protection is not required. In addition, workers may use personnel lifts or temporary fall protection measures to perform work within 6 feet of the roof edge in place of permanent edge protection. Reference: 29 CFR 1910.28, 29 CFR 1910.23 (NPRM-1990); OSHA Letters of Interpretation 2/9/83 and 3/8/9

APPENDIX A: RF SIGNAGE

AT&T RF Signage

Sign	Description	Sign	Description
	**Information 1 Sign** Gives guidelines on how to proceed and who to contact regarding areas that may exceed either the FCC's General Population or Occupational emissions limits.		**Information 2 Sign** Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	**Blue Notice 1 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Blue Notice 2 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population emissions limits. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Blue Notice 1 signs.
	**Yellow Caution 1 Sign-Rooftop** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Yellow Caution 2 Sign-Rooftop** Used to alert individuals that they are entering an area that may exceed the FCC's Occupational emissions limit. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Yellow Caution 1 signs.
	**Yellow Caution 1 Sign-Tower** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limits. Must be placed at the base of the tower to warn tower climbers of potential for exposure.		**Warning 2 Sign** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational emissions limit by a factor of 10 or greater. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.

APPENDIX B: FCC GUIDELINES AND EMISSIONS THRESHOLD LIMITS

All power density values used in this report were 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 ($\mu W/cm^2$). The number of $\mu W/cm^2$ 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 public 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 public 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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, have been properly trained in RF safety 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 (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

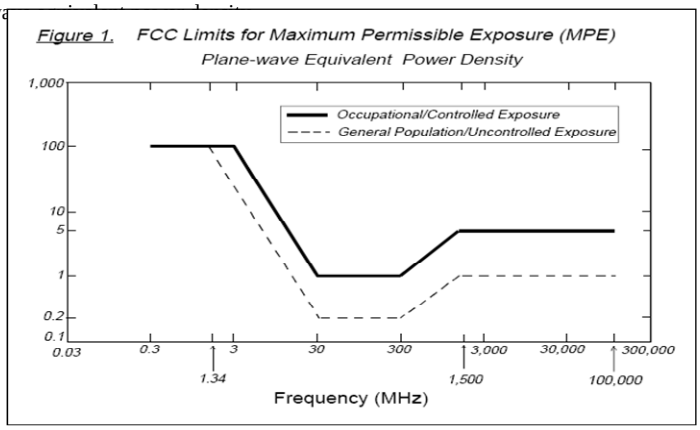
The FCC Mandates that if a site is found to be out of compliance with regard to emissions that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits will be responsible for bringing the site into compliance.

Additional details can be found in FCC OET 65.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-I,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-I,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wa



APPENDIX C: CALCULATION METHODOLOGY

Centerline Communications, LLC has performed theoretical modeling using Waterford Consultants' RoofMaster™ 2015 Version 19.9.7.19 which uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is very accurate with very low antenna centerlines, such as rooftops, where persons can get very close to the antennas and pass through fields in close proximity.

The modeling is based on worst-case assumptions for the number of antennas and transmitter power. No losses were included in the power calculations unless they were specifically provided for the project.

APPENDIX D: CERTIFICATIONS

I, Alex Van Abbema, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Alex Van Abbema

5/19/2020

I, Brandon Green, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Brandon Green

5/19/2020

APPENDIX E: PROPRIETARY STATEMENT

This report was prepared for the use of AT&T Mobility, LLC to meet requirements specified in AT&T's corporate RF safety guidelines. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by Centerline Communications, LLC are based solely on the information provided by AT&T Mobility and all observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to Centerline Communications, LLC so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

EXHIBIT 6

FDH INFRASTRUCTURE SERVICES
ENGINEERING INNOVATION

Structural Analysis for
SBA Network Services, Inc.

120.0' Self-Support Tower (120.0' AGL)

SBA Site Name: Wilton, CT / Optasite
SBA Site ID: CT98078-L-02
AT&T Site Name: Wilton-Deer Run Road
AT&T Site ID: CT2286
AT&T FA#: 10092833
Site Address: 160 Deer Run Rd, Wilton, CT 06897

FDH Infrastructure Services, LLC Project Number PR-003788

Analysis Results

Tower Components	74.7%	Sufficient
Foundation	33.6%	Sufficient

Prepared By:

Chaitanya Shetti
Project Engineer II

Reviewed By:

Krystyn M. Perez, PE
Vice President, Structural Engineering
CT License No. 32975

STATE OF CONNECTICUT
KRYSTYN M. PEREZ
No. 32975
LICENSED
PROFESSIONAL ENGINEER
05-22-2020

FDH Infrastructure Services, LLC
6521 Meridien Drive
Raleigh, NC, 27616
(919) 755-1012
Structural@fdh-is.com

May 22, 2020

Prepared pursuant to the ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2018 Connecticut State Building Code

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EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Infrastructure Services, LLC performed a structural analysis of the existing Self-Support Tower located in Wilton, CT to determine whether the tower is structurally adequate to support the antenna configuration in place per **Table 1** pursuant to the *ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2018 Connecticut State Building Code*. Information pertaining to the antenna loading, current tower geometry, member sizes, and below grade parameters was obtained from:

Source	Document Type	Reference	Date
World Tower	Tower & Foundation Drawings	Drawing No. Q06515	October 16, 2006
JGI Eastern,Inc.	Geotechnical Report	Project No. 06517G	August 31, 2006
FDH Infrastructure Services, LLC	Tower Mapping	Project No. 18TBQN1500	December 12, 2018
FDH Infrastructure Services, LLC	Previous Structural Analysis	Project No. 18TBQD1400	December 19, 2018
AT&T	Collocation Application	App ID: 133108	May 11, 2020
SBA Network Services,Inc.			

This analysis has been performed in accordance with the *2018 Connecticut State Building Code* based upon an *ultimate 3-second gust wind speed* of 120 mph without ice converted to a *nominal 3-second gust wind speed* of 93 mph without ice per *Section 1609.3 and Appendix N* as required for use in the *TIA-222-G* Standard per *Exception #5 of Section 1609.1.1*. A basic design wind speed of 50 mph with 3/4" radial ice was used in this analysis. Ice is considered to increase with height. Exposure Category B with a maximum topographic factor, Kzt, of 1, Risk Category II, and Spectral Response Accelerations of Ss=0.231 and S1=0.068 were used in this analysis.

Note: Per *Section 2.7.3* of the *ANSI/TIA-222-G* Standard, the seismic/earthquake loading effects can be ignored if the spectral response acceleration at short periods (S_S) is less than or equal to 1.00. The tower's location mandates a design S_S of less than 1.00, thus seismic loading was not considered as part of the analysis of this structure.

Conclusions

With the antenna configuration in place per **Table 1** we have determined the tower stress level to be sufficient and the foundation(s) to be sufficient pursuant to the requirements stipulated by *ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2018 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Infrastructure Services, LLC is accurate (i.e., the structure member information, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the current analysis standards are met with the antenna configuration in place per **Table 1**, we have the following recommendations:

1. Feed lines to be installed as shown in **Figure 1** in the **Appendix**.
2. RRU/RRH Stipulation: The equipment may be installed in any arrangement as determined by the client.
3. The existing TMAs should be installed directly behind the proposed/existing panel antennas.

APPURTENANCE LISTING

The antennas and equipment, with their corresponding feed lines, considered for this analysis are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Infrastructure Services, LLC should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
126.5	(2) 3" Ø x 12'Omni	(2) 7/8"	---	122.0	(3) 2.4" Ø x 7' Pipe Mounts
121.0	(3) Ericsson KRY 112 144/1	(6) 1-5/8" (1) 1-1/4" Hybrid	T-Mobile	118.0	(3) 6.7'x 1' T-Arms
120.0	(3) Commscope LNX-6515DS-VTM				
119.5	(3) Ericsson Air 21 B4A/B2P (3) Ericsson Air 21 B2A/B4P				
118.0	(3) Ericsson S11B12				
110.0	(3) Powerwave 7770 (3) Kathrein 800-10965 (3) Powerwave P65-16-XLH-RR (6) Powerwave LGP 21401 (3) Powerwave TT19-08BP111-001 (3) Ericsson RRUS-11 (3) Ericsson RRUS 4478 B5 (3) Ericsson RRUS 4415 B25 (2) Raycap DC6-48-60-18-8F	(12) 1-5/8" (4) 3/4" DC (2) 3/8" Fiber (2) 3/8" Alarm Cables (1) 3" Flex	AT&T	110.0	(3) 12' Sector Mounts [Sabre P/N: C10857001C]
99.5	(2) Raycap RC2DC-3315-PF48 (3) Alcatel Lucent B66A RRH4x45	(12) 1-5/8" (2) 1-5/8" Hybrid	Verizon	96.5	(3) 10'x2' T-Frames
99.0	(6) Andrew SBNHH-1D85B				
98.0	(6) RFS RDR6004 (3) RFS 80090/8				
97.0	(3) Alcatel Lucent B13 RRH4x30-4R				
86.0	(3) 60"x12"x4.5" Panels	(9) 1-5/8" (2) 1-1/2"	Sprint	86.0	(3) 2.7' Stand-Offs
57.0	(1) Scala PR-850	(1) 7/8"		57.0	Direct
	(1) Scala PR-850	(2) 7/8"		55.0	(1) 1.9"x9.8' Pipe Mount
51.0	(1) Scala PR-850				

Proposed Carrier Final Loading:

Antenna Elevation (ft)	Description	Feed Lines	Carrier	Mount Elevation (ft)	Mount Type
110.0	(3) Powerwave 7770 (3) Kathrein 800-10965 (3) Powerwave P65-16-XLH-RR (3) CCI OPA65R-BU6DA (6) Powerwave LGP 21401 (3) Powerwave TT19-08BP111-001 (3) Ericsson RRUS-11 (3) Ericsson RRUS 4478 B5 (3) Ericsson RRUS 4415 B25 (3) Ericsson RRUS 4478 B14 (2) Raycap DC6-48-60-18-8F	(12) 1-5/8" (4) 3/4" DC (2) 3/8" Fiber (2) 3/8" Alarm Cables (1) 3" Flex	AT&T	110.0	(3) 12' Sector Mounts [Sabre P/N: C10857001C]

RESULTS

The following material grades for individual members were used for analysis:

Table 2 - Material Grade

Member Type	Material Grade
Legs	A572-50
Bracing	A36
Anchor Rods	A449

Table 3 and **Table 4** display the summary of capacities for the analyzed structure and its additional components. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 5** displays the maximum dish rotations at service winds speeds.

If the assumptions outlined in this report differ from actual field conditions, FDH Infrastructure Services, LLC should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 - Structure Member Capacities

Section No.	Elevation (ft.)	Component Type	Size	% Capacity	Pass / Fail
T1	120 - 100	Leg	1 3/4	61.8	Pass
T2	100 - 80	Leg	2 1/2	55.2	Pass
T3	80 - 60	Leg	2 3/4	62.2	Pass
T4	60 - 40	Leg	3	64.4	Pass
T5	40 - 20	Leg	3 1/4	63.0	Pass
T6	20 - 0	Leg	3 1/2	59.8	Pass
T1	120 - 100	Diagonal	L2x2x3/16	24.7 38.6 (b)	Pass
T2	100 - 80	Diagonal	L2x2x3/16	48.0 74.6 (b)	Pass
T3	80 - 60	Diagonal	L2x2x3/16	36.8 48.3 (b)	Pass
T4	60 - 40	Diagonal	L2x2x3/16	55.5	Pass
T5	40 - 20	Diagonal	L3x3x1/4	35.3 48.6 (b)	Pass
T6	20 - 0	Diagonal	L3x3x1/4	40.1 46.8 (b)	Pass
T5	40 - 20	Secondary Horizontal	L2x2x1/8	53.3	Pass
T6	20 - 0	Secondary Horizontal	L2x2x1/8	74.7	Pass
T1	120 - 100	Top Girt	L2x2x1/8	9.8 10.3 (b)	Pass
T3	80 - 60	Top Girt	L2x2x1/8	5.0 5.4 (b)	Pass

Table 4 – Additional Structure Component Capacities

Elevation (ft.)	Component	% Capacity	Pass / Fail	Notes
0	Anchor Rods	61.3	Pass	-
0	Base Foundation (Soil Interaction)	33.6	Pass	-
0	Base Foundation (Structural)	30.4	Pass	-

Table 5 - Maximum Dish Rotations at Service Wind Speeds

Centerline Elevation (ft.)	Dish	Tilt (deg)*	Twist (deg)*
57.0	(2) Scala PR-850	0.0893	0.0144
51.0	(1) Scala PR-850	0.0785	0.0116

*Allowable tilt and twist to be reviewed by the carrier

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Infrastructure Services, LLC should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Infrastructure Services, LLC.

