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

November 8, 2019

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1340
10 Blackville Road, Washington, CT 06794
N 41.64653333
W 73.31605278

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 126-foot level of the existing 135-foot Monopine at 10 Blackville Road, Washington, CT. The tower is owned by Insite Towers. The property is owned by the Town of Washington. AT&T now intends to remove three (3) CCI antennas and install six (6) new CCI DMP65R-BU8DA antennas. AT&T will also remove three (3) Ericsson RRUS-11 Remote Radio Units (RRU) and install three (3) Ericsson 4478-B14 and three (3) Ericsson 4449-B5/B12 RRUs.

This facility was approved by the Connecticut Siting Council in Docket # 0441 on March 6, 2014. This approval included the condition that the tower height not exceed 135 feet (140 feet with camouflage branches in place). No increase in tower height is proposed, and this modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mark Lyon, First Selectman for the Town of Washington, and the Washington Land Use Department, as well as

the property owner and the tower owner.

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

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

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

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

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

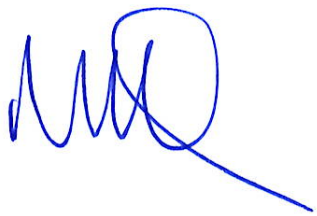
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

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

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Mark Lyon - Elected Official and Property Owner
Shelley White – Land Use Department
Insite Towers - tower owner (via e-mail)

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							0.0%
AT&T UMTS	1	500	126	0.0125	850	0.5667	0.22%
AT&T LTE	2	1476	126	0.0737	700	0.4667	1.58%
AT&T LTE	1	2421	126	0.0605	1900	1.0000	0.60%
Site Total							2.40%

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

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

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							0.0%
AT&T UMTS	1	500	126	0.0125	850	0.5667	0.22%
AT&T LTE	1	1476	126	0.0369	700	0.4667	0.70%
AT&T LTE	1	2951	126	0.0737	700	0.4667	1.58%
AT&T LTE	1	1000	126	0.0250	850	0.5667	0.44%
AT&T 5G	1	1000	126	0.0250	850	0.5667	0.44%
AT&T LTE	4	4842	126	0.4837	1900	1.0000	4.84%
Site Total							8.31%

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

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

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPINE:
- NEW AT&T ANTENNAS: DMP65R-BU8DA (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- NEW AT&T RRUS: B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B14 4478 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T DC & FIBER SURGE ARRESTOR DC6-48-60-18-8C-EV (TOTAL OF 1) WITH (2) DC POWER & (1) FIBER RUN.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP BBU WITH (2) 6630.
- ADD (1) IDLe

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: HPA-65R-BUU-H8 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO REMAIN:
- (3) ANTENNAS: HPA-65R-BUU-H8, (3) RRUS-11 B5, (3) RRUS-32 B2, (2) SURGE ARRESTORS, (3) DC POWER & (2) FIBER.

SITE ADDRESS:	10-12 BLACKVILLE ROAD WASHINGTON DEPOT CT 06794
LATITUDE:	41.646533° N, 41° 38' 47.52" N
LONGITUDE:	73.316052° W, 73° 18' 57.79" W
TYPE OF SITE:	MONOPINE / INDOOR
STRUCTURE HEIGHT:	135'-0"±
RAD CENTER:	126'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1340

SITE NAME: WASHINGTON BLACKVILLE ROAD

FA CODE: 10141339

PACE ID: MRCTB040476/MRCTB040645

PROJECT: LTE 3C_4C 2020 UPGRADE

DRAWING INDEX

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G-1	GROUNDING DETAILS	1
RF-1	RF PLUMBING DIAGRAM	1

VICINITY MAP

DIRECTIONS TO SITE:

HEAD SOUTH TOWARD ENTERPRISE DRIVE. TURN LEFT ONTO ENTERPRISE DRIVE. TURN LEFT ONTO CAPITAL BLVD. USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HIGHWAY 411. TURN LEFT TO MERGE ONTO I-91 S. CONTINUE ON I-91 S AND TAKE EXIT 18 FOR I-691 W TOWARD MERIDEN/WATERBURY. CONTINUE ONTO I-691 W. USE THE LEFT 2 LANES TO TAKE EXIT 1 FOR I-84 W TOWARD WATERBURY/DANBURY. MERGE ONTO I-84. TAKE EXIT 17 FOR CT-64 TOWARD CT-63/MIDDLEBURY/WATERTOWN. CONTINUE ONTO CT-64 W. TURN RIGHT TO STAY ON CT-64 W. TURN RIGHT ONTO US-6 E/MAIN ST S. TURN LEFT ONTO CT-47 N/WASHINGTON RD. TURN LEFT ONTO CT-47 N. TURN RIGHT ONTO CT-109 E/CT-47 N. CONTINUE TO FOLLOW CT-47 N. DESTINATION WILL BE ON THR RIGHT.

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1340
SITE NAME: WASHINGTON BLACKVILLE ROAD

10-12 BLACKVILLE ROAD
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500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VP

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

AT&T

TITLE SHEET
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1340	T-1	1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ABBREVIATIONS

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

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

12 INDUSTRIAL WAY
SALEM, NH 03079

500 ENTERPRISE DRIVE, SUITE 3A
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SITE NUMBER: CT1340
SITE NAME: WASHINGTON BLACKVILLE ROAD

10-12 BLACKVILLE ROAD
WASHINGTON DEPOT CT 06794
LITCHFIELD COUNTY

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

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

AT&T

GENERAL NOTES
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1340	GN-1	1

NOTE:

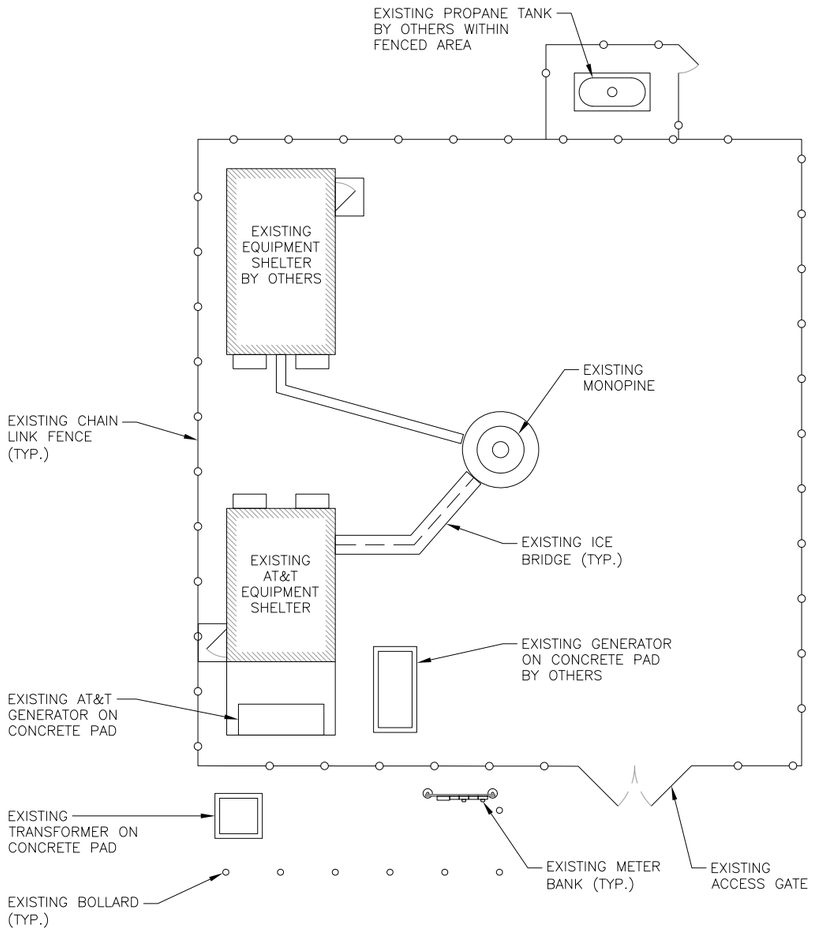
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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: SEPTEMBER 20, 2019

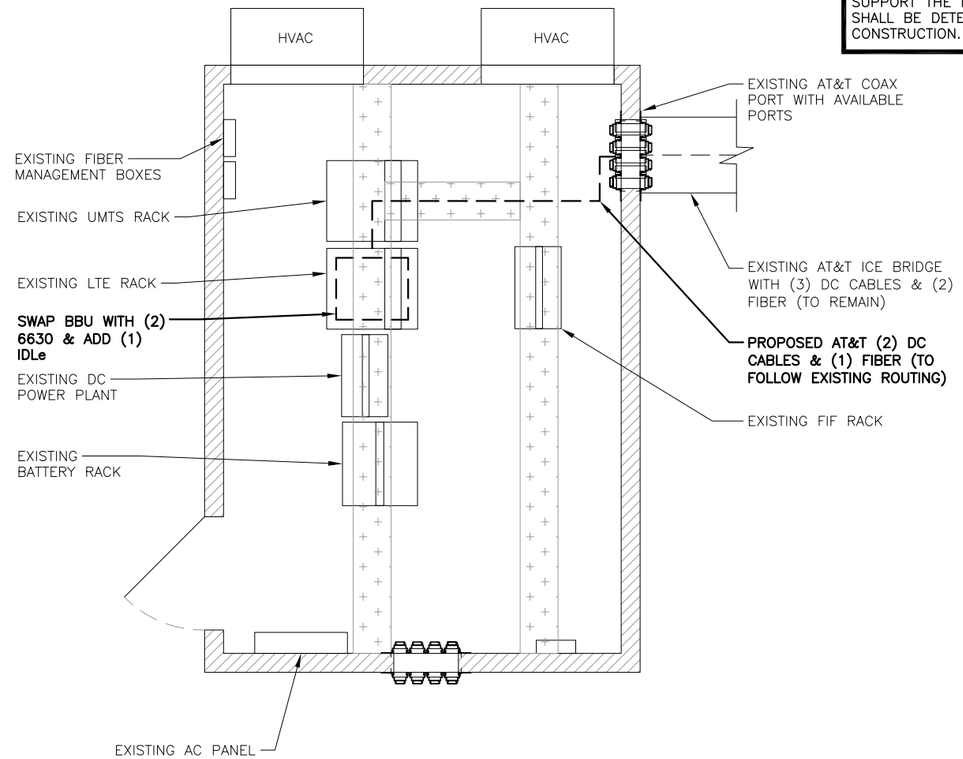
NOTE:

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: 1/8"=1'–0"
11x17 SCALE: 1/16"=1'–0"

0 4'–0" 8'–0" 16'–0" 24'–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
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AT&T

COMPOUND & EQUIPMENT PLANS
LTE 3C_4C 2020 UPGRADE

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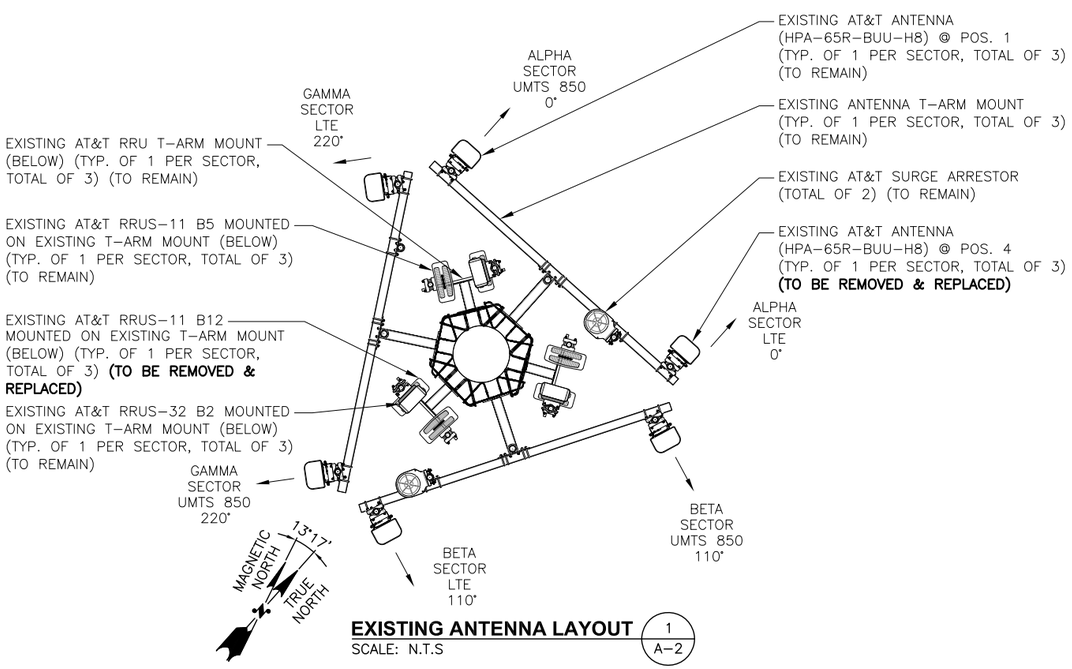
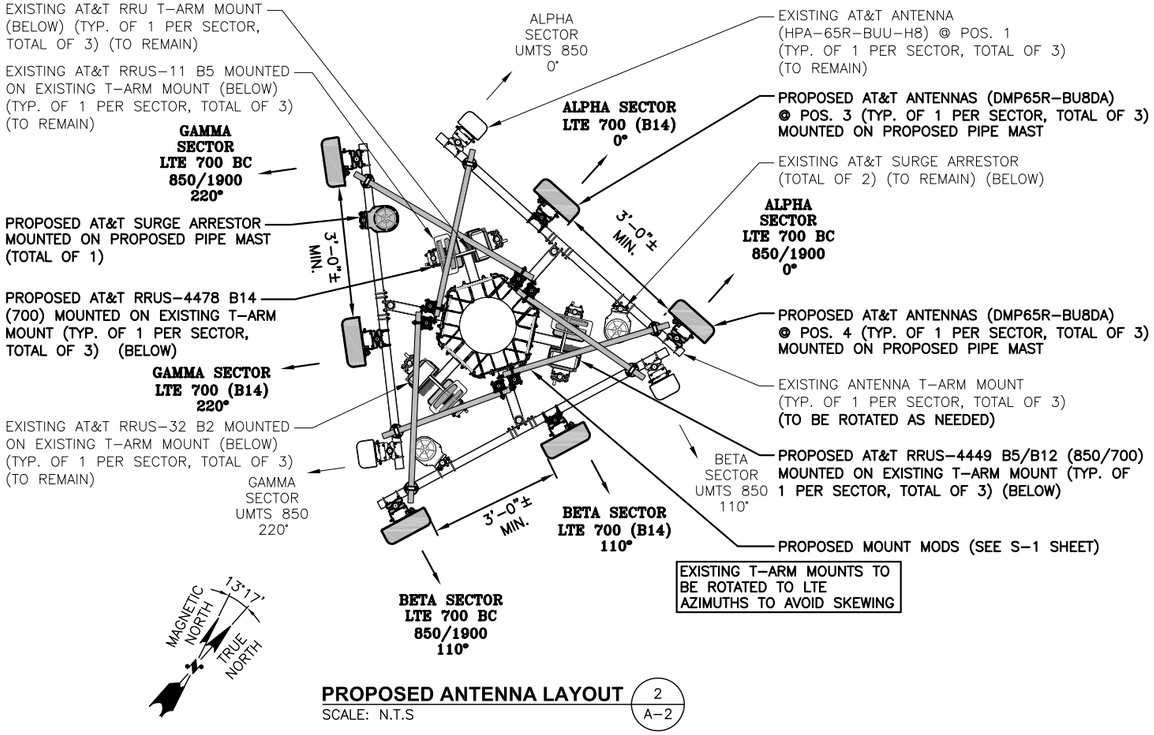


EXISTING ANTENNA LAYOUT

1 / A-2

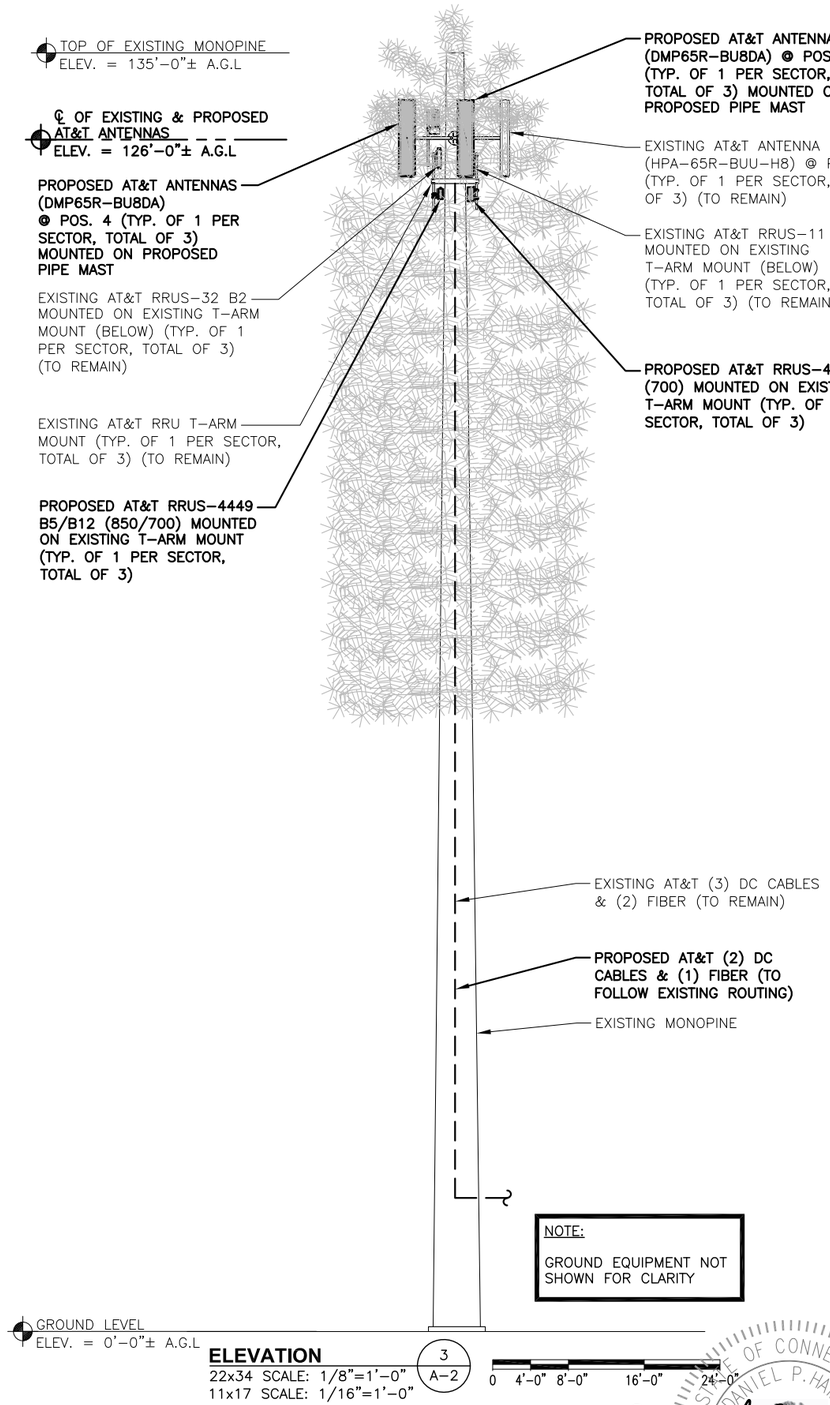
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT

2 / A-2

SCALE: N.T.S



NOTE:

GROUND EQUIPMENT NOT SHOWN FOR CLARITY

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.

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DATED: SEPTEMBER 20, 2019

NOTE:

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

NOTE:
PAINT ALL VISIBLE PROPOSED EQUIPMENT TO MATCH EXISTING SURROUNDINGS.

