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

February 22, 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) – CT2019
170 Ingham Hill Road, Old Saybrook, CT 06475
N 41.30972222
W 72.39750000

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 152-foot level of the existing 150-foot Monopole at 170 Ingham Hill Road, Old Saybrook, CT. The tower is owned by Crown Castle and the property is owned by Carol and Robert Lorenz. AT&T now intends to add three (3) Kathrein 800-10964 antennas. AT&T will also install (3) Ericsson 4478-B5, (3) Ericsson 4426-B66 and (3) B14-4478 Remote Radio Units (RRU). The Antennas and RRUs will be installed at the 152-foot level of the tower.

This facility was approved by the Siting Council in Docket # 051.2 on September 26, 1985 and in Petition # 601 on January 8, 2003. The approvals included a condition that the tower not exceed 150' in height. This modification will not extend the height of the tower and 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 Carl P. Fortuna Jr., First Selectman of the Town of Old Saybrook, and the Old Saybrook Land Use

Department as well as the property owner and tower owner.

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

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

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

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

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

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

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

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

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

Sincerely,

Mark Roberts
QC Development
Consultant for AT&T

Attachments

Cc: The Honorable Carl P. Fortuna Jr.- Elected Official
Christine Nelson – Town Planner
Carol & Robert Lorenz – Property Owners
Crown Castle - 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*							6.52%
AT&T GSM	2	352	154	0.0116	880	0.5867	0.20%
AT&T UMTS	1	352	154	0.0058	880	0.5867	0.10%
AT&T UMTS	1	423	154	0.0069	1900	1.0000	0.07%
AT&T LTE	2	793	154	0.0260	734	0.4933	0.53%
AT&T LTE	2	1734	154	0.0569	1900	1.0000	0.57%
AT&T LTE	2	1094	154	0.0359	2300	1.0000	0.36%
Site Total							8.35%

*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*							6.52%
AT&T UMTS	1	352	152	0.0059	850	0.5667	0.10%
AT&T UMTS	1	424	152	0.0072	1900	1.0000	0.07%
AT&T LTE	2	1476	152	0.0498	700	0.4667	1.07%
AT&T LTE	1	1000	152	0.0169	850	0.5667	0.30%
AT&T 5G	1	1000	152	0.0169	850	0.5667	0.30%
AT&T LTE	2	3664	152	0.1236	1900	1.0000	1.24%
AT&T LTE	1	4842	152	0.0817	2100	1.0000	0.82%
AT&T LTE	1	1285	152	0.0217	2300	1.0000	0.22%
Site Total							10.63%

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

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

PROJECT INFORMATION

SCOPE OF WORK:	ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE: • PROPOSED PLATFORM REINFORCEMENT KIT, SITE PRO 1 PART # PRK–1245L (OR APPROVED EQUAL). • INSTALL NEW HANDRAIL KIT, SITE PRO 1 P/N HRK–14 (OR APPROVED EQUAL) • NEW AT&T RRUS: B2/B66A 8843 (1900/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) • NEW AT&T RRUS: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3) • NEW SURGE ARRESTOR: SURGE ARRESTOR (DC6–48–60–18F) (TOTAL OF 1) ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION: • NEW AT&T RRUS: B14 4478 (700) (TOTAL OF 2, ALPHA & GAMMA WILL SHARE THE SAME RADIO). • SWAP 2x DUS WITH 2x 5216. • ADD 2ND XMU & IDLE. • ADD RBS 6630 FOR 5G.
SITE ADDRESS:	170 INGHAM HILL ROAD OLD SAYBROOK, CT 06475
LATITUDE:	41.309881° N 41° 18' 35.57" N
LONGITUDE:	72.397526° W 72° 23' 51.09" W
TYPE OF SITE:	MONOPOLE / INDOOR EQUIPMENT
TOWER HEIGHT:	150'–0"±
RAD CENTER:	152'–0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2019

SITE NAME: OLD SAYBROOK

FA CODE: 10034982

PACE ID: MRCTB031501, MRCTB031724, MRCTB031747

PROJECT: LTE 4C_5C_6C 2019 UPGRADE

DRAWING INDEX

CROWN SITE NAME: OLD SAYBROOK
CROWN SITE #: 841289

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI. TURN LEFT ONTO CAPITOL BLVD. 0.3 MI. TURN LEFT ONTO WEST ST. 0.3 MI. MERGE ONTO I–91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 1.4 MI. MERGE ONTO CT–9 S VIA EXIT 22S ON THE LEFT TOWARD MIDDLETOWN/OLD SAYBROOK. 29.3 MI. MERGE ONTO I–95 S / GOVERNOR JOHN DAVIS LODGE TURNPIKE TOWARD NEW HAVEN/N.Y. CITY. 2.1 MI. TAKE THE ELM ST EXIT, EXIT 67. 0.2 MI. TURN RIGHT ONTO ELM ST. 0.0 MI. ELM ST BECOMES INGHAM HILL RD. 0.6 MI. 170 INGHAM HILL RD IS ON THE 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: CT2019
SITE NAME: OLD SAYBROOK
CROWN SITE#: 841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/20/19	ISSUED FOR CONSTRUCTION	AM	AT	DPH
A	06/21/18	ISSUED FOR REVIEW	AM	AT	DPH

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23554 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	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) 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 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 AWS 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. TOUCHUP 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

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT2019
SITE NAME: OLD SAYBROOK
CROWN SITE#: 841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY

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

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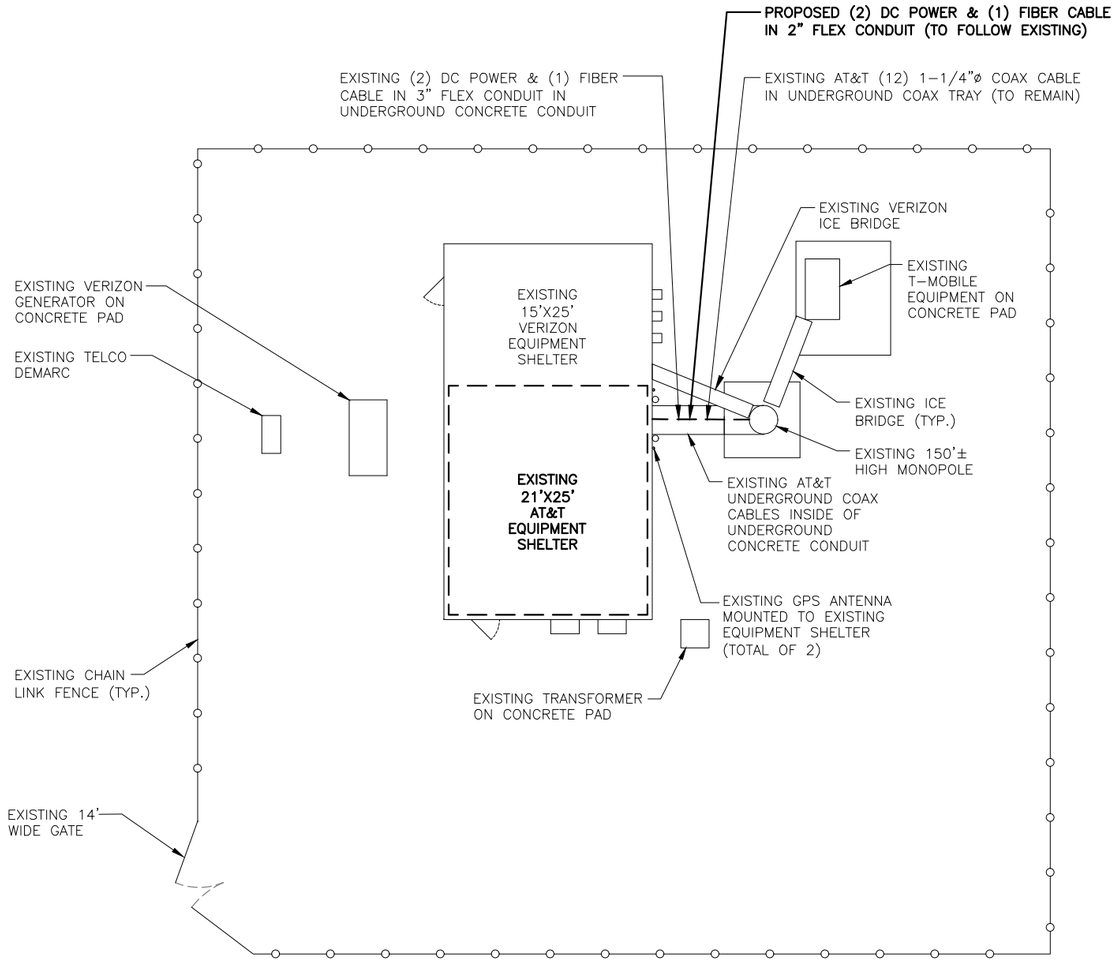
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT
DEREK J. CREAGER
No. 25[illegible]
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	GN-1	1



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"

NOTE:

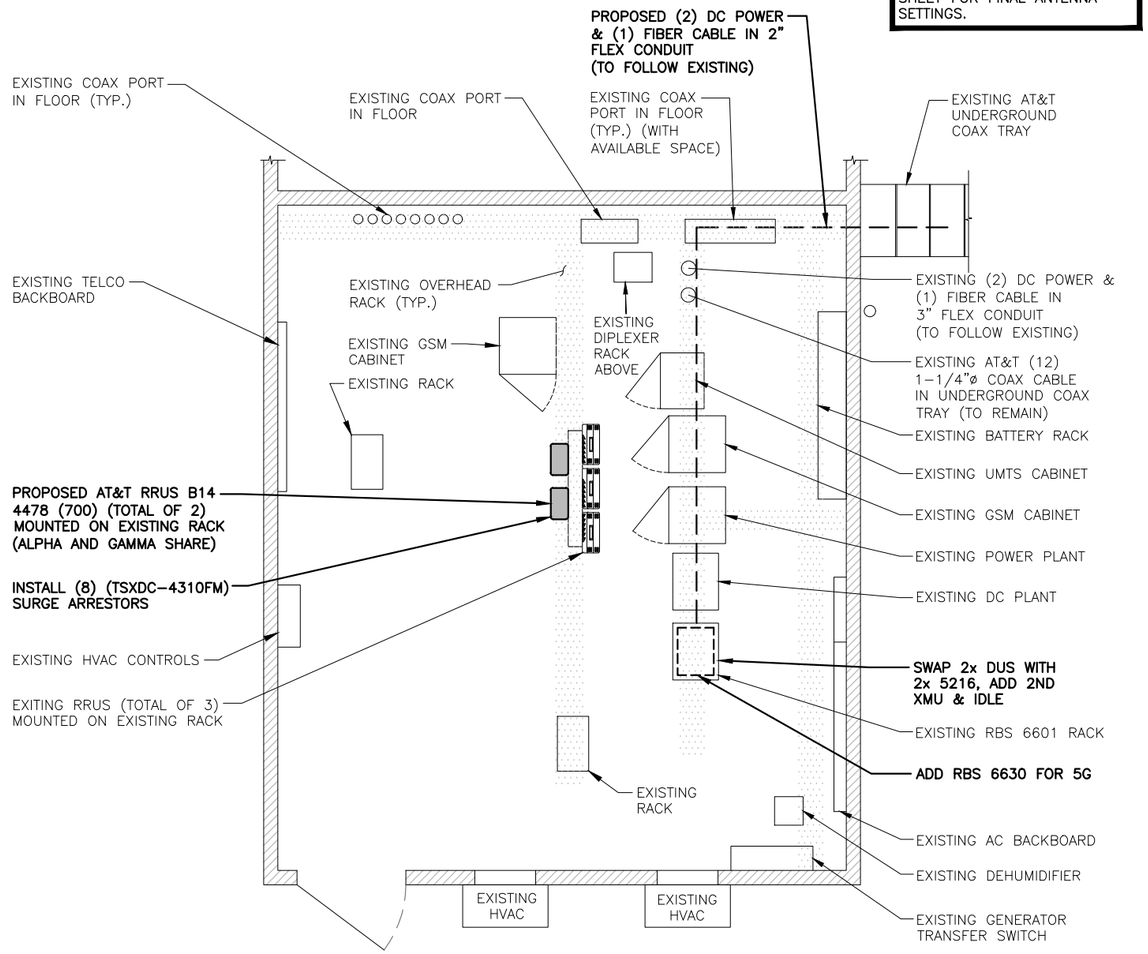
REFER TO STRUCTURAL ANALYSIS BY: B+T GRP, DATED: JANUARY 04, 2019, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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: FEBRUARY 07, 2019 (REV1)

NOTE:

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



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

0 1'-4" 2'-8" 5'-4" 8'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
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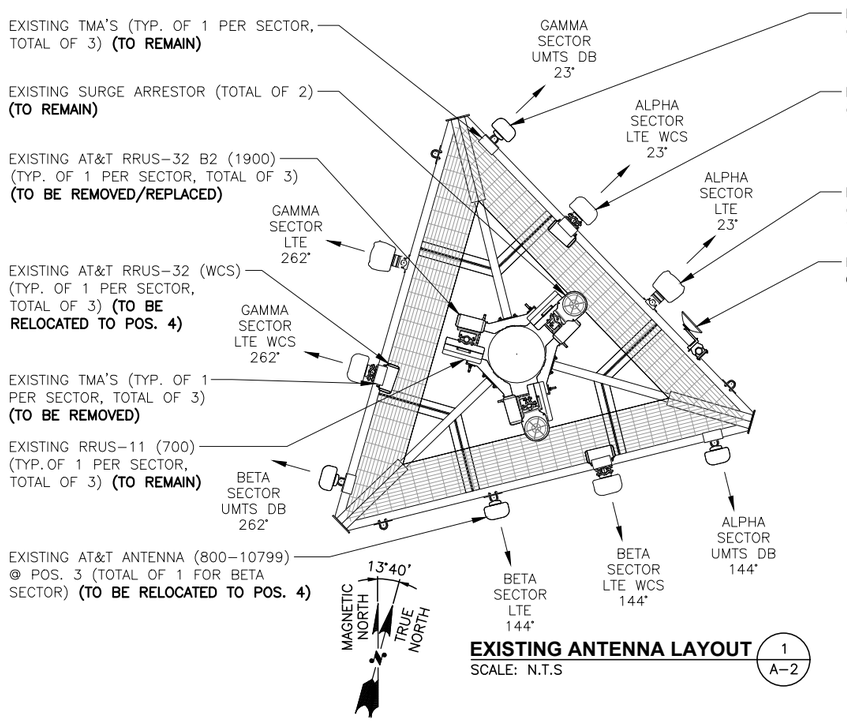
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 28358 · LICENSED PROFESSIONAL ENGINEER

AT&T

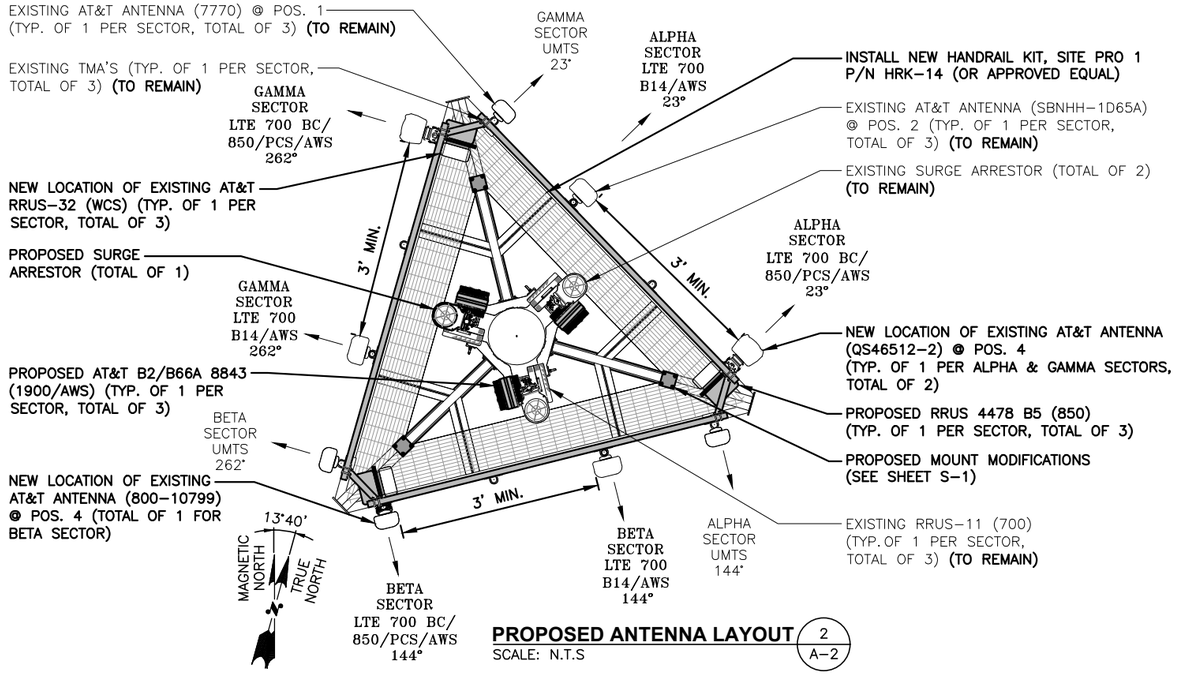
COMPOUND & EQUIPMENT PLAN
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	A-1	1