APPENDIX

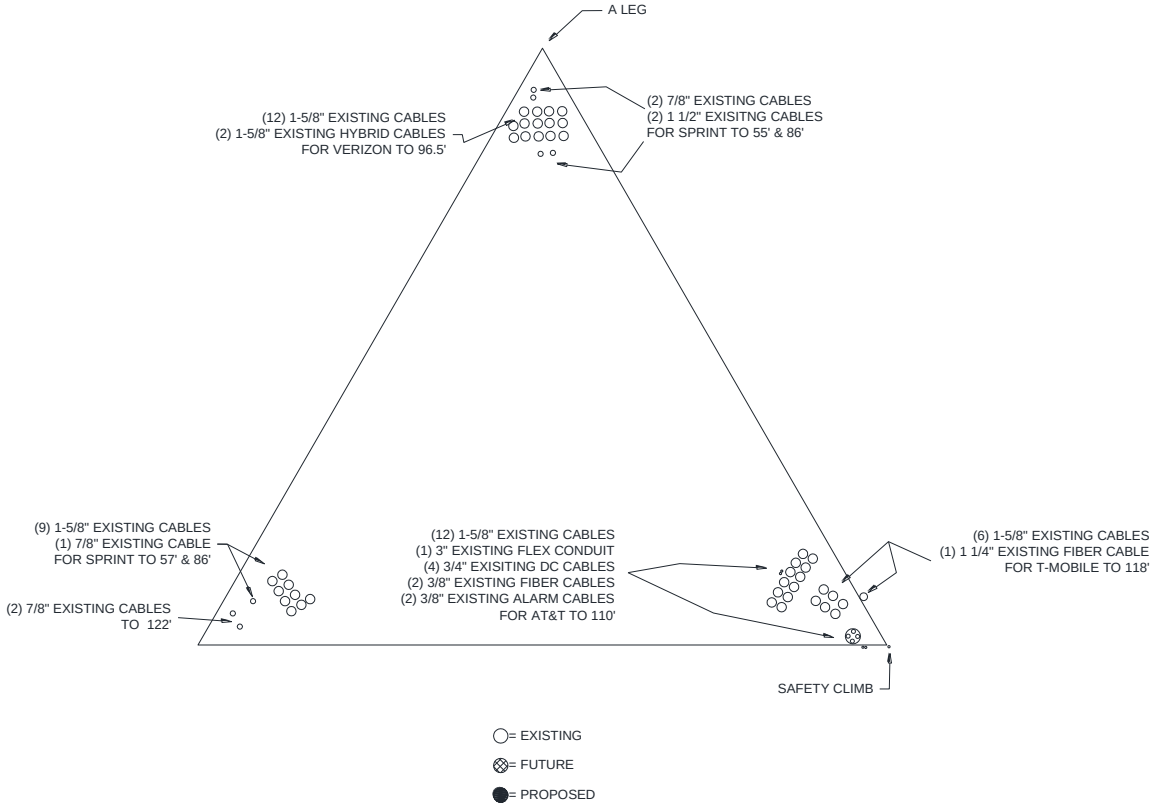
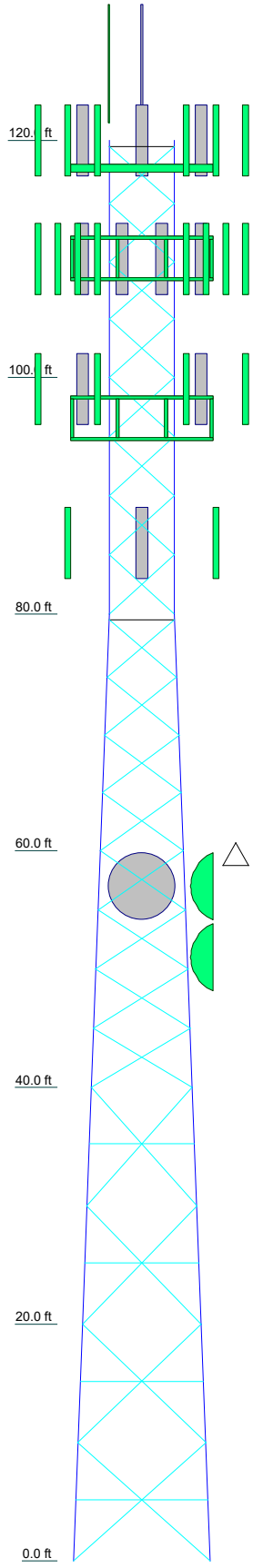


Figure 1- Feed Line Layout

Section		T1	T2	T3	T4	T5	T6	
Legs		SR 1 3/4	SR 2 1/2	SR 2 3/4	SR 3	SR 3 1/4	SR 3 1/2	
Leg Grade		A572-50						
Diagonals		L2x2x3/16				L3x3x1/4		
Diagonal Grade		A36						
Top Girts		L2x2x1/8	N.A.	L2x2x1/8	N.A.			
Sec. Horizontals		N.A.		N.A.		L2x2x1/8		
Face Width (ft)	11.5	5.5		7		8.5	10	
# Panels @ (ft)		4 @ 4.875	4 @ 5	4 @ 4.875	4 @ 5	4 @ 10		
Weight (K)	11.6	0.9	1.4	1.7	2.0	2.6	2.9	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
3"x12' Omni	122	TT19-08BP111-001	110
3"x12' Omni	122	TT19-08BP111-001	110
2.4" x 7' Pipe Mount	122	RRUS-11	110
2.4" x 7' Pipe Mount	122	RRUS-11	110
2.4" x 7' Pipe Mount	122	RRUS-11	110
Lightning Rod	120	RRUS 4478 B5	110
KRY 112 144/1	118	RRUS 4478 B5	110
KRY 112 144/1	118	RRUS 4478 B5	110
KRY 112 144/1	118	RRUS 4415 B25	110
LNX-6515DS-VTM w/ Mount Pipe	118	RRUS 4415 B25	110
LNX-6515DS-VTM w/ Mount Pipe	118	RRUS 4415 B25	110
LNX-6515DS-VTM w/ Mount Pipe	118	DC6-48-60-18-8F	110
AIR 21 B2A/B4P w/Mount Pipe	118	DC6-48-60-18-8F	110
AIR 21 B2A/B4P w/Mount Pipe	118	(3) 12' Sector Mounts [Sabre C10857001C]	110
AIR 21 B2A/B4P w/Mount Pipe	118		
AIR 21 B4A/B2P w/Mount Pipe	118	RC2DC-3315-PF-48	96.5
AIR 21 B4A/B2P w/Mount Pipe	118	RC2DC-3315-PF-48	96.5
AIR 21 B4A/B2P w/Mount Pipe	118	B66A RRH4X45	96.5
S11B12	118	B66A RRH4X45	96.5
S11B12	118	B66A RRH4X45	96.5
S11B12	118	(2) SBNHH-1D85B w/Mount Pipe	96.5
Mount Pipe	118	(2) SBNHH-1D85B w/Mount Pipe	96.5
Mount Pipe	118	(2) SBNHH-1D85B w/Mount Pipe	96.5
Mount Pipe	118	(2) FDR6004/6	96.5
(3) 6.7' x 1' T-Arms	118	(2) FDR6004/6	96.5
OPA65R-BU6DA w/ Mount Pipe	110	(2) FDR6004/6	96.5
OPA65R-BU6DA w/ Mount Pipe	110	80090-8	96.5
OPA65R-BU6DA w/ Mount Pipe	110	80090-8	96.5
RRUS 4478 B14	110	80090-8	96.5
RRUS 4478 B14	110	B13 RRH 4x30-4R	96.5
RRUS 4478 B14	110	B13 RRH 4x30-4R	96.5
7770 w/Mount Pipe	110	B13 RRH 4x30-4R	96.5
7770 w/Mount Pipe	110	(4) Mount Pipe	96.5
7770 w/Mount Pipe	110	(4) Mount Pipe	96.5
800 10965 w/ Mount Pipe	110	(4) Mount Pipe	96.5
800 10965 w/ Mount Pipe	110	(3) 10' x 2' T-Arms	96.5
800 10965 w/ Mount Pipe	110	60" x 12" x 5" w/ Mount Pipe	86
P65-16-XLH-RR w/ Mount Pipe	110	60" x 12" x 5" w/ Mount Pipe	86
P65-16-XLH-RR w/ Mount Pipe	110	60" x 12" x 5" w/ Mount Pipe	86
P65-16-XLH-RR w/ Mount Pipe	110	(3) 2.7' StandOffs	86
(2) LGP21401 TMA	110	PR-850	57
(2) LGP21401 TMA	110	1.9"Ø x 9.8' Pipe Mount	55
(2) LGP21401 TMA	110	PR-850	55
TT19-08BP111-001	110	PR-850	55

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

FDH INFRASTRUCTURE SERVICES ENGINEERING INNOVATION
FDH-IS

FDH Infrastructure Services
6521 Meridien Drive
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Phone: (919) 755-1012
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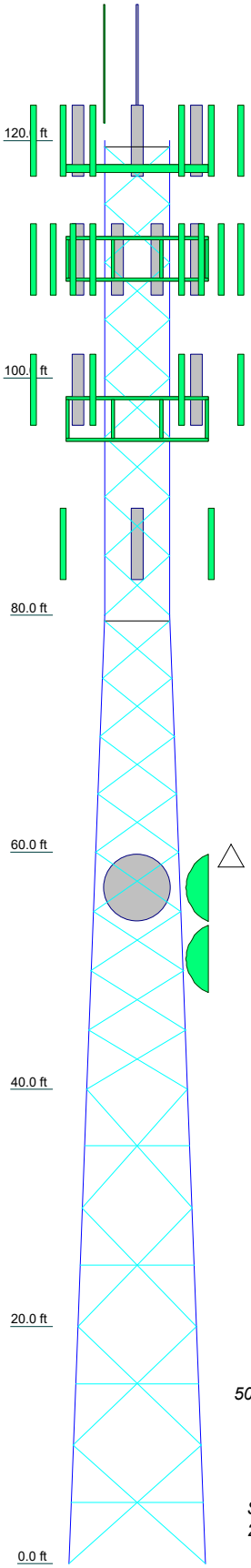
Job: ***CT98078-L, Wilton, CT/Optasite***			
Project: ***PR-003788***			
Client: SBA Network Services, Inc.	Drawn by: Chaitanya Shetti	App'd:	
Code: TIA-222-G	Date: 05/22/20	Scale: NTS	
Path:		Dwg No. E-1	



Section	T1	T2	T3	T4	T5	T6	
Legs	SR 1 3/4	SR 2 1/2	SR 2 3/4	SR 3	SR 3 1/4	SR 3 1/2	
Leg Grade	A572-50						
Diagonals	L2x2x3/16				L3x3x1/4		
Diagonal Grade	A36						
Top Girts	L2x2x1/8	N.A.	L2x2x1/8	N.A.	N.A.		
Sec. Horizontals	N.A.				L2x2x1/8		
Face Width (ft)	5.5		7		8.5	10	11.5
# Panels @ (ft)	4 @ 4.875	4 @ 5	4 @ 4.875	4 @ 5	4 @ 10		
Weight (K)	0.9	1.4	1.7	2.0	2.6	2.9	11.6

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 74.7%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 186 K
SHEAR: 14 K

UPLIFT: -160 K
SHEAR: 13 K

AXIAL 81 K
SHEAR 7 K *MOMENT 570 kip-ft*
TORQUE 4 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 32 K
SHEAR 23 K *MOMENT 1744 kip-ft*
TORQUE 10 kip-ft
REACTIONS - 93 mph WIND

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FDH-IS

Job: *CT98078-L, Wilton, CT/Optasite*			
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Client: SBA Network Services, Inc.	Drawn by: Chaitanya Shetti	App'd:	
Code: TIA-222-G	Date: 05/22/20	Scale: NTS	
Path:		Dwg No. E-1	

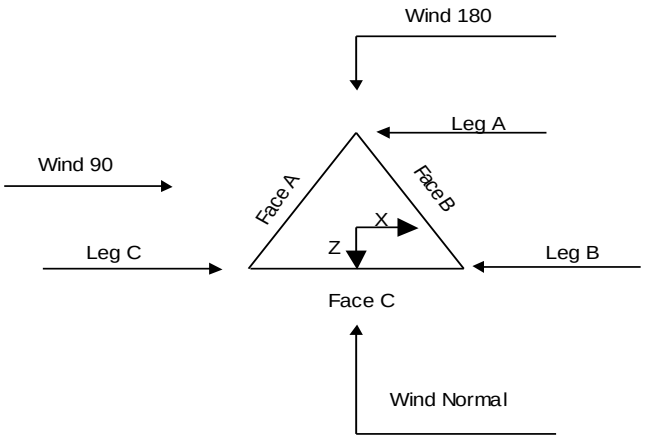
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.50 ft at the top and 11.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	120.00-100.00			5.50	1	20.00
T2	100.00-80.00			5.50	1	20.00
T3	80.00-60.00			5.50	1	20.00
T4	60.00-40.00			7.00	1	20.00
T5	40.00-20.00			8.50	1	20.00
T6	20.00-0.00			10.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	120.00-100.00	4.88	X Brace	No	No	6.0000	0.0000
T2	100.00-80.00	5.00	X Brace	No	No	0.0000	0.0000
T3	80.00-60.00	4.88	X Brace	No	No	6.0000	0.0000
T4	60.00-40.00	5.00	X Brace	No	No	0.0000	0.0000
T5	40.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T6	20.00-0.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 120.00-100.00	Solid Round	1 3/4	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T2 100.00-80.00	Solid Round	2 1/2	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 80.00-60.00	Solid Round	2 3/4	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 60.00-40.00	Solid Round	3	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T5 40.00-20.00	Solid Round	3 1/4	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T6 20.00-0.00	Solid Round	3 1/2	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 120.00-100.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 80.00-60.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T5 40.00-20.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 20.00-0.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
100.00-80.00			(36 ksi)						
T3 80.00-60.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T4 60.00-40.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T5 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						
T6 20.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000	36.0000
			(36 ksi)						