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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1340
SITE NAME: WASHINGTON BLACKVILLE ROAD

10-12 BLACKVILLE ROAD
WASHINGTON DEPOT CT 06794
LITCHFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/30/19	ISSUED FOR CONSTRUCTION	TR	AT	DPH
0	10/28/19	ISSUED FOR REVIEW	TR	AT	DPH
A	10/02/19	ISSUED FOR REVIEW	VP	AT	DPH

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

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

AT&T

ANTENNA LAYOUTS & ELEVATION
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1340	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	HPA-65R-BUU-H8	92.4X14.8X7.4	126'-0"±	0°	–	(E) (1) RRUS-11 B5	–	–	(E) (1) RAYCAP DC6-48-60-18-8C
A2	–	–	–	–	–	–	–	–	–	–	
A3	**PROPOSED**	**LTE 700 (B14)**	**DMP65R-BU8DA**	**96.0X20.7X7.7**	126'-0"±	0°	–	**(P) (1) 4478 B14**	**18.1"X13.4"X8.3"**	–	
A4	**PROPOSED**	**LTE 700 BC 850/1900**	**DMP65R-BU8DA**	**96.0X20.7X7.7**	**126'-0"±**	**0°**	–	**(P) (1) 4449 B5/B12** (E) (1) RRUS-32 B2	**14.9"X13.2"X10.4"** –	–	
B1	EXISTING	UMTS 850	HPA-65R-BUU-H8	92.4X14.8X7.4	126'-0"±	110°	–	(E) (1) RRUS-11 B5	–	–	(E) (1) RAYCAP DC6-48-60-18-8C
B2	–	–	–	–	–	–	–	–	–	–	
B3	**PROPOSED**	**LTE 700 (B14)**	**DMP65R-BU8DA**	**96.0X20.7X7.7**	126'-0"±	110°	–	**(P) (1) 4478 B14**	**18.1"X13.4"X8.3"**	–	
B4	**PROPOSED**	**LTE 700 BC 800/1900**	**DMP65R-BU8DA**	**96.0X20.7X7.7**	**126'-0"±**	**110°**	–	**(P) (1) 4449 B5/B12** (E) (1) RRUS-32 B2	**14.9"X13.2"X10.4"** –	–	
C1	EXISTING	UMTS 850	HPA-65R-BUU-H8	92.4X14.8X7.4	126'-0"±	220°	–	(E) (1) RRUS-11 B5	–	–	**(P) (1) RAYCAP DC6-48-60-18-8C-EV**
C2	–	–	–	–	–	–	–	–	–	–	
C3	**PROPOSED**	**LTE 700 (B14)**	**DMP65R-BU8DA**	**96.0X20.7X7.7**	126'-0"±	220°	–	**(P) (1) 4478 B14**	**18.1"X13.4"X8.3"**	–	
C4	**PROPOSED**	**LTE 700 BC 800/1900**	**DMP65R-BU8DA**	**96.0X20.7X7.7**	**126'-0"±**	**220°**	–	**(P) (1) 4449 B5/B12** (E) (1) RRUS-32 B2	**14.9"X13.2"X10.4"** –	–	

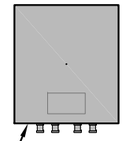
FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
(P)(3)	**4449 B5/B12 (850/700)**	**14.9"x13.2"x10.4"**
(P)(3)	**4478 B14 (700)**	**18.1"x13.4"x8.3"**
(E)(3)	RRUS-32 B2 (WCS)	27.2"x12.1"x7.0"
(E)(3)	RRUS-11 B5	19.7"x17.0"x7.2"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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

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: SEPTEMBER 20, 2019

NOTE:
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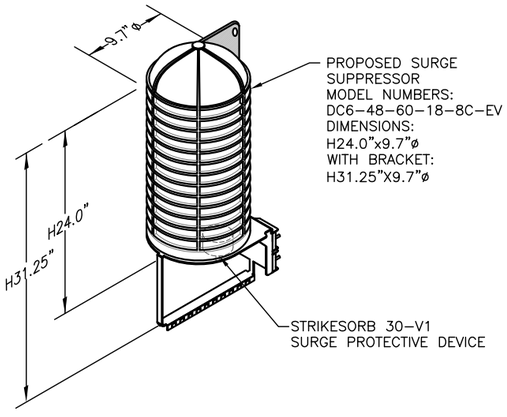
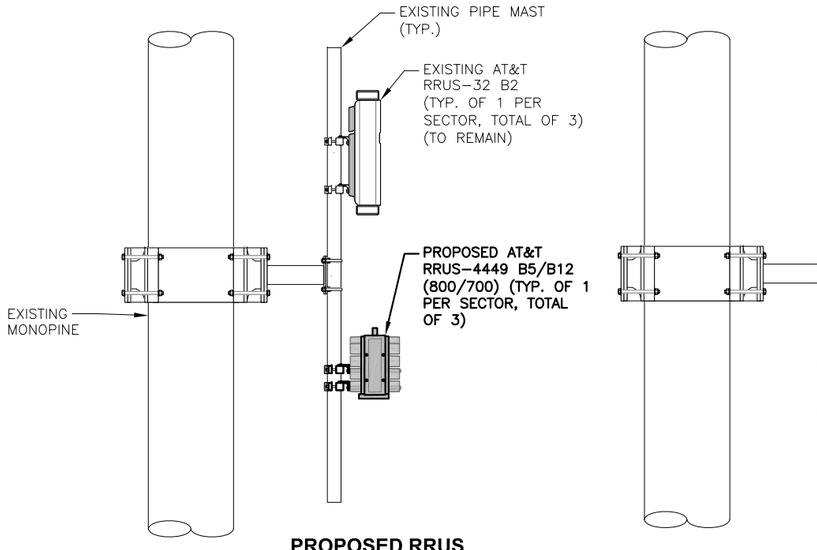
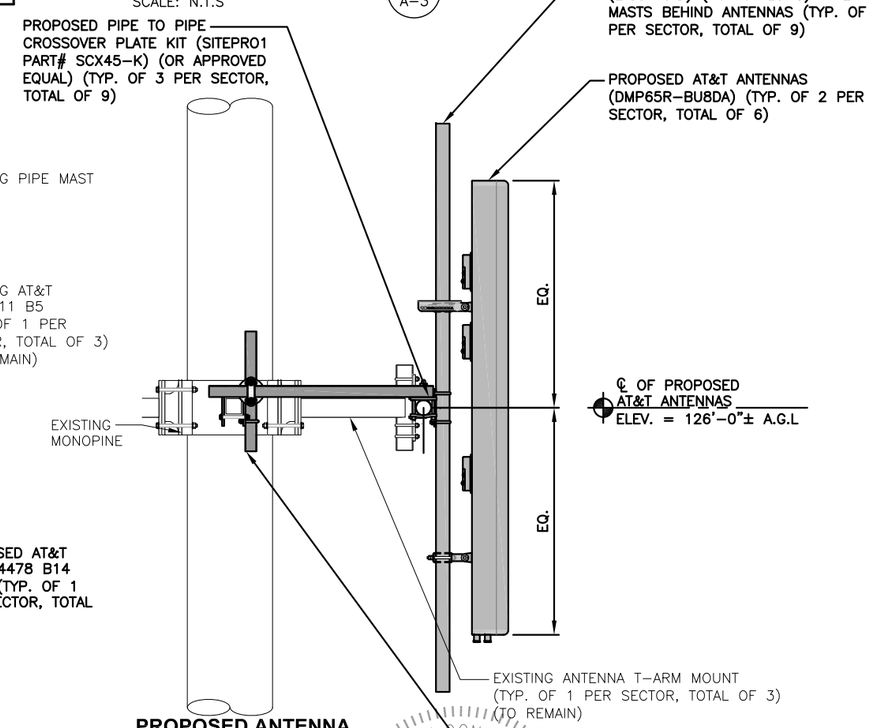


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



PROPOSED RRUS MOUNTING DETAIL (4 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED ANTENNA MOUNTING DETAIL (5 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"

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Daniel P. Hamm No.24178 LICENSED PROFESSIONAL ENGINEER STATE OF CONNECTICUT

AT&T

DETAILS
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1340	A-3	1

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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STRUCTURAL NOTES
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
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DATED: SEPTEMBER 20, 2019

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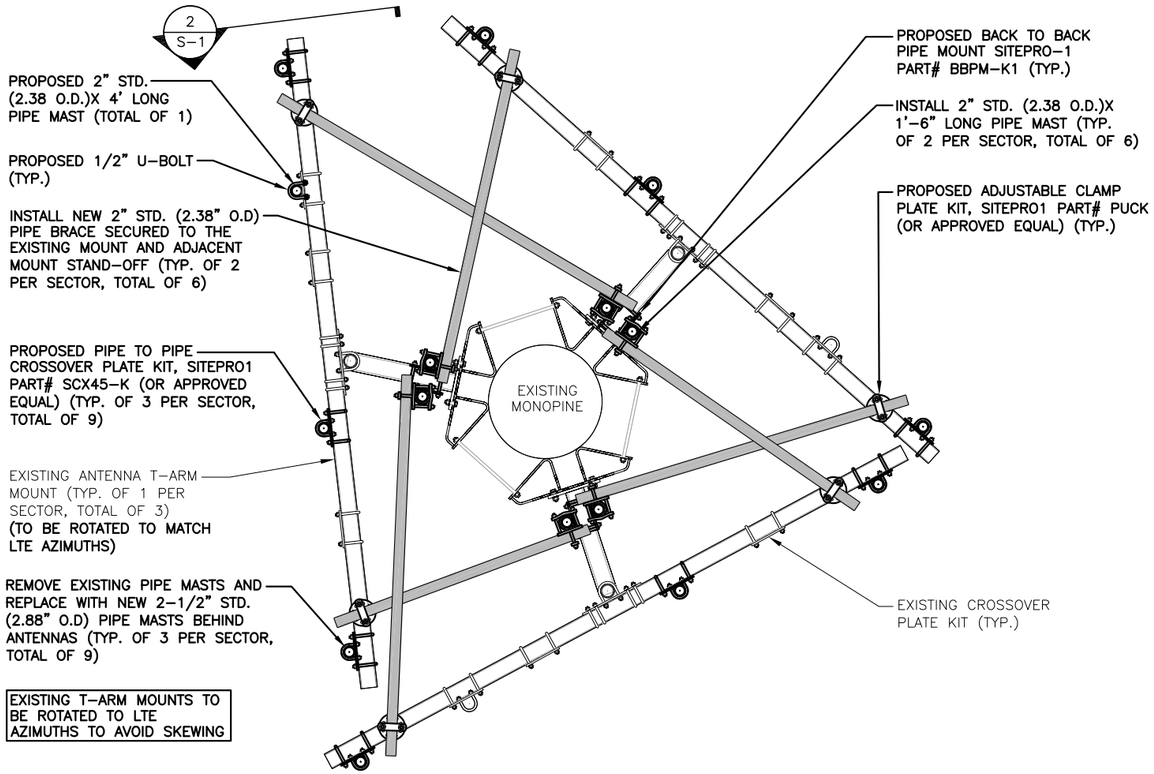
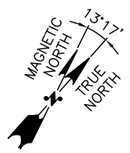
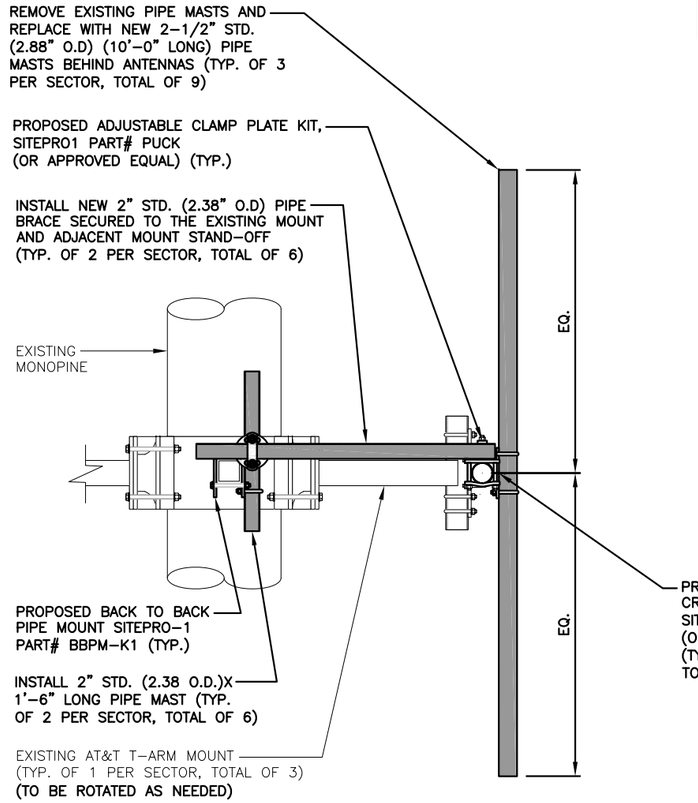




PROPOSED MOUNT MODIFICATION PLAN (1 / S-1)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED MOUNT MODIFICATION ELEVATION DETAIL (2 / S-1)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

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MOUNT MODIFICATION DESIGN
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SITE NUMBER	DRAWING NUMBER	REV
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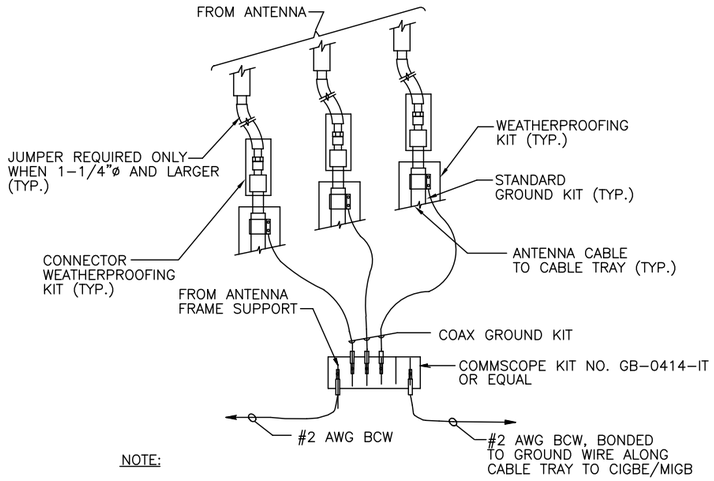
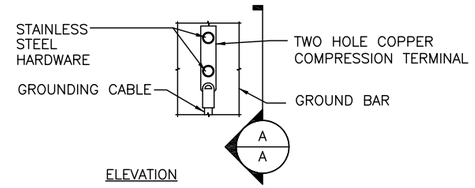


NOTE:

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

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

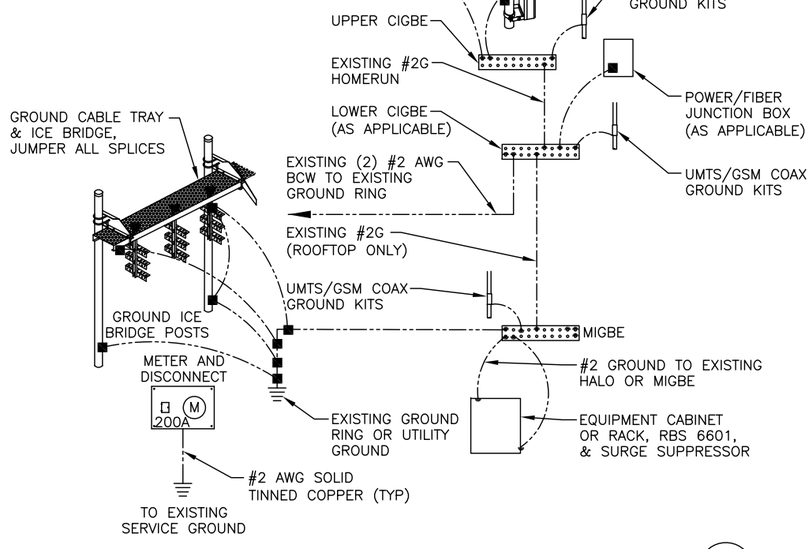
SCALE: N.T.S



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

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

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S

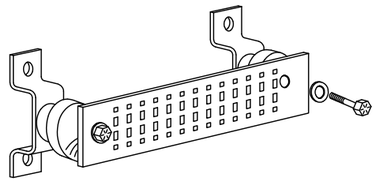
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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A	10/02/19	ISSUED FOR REVIEW	VP	AT	DPH

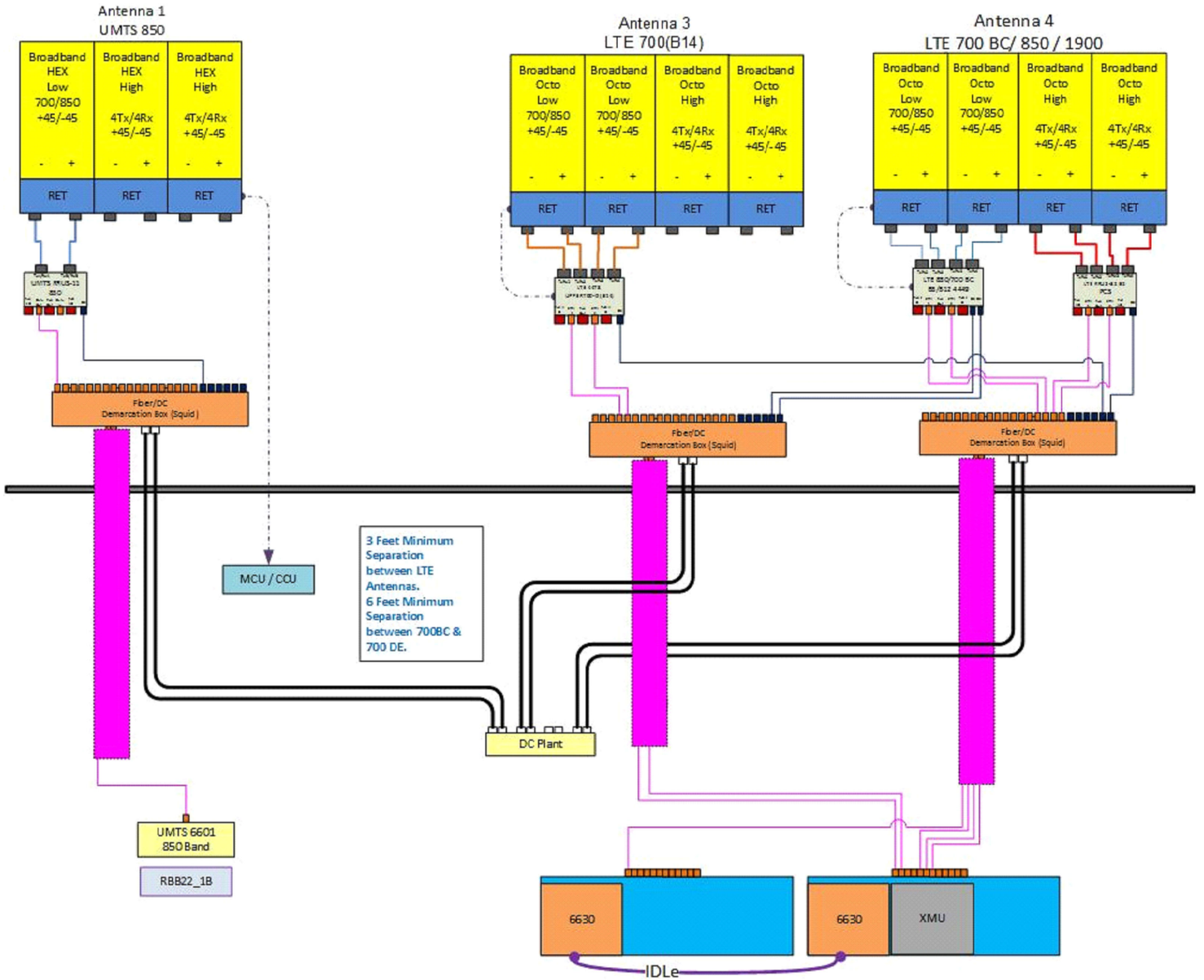
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VP

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

AT&T

GROUNDING DETAILS
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1340	G-1	1



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

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

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

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

12 INDUSTRIAL WAY
SALEM, NH 03079

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CT1340
SITE NAME: WASHINGTON BLACKVILLE ROAD

10–12 BLACKVILLE ROAD
WASHINGTON DEPOT CT 06794
LITCHFIELD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/30/19	ISSUED FOR CONSTRUCTION	TR	AT	DPH
0	10/28/19	ISSUED FOR REVIEW	TR	AT	DPH
A	10/02/19	ISSUED FOR REVIEW	VP	AT	DPH

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

AT&T

RF PLUMBING DIAGRAM
LTE 3C_4C 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1340	RF–1	1

Structural Analysis Report

Structure	**:** 134’ Monopine
Insite Site Name	**:** Washington
Insite Site Number	**:** CT112
Proposed Carrier	**:** AT&T
Carrier Site Name	**:** Washington
Carrier Site Number	**:** CT1340
Site Location	**:** 10 Blackville Road Washington, CT 06794 41.6465, -73.316
Date	**:** October 10, 2019
Max Member Stress Level	**:** 58.0% (Pole) 54.0% (Anchor Bolt) 72.5% (Foundation)
Result	**: PASS**

10/10/2019

Prepared by:
Bennett & Pless, Inc.
B&P Job No.: 19313.023

Atlanta | Boca Raton | Charlotte | Chattanooga
750 Park of Commerce Drive, Suite 200, Boca Raton, FL 33487 | T: 561 282 2676 F: 561 989 0277
www.bennett-pless.com

Table of Contents

Introduction

We have completed our structural analysis of the proposed equipment installation on the foregoing tower to determine its ability to support the new loads proposed by AT&T. The objective of the analysis was to determine if the tower meets the current structural codes and standards with the proposed equipment installation.