EXISTING ANTENNA LAYOUT (1 / A-2)

SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)

SCALE: N.T.S

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: FEBRUARY 07, 2019 (REV1)

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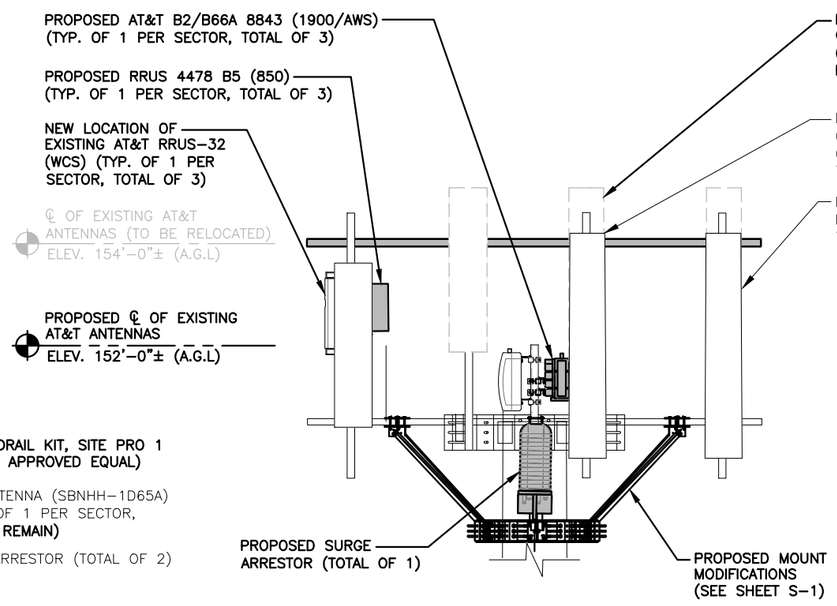


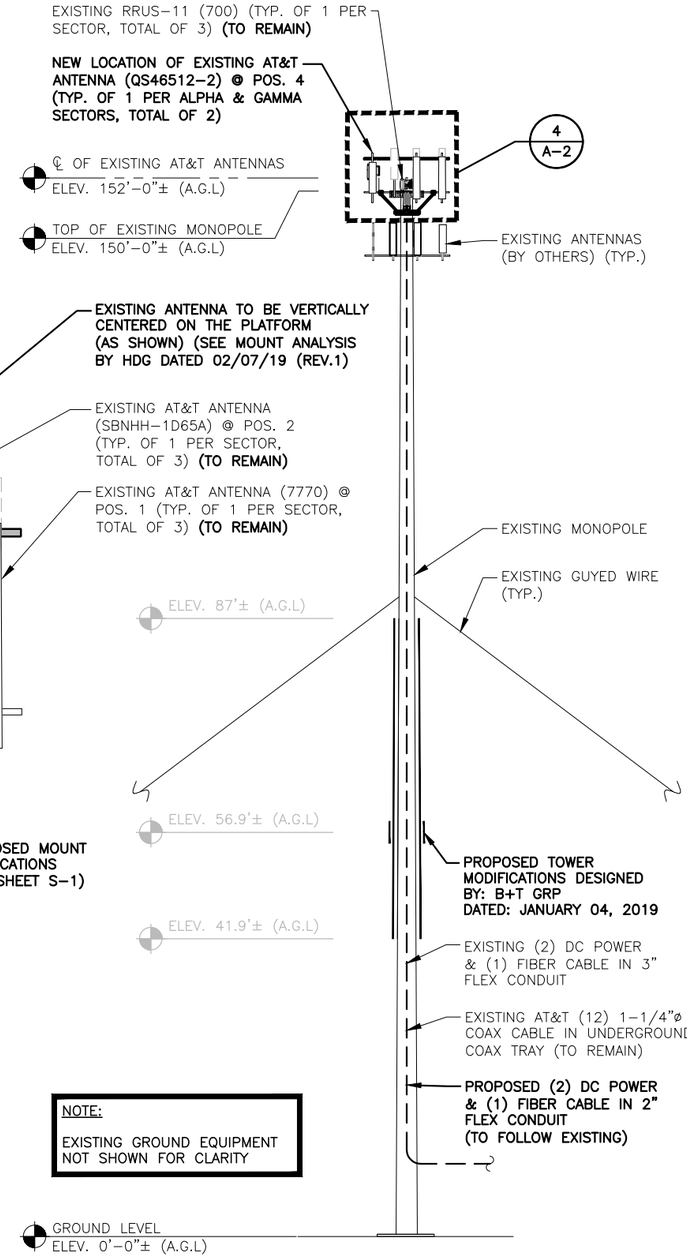
ENLARGED ANTENNA ELEVATION (4 / A-2)

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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

NOTE:

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



NOTE:

EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION (3 / A-2)

22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

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: CT2019
SITE NAME: OLD SAYBROOK
CROWN SITE#: 841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/20/19	ISSUED FOR CONSTRUCTION	AM	AT	DPH
A	06/21/18	ISSUED FOR REVIEW	AM	AT	DPH

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

STATE OF CONNECTICUT — KEREN M. RELEASER — No. 23554 — LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION (LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	A-2	1

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: B+T GRP, DATED: JANUARY 04, 2019, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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: FEBRUARY 07, 2019 (REV1)

NOTE:

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

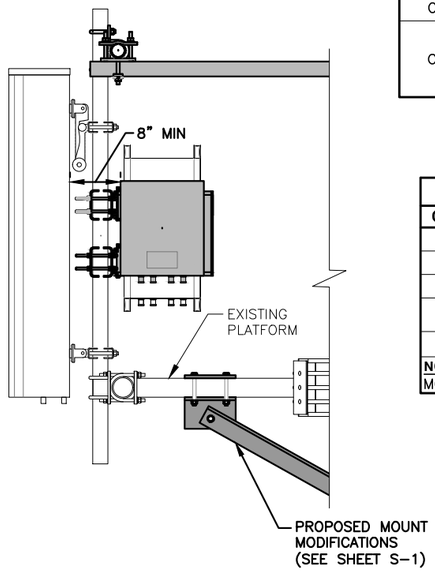
NOTE:

MINIMUM OF 8" SEPARATION REQUIRED BETWEEN THE BACK OF ANTENNA AND THE RRH.

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ COMBINER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS	7770	55X11X5	±152'-0"	144°	(E)(G)(1) POWERWAVE CM1007-DBPXBC-003 (E)(1) POWERWAVE TT19-08BP111-001	–	–	(2) 1-5/8" (APPROX 190'±)	(E) (1) RAYCAP DC6-48-60-18-8F
A2	EXISTING	LTE 700 B14/AWS	SBNHH-1D65A	55X11.9X7.1	±152'-0"	23°	–	**(P)(G)(1) B14 4478 (700) (P)(1) B2/B66A 8843 (1900/AWS)**	**18.1X13.4X8.3 14.9X13.2X10.9**	(2) 1-5/8" (APPROX 190'±)	
A3	–	–	–	–	–	–	–	–	–	–	
A4	EXISTING	LTE 700 BC /850/PCS/AWS	QS46512-2	52X12X10.8	±152'-0"	23°	–	(E)(1) RRUS-11 (700) (E)(1) RRUS-32 (WCS) **(P)(1) 4478 B5 (850)**	– – **18.1X13.4X8.3**	–	
B1	EXISTING	UMTS	7770	55X11X5	±152'-0"	262°	(E)(G)(1) POWERWAVE CM1007-DBPXBC-003 (E)(1) POWERWAVE TT19-08BP111-001	–	–	(2) 1-5/8" (APPROX 190'±)	(E) (1) RAYCAP DC6-48-60-18-8F
B2	EXISTING	LTE 700 B14/AWS	SBNHH-1D65A	55X11.9X7.1	±152'-0"	144°	–	**(P)(G)(1) B14 4478 (700) (P)(1) B2/B66A 8843 (1900/AWS)**	**18.1X13.4X8.3 14.9X13.2X10.9**	(2) 1-5/8" (APPROX 190'±)	
B3	–	–	–	–	–	–	–	–	–	–	
B4	EXISTING	LTE 700 BC /850/PCS/AWS	800-10799	106X14.8X6.7	±152'-0"	144°	–	(E)(1) RRUS-11 (700) (E)(1) RRUS-32 (WCS) **(P)(1) 4478 B5 (850)**	– – **18.1X13.4X8.3**	–	
C1	EXISTING	UMTS	7770	55X11X5	±152'-0"	23°	(E)(G)(1) POWERWAVE CM1007-DBPXBC-003 (E)(1) POWERWAVE TT19-08BP111-001	–	–	(2) 1-5/8" (APPROX 190'±)	**(P) (1) RAYCAP DC6-48-60-18-8F**
C2	EXISTING	LTE 700 B14/AWS	SBNHH-1D65A	55X11.9X7.1	±152'-0"	262°	–	**(P)(1) B2/B66A 8843 (1900/AWS)**	**14.9X13.2X10.9**	(2) 1-5/8" (APPROX 190'±)	
C3	–	–	–	–	–	–	–	–	–	–	
C4	EXISTING	LTE 700 BC /850/PCS/AWS	QS46512-2	52X12X10.8	±152'-0"	262°	–	(E)(1) RRUS-11 (700) (E)(1) RRUS-32 (WCS) **(P)(1) 4478 B5 (850)**	– – **18.1X13.4X8.3**	–	

℄ OF EXISTING AT&T ANTENNAS
ELEV. 152'-0"± (A.G.L)



PROPOSED ANTENNA & RRH MOUNTING DETAIL (1 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

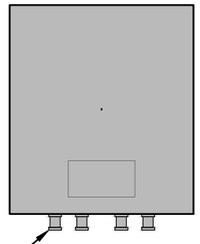
RRU CHART

QUANTITY	MODEL	L	W	D
2(P)(G)	B14 4478	18.1"	13.4"	8.3"
3(E)	RRUS-32	27.2"	12.1"	7.0"
3(P)	B2/B66A 8843	14.9"	13.2"	10.9"
3(P)	4478 B5	18.1"	13.4"	8.3"
3(E)	RRUS 11 (700)	19.7"	17.0"	7.2"

NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

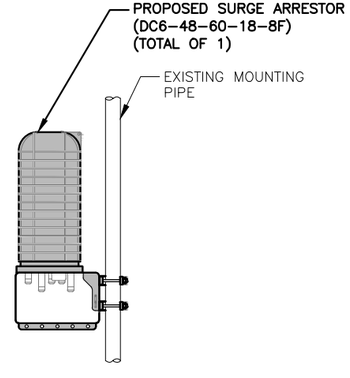


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

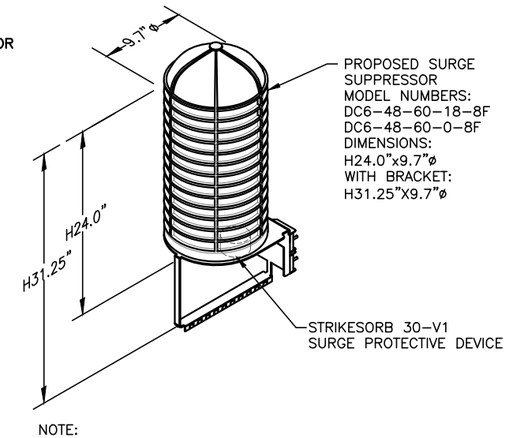
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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

FINAL ANTENNA CONFIGURATION (5 / A-3)
SCALE: N.T.S



PROPOSED SURGE ARRESTOR MOUNT DETAIL (3 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)
SCALE: N.T.S

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A	06/21/18	ISSUED FOR REVIEW	AM	AT	DPH

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23554 · LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	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

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
BEFORE CONSTRUCTION	
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	
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:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

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SITE NAME: OLD SAYBROOK
CROWN SITE#: 841289

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A	06/21/18	ISSUED FOR REVIEW	AM	AT	DPH

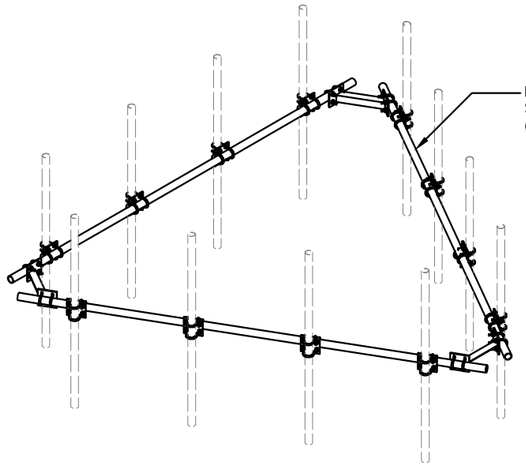
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT · DEREK J. CREASER · 29295 · LICENSED PROFESSIONAL ENGINEER

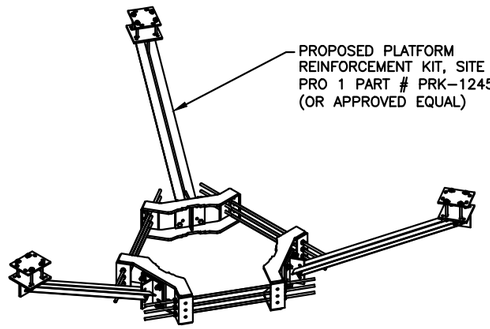
AT&T

STRUCTURAL NOTES
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	SN-1	1



PROPOSED HANDRAIL KIT (1 / S-1)
SCALE: N.T.S



PROPOSED PLATFORM REINFORCEMENT MOUNT DETAIL (4 / S-1)
SCALE: N.T.S

NOTE:

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

NOTE:

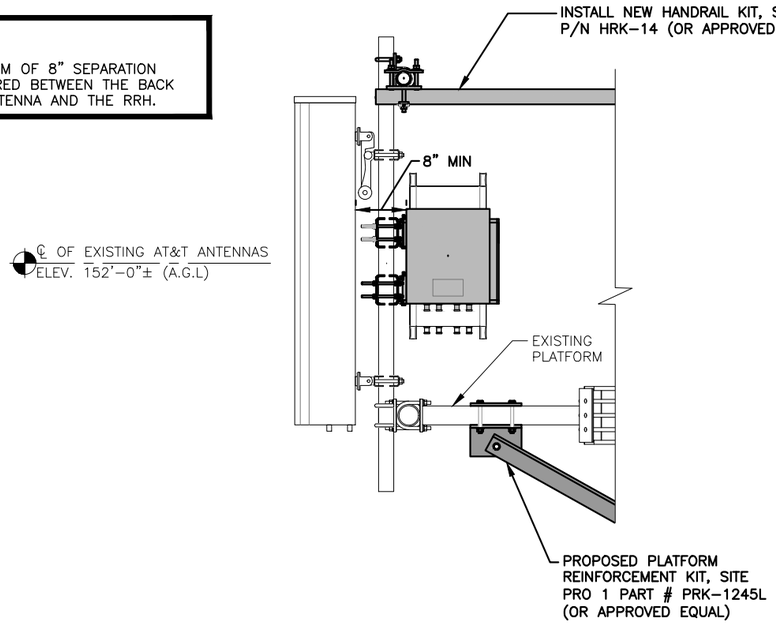
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: FEBRUARY 07, 2019 (REV1)

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: B+T GRP,
DATED: JANUARY 04, 2019,
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

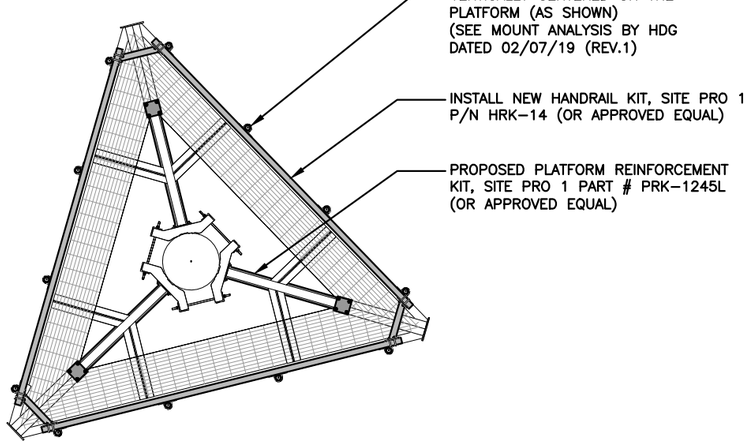
NOTE:

MINIMUM OF 8" SEPARATION REQUIRED BETWEEN THE BACK OF ANTENNA AND THE RRH.