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	0.5	1
T6 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
120.00-100.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.00-80.00														
T3 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 120.00-100.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.3750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 100.00-80.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 80.00-60.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.3750 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 60.00-40.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 40.00-20.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0
T6 20.00-0.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***													
Safety Line 3/8	B	No	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.5	1	1	0.0000	0.3750		0.22
***													
***													
1-5/8"	A	No	No	Ar (CaAa)	118.00 - 0.00	-85.0000	0	6	2	0.5000	1.9800		0.82
1-1/4"	B	No	No	Ar (CaAa)	118.00 - 0.00	0.0000	0.4	1	1	0.5000	1.5500		0.66
T-Brackets	A	No	No	Af (CaAa)	110.00 - 8.50	-100.0000	0	1	1	1.0000	1.0000		4.20
***													
1-5/8"	A	No	No	Ar (CaAa)	110.00 - 0.00	-75.0000	0	12	6	0.5000	1.9800		0.82
3"	C	No	No	Ar (CaAa)	110.00 - 0.00	-0.5000	-0.43	1	1	0.5000	3.0100		1.78
3/8"	A	No	No	Ar (CaAa)	110.00 - 0.00	-72.0000	0	2	2	0.0000	0.3750		0.18
3/8"	C	No	No	Ar (CaAa)	110.00 - 0.00	0.0000	-0.45	2	2	0.0000	0.3750		0.18
***													
1-5/8"	C	No	No	Ar (CaAa)	96.50 - 9.50	-85.0000	0	14	4	0.5000	1.9800		0.82
T-Brackets	C	No	No	Af (CaAa)	95.00 - 9.50	-95.0000	0	1	1	1.0000	1.0000		4.20
***													
1-5/8"	B	No	No	Ar (CaAa)	86.00 - 9.00	-80.0000	0	9	4	0.5000	1.9800		0.82
7/8"	B	No	No	Ar (CaAa)	57.00 - 9.00	-85.0000	0	1	1	0.5000	1.1100		0.54

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8"	B	No	No	Ar (CaAa)	120.00 - 9.00	-90.0000	0	2	2	0.5000	1.1100		0.54
7/8"	C	No	No	Ar (CaAa)	55.00 - 9.50	-90.0000	0.02	2	1	0.5000	1.1100		0.54
7/8"	C	No	No	Ar (CaAa)	86.00 - 9.50	-78.0000	0	2	2	0.5000	1.1100		0.54
T-Brackets	B	No	No	Af (CaAa)	95.00 - 8.50	-95.0000	0	1	1	1.0000	1.0000		4.20
***													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
***											
3/4"	C	No	No	CaAa (In Face)	110.00 - 0.00	-0.5000	-0.43	4	No Ice	0.00	1.78
									1/2" Ice	0.00	0.00
									1" Ice	0.00	0.00
***											

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	120.00-100.00	A	0.000	0.000	47.561	0.000	0.23
		B	0.000	0.000	7.905	0.000	0.04
		C	0.000	0.000	3.760	0.000	0.09
T2	100.00-80.00	A	0.000	0.000	76.113	0.000	0.39
		B	0.000	0.000	21.482	0.000	0.15
		C	0.000	0.000	57.090	0.000	0.44
T3	80.00-60.00	A	0.000	0.000	76.113	0.000	0.39
		B	0.000	0.000	47.263	0.000	0.27
		C	0.000	0.000	70.733	0.000	0.52
T4	60.00-40.00	A	0.000	0.000	76.113	0.000	0.39
		B	0.000	0.000	49.150	0.000	0.28
		C	0.000	0.000	74.063	0.000	0.54
T5	40.00-20.00	A	0.000	0.000	76.113	0.000	0.39
		B	0.000	0.000	49.483	0.000	0.28
		C	0.000	0.000	75.173	0.000	0.54
T6	20.00-0.00	A	0.000	0.000	74.697	0.000	0.35
		B	0.000	0.000	29.032	0.000	0.16
		C	0.000	0.000	43.038	0.000	0.37

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	120.00-100.00	A	1.692	0.000	0.000	65.480	0.000	1.12
		B		0.000	0.000	34.596	0.000	0.40
		C		0.000	0.000	13.378	0.000	0.17
T2	100.00-80.00	A	1.658	0.000	0.000	104.201	0.000	1.78
		B		0.000	0.000	55.570	0.000	0.80
		C		0.000	0.000	76.623	0.000	1.37
T3	80.00-60.00	A	1.617	0.000	0.000	103.186	0.000	1.74
		B		0.000	0.000	85.609	0.000	1.34
		C		0.000	0.000	98.897	0.000	1.69
T4	60.00-40.00	A	1.564	0.000	0.000	101.867	0.000	1.70
		B		0.000	0.000	91.420	0.000	1.40
		C		0.000	0.000	110.879	0.000	1.81
T5	40.00-20.00	A	1.486	0.000	0.000	99.949	0.000	1.64
		B		0.000	0.000	90.355	0.000	1.35
		C		0.000	0.000	112.581	0.000	1.79
T6	20.00-0.00	A	1.331	0.000	0.000	92.465	0.000	1.44
		B		0.000	0.000	53.886	0.000	0.75
		C		0.000	0.000	66.991	0.000	0.98

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	120.00-100.00	13.1190	11.6367	12.6312	12.3848
T2	100.00-80.00	11.0688	3.7047	11.3744	5.8031
T3	80.00-60.00	5.2078	3.4074	6.5436	4.2762
T4	60.00-40.00	4.5618	2.4344	5.5911	2.9227
T5	40.00-20.00	4.2069	2.0214	5.6727	2.6252
T6	20.00-0.00	6.9464	4.3308	9.3562	5.4594