Existing Structural Information

The following documents for the existing structure were made available for our structural analysis.

Tower Information	Structural Analysis Report by Sabre Industries dated 01/20/2015
Foundation Information	Foundation Information was not available
Geotechnical Information	Terracon geotechnical report Project No J2145120 dated 3/20/2014
Existing Equipment Information	AT&T First Amendment Exhibit
Tower Reinforcement Information	Tower has not been previously reinforced.

Final Proposed Equipment Loading for AT&T

The following proposed loading was obtained from the Insite Collocation Application:

Antenna/Equipment					Coax	
Mount	RAD	Qty.	Antenna	Type	Qty.	Size/Type
126	-	3	T-Arm Mount (10’ w/ 3’ stand-off) with Modifications	Mount	**1** 2 **2** 6 2 3	**1/2” Fiber** 1/2” Fiber **3/4” DC Power** 3/4” DC Power 3/4” DC Power* 1/2” RET*
	126	3	CCI HPA-65R-BUU-H8	Panel		
		3	CCI HPA-65R-BUU-H8*	Panel		
		6	**CCI DMP65R-BU8DA**	**Panel**		
		2	Raycap DC6-48-60-18-8F	OVP		
		1	**Raycap DC6-48-60-18-8F**	**OVP**		
		1	Raycap DC6-48-60-18-8F*	OVP		
122	-	3	RRU T-Arm	Mount		
	122	3	Ericsson RRUS-11	RRU		
		6	Ericsson RRUS-11*	RRU		
		3	Ericsson RRUS-12*	RRU		
		3	Ericsson RRUS-32	RRU		
		3	**Ericsson 4478-B14**	**RRU**		
		3	**Ericsson 4449 – B5/B12**	**RRU**		
		3	Ericsson RRUS-E2*	RRU		
		3	Ericsson RRUS-A2*	RRU		

Note: Proposed equipment is shown in bold above.
***Note: AT&T reserved rights.**
Note: Proposed feed lines to be placed inside the pole.

Design Criteria

The tower was analyzed using tnxTower (Version 8.0.5.0) tower analysis software using the following design criteria.

State/County	Connecticut / Litchfield
State Building Code	2018 Connecticut State Building Code (IBC 2015)
TIA/EIA Standard Code	TIA-222-G
Basic Wind Speed	115 MPH (V_{ult})/90 MPH (V_{asd})
Basic Wind Speed w/ Ice	50 MPH/ 0.75" Ice
Steel Grade	See attached tower profile for details
Exposure Category	C
Topographic Category (height)	1 (0.0 ft)
Importance Factor	1.0

Analysis Results

Based on the foregoing information, the **existing tower, base plates, flange plates and anchor rods are structurally capable of supporting the proposed equipment loads.** The existing foundation has also been evaluated. The foundation reactions resulting from the proposed installation are less than the original design foundation reactions and as such the existing foundation **is considered to be structurally capable of supporting the proposed equipment loads.**

Assumptions

The below assumptions are true, complete and accurate.

1. The existing tower has been maintained to manufacturer's specifications and is in good condition.
2. Foundations are considered to have been properly designed for the original design loads.
3. All member connections are considered to have been designed to meet the load carrying capacity of the connected member.
4. Antenna mount loads have been estimated based on generally accepted industry standards.
5. The mounts for the proposed antennas have been analyzed and designed by others.
6. See additional assumptions contained in the report attached.
7. Tower is within acceptable engineering tolerance at 105%.
8. Foundations are within acceptable engineering tolerance at 110%.

Conclusions

The existing tower described above **does have sufficient capacity** to support the proposed loading based on the governing Building Code. The existing tower foundations is also acceptable.

We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance, please call us anytime at 561-288-1187.

Sincerely,

Analysis by:

Chunhui Song, P.E.
Design Engineer

Reviewed by:

Tommy Ireland, P.E.
Principal

10/10/2019

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but not necessarily limited, to:

- Information supplied by the client regarding the structure itself, the antenna and transmission line loading on the structure and it components, or relevant information.

- Information from drawings in possession of Bennett & Pless Inc., or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Bennett & Pless Inc. and used in the performance of our engineering services is correct and complete. In the absence of information contrary, we consider that all structures were constructed in accordance with the drawings and specifications and are in a un-corroded condition and have not deteriorated; and we, therefore consider that their capacity has not significantly changed from the original design condition.

All services will be performed to the codes and standards specified by the client, and we do not imply to meet any other code and standard requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes and standards, the client shall specify the exact requirements. In the absence of information to the contrary, all work will be performed in accordance with the revision of ANSI/TIA/EIA-222 requested.

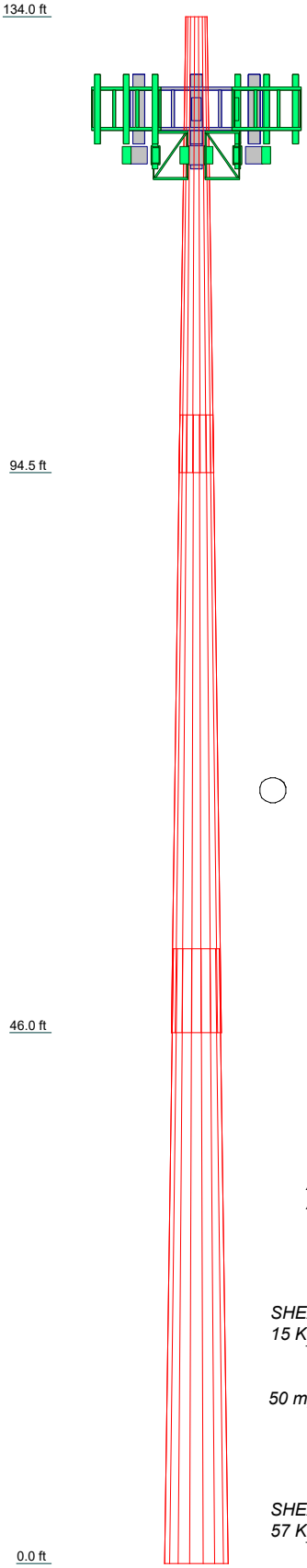
All services are performed, results obtained and recommendations made in accordance with the generally accepted engineering principles and practices. Bennett & Pless Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Disclaimer of Warranties

Bennett & Pless Inc. makes no warranties, expressed or implied, in connection with this report, and disclaims any liability arising from the ability of the existing structure to support the design loads for which it was originally designed. Bennett & Pless Inc. will not be responsible whatsoever for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of Bennett & Pless Inc. pursuant to this report will be limited to the total fee received for preparation of this report.

Attachment 1:
Calculations

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	39.50	18	0.25	5.00	22.38	35.75		3.1
2	53.50	18	0.44	7.25	33.56	51.63	A572-65	10.7
3	53.25	18	0.50		48.31	66.31		16.3
								30.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Top Branches	136.5	Ericsson RRUS-E2 (ATI)	122
Top Branches	131.5	Ericsson RRUS-E2 (ATI)	122
Branches (9' Max)	126.5	Ericsson RRUS-E2 (ATI)	122
CCI HPA-65R-BUU-H8 (ATI)	126	Ericsson RRUS A2 (ATI)	122
CCI HPA-65R-BUU-H8 (ATI)	126	Ericsson RRUS A2 (ATI)	122
CCI HPA-65R-BUU-H8 (ATI)	126	Ericsson RRUS A2 (ATI)	122
(2) CCI DMP65R-BU8DA (ATI)	126	Ericsson RRUS-11 (ATI)	122
(2) CCI DMP65R-BU8DA (ATI)	126	Ericsson RRUS-11 (ATI)	122
(2) CCI DMP65R-BU8DA (ATI)	126	Ericsson RRUS-11 (ATI)	122
(2) RayCap DC6-48-60-18-8F (ATI)	126	(2) Ericsson RRUS-11 (ATI)	122
RayCap DC6-48-60-18-8F (ATI)	126	(2) Ericsson RRUS-11 (ATI)	122
RayCap DC6-48-60-18-8F (ATI)	126	(2) Ericsson RRUS-11 (ATI)	122
10' T-Arm w/ 3'Stand-off with mods (ATI)	126	RRU T-Arm (ATI)	122
		RRU T-Arm (ATI)	122
10' T-Arm w/ 3'Stand-off with mods (ATI)	126	RRU T-Arm (ATI)	122
10' T-Arm w/ 3'Stand-off with mods (ATI)	126	Ericsson RRUS-12 (ATI)	122
		Ericsson RRUS-12 (ATI)	122
CCI HPA-65R-BUU-H8 (ATI)	126	Ericsson RRUS-12 (ATI)	122
CCI HPA-65R-BUU-H8 (ATI)	126	Branches (10' Max)	121.5
CCI HPA-65R-BUU-H8 (ATI)	126	Branches (10' Max)	116.5
Ericsson RRUS-32 (ATI)	122	Branches (10' Max)	111.5
Ericsson RRUS-32 (ATI)	122	Branches (11' Max)	106.5
Ericsson RRUS-32 (ATI)	122	Branches (11' Max)	101.5
Ericsson RRUS 4478 B14 (ATI)	122	Branches (12' Max)	96.5
Ericsson RRUS 4478 B14 (ATI)	122	Branches (12' Max)	91.5
Ericsson RRUS 4478 B14 (ATI)	122	Branches (12' Max)	86.5
Ericsson 4449 - B5/B12 (ATI)	122	Branches (13' Max)	81.5
Ericsson 4449 - B5/B12 (ATI)	122	Branches (13' Max)	76.5
Ericsson 4449 - B5/B12 (ATI)	122	Branches (14' Max)	75.8

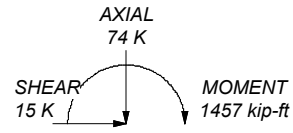
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

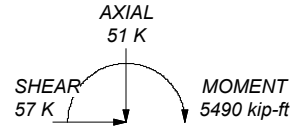
TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90 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. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Full height step bolts
11. Antenna feedlines are considered to run inside the pole shaft.
12. TOWER RATING: 58%

ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 0.75 in ICE



TORQUE 0 kip-ft
REACTIONS - 90 mph WIND

bennett&pless
Experience Structural Experties

Bennett & Pless
750 Park of Commerce Dr #200
Boca Raton, FL 33487
Phone: (605) 540-4623
FAX:

Job:	***CT112 Washington (ATT) 135ft Mono***		
Project:	***Structural Analysis SA***		
Client: InSite Towers	Drawn by: Chunhui Song		App'd:
Code: TIA-222-G	Date: 10/10/19		Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Litchfield County, Connecticut.
Basic wind speed of 90 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.75 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.
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Full height step bolts.
Antenna feedlines are considered to run inside the pole shaft..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole 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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	134.00-94.50	39.50	5.00	18	22.38	35.75	0.25	1.00	A572-65 (65 ksi)
L2	94.50-46.00	53.50	7.25	18	33.56	51.63	0.44	1.75	A572-65 (65 ksi)
L3	46.00-0.00	53.25		18	48.31	66.31	0.50	2.00	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.69	17.56	1086.50	7.86	11.37	95.57	2174.42	8.78	3.50	13.996
	36.26	28.17	4485.07	12.60	18.16	246.96	8976.05	14.09	5.85	23.408
L2	35.72	45.99	6373.78	11.76	17.05	373.89	12755.95	23.00	5.14	11.74
	52.36	71.09	23536.48	18.17	26.23	897.38	47103.92	35.55	8.32	19.01
L3	51.46	75.87	21905.84	16.97	24.54	892.68	43840.50	37.94	7.62	15.244
	67.26	104.44	57146.55	23.36	33.69	1696.47	114368.30	52.23	10.79	21.581

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
L1 134.00-94.50				1	1	1			
L2 94.50-46.00				1	1	1			
L3 46.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
***									
3/4" DC Power Cable (ATT)	C	No	Yes	Inside Pole	126.00 - 5.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
3/4" DC Power Cable (ATT)	C	No	Yes	Inside Pole	126.00 - 5.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1/2" FIBER CABLE (ATT)	A	No	Yes	Inside Pole	126.00 - 5.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1/2" FIBER CABLE (ATT)	A	No	Yes	Inside Pole	126.00 - 5.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00
1/2" RET (ATT)	B	No	Yes	Inside Pole	126.00 - 5.00	3	No Ice 1/2" Ice	0.00 0.00	0.00 0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
3/4" DC Power Cable (ATT)	B	No	Yes	Inside Pole	126.00 - 5.00	2	1" Ice	0.00	0.00
							No Ice	0.00	0.00
							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
L1	134.00-94.50	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.15
L2	94.50-46.00	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.09
		C	0.000	0.000	0.000	0.000	0.23
L3	46.00-0.00	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.19

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
L1	134.00-94.50	A	1.696	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.15
L2	94.50-46.00	A	1.615	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.23
L3	46.00-0.00	A	1.447	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.19

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

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
CCI HPA-65R-BUU-H8	A	From Leg	3.00	0.00	126.00	No Ice	12.98	7.52	0.07
(AT&T)			0			1/2" Ice	13.56	8.09	0.14
			0			1" Ice	14.15	8.67	0.22
CCI HPA-65R-BUU-H8	B	From Leg	3.00	0.00	126.00	No Ice	12.98	7.52	0.07
(AT&T)			0			1/2" Ice	13.56	8.09	0.14
			0			1" Ice	14.15	8.67	0.22
CCI HPA-65R-BUU-H8	C	From Leg	3.00	0.00	126.00	No Ice	12.98	7.52	0.07
(AT&T)			0			1/2" Ice	13.56	8.09	0.14
			0			1" Ice	14.15	8.67	0.22
CCI HPA-65R-BUU-H8	A	From Leg	3.00	0.00	126.00	No Ice	12.98	7.52	0.07
(AT&T)			0			1/2" Ice	13.56	8.09	0.14
			0			1" Ice	14.15	8.67	0.22
CCI HPA-65R-BUU-H8	B	From Leg	3.00	0.00	126.00	No Ice	12.98	7.52	0.07
(AT&T)			0			1/2" Ice	13.56	8.09	0.14
			0			1" Ice	14.15	8.67	0.22
CCI HPA-65R-BUU-H8	C	From Leg	3.00	0.00	126.00	No Ice	12.98	7.52	0.07
(AT&T)			0			1/2" Ice	13.56	8.09	0.14
			0			1" Ice	14.15	8.67	0.22
(2) CCI DMP65R-BU8DA	A	From Leg	3.00	0.00	126.00	No Ice	17.87	8.12	0.10
(AT&T)			0			1/2" Ice	18.50	8.72	0.19
			0			1" Ice	19.14	9.32	0.30
(2) CCI DMP65R-BU8DA	B	From Leg	3.00	0.00	126.00	No Ice	17.87	8.12	0.10
(AT&T)			0			1/2" Ice	18.50	8.72	0.19
			0			1" Ice	19.14	9.32	0.30
(2) CCI DMP65R-BU8DA	C	From Leg	3.00	0.00	126.00	No Ice	17.87	8.12	0.10
(AT&T)			0			1/2" Ice	18.50	8.72	0.19
			0			1" Ice	19.14	9.32	0.30
Ericsson RRUS-11	A	From Leg	3.00	0.00	122.00	No Ice	2.57	1.07	0.05
(AT&T)			0			1/2" Ice	2.76	1.21	0.07
			0			1" Ice	2.97	1.36	0.09
Ericsson RRUS-11	B	From Leg	3.00	0.00	122.00	No Ice	2.57	1.07	0.05
(AT&T)			0			1/2" Ice	2.76	1.21	0.07
			0			1" Ice	2.97	1.36	0.09
Ericsson RRUS-11	C	From Leg	3.00	0.00	122.00	No Ice	2.57	1.07	0.05
(AT&T)			0			1/2" Ice	2.76	1.21	0.07
			0			1" Ice	2.97	1.36	0.09
(2) Ericsson RRUS-11	A	From Leg	3.00	0.00	122.00	No Ice	2.57	1.07	0.05
(AT&T)			0			1/2" Ice	2.76	1.21	0.07
			0			1" Ice	2.97	1.36	0.09
(2) Ericsson RRUS-11	B	From Leg	3.00	0.00	122.00	No Ice	2.57	1.07	0.05
(AT&T)			0			1/2" Ice	2.76	1.21	0.07
			0			1" Ice	2.97	1.36	0.09
(2) Ericsson RRUS-11	C	From Leg	3.00	0.00	122.00	No Ice	2.57	1.07	0.05
(AT&T)			0			1/2" Ice	2.76	1.21	0.07
			0			1" Ice	2.97	1.36	0.09
Ericsson RRUS-12	A	From Leg	3.00	0.00	122.00	No Ice	3.15	1.29	0.06
(AT&T)			0			1/2" Ice	3.36	1.44	0.08
			0			1" Ice	3.59	1.60	0.11
Ericsson RRUS-12	B	From Leg	3.00	0.00	122.00	No Ice	3.15	1.29	0.06
(AT&T)			0			1/2" Ice	3.36	1.44	0.08
			0			1" Ice	3.59	1.60	0.11
Ericsson RRUS-12	C	From Leg	3.00	0.00	122.00	No Ice	3.15	1.29	0.06
(AT&T)			0			1/2" Ice	3.36	1.44	0.08
			0			1" Ice	3.59	1.60	0.11
Ericsson RRUS-32	A	From Leg	3.00	0.00	122.00	No Ice	2.74	1.67	0.05
(AT&T)			0			1/2" Ice	2.96	1.86	0.07
			0			1" Ice	3.19	2.05	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
Ericsson RRUS-32	B	From Leg	3.00	0.00	122.00	No Ice	2.74	1.67	0.05
(AT&T)			0			1/2" Ice	2.96	1.86	0.07
			0			1" Ice	3.19	2.05	0.10
Ericsson RRUS-32	C	From Leg	3.00	0.00	122.00	No Ice	2.74	1.67	0.05
(AT&T)			0			1/2" Ice	2.96	1.86	0.07
			0			1" Ice	3.19	2.05	0.10
Ericsson RRUS 4478 B14	A	From Leg	3.00	0.00	122.00	No Ice	2.02	1.25	0.06
(AT&T)			0			1/2" Ice	2.20	1.40	0.08
			0			1" Ice	2.39	1.55	0.10
Ericsson RRUS 4478 B14	B	From Leg	3.00	0.00	122.00	No Ice	2.02	1.25	0.06
(AT&T)			0			1/2" Ice	2.20	1.40	0.08
			0			1" Ice	2.39	1.55	0.10
Ericsson RRUS 4478 B14	C	From Leg	3.00	0.00	122.00	No Ice	2.02	1.25	0.06
(AT&T)			0			1/2" Ice	2.20	1.40	0.08
			0			1" Ice	2.39	1.55	0.10
Ericsson 4449 - B5/B12	A	From Leg	3.00	0.00	122.00	No Ice	1.97	1.41	0.07
(AT&T)			0			1/2" Ice	2.14	1.56	0.09
			0			1" Ice	2.33	1.73	0.11
Ericsson 4449 - B5/B12	B	From Leg	3.00	0.00	122.00	No Ice	1.97	1.41	0.07
(AT&T)			0			1/2" Ice	2.14	1.56	0.09
			0			1" Ice	2.33	1.73	0.11
Ericsson 4449 - B5/B12	C	From Leg	3.00	0.00	122.00	No Ice	1.97	1.41	0.07
(AT&T)			0			1/2" Ice	2.14	1.56	0.09
			0			1" Ice	2.33	1.73	0.11
Ericsson RRUS-E2	A	From Leg	3.00	0.00	122.00	No Ice	3.15	1.29	0.06
(AT&T)			0			1/2" Ice	3.36	1.44	0.08
			0			1" Ice	3.59	1.60	0.11
Ericsson RRUS-E2	B	From Leg	3.00	0.00	122.00	No Ice	3.15	1.29	0.06
(AT&T)			0			1/2" Ice	3.36	1.44	0.08
			0			1" Ice	3.59	1.60	0.11
Ericsson RRUS-E2	C	From Leg	3.00	0.00	122.00	No Ice	3.15	1.29	0.06
(AT&T)			0			1/2" Ice	3.36	1.44	0.08
			0			1" Ice	3.59	1.60	0.11
Ericsson RRUS A2	A	From Leg	3.00	0.00	122.00	No Ice	2.00	0.44	0.02
(AT&T)			0			1/2" Ice	2.18	0.55	0.03
			0			1" Ice	2.36	0.66	0.05
Ericsson RRUS A2	B	From Leg	3.00	0.00	122.00	No Ice	2.00	0.44	0.02
(AT&T)			0			1/2" Ice	2.18	0.55	0.03
			0			1" Ice	2.36	0.66	0.05
Ericsson RRUS A2	C	From Leg	3.00	0.00	122.00	No Ice	2.00	0.44	0.02
(AT&T)			0			1/2" Ice	2.18	0.55	0.03
			0			1" Ice	2.36	0.66	0.05
(2) RayCap	A	From Leg	3.00	0.00	126.00	No Ice	0.79	0.79	0.02
DC6-48-60-18-8F			0			1/2" Ice	1.27	1.27	0.04
(AT&T)			0			1" Ice	1.45	1.45	0.05
RayCap DC6-48-60-18-8F	B	From Leg	3.00	0.00	126.00	No Ice	0.79	0.79	0.02
(AT&T)			0			1/2" Ice	1.27	1.27	0.04
			0			1" Ice	1.45	1.45	0.05
RayCap DC6-48-60-18-8F	C	From Leg	3.00	0.00	126.00	No Ice	0.79	0.79	0.02
(AT&T)			0			1/2" Ice	1.27	1.27	0.04
			0			1" Ice	1.45	1.45	0.05
10' T-Arm w/ 3'Stand-off	A	From Leg	1.50	0.00	126.00	No Ice	15.00	8.00	0.50
with mods			0			1/2" Ice	16.50	8.50	0.55
(AT&T)			0			1" Ice	18.00	9.00	0.60
10' T-Arm w/ 3'Stand-off	B	From Leg	1.50	0.00	126.00	No Ice	15.00	8.00	0.50
with mods			0			1/2" Ice	16.50	8.50	0.55
(AT&T)			0			1" Ice	18.00	9.00	0.60