PROPOSED ANTENNA & RRH MOUNTING DETAIL (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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



PLATFORM REINFORCEMENT PLAN (3 / S-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

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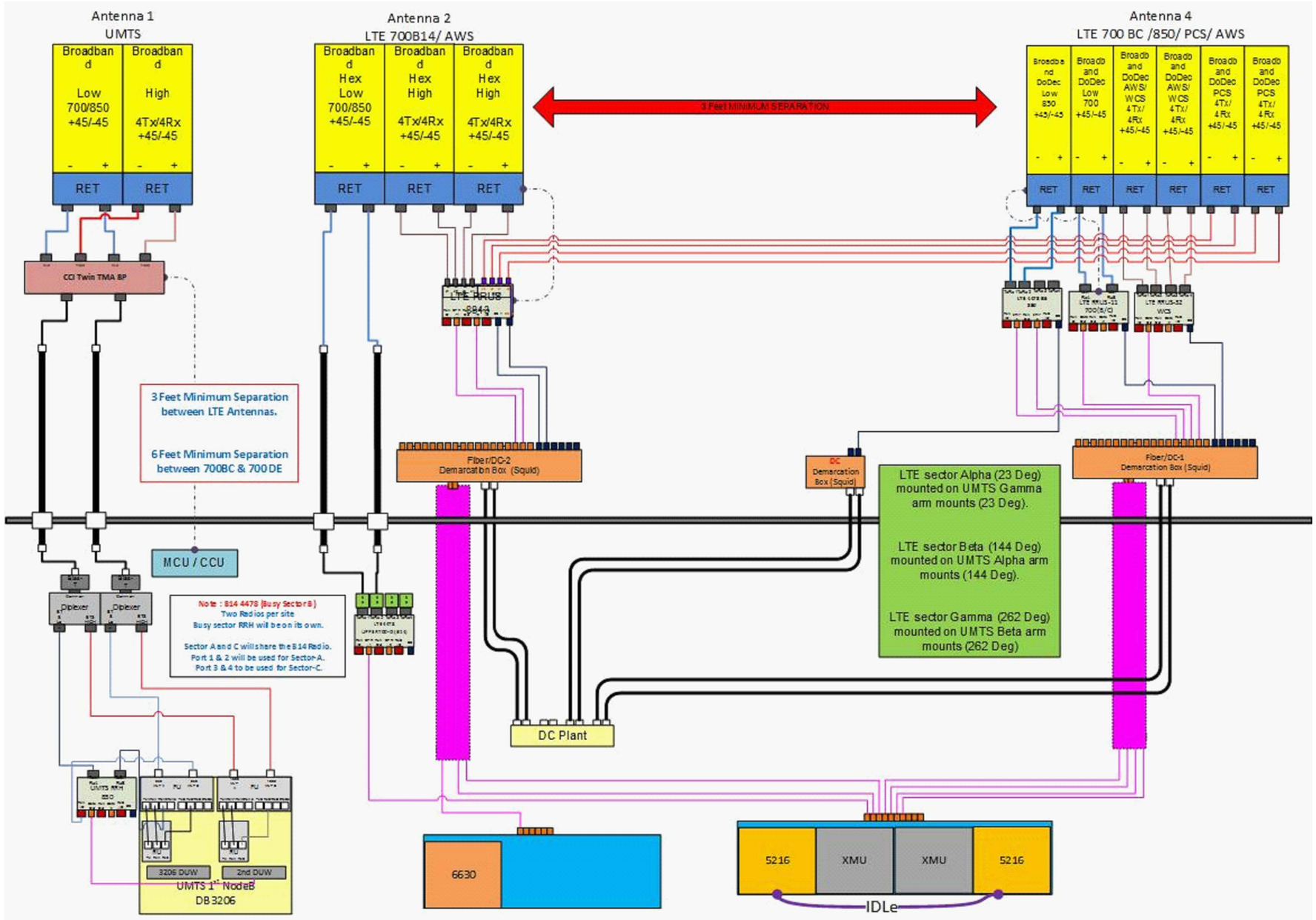
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23851 · LICENSED PROFESSIONAL ENGINEER

AT&T

MOUNT MODIFICATION DESIGN
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	S-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

SITE NUMBER: CT2019
SITE NAME: OLD SAYBROOK
CROWN SITE#: 841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	02/20/19	ISSUED FOR CONSTRUCTION	AM	AT	DPH
A	06/21/18	ISSUED FOR REVIEW	AM	AT	DPH

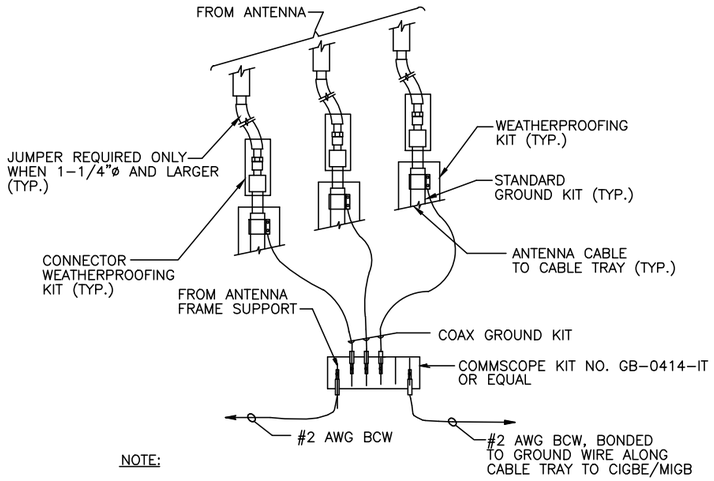
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 25854 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	RF–1	1



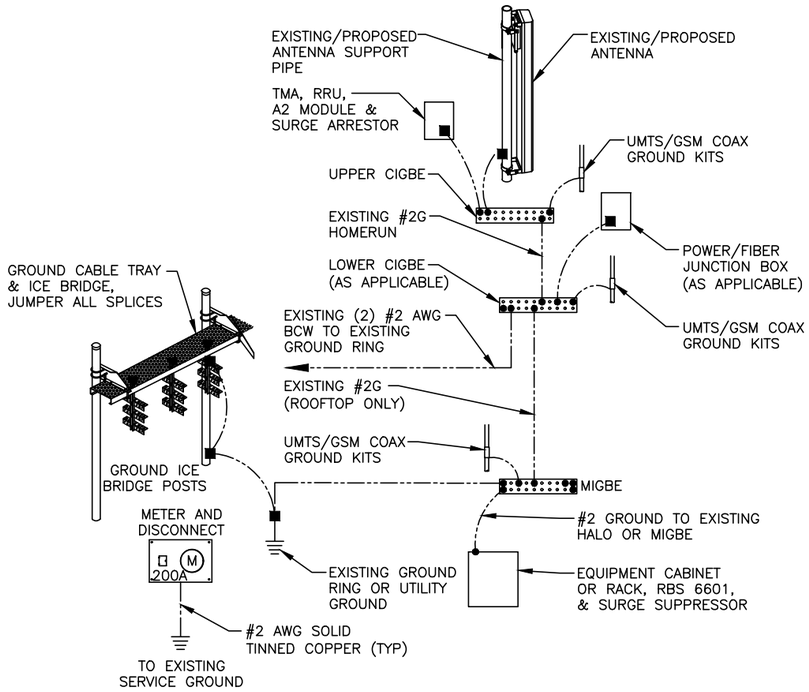
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

1 / G-1

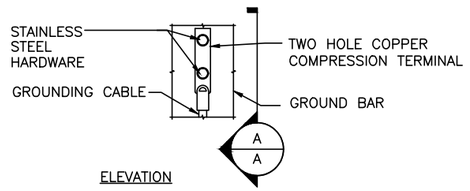
SCALE: N.T.S



GROUNDING RISER DIAGRAM

2 / G-1

SCALE: N.T.S



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

TYPICAL GROUND BAR CONNECTION DETAIL

3 / G-1

SCALE: N.T.S

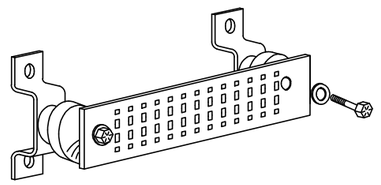
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

4 / G-1

SCALE: N.T.S

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SAI
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AM

STATE OF CONNECTICUT · DEREK J. CREASER · No. 28556 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 4C_5C_6C)

SITE NUMBER	DRAWING NUMBER	REV
CT2019	G-1	1

Date: **January 04, 2019**

Mr. Timothy Howell
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

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

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2019
	Carrier Site Name:	Old Saybrook
Crown Castle Designation:	**Crown Castle BU Number:**	841289
	Crown Castle Site Name:	Old Saybrook
	Crown Castle JDE Job Number:	519254
	Crown Castle Work Order Number:	1668390
	Crown Castle Order Number:	447927 Rev. 3
Engineering Firm Designation:	**B+T Group Project Number:**	93496.020.01
Site Data:	**170 Ingham Hill Road, Old Saybrook, CT, Middlesex County** **Latitude *41° 18' 35.55"*, Longitude *-72° 23' 51.13"*** **150 Foot - Guyed Monopole**	

Dear Mr. Howell,

B+T Group is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower.

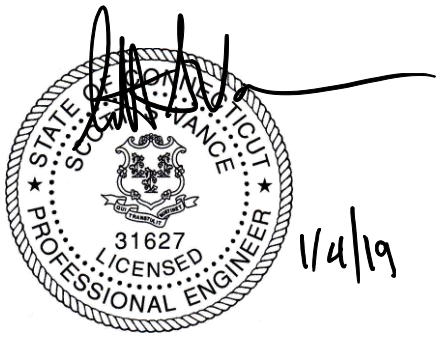
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC4.5: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural modification prepared by: Umesh Shrestha, E.I.T.

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



Scott S. Vance, P.E.

tnxTower Report - version 8.0.5.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft. monopole designed by Engineered Endeavors Inc.,

This tower has been modified multiple times in the past to accommodate additional loading and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	135 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
149.0	156.0	1	Andrew	KP4F-23A	12 1 6 3	1-1/4 7/8 3/4 3/8
	152.0	3	Andrew	SBNHH-1D65A		
		3	Ericsson	RADIO 8843		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 4478 B5		
		6	Kaelus	DBC0061F1V51-2		
		1	Kathrein	80010799		
		3	Powerwave Tech.	7770.00		
		3	Powerwave Tech.	TT19-08BP111-001		
		2	Quintel Tech.	QS46512-2		
		3	Raycap	DC6-48-60-18-8C		
	150.0	3	Ericsson	RRUS 11		
	149.0	1	Site Pro 1	PRK-1245L (Kicker Kit)		
		1	--	Platform Mount [LP 403-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	142.0	3	Commscope	TMAT7LA-11A	1 7	1-5/8 1-1/4
	141.0	3	Andrew	LNX-6515DS-A1M		
		3	Ericsson	RRUS 11 B12		
	140.0	3	Ericsson	AIR 21 B2A/B4P		
		3	Ericsson	AIR 21 B4A/B2P		
		1	--	Miscellaneous [NA 507-1]		
		1	--	Platform Mount [LP 303-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
130.0	133.0	3	Alcatel Lucent	RRH2X60-AWS	1 12	1-5/8 1-1/4
		3	Alcatel Lucent	RRH2X60-PCS		
		3	Antel	BXA-171085-8BF-EDIN-0		
		3	Antel	BXA-80080/4CF		
		1	RFS Celwave	DB-B1-6C-12AB-0Z		
		6	RFS Celwave	FD9R6004/2C-3L		
	132.0	3	Commscope	HBXX-6517DS-A2M		
		3	Commscope	LNX-6514DS-A1M		
	130.0	1	--	Platform Mount [LP 403-1]		
71.0	72.0	1	Kathrein	FMO	1	1/2
	71.0	1	--	Side Arm Mount [SO 301-1]		
22.0	22.0	1	Maxrad	MYA-43012N	1	5/16
		1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Online Order Information	AT&T Mobility Co-Locate Rev. 3	447927	CCIsites
Tower Manufacturer Drawing	EEI, Job No. 3503	5204147	CCIsites
Tower Mapping	ReliaPOLE, Project No. 14-0703NEd	5204147	CCIsites
Tower Modification Drawing	GPD, Job No. 2008263.44	4489382	CCIsites
Post Modification Inspection	GPD, Project No. 2008534.00	4489415	CCIsites
Tower Modification Drawing	GPD, Job No. 2011716.17	4478711	CCIsites
Post Modification Inspection	HDG, Date: 03/19/2012	4468635	CCIsites
Tower Modification Drawing	B+T Group, Project No. 93496.001.01	5293057	CCIsites
Post Modification Inspection	SGS, Project No. 145988	5874000	CCIsites
Tower Modification Drawing	B+T Group, Project No. 93496.005.01	6254746	CCIsites
Post Modification Inspection	SGS, Project No. 163830	6444911	CCIsites
Foundation Mapping	FDH, Project No. 08-04159E N1	4591935	CCIsites
Geotech Report	FDH, Project No. 08-04159E G1	4468634	CCIsites
Antenna Configuration	Failing SA by B+T Group, Project No. 93496.019.01	7951511	CCIsites

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built and have been maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) Mount areas and weights are assumed based on photographs provided.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole) - LC4.5

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 145	Pole	TP16.31x15.53x0.25	1	-3.438	--	15.1	Pass[1]
L2	145 - 140	Pole	TP17.09x16.31x0.25	2	-3.755	--	25.2	Pass[1]
L3	140 - 135	Pole	TP17.87x17.09x0.25	3	-6.544	--	40.4	Pass[1]
L4	135 - 130	Pole	TP18.65x17.87x0.25	4	-7.019	--	52.8	Pass[1]
L5	130 - 125	Pole	TP19.43x18.65x0.25	5	-9.831	--	70.8	Pass[1]
L6	125 - 123.75	Pole	TP19.625x19.43x0.25	6	-9.980	--	74.4	Pass[1]
L7	123.75 - 123.5	Pole + Reinf.	TP19.664x19.625x0.513	7	-10.044	--	65.6	Pass[1]
L8	123.5 - 118.5	Pole + Reinf.	TP20.444x19.664x0.5	8	-10.847	--	78.8	Pass[1]
L9	118.5 - 113.5	Pole + Reinf.	TP21.224x20.444x0.488	9	-12.780	--	91.2	Pass[1]
L10	113.5 - 112	Pole + Reinf.	TP21.458x21.224x0.488	10	-13.504	--	94.8	Pass[1]
L11	112 - 111.75	Pole + Reinf.	TP21.497x21.458x0.7	11	-13.657	--	61.3	Pass[1]
L12	111.75 - 110	Pole + Reinf.	TP21.77x21.497x0.7	12	-14.452	--	64.1	Pass[1]
L13	110 - 109.75	Pole + Reinf.	TP21.81x21.77x0.625	13	-14.553	--	62.9	Pass[1]
L14	109.75 - 104.75	Pole + Reinf.	TP22.619x21.81x0.613	14	-17.237	--	70.1	Pass[1]
L15	104.75 - 99.75	Pole + Reinf.	TP23.427x22.619x0.588	15	-19.005	--	76.9	Pass[1]
L16	99.75 - 95	Pole + Reinf.	TP24.195x23.427x0.575	16	-20.213	--	82.8	Pass[1]
L17	95 - 94.75	Pole + Reinf.	TP24.235x24.195x0.713	17	-20.303	--	81.8	Pass[1]
L18	94.75 - 89.75	Pole + Reinf.	TP25.043x24.235x0.688	18	-21.726	--	87.8	Pass[1]
L19	89.75 - 87.75	Pole + Reinf.	TP25.367x25.043x0.688	19	-267.037	--	86.2	Pass[1]
		Guy A@89.75	1 5/8	53	185.022	194.400	95.3	Pass
		Guy B@89.75	1 3/8	52	102.499	139.200	73.6	Pass
		Guy C@89.75	1 3/8	51	113.680	139.200	81.7	Pass
L20	87.75 - 87.5	Pole + Reinf.	TP25.407x25.367x0.65	20	-267.481	--	97.9	Pass[1]
L21	87.5 - 85.5	Pole + Reinf.	TP25.73x25.407x0.638	21	-276.646	--	98.6	Pass[1]
L22	85.5 - 85.25	Pole + Reinf.	TP25.771x25.73x0.85	22	-276.728	--	78.1	Pass[1]
L23	85.25 - 83	Pole + Reinf.	TP26.134x25.771x0.838	23	-277.385	--	79.1	Pass[1]
L24	83 - 82.65	Pole + Reinf.	TP26.191x26.134x0.713	24	-277.493	--	87.5	Pass[1]
L25	82.65 - 82.42	Pole + Reinf.	TP26.229x26.191x0.713	25	-277.562	--	87.6	Pass[1]
L26	82.42 - 77.42	Pole + Reinf.	TP27.037x26.229x0.7	26	-279.024	--	89.4	Pass[1]
L27	77.42 - 73	Pole + Reinf.	TP27.751x27.037x0.688	27	-279.043	--	90.7	Pass[1]
L28	73 - 72.75	Pole + Reinf.	TP27.791x27.751x0.663	28	-280.346	--	92.2	Pass[1]
L29	72.75 - 71	Pole + Reinf.	TP28.64x27.791x0.663	29	-280.427	--	92.6	Pass[1]