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	Safety Line 3/8	100.00 - 118.00	0.6000	0.6000
T1	5	1-5/8"	100.00 - 118.00	0.6000	0.6000
T1	6	1-1/4"	100.00 - 118.00	0.6000	0.6000
T1	9	T-Brackets	100.00 - 110.00	0.6000	0.6000
T1	11	1-5/8"	100.00 - 110.00	0.6000	0.6000
T1	12	3"	100.00 - 110.00	0.6000	0.6000
T1	13	3/4"	100.00 - 110.00	0.6000	0.6000
T1	14	3/8"	100.00 - 110.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	15	3/8"	100.00 - 110.00	0.6000	0.6000
T1	22	7/8"	100.00 - 120.00	0.6000	0.6000
T2	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T2	5	1-5/8"	80.00 - 100.00	0.6000	0.6000
T2	6	1-1/4"	80.00 - 100.00	0.6000	0.6000
T2	9	T-Brackets	80.00 - 100.00	0.6000	0.6000
T2	11	1-5/8"	80.00 - 100.00	0.6000	0.6000
T2	12	3"	80.00 - 100.00	0.6000	0.6000
T2	13	3/4"	80.00 - 100.00	0.6000	0.6000
T2	14	3/8"	80.00 - 100.00	0.6000	0.6000
T2	15	3/8"	80.00 - 100.00	0.6000	0.6000
T2	17	1-5/8"	80.00 - 96.50	0.6000	0.6000
T2	18	T-Brackets	80.00 - 95.00	0.6000	0.6000
T2	20	1-5/8"	80.00 - 86.00	0.6000	0.6000
T2	22	7/8"	80.00 - 100.00	0.6000	0.6000
T2	24	7/8"	80.00 - 86.00	0.6000	0.6000
T2	25	T-Brackets	80.00 - 95.00	0.6000	0.6000
T3	2	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T3	5	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	6	1-1/4"	60.00 - 80.00	0.6000	0.6000
T3	9	T-Brackets	60.00 - 80.00	0.6000	0.6000
T3	11	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	12	3"	60.00 - 80.00	0.6000	0.6000
T3	13	3/4"	60.00 - 80.00	0.6000	0.6000
T3	14	3/8"	60.00 - 80.00	0.6000	0.6000
T3	15	3/8"	60.00 - 80.00	0.6000	0.6000
T3	17	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	18	T-Brackets	60.00 - 80.00	0.6000	0.6000
T3	20	1-5/8"	60.00 - 80.00	0.6000	0.6000
T3	22	7/8"	60.00 - 80.00	0.6000	0.6000
T3	24	7/8"	60.00 - 80.00	0.6000	0.6000
T3	25	T-Brackets	60.00 - 80.00	0.6000	0.6000
T4	2	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T4	5	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	6	1-1/4"	40.00 - 60.00	0.6000	0.6000
T4	9	T-Brackets	40.00 - 60.00	0.6000	0.6000
T4	11	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	12	3"	40.00 - 60.00	0.6000	0.6000
T4	13	3/4"	40.00 - 60.00	0.6000	0.6000
T4	14	3/8"	40.00 - 60.00	0.6000	0.6000
T4	15	3/8"	40.00 - 60.00	0.6000	0.6000
T4	17	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	18	T-Brackets	40.00 - 60.00	0.6000	0.6000
T4	20	1-5/8"	40.00 - 60.00	0.6000	0.6000
T4	21	7/8"	40.00 - 57.00	0.6000	0.6000
T4	22	7/8"	40.00 - 60.00	0.6000	0.6000
T4	23	7/8"	40.00 - 55.00	0.6000	0.6000
T4	24	7/8"	40.00 - 60.00	0.6000	0.6000
T4	25	T-Brackets	40.00 - 60.00	0.6000	0.6000
T5	2	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T5	5	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	6	1-1/4"	20.00 - 40.00	0.6000	0.6000
T5	9	T-Brackets	20.00 - 40.00	0.6000	0.6000
T5	11	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	12	3"	20.00 - 40.00	0.6000	0.6000
T5	13	3/4"	20.00 - 40.00	0.6000	0.6000
T5	14	3/8"	20.00 - 40.00	0.6000	0.6000
T5	15	3/8"	20.00 - 40.00	0.6000	0.6000
T5	17	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	18	T-Brackets	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	20	1-5/8"	20.00 - 40.00	0.6000	0.6000
T5	21	7/8"	20.00 - 40.00	0.6000	0.6000
T5	22	7/8"	20.00 - 40.00	0.6000	0.6000
T5	23	7/8"	20.00 - 40.00	0.6000	0.6000
T5	24	7/8"	20.00 - 40.00	0.6000	0.6000
T5	25	T-Brackets	20.00 - 40.00	0.6000	0.6000
T6	2	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T6	5	1-5/8"	0.00 - 20.00	0.6000	0.6000
T6	6	1-1/4"	0.00 - 20.00	0.6000	0.6000
T6	9	T-Brackets	8.50 - 20.00	0.6000	0.6000
T6	11	1-5/8"	0.00 - 20.00	0.6000	0.6000
T6	12	3"	0.00 - 20.00	0.6000	0.6000
T6	13	3/4"	0.00 - 20.00	0.6000	0.6000
T6	14	3/8"	0.00 - 20.00	0.6000	0.6000
T6	15	3/8"	0.00 - 20.00	0.6000	0.6000
T6	17	1-5/8"	9.50 - 20.00	0.6000	0.6000
T6	18	T-Brackets	9.50 - 20.00	0.6000	0.6000
T6	20	1-5/8"	9.00 - 20.00	0.6000	0.6000
T6	21	7/8"	9.00 - 20.00	0.6000	0.6000
T6	22	7/8"	9.00 - 20.00	0.6000	0.6000
T6	23	7/8"	9.50 - 20.00	0.6000	0.6000
T6	24	7/8"	9.50 - 20.00	0.6000	0.6000
T6	25	T-Brackets	8.50 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod	C	None			0.0000	120.00	No Ice	0.25	0.25	0.03
							1/2" Ice	0.66	0.66	0.03
							1" Ice	0.97	0.97	0.04
***										
3"x12' Omni	A	From Leg	0.00		0.0000	122.00	No Ice	3.60	3.60	0.03
			0.00				1/2" Ice	4.83	4.83	0.05
			4.50				1" Ice	6.08	6.08	0.08
3"x12' Omni	C	From Leg	0.00		0.0000	122.00	No Ice	3.60	3.60	0.03
			0.00				1/2" Ice	4.83	4.83	0.05
			4.50				1" Ice	6.08	6.08	0.08
2.4" x 7' Pipe Mount	A	From Leg	0.00		0.0000	122.00	No Ice	1.68	1.68	0.05
			0.00				1/2" Ice	2.41	2.41	0.06
			0.00				1" Ice	2.83	2.83	0.08
2.4" x 7' Pipe Mount	B	From Leg	0.00		0.0000	122.00	No Ice	1.68	1.68	0.05
			0.00				1/2" Ice	2.41	2.41	0.06
			0.00				1" Ice	2.83	2.83	0.08
2.4" x 7' Pipe Mount	C	From Leg	0.00		0.0000	122.00	No Ice	1.68	1.68	0.05
			0.00				1/2" Ice	2.41	2.41	0.06
			0.00				1" Ice	2.83	2.83	0.08
***										
KRY 112 144/1	A	From Leg	4.00		0.0000	118.00	No Ice	0.35	0.16	0.01
			0.00				1/2" Ice	0.43	0.22	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			3.00			1" Ice	0.51	0.28	0.02
KRY 112 144/1	B	From Leg	4.00	0.0000	118.00	No Ice	0.35	0.16	0.01
			0.00			1/2" Ice	0.43	0.22	0.01
			3.00			1" Ice	0.51	0.28	0.02
KRY 112 144/1	C	From Leg	4.00	0.0000	118.00	No Ice	0.35	0.16	0.01
			0.00			1/2" Ice	0.43	0.22	0.01
			3.00			1" Ice	0.51	0.28	0.02
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	5.31	4.27	0.08
			0.00			1/2" Ice	5.80	4.75	0.17
			2.00			1" Ice	6.30	5.24	0.26
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	5.31	4.27	0.08
			0.00			1/2" Ice	5.80	4.75	0.17
			2.00			1" Ice	6.30	5.24	0.26
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	5.31	4.27	0.08
			0.00			1/2" Ice	5.80	4.75	0.17
			2.00			1" Ice	6.30	5.24	0.26
AIR 21 B2A/B4P w/Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	7.09	6.02	0.12
			0.00			1/2" Ice	7.78	7.17	0.18
			1.50			1" Ice	8.37	8.03	0.25
AIR 21 B2A/B4P w/Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	7.09	6.02	0.12
			0.00			1/2" Ice	7.78	7.17	0.18
			1.50			1" Ice	8.37	8.03	0.25
AIR 21 B2A/B4P w/Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	7.09	6.02	0.12
			0.00			1/2" Ice	7.78	7.17	0.18
			1.50			1" Ice	8.37	8.03	0.25
AIR 21 B4A/B2P w/Mount Pipe	A	From Leg	4.00	0.0000	118.00	No Ice	7.09	6.02	0.12
			0.00			1/2" Ice	7.78	7.17	0.18
			1.50			1" Ice	8.37	8.03	0.24
AIR 21 B4A/B2P w/Mount Pipe	B	From Leg	4.00	0.0000	118.00	No Ice	7.09	6.02	0.12
			0.00			1/2" Ice	7.78	7.17	0.18
			1.50			1" Ice	8.37	8.03	0.24
AIR 21 B4A/B2P w/Mount Pipe	C	From Leg	4.00	0.0000	118.00	No Ice	7.09	6.02	0.12
			0.00			1/2" Ice	7.78	7.17	0.18
			1.50			1" Ice	8.37	8.03	0.24
S11B12	A	From Leg	4.00	0.0000	118.00	No Ice	2.83	1.18	0.05
			0.00			1/2" Ice	3.04	1.33	0.07
			0.00			1" Ice	3.26	1.48	0.10
S11B12	B	From Leg	4.00	0.0000	118.00	No Ice	2.83	1.18	0.05
			0.00			1/2" Ice	3.04	1.33	0.07
			0.00			1" Ice	3.26	1.48	0.10
S11B12	C	From Leg	4.00	0.0000	118.00	No Ice	2.83	1.18	0.05
			0.00			1/2" Ice	3.04	1.33	0.07
			0.00			1" Ice	3.26	1.48	0.10
Mount Pipe	A	From Leg	0.00	0.0000	118.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
Mount Pipe	B	From Leg	0.00	0.0000	118.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
Mount Pipe	C	From Leg	0.00	0.0000	118.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
(3) 6.7' x 1' T-Arms	C	None		0.0000	118.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
***									
OPA65R-BU6DA w/ Mount	A	From Leg	4.00	0.0000	110.00	No Ice	12.25	6.05	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.00				1/2" Ice	13.00	6.71	0.18
			0.00				1" Ice	13.76	7.39	0.27
OPA65R-BU6DA w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	110.00	No Ice	12.25	6.05	0.09
			0.00				1/2" Ice	13.00	6.71	0.18
			0.00				1" Ice	13.76	7.39	0.27
OPA65R-BU6DA w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	110.00	No Ice	12.25	6.05	0.09
			0.00				1/2" Ice	13.00	6.71	0.18
			0.00				1" Ice	13.76	7.39	0.27
RRUS 4478 B14	A	From Leg	4.00	0.00	0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00				1/2" Ice	2.01	1.20	0.08
			0.00				1" Ice	2.19	1.34	0.09
RRUS 4478 B14	B	From Leg	4.00	0.00	0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00				1/2" Ice	2.01	1.20	0.08
			0.00				1" Ice	2.19	1.34	0.09
RRUS 4478 B14	C	From Leg	4.00	0.00	0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00				1/2" Ice	2.01	1.20	0.08
			0.00				1" Ice	2.19	1.34	0.09
7770 w/Mount Pipe	A	From Face	4.00	0.00	0.0000	110.00	No Ice	6.20	4.94	0.07
			0.00				1/2" Ice	6.76	5.86	0.12
			0.00				1" Ice	7.27	6.64	0.19
7770 w/Mount Pipe	B	From Face	4.00	0.00	0.0000	110.00	No Ice	6.20	4.94	0.07
			0.00				1/2" Ice	6.76	5.86	0.12
			0.00				1" Ice	7.27	6.64	0.19
7770 w/Mount Pipe	C	From Face	4.00	0.00	0.0000	110.00	No Ice	6.20	4.94	0.07
			0.00				1/2" Ice	6.76	5.86	0.12
			0.00				1" Ice	7.27	6.64	0.19
800 10965 w/ Mount Pipe	A	From Face	4.00	0.00	0.0000	110.00	No Ice	14.05	7.63	0.14
			0.00				1/2" Ice	14.69	8.90	0.23
			0.00				1" Ice	15.30	9.96	0.34
800 10965 w/ Mount Pipe	B	From Face	4.00	0.00	0.0000	110.00	No Ice	14.05	7.63	0.14
			0.00				1/2" Ice	14.69	8.90	0.23
			0.00				1" Ice	15.30	9.96	0.34
800 10965 w/ Mount Pipe	C	From Face	4.00	0.00	0.0000	110.00	No Ice	14.05	7.63	0.14
			0.00				1/2" Ice	14.69	8.90	0.23
			0.00				1" Ice	15.30	9.96	0.34
P65-16-XLH-RR w/ Mount Pipe	A	From Face	4.00	0.00	0.0000	110.00	No Ice	8.37	6.36	0.08
			0.00				1/2" Ice	8.93	7.54	0.14
			0.00				1" Ice	9.46	8.43	0.22
P65-16-XLH-RR w/ Mount Pipe	B	From Face	4.00	0.00	0.0000	110.00	No Ice	8.37	6.36	0.08
			0.00				1/2" Ice	8.93	7.54	0.14
			0.00				1" Ice	9.46	8.43	0.22
P65-16-XLH-RR w/ Mount Pipe	C	From Face	4.00	0.00	0.0000	110.00	No Ice	8.37	6.36	0.08
			0.00				1/2" Ice	8.93	7.54	0.14
			0.00				1" Ice	9.46	8.43	0.22
(2) LGP21401 TMA	A	From Face	4.00	0.00	0.0000	110.00	No Ice	0.82	0.35	0.02
			0.00				1/2" Ice	0.94	0.44	0.02
			0.00				1" Ice	1.06	0.54	0.03
(2) LGP21401 TMA	B	From Face	4.00	0.00	0.0000	110.00	No Ice	0.82	0.35	0.02
			0.00				1/2" Ice	0.94	0.44	0.02
			0.00				1" Ice	1.06	0.54	0.03
(2) LGP21401 TMA	C	From Face	4.00	0.00	0.0000	110.00	No Ice	0.82	0.35	0.02
			0.00				1/2" Ice	0.94	0.44	0.02
			0.00				1" Ice	1.06	0.54	0.03
TT19-08BP111-001	A	From Face	4.00	0.00	0.0000	110.00	No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
TT19-08BP111-001	B	From Face	4.00	0.00	0.0000	110.00	No Ice	0.55	0.45	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
TT19-08BP111-001	C	From Face	4.00		0.0000	110.00	No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
RRUS-11	A	From Face	4.00		0.0000	110.00	No Ice	2.52	1.07	0.06
			0.00				1/2" Ice	2.72	1.21	0.07
			0.00				1" Ice	2.92	1.36	0.10
RRUS-11	B	From Face	4.00		0.0000	110.00	No Ice	2.52	1.07	0.06
			0.00				1/2" Ice	2.72	1.21	0.07
			0.00				1" Ice	2.92	1.36	0.10
RRUS-11	C	From Face	4.00		0.0000	110.00	No Ice	2.52	1.07	0.06
			0.00				1/2" Ice	2.72	1.21	0.07
			0.00				1" Ice	2.92	1.36	0.10
RRUS 4478 B5	A	From Face	4.00		0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00				1/2" Ice	2.01	1.20	0.08
			0.00				1" Ice	2.19	1.34	0.09
RRUS 4478 B5	B	From Face	4.00		0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00				1/2" Ice	2.01	1.20	0.08
			0.00				1" Ice	2.19	1.34	0.09
RRUS 4478 B5	C	From Face	4.00		0.0000	110.00	No Ice	1.84	1.06	0.06
			0.00				1/2" Ice	2.01	1.20	0.08
			0.00				1" Ice	2.19	1.34	0.09
RRUS 4415 B25	A	From Face	4.00		0.0000	110.00	No Ice	1.64	0.68	0.04
			0.00				1/2" Ice	1.80	0.79	0.06
			0.00				1" Ice	1.97	0.91	0.07
RRUS 4415 B25	B	From Face	4.00		0.0000	110.00	No Ice	1.64	0.68	0.04
			0.00				1/2" Ice	1.80	0.79	0.06
			0.00				1" Ice	1.97	0.91	0.07
RRUS 4415 B25	C	From Face	4.00		0.0000	110.00	No Ice	1.64	0.68	0.04
			0.00				1/2" Ice	1.80	0.79	0.06
			0.00				1" Ice	1.97	0.91	0.07
DC6-48-60-18-8F	A	From Face	0.50		0.0000	110.00	No Ice	1.21	1.21	0.03
			0.00				1/2" Ice	1.89	1.89	0.05
			0.00				1" Ice	2.11	2.11	0.08
DC6-48-60-18-8F	B	From Face	0.50		0.0000	110.00	No Ice	1.21	1.21	0.03
			0.00				1/2" Ice	1.89	1.89	0.05
			0.00				1" Ice	2.11	2.11	0.08
(3) 12' Sector Mounts [Sabre C10857001C]	C	None			0.0000	110.00	No Ice	15.85	15.85	1.50
							1/2" Ice	20.80	20.80	1.95
							1" Ice	25.75	25.75	2.40
***										
RC2DC-3315-PF-48	A	From Leg	4.00		0.0000	96.50	No Ice	2.52	1.77	0.04
			0.00				1/2" Ice	2.73	1.95	0.06
			3.00				1" Ice	2.95	2.14	0.09
RC2DC-3315-PF-48	B	From Leg	4.00		0.0000	96.50	No Ice	2.52	1.77	0.04
			0.00				1/2" Ice	2.73	1.95	0.06
			3.00				1" Ice	2.95	2.14	0.09
B66A RRH4X45	A	From Leg	4.00		0.0000	96.50	No Ice	2.58	1.63	0.06
			0.00				1/2" Ice	2.79	1.81	0.08
			3.00				1" Ice	3.01	2.00	0.10
B66A RRH4X45	B	From Leg	4.00		0.0000	96.50	No Ice	2.58	1.63	0.06
			0.00				1/2" Ice	2.79	1.81	0.08
			3.00				1" Ice	3.01	2.00	0.10
B66A RRH4X45	C	From Leg	4.00		0.0000	96.50	No Ice	2.58	1.63	0.06
			0.00				1/2" Ice	2.79	1.81	0.08
			3.00				1" Ice	3.01	2.00	0.10