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
10' T-Arm w/ 3'Stand-off	C	From Leg	1.50	0.00	126.00	No Ice	15.00	8.00	0.50
with mods			0			1/2" Ice	16.50	8.50	0.55
(AT&T)			0			1" Ice	18.00	9.00	0.60
RRU T-Arm	A	From Leg	1.50	0.00	122.00	No Ice	7.00	3.50	0.15
(AT&T)			0			1/2" Ice	8.00	4.00	0.17
			0			1" Ice	9.00	4.50	0.20
RRU T-Arm	B	From Leg	1.50	0.00	122.00	No Ice	7.00	3.50	0.15
(AT&T)			0			1/2" Ice	8.00	4.00	0.17
			0			1" Ice	9.00	4.50	0.20
RRU T-Arm	C	From Leg	1.50	0.00	122.00	No Ice	7.00	3.50	0.15
(AT&T)			0			1/2" Ice	8.00	4.00	0.17
			0			1" Ice	9.00	4.50	0.20
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Top Branches	C	None		0.00	136.50	No Ice	25.00	25.00	0.25
						1/2" Ice	26.50	26.50	0.28
						1" Ice	28.00	28.00	0.31
Top Branches	C	None		0.00	131.50	No Ice	25.00	25.00	0.25
						1/2" Ice	26.50	26.50	0.28
						1" Ice	28.00	28.00	0.31
Branches (9' Max)	C	None		0.00	126.50	No Ice	50.00	50.00	0.50
						1/2" Ice	52.90	52.90	0.55
						1" Ice	55.80	55.80	0.60
Branches (10' Max)	C	None		0.00	121.50	No Ice	55.60	55.60	0.50
						1/2" Ice	58.80	58.80	0.55
						1" Ice	62.00	62.00	0.60
Branches (10' Max)	C	None		0.00	116.50	No Ice	55.60	55.60	0.50
						1/2" Ice	58.80	58.80	0.55
						1" Ice	62.00	62.00	0.60
Branches (10' Max)	C	None		0.00	111.50	No Ice	55.60	55.60	0.50
						1/2" Ice	58.80	58.80	0.55
						1" Ice	62.00	62.00	0.60
Branches (11' Max)	C	None		0.00	106.50	No Ice	61.10	61.10	0.55
						1/2" Ice	70.50	70.50	0.60
						1" Ice	79.90	79.90	0.65
Branches (11' Max)	C	None		0.00	101.50	No Ice	61.10	61.10	0.55
						1/2" Ice	70.50	70.50	0.60
						1" Ice	79.90	79.90	0.65
Branches (12' Max)	C	None		0.00	96.50	No Ice	66.70	66.70	0.60
						1/2" Ice	70.50	70.50	0.65
						1" Ice	74.30	74.30	0.70
Branches (12' Max)	C	None		0.00	91.50	No Ice	66.70	66.70	0.60
						1/2" Ice	70.50	70.50	0.65
						1" Ice	74.30	74.30	0.70
Branches (12' Max)	C	None		0.00	86.50	No Ice	66.70	66.70	0.60
						1/2" Ice	70.50	70.50	0.65
						1" Ice	74.30	74.30	0.70
Branches (13' Max)	C	None		0.00	81.50	No Ice	72.20	72.20	0.65
						1/2" Ice	76.40	76.40	0.70
						1" Ice	80.60	80.60	0.75
Branches (13' Max)	C	None		0.00	76.50	No Ice	72.20	72.20	0.65
						1/2" Ice	76.40	76.40	0.70
						1" Ice	80.60	80.60	0.75
Branches (14' Max)	C	None		0.00	75.80	No Ice	77.80	72.20	0.70
						1/2" Ice	82.20	82.20	0.75
						1" Ice	86.60	92.20	0.80
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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
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
L1	134 - 94.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.60	0.00	0.35
			Max. Mx	8	-11.47	-573.48	0.09
			Max. My	2	-11.47	0.00	573.57
			Max. Vy	8	29.48	-573.48	0.09
			Max. Vx	2	-29.48	0.00	573.57
			Max. Torque	9			0.12
L2	94.5 - 46	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.29	0.00	0.35
			Max. Mx	8	-27.84	-2598.33	0.10
			Max. My	2	-27.84	0.00	2598.43
			Max. Vy	8	51.80	-2598.33	0.10
			Max. Vx	2	-51.80	0.00	2598.43
			Max. Torque	9			0.12
L3	46 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.69	0.00	0.35
			Max. Mx	8	-51.26	-5489.41	0.10
			Max. My	2	-51.26	0.00	5489.51
			Max. Vy	8	56.57	-5489.41	0.10
			Max. Vx	2	-56.57	0.00	5489.51
			Max. Torque	9			0.12

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	73.69	0.00	15.44
	Max. H_x	20	51.30	56.54	0.00
	Max. H_z	2	51.30	0.00	56.54
	Max. M_x	2	5489.51	0.00	56.54
	Max. M_z	8	5489.41	-56.54	0.00
	Max. Torsion	9	0.12	-56.54	0.00
	Min. Vert	5	38.47	-28.27	48.97
	Min. H_x	8	51.30	-56.54	0.00
	Min. H_z	14	51.30	0.00	-56.54
	Min. M_x	14	-5489.31	0.00	-56.54
	Min. M_z	20	-5489.41	56.54	0.00
	Min. Torsion	21	-0.12	56.54	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	42.75	0.00	0.00	-0.08	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	51.30	0.00	-56.54	-5489.51	0.00	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	38.47	0.00	-56.54	-5468.76	0.00	0.00

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.6 Wind 30 deg - No Ice	51.30	28.27	-48.97	-4754.07	-2744.71	-0.06
0.9 Dead+1.6 Wind 30 deg - No Ice	38.47	28.27	-48.97	-4736.10	-2734.34	-0.06
1.2 Dead+1.6 Wind 60 deg - No Ice	51.30	48.97	-28.27	-2744.80	-4753.97	-0.10
0.9 Dead+1.6 Wind 60 deg - No Ice	38.47	48.97	-28.27	-2734.42	-4736.02	-0.10
1.2 Dead+1.6 Wind 90 deg - No Ice	51.30	56.54	0.00	-0.10	-5489.41	-0.11
0.9 Dead+1.6 Wind 90 deg - No Ice	38.47	56.54	0.00	-0.07	-5468.69	-0.12
1.2 Dead+1.6 Wind 120 deg - No Ice	51.30	48.97	28.27	2744.61	-4753.97	-0.10
0.9 Dead+1.6 Wind 120 deg - No Ice	38.47	48.97	28.27	2734.27	-4736.02	-0.10
1.2 Dead+1.6 Wind 150 deg - No Ice	51.30	28.27	48.97	4753.87	-2744.71	-0.06
0.9 Dead+1.6 Wind 150 deg - No Ice	38.47	28.27	48.97	4735.95	-2734.34	-0.06
1.2 Dead+1.6 Wind 180 deg - No Ice	51.30	0.00	56.54	5489.31	0.00	0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	38.47	0.00	56.54	5468.61	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice	51.30	-28.27	48.97	4753.87	2744.71	0.06
0.9 Dead+1.6 Wind 210 deg - No Ice	38.47	-28.27	48.97	4735.95	2734.34	0.06
1.2 Dead+1.6 Wind 240 deg - No Ice	51.30	-48.97	28.27	2744.61	4753.97	0.10
0.9 Dead+1.6 Wind 240 deg - No Ice	38.47	-48.97	28.27	2734.27	4736.02	0.10
1.2 Dead+1.6 Wind 270 deg - No Ice	51.30	-56.54	0.00	-0.10	5489.41	0.11
0.9 Dead+1.6 Wind 270 deg - No Ice	38.47	-56.54	0.00	-0.07	5468.69	0.12
1.2 Dead+1.6 Wind 300 deg - No Ice	51.30	-48.97	-28.27	-2744.80	4753.97	0.10
0.9 Dead+1.6 Wind 300 deg - No Ice	38.47	-48.97	-28.27	-2734.42	4736.02	0.10
1.2 Dead+1.6 Wind 330 deg - No Ice	51.30	-28.27	-48.97	-4754.07	2744.71	0.06
0.9 Dead+1.6 Wind 330 deg - No Ice	38.47	-28.27	-48.97	-4736.10	2734.34	0.06
1.2 Dead+1.0 Ice+1.0 Temp	73.69	0.00	0.00	-0.35	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	73.69	0.00	-15.44	-1457.19	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	73.69	7.72	-13.38	-1262.02	-728.41	-0.02
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	73.69	13.38	-7.72	-728.78	-1261.65	-0.04
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	73.69	15.44	0.00	-0.37	-1456.82	-0.05
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	73.69	13.38	7.72	728.04	-1261.65	-0.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	73.69	7.72	13.38	1261.27	-728.41	-0.02
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	73.69	0.00	15.44	1456.45	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	73.69	-7.72	13.38	1261.27	728.41	0.02

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	73.69	-13.38	7.72	728.04	1261.65	0.04
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	73.69	-15.44	0.00	-0.37	1456.82	0.05
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	73.69	-13.38	-7.72	-728.78	1261.65	0.04
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	73.69	-7.72	-13.38	-1262.02	728.41	0.02
Dead+Wind 0 deg - Service	42.75	0.00	-14.05	-1361.67	0.00	0.00
Dead+Wind 30 deg - Service	42.75	7.03	-12.17	-1179.25	-680.79	-0.01
Dead+Wind 60 deg - Service	42.75	12.17	-7.03	-680.88	-1179.17	-0.02
Dead+Wind 90 deg - Service	42.75	14.05	0.00	-0.08	-1361.58	-0.03
Dead+Wind 120 deg - Service	42.75	12.17	7.03	680.71	-1179.17	-0.02
Dead+Wind 150 deg - Service	42.75	7.03	12.17	1179.08	-680.79	-0.01
Dead+Wind 180 deg - Service	42.75	0.00	14.05	1361.50	0.00	0.00
Dead+Wind 210 deg - Service	42.75	-7.03	12.17	1179.08	680.79	0.01
Dead+Wind 240 deg - Service	42.75	-12.17	7.03	680.71	1179.17	0.02
Dead+Wind 270 deg - Service	42.75	-14.05	0.00	-0.08	1361.58	0.03
Dead+Wind 300 deg - Service	42.75	-12.17	-7.03	-680.88	1179.17	0.02
Dead+Wind 330 deg - Service	42.75	-7.03	-12.17	-1179.25	680.79	0.01

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-42.75	0.00	0.00	42.75	0.00	0.000%
2	0.00	-51.30	-56.54	0.00	51.30	56.54	0.000%
3	0.00	-38.47	-56.54	0.00	38.47	56.54	0.000%
4	28.27	-51.30	-48.97	-28.27	51.30	48.97	0.000%
5	28.27	-38.47	-48.97	-28.27	38.47	48.97	0.000%
6	48.97	-51.30	-28.27	-48.97	51.30	28.27	0.000%
7	48.97	-38.47	-28.27	-48.97	38.47	28.27	0.000%
8	56.54	-51.30	0.00	-56.54	51.30	0.00	0.000%
9	56.54	-38.47	0.00	-56.54	38.47	0.00	0.000%
10	48.97	-51.30	28.27	-48.97	51.30	-28.27	0.000%
11	48.97	-38.47	28.27	-48.97	38.47	-28.27	0.000%
12	28.27	-51.30	48.97	-28.27	51.30	-48.97	0.000%
13	28.27	-38.47	48.97	-28.27	38.47	-48.97	0.000%
14	0.00	-51.30	56.54	0.00	51.30	-56.54	0.000%
15	0.00	-38.47	56.54	0.00	38.47	-56.54	0.000%
16	-28.27	-51.30	48.97	28.27	51.30	-48.97	0.000%
17	-28.27	-38.47	48.97	28.27	38.47	-48.97	0.000%
18	-48.97	-51.30	28.27	48.97	51.30	-28.27	0.000%
19	-48.97	-38.47	28.27	48.97	38.47	-28.27	0.000%
20	-56.54	-51.30	0.00	56.54	51.30	0.00	0.000%
21	-56.54	-38.47	0.00	56.54	38.47	0.00	0.000%
22	-48.97	-51.30	-28.27	48.97	51.30	28.27	0.000%
23	-48.97	-38.47	-28.27	48.97	38.47	28.27	0.000%
24	-28.27	-51.30	-48.97	28.27	51.30	48.97	0.000%
25	-28.27	-38.47	-48.97	28.27	38.47	48.97	0.000%
26	0.00	-73.69	0.00	0.00	73.69	0.00	0.000%
27	0.00	-73.69	-15.44	0.00	73.69	15.44	0.000%
28	7.72	-73.69	-13.38	-7.72	73.69	13.38	0.000%
29	13.38	-73.69	-7.72	-13.38	73.69	7.72	0.000%
30	15.44	-73.69	0.00	-15.44	73.69	0.00	0.000%
31	13.38	-73.69	7.72	-13.38	73.69	-7.72	0.000%
32	7.72	-73.69	13.38	-7.72	73.69	-13.38	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
33	0.00	-73.69	15.44	0.00	73.69	-15.44	0.000%
34	-7.72	-73.69	13.38	7.72	73.69	-13.38	0.000%
35	-13.38	-73.69	7.72	13.38	73.69	-7.72	0.000%
36	-15.44	-73.69	0.00	15.44	73.69	0.00	0.000%
37	-13.38	-73.69	-7.72	13.38	73.69	7.72	0.000%
38	-7.72	-73.69	-13.38	7.72	73.69	13.38	0.000%
39	0.00	-42.75	-14.05	0.00	42.75	14.05	0.000%
40	7.03	-42.75	-12.17	-7.03	42.75	12.17	0.000%
41	12.17	-42.75	-7.03	-12.17	42.75	7.03	0.000%
42	14.05	-42.75	0.00	-14.05	42.75	0.00	0.000%
43	12.17	-42.75	7.03	-12.17	42.75	-7.03	0.000%
44	7.03	-42.75	12.17	-7.03	42.75	-12.17	0.000%
45	0.00	-42.75	14.05	0.00	42.75	-14.05	0.000%
46	-7.03	-42.75	12.17	7.03	42.75	-12.17	0.000%
47	-12.17	-42.75	7.03	12.17	42.75	-7.03	0.000%
48	-14.05	-42.75	0.00	14.05	42.75	0.00	0.000%
49	-12.17	-42.75	-7.03	12.17	42.75	7.03	0.000%
50	-7.03	-42.75	-12.17	7.03	42.75	12.17	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	0.00001286
3	Yes	4	0.00000001	0.00000646
4	Yes	5	0.00000001	0.00001496
5	Yes	5	0.00000001	0.00000601
6	Yes	5	0.00000001	0.00001501
7	Yes	5	0.00000001	0.00000603
8	Yes	4	0.00000001	0.00001343
9	Yes	4	0.00000001	0.00000685
10	Yes	5	0.00000001	0.00001495
11	Yes	5	0.00000001	0.00000600
12	Yes	5	0.00000001	0.00001500
13	Yes	5	0.00000001	0.00000603
14	Yes	4	0.00000001	0.00001286
15	Yes	4	0.00000001	0.00000646
16	Yes	5	0.00000001	0.00001500
17	Yes	5	0.00000001	0.00000603
18	Yes	5	0.00000001	0.00001495
19	Yes	5	0.00000001	0.00000600
20	Yes	4	0.00000001	0.00001343
21	Yes	4	0.00000001	0.00000685
22	Yes	5	0.00000001	0.00001501
23	Yes	5	0.00000001	0.00000603
24	Yes	5	0.00000001	0.00001496
25	Yes	5	0.00000001	0.00000601
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00001246
28	Yes	5	0.00000001	0.00001398
29	Yes	5	0.00000001	0.00001399
30	Yes	5	0.00000001	0.00001245
31	Yes	5	0.00000001	0.00001396
32	Yes	5	0.00000001	0.00001397
33	Yes	5	0.00000001	0.00001244