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L30	71 - 66	Pole + Reinf.	TP28.266x27.449x0.725	30	-282.770	--	87.6	Pass[1]
L31	66 - 61	Pole + Reinf.	TP29.084x28.266x0.738	31	-283.203	--	88.0	Pass[1]
L32	61 - 56	Pole + Reinf.	TP29.901x29.084x0.725	32	-284.667	--	88.3	Pass[1]
L33	56 - 55.42	Pole + Reinf.	TP29.996x29.901x0.725	33	-286.147	--	88.3	Pass[1]
L34	55.42 - 55.17	Pole + Reinf.	TP30.037x29.996x0.725	34	-286.319	--	88.3	Pass[1]
L35	55.17 - 50.17	Pole + Reinf.	TP30.854x30.037x0.713	35	-286.399	--	88.2	Pass[1]
L36	50.17 - 47.17	Pole + Reinf.	TP31.345x30.854x0.7	36	-287.903	--	88.0	Pass[1]
L37	47.17 - 46.92	Pole + Reinf.	TP31.385x31.345x0.788	37	-288.812	--	79.9	Pass[1]
L38	46.92 - 43.42	Pole + Reinf.	TP31.957x31.385x0.775	38	-288.900	--	79.7	Pass[1]
L39	43.42 - 43.17	Pole + Reinf.	TP31.998x31.957x0.65	39	-290.060	--	87.6	Pass[1]
L40	43.17 - 38.17	Pole + Reinf.	TP32.815x31.998x0.65	40	-290.140	--	86.9	Pass[1]
L41	38.17 - 37	Pole + Reinf.	TP33.66x32.815x0.65	41	-291.645	--	86.7	Pass[1]
L42	37 - 32.67	Pole + Reinf.	TP32.963x32.256x0.713	42	-294.337	--	81.1	Pass[1]
L43	32.67 - 32.42	Pole	TP33.004x32.963x0.438	43	-294.447	--	86.0	Pass[1]
L44	32.42 - 27.42	Pole	TP33.819x33.004x0.438	44	-294.512	--	84.0	Pass[1]
L45	27.42 - 22.42	Pole	TP34.634x33.819x0.438	45	-295.701	--	81.9	Pass[1]
L46	22.42 - 17.42	Pole	TP35.45x34.634x0.438	46	-296.903	--	79.6	Pass[1]
L47	17.42 - 12.42	Pole	TP36.265x35.45x0.438	47	-298.237	--	77.1	Pass[1]
L48	12.42 - 7.42	Pole	TP37.081x36.265x0.438	48	-299.471	--	75.1	Pass[1]
L49	7.42 - 2.42	Pole	TP37.896x37.081x0.438	49	-300.721	--	73.0	Pass[1]
L50	2.42 - 0	Pole	TP38.29x37.896x0.438	50	-301.991	--	72.0	Pass[1]
							Summary	
						Pole (L43)	98.6	Pass[1]
						Guy A (L19)	95.3	Pass
						Guy B (L19)	73.6	Pass
						Guy C (L19)	81.7	Pass
						Rating =	98.6	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole) - LC4.5

Notes	Component		Elevation	% Capacity	Pass / Fail
1	Flange Connection		110’	57.8	Pass
1	Bridge Stiffener			64.3	Pass
1	Anchor Rods		Base	94.7	Pass
1	Base Plate		Base	71.3	Pass
1	Base Foundation	Structure	Base	70.4	Pass
		Soil	Base	99.5	Pass
1	Inner Guy Anchor Foundation	Anchor Rod	Base	91.6	Pass
		Structure	Base	75.2	Pass
		Soil	Base	80.2	Pass
1	Outer Guy Anchor Foundation	Anchor Rod	Base	56.2	Pass
		Structure	Base	34.9	Pass
		Soil	Base	55.8	Pass

Structure Rating (max from all components) =	98.6%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5.

4.1) Recommendations

1) All modifications proposed in this report shall be installed in accordance with the attached drawings (Appendix D) for the determined capacity to be effective.
2) The results of the tilt and twist values for a 60 mph 3-second gust service wind speed per the TIA-222-H standard are given below:

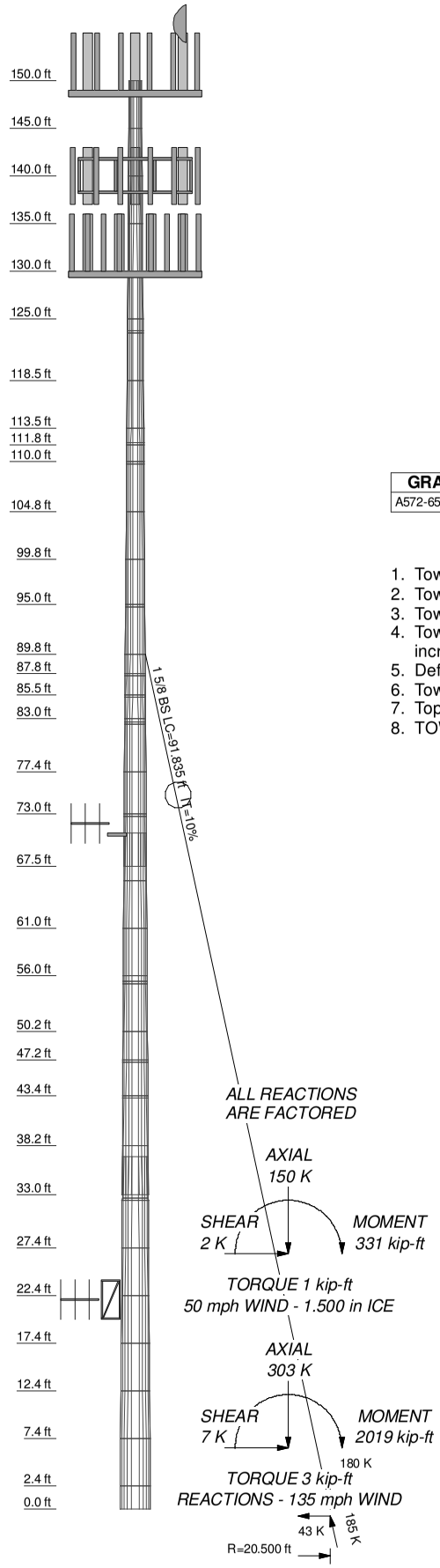
Table 6 - Existing Loading Tilt-Sway Results for 60 mph Service Wind - LC4.5

Elevation (ft)	*Dish Model*	*Diameter (ft)*	*Tilt (°)*	*Twist (°)*
156.0	KP4F-23A	4.000	1.442	0.011

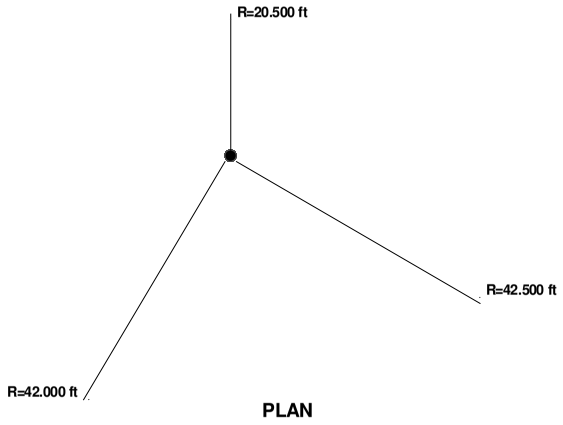
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	2.417
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.500	0.487	0.250	0.250	0.250	0.250	0.619	0.588	0.575	0.563	0.688	0.675	0.663	0.650	0.638	0.625	0.613	0.600	0.700	0.688	0.675	0.662	0.650	0.738	0.725	0.713	0.700	0.713	0.700	0.688	0.675	0.663	0.650	0.638	0.625	0.613	0.600	0.588	0.575	0.563	0.550	0.438
Socket Length (ft)																																																					
Top Dia (in)	15.530	16.310	17.090	17.870	18.650	19.430	20.210	20.444	21.224	22.004	22.784	23.564	24.344	22.619	23.427	24.235	25.043	25.851	26.659	27.467	28.275	29.083	29.901	30.709	31.517	27.751	28.559	29.367	30.175	30.983	31.791	32.599	33.407	34.215	35.023	35.831	36.639	37.447	38.255	32.835	33.643	34.451	33.819	34.634	35.450	36.265	37.081	37.896	38.290
Bot Dia (in)	16.310	17.090	17.870	18.650	19.430	20.210	20.444	21.224	22.004	22.784	23.564	24.344	22.619	23.427	24.235	25.043	25.851	26.659	27.467	28.275	29.083	29.901	30.709	31.517	27.751	28.559	29.367	30.175	30.983	31.791	32.599	33.407	34.215	35.023	35.831	36.639	37.447	32.835	33.643	34.451	33.819	34.634	35.450	36.265	37.081	37.896	38.290	30.4
Grade																																																				
Weight (K)	0.2	0.2	0.2	0.2	0.3	0.1	0.1	0.5	0.5	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.0	1.0	0.4	0.0	0.5	0.0	1.0	0.9	0.0	1.0	0.9	0.0	1.0	1.0	1.0	1.1	0.1	1.1	0.1	10.7	10.80	0.0	1.1	0.0	1.1	0.0	0.8	0.8	0.8	0.8	0.9	0.9	0.4	25.3



ALL REACTIONS ARE FACTORED



PLAN

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 95.3%

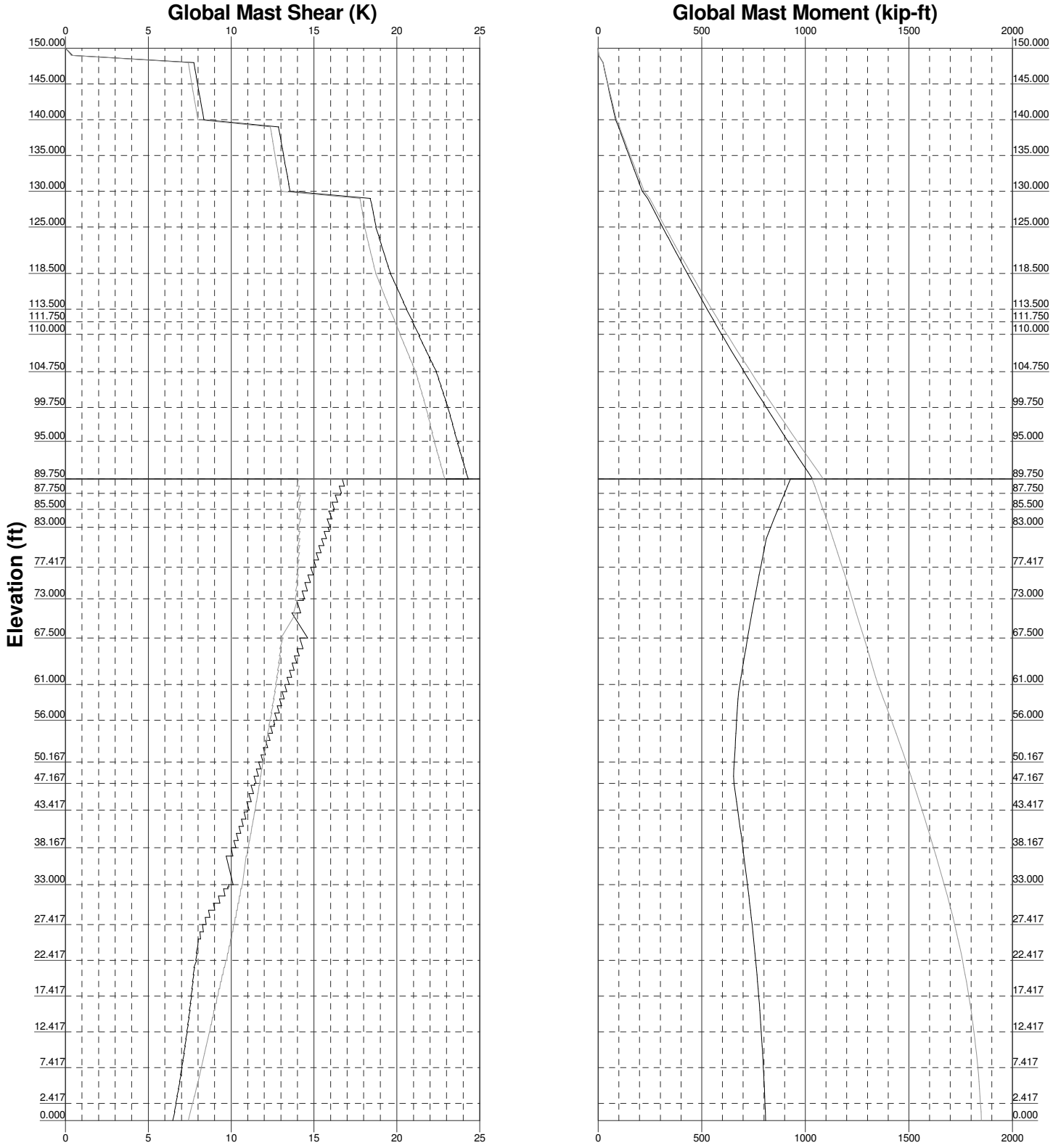
B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 93496.020.01 - OLD SAYBROOK, CT (BU # 841289)			
Project:			
Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:	
Code: TIA-222-H	Date: 01/04/19	Scale: NTS	
Path:		Dwg No. E-1	

TIA-222-H - 135 mph/50 mph 1.500 in Ice Exposure B

Maximum Values

Vx Vz Mx Mz



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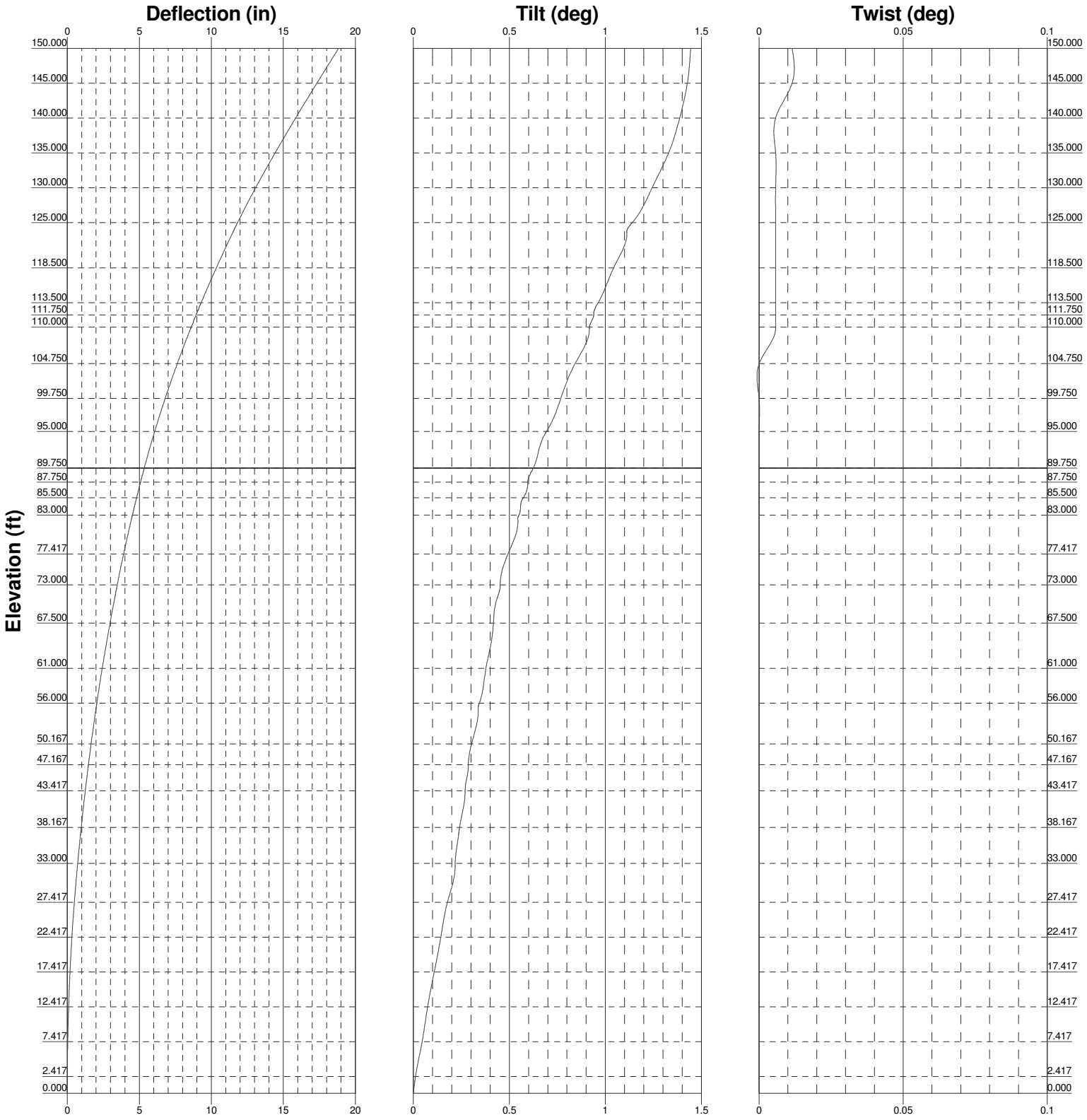
Job: 93496.020.01 - OLD SAYBROOK, CT (BU # 841289)			
Project:			
Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:	
Code: TIA-222-H	Date: 01/04/19	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