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* °	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
(2) SBNHH-1D85B w/Mount Pipe	A	From Leg	4.00 0.00 2.50	0.0000	96.50	No Ice 1/2" Ice 1" Ice	8.47 9.00 9.53	7.44 8.47 9.37	0.08 0.16 0.24
(2) SBNHH-1D85B w/Mount Pipe	B	From Leg	4.00 0.00 2.50	0.0000	96.50	No Ice 1/2" Ice 1" Ice	8.47 9.00 9.53	7.44 8.47 9.37	0.08 0.16 0.24
(2) SBNHH-1D85B w/Mount Pipe	C	From Leg	4.00 0.00 2.50	0.0000	96.50	No Ice 1/2" Ice 1" Ice	8.47 9.00 9.53	7.44 8.47 9.37	0.08 0.16 0.24
(2) FDR6004/6	A	From Leg	4.00 0.00 1.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	0.25 0.31 0.39	0.08 0.12 0.17	0.00 0.00 0.01
(2) FDR6004/6	B	From Leg	4.00 0.00 1.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	0.25 0.31 0.39	0.08 0.12 0.17	0.00 0.00 0.01
(2) FDR6004/6	C	From Leg	4.00 0.00 1.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	0.25 0.31 0.39	0.08 0.12 0.17	0.00 0.00 0.01
80090-8	A	From Leg	4.00 0.00 1.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	8.14 8.72 9.31	6.61 7.19 7.77	0.23 0.28 0.33
80090-8	B	From Leg	4.00 0.00 1.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	8.14 8.72 9.31	6.61 7.19 7.77	0.23 0.28 0.33
80090-8	C	From Leg	4.00 0.00 1.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	8.14 8.72 9.31	6.61 7.19 7.77	0.23 0.28 0.33
B13 RRH 4x30-4R	A	From Leg	4.00 0.00 0.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.52	1.59 1.76 1.94	0.06 0.08 0.10
B13 RRH 4x30-4R	B	From Leg	4.00 0.00 0.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.52	1.59 1.76 1.94	0.06 0.08 0.10
B13 RRH 4x30-4R	C	From Leg	4.00 0.00 0.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.52	1.59 1.76 1.94	0.06 0.08 0.10
(4) Mount Pipe	A	From Leg	0.00 0.00 0.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	1.20 1.50 1.81	1.20 1.50 1.81	0.02 0.03 0.04
(4) Mount Pipe	B	From Leg	0.00 0.00 0.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	1.20 1.50 1.81	1.20 1.50 1.81	0.02 0.03 0.04
(4) Mount Pipe	C	From Leg	0.00 0.00 0.00	0.0000	96.50	No Ice 1/2" Ice 1" Ice	1.20 1.50 1.81	1.20 1.50 1.81	0.02 0.03 0.04
(3) 10' x 2' T-Arms ***	C	None		0.0000	96.50	No Ice 1/2" Ice 1" Ice	17.87 25.31 32.75	17.87 25.31 32.75	0.80 1.16 1.52
60" x 12" x 5" w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	6.74 7.37 7.96	5.07 6.01 6.80	0.07 0.13 0.19
60" x 12" x 5" w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	6.74 7.37 7.96	5.07 6.01 6.80	0.07 0.13 0.19
60" x 12" x 5" w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	86.00	No Ice 1/2" Ice	6.74 7.37	5.07 6.01	0.07 0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	7.96	6.80	0.19
(3) 2.7' StandOffs	C	None		0.0000	86.00	No Ice	6.18	6.18	0.33
						1/2" Ice	8.56	8.56	0.40
						1" Ice	10.94	10.94	0.47
***									
1.9"Ø x 9.8' Pipe Mount	B	From Leg	0.00	0.0000	55.00	No Ice	1.65	1.65	0.02
			0.00			1/2" Ice	2.67	2.67	0.04
			0.00			1" Ice	3.71	3.71	0.06
***									
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PR-850	A	Grid	From Leg	0.50	0.0000		57.00	5.67	No Ice	25.22	0.04
				0.00					1/2" Ice	25.97	0.17
				0.00					1" Ice	26.71	0.30
**											
PR-850	B	Grid	From Leg	0.50	10.0000		55.00	5.67	No Ice	25.22	0.04
				0.00					1/2" Ice	25.97	0.17
				2.00					1" Ice	26.71	0.30
PR-850	B	Grid	From Leg	0.50	25.0000		55.00	5.67	No Ice	25.22	0.04
				0.00					1/2" Ice	25.97	0.17
				-4.00					1" Ice	26.71	0.30
**											

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	110.00	1.016	19	112.917	A	10.432	5.833	5.833	35.86	47.561	0.000
120.00-100.00					B	10.432	5.833		35.86	7.905	0.000
					C	10.432	5.833		35.86	3.760	0.000
T2	90.00	0.959	18	114.167	A	9.549	8.333	8.333	46.60	76.113	0.000
100.00-80.00					B	9.549	8.333		46.60	21.482	0.000
					C	9.549	8.333		46.60	57.090	0.000
T3 80.00-60.00	70.00	0.892	17	129.587	A	11.091	9.175	9.175	45.27	76.113	0.000
					B	11.091	9.175		45.27	47.263	0.000
					C	11.091	9.175		45.27	70.733	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T4 60.00-40.00	50.00	0.811	15	160.004	A	11.909	10.009	10.009	45.67	76.113	0.000
					B	11.909	10.009		45.67	49.150	0.000
					C	11.909	10.009		45.67	74.063	0.000
T5 40.00-20.00	30.00	0.701	13	190.420	A	16.223	10.843	10.843	40.06	76.113	0.000
					B	16.223	10.843		40.06	49.483	0.000
					C	16.223	10.843		40.06	75.173	0.000
T6 20.00-0.00	10.00	0.7	13	220.837	A	17.776	11.678	11.678	39.65	74.697	0.000
					B	17.776	11.678		39.65	29.032	0.000
					C	17.776	11.678		39.65	43.038	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	110.00	1.016	6	1.6919	118.556	A	10.432	34.763	17.113	37.86	65.480	0.000
120.00-100.00						B	10.432	34.763		37.86	34.596	0.000
						C	10.432	34.763		37.86	13.378	0.000
T2 100.00-80.00	90.00	0.959	5	1.6583	119.694	A	9.549	35.224	19.389	43.30	104.201	0.000
						B	9.549	35.224		43.30	55.570	0.000
						C	9.549	35.224		43.30	76.623	0.000
T3 80.00-60.00	70.00	0.892	5	1.6171	134.981	A	11.091	37.903	19.966	40.75	103.186	0.000
						B	11.091	37.903		40.75	85.609	0.000
						C	11.091	37.903		40.75	98.897	0.000
T4 60.00-40.00	50.00	0.811	4	1.5636	165.219	A	11.909	39.065	20.443	40.11	101.867	0.000
						B	11.909	39.065		40.11	91.420	0.000
						C	11.909	39.065		40.11	110.879	0.000
T5 40.00-20.00	30.00	0.701	4	1.4858	195.377	A	16.223	38.307	20.758	38.07	99.949	0.000
						B	16.223	38.307		38.07	90.355	0.000
						C	16.223	38.307		38.07	112.581	0.000
T6 20.00-0.00	10.00	0.7	4	1.3312	225.278	A	17.776	37.881	20.561	36.94	92.465	0.000
						B	17.776	37.881		36.94	53.886	0.000
						C	17.776	37.881		36.94	66.991	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	110.00	1.016	8	112.917	A	10.432	5.833	5.833	35.86	47.561	0.000
120.00-100.00					B	10.432	5.833		35.86	7.905	0.000
					C	10.432	5.833		35.86	3.760	0.000
T2	90.00	0.959	8	114.167	A	9.549	8.333	8.333	46.60	76.113	0.000
100.00-80.00					B	9.549	8.333		46.60	21.482	0.000
					C	9.549	8.333		46.60	57.090	0.000
T3 80.00-60.00	70.00	0.892	7	129.587	A	11.091	9.175	9.175	45.27	76.113	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					B	11.091	9.175		45.27	47.263	0.000
					C	11.091	9.175		45.27	70.733	0.000
T4 60.00-40.00	50.00	0.811	6	160.004	A	11.909	10.009	10.009	45.67	76.113	0.000
					B	11.909	10.009		45.67	49.150	0.000
					C	11.909	10.009		45.67	74.063	0.000
T5 40.00-20.00	30.00	0.701	5	190.420	A	16.223	10.843	10.843	40.06	76.113	0.000
					B	16.223	10.843		40.06	49.483	0.000
					C	16.223	10.843		40.06	75.173	0.000
T6 20.00-0.00	10.00	0.7	5	220.837	A	17.776	11.678	11.678	39.65	74.697	0.000
					B	17.776	11.678		39.65	29.032	0.000
					C	17.776	11.678		39.65	43.038	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	19	1	1	13.739	1.02	51.09	A
120.00-100.00			B	0.144	2.794		1	1	13.739			
			C	0.144	2.794		1	1	13.739			
T2	0.98	1.44	A	0.157	2.747	18	1	1	14.285	1.48	74.24	A
100.00-80.00			B	0.157	2.747		1	1	14.285			
			C	0.157	2.747		1	1	14.285			
T3	1.18	1.71	A	0.156	2.748	17	1	1	16.305	1.64	82.17	A
80.00-60.00			B	0.156	2.748		1	1	16.305			
			C	0.156	2.748		1	1	16.305			
T4	1.20	1.98	A	0.137	2.82	15	1	1	17.578	1.60	79.75	A
60.00-40.00			B	0.137	2.82		1	1	17.578			
			C	0.137	2.82		1	1	17.578			
T5	1.21	2.59	A	0.142	2.801	13	1	1	22.369	1.53	76.74	A
40.00-20.00			B	0.142	2.801		1	1	22.369			
			C	0.142	2.801		1	1	22.369			
T6 20.00-0.00	0.89	2.94	A	0.133	2.834	13	1	1	24.386	1.41	70.34	A
			B	0.133	2.834		1	1	24.386			
			C	0.133	2.834		1	1	24.386			
Sum Weight:	5.82	11.60						OTM	500.91 kip-ft	8.69		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	19	0.8	1	11.653	0.93	46.35	B
120.00-100.00			B	0.144	2.794		0.8	1	11.653			
			C	0.144	2.794		0.8	1	11.653			
T2	0.98	1.44	A	0.157	2.747	18	0.8	1	12.375	1.40	70.21	B
100.00-80.00			B	0.157	2.747		0.8	1	12.375			
			C	0.157	2.747		0.8	1	12.375			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T3	1.18	1.71	A	0.156	2.748	17	0.8	1	14.087	1.56	77.81	B
80.00-60.00			B	0.156	2.748		0.8	1	14.087			
			C	0.156	2.748		0.8	1	14.087			
T4	1.20	1.98	A	0.137	2.82	15	0.8	1	15.196	1.51	75.40	B
60.00-40.00			B	0.137	2.82		0.8	1	15.196			
			C	0.137	2.82		0.8	1	15.196			
T5	1.21	2.59	A	0.142	2.801	13	0.8	1	19.125	1.43	71.64	B
40.00-20.00			B	0.142	2.801		0.8	1	19.125			
			C	0.142	2.801		0.8	1	19.125			
T6 20.00-0.00	0.89	2.94	A	0.133	2.834	13	0.8	1	20.831	1.29	64.70	B
			B	0.133	2.834		0.8	1	20.831			
			C	0.133	2.834		0.8	1	20.831			
Sum Weight:	5.82	11.60						OTM	468.62 kip-ft	8.12		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	19	0.85	1	12.174	0.94	46.97	C
120.00-100.00			B	0.144	2.794		0.85	1	12.174			
			C	0.144	2.794		0.85	1	12.174			
T2	0.98	1.44	A	0.157	2.747	18	0.85	1	12.852	1.39	69.56	C
100.00-80.00			B	0.157	2.747		0.85	1	12.852			
			C	0.157	2.747		0.85	1	12.852			
T3	1.18	1.71	A	0.156	2.748	17	0.85	1	14.641	1.56	77.99	C
80.00-60.00			B	0.156	2.748		0.85	1	14.641			
			C	0.156	2.748		0.85	1	14.641			
T4	1.20	1.98	A	0.137	2.82	15	0.85	1	15.791	1.51	75.66	C
60.00-40.00			B	0.137	2.82		0.85	1	15.791			
			C	0.137	2.82		0.85	1	15.791			
T5	1.21	2.59	A	0.142	2.801	13	0.85	1	19.936	1.44	72.20	C
40.00-20.00			B	0.142	2.801		0.85	1	19.936			
			C	0.142	2.801		0.85	1	19.936			
T6 20.00-0.00	0.89	2.94	A	0.133	2.834	13	0.85	1	21.720	1.30	64.98	C
			B	0.133	2.834		0.85	1	21.720			
			C	0.133	2.834		0.85	1	21.720			
Sum Weight:	5.82	11.60						OTM	469.70 kip-ft	8.15		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.68	3.18	A	0.381	2.102	6	1	1	32.274	0.57	28.49	A