34	Yes	5	0.00000001	0.00001397
35	Yes	5	0.00000001	0.00001396
36	Yes	5	0.00000001	0.00001245
37	Yes	5	0.00000001	0.00001399
38	Yes	5	0.00000001	0.00001398
39	Yes	4	0.00000001	0.00000375
40	Yes	4	0.00000001	0.00002343
41	Yes	4	0.00000001	0.00002364
42	Yes	4	0.00000001	0.00000377
43	Yes	4	0.00000001	0.00002335
44	Yes	4	0.00000001	0.00002356
45	Yes	4	0.00000001	0.00000375
46	Yes	4	0.00000001	0.00002356
47	Yes	4	0.00000001	0.00002335
48	Yes	4	0.00000001	0.00000377
49	Yes	4	0.00000001	0.00002364
50	Yes	4	0.00000001	0.00002343

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
L1	134 - 94.5	1.17	39	0.92	0.00
L2	99.5 - 46	0.65	39	0.74	0.00
L3	53.25 - 0	0.18	39	0.38	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
136.50	Top Branches	39	1.17	0.92	0.00	50128
131.50	Top Branches	39	1.13	0.91	0.00	50128
126.50	Branches (9' Max)	39	1.05	0.89	0.00	33418
126.00	CCI HPA-65R-BUU-H8	39	1.04	0.88	0.00	31330
122.00	Ericsson RRUS-11	39	0.98	0.86	0.00	20886
121.50	Branches (10' Max)	39	0.97	0.86	0.00	20051
116.50	Branches (10' Max)	39	0.89	0.84	0.00	14322
111.50	Branches (10' Max)	39	0.82	0.81	0.00	11139
106.50	Branches (11' Max)	39	0.75	0.79	0.00	9114
101.50	Branches (11' Max)	39	0.67	0.76	0.00	7747
96.50	Branches (12' Max)	39	0.61	0.72	0.00	7165
91.50	Branches (12' Max)	39	0.54	0.69	0.00	6984
86.50	Branches (12' Max)	39	0.48	0.65	0.00	6819
81.50	Branches (13' Max)	39	0.43	0.61	0.00	6662
76.50	Branches (13' Max)	39	0.37	0.57	0.00	6512
75.80	Branches (14' Max)	39	0.37	0.57	0.00	6492

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
L1	134 - 94.5	4.71	2	3.70	0.00
L2	99.5 - 46	2.61	2	3.00	0.00
L3	53.25 - 0	0.73	2	1.53	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
136.50	Top Branches	2	4.71	3.70	0.00	12520
131.50	Top Branches	2	4.55	3.66	0.00	12520
126.50	Branches (9' Max)	2	4.23	3.57	0.00	8346
126.00	CCI HPA-65R-BUU-H8	2	4.20	3.56	0.00	7824
122.00	Ericsson RRUS-11	2	3.95	3.49	0.00	5216
121.50	Branches (10' Max)	2	3.92	3.48	0.00	5007
116.50	Branches (10' Max)	2	3.60	3.38	0.00	3576
111.50	Branches (10' Max)	2	3.30	3.28	0.00	2780
106.50	Branches (11' Max)	2	3.00	3.17	0.00	2274
101.50	Branches (11' Max)	2	2.72	3.05	0.00	1932
96.50	Branches (12' Max)	2	2.45	2.92	0.00	1786
91.50	Branches (12' Max)	2	2.19	2.78	0.00	1740
86.50	Branches (12' Max)	2	1.95	2.63	0.00	1698
81.50	Branches (13' Max)	2	1.72	2.47	0.00	1658
76.50	Branches (13' Max)	2	1.51	2.31	0.00	1620
75.80	Branches (14' Max)	2	1.48	2.28	0.00	1614

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	134 - 94.5 (1)	TP35.75x22.38x0.25	39.50	134.00	134.0	26.83	-11.47	337.61	0.034
L2	94.5 - 46 (2)	TP51.63x33.56x0.44	53.50	134.00	92.9	67.69	-27.84	1770.75	0.016
L3	46 - 0 (3)	TP66.31x48.31x0.5	53.25	134.00	68.8	104.44	-51.26	4220.05	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	134 - 94.5 (1)	TP35.75x22.38x0.25	573.57	1263.96	0.454	0.00	1263.96	0.000
L2	94.5 - 46 (2)	TP51.63x33.56x0.44	2598.43	4891.56	0.531	0.00	4891.56	0.000
L3	46 - 0 (3)	TP66.31x48.31x0.5	5489.51	9672.08	0.568	0.00	9672.08	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	134 - 94.5 (1)	TP35.75x22.38x0.25	29.48	908.65	0.032	0.00	2533.83	0.000
L2	94.5 - 46 (2)	TP51.63x33.56x0.44	51.80	2442.81	0.021	0.00	9808.33	0.000
L3	46 - 0 (3)	TP66.31x48.31x0.5	56.57	3572.68	0.016	0.00	19390.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	134 - 94.5 (1)	0.034	0.454	0.000	0.032	0.000	0.489 ✔	1.000	4.8.2 ✔
L2	94.5 - 46 (2)	0.016	0.531	0.000	0.021	0.000	0.547 ✔	1.000	4.8.2 ✔
L3	46 - 0 (3)	0.012	0.568	0.000	0.016	0.000	0.580 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	134 - 94.5	Pole	TP35.75x22.38x0.25	1	-11.47	337.61	48.9	Pass
L2	94.5 - 46	Pole	TP51.63x33.56x0.44	2	-27.84	1770.75	54.7	Pass
L3	46 - 0	Pole	TP66.31x48.31x0.5	3	-51.26	4220.05	58.0	Pass
							Summary	
						Pole (L3)	58.0	Pass
						RATING =	**58.0**	**Pass**

Base/Flange Plate	Plate Type	***Baseplate***	
	Pole Diameter	66.31	in
	Pole Thickness	0.5	in
	Plate Diameter	79.25	in
	Plate Thickness	3	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	811.24	k-in
	Applied	258.81	k-in
Stiffeners	#	***0***	

Bolts	#	***26***	
	Bolt Circle	73.25	in
	(R)adial / (S)quare	R	
●	Diameter	2.25	in
	Hole Diameter	2.625	in
	Type	A615-75	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	140.28	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev.	***G***	**Date**	10/10/2019
		Engineer	CS
		Site #	CT112
Moment	5490.0 k-ft	**Carrier**	AT&T
Axial	51.0 k		
Shear	57.0 k		

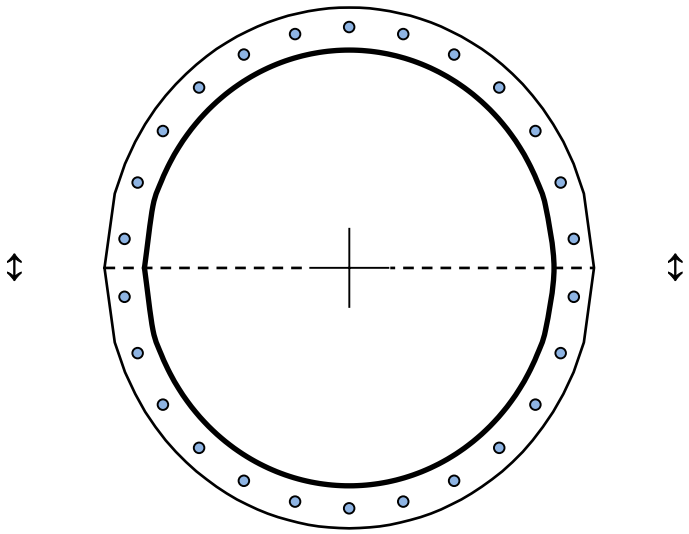

Plate Stress Ratio:
0.32 (Pass)

Bolt Stress Ratio:
0.54 (Pass)

Monopole Foundation Analysis

Site#	CT112	Date	10/10/2019
Carrier	AT&T	Engineer	CS

TIA Rev	TIA-222-G
Conversion Factor	1

*Use (1) if tower was designed in Rev G/Rev H

Original Design Reactions	
Moment (kip-ft)	9467.0
Horizontal (kip)	90.0
Vertical (kip)	70.3

Current Analysis Reactions	
Moment (kip-ft)	5490.0
Horizontal (kip)	57.0
Vertical (kip)	51.0

Foundation Reactions	**Factored Original Design**			**Current Analysis**			**Percentage**
	Horizontal (kips)	Vertical (kips)	Moment (kips-ft)	Horizontal (kips)	Vertical (kips)	Moment (kips-ft)	
Base	90.0	70.3	9467.0	57.0	51.0	5490.0	**72.5%**

Notes:

1. Original design reactions should be increased by 1.35 conversion factor from Rev F to Rev G
2. Foundations are within acceptable engineering tolerance at 110%.

Reaction	**Percentage**
Moment	58.0%
Horizontal	72.5%
Vertical	63.3%

Attachment 2:
Collocation Application

WORKSHEET 1 OF 2 (COMPLETE BOTH WORKSHEET TABS)

InSite Towers, LLC

CUSTOMER APPLICATION

DATE SUBMITTED: 04.29.2019

A Site Application Fee to be paid upon submission of this Customer Application.

CUSTOMER INFORMATION

COMPANY NAME:	NEW CINGULAR WIRELESS PCS	PHONE:	
ENTITY Type: i.e. Inc., LLP	LLC	FAX:	
STATE of Inc.	DELAWARE	SERVICE (PCS, SMR):	

CUSTOMER ADDRESSES

COMPANY Address:	575 MOROSGO DRIVE	CITY/STATE:	ATLANTA, GA	ZIP :	30324
BILLING Address:		CITY/STATE:		ZIP :	
NOTICE Address 1:	1025 Lenox Park Blvd NE, 3rd Floor	CITY/STATE:	ATLANTA, GA	ZIP :	30319
NOTICE Address 2:	208 S. AKARD STREET	CITY/STATE:	DALLAS, TX	ZIP :	75202-4206

CUSTOMER CONTACTS

PRIMARY CONTACT:	DAVID HERDMAN	PHONE:	203-213-6588
TITLE:	SENIOR PM	E-MAIL Address:	dh1681@att.com
SIGNATORY NAME:	JESSICA RINCON	PHONE:	508-395-4841
TITLE:	AREA MANAGER	E-MAIL Address:	JR7293@att.com
EMERGENCY CONTACT:		PHONE:	
TITLE:		E-MAIL Address:	
TECHNICAL/OPS:		PHONE:	
TITLE:		E-MAIL Address:	
RF ENGINEER:	Mohammed Hussain	PHONE:	510-493-3024
TITLE:		E-MAIL Address:	MH705R@ATT.COM
BILLING CONTACT:		PHONE:	
TITLE:		E-MAIL Address:	
LEGAL CONTACT:	JAY PEREZ	PHONE:	201-576-2042
TITLE:	ATTORNEY	E-MAIL Address:	VP8049@att.com

SITE INFORMATION

CUSTOMER Site # / Name:	CT1340 / WASHINGTON / 10141339	INSITE Site # and Name:	CT112 / Washington
SITE LATITUDE:	41.6465333	SITE LONGITUDE:	-73.3160528
SITE ADDRESS:	10 BLACKVILLE ROAD	CITY:	WASHINGTON
STATE:	CT ZIP: 6794	STRUCTURE TYPE:	MONOPINE

USE THIS SECTION TO PROVIDE A DESCRIPTION OF COLOCATION OR MODIFICATION REQUEST

See attached Mount Modification and Mount Mod Design. RRU are mounted on 2' Standoff on collar mount right below antennas at 122' RC. Insite Scoping: Current install (6) antennas (9) RRU (2) Surge (2) Fiber (4) Power lines plus reserved (18) RRU (2) Surge (4) Power lines (3) RET lines. Replacing (3) installed and (3) Not Installed HPA-65R-BUU-H8 antennas for (6) CCI DMP65R-BU8DA antennas, Replacing (3) RRUS-11 for (3) 4478-B14 RRU but keeping rights to the (3) RRUS-11 and giving up rights to (3) Not installed RRUS-12 instead, replacing (3) Not installed RRUS-A2 for (3) 4449-B5/B12 RRU, Adding (1) Surge with (1) Fiber (2) DC Power lines already allowed in lease but not currently installed. Final installed configeration: (9) antennas (12) RRU (3) Surge (3) Fiber lines (6) Power lines, plus keeping entitlements to an additional: (3) antennas (15) RRU (1) Surge (2) Power lines (3) RET lines.

USE THIS SECTION TO LIST EQUIPMENT TO BE REMOVED

(3) HPA-65R-BUU-H8 installed (3) HPA-65R-BUU-H8 Not installed (3) Installed RRUS-11 (3) Not Installed RRUS-12 (3) RRUS-A2

APPLICATION PREPARED BY

NAME:	MARK ROBERTS	PHONE:	860-670-9068
COMPANY:	QC DEVELOPMENT	ADDRESS:	PO BOX 916, STORRS, CT 06268
TITLE:	SITE ACQ CONSULTANT	E-MAIL Address:	Mark.Roberts@QCDevelopment.net

EXHIBIT
Equipment

Site Name and #: **CT112 / Washington** **Licensee Name:** **NEW CINGULAR WIRELESS PCS**

The mounting method and exact location of the space and equipment listed herein shall be subject to InSite's approval.

SYSTEM REQUIREMENTS									
POWER provided by:	Licensor				TELCO provided by:	Fiber			
Power Requirements:	Amps:	200	Volts:	120/240	No. of Outlets:	None			
Generator Provided by:	Licensee	Make:	Generac	Model:	SD050	Fuel Type:	Diesel	Capacity:	Unknown
Batteries:	Quantity:	None	Make:	N/A	Model:	N/A			
SPACE REQUIREMENTS & RADIO INVENTORY									
Type of Space Required:	Ground:	Yes	Floor:	No	Total Square Feet:	295 sq. ft.			
Dimensions of Equipment Floor/Ground Space:		12' x 20'			Equipment Height:	N/A			
Dimensions of Generator Ground Space:		5' x 11'			Dimensions of Fuel Tank Ground Space:	N/A			
No. of Transmitters (Tx):	None	Transmitter Make/Model:	N/A		Transmitter Power Output	N/A			
No. of Receivers (Rx):	None	Receiver Make/Model:	N/A		Transmitter ERP:	N/A			
Cabinet also contains:	N/A								

EQUIPMENT LOADING DESCRIPTION (FINAL CONFIGURATION)					
	Sector 1	**Sector 2**	**Sector 3**	**DISH(ES)**	**OTHER**
Antenna Type (1):	Panel	Panel	Panel	N/A	N/A
# of Antennas (1)/ Sector:	One (1)	One (1)	One (1)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (1):	CCI	CCI	CCI	N/A	N/A
Antenna Model (1):	HPA-65R-BUU-H8	HPA-65R-BUU-H8	HPA-65R-BUU-H8	N/A	N/A
Antenna Dimensions (1):	92.4" x 14.8" x 7.4"	92.4" x 14.8" x 7.4"	92.4" x 14.8" x 7.4"	N/A	N/A
Antenna Weight (1):	68 lbs	68 lbs	68 lbs	N/A	N/A
Antenna RAD Ctr / Azimuth (1):	126 ft	126 ft	126 ft	N/A	N/A
Antenna Type (2):	Panel	Panel	Panel	N/A	N/A
# of Antennas (2)/ Sector:	One (1) Reserved	One (1) Reserved	One (1) Reserved	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (2):	CCI	CCI	CCI	N/A	N/A
Antenna Model (2):	HPA-65R-BUU-H8	HPA-65R-BUU-H8	HPA-65R-BUU-H8	N/A	N/A
Antenna Dimensions (2):	92.4" x 14.8" x 7.4"	92.4" x 14.8" x 7.4"	92.4" x 14.8" x 7.4"	N/A	N/A
Antenna Weight (2):	68 lbs	68 lbs	68 lbs	N/A	N/A
Antenna RAD Ctr / Azimuth (2):	126 ft	126 ft	126 ft	N/A	N/A
Antenna Type (3):	Panel	Panel	Panel	N/A	N/A
# of Antennas (3)/ Sector:	Two (2)	Two (2)	Two (2)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (3):	CCI	CCI	CCI	N/A	N/A
Antenna Model (3):	DMP65R-BU8DA	DMP65R-BU8DA	DMP65R-BU8DA	N/A	N/A
Antenna Dimensions (3):	96" x 20.7" x 7.7"	96" x 20.7" x 7.7"	96" x 20.7" x 7.7"	N/A	N/A
Antenna Weight (3):	96 lbs	96 lbs	96 lbs	N/A	N/A
Antenna RAD Ctr / Azimuth (3):	126 ft	126 ft	126 ft	N/A	N/A
# of RRU/RRHs/ Sector (1):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (1):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (1):	RRUS-11	RRUS-11	RRUS-11		
RRU/RRH Dimensions (1):	19.7" x 17" x 7.2"	19.7" x 17" x 7.2"	19.7" x 17" x 7.2"		
RRU/RRH Weight (1):	50 lbs	50 lbs	50 lbs		
RRU/RRH RAD Ctr (1):	122'	122'	122'		
# of RRU/RRHs/ Sector (2):	Two (2) Reserved	Two (2) Reserved	Two (2) Reserved		
RRU/RRH Manufacturer (2):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (2):	RRUS-11	RRUS-11	RRUS-11		
RRU/RRH Dimension (2):	19.7" x 17" x 7.2"	19.7" x 17" x 7.2"	19.7" x 17" x 7.2"		
RRU/RRH Weight (2):	50 lbs	50 lbs	50 lbs		
RRU/RRH RAD Ctr (2):	122'	122'	122'		
# of RRU/RRHs/ Sector (3):	One (1) Reserved	One (1) Reserved	One (1) Reserved		
RRU/RRH Manufacturer (3):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (3):	RRUS-12	RRUS-12	RRUS-12		
RRU/RRH Dimension (3):	20.4" x 18.5" x 7.5"	20.4" x 18.5" x 7.5"	20.4" x 18.5" x 7.5"		
RRU/RRH Weight (3):	50 lbs	50 lbs	50 lbs		
RRU/RRH RAD Ctr (3):	122'	122'	122'		
# of RRU/RRHs/ Sector (4):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (4):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (4):	RRUS-32	RRUS-32	RRUS-32		
RRU/RRH Dimension (4):	26.7" x 12.1" x 6.7"	26.7" x 12.1" x 6.7"	26.7" x 12.1" x 6.7"		
RRU/RRH Weight (4):	60 lbs	60 lbs	60 lbs		
RRU/RRH RAD Ctr (4):	126'	126'	126'		
# of RRU/RRHs/ Sector (5):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (5):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (5):	4478-B14	4478-B14	4478-B14		
RRU/RRH Dimension (5):	18.1" x 13.4" x 8.26"	18.1" x 13.4" x 8.26"	18.1" x 13.4" x 8.26"		
RRU/RRH Weight (5):	59.4 lbs	59.4 lbs	59.4 lbs		
RRU/RRH RAD Ctr (5):	122'	122'	122'		
# of RRU/RRHs/ Sector (6):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (6):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (6):	4449 - B5/B12	4449 - B5/B12	4449 - B5/B12		
RRU/RRH Dimension (6):	17.9" x 13.19" x 9.44"	17.9" x 13.19" x 9.44"	17.9" x 13.19" x 9.44"		
RRU/RRH Weight (6):	71 lbs	71 lbs	71 lbs		