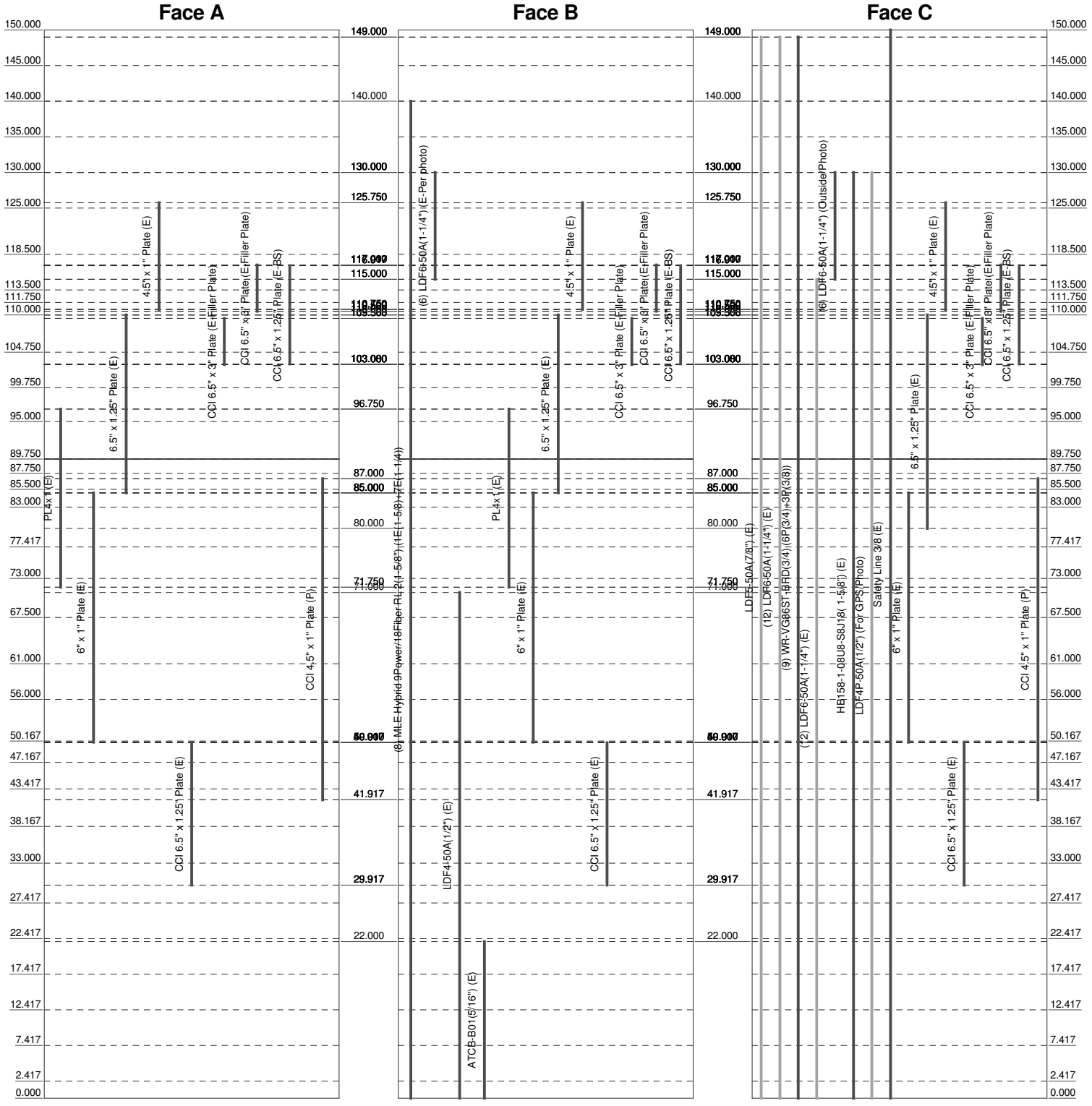
B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***93496.020.01 - OLD SAYBROOK, CT (BU # 841289)***			
Project:			
Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:	
Code: TIA-222-H	Date: 01/04/19	Scale: NTS	
Path:		Dwg No. E-5	

Feed Line Distribution Chart
0' - 150'

Round | Flat | App In Face | App Out Face | Truss Leg



B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job: ***93496.020.01 - OLD SAYBROOK, CT (BU # 841289)***		
	Project:		
	Client: Crown Castle	Drawn by: Vignesh Prabhu K	App'd:
	Code: TIA-222-H	Date: 01/04/19	Scale: NTS
	Path:		Dwg No. E-7

Tower Input Data

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

Tower is located in Middlesex County, Connecticut.
Tower base elevation above sea level: 133.000 ft.
Basic wind speed of 135 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Safety factor used in guy design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
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-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H 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	150.000-145.000	5.000	0.000	12	15.530	16.310	0.250	1.000	A572-65 (65 ksi)
L2	145.000-140.000	5.000	0.000	12	16.310	17.090	0.250	1.000	A572-65 (65 ksi)
L3	140.000-135.000	5.000	0.000	12	17.090	17.870	0.250	1.000	A572-65 (65 ksi)
L4	135.000-130.000	5.000	0.000	12	17.870	18.650	0.250	1.000	A572-65 (65 ksi)
L5	130.000-125.000	5.000	0.000	12	18.650	19.430	0.250	1.000	A572-65 (65 ksi)
L6	125.000-123.750	1.250	0.000	12	19.430	19.625	0.250	1.000	A572-65 (65 ksi)
L7	123.750-123.500	0.250	0.000	12	19.625	19.664	0.512	2.050	A572-65 (65 ksi)
L8	123.500-118.500	5.000	0.000	12	19.664	20.444	0.500	2.000	A572-65 (65 ksi)
L9	118.500-113.500	5.000	0.000	12	20.444	21.224	0.487	1.950	A572-65 (65 ksi)
L10	113.500-112.000	1.500	0.000	12	21.224	21.458	0.487	1.950	A572-65 (65 ksi)
L11	112.000-111.750	0.250	0.000	12	21.458	21.497	0.700	2.800	A572-65 (65 ksi)
L12	111.750-110.000	1.750	0.000	12	21.497	21.770	0.700	2.800	A572-65 (65 ksi)
L13	110.000-109.750	0.250	0.000	12	21.770	21.810	0.625	2.500	A572-65 (65 ksi)
L14	109.750-104.750	5.000	0.000	12	21.810	22.619	0.613	2.450	A572-65 (65 ksi)
L15	104.750-99.750	5.000	0.000	12	22.619	23.427	0.588	2.350	A572-65 (65 ksi)
L16	99.750-95.000	4.750	0.000	12	23.427	24.195	0.575	2.300	A572-65 (65 ksi)
L17	95.000-94.750	0.250	0.000	12	24.195	24.235	0.713	2.850	A572-65 (65 ksi)
L18	94.750-89.750	5.000	0.000	12	24.235	25.043	0.688	2.750	A572-65 (65 ksi)
L19	89.750-87.750	2.000	0.000	12	25.043	25.367	0.688	2.750	A572-65 (65 ksi)
L20	87.750-87.500	0.250	0.000	12	25.367	25.407	0.650	2.600	A572-65 (65 ksi)
L21	87.500-85.500	2.000	0.000	12	25.407	25.730	0.637	2.550	A572-65 (65 ksi)
L22	85.500-85.250	0.250	0.000	12	25.730	25.771	0.850	3.400	A572-65 (65 ksi)
L23	85.250-83.000	2.250	0.000	12	25.771	26.134	0.838	3.350	A572-65 (65 ksi)
L24	83.000-82.650	0.350	0.000	12	26.134	26.191	0.713	2.850	A572-65 (65 ksi)
L25	82.650-82.417	0.233	0.000	12	26.191	26.229	0.713	2.850	A572-65 (65 ksi)
L26	82.417-77.417	5.000	0.000	12	26.229	27.037	0.700	2.800	A572-65 (65 ksi)
L27	77.417-73.000	4.417	0.000	12	27.037	27.751	0.688	2.750	A572-65 (65 ksi)
L28	73.000-72.750	0.250	0.000	12	27.751	27.791	0.662	2.650	A572-65 (65 ksi)
L29	72.750-67.500	5.250	3.500	12	27.791	28.640	0.662	2.650	A572-65 (65 ksi)

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
L30	67.500-66.000	5.000	0.000	12	27.449	28.266	0.725	2.900	A572-65 (65 ksi)
L31	66.000-61.000	5.000	0.000	12	28.266	29.084	0.738	2.950	A572-65 (65 ksi)
L32	61.000-56.000	5.000	0.000	12	29.084	29.901	0.725	2.900	A572-65 (65 ksi)
L33	56.000-55.417	0.583	0.000	12	29.901	29.996	0.725	2.900	A572-65 (65 ksi)
L34	55.417-55.167	0.250	0.000	12	29.996	30.037	0.725	2.900	A572-65 (65 ksi)
L35	55.167-50.167	5.000	0.000	12	30.037	30.854	0.713	2.850	A572-65 (65 ksi)
L36	50.167-47.167	3.000	0.000	12	30.854	31.345	0.700	2.800	A572-65 (65 ksi)
L37	47.167-46.917	0.250	0.000	12	31.345	31.385	0.787	3.150	A572-65 (65 ksi)
L38	46.917-43.417	3.500	0.000	12	31.385	31.957	0.775	3.100	A572-65 (65 ksi)
L39	43.417-43.167	0.250	0.000	12	31.957	31.998	0.650	2.600	A572-65 (65 ksi)
L40	43.167-38.167	5.000	0.000	12	31.998	32.815	0.650	2.600	A572-65 (65 ksi)
L41	38.167-33.000	5.167	4.000	12	32.815	33.660	0.650	2.600	A572-65 (65 ksi)
L42	33.000-32.667	4.333	0.000	12	32.256	32.963	0.713	2.850	A572-65 (65 ksi)
L43	32.667-32.417	0.250	0.000	12	32.963	33.004	0.438	1.750	A572-65 (65 ksi)
L44	32.417-27.417	5.000	0.000	12	33.004	33.819	0.438	1.750	A572-65 (65 ksi)
L45	27.417-22.417	5.000	0.000	12	33.819	34.634	0.438	1.750	A572-65 (65 ksi)
L46	22.417-17.417	5.000	0.000	12	34.634	35.450	0.438	1.750	A572-65 (65 ksi)
L47	17.417-12.417	5.000	0.000	12	35.450	36.265	0.438	1.750	A572-65 (65 ksi)
L48	12.417-7.417	5.000	0.000	12	36.265	37.081	0.438	1.750	A572-65 (65 ksi)
L49	7.417-2.417	5.000	0.000	12	37.081	37.896	0.438	1.750	A572-65 (65 ksi)
L50	2.417-0.000	2.417		12	37.896	38.290	0.438	1.750	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	15.990	12.300	366.566	5.470	8.045	45.567	742.762	6.054	3.492	13.968
	16.797	12.928	425.616	5.749	8.449	50.377	862.414	6.363	3.701	14.804
L2	16.797	12.928	425.616	5.749	8.449	50.377	862.414	6.363	3.701	14.804
	17.605	13.556	490.691	6.029	8.853	55.429	994.273	6.672	3.910	15.64
L3	17.605	13.556	490.691	6.029	8.853	55.429	994.273	6.672	3.910	15.64
	18.412	14.184	562.082	6.308	9.257	60.722	1138.930	6.981	4.119	16.477
L4	18.412	14.184	562.082	6.308	9.257	60.722	1138.930	6.981	4.119	16.477
	19.220	14.812	640.082	6.587	9.661	66.256	1296.979	7.290	4.328	17.313
L5	19.220	14.812	640.082	6.587	9.661	66.256	1296.979	7.290	4.328	17.313

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
	20.027	15.440	724.983	6.866	10.065	72.032	1469.011	7.599	4.537	18.149
L6	20.027	15.440	724.983	6.866	10.065	72.032	1469.011	7.599	4.537	18.149
	20.229	15.597	747.321	6.936	10.166	73.514	1514.274	7.676	4.590	18.358
L7	20.137	31.540	1470.578	6.842	10.166	144.660	2979.791	15.523	3.886	7.582
	20.177	31.605	1479.599	6.856	10.186	145.259	2998.069	15.555	3.896	7.603
L8	20.181	30.854	1446.340	6.861	10.186	141.994	2930.676	15.185	3.930	7.86
	20.989	32.110	1630.229	7.140	10.590	153.941	3303.286	15.803	4.139	8.278
L9	20.993	31.327	1592.464	7.144	10.590	150.374	3226.763	15.418	4.172	8.559
	21.801	32.551	1786.581	7.424	10.994	162.505	3620.098	16.021	4.382	8.988
L10	21.801	32.551	1786.581	7.424	10.994	162.505	3620.098	16.021	4.382	8.988
	22.043	32.918	1847.748	7.507	11.115	166.236	3744.039	16.201	4.444	9.116
L11	21.968	46.789	2573.335	7.431	11.115	231.514	5214.275	23.028	3.875	5.535
	22.008	46.876	2587.867	7.445	11.135	232.399	5243.720	23.071	3.885	5.55
L12	22.008	46.876	2587.867	7.445	11.135	232.399	5243.720	23.071	3.885	5.55
	22.291	47.492	2691.123	7.543	11.277	238.641	5452.944	23.374	3.958	5.655
L13	22.317	42.554	2428.538	7.570	11.277	215.356	4920.876	20.944	4.159	6.655
	22.359	42.636	2442.489	7.584	11.298	216.192	4949.144	20.984	4.170	6.672
L14	22.364	41.808	2397.878	7.589	11.298	212.243	4858.752	20.576	4.204	6.863
	23.200	43.402	2682.748	7.878	11.716	228.973	5435.976	21.361	4.420	7.217
L15	23.209	41.677	2582.028	7.887	11.716	220.376	5231.890	20.512	4.487	7.638
	24.046	43.206	2876.754	8.176	12.135	237.060	5829.084	21.265	4.704	8.007
L16	24.050	42.310	2820.172	8.181	12.135	232.397	5714.433	20.824	4.737	8.239
	24.845	43.732	3114.104	8.456	12.533	248.475	6310.019	21.524	4.943	8.597
L17	24.797	53.874	3791.782	8.407	12.533	302.547	7683.178	26.515	4.575	6.421
	24.839	53.967	3811.392	8.421	12.554	303.605	7722.914	26.561	4.586	6.436
L18	24.848	52.129	3689.398	8.430	12.554	293.887	7475.720	25.656	4.653	6.767
	25.684	53.918	4082.485	8.719	12.972	314.704	8272.221	26.537	4.869	7.082
L19	25.684	53.918	4082.485	8.719	12.972	314.704	8272.221	26.537	4.869	7.082
	26.019	54.633	4247.222	8.835	13.140	323.230	8606.023	26.889	4.956	7.208
L20	26.032	51.732	4033.888	8.849	13.140	306.995	8173.751	25.461	5.056	7.779
	26.074	51.817	4053.707	8.863	13.161	308.012	8213.909	25.503	5.067	7.796
L21	26.078	50.846	3981.776	8.868	13.161	302.547	8068.158	25.025	5.101	8.001
	26.413	51.509	4139.731	8.983	13.328	310.597	8388.218	25.351	5.187	8.137
L22	26.338	68.098	5380.596	8.907	13.328	403.696	10902.546	33.516	4.618	5.433
	26.380	68.208	5406.856	8.922	13.349	405.031	10955.757	33.570	4.629	5.445
L23	26.384	67.239	5335.364	8.926	13.349	399.675	10810.895	33.093	4.662	5.567
	26.761	68.220	5572.270	9.056	13.538	411.613	11290.931	33.576	4.760	5.683
L24	26.805	58.324	4811.210	9.101	13.538	355.395	9748.816	28.705	5.095	7.15
	26.864	58.454	4843.404	9.121	13.567	357.000	9814.049	28.769	5.110	7.172
L25	26.864	58.454	4843.404	9.121	13.567	357.000	9814.049	28.769	5.110	7.172
	26.903	58.541	4864.943	9.135	13.586	358.072	9857.692	28.812	5.120	7.186
L26	26.907	57.542	4786.620	9.139	13.586	352.307	9698.991	28.320	5.153	7.362
	27.744	59.364	5255.796	9.429	14.005	375.276	10649.668	29.217	5.370	7.671
L27	27.748	58.331	5169.296	9.433	14.005	369.099	10474.395	28.709	5.403	7.86
	28.487	59.912	5600.974	9.689	14.375	389.633	11349.092	29.487	5.595	8.138
L28	28.496	57.786	5412.274	9.698	14.375	376.506	10966.734	28.441	5.662	8.546
	28.538	57.873	5436.533	9.712	14.396	377.644	11015.889	28.483	5.673	8.562
L29	28.538	57.873	5436.533	9.712	14.396	377.644	11015.889	28.483	5.673	8.562
	29.417	59.683	5962.857	10.016	14.836	401.931	12082.366	29.374	5.900	8.906
L30	28.754	62.388	5687.163	9.567	14.219	399.978	11523.734	30.705	5.413	7.467
	29.008	64.295	6225.007	9.860	14.642	425.147	12613.551	31.644	5.632	7.769
L31	29.003	65.374	6323.716	9.855	14.642	431.888	12813.563	32.175	5.599	7.592
	29.849	67.315	6903.764	10.148	15.065	458.255	13988.898	33.130	5.818	7.889
L32	29.854	66.203	6795.734	10.152	15.065	451.084	13769.999	32.583	5.851	8.071
	30.700	68.111	7400.320	10.445	15.489	477.790	14995.055	33.522	6.070	8.373
L33	30.700	68.111	7400.320	10.445	15.489	477.790	14995.055	33.522	6.070	8.373
	30.799	68.333	7473.064	10.479	15.538	480.954	15142.454	33.632	6.096	8.408
L34	30.799	68.333	7473.064	10.479	15.538	480.954	15142.454	33.632	6.096	8.408
	30.841	68.429	7504.403	10.494	15.559	482.314	15205.955	33.679	6.107	8.423
L35	30.845	67.278	7384.456	10.498	15.559	474.605	14962.910	33.112	6.140	8.618
	31.691	69.153	8019.183	10.791	15.982	501.748	16249.040	34.035	6.359	8.926
L36	31.696	67.968	7888.302	10.795	15.982	493.559	15983.838	33.452	6.393	9.133