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
120.00-100.00			B	0.381	2.102		1	1	32.274			
			C	0.381	2.102		1	1	32.274			
T2	3.94	3.56	A	0.374	2.118	5	1	1	31.579	0.80	39.85	A
100.00-80.00			B	0.374	2.118		1	1	31.579			
			C	0.374	2.118		1	1	31.579			
T3	4.77	4.04	A	0.363	2.142	5	1	1	34.629	0.86	42.98	A
80.00-60.00			B	0.363	2.142		1	1	34.629			
			C	0.363	2.142		1	1	34.629			
T4	4.91	4.36	A	0.309	2.274	4	1	1	35.411	0.84	41.80	A
60.00-40.00			B	0.309	2.274		1	1	35.411			
			C	0.309	2.274		1	1	35.411			
T5	4.77	5.24	A	0.279	2.353	4	1	1	38.928	0.76	37.82	A
40.00-20.00			B	0.279	2.353		1	1	38.928			
			C	0.279	2.353		1	1	38.928			
T6 20.00-0.00	3.17	5.44	A	0.247	2.446	4	1	1	39.910	0.64	32.21	A
			B	0.247	2.446		1	1	39.910			
			C	0.247	2.446		1	1	39.910			
Sum Weight:	23.25	25.83						OTM	265.52 kip-ft	4.46		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.68	3.18	A	0.381	2.102	6	0.8	1	30.187	0.55	27.46	B
120.00-100.00			B	0.381	2.102		0.8	1	30.187			
			C	0.381	2.102		0.8	1	30.187			
T2	3.94	3.56	A	0.374	2.118	5	0.8	1	29.669	0.78	38.95	B
100.00-80.00			B	0.374	2.118		0.8	1	29.669			
			C	0.374	2.118		0.8	1	29.669			
T3	4.77	4.04	A	0.363	2.142	5	0.8	1	32.411	0.84	42.00	B
80.00-60.00			B	0.363	2.142		0.8	1	32.411			
			C	0.363	2.142		0.8	1	32.411			
T4	4.91	4.36	A	0.309	2.274	4	0.8	1	33.029	0.82	40.79	B
60.00-40.00			B	0.309	2.274		0.8	1	33.029			
			C	0.309	2.274		0.8	1	33.029			
T5	4.77	5.24	A	0.279	2.353	4	0.8	1	35.683	0.73	36.59	B
40.00-20.00			B	0.279	2.353		0.8	1	35.683			
			C	0.279	2.353		0.8	1	35.683			
T6 20.00-0.00	3.17	5.44	A	0.247	2.446	4	0.8	1	36.354	0.62	30.80	B
			B	0.247	2.446		0.8	1	36.354			
			C	0.247	2.446		0.8	1	36.354			
Sum Weight:	23.25	25.83						OTM	258.23 kip-ft	4.33		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.68	3.18	A	0.381	2.102	6	0.85	1	30.709	0.55	27.73	C
120.00-100.00			B	0.381	2.102		0.85	1	30.709			
			C	0.381	2.102		0.85	1	30.709			
T2	3.94	3.56	A	0.374	2.118	5	0.85	1	30.147	0.78	38.85	C
100.00-80.00			B	0.374	2.118		0.85	1	30.147			
			C	0.374	2.118		0.85	1	30.147			
T3	4.77	4.04	A	0.363	2.142	5	0.85	1	32.966	0.84	42.12	C
80.00-60.00			B	0.363	2.142		0.85	1	32.966			
			C	0.363	2.142		0.85	1	32.966			
T4	4.91	4.36	A	0.309	2.274	4	0.85	1	33.625	0.82	41.01	C
60.00-40.00			B	0.309	2.274		0.85	1	33.625			
			C	0.309	2.274		0.85	1	33.625			
T5	4.77	5.24	A	0.279	2.353	4	0.85	1	36.494	0.74	36.89	C
40.00-20.00			B	0.279	2.353		0.85	1	36.494			
			C	0.279	2.353		0.85	1	36.494			
T6 20.00-0.00	3.17	5.44	A	0.247	2.446	4	0.85	1	37.243	0.62	30.93	C
			B	0.247	2.446		0.85	1	37.243			
			C	0.247	2.446		0.85	1	37.243			
Sum Weight:	23.25	25.83						OTM	259.23 kip-ft	4.35		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	8	1	1	13.739	0.43	21.26	A
120.00-100.00			B	0.144	2.794		1	1	13.739			
			C	0.144	2.794		1	1	13.739			
T2	0.98	1.44	A	0.157	2.747	8	1	1	14.285	0.62	30.90	A
100.00-80.00			B	0.157	2.747		1	1	14.285			
			C	0.157	2.747		1	1	14.285			
T3	1.18	1.71	A	0.156	2.748	7	1	1	16.305	0.68	34.20	A
80.00-60.00			B	0.156	2.748		1	1	16.305			
			C	0.156	2.748		1	1	16.305			
T4	1.20	1.98	A	0.137	2.82	6	1	1	17.578	0.66	33.20	A
60.00-40.00			B	0.137	2.82		1	1	17.578			
			C	0.137	2.82		1	1	17.578			
T5	1.21	2.59	A	0.142	2.801	5	1	1	22.369	0.64	31.94	A
40.00-20.00			B	0.142	2.801		1	1	22.369			
			C	0.142	2.801		1	1	22.369			
T6 20.00-0.00	0.89	2.94	A	0.133	2.834	5	1	1	24.386	0.59	29.28	A
			B	0.133	2.834		1	1	24.386			
			C	0.133	2.834		1	1	24.386			
Sum Weight:	5.82	11.60						OTM	208.49 kip-ft	3.62		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	8	0.8	1	11.653	0.39	19.29	B
120.00-100.00			B	0.144	2.794		0.8	1	11.653			
			C	0.144	2.794		0.8	1	11.653			
T2	0.98	1.44	A	0.157	2.747	8	0.8	1	12.375	0.58	29.22	B
100.00-80.00			B	0.157	2.747		0.8	1	12.375			
			C	0.157	2.747		0.8	1	12.375			
T3	1.18	1.71	A	0.156	2.748	7	0.8	1	14.087	0.65	32.39	B
80.00-60.00			B	0.156	2.748		0.8	1	14.087			
			C	0.156	2.748		0.8	1	14.087			
T4	1.20	1.98	A	0.137	2.82	6	0.8	1	15.196	0.63	31.38	B
60.00-40.00			B	0.137	2.82		0.8	1	15.196			
			C	0.137	2.82		0.8	1	15.196			
T5	1.21	2.59	A	0.142	2.801	5	0.8	1	19.125	0.60	29.82	B
40.00-20.00			B	0.142	2.801		0.8	1	19.125			
			C	0.142	2.801		0.8	1	19.125			
T6 20.00-0.00	0.89	2.94	A	0.133	2.834	5	0.8	1	20.831	0.54	26.93	B
			B	0.133	2.834		0.8	1	20.831			
			C	0.133	2.834		0.8	1	20.831			
Sum Weight:	5.82	11.60						OTM	195.05 kip-ft	3.38		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.36	0.95	A	0.144	2.794	8	0.85	1	12.174	0.39	19.55	C
120.00-100.00			B	0.144	2.794		0.85	1	12.174			
			C	0.144	2.794		0.85	1	12.174			
T2	0.98	1.44	A	0.157	2.747	8	0.85	1	12.852	0.58	28.95	C
100.00-80.00			B	0.157	2.747		0.85	1	12.852			
			C	0.157	2.747		0.85	1	12.852			
T3	1.18	1.71	A	0.156	2.748	7	0.85	1	14.641	0.65	32.46	C
80.00-60.00			B	0.156	2.748		0.85	1	14.641			
			C	0.156	2.748		0.85	1	14.641			
T4	1.20	1.98	A	0.137	2.82	6	0.85	1	15.791	0.63	31.49	C
60.00-40.00			B	0.137	2.82		0.85	1	15.791			
			C	0.137	2.82		0.85	1	15.791			
T5	1.21	2.59	A	0.142	2.801	5	0.85	1	19.936	0.60	30.05	C
40.00-20.00			B	0.142	2.801		0.85	1	19.936			
			C	0.142	2.801		0.85	1	19.936			
T6 20.00-0.00	0.89	2.94	A	0.133	2.834	5	0.85	1	21.720	0.54	27.05	C
			B	0.133	2.834		0.85	1	21.720			
			C	0.133	2.834		0.85	1	21.720			
Sum Weight:	5.82	11.60						OTM	195.50 kip-ft	3.39		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	7.81					
Bracing Weight	3.78					
Total Member Self-Weight	11.60			2.46	-8.34	
Total Weight	26.53			2.46	-8.34	
Wind 0 deg - No Ice		-0.05	-13.71	-1041.17	-5.45	6.21
Wind 30 deg - No Ice		6.50	-11.34	-870.07	-509.43	4.60
Wind 60 deg - No Ice		11.37	-6.55	-501.13	-882.15	4.04
Wind 90 deg - No Ice		13.63	0.04	5.01	-1046.87	2.80
Wind 120 deg - No Ice		12.36	7.19	543.66	-940.04	-1.70
Wind 150 deg - No Ice		6.84	11.84	904.16	-529.31	-6.06
Wind 180 deg - No Ice		0.06	13.12	1012.25	-11.71	-6.15
Wind 210 deg - No Ice		-6.49	11.37	876.67	492.03	-4.64
Wind 240 deg - No Ice		-11.82	6.85	523.28	891.47	-4.08
Wind 270 deg - No Ice		-13.63	-0.07	-1.40	1030.52	-2.86
Wind 300 deg - No Ice		-11.86	-6.89	-521.56	894.67	1.58
Wind 330 deg - No Ice		-6.81	-11.83	-898.64	510.54	6.02
Member Ice	14.23					
Total Weight Ice	75.51			7.95	-30.98	
Wind 0 deg - Ice		-0.23	-6.97	-514.78	-18.57	3.44
Wind 30 deg - Ice		3.19	-5.94	-438.84	-276.15	3.45
Wind 60 deg - Ice		5.81	-3.32	-244.35	-471.36	2.87
Wind 90 deg - Ice		6.83	0.01	8.78	-546.19	2.02
Wind 120 deg - Ice		6.05	3.66	279.56	-484.51	-0.23
Wind 150 deg - Ice		3.40	6.05	461.66	-287.49	-2.71
Wind 180 deg - Ice		0.01	6.79	520.90	-31.70	-3.76
Wind 210 deg - Ice		-3.24	5.91	453.83	216.86	-3.66
Wind 240 deg - Ice		-5.99	3.44	267.09	419.31	-2.92
Wind 270 deg - Ice		-6.93	-0.24	-5.17	489.62	-1.07
Wind 300 deg - Ice		-6.00	-3.61	-260.29	420.13	1.08
Wind 330 deg - Ice		-3.56	-6.02	-444.11	234.72	2.88
Total Weight	26.53			2.46	-8.34	
Wind 0 deg - Service		-0.02	-5.71	-434.60	0.63	2.58
Wind 30 deg - Service		2.71	-4.72	-363.38	-209.14	1.92
Wind 60 deg - Service		4.73	-2.72	-209.82	-364.28	1.68
Wind 90 deg - Service		5.67	0.02	0.85	-432.84	1.16
Wind 120 deg - Service		5.15	2.99	225.06	-388.38	-0.71
Wind 150 deg - Service		2.85	4.93	375.11	-217.42	-2.52
Wind 180 deg - Service		0.02	5.46	420.10	-1.98	-2.56
Wind 210 deg - Service		-2.70	4.73	363.67	207.70	-1.93
Wind 240 deg - Service		-4.92	2.85	216.57	373.96	-1.70
Wind 270 deg - Service		-5.67	-0.03	-1.82	431.84	-1.19
Wind 300 deg - Service		-4.94	-2.87	-218.32	375.29	0.66
Wind 330 deg - Service		-2.83	-4.92	-375.27	215.40	2.51