EQUIPMENT LOADING DESCRIPTION (FINAL CONFIGURATION)					
	Sector 1	Sector 2	Sector 3	DISH(ES)	OTHER
RRU/RRH RAD Ctr (6):	122'	122'	122'		
# of RRU/RRHs/ Sector (7):	One (1) Reserved	One (1) Reserved	One (1) Reserved		
RRU/RRH Manufacturer (7):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (7):	RRUS-E2	RRUS-E2	RRUS-E2		
RRU/RRH Dimension (7):	20.4" x 18.5" x 7.5"	20.4" x 18.5" x 7.5"	20.4" x 18.5" x 7.5"		
RRU/RRH Weight (7):	60 lbs	60 lbs	60 lbs		
RRU/RRH RAD Ctr (7):	122'	122'	122'		
# of RRU/RRHs/ Sector (8):	One (1) Reserved	One (1) Reserved	One (1) Reserved		
RRU/RRH Manufacturer (8):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (8):	RRUS-A2	RRUS-A2	RRUS-A2		
RRU/RRH Dimension (8):	16.4" x 15.1" x 3.4"	16.4" x 15.1" x 3.4"	16.4" x 15.1" x 3.4"		
RRU/RRH Weight (8):	22 lbs	22 lbs	22 lbs		
RRU/RRH RAD Ctr (8):	122'	122'	122'		
# of TMAs/ Sector:	None	None	None		
# of Diplexers/ Sector:	None	None	None		
# of Surge Suppressors/Sctr:	Two (2)	One (1)	One (1) Reserved		
Surge Suppressor Make:	Raycap	Raycap	Raycap		
Surge Suppressor Model:	DC6-48-60-18-8F	DC6-48-60-18-8F	DC6-48-60-18-8F		
Surge Supressor Dimensions:	23.5" x 9.7"	23.5" x 9.7"	23.5" x 9.7"		
Surge Supressor Weight:	20 lbs	20 lbs	20 lbs		
Surge Supressors RAD Ctr:	126'	126'	126'		
OTHER:	None	None	None		
Transmit Frequencies:	869-880, 890-891, 1970-1975, 1985-1990, 734-746, 2130-2135, 758-768 MHz			N/A	N/A
Receive Frequencies:	824-835, 845-846, 1890-1895, 1905-1910, 704-716, 1730-1735, 788-798 MHz			N/A	N/A
# of Lines:	Three (3)	Eight (8)	Three (3) Reserved	None	None
Line Size:	1/2" Fiber	3/4" DC Power	1/2" RET	N/A	N/A
# of Lines:	None	Two (2) Reserved	None	None	None
Line Size:	N/A	3/4" DC Power	N/A	N/A	N/A
Antenna Mount Type:	T-Arm Mount @ 126'	T-Arm Mount @ 126'	T-Arm Mount @ 126'	N/A	N/A
Mount Size:	Ten Feet (10') w/3' stand-off	Ten Feet (10') w/3' stand-off	Ten Feet (10') w/3' stand-off	N/A	N/A

September 20, 2019

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT1340 (LTE 4C/5C)
	FA Number:	10141339
	PACE Number:	MRCTB040476
	PT Number:	2051A0PQTG
	Site Name:	WASHINGTON BLACKVILLE ROAD
	Site Address:	10 Blackville Road Washington Depot, CT 06794

To Whom It May Concern:

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

- (3) HPA-65R-BUU-H8 Antennas (92.4"x14.8"x7.4" – Wt. = 68 lbs. /each)
- (3) RRUS-11 B5 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each) (Tower Mount)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each) (Tower Mount)
- (2) Squid Surge Arrestors (24.0"x9.7" Φ – Wt. = 33 lbs. /each)
- **(6) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each) (Tower Mount)**
- **(3) B5/B12 4449 RRH's (14.9"x13.2"x10.4" – Wt. = 73 lbs. /each) (Tower Mount)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs.)**

**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 August 29, 2019.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 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 1.32 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.
- AT&T policy forbids walking on or suspending below T-arm mounts. This Analysis does not include live load conditions for this mount.
- The existing mount is secured to the existing monopine with ring mount. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mounts **ARE NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Remove existing pipe masts and replace with new 2-1/2" std. (2.88" O.D.) pipe masts behind Antennas (typ. of 3 per sector, total of 9).**
- **Install new 2" std. (2.38" O.D.) pipe brace secured to the existing mount and adjacent mount standoff (typ. of 2 per sector, total of 6).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 4C/5C) Mount Rating	11	LC7	162%	**FAIL**
Modified (LTE 4C/5C) Mount Rating	11	LC1	85%	**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

STATE OF CONNECTICUT
DANIEL HAMM
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PROFESSIONAL ENGINEER

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Vice President

Daniel P. Hamm, PE
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FIELD PHOTOS:






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HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	127 (ft)
	z_g=	900 (ft)
K_z= **1.331**	α=	9.5

$K_{zmin} \le K_z \le 2.01$

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

$K_{zt} = [1+(K_c K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= **1.51**

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

Category= **3**

K_h=	2.33	
K_c=	1.0	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2.0	(from Table 2-5)
z=	127	
z_s=	600	(Mean elevation of base of structure above sea level)
H=	300	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.51	(from 2.6.6.2.1)
K_e=	0.98	(from 2.6.8)

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} =	1.14 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.32 in

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	135	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

G_h=	1.35	Gh=	1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

q_z=	68.70	K_z=	1.331	(from 2.6.5.2)
$q_{z\ (ice)}$=	11.93	K_{zt}=	1.5	(from 2.6.6.2.1)
$q_{z\ (30)}$=	4.29	K_s=	1.0	(from 2.6.7)
		K_e=	0.98	(from 2.6.8)
		K_d=	0.95	(from Table 2-2)
		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

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

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

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

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

Ice Thickness = **1.32** 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)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	6.24	1.37	891	188	56
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	1228	247	77
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	1.16	1.20	192	44	12
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	188	44	12
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	139	33	9
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.13	1.20	113	28	7
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	78	19	5
HSS 4x4	4.0	12.0		0.33	0.33	1.25	29	10	2
3-1/2" Pipe	4.0	12.0		0.33	0.33	1.20	27	10	2
2" Pipe	2.4	12.0		0.20	0.20	1.20	16	7	1

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)

Ice Thickness =	1.32	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) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	891	516	798
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	1228	558	1060
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	192	82	164
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	188	115	170
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	139	86	126
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	113	89	107
WIND LOADS WITH ICE:												
HPA-65R-BUU-H8 Antenna	95.0	17.4	10.0	11.51	6.63	5.45	9.47	1.33	1.48	183	117	166
DMP65R-BU8DA Antenna	98.6	23.3	10.3	15.99	7.08	4.23	9.54	1.28	1.48	243	125	214
RRUS-11 B5 RRH	22.3	19.6	9.8	3.05	1.53	1.14	2.27	1.20	1.20	44	22	38
RRUS-32 B2 RRH	29.8	14.7	9.6	3.05	2.00	2.02	3.10	1.20	1.23	44	29	40
B14 4478 RRH	20.7	16.0	10.9	2.31	1.58	1.29	1.90	1.20	1.20	33	23	30
B5/B12 4449 RRH	17.5	15.8	13.0	1.93	1.59	1.11	1.35	1.20	1.20	28	23	26
WIND LOADS AT 30 MPH:												
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	56	32	50
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	77	35	66
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	12	5	10
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	12	7	11
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	9	5	8
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	7	6	7

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.32	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	891	516	610
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	1228	558	725
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	192	82	109
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	188	115	133
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	139	86	99
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	113	89	95

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.0	17.4	10.0	11.51	6.69	5.45	9.47	1.33	1.48	183	117	134
DMP65R-BU8DA Antenna	98.6	23.3	10.3	15.99	7.08	4.23	9.54	1.28	1.48	243	125	155
RRUS-11 B5 RRH	22.3	19.6	9.8	3.05	1.53	1.14	2.27	1.20	1.20	44	22	27
RRUS-32 B2 RRH	29.8	14.7	9.6	3.05	2.00	2.02	3.10	1.20	1.23	44	29	33
B14 4478 RRH	20.7	16.0	10.9	2.31	1.58	1.29	1.90	1.20	1.20	33	23	25
B5/B12 4449 RRH	17.5	15.8	13.0	1.93	1.59	1.11	1.35	1.20	1.20	28	23	24

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	56	32	38
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	77	35	45
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	12	5	7
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	12	7	8
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	9	5	6
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	7	6	6

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.32	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	891	516	516
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	1228	558	558
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	192	82	82
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	188	115	115
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	139	86	86
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	113	89	89

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.0	17.4	10.0	11.51	6.63	5.45	9.47	1.33	1.48	183	117	117
DMP65R-BU8DA Antenna	98.6	23.3	10.3	15.99	7.08	4.23	9.54	1.28	1.48	243	125	125
RRUS-11 B5 RRH	22.3	19.6	9.8	3.05	1.53	1.14	2.27	1.20	1.20	44	22	22
RRUS-32 B2 RRH	29.8	14.7	9.6	3.05	2.00	2.02	3.10	1.20	1.23	44	29	29
B14 4478 RRH	20.7	16.0	10.9	2.31	1.58	1.29	1.90	1.20	1.20	33	23	23
B5/B12 4449 RRH	17.5	15.8	13.0	1.93	1.59	1.11	1.35	1.20	1.20	28	23	23

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	56	32	32
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	77	35	35
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	12	5	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	12	7	7
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	9	5	5
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	7	6	6

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.32	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	891	516	610
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	1228	558	725
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	192	82	109
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	188	115	133
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	139	86	99
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	113	89	95

WIND LOADS WITH ICE:

HPA-65R-BUU-H8 Antenna	95.0	17.4	10.0	11.51	6.63	5.45	9.47	1.33	1.48	189	117	134
DMP65R-BU8DA Antenna	98.6	23.3	10.3	15.99	7.08	4.23	9.54	1.28	1.48	243	125	155
RRUS-11 B5 RRH	22.3	19.6	9.8	3.05	1.53	1.14	2.27	1.20	1.20	44	22	27
RRUS-32 B2 RRH	29.8	14.7	9.6	3.05	2.00	2.02	3.10	1.20	1.23	44	29	33
B14 4478 RRH	20.7	16.0	10.9	2.31	1.58	1.29	1.90	1.20	1.20	33	23	25
B5/B12 4449 RRH	17.5	15.8	13.0	1.93	1.59	1.11	1.35	1.20	1.20	28	23	24

WIND LOADS AT 30 MPH:

HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	56	32	38
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	77	35	45
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	12	5	7
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	12	7	8
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	9	5	6
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	7	6	6

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.32	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	891	516	798
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	1228	558	1060
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	192	82	164
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	188	115	170
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	139	86	126
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	113	89	107
WIND LOADS WITH ICE:												
HPA-65R-BUU-H8 Antenna	95.0	17.4	10.0	11.51	6.63	5.45	9.47	1.33	1.48	183	117	166
DMP65R-BU8DA Antenna	98.6	23.3	10.3	15.99	7.08	4.23	9.54	1.28	1.48	243	125	214
RRUS-11 B5 RRH	22.3	19.6	9.8	3.05	1.53	1.14	2.27	1.20	1.20	44	22	38
RRUS-32 B2 RRH	29.8	14.7	9.6	3.05	2.00	2.02	3.10	1.20	1.23	44	29	40
B14 4478 RRH	20.7	16.0	10.9	2.31	1.58	1.29	1.90	1.20	1.20	33	23	30
B5/B12 4449 RRH	17.5	15.8	13.0	1.93	1.59	1.11	1.35	1.20	1.20	28	23	26
WIND LOADS AT 30 MPH:												
HPA-65R-BUU-H8 Antenna	92.4	14.8	7.4	9.50	4.75	6.24	12.49	1.37	1.58	56	32	50
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	77	35	66
RRUS-11 B5 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	12	5	10
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	12	7	11
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	9	5	8
B5/B12 4449 RRH	14.9	13.2	10.4	1.37	1.08	1.13	1.43	1.20	1.20	7	6	7

Date: 9/19/2019
Project Name: WASHINGTON BLACKVILLE ROAD
Project No.: CT1340
Designed By: RL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.32 in.
Density of ice: 56 pcf

HPA-65R-BUU-H8 Antenna

Weight of ice based on total radial SF area:

Height (in):	92.4	
Width (in):	14.8	
Depth (in):	7.4	
Total weight of ice on object:		222 lbs
Weight of object:	68.0 lbs	
Combined weight of ice and object:		290 lbs

DMP65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		302 lbs
Weight of object:	96.0 lbs	
Combined weight of ice and object:		398 lbs

RRUS-11 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		52 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		103 lbs

RRUS-32 B2 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		56 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		116 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:		42 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		102 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.4	
Total weight of ice on object:		36 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		109 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		36 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		69 lbs

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		11 plf

3-1/2" Pipe

Per foot weight of ice:

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

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		6 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

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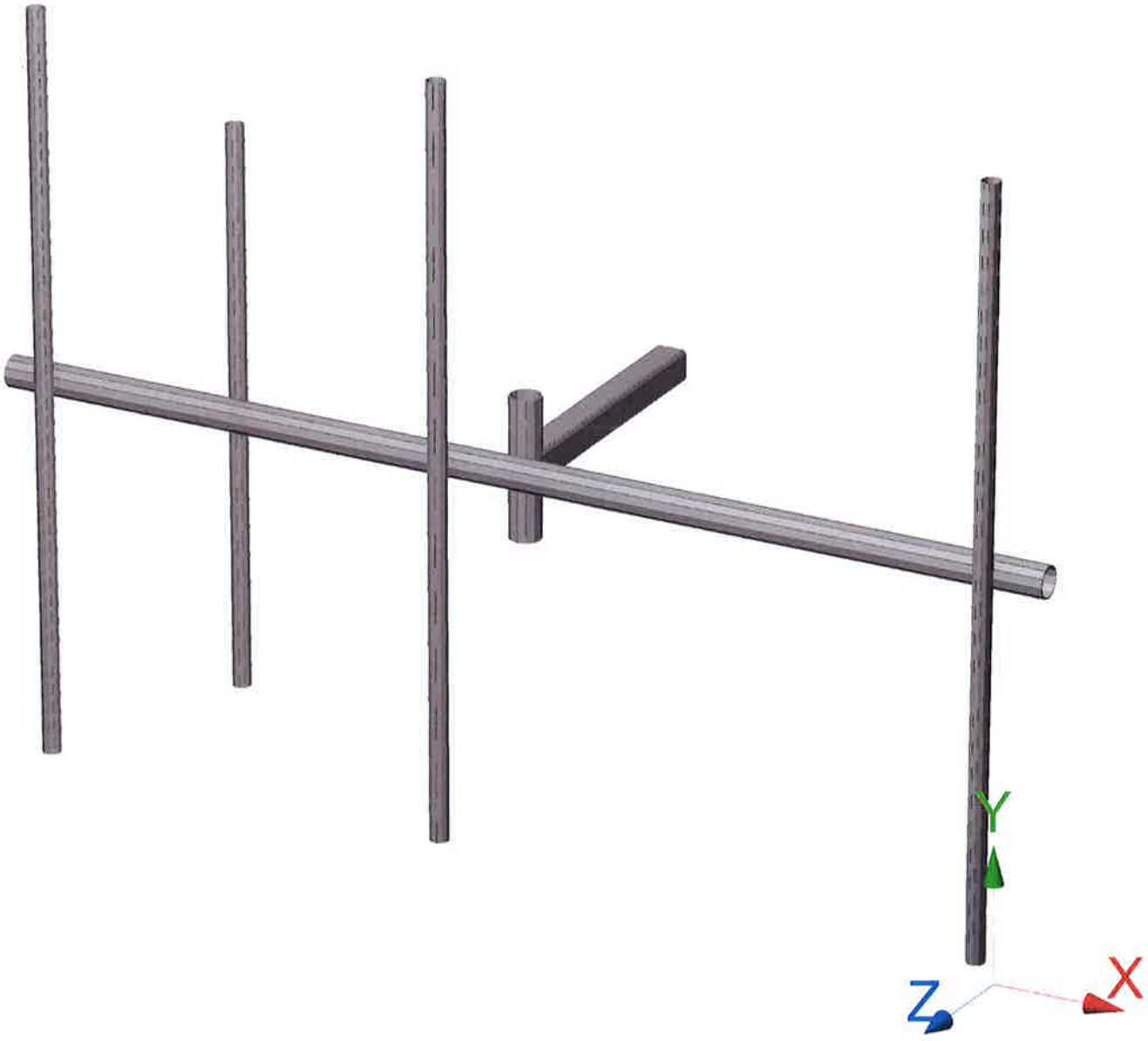

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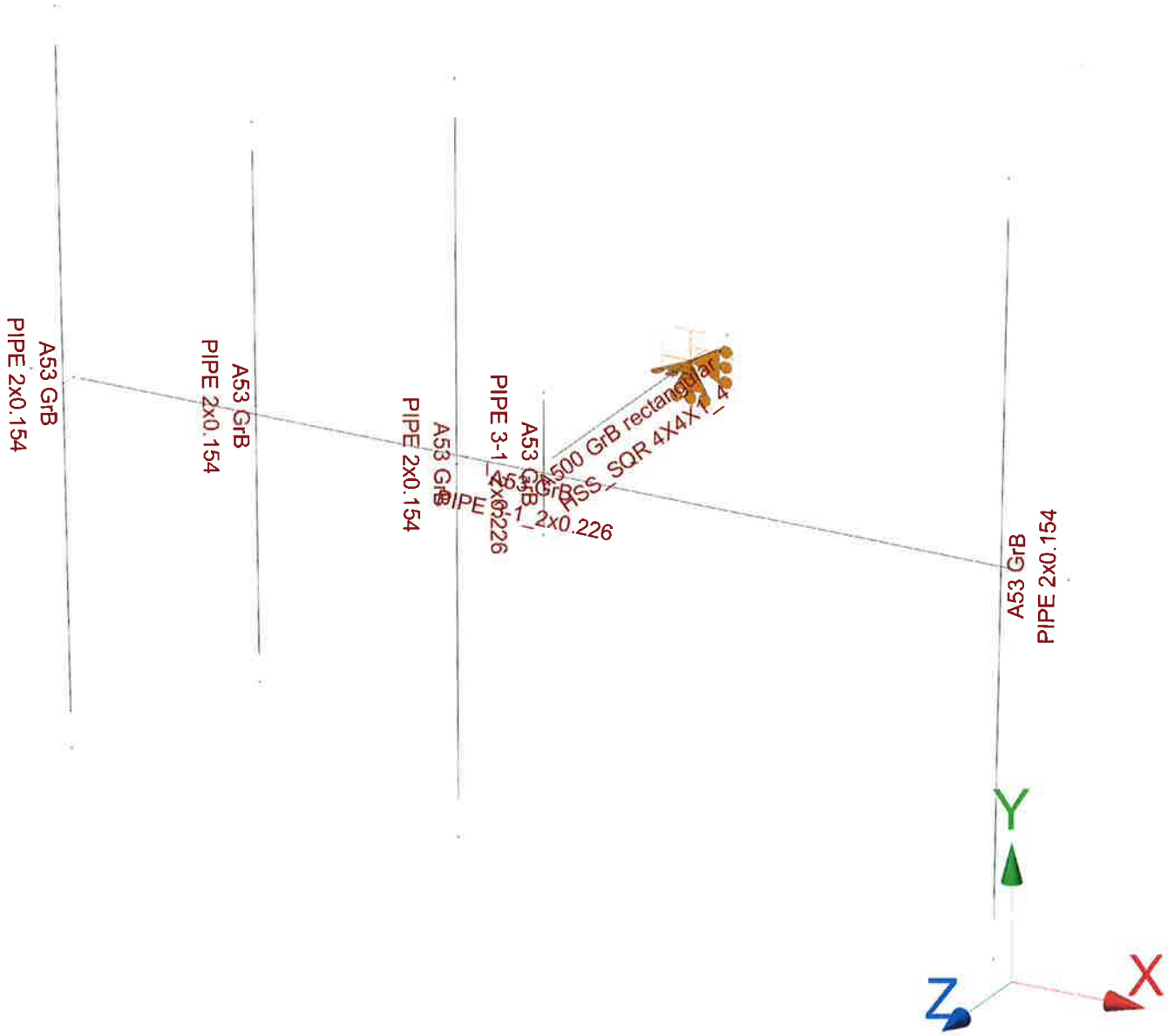