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
	32.203	69.073	8279.437	10.971	16.236	509.928	16776.384	33.996	6.524	9.32
L37	32.172	77.485	9234.808	10.939	16.236	568.769	18712.224	38.136	6.290	7.987
	32.215	77.589	9271.903	10.954	16.258	570.310	18787.389	38.187	6.301	8.001
L38	32.219	76.388	9135.917	10.959	16.258	561.946	18511.845	37.596	6.334	8.173
	32.811	77.816	9657.696	11.163	16.554	583.407	19569.110	38.299	6.488	8.371
L39	32.855	65.526	8197.805	11.208	16.554	495.217	16610.975	32.250	6.823	10.496
	32.898	65.612	8229.944	11.223	16.575	496.524	16676.098	32.292	6.834	10.513
L40	32.898	65.612	8229.944	11.223	16.575	496.524	16676.098	32.292	6.834	10.513
	33.744	67.322	8890.498	11.515	16.998	523.019	18014.559	33.134	7.053	10.85
L41	33.744	67.322	8890.498	11.515	16.998	523.019	18014.559	33.134	7.053	10.85
	34.618	69.090	9609.300	11.818	17.436	551.122	19471.047	34.004	7.279	11.198
L42	33.818	72.369	9191.069	11.293	16.709	550.076	18623.599	35.618	6.735	9.453
	33.874	73.990	9822.714	11.546	17.075	575.276	19903.481	36.416	6.925	9.719
L43	33.971	45.820	6187.102	11.644	17.075	362.353	12536.747	22.551	7.662	17.512
	34.014	45.878	6210.397	11.659	17.096	363.268	12583.948	22.580	7.672	17.537
L44	34.014	45.878	6210.397	11.659	17.096	363.268	12583.948	22.580	7.672	17.537
	34.858	47.026	6688.651	11.951	17.518	381.810	13553.021	23.145	7.891	18.037
L45	34.858	47.026	6688.651	11.951	17.518	381.810	13553.021	23.145	7.891	18.037
	35.702	48.175	7190.850	12.242	17.941	400.814	14570.611	23.710	8.110	18.536
L46	35.702	48.175	7190.850	12.242	17.941	400.814	14570.611	23.710	8.110	18.536
	36.546	49.324	7717.576	12.534	18.363	420.279	15637.902	24.276	8.328	19.036
L47	36.546	49.324	7717.576	12.534	18.363	420.279	15637.902	24.276	8.328	19.036
	37.390	50.472	8269.416	12.826	18.785	440.206	16756.079	24.841	8.547	19.535
L48	37.390	50.472	8269.416	12.826	18.785	440.206	16756.079	24.841	8.547	19.535
	38.234	51.621	8846.954	13.118	19.208	460.594	17926.328	25.406	8.765	20.034
L49	38.234	51.621	8846.954	13.118	19.208	460.594	17926.328	25.406	8.765	20.034
	39.078	52.770	9450.776	13.410	19.630	481.444	19149.834	25.972	8.984	20.534
L50	39.078	52.770	9450.776	13.410	19.630	481.444	19149.834	25.972	8.984	20.534
	39.486	53.325	9752.222	13.551	19.834	491.687	19760.646	26.245	9.089	20.775

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 150.000-145.000				1	1	1			
L2 145.000-140.000				1	1	1			
L3 140.000-135.000				1	1	1			
L4 135.000-130.000				1	1	1			
L5 130.000-125.000				1	1	1			
L6 125.000-123.750				1	1	1			
L7 123.750-123.500				1	1	0.922254			
L8 123.500-118.500				1	1	0.927302			
L9 118.500-113.5				1	1	0.934021			

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
00									
L10				1	1	0.929321			
113.500-112.0									
00									
L11				1	1	0.8856			
112.000-111.7									
50									
L12				1	1	0.878753			
111.750-110.0									
00									
L13				1	1	1.0799			
110.000-109.7									
50									
L14				1	1	1.07958			
109.750-104.7									
50									
L15				1	1	1.10328			
104.750-99.75									
0									
L16				1	1	1.10769			
99.750-95.000									
L17				1	1	1.04682			
95.000-94.750									
L18				1	1	1.06286			
94.750-89.750									
L19				1	1	1.05489			
89.750-87.750									
L20				1	1	1.03088			
87.750-87.500									
L21				1	1	1.04335			
87.500-85.500									
L22				1	1	0.920647			
85.500-85.250									
L23				1	1	0.925857			
85.250-83.000									
L24				1	1	1.0451			
83.000-82.650									
L25				1	1	1.0442			
82.650-82.417									
L26				1	1	1.04343			
82.417-77.417									
L27				1	1	1.04587			
77.417-73.000									
L28				1	1	0.944994			
73.000-72.750									
L29				1	1	0.94011			
72.750-67.500									
L30				1	1	0.944353			
67.500-66.000									
L31				1	1	0.916651			
66.000-61.000									
L32				1	1	0.920426			
61.000-56.000									
L33				1	1	0.919114			
56.000-55.417									
L34				1	1	0.918554			
55.417-55.167									
L35				1	1	0.92321			
55.167-50.167									

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
L36 50.167-47.167				1	1	0.932848			
L37 47.167-46.917				1	1	0.91338			
L38 46.917-43.417				1	1	0.919591			
L39 43.417-43.167				1	1	0.954019			
L40 43.167-38.167				1	1	0.944438			
L41 38.167-33.000				1	1	0.942272			
L42 33.000-32.667				1	1	0.949178			
L43 32.667-32.417				1	1	1			
L44 32.417-27.417				1	1	1			
L45 27.417-22.417				1	1	1			
L46 22.417-17.417				1	1	1			
L47 17.417-12.417				1	1	1			
L48 12.417-7.417				1	1	1			
L49 7.417-2.417				1	1	1			
L50 2.417-0.000				1	1	1			

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
89.75	BS	A	1 5/8	32.400	10%	24000.000	5.550	91.756	20.500	0.000	0.000	100%
		B	1 3/8	23.200	10%	24000.000	3.970	98.777	42.500	0.000	0.000	100%
		C	1 3/8	23.200	10%	24000.000	3.970	98.569	42.000	-30.000	0.000	100%

Guy Data*(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
89.75	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
89.750	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
89.75	0.509	0.392	0.391		0.716 1.5 sec/pulse	0.829 1.6 sec/pulse	0.826 1.6 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
89.75	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
89.75	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75	0.625 A325N	0	0.000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z ksf	q_z Ice ksf	Ice Thickness in
89.75	A	44.875	0.033	0.005	1.315
	B	44.875	0.033	0.005	1.315
	C	44.875	0.033	0.005	1.315

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
89.75	A	77.768	32.898 32.400	0.000	32.162	-6.917	-33.560	0.000	0.000
	B	65.207	23.556 23.200	8.490	21.419	4.902	11.175	0.000	-19.356
	C	65.471	23.556 23.200	-4.957	21.464	8.344	19.256	0.000	11.439
			Sum:	**3.533**	75.045	**6.329**	**-3.130**	0.000	**-7.918**

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
89.75	A	77.768	45.543 44.622	0.000	44.530	-9.551	-46.466	0.000	0.000
	B	65.207	32.648 31.904	11.720	29.710	6.767	15.501	0.000	-26.848
	C	65.471	32.646 31.902	-6.843	29.770	11.519	26.707	0.000	15.865
			Sum:	**4.878**	104.010	**8.735**	**-4.258**	0.000	**-10.983**

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
89.75	A	77.768	32.898 32.400	0.000	32.162	-6.917	-33.560	0.000	0.000
	B	65.207	23.556 23.200	8.490	21.419	4.902	11.175	0.000	-19.356
	C	65.471	23.556 23.200	-4.957	21.464	8.344	19.256	0.000	11.439
			Sum:	**3.533**	75.045	**6.329**	**-3.130**	0.000	**-7.918**

Guy-Tensioning Information

				Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
Guy Elevation		H	V	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft
89.75	A	19.46	89.75	33.068	0.70	32.845	0.71	32.623	0.71	32.400	0.72	32.177	0.72	31.955	0.73	31.732	0.73
	B	41.46	89.75	25.055	0.77	24.436	0.79	23.818	0.81	23.200	0.83	22.583	0.85	21.966	0.88	21.349	0.90
	C	40.96	89.75	25.018	0.77	24.412	0.78	23.806	0.80	23.200	0.83	22.595	0.85	21.990	0.87	21.386	0.90

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
WR-VG86ST-BRD(3/4) (6P(3/4)+3P(3/8)) **V** **V**	C	No	Surface Ar (CaAa)	149.000 - 0.000	9	5	0.000 0.250	0.795		0.001
MLE Hybrid 9Power/18Fiber RL 2(1-5/8") (1E(1-5/8)+7E(1-1/4))	B	No	Surface Ar (CaAa)	140.000 - 0.000	8	8	0.200 0.350	1.625		0.001
LDF6-50A(1-1/4") (E-Per photo)	B	No	Surface Ar (CaAa)	130.000 - 115.000	6	6	0.000 0.100	1.550		0.001
LDF6-50A(1-1/4") (Outside/Photo)	C	No	Surface Ar (CaAa)	130.000 - 115.000	6	6	0.000 0.150	1.550		0.001
HB158-1-08U8-S8J18(1-5/8") (E) **V**	C	No	Surface Ar (CaAa)	130.000 - 0.000	1	1	0.250 0.300	1.980		0.001
LDF4-50A(1/2") (E) **V**	B	No	Surface Ar (CaAa)	71.000 - 0.000	1	1	-0.460 -0.450	0.630		0.000
ATCB-B01(5/16") (E) **V**	B	No	Surface Ar (CaAa)	22.000 - 0.000	1	1	-0.480 -0.470	0.315		0.000
Safety Line 3/8 (E) **2011 Mod**	C	No	Surface Ar (CaAa)	150.000 - 0.000	1	1	-0.210 -0.200	0.375		0.000
PL4x1 (E)	A	No	Surface Af (CaAa)	96.750 - 71.750	1	1	0.100 0.150	4.000	10.000	0.000
PL4x1 (E) **V** **2014 Mod**	B	No	Surface Af (CaAa)	96.750 - 71.750	1	1	0.100 0.150	4.000	10.000	0.000
6" x 1" Plate (E)	A	No	Surface Af (CaAa)	85.000 - 50.000	1	1	0.000 0.100	6.000	14.000	0.000
6" x 1" Plate (E)	B	No	Surface Af (CaAa)	85.000 - 50.000	1	1	0.000 0.100	6.000	14.000	0.000
6" x 1" Plate (E) **V**	C	No	Surface Af (CaAa)	85.000 - 50.000	1	1	0.000 0.100	6.000	14.000	0.000
6.5" x 1.25" Plate (E)	A	No	Surface Af (CaAa)	110.000 - 85.000	1	1	0.000 0.100	6.500	15.500	0.000
6.5" x 1.25" Plate (E)	B	No	Surface Af (CaAa)	110.000 - 85.000	1	1	0.000 0.100	6.500	15.500	0.000

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
6.5" x 1.25" Plate (E) **V**	C	No	Surface Af (CaAa)	110.000 - 80.000	1	1	0.100 0.150	6.500	15.500	0.000
4.5" x 1" Plate (E)	A	No	Surface Af (CaAa)	125.750 - 110.750	1	1	0.000 0.100	4.500	11.000	0.000
4.5" x 1" Plate (E)	B	No	Surface Af (CaAa)	125.750 - 110.750	1	1	0.000 0.100	4.500	11.000	0.000
4.5" x 1" Plate (E) **V**	C	No	Surface Af (CaAa)	125.750 - 110.750	1	1	0.000 0.100	4.500	11.000	0.000
2016 Mod										
CCI 6.5" x 1.25" Plate (E)	A	No	Surface Af (CaAa)	49.917 - 29.917	1	1	0.000 0.100	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E)	B	No	Surface Af (CaAa)	49.917 - 29.917	1	1	0.000 0.100	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate (E) **V**	C	No	Surface Af (CaAa)	49.917 - 29.917	1	1	0.000 0.100	6.500	15.500	0.000
Proposed Mod										
CCI 6.5" x 3" Plate (E-Filler Plate)	A	No	Surface Af (CaAa)	109.500 - 103.000	1	1	0.000 0.100	6.500	19.000	0.061
CCI 6.5" x 3" Plate (E-Filler Plate)	B	No	Surface Af (CaAa)	109.500 - 103.000	1	1	0.000 0.100	6.500	19.000	0.061
CCI 6.5" x 3" Plate (E-Filler Plate) **V**	C	No	Surface Af (CaAa)	109.500 - 103.000	1	1	0.000 0.100	6.500	19.000	0.061
CCI 6.5" x 3" Plate (E-Filler Plate)	A	No	Surface Af (CaAa)	117.000 - 110.500	1	1	0.000 0.100	6.500	19.000	0.061
CCI 6.5" x 3" Plate (E-Filler Plate)	B	No	Surface Af (CaAa)	117.000 - 110.500	1	1	0.000 0.100	6.500	19.000	0.061
CCI 6.5" x 3" Plate (E-Filler Plate) **V**	C	No	Surface Af (CaAa)	117.000 - 110.500	1	1	0.000 0.100	6.500	19.000	0.061
CCI 6.5" x 1.25" Plate (E-BS)	A	No	Surface Af (CaAa)	116.917 - 103.080	1	1	0.000 0.100	6.500	15.500	0.028
CCI 6.5" x 1.25" Plate (E-BS)	B	No	Surface Af (CaAa)	116.917 - 103.080	1	1	0.000 0.100	6.500	15.500	0.028
CCI 6.5" x 1.25" Plate (E-BS) **V**	C	No	Surface Af (CaAa)	116.917 - 103.080	1	1	0.000 0.100	6.500	15.500	0.028
CCI 4.5" x 1" Plate (P)	A	No	Surface Af (CaAa)	87.000 - 41.917	1	1	0.300 0.350	4.500	11.000	0.000
CCI 4.5" x 1" Plate (P) **V**	C	No	Surface Af (CaAa)	87.000 - 41.917	1	1	0.300 0.350	4.500	11.000	0.000

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
V									
LDF5-50A(7/8") (E)	C	No	No	Inside Pole	149.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF6-50A(1-1/4") (E)	C	No	No	Inside Pole	149.000 - 0.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
V									
V									
LDF6-50A(1-1/4") (E)	C	No	No	Inside Pole	115.000 - 0.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
V									
LDF4P-50A(1/2") (For GPS/Photo)	C	No	No	Inside Pole	130.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
V									
V									
V									
V									