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice

Comb. No.	Description
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	120 - 100	Leg	Max Tension	15	13.36	-0.02	-0.11
			Max. Compression	10	-18.78	-0.10	-0.06
			Max. Mx	8	-2.59	0.56	0.03
			Max. My	14	-1.95	0.02	0.56
			Max. Vy	8	0.94	-0.08	-0.00
			Max. Vx	2	-0.95	0.00	0.07
		Diagonal	Max Tension	8	3.04	0.00	0.00
			Max. Compression	20	-3.08	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	31	0.74	0.03	-0.00
			Max. My	8	-2.86	-0.00	-0.01
			Max. Vy	31	-0.02	0.03	-0.00
			Max. Vx	8	0.00	-0.00	-0.01
		Top Girt	Max Tension	11	0.43	0.00	0.00
			Max. Compression	6	-0.46	0.00	0.00
			Max. Mx	26	-0.05	-0.04	0.00
			Max. My	12	-0.01	0.00	-0.00
			Max. Vy	26	0.03	0.00	0.00
			Max. Vx	12	0.00	0.00	0.00
T2	100 - 80	Leg	Max Tension	7	51.27	-0.29	0.13
			Max. Compression	10	-62.19	0.56	0.34
			Max. Mx	20	-3.88	-0.61	-0.01
			Max. My	3	-59.06	-0.06	-0.65
			Max. Vy	8	0.67	-0.38	-0.01
			Max. Vx	2	-0.71	0.01	0.42
		Diagonal	Max Tension	24	5.88	0.00	0.00
			Max. Compression	24	-5.99	0.00	0.00
			Max. Mx	31	1.26	0.03	-0.00
			Max. My	4	-4.94	-0.01	-0.00
			Max. Vy	31	-0.02	0.03	-0.00
			Max. Vx	4	0.00	-0.01	-0.00
T3	80 - 60	Leg	Max Tension	23	83.52	-0.04	0.00
			Max. Compression	10	-97.77	0.16	0.02
			Max. Mx	11	-67.80	1.21	0.03
			Max. My	16	-5.97	-0.03	0.62
			Max. Vy	11	-3.75	1.21	0.03
			Max. Vx	16	-2.01	-0.03	0.62
		Diagonal	Max Tension	24	4.17	0.00	0.00
			Max. Compression	24	-4.35	0.00	0.00
			Max. Mx	31	1.02	0.03	0.00
			Max. My	12	-4.29	-0.01	0.01
			Max. Vy	31	-0.03	0.03	0.00
			Max. Vx	12	-0.00	0.00	0.00
		Top Girt	Max Tension	11	0.14	0.00	0.00
			Max. Compression	22	-0.24	0.00	0.00
			Max. Mx	26	-0.08	-0.04	0.00
			Max. My	34	-0.08	0.00	0.00
			Max. Vy	26	-0.03	0.00	0.00
			Max. Vx	34	0.00	0.00	0.00
T4	60 - 40	Leg	Max Tension	23	110.50	-0.14	-0.00
			Max. Compression	10	-128.28	-0.04	0.01
			Max. Mx	31	-56.82	0.21	-0.00
			Max. My	5	-6.17	-0.00	-0.23
			Max. Vy	14	0.14	-0.20	0.06
			Max. Vx	2	0.18	-0.12	-0.22
		Diagonal	Max Tension	24	4.43	0.00	0.00
			Max. Compression	24	-4.51	0.00	0.00
			Max. Mx	31	0.77	0.04	0.00
			Max. My	2	-3.98	-0.00	-0.00
			Max. Vy	29	0.03	0.03	-0.00
			Max. Vx	33	-0.00	0.00	0.00
T5	40 - 20	Leg	Max Tension	23	131.84	0.37	-0.01
			Max. Compression	10	-152.86	-0.39	0.00
			Max. Mx	10	-152.64	0.73	0.00
			Max. My	8	-8.02	-0.08	0.62
			Max. Vy	10	-0.28	0.73	0.00
			Max. Vx	4	-0.18	-0.09	-0.61
		Diagonal	Max Tension	25	5.76	0.07	-0.02
			Max. Compression	24	-6.04	0.00	0.00
			Max. Mx	10	4.44	0.11	-0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	12	-5.99	-0.04	0.03
			Max. Vy	31	-0.05	0.09	-0.01
			Max. Vx	12	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	10	3.15	0.01	-0.01
			Max. Compression	10	-3.15	0.00	0.00
			Max. Mx	34	-0.03	0.03	0.00
			Max. My	14	-0.26	0.01	0.01
			Max. Vy	28	0.03	0.03	0.00
			Max. Vx	14	-0.00	0.00	0.00
T6	20 - 0	Leg	Max Tension	23	154.25	0.44	-0.00
			Max. Compression	10	-179.13	0.00	0.00
			Max. Mx	10	-166.30	0.84	-0.00
			Max. My	8	-9.45	-0.10	0.75
			Max. Vy	10	0.30	0.84	-0.00
			Max. Vx	4	0.21	-0.10	-0.75
		Diagonal	Max Tension	25	5.62	0.06	-0.01
			Max. Compression	24	-5.81	0.00	0.00
			Max. Mx	30	1.16	0.11	0.01
			Max. My	12	-5.70	-0.02	0.03
			Max. Vy	29	0.05	0.11	-0.01
			Max. Vx	12	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	10	3.49	0.01	-0.00
			Max. Compression	10	-3.49	0.00	0.00
			Max. Mx	34	-0.07	0.04	0.00
			Max. My	14	-0.34	0.01	0.01
			Max. Vy	28	0.03	0.03	0.00
			Max. Vx	14	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	177.88	11.92	-6.50
	Max. H_x	18	177.88	11.92	-6.50
	Max. H_z	7	-155.30	-10.67	5.78
	Min. Vert	7	-155.30	-10.67	5.78
	Min. H_x	7	-155.30	-10.67	5.78
	Min. H_z	18	177.88	11.92	-6.50
Leg B	Max. Vert	10	185.74	-12.22	-7.22
	Max. H_x	23	-159.71	10.91	6.45
	Max. H_z	25	-136.46	8.82	6.49
	Min. Vert	23	-159.71	10.91	6.45
	Min. H_x	10	185.74	-12.22	-7.22
	Min. H_z	10	185.74	-12.22	-7.22
Leg A	Max. Vert	2	178.95	0.51	13.63
	Max. H_x	22	94.99	1.52	7.04
	Max. H_z	2	178.95	0.51	13.63
	Min. Vert	15	-155.19	-0.50	-12.13
	Min. H_x	11	-79.57	-1.49	-6.53
	Min. H_z	15	-155.19	-0.50	-12.13

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	26.53	0.00	0.00	2.47	-8.35	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	31.83	-0.08	-21.94	-1676.57	-5.46	9.99
0.9 Dead+1.6 Wind 0 deg - No Ice	23.87	-0.08	-21.94	-1674.66	-2.93	9.98
1.2 Dead+1.6 Wind 30 deg - No Ice	31.83	10.40	-18.15	-1401.28	-816.55	7.43
0.9 Dead+1.6 Wind 30 deg - No Ice	23.87	10.40	-18.15	-1399.79	-812.73	7.41
1.2 Dead+1.6 Wind 60 deg - No Ice	31.83	18.19	-10.47	-807.50	-1416.39	6.50
0.9 Dead+1.6 Wind 60 deg - No Ice	23.87	18.19	-10.47	-806.96	-1411.62	6.49
1.2 Dead+1.6 Wind 90 deg - No Ice	31.83	21.80	0.07	7.06	-1681.39	4.49
0.9 Dead+1.6 Wind 90 deg - No Ice	23.87	21.80	0.07	6.31	-1676.21	4.48
1.2 Dead+1.6 Wind 120 deg - No Ice	31.83	19.78	11.51	873.87	-1509.40	-2.73
0.9 Dead+1.6 Wind 120 deg - No Ice	23.87	19.78	11.51	871.76	-1504.51	-2.73
1.2 Dead+1.6 Wind 150 deg - No Ice	31.83	10.95	18.95	1454.08	-848.49	-9.74
0.9 Dead+1.6 Wind 150 deg - No Ice	23.87	10.95	18.95	1451.04	-844.63	-9.73
1.2 Dead+1.6 Wind 180 deg - No Ice	31.83	0.09	20.99	1628.13	-15.52	-9.90
0.9 Dead+1.6 Wind 180 deg - No Ice	23.87	0.09	20.99	1624.80	-12.98	-9.89
1.2 Dead+1.6 Wind 210 deg - No Ice	31.83	-10.38	18.19	1409.93	795.21	-7.49
0.9 Dead+1.6 Wind 210 deg - No Ice	23.87	-10.38	18.19	1406.95	796.46	-7.48
1.2 Dead+1.6 Wind 240 deg - No Ice	31.83	-18.91	10.96	841.14	1438.00	-6.57
0.9 Dead+1.6 Wind 240 deg - No Ice	23.87	-18.91	10.96	839.07	1438.24	-6.56
1.2 Dead+1.6 Wind 270 deg - No Ice	31.83	-21.81	-0.11	-3.23	1661.77	-4.59
0.9 Dead+1.6 Wind 270 deg - No Ice	23.87	-21.81	-0.11	-3.97	1661.65	-4.59
1.2 Dead+1.6 Wind 300 deg - No Ice	31.83	-18.98	-11.03	-840.34	1443.13	2.55
0.9 Dead+1.6 Wind 300 deg - No Ice	23.87	-18.98	-11.03	-839.76	1443.37	2.55
1.2 Dead+1.6 Wind 330 deg - No Ice	31.83	-10.89	-18.93	-1447.19	824.94	9.67
0.9 Dead+1.6 Wind 330 deg - No Ice	23.87	-10.89	-18.93	-1445.65	826.16	9.66
1.2 Dead+1.0 Ice+1.0 Temp	80.81	0.00	0.00	8.63	-33.31	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	80.81	-0.23	-6.97	-522.33	-20.82	3.50
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	80.81	3.19	-5.94	-445.20	-282.47	3.51
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	80.81	5.81	-3.32	-247.69	-480.70	2.91
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	80.81	6.83	0.01	9.47	-556.71	2.04

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	80.81	6.05	3.66	284.47	-494.02	-0.24
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	80.81	3.40	6.05	469.48	-293.91	-2.76
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	80.81	0.01	6.79	529.69	-34.07	-3.82
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	80.81	-3.24	5.91	461.57	218.46	-3.73
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	80.81	-5.99	3.44	271.89	424.05	-2.97
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	80.81	-6.93	-0.24	-4.60	495.46	-1.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	80.81	-6.00	-3.61	-263.76	424.86	1.10
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	80.81	-3.56	-6.02	-450.54	236.50	2.92
Dead+Wind 0 deg - Service	26.53	-0.02	-5.71	-433.99	-7.19	2.60
Dead+Wind 30 deg - Service	26.53	2.71	-4.72	-362.44	-217.97	1.93
Dead+Wind 60 deg - Service	26.53	4.73	-2.72	-208.14	-373.85	1.69
Dead+Wind 90 deg - Service	26.53	5.67	0.02	3.54	-442.72	1.17
Dead+Wind 120 deg - Service	26.53	5.15	2.99	228.80	-398.02	-0.71
Dead+Wind 150 deg - Service	26.53	2.85	4.93	379.57	-226.27	-2.53
Dead+Wind 180 deg - Service	26.53	0.02	5.46	424.81	-9.81	-2.57
Dead+Wind 210 deg - Service	26.53	-2.70	4.73	368.10	200.88	-1.94
Dead+Wind 240 deg - Service	26.53	-4.92	2.85	220.29	367.92	-1.71
Dead+Wind 270 deg - Service	26.53	-5.67	-0.03	0.87	426.07	-1.19
Dead+Wind 300 deg - Service	26.53	-4.94	-2.87	-216.68	369.25	0.66
Dead+Wind 330 deg - Service	26.53	-2.83	-4.92	-374.38	208.60	2.51

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-26.53	0.00	0.00	26.53	0.00	0.000%
2	-0.08	-31.83	-21.94	0.08	31.83	21.94	0.000%
3	-0.08	-23.87	-21.94	0.08	23.87	21.94	0.000%
4	10.40	-31.83	-18.15	-10.40	31.83	18.15	0.000%
5	10.40	-23.87	-18.15	-10.40	23.87	18.15	0.000%
6	18.19	-31.83	-10.47	-18.19	31.83	10.47	0.000%
7	18.19	-23.87	-10.47	-18.19	23.87	10.47	0.000%
8	21.80	-31.83	0.07	-21.80	31.83	-0.07	0.000%
9	21.80	-23.87	0.07	-21.80	23.87	-0.07	0.000%
10	19.78	-31.83	11.51	-19.78	31.83	-11.51	0.000%
11	19.78	-23.87	11.51	-19.78	23.87	-11.51	0.000%
12	10.95	-31.83	18.95	-10.95	31.83	-18.95	0.000%
13	10.95	-23.87	18.95	-10.95	23.87	-18.95	0.000%
14	0.09	-31.83	20.99	-0.09	31.83	-20.99	0.000%
15	0.09	-23.87	20.99	-0.09	23.87	-20.99	0.000%
16	-10.38	-31.83	18.19	10.38	31.83	-18.19	0.000%
17	-10.38	-23.87	18.19	10.38	23.87	-18.19	0.000%
18	-18.91	-31.83	10.96	18.91	31.83	-10.96	0.000%
19	-18.91	-23.87	10.96	18.91	23.87	-10.96	0.000%
20	-21.81	-31.83	-0.11	21.81	31.83	0.11	0.000%
21	-21.81	-23.87	-0.11	21.81	23.87	0.11	0.000%
22	-18.98	-31.83	-11.03	18.98	31.83	11.03	0.000%
23	-18.98	-23.87	-11.03	18.98	23.87	11.03	0.000%
24	-10.89	-31.83	-18.93	10.89	31.83	18.93	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
25	-10.89	-23.87	-18.93	10.89	23.87	18.93	0.000%
26	0.00	-80.81	0.00	0.00	80.81	0.00	0.000%
27	-0.23	-80.81	-6.97	0.23	80.81	6.97	0.000%
28	3.19	-80.81	-5.94	-3.19	80.81	5.94	0.000%
29	5.81	-80.81	-3.32	-5.81	80.81	3.32	0.000%
30	6.83	-80.81	0.01	-6.83	80.81	-0.01	0.000%
31	6.05	-80.81	3.66	-6.05	80.81	-3.66	0.000%
32	3.40	-80.81	6.05	-3.40	80.81	-6.05	0.000%
33	0.01	-80.81	6.79	-0.01	80.81	-6.79	0.000%
34	-3.24	-80.81	5.91	3.24	80.81	-5.91	0.000%
35	-5.99	-80.81	3.44	5.99	80.81	-3.44	0.000%
36	-6.93	-80.81	-0.24	6.93	80.81	0.24	0.000%
37	-6.00	-80.81	-3.61	6.00	80.81	3.61	0.000%
38	-3.56	-80.81	-6.02	3.56	80.81	6.02	0.000%
39	-0.02	-26.53	-5.71	0.02	26.53	5.71	0.000%
40	2.71	-26.53	-4.72	-2.71	26.53	4.72	0.000%
41	4.73	-26.53	-2.72	-4.73	26.53	2.72	0.000%
42	5.67	-26.53	0.02	-5.67	26.53	-0.02	0.000%
43	5.15	-26.53	2.99	-5.15	26.53	-2.99	0.000%
44	2.85	-26.53	4.93	-2.85	26.53	-4.93	0.000%
45	0.02	-26.53	5.46	-0.02	26.53	-5.46	0.000%
46	-2.70	-26.53	4.73	2.70	26.53	-4.73	0.000%
47	-4.92	-26.53	2.85	4.92	26.53	-2.85	0.000%
48	-5.67	-26.53	-0.03	5.67	26.53	0.03	0.000%
49	-4.94	-26.53	-2.87	4.94	26.53	2.87	0.000%
50	-2.83	-26.53	-4.92	2.83	26.53	4.92	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000316
3	Yes	4	0.00000001	0.00000349
4	Yes	4	0.00000001	0.00000610
5	Yes	4	0.00000001	0.00000557
6	Yes	4	0.00000001	0.00000763
7	Yes	4	0.00000001	0.00000672
8	Yes	4	0.00000001	0.00000642
9	Yes	4	0.00000001	0.00000590
10	Yes	4	0.00000001	0.00000354
11	Yes	4	0.00000001	0.00000391
12	Yes	4	0.00000001	0.00000631
13	Yes	4	0.00000001	0.00000580
14	Yes	4	0.00000001	0.00000766
15	Yes	4	0.00000001	0.00000676
16	Yes	4	0.00000001	0.00000610
17	Yes	4	0.00000001	0.00000559
18	Yes	4	0.00000001	0.00000306
19	Yes	4	0.00000001	0.00000339
20	Yes	4	0.00000001	0.00000627
21	Yes	4	0.00000001	0.00000579
22	Yes	4	0.00000001	0.00000813
23	Yes	4	0.00000001	0.00000723
24	Yes	4	0.00000001	0.00000612
25	Yes	4	0.00000001	0.00000565