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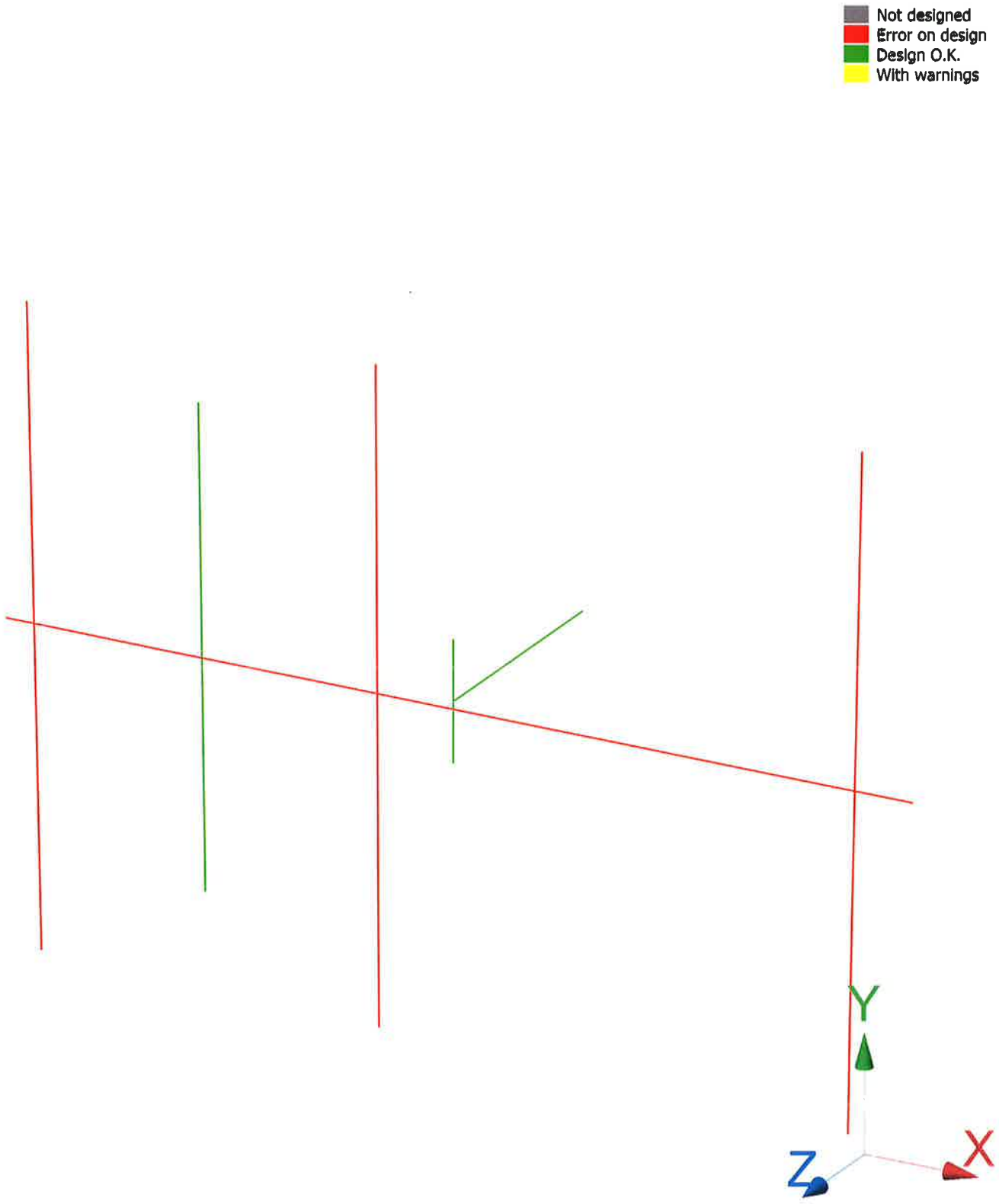

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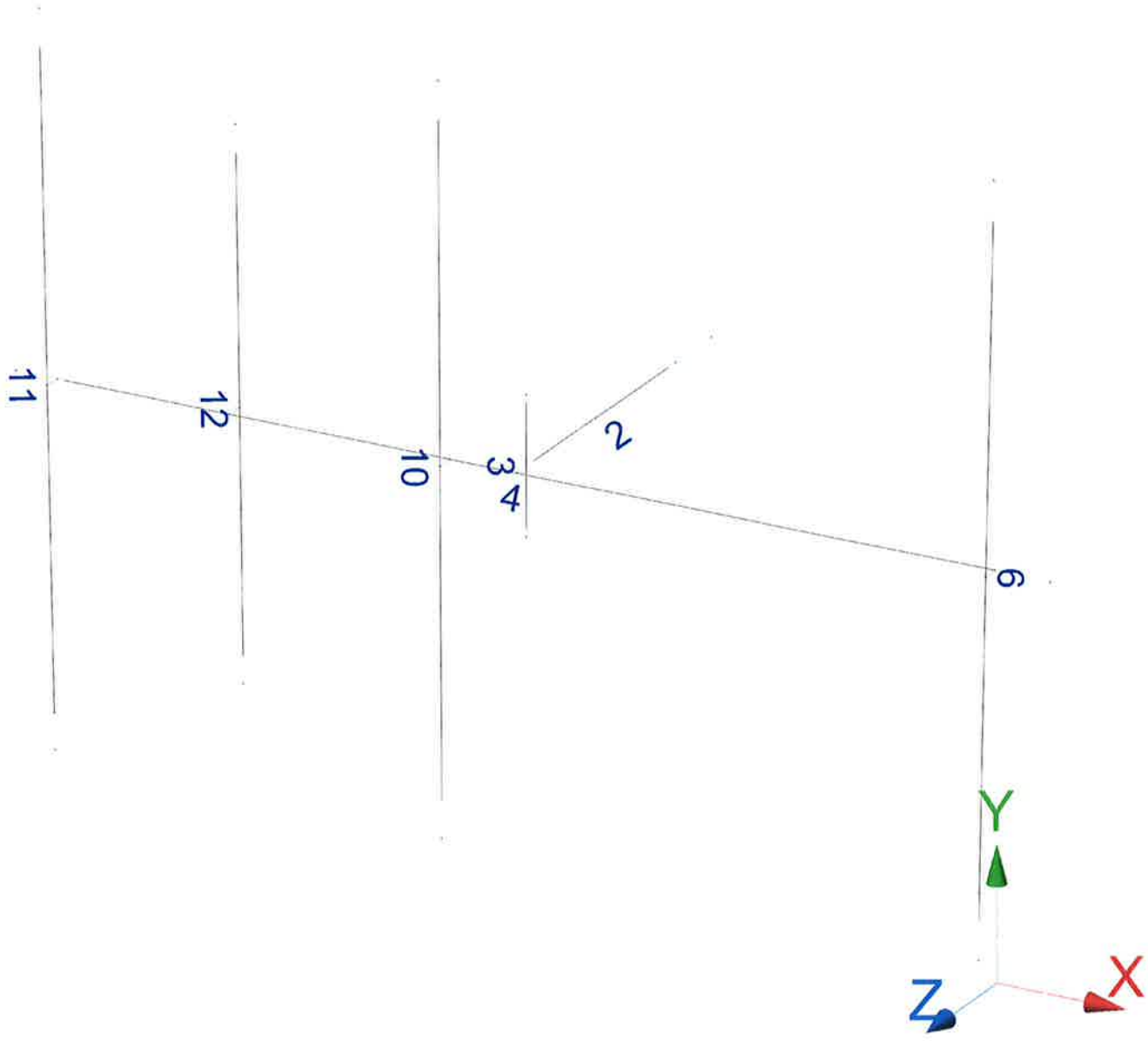

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Load data

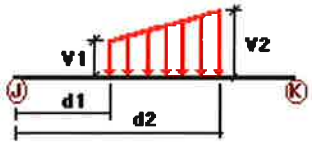
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

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

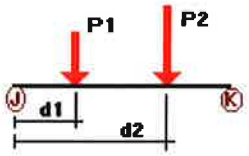
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	3	z	-0.027	-0.027	0.00	No	100.00	Yes
	4	z	-0.027	-0.027	0.00	No	100.00	Yes
	12	z	-0.016	-0.016	0.00	No	100.00	Yes
W30	2	z	-0.029	-0.029	0.00	No	100.00	Yes
	3	z	-0.027	-0.027	0.00	No	100.00	Yes
	4	z	-0.027	-0.027	0.00	No	100.00	Yes
	9	z	-0.016	-0.016	0.00	No	100.00	Yes
	10	z	-0.016	-0.016	0.00	No	100.00	Yes

	11	z	-0.016	-0.016	0.00	No	100.00	Yes
	12	z	-0.016	-0.016	0.00	No	100.00	Yes
W60	2	x	-0.029	-0.029	0.00	No	100.00	Yes
	3	x	-0.027	-0.027	0.00	No	100.00	Yes
	4	x	-0.027	-0.027	0.00	No	100.00	Yes
	9	x	-0.016	-0.016	0.00	No	100.00	Yes
	10	x	-0.016	-0.016	0.00	No	100.00	Yes
	11	x	-0.016	-0.016	0.00	No	100.00	Yes
	12	x	-0.016	-0.016	0.00	No	100.00	Yes
W90	2	x	-0.029	-0.029	0.00	No	100.00	Yes
	3	x	-0.027	-0.027	0.00	No	100.00	Yes
	9	x	-0.016	-0.016	0.00	No	100.00	Yes
	10	x	-0.016	-0.016	0.00	No	100.00	Yes
	11	x	-0.016	-0.016	0.00	No	100.00	Yes
	12	x	-0.016	-0.016	0.00	No	100.00	Yes
W120	2	x	-0.029	-0.029	0.00	No	100.00	Yes
	3	x	-0.027	-0.027	0.00	No	100.00	Yes
	4	x	-0.027	-0.027	0.00	No	100.00	Yes
	9	x	-0.016	-0.016	0.00	No	100.00	Yes
	10	x	-0.016	-0.016	0.00	No	100.00	Yes
	11	x	-0.016	-0.016	0.00	No	100.00	Yes
	12	x	-0.016	-0.016	0.00	No	100.00	Yes
W150	2	z	0.029	0.029	0.00	No	100.00	Yes
	3	z	0.027	0.027	0.00	No	100.00	Yes
	4	z	0.027	0.027	0.00	No	100.00	Yes
	9	z	0.016	0.016	0.00	No	100.00	Yes
	10	z	0.016	0.016	0.00	No	100.00	Yes
	11	z	0.016	0.016	0.00	No	100.00	Yes
	12	z	0.016	0.016	0.00	No	100.00	Yes
Di	2	y	-0.011	-0.011	0.00	No	100.00	Yes
	3	y	-0.009	-0.009	0.00	No	100.00	Yes
	4	y	-0.009	-0.009	0.00	No	100.00	Yes
	9	y	-0.006	-0.006	0.00	No	100.00	Yes
	10	y	-0.006	-0.006	0.00	No	100.00	Yes
	11	y	-0.006	-0.006	0.00	No	100.00	Yes
	12	y	-0.006	-0.006	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	9	y	-0.034	0.50	No
		y	-0.034	7.00	No
	10	y	-0.048	0.50	No
		y	-0.048	7.50	No
	11	y	-0.048	0.50	No
		y	-0.048	7.50	No
	12	y	-0.033	2.00	No
Wo	9	z	-0.446	0.50	No
		z	-0.446	7.00	No

	10	z	-0.614	0.50	No
		z	-0.614	7.50	No
	11	z	-0.614	0.50	No
		z	-0.614	7.50	No
	12	z	-0.078	2.00	No
W30	9	3	-0.399	0.50	No
		3	-0.399	7.00	No
	10	3	-0.531	0.50	No
		3	-0.531	7.50	No
	11	3	-0.531	0.50	No
		3	-0.531	7.50	No
	12	3	-0.078	2.00	No
W60	9	3	-0.306	0.50	No
		3	-0.306	7.00	No
	10	3	-0.363	0.50	No
		3	-0.363	7.50	No
	11	3	-0.363	0.50	No
		3	-0.363	7.50	No
	12	3	-0.078	2.00	No
W90	9	x	-0.259	0.50	No
		x	-0.259	7.00	No
	10	x	-0.279	0.50	No
		x	-0.279	7.50	No
	11	x	-0.279	0.50	No
		x	-0.279	7.50	No
	12	x	-0.078	2.00	No
W120	9	2	-0.306	0.50	No
		2	-0.306	7.00	No
	10	2	-0.363	0.50	No
		2	-0.363	7.50	No
	11	2	-0.363	0.50	No
		2	-0.363	7.50	No
	12	2	-0.078	2.00	No
W150	9	2	-0.399	0.50	No
		2	-0.399	7.00	No
	10	2	-0.531	0.50	No
		2	-0.531	7.50	No
	11	2	-0.531	0.50	No
		2	-0.531	7.50	No
	12	2	-0.078	2.00	No
Di	9	y	-0.111	0.50	No
		y	-0.111	7.00	No
	10	y	-0.151	0.50	No
		y	-0.151	7.50	No
	11	y	-0.151	0.50	No
		y	-0.151	7.50	No
	12	y	-0.036	2.00	No
WI0	9	z	-0.094	0.50	No
		z	-0.094	7.00	No
	10	z	-0.124	0.50	No
		z	-0.124	7.50	No
	11	z	-0.124	0.50	No
		z	-0.124	7.50	No
	12	z	-0.019	2.00	No
WI30	9	3	-0.084	0.50	No
		3	-0.084	7.00	No
	10	3	-0.107	0.50	No
		3	-0.107	7.50	No
	11	3	-0.107	0.50	No
		3	-0.107	7.50	No

	12	3	-0.019	2.00	No
WI60	9	3	-0.067	0.50	No
		3	-0.067	7.00	No
	10	3	-0.078	0.50	No
		3	-0.078	7.50	No
	11	3	-0.078	0.50	No
		3	-0.078	7.50	No
	12	3	-0.019	2.00	No
WI90	9	x	-0.059	0.50	No
		x	-0.059	7.00	No
	10	x	-0.063	0.50	No
		x	-0.063	7.50	No
	11	x	-0.063	0.50	No
		x	-0.063	7.50	No
	12	x	-0.019	2.00	No
WI120	9	2	-0.067	0.50	No
		2	-0.067	7.00	No
	10	2	-0.078	0.50	No
		2	-0.078	7.50	No
	11	2	-0.078	0.50	No
		2	-0.078	7.50	No
	12	2	-0.019	2.00	No
WI150	9	2	-0.084	0.50	No
		2	-0.084	7.00	No
	10	2	-0.107	0.50	No
		2	-0.107	7.50	No
	11	2	-0.107	0.50	No
		2	-0.107	7.50	No
	12	2	-0.019	2.00	No
WL0	9	z	-0.028	0.50	No
		z	-0.028	7.00	No
	10	z	-0.039	0.50	No
		z	-0.039	7.50	No
	11	z	-0.039	0.50	No
		z	-0.039	7.50	No
	12	z	-0.005	2.00	No
WL30	9	3	-0.025	0.50	No
		3	-0.025	7.00	No
	10	3	-0.034	0.50	No
		3	-0.034	7.50	No
	11	3	-0.034	0.50	No
		3	-0.034	7.50	No
	12	3	-0.005	2.00	No
WL60	9	3	-0.02	0.50	No
		3	-0.02	7.00	No
	10	3	-0.023	0.50	No
		3	-0.023	7.50	No
	11	3	-0.023	0.50	No
		3	-0.023	7.50	No
	12	3	-0.005	2.00	No
WL90	9	x	-0.017	0.50	No
		x	-0.017	7.00	No
	10	x	-0.018	0.50	No
		x	-0.018	7.50	No
	11	x	-0.018	0.50	No
		x	-0.018	7.50	No
	12	x	-0.005	2.00	No
WL120	9	2	-0.02	0.50	No
		2	-0.02	7.00	No
	10	2	-0.023	0.50	No

		2	-0.023	7.50	No
	11	2	-0.023	0.50	No
		2	-0.023	7.50	No
	12	2	-0.005	2.00	No
WL150	9	2	-0.025	0.50	No
		2	-0.025	7.00	No
	10	2	-0.034	0.50	No
		2	-0.034	7.50	No
	11	2	-0.034	0.50	No
		2	-0.034	7.50	No
	12	2	-0.005	2.00	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

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

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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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**2**	LC8 at 100.00%	**0.75**	**OK**	
	PIPE 2x0.154	**9**	LC7 at 46.88%	1.10	N.G.	
		10	LC1 at 50.00%	1.62	N.G.	
		11	LC7 at 50.00%	**1.62**	**N.G.**	
		12	LC4 at 46.88%	0.10	OK	
	PIPE 3-1_2x0.226	**3**	LC7 at 50.00%	0.00	OK	
		4	LC7 at 50.00%	**1.21**	**N.G.**	

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	0.00	0.00	0.80	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
2	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	3	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
11	24	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	23	19		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	22	18		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	7	8		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
9	21	17		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
3	6	5		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
11	315.00	0	0.00	0.00	0.00
12	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
9	315.00	0	0.00	0.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