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	150.000-145.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	1.778	0.000	0.055
L2	145.000-140.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	2.175	0.000	0.069
L3	140.000-135.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.500	0.000	0.043
		C	0.000	0.000	2.175	0.000	0.069
L4	135.000-130.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.500	0.000	0.043
		C	0.000	0.000	2.175	0.000	0.069
L5	130.000-125.000	A	0.000	0.000	0.563	0.000	0.000
		B	0.000	0.000	11.713	0.000	0.063
		C	0.000	0.000	8.377	0.000	0.096
L6	125.000-123.750	A	0.000	0.000	0.938	0.000	0.000
		B	0.000	0.000	3.725	0.000	0.016
		C	0.000	0.000	2.891	0.000	0.024
L7	123.750-123.500	A	0.000	0.000	0.188	0.000	0.000
		B	0.000	0.000	0.745	0.000	0.003
		C	0.000	0.000	0.578	0.000	0.005
L8	123.500-118.500	A	0.000	0.000	3.750	0.000	0.000
		B	0.000	0.000	14.900	0.000	0.063
		C	0.000	0.000	11.565	0.000	0.096
L9	118.500-113.500	A	0.000	0.000	10.352	0.000	0.309
		B	0.000	0.000	20.107	0.000	0.366
		C	0.000	0.000	16.772	0.000	0.410
L10	113.500-112.000	A	0.000	0.000	3.993	0.000	0.133
		B	0.000	0.000	5.943	0.000	0.146

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
		C	0.000	0.000	4.943	0.000	0.168
L11	112.000-111.750	A	0.000	0.000	0.666	0.000	0.022
		B	0.000	0.000	0.991	0.000	0.024
		C	0.000	0.000	0.824	0.000	0.028
L12	111.750-110.000	A	0.000	0.000	3.682	0.000	0.125
		B	0.000	0.000	5.957	0.000	0.140
		C	0.000	0.000	4.789	0.000	0.165
L13	110.000-109.750	A	0.000	0.000	0.542	0.000	0.007
		B	0.000	0.000	0.867	0.000	0.009
		C	0.000	0.000	0.700	0.000	0.013
L14	109.750-104.750	A	0.000	0.000	14.770	0.000	0.429
		B	0.000	0.000	21.270	0.000	0.472
		C	0.000	0.000	17.935	0.000	0.545
L15	104.750-99.750	A	0.000	0.000	8.676	0.000	0.153
		B	0.000	0.000	15.176	0.000	0.196
		C	0.000	0.000	11.841	0.000	0.269
L16	99.750-95.000	A	0.000	0.000	6.313	0.000	0.000
		B	0.000	0.000	12.488	0.000	0.041
		C	0.000	0.000	8.153	0.000	0.110
L17	95.000-94.750	A	0.000	0.000	0.438	0.000	0.000
		B	0.000	0.000	0.762	0.000	0.002
		C	0.000	0.000	0.429	0.000	0.006
L18	94.750-89.750	A	0.000	0.000	8.750	0.000	0.000
		B	0.000	0.000	15.250	0.000	0.043
		C	0.000	0.000	8.582	0.000	0.115
L19	89.750-87.750	A	0.000	0.000	3.500	0.000	0.000
		B	0.000	0.000	6.100	0.000	0.017
		C	0.000	0.000	3.433	0.000	0.046
L20	87.750-87.500	A	0.000	0.000	0.438	0.000	0.000
		B	0.000	0.000	0.762	0.000	0.002
		C	0.000	0.000	0.429	0.000	0.006
L21	87.500-85.500	A	0.000	0.000	4.625	0.000	0.000
		B	0.000	0.000	6.100	0.000	0.017
		C	0.000	0.000	4.558	0.000	0.046
L22	85.500-85.250	A	0.000	0.000	0.625	0.000	0.000
		B	0.000	0.000	0.762	0.000	0.002
		C	0.000	0.000	0.617	0.000	0.006
L23	85.250-83.000	A	0.000	0.000	5.458	0.000	0.000
		B	0.000	0.000	6.696	0.000	0.019
		C	0.000	0.000	7.549	0.000	0.052
L24	83.000-82.650	A	0.000	0.000	0.846	0.000	0.000
		B	0.000	0.000	1.038	0.000	0.003
		C	0.000	0.000	1.213	0.000	0.008
L25	82.650-82.417	A	0.000	0.000	0.564	0.000	0.000
		B	0.000	0.000	0.692	0.000	0.002
		C	0.000	0.000	0.809	0.000	0.005
L26	82.417-77.417	A	0.000	0.000	12.083	0.000	0.000
		B	0.000	0.000	14.833	0.000	0.043
		C	0.000	0.000	14.533	0.000	0.115
L27	77.417-73.000	A	0.000	0.000	10.674	0.000	0.000
		B	0.000	0.000	13.103	0.000	0.038
		C	0.000	0.000	10.525	0.000	0.102
L28	73.000-72.750	A	0.000	0.000	0.604	0.000	0.000
		B	0.000	0.000	0.742	0.000	0.002
		C	0.000	0.000	0.596	0.000	0.006
L29	72.750-67.500	A	0.000	0.000	9.854	0.000	0.000
		B	0.000	0.000	12.962	0.000	0.045
		C	0.000	0.000	12.511	0.000	0.121
L30	67.500-66.000	A	0.000	0.000	2.625	0.000	0.000
		B	0.000	0.000	3.545	0.000	0.013
		C	0.000	0.000	3.575	0.000	0.035

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
L31	66.000-61.000	A	0.000	0.000	8.750	0.000	0.000
		B	0.000	0.000	11.815	0.000	0.044
		C	0.000	0.000	11.915	0.000	0.115
L32	61.000-56.000	A	0.000	0.000	8.750	0.000	0.000
		B	0.000	0.000	11.815	0.000	0.044
		C	0.000	0.000	11.915	0.000	0.115
L33	56.000-55.417	A	0.000	0.000	1.020	0.000	0.000
		B	0.000	0.000	1.378	0.000	0.005
		C	0.000	0.000	1.389	0.000	0.013
L34	55.417-55.167	A	0.000	0.000	0.438	0.000	0.000
		B	0.000	0.000	0.591	0.000	0.002
		C	0.000	0.000	0.596	0.000	0.006
L35	55.167-50.167	A	0.000	0.000	8.750	0.000	0.000
		B	0.000	0.000	11.815	0.000	0.044
		C	0.000	0.000	11.915	0.000	0.115
L36	50.167-47.167	A	0.000	0.000	5.397	0.000	0.000
		B	0.000	0.000	7.236	0.000	0.026
		C	0.000	0.000	7.296	0.000	0.069
L37	47.167-46.917	A	0.000	0.000	0.458	0.000	0.000
		B	0.000	0.000	0.612	0.000	0.002
		C	0.000	0.000	0.617	0.000	0.006
L38	46.917-43.417	A	0.000	0.000	6.416	0.000	0.000
		B	0.000	0.000	8.561	0.000	0.030
		C	0.000	0.000	8.631	0.000	0.081
L39	43.417-43.167	A	0.000	0.000	0.458	0.000	0.000
		B	0.000	0.000	0.612	0.000	0.002
		C	0.000	0.000	0.617	0.000	0.006
L40	43.167-38.167	A	0.000	0.000	6.354	0.000	0.000
		B	0.000	0.000	12.232	0.000	0.044
		C	0.000	0.000	9.519	0.000	0.115
L41	38.167-33.000	A	0.000	0.000	5.598	0.000	0.000
		B	0.000	0.000	12.640	0.000	0.045
		C	0.000	0.000	8.868	0.000	0.119
L42	33.000-32.667	A	0.000	0.000	0.361	0.000	0.000
		B	0.000	0.000	0.815	0.000	0.003
		C	0.000	0.000	0.572	0.000	0.008
L43	32.667-32.417	A	0.000	0.000	0.271	0.000	0.000
		B	0.000	0.000	0.612	0.000	0.002
		C	0.000	0.000	0.429	0.000	0.006
L44	32.417-27.417	A	0.000	0.000	2.708	0.000	0.000
		B	0.000	0.000	9.523	0.000	0.044
		C	0.000	0.000	5.873	0.000	0.115
L45	27.417-22.417	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.815	0.000	0.044
		C	0.000	0.000	3.165	0.000	0.115
L46	22.417-17.417	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.959	0.000	0.044
		C	0.000	0.000	3.165	0.000	0.115
L47	17.417-12.417	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.973	0.000	0.044
		C	0.000	0.000	3.165	0.000	0.115
L48	12.417-7.417	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.973	0.000	0.044
		C	0.000	0.000	3.165	0.000	0.115
L49	7.417-2.417	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	6.973	0.000	0.044
		C	0.000	0.000	3.165	0.000	0.115
L50	2.417-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	3.370	0.000	0.021
		C	0.000	0.000	1.530	0.000	0.056

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	150.000-145.000	A	1.481	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	5.137	0.000	0.107
L2	145.000-140.000	A	1.476	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	5.992	0.000	0.129
L3	140.000-135.000	A	1.471	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	9.963	0.000	0.143
		C		0.000	0.000	5.981	0.000	0.129
L4	135.000-130.000	A	1.465	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	9.956	0.000	0.143
		C		0.000	0.000	5.968	0.000	0.129
L5	130.000-125.000	A	1.459	0.000	0.000	0.779	0.000	0.007
		B		0.000	0.000	18.365	0.000	0.245
		C		0.000	0.000	16.821	0.000	0.269
L6	125.000-123.750	A	1.456	0.000	0.000	1.297	0.000	0.012
		B		0.000	0.000	5.691	0.000	0.071
		C		0.000	0.000	5.303	0.000	0.077
L7	123.750-123.500	A	1.455	0.000	0.000	0.259	0.000	0.002
		B		0.000	0.000	1.138	0.000	0.014
		C		0.000	0.000	1.060	0.000	0.015
L8	123.500-118.500	A	1.452	0.000	0.000	5.184	0.000	0.047
		B		0.000	0.000	22.751	0.000	0.284
		C		0.000	0.000	21.192	0.000	0.308
L9	118.500-113.500	A	1.446	0.000	0.000	12.868	0.000	0.444
		B		0.000	0.000	28.134	0.000	0.652
		C		0.000	0.000	26.563	0.000	0.687
L10	113.500-112.000	A	1.442	0.000	0.000	4.891	0.000	0.185
		B		0.000	0.000	7.869	0.000	0.228
		C		0.000	0.000	7.395	0.000	0.247
L11	112.000-111.750	A	1.441	0.000	0.000	0.815	0.000	0.031
		B		0.000	0.000	1.311	0.000	0.038
		C		0.000	0.000	1.232	0.000	0.041
L12	111.750-110.000	A	1.439	0.000	0.000	4.434	0.000	0.172
		B		0.000	0.000	7.908	0.000	0.221
		C		0.000	0.000	7.353	0.000	0.243
L13	110.000-109.750	A	1.438	0.000	0.000	0.652	0.000	0.013
		B		0.000	0.000	1.148	0.000	0.020
		C		0.000	0.000	1.069	0.000	0.023
L14	109.750-104.750	A	1.434	0.000	0.000	17.724	0.000	0.611
		B		0.000	0.000	27.642	0.000	0.752
		C		0.000	0.000	26.048	0.000	0.815
L15	104.750-99.750	A	1.428	0.000	0.000	10.635	0.000	0.255
		B		0.000	0.000	20.544	0.000	0.395
		C		0.000	0.000	18.937	0.000	0.458
L16	99.750-95.000	A	1.421	0.000	0.000	8.159	0.000	0.070
		B		0.000	0.000	17.565	0.000	0.202
		C		0.000	0.000	14.361	0.000	0.247
L17	95.000-94.750	A	1.417	0.000	0.000	0.579	0.000	0.005
		B		0.000	0.000	1.074	0.000	0.012
		C		0.000	0.000	0.755	0.000	0.013
L18	94.750-89.750	A	1.413	0.000	0.000	11.576	0.000	0.099
		B		0.000	0.000	21.467	0.000	0.239
		C		0.000	0.000	15.084	0.000	0.259
L19	89.750-87.750	A	1.408	0.000	0.000	4.626	0.000	0.040

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
		B		0.000	0.000	8.580	0.000	0.095
		C		0.000	0.000	6.024	0.000	0.103
L20	87.750-87.500	A	1.406	0.000	0.000	0.578	0.000	0.005
		B		0.000	0.000	1.072	0.000	0.012
		C		0.000	0.000	0.753	0.000	0.013
L21	87.500-85.500	A	1.404	0.000	0.000	6.169	0.000	0.053
		B		0.000	0.000	8.575	0.000	0.095
		C		0.000	0.000	7.564	0.000	0.117
L22	85.500-85.250	A	1.402	0.000	0.000	0.835	0.000	0.007
		B		0.000	0.000	1.072	0.000	0.012
		C		0.000	0.000	1.009	0.000	0.015
L23	85.250-83.000	A	1.400	0.000	0.000	7.348	0.000	0.063
		B		0.000	0.000	9.475	0.000	0.105
		C		0.000	0.000	11.641	0.000	0.157
L24	83.000-82.650	A	1.398	0.000	0.000	1.139	0.000	0.010
		B		0.000	0.000	1.470	0.000	0.016
		C		0.000	0.000	1.860	0.000	0.025
L25	82.650-82.417	A	1.397	0.000	0.000	0.759	0.000	0.006
		B		0.000	0.000	0.980	0.000	0.011
		C		0.000	0.000	1.239	0.000	0.017
L26	82.417-77.417	A	1.393	0.000	0.000	16.262	0.000	0.138
		B		0.000	0.000	20.985	0.000	0.231
		C		0.000	0.000	23.016	0.000	0.324
L27	77.417-73.000	A	1.384	0.000	0.000	14.343	0.000	0.121
		B		0.000	0.000	18.513	0.000	0.203
		C		0.000	0.000	17.384	0.000	0.261
L28	73.000-72.750	A	1.380	0.000	0.000	0.811	0.000	0.007
		B		0.000	0.000	1.047	0.000	0.011
		C		0.000	0.000	0.983	0.000	0.015
L29	72.750-67.500	A	1.375	0.000	0.000	13.016	0.000	0.108
		B		0.000	0.000	19.154	0.000	0.218
		C		0.000	0.000	20.611	0.000	0.308
L30	67.500-66.000	A	1.368	0.000	0.000	3.450	0.000	0.028
		B		0.000	0.000	5.372	0.000	0.062
		C		0.000	0.000	5.889	0.000	0.088
L31	66.000-61.000	A	1.361	0.000	0.000	11.472	0.000	0.093
		B		0.000	0.000	17.864	0.000	0.204
		C		0.000	0.000	19.558	0.000	0.291
L32	61.000-56.000	A	1.350	0.000	0.000	11.450	0.000	0.092
		B		0.000	0.000	17.828	0.000	0.202
		C		0.000	0.000	19.500	0.000	0.289
L33	56.000-55.417	A	1.344	0.000	0.000	1.334	0.000	0.011
		B		0.000	0.000	2.076	0.000	0.023
		C		0.000	0.000	2.270	0.000	0.034
L34	55.417-55.167	A	1.343	0.000	0.000	0.572	0.000	0.005
		B		0.000	0.000	0.890	0.000	0.010
		C		0.000	0.000	0.973	0.000	0.014
L35	55.167-50.167	A	1.336	0.000	0.000	11.422	0.000	0.091
		B		0.000	0.000	17.782	0.000	0.200
		C		0.000	0.000	19.426	0.000	0.287
L36	50.167-47.167	A	1.325	0.000	0.000	6.965	0.000	0.055
		B		0.000	0.000	10.774	0.000	0.121
		C		0.000	0.000	11.748	0.000	0.172
L37	47.167-46.917	A	1.321	0.000	0.000	0.590	0.000	0.005
		B		0.000	0.000	0.907	0.000	0.010
		C		0.000	0.000	0.988	0.000	0.014
L38	46.917-43.417	A	1.316	0.000	0.000	8.258	0.000	0.065
		B		0.000	0.000	12.692	0.000	0.141
		C		0.000	0.000	13.814	0.000	0.201
L39	43.417-43.167	A	1.310	0.000	0.000	0.589	0.000	0.005
		B		0.000	0.000	0.906	0.000	0.010

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
		C		0.000	0.000	0.985	0.000	0.014
L40	43.167-38.167	A	1.302	0.000	0.000	7.982	0.000	0.062
		B		0.000	0.000	18.088	0.000	0.199
		C		0.000	0.000	15.875	0.000	0.255
L41	38.167-33.000	A	1.285	0.000	0.000	6.925	0.000	0.053
		B		0.000	0.000	18.634	0.000	0.203
		C		0.000	0.000	15.024	0.000	0.250
L42	33.000-32.667	A	1.274	0.000	0.000	0.447	0.000	0.003
		B		0.000	0.000	1.202	0.000	0.013
		C		0.000	0.000	0.969	0.000	0.016
L43	32.667-32.417	A	1.273	0.000	0.000	0.334	0.000	0.003
		B		0.000	0.000	0.900	0.000	0.010
		C		0.000	0.000	0.724	0.000	0.012
L44	32.417-27.417	A	1.263	0.000	0.000	3.339	0.000	0.025
		B		0.000	0.000	14.620	0.000	0.169
		C		0.000	0.000	11.104	0.000	0.214
L45	27.417-22.417	A	1.240	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	11.229	0.000	0.142
		C		0.000	0.000	7.691	0.000	0.188
L46	22.417-17.417	A	1.212	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	12.423	0.000	0.150
		C		0.000	0.000	7.601	0.000	0.186
L47	17.417-12.417	A	1.178	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	12.425	0.000	0.148
		C		0.000	0.000	7.489	0.000	0.183
L48	12.417-7.417	A	1.130	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	12.271	0.000	0.143
		C		0.000	0.000	7.336	0.000	0.179
L49	7.417-2.417	A	1.054	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	12.022	0.000	0.135
		C		0.000	0.000	7.087	0.000	0.174
L50	2.417-0.000	A	0.916	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	5.594	0.000	0.059
		C		0.000	0.000	3.209	0.000	0.079