26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00001150
28	Yes	4	0.00000001	0.00001187
29	Yes	4	0.00000001	0.00001216
30	Yes	4	0.00000001	0.00001211
31	Yes	4	0.00000001	0.00001200
32	Yes	4	0.00000001	0.00001204
33	Yes	4	0.00000001	0.00001203
34	Yes	4	0.00000001	0.00001169
35	Yes	4	0.00000001	0.00001129
36	Yes	4	0.00000001	0.00001120
37	Yes	4	0.00000001	0.00001132
38	Yes	4	0.00000001	0.00001134
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	2.475	43	0.1700	0.0322
T2	100 - 80	1.774	43	0.1595	0.0319
T3	80 - 60	1.124	43	0.1324	0.0250
T4	60 - 40	0.619	43	0.0949	0.0158
T5	40 - 20	0.270	43	0.0597	0.0074
T6	20 - 0	0.072	43	0.0279	0.0032

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	3"x12' Omni	43	2.475	0.1700	0.0322	566377
120.00	Lightning Rod	43	2.475	0.1700	0.0322	566377
118.00	KRY 112 144/1	43	2.404	0.1693	0.0323	566377
110.00	OPA65R-BU6DA w/ Mount Pipe	43	2.122	0.1661	0.0326	283189
96.50	RC2DC-3315-PF-48	43	1.654	0.1561	0.0311	82522
86.00	60" x 12" x 5" w/ Mount Pipe	43	1.307	0.1422	0.0276	36782
57.00	PR-850	43	0.557	0.0893	0.0144	31719
55.00	1.9"Ø x 9.8' Pipe Mount	43	0.518	0.0857	0.0135	31705
51.00	PR-850	43	0.443	0.0785	0.0116	31653

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 100	9.365	10	0.6403	0.1240
T2	100 - 80	6.722	10	0.6017	0.1228
T3	80 - 60	4.266	10	0.5005	0.0963
T4	60 - 40	2.354	10	0.3593	0.0609
T5	40 - 20	1.026	10	0.2264	0.0283
T6	20 - 0	0.274	10	0.1060	0.0123

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	3"x12' Omni	10	9.365	0.6403	0.1240	162279
120.00	Lightning Rod	10	9.365	0.6403	0.1240	162279
118.00	KRY 112 144/1	10	9.098	0.6378	0.1245	162279
110.00	OPA65R-BU6DA w/ Mount Pipe	10	8.036	0.6262	0.1258	81140
96.50	RC2DC-3315-PF-48	10	6.269	0.5889	0.1199	22773
86.00	60" x 12" x 5" w/ Mount Pipe	10	4.959	0.5373	0.1062	9870
57.00	PR-850	10	2.118	0.3383	0.0554	8395
55.00	1.9"Ø x 9.8' Pipe Mount	10	1.968	0.3246	0.0518	8387
51.00	PR-850	10	1.686	0.2977	0.0448	8365

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	120	Leg	A325N	0.7500	4	3.34	29.82	0.112	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3.04	7.88	0.386	1	Member Block Shear
		Top Girt	A325N	0.3750	1	0.46	4.47	0.103	1	Bolt Shear
T2	100	Leg	A325N	0.7500	4	12.82	29.82	0.430	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5.88	7.88	0.746	1	Member Block Shear
T3	80	Leg	A325N	1.0000	4	20.88	53.01	0.394	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.17	8.63	0.483	1	Member Block Shear
		Top Girt	A325N	0.3750	1	0.24	4.47	0.054	1	Bolt Shear
T4	60	Leg	A325N	1.0000	4	27.63	53.01	0.521	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.43	8.63	0.513	1	Member Block Shear
T5	40	Leg	A325N	1.0000	6	21.94	53.01	0.414	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6.04	12.43	0.486	1	Bolt Shear
T6	20	Diagonal	A325N	0.6250	1	5.81	12.43	0.468	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1 3/4	20.00	4.88	133.7 K=1.00	2.4053	-18.78	30.39	0.618 [1]
T2	100 - 80	2 1/2	20.00	5.00	96.0 K=1.00	4.9087	-62.19	112.60	0.552 [1]
T3	80 - 60	2 3/4	20.02	4.88	85.2 K=1.00	5.9396	-97.77	157.26	0.622 [1]
T4	60 - 40	3	20.02	5.00	80.1 K=1.00	7.0686	-128.28	199.04	0.644 [1]
T5	40 - 20	3 1/4	20.02	5.20	76.8 K=1.00	8.2958	-152.86	242.55	0.630 [1]
T6	20 - 0	3 1/2	20.02	5.17	70.9 K=1.00	9.6211	-179.13	299.63	0.598 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x3/16	7.35	3.43	108.4 K=1.04	0.7150	-3.08	12.48	0.247 [1]
T2	100 - 80	L2x2x3/16	7.43	3.43	108.3 K=1.04	0.7150	-5.99	12.49	0.480 [1]
T3	80 - 60	L2x2x3/16	8.38	4.00	121.7 K=1.00	0.7150	-3.91	10.62	0.368 [1]
T4	60 - 40	L2x2x3/16	9.70	4.65	141.5 K=1.00	0.7150	-4.47	8.06	0.555 [1]
T5	40 - 20	L3x3x1/4	13.88	6.87	139.3 K=1.00	1.4400	-5.92	16.78	0.353 [1]
T6	20 - 0	L3x3x1/4	14.96	7.39	149.8 K=1.00	1.4400	-5.81	14.50	0.401 [1]

[1] $P_u / \phi P_n$ controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	40 - 20	L2x2x1/8	9.61	4.67	136.0	0.4844	-3.15	5.92	0.533 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	20 - 0	L2x2x1/8	11.11	5.41	K=0.96 153.0 K=0.94	0.4844	-3.49	4.67	0.747 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x1/8	5.50	5.06	152.8 K=1.00	0.4844	-0.46	4.69	0.098 [1]
T3	80 - 60	L2x2x1/8	5.54	5.02	151.4 K=1.00	0.4844	-0.24	4.77	0.050 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	1 3/4	20.00	4.88	133.7	2.4053	13.36	108.24	0.123 [1]
T2	100 - 80	2 1/2	20.00	5.00	96.0	4.9087	51.27	220.89	0.232 [1]
T3	80 - 60	2 3/4	20.02	4.88	85.2	5.9396	83.52	267.28	0.312 [1]
T4	60 - 40	3	20.02	5.00	80.1	7.0686	110.50	318.09	0.347 [1]
T5	40 - 20	3 1/4	20.02	4.81	71.0	8.2958	131.84	373.31	0.353 [1]
T6	20 - 0	3 1/2	20.02	4.84	66.3	9.6211	154.25	432.95	0.356 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x3/16	7.35	3.43	69.6	0.4308	3.04	18.74	0.162 [1]
T2	100 - 80	L2x2x3/16	7.43	3.43	69.5	0.4308	5.88	18.74	0.314 [1]
T3	80 - 60	L2x2x3/16	7.52	3.57	72.7	0.4308	4.17	18.74	0.223 [1]
T4	60 - 40	L2x2x3/16	9.70	4.65	93.6	0.4308	4.43	18.74	0.236 [1]
T5	40 - 20	L3x3x1/4	13.37	6.63	87.4	0.9394	5.76	40.86	0.141 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	20 - 0	L3x3x1/4	14.41	7.12	93.8	0.9394	5.62	40.86	0.138 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	40 - 20	L2x2x1/8	9.61	4.67	179.0	0.4844	3.15	15.69	0.201 [1]
T6	20 - 0	L2x2x1/8	11.11	5.41	207.3	0.4844	3.49	15.69	0.222 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	120 - 100	L2x2x1/8	5.50	5.06	102.6	0.3164	0.43	13.76	0.031 [1]
T3	80 - 60	L2x2x1/8	5.54	5.02	101.7	0.3164	0.14	13.76	0.010 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	120 - 100	Leg	1 3/4	2	-18.78	30.39	61.8	Pass
T2	100 - 80	Leg	2 1/2	32	-62.19	112.60	55.2	Pass
T3	80 - 60	Leg	2 3/4	59	-97.77	157.26	62.2	Pass
T4	60 - 40	Leg	3	89	-128.28	199.04	64.4	Pass
T5	40 - 20	Leg	3 1/4	116	-152.86	242.55	63.0	Pass
T6	20 - 0	Leg	3 1/2	137	-179.13	299.63	59.8	Pass
T1	120 - 100	Diagonal	L2x2x3/16	7	-3.08	12.48	24.7 38.6 (b)	Pass
T2	100 - 80	Diagonal	L2x2x3/16	37	-5.99	12.49	48.0 74.6 (b)	Pass
T3	80 - 60	Diagonal	L2x2x3/16	67	-3.91	10.62	36.8 48.3 (b)	Pass
T4	60 - 40	Diagonal	L2x2x3/16	94	-4.47	8.06	55.5	Pass
T5	40 - 20	Diagonal	L3x3x1/4	121	-5.92	16.78	35.3 48.6 (b)	Pass
T6	20 - 0	Diagonal	L3x3x1/4	142	-5.81	14.50	40.1 46.8 (b)	Pass
T5	40 - 20	Secondary Horizontal	L2x2x1/8	124	-3.15	5.92	53.3	Pass
T6	20 - 0	Secondary Horizontal	L2x2x1/8	146	-3.49	4.67	74.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	120 - 100	Top Girt	L2x2x1/8	5	-0.46	4.69	9.8 10.3 (b)	Pass
T3	80 - 60	Top Girt	L2x2x1/8	63	-0.24	4.77	5.0 5.4 (b)	Pass
							Summary	
							Leg (T4) 64.4	Pass
							Diagonal (T2) 74.6	Pass
							Secondary Horizontal (T6) 74.7	Pass
							Top Girt (T1) 10.3	Pass
							Bolt Checks 74.6	Pass
							RATING = 74.7	**Pass**

Project Information

BU #	CT98078-L-02
Site Name	Wilton, CT/ Optasite
Order #	133108

Tower Information

Tower Type	Self Support
TIA-222 Rev	G

☐ Load Z Normalization

Applied Loads

	Comp.	Uplift
Axial (k)	186.00	160.00
Shear (k)	14.00	13.00

Anchor Rod Data

Quantity:	6
Diameter (in):	1
Material Grade:	A449
Grout Considered:	No
l_{ar} (in):	1
Eta Factor, η:	0.5
Thread Type:	N-Included
Configuration:	Symmetrical

Fy=92 ksi Fu=120 ksi

Anchor Rod Results

Axial, Pu_c (kips)	31.00
Shear, Vu (kips)	2.33
Moment, Mu (kip-in)	-
Axial Cap., φPn_t (kips)	58.18
Shear Cap., ϕVn (kips)	-
Moment Cap., ϕMn (kip-in)	-
Stress Rating	61.3%

Pass

Analysis Date: 5/22/2020

Pier and Pad Foundation

BU # :	CT98078-L-02
Site Name:	Wilton, CT/ Optasit
App. Number:	133108

TIA-222 Revision:	G
Tower Type:	Self Support

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	186	kips
Compression Shear, Vu_comp:	14	kips
Uplift, P_{uplift}:	160	kips
Uplift Shear, V_{u_uplift}:	13	kips
Tower Height, **H**:	120	ft
Base Face Width, **BW**:	11.5	ft
BP Dist. Above Fdn, bp_{dist}:	2	in

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Uplift (kips)	475.86	160.00	**33.6%**	**Pass**
Lateral (Sliding) (kips)	161.80	13.00	**8.0%**	**Pass**
Bearing Pressure (ksf)	9.77	1.82	**18.6%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	843.81	98.00	**11.6%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	594.02	91.00	**15.3%**	**Pass**
Pier Compression (kip)	3374.26	194.91	**5.8%**	**Pass**
*Pad Flexure (kip*ft)*	2102.07	317.12	**15.1%**	**Pass**
Pad Shear - 1-way (kips)	361.68	63.33	**17.5%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.050	**30.4%**	**Pass**

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	3	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	16	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Soil Rating:	**33.6%**
Structural Rating:	**30.4%**

Pad Properties

Depth, **D**:	8.5	ft
Pad Width, **W**:	19	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom), **Sp**:	9	
Pad Rebar Quantity (Bottom), **mp**:	26	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties

Total Soil Unit Weight, **γ**:	120	pcf
Ultimate Net Bearing, Qnet:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **ϕ**:	30	degrees
SPT Blow Count, N_{blows}:	8	
Base Friction, **μ**:	0.5	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net