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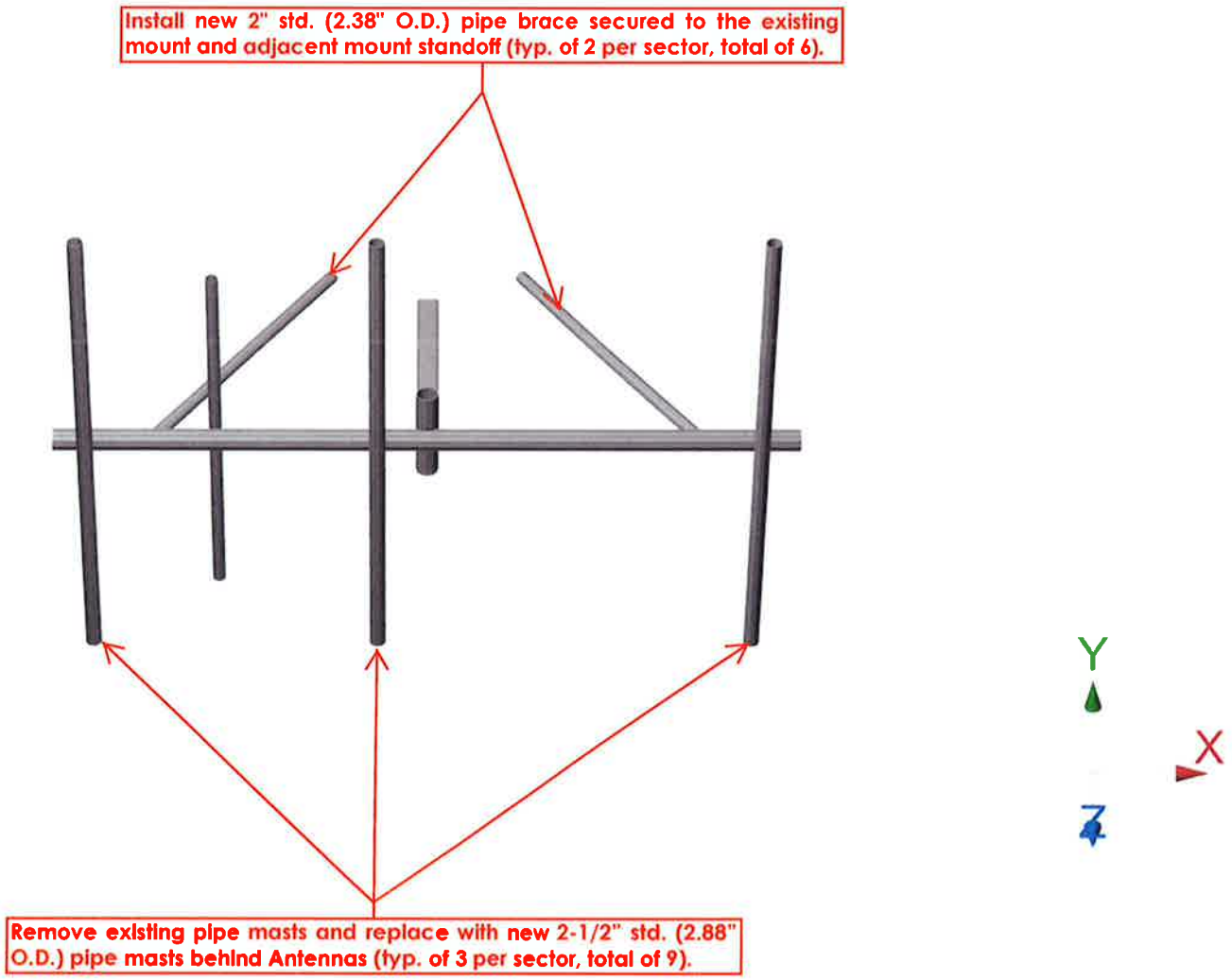
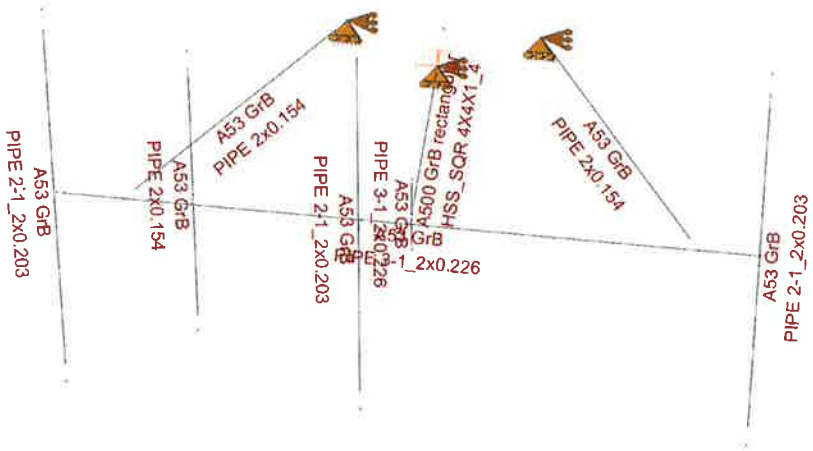
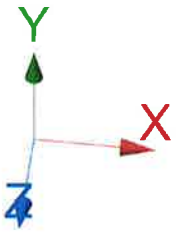
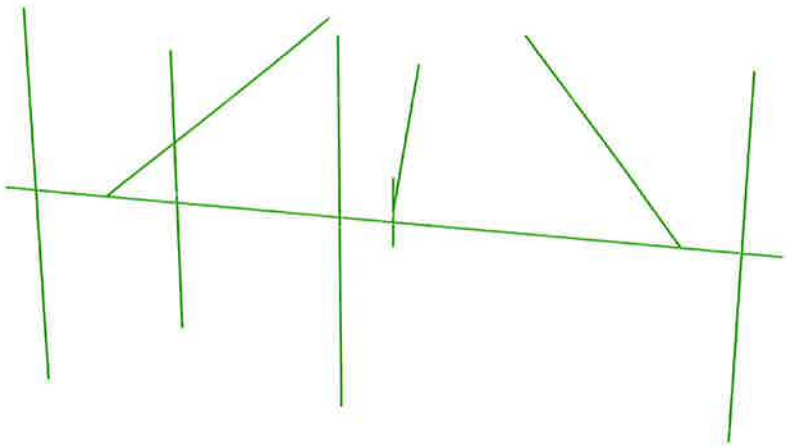
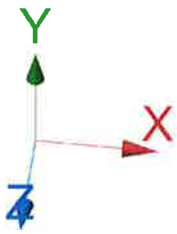


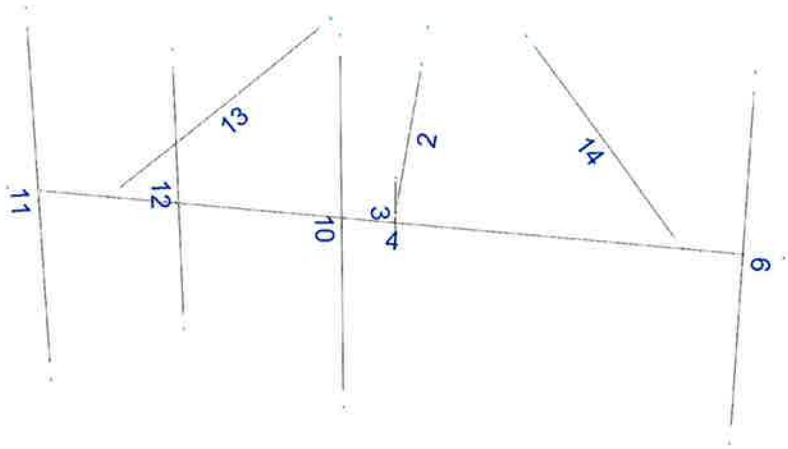

A53 GrB
PIPE 2-1_2x0.203
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203
A500 GrB rectang
HSS_SQR 4X4X1_4
A53 GrB
PIPE 3-1_2x0.226
A53 GrB
PIPE 2x0.154
A53 GrB
PIPE 2-1_2x0.203


Y
X
Z

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



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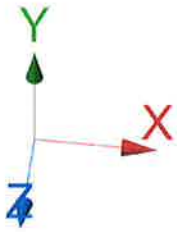
Y
X
Z

Bentley

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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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**2**	LC8 at 100.00%	**0.61**	**OK**	
	PIPE 2-1_2x0.203	**9**	LC7 at 46.88%	0.57	OK	
		10	LC1 at 50.00%	0.85	OK	
		11	LC1 at 50.00%	**0.85**	**OK**	
	PIPE 2x0.154	**12**	LC7 at 46.88%	0.10	OK	
		13	LC6 at 0.00%	0.13	OK	
		14	LC8 at 100.00%	**0.20**	**OK**	
	PIPE 3-1_2x0.226	**3**	LC4 at 50.00%	0.00	OK	
		4	LC26 at 50.00%	**0.48**	**OK**	

Bentley

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	0.00	0.00	0.80	0
27	1.50	0.00	0.00	0
28	-1.50	0.00	0.00	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
2	1	1	1	1	1	1
27	1	1	1	0	0	0
28	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	3	2		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
13	26	28		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
14	27	25		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	21	17		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	7	8		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
3	6	5		PIPE 3-1_2x0.226	A53 GrB	0.00	0.00	0.00
10	22	18		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
12	23	19		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	24	20		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
9	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
12	315.00	0	0.00	0.00	0.00
11	315.00	0	0.00	0.00	0.00

DOCKET NO. 441 – Homeland Towers, LLC and New Cingular Wireless PCS, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at 10 Blackville Road, Washington, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		March 6, 2014

Decision and Order

Pursuant to Connecticut General Statutes §16-50p and the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation 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 Homeland Towers, LLC, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 10 Blackville Road, in Washington, Connecticut.

Unless otherwise approved by the Council, 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 monopine, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of New Cingular Wireless PCS, LLC, Litchfield County Dispatch and other entities, both public and private, but such tower shall not exceed a height of 135 feet above ground level (140 feet with camouflage branches in place).

2. 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 Washington 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, tower foundation, antennas, equipment compound with space reserved for future shared backup generation, radio equipment, access road, utility line, emergency backup generator, including provision of emergency backup generation for Litchfield County Dispatch, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control as amended, and Best Management Plans for vernal pool protection.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the 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 the electromagnetic radio frequency power density be 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.

4. 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.

5. 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.

6. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service 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. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.

7. Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Washington. Any proposed modifications to this Decision and Order shall likewise be so served.

8. 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 within 90 days from the one year period of cessation of service. The Certificate Holder may submit a written request to the Council for an extension of the 90 day period not later than 60 days prior to the expiration of the 90 day period.

9. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

10. 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.

11. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.

12. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.

13. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.

14. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

15. This Certificate may be surrendered by the Certificate Holder upon written notification and approval by the Council.

We hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed in the Service List, dated November 22, 2013, and notice of issuance published in The Voices.

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 Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2018.

Information on the Property Records for the Municipality of Washington was last updated on

Parcel Information

Location:	10 BLACKVILLE RD	Property Use:	Automotive	Primary Use:	Commercial Garage
Unique ID:	3008	Map Block Lot:	08-07-23	Acres:	15.34
490 Acres:	0.00	Zone:	B-2	Volume / Page:	130/ 425
Developers Map / Lot:	1962 1643 /1287 985	Census:	2671		

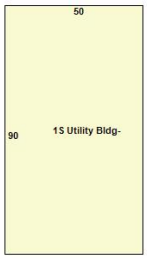
Value Information

	Appraised Value	Assessed Value
Land	409,400	286,570
Buildings	1,601,597	1,121,120
Detached Outbuildings	148,737	104,120
Total	2,159,734	1,511,810

Owner's Information

Owner's Data
WASHINGTON TOWN OF PO BOX 383 WASHINGTON DEPOT, CT 06794

Building 1

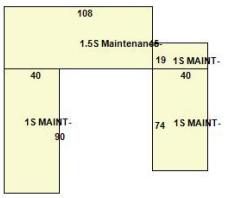


Category:	Automotive	Use:	Commercial Garage	GLA:	4,500
Stories:	1.00	Construction:	Very Good	Year Built:	1996
Heating:		Fuel:		Cooling Percent:	0%
Siding:	Vertical Wood	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Building 2



Category:	Automotive	Use:	Commercial Garage	GLA:	14,622
Stories:	1.00	Construction:	Very Good	Year Built:	1996
Heating:	FHA	Fuel:	Gas	Cooling Percent:	0%
Siding:	Metal	Roof Material:	Metal	Beds/Units:	0

Special Features

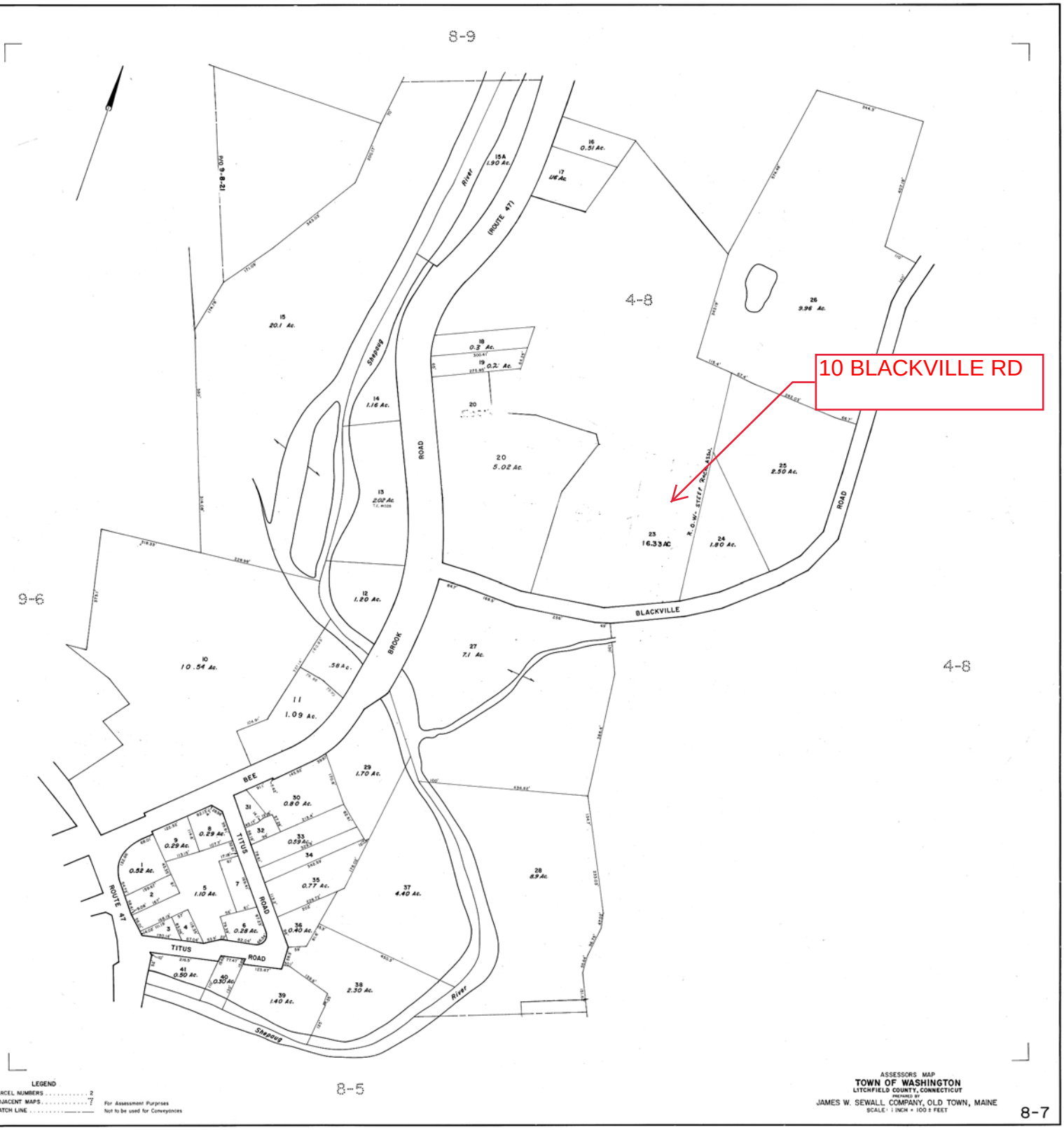
Attached Components

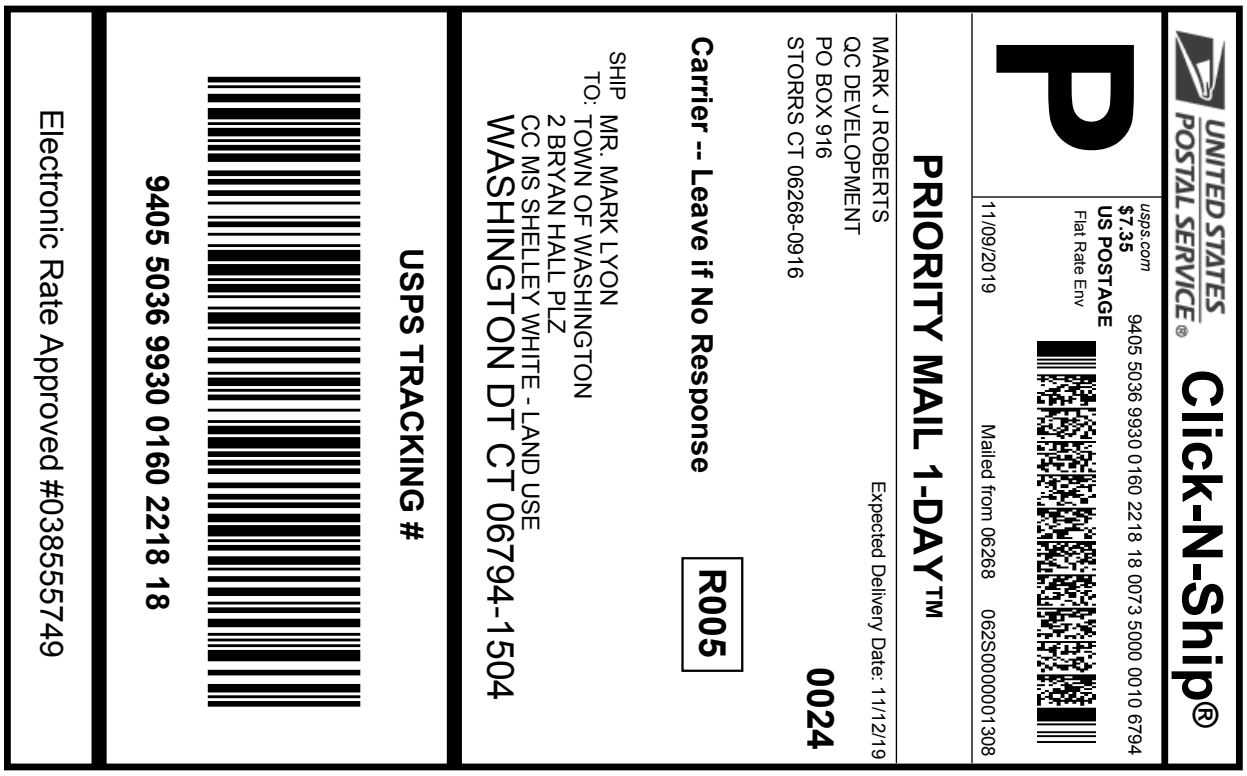
Detached Outbuildings

Type:	Year Built:	Area:
Generator	2014	1
Paving	1996	12,000
Paving	2014	2,000
Paving	2014	4,875

Type:	Year Built:	Area:
Metal Shed	2007	6,000

Information Published With Permission From The Assessor


8-9
10 BLACKVILLE RD
4-8
5-6
8-5
BLACKVILLE ROAD
BROOK ROAD
BEE
TITUS ROAD
ROUTE 47
(ROUTE 47)
River
Shepaug
R.O.W. STEEP RIVER ASSN.
15 20.1 Ac.
16 0.51 Ac.
17 1.46 Ac.
15A 1.90 Ac.
18 0.3 Ac.
19 0.2 Ac.
20 5.02 Ac.
14 1.16 Ac.
13 2.02 Ac.
12 1.20 Ac.
10 10.54 Ac.
11 1.09 Ac.
.58 Ac.
23 16.33 Ac.
24 1.80 Ac.
25 2.50 Ac.
26 9.96 Ac.
27 7.1 Ac.
28 8.9 Ac.
29 1.70 Ac.
30 0.80 Ac.
31
32
33 0.59 Ac.
34
35 0.77 Ac.
36 0.40 Ac.
37 4.40 Ac.
38 2.30 Ac.
39 1.40 Ac.
40 0.50 Ac.
41 0.50 Ac.
1 0.52 Ac.
2
3
4
5 1.10 Ac.
6 0.28 Ac.
7
8 0.29 Ac.
9 0.29 Ac.
LEGEND
PARCEL NUMBERS 2
ADJACENT MAPS 7
MATCH LINE . . . . . —— ——
For Assessment Purposes
Not to be used for Conveyances
ASSESSORS MAP
TOWN OF WASHINGTON
LITCHFIELD COUNTY, CONNECTICUT
PREPARED BY
JAMES W. SEWALL COMPANY, OLD TOWN, MAINE
SCALE 1 INCH = 100 ± FEET
8-7



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0160 2218 18

Trans. #:	476585784
Print Date:	11/08/2019
Ship Date:	11/09/2019
Expected Delivery Date:	11/12/2019

Priority Mail® Postage:	**$7.35**
Total:	**$7.35**

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

To: MR. MARK LYON
TOWN OF WASHINGTON
2 BRYAN HALL PLZ
CC MS SHELLEY WHITE - LAND USE
WASHINGTON DT CT 06794-1504

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