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.000-145.000	-0.361	1.802	-0.134	2.505
L2	145.000-140.000	-0.449	2.116	-0.235	2.778
L3	140.000-135.000	3.657	1.460	2.864	1.843
L4	135.000-130.000	3.731	1.490	2.946	1.894
L5	130.000-125.000	3.180	2.101	2.472	2.244
L6	125.000-123.750	2.362	1.560	2.051	1.861
L7	123.750-123.500	2.374	1.568	2.062	1.871
L8	123.500-118.500	2.408	1.591	2.097	1.901
L9	118.500-113.500	1.503	0.972	1.505	1.393
L10	113.500-112.000	1.009	0.598	1.069	1.072
L11	112.000-111.750	1.015	0.601	1.075	1.078
L12	111.750-110.000	1.191	0.706	1.247	1.250
L13	110.000-109.750	0.849	0.607	0.941	1.158
L14	109.750-104.750	0.699	0.500	0.798	0.981
L15	104.750-99.750	1.007	0.721	1.090	1.338
L16	99.750-95.000	1.418	0.542	1.453	1.241
L17	95.000-94.750	1.587	-0.030	1.615	0.639

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L18	94.750-89.750	1.606	-0.031	1.637	0.646
L19	89.750-87.750	1.631	-0.032	1.667	0.655
L20	87.750-87.500	1.639	-0.032	1.676	0.658
L21	87.500-85.500	0.812	-0.586	0.900	0.066
L22	85.500-85.250	0.581	-0.745	0.681	-0.105
L23	85.250-83.000	0.316	0.405	0.444	0.858
L24	83.000-82.650	0.288	0.539	0.419	0.974
L25	82.650-82.417	0.288	0.540	0.420	0.975
L26	82.417-77.417	0.649	-0.052	0.743	0.489
L27	77.417-73.000	1.040	-0.685	1.090	-0.019
L28	73.000-72.750	1.050	-0.692	1.103	-0.021
L29	72.750-67.500	0.782	-0.106	0.857	0.450
L30	67.500-66.000	0.709	0.034	0.791	0.509
L31	66.000-61.000	0.717	0.033	0.805	0.514
L32	61.000-56.000	0.730	0.033	0.823	0.521
L33	56.000-55.417	0.737	0.032	0.834	0.526
L34	55.417-55.167	0.738	0.032	0.836	0.526
L35	55.167-50.167	0.745	0.032	0.845	0.530
L36	50.167-47.167	0.743	0.031	0.852	0.531
L37	47.167-46.917	0.739	0.030	0.851	0.528
L38	46.917-43.417	0.744	0.030	0.858	0.530
L39	43.417-43.167	0.748	0.030	0.865	0.533
L40	43.167-38.167	1.790	0.851	1.855	1.366
L41	38.167-33.000	2.427	1.296	2.277	1.712
L42	33.000-32.667	2.414	1.289	2.263	1.702
L43	32.667-32.417	2.414	1.289	2.265	1.700
L44	32.417-27.417	3.056	1.632	2.727	2.041
L45	27.417-22.417	4.145	2.213	3.427	2.551
L46	22.417-17.417	4.162	2.114	3.407	1.994
L47	17.417-12.417	4.195	2.122	3.457	1.967
L48	12.417-7.417	4.230	2.139	3.518	1.990
L49	7.417-2.417	4.263	2.155	3.590	2.011
L50	2.417-0.000	4.287	2.167	3.678	2.025

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	8	WR-VG86ST-BRD(3/4)	145.00 - 149.00	1.0000	1.0000
L1	42	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L2	8	WR-VG86ST-BRD(3/4)	140.00 - 145.00	1.0000	1.0000
L2	42	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L3	8	WR-VG86ST-BRD(3/4)	135.00 - 140.00	1.0000	1.0000
L3	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	135.00 - 140.00	1.0000	1.0000
L3	42	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	8	WR-VG86ST-BRD(3/4)	130.00 - 135.00	1.0000	1.0000
L4	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	130.00 - 135.00	1.0000	1.0000
L4	42	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L5	8	WR-VG86ST-BRD(3/4)	125.00 - 130.00	1.0000	1.0000
L5	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	125.00 - 130.00	1.0000	1.0000
L5	27	LDF6-50A(1-1/4")	125.00 - 130.00	1.0000	1.0000
L5	28	LDF6-50A(1-1/4")	125.00 - 130.00	1.0000	1.0000
L5	29	HB158-1-08U8-S8J18(1-5/8")	125.00 - 130.00	1.0000	1.0000
L5	42	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L5	56	4.5" x 1" Plate	125.00 - 125.75	1.0000	1.0000
L5	57	4.5" x 1" Plate	125.00 - 125.75	1.0000	1.0000
L5	58	4.5" x 1" Plate	125.00 - 125.75	1.0000	1.0000
L6	8	WR-VG86ST-BRD(3/4)	123.75 - 125.00	1.0000	1.0000
L6	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	123.75 - 125.00	1.0000	1.0000
L6	27	LDF6-50A(1-1/4")	123.75 - 125.00	1.0000	1.0000
L6	28	LDF6-50A(1-1/4")	123.75 - 125.00	1.0000	1.0000
L6	29	HB158-1-08U8-S8J18(1-5/8")	123.75 - 125.00	1.0000	1.0000
L6	42	Safety Line 3/8	123.75 - 125.00	1.0000	1.0000
L6	56	4.5" x 1" Plate	123.75 - 125.00	1.0000	1.0000
L6	57	4.5" x 1" Plate	123.75 - 125.00	1.0000	1.0000
L6	58	4.5" x 1" Plate	123.75 - 125.00	1.0000	1.0000
L7	8	WR-VG86ST-BRD(3/4)	123.50 - 123.75	1.0000	1.0000
L7	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	123.50 - 123.75	1.0000	1.0000
L7	27	LDF6-50A(1-1/4")	123.50 - 123.75	1.0000	1.0000
L7	28	LDF6-50A(1-1/4")	123.50 - 123.75	1.0000	1.0000
L7	29	HB158-1-08U8-S8J18(1-5/8")	123.50 - 123.75	1.0000	1.0000
L7	42	Safety Line 3/8	123.50 - 123.75	1.0000	1.0000
L7	56	4.5" x 1" Plate	123.50 - 123.75	1.0000	1.0000
L7	57	4.5" x 1" Plate	123.50 - 123.75	1.0000	1.0000
L7	58	4.5" x 1" Plate	123.50 - 123.75	1.0000	1.0000
L8	8	WR-VG86ST-BRD(3/4)	118.50 - 123.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L8	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	118.50 - 123.50	1.0000	1.0000
L8	27	LDF6-50A(1-1/4")	118.50 - 123.50	1.0000	1.0000
L8	28	LDF6-50A(1-1/4")	118.50 - 123.50	1.0000	1.0000
L8	29	HB158-1-08U8-S8J18(1-5/8")	118.50 - 123.50	1.0000	1.0000
L8	42	Safety Line 3/8	118.50 - 123.50	1.0000	1.0000
L8	56	4.5" x 1" Plate	118.50 - 123.50	1.0000	1.0000
L8	57	4.5" x 1" Plate	118.50 - 123.50	1.0000	1.0000
L8	58	4.5" x 1" Plate	118.50 - 123.50	1.0000	1.0000
L9	8	WR-VG86ST-BRD(3/4)	113.50 - 118.50	1.0000	1.0000
L9	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	113.50 - 118.50	1.0000	1.0000
L9	27	LDF6-50A(1-1/4")	115.00 - 118.50	1.0000	1.0000
L9	28	LDF6-50A(1-1/4")	115.00 - 118.50	1.0000	1.0000
L9	29	HB158-1-08U8-S8J18(1-5/8")	113.50 - 118.50	1.0000	1.0000
L9	42	Safety Line 3/8	113.50 - 118.50	1.0000	1.0000
L9	56	4.5" x 1" Plate	113.50 - 118.50	1.0000	1.0000
L9	57	4.5" x 1" Plate	113.50 - 118.50	1.0000	1.0000
L9	58	4.5" x 1" Plate	113.50 - 118.50	1.0000	1.0000
L9	70	CCI 6.5" x 3" Plate	113.50 - 117.00	1.0000	1.0000
L9	71	CCI 6.5" x 3" Plate	113.50 - 117.00	1.0000	1.0000
L9	72	CCI 6.5" x 3" Plate	113.50 - 117.00	1.0000	1.0000
L9	74	CCI 6.5" x 1.25" Plate	113.50 - 116.92	1.0000	1.0000
L9	75	CCI 6.5" x 1.25" Plate	113.50 - 116.92	1.0000	1.0000
L9	76	CCI 6.5" x 1.25" Plate	113.50 - 116.92	1.0000	1.0000
L10	8	WR-VG86ST-BRD(3/4)	112.00 - 113.50	1.0000	1.0000
L10	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	112.00 - 113.50	1.0000	1.0000
L10	29	HB158-1-08U8-S8J18(1-5/8")	112.00 - 113.50	1.0000	1.0000
L10	42	Safety Line 3/8	112.00 - 113.50	1.0000	1.0000
L10	56	4.5" x 1" Plate	112.00 - 113.50	1.0000	1.0000
L10	57	4.5" x 1" Plate	112.00 - 113.50	1.0000	1.0000
L10	58	4.5" x 1" Plate	112.00 - 113.50	1.0000	1.0000
L10	70	CCI 6.5" x 3" Plate	112.00 - 113.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L10	71	CCI 6.5" x 3" Plate	112.00 - 113.50	1.0000	1.0000
L10	72	CCI 6.5" x 3" Plate	112.00 - 113.50	1.0000	1.0000
L10	74	CCI 6.5" x 1.25" Plate	112.00 - 113.50	1.0000	1.0000
L10	75	CCI 6.5" x 1.25" Plate	112.00 - 113.50	1.0000	1.0000
L10	76	CCI 6.5" x 1.25" Plate	112.00 - 113.50	1.0000	1.0000
L11	8	WR-VG86ST-BRD(3/4)	111.75 - 112.00	1.0000	1.0000
L11	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	111.75 - 112.00	1.0000	1.0000
L11	29	HB158-1-08U8-S8J18(1-5/8")	111.75 - 112.00	1.0000	1.0000
L11	42	Safety Line 3/8	111.75 - 112.00	1.0000	1.0000
L11	56	4.5" x 1" Plate	111.75 - 112.00	1.0000	1.0000
L11	57	4.5" x 1" Plate	111.75 - 112.00	1.0000	1.0000
L11	58	4.5" x 1" Plate	111.75 - 112.00	1.0000	1.0000
L11	70	CCI 6.5" x 3" Plate	111.75 - 112.00	1.0000	1.0000
L11	71	CCI 6.5" x 3" Plate	111.75 - 112.00	1.0000	1.0000
L11	72	CCI 6.5" x 3" Plate	111.75 - 112.00	1.0000	1.0000
L11	74	CCI 6.5" x 1.25" Plate	111.75 - 112.00	1.0000	1.0000
L11	75	CCI 6.5" x 1.25" Plate	111.75 - 112.00	1.0000	1.0000
L11	76	CCI 6.5" x 1.25" Plate	111.75 - 112.00	1.0000	1.0000
L12	8	WR-VG86ST-BRD(3/4)	110.00 - 111.75	1.0000	1.0000
L12	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	110.00 - 111.75	1.0000	1.0000
L12	29	HB158-1-08U8-S8J18(1-5/8")	110.00 - 111.75	1.0000	1.0000
L12	42	Safety Line 3/8	110.00 - 111.75	1.0000	1.0000
L12	56	4.5" x 1" Plate	110.75 - 111.75	1.0000	1.0000
L12	57	4.5" x 1" Plate	110.75 - 111.75	1.0000	1.0000
L12	58	4.5" x 1" Plate	110.75 - 111.75	1.0000	1.0000
L12	70	CCI 6.5" x 3" Plate	110.50 - 111.75	1.0000	1.0000
L12	71	CCI 6.5" x 3" Plate	110.50 - 111.75	1.0000	1.0000
L12	72	CCI 6.5" x 3" Plate	110.50 - 111.75	1.0000	1.0000
L12	74	CCI 6.5" x 1.25" Plate	110.00 - 111.75	1.0000	1.0000
L12	75	CCI 6.5" x 1.25" Plate	110.00 - 111.75	1.0000	1.0000
L12	76	CCI 6.5" x 1.25" Plate	110.00 - 111.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L13	8	WR-VG86ST-BRD(3/4)	109.75 - 110.00	1.0000	1.0000
L13	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	109.75 - 110.00	1.0000	1.0000
L13	29	HB158-1-08U8-S8J18(1-5/8")	109.75 - 110.00	1.0000	1.0000
L13	42	Safety Line 3/8	109.75 - 110.00	1.0000	1.0000
L13	52	6.5" x 1.25" Plate	109.75 - 110.00	1.0000	1.0000
L13	53	6.5" x 1.25" Plate	109.75 - 110.00	1.0000	1.0000
L13	54	6.5" x 1.25" Plate	109.75 - 110.00	1.0000	1.0000
L13	74	CCI 6.5" x 1.25" Plate	109.75 - 110.00	1.0000	1.0000
L13	75	CCI 6.5" x 1.25" Plate	109.75 - 110.00	1.0000	1.0000
L13	76	CCI 6.5" x 1.25" Plate	109.75 - 110.00	1.0000	1.0000
L14	8	WR-VG86ST-BRD(3/4)	104.75 - 109.75	1.0000	1.0000
L14	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	104.75 - 109.75	1.0000	1.0000
L14	29	HB158-1-08U8-S8J18(1-5/8")	104.75 - 109.75	1.0000	1.0000
L14	42	Safety Line 3/8	104.75 - 109.75	1.0000	1.0000
L14	52	6.5" x 1.25" Plate	104.75 - 109.75	1.0000	1.0000
L14	53	6.5" x 1.25" Plate	104.75 - 109.75	1.0000	1.0000
L14	54	6.5" x 1.25" Plate	104.75 - 109.75	1.0000	1.0000
L14	66	CCI 6.5" x 3" Plate	104.75 - 109.50	1.0000	1.0000
L14	67	CCI 6.5" x 3" Plate	104.75 - 109.50	1.0000	1.0000
L14	68	CCI 6.5" x 3" Plate	104.75 - 109.50	1.0000	1.0000
L14	74	CCI 6.5" x 1.25" Plate	104.75 - 109.75	1.0000	1.0000
L14	75	CCI 6.5" x 1.25" Plate	104.75 - 109.75	1.0000	1.0000
L14	76	CCI 6.5" x 1.25" Plate	104.75 - 109.75	1.0000	1.0000
L15	8	WR-VG86ST-BRD(3/4)	99.75 - 104.75	1.0000	1.0000
L15	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	99.75 - 104.75	1.0000	1.0000
L15	29	HB158-1-08U8-S8J18(1-5/8")	99.75 - 104.75	1.0000	1.0000
L15	42	Safety Line 3/8	99.75 - 104.75	1.0000	1.0000
L15	52	6.5" x 1.25" Plate	99.75 - 104.75	1.0000	1.0000
L15	53	6.5" x 1.25" Plate	99.75 - 104.75	1.0000	1.0000
L15	54	6.5" x 1.25" Plate	99.75 - 104.75	1.0000	1.0000
L15	66	CCI 6.5" x 3" Plate	103.00 - 104.75	1.0000	1.0000
L15	67	CCI 6.5" x 3" Plate	103.00 - 104.75	1.0000	1.0000
L15	68	CCI 6.5" x 3" Plate	103.00 - 104.75	1.0000	1.0000
L15	74	CCI 6.5" x 1.25" Plate	103.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			104.75		
L15	75	CCI 6.5" x 1.25" Plate	103.08 - 104.75	1.0000	1.0000
L15	76	CCI 6.5" x 1.25" Plate	103.08 - 104.75	1.0000	1.0000
L16	8	WR-VG86ST-BRD(3/4)	95.00 - 99.75	1.0000	1.0000
L16	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	95.00 - 99.75	1.0000	1.0000
L16	29	HB158-1-08U8-S8J18(1-5/8")	95.00 - 99.75	1.0000	1.0000
L16	42	Safety Line 3/8	95.00 - 99.75	1.0000	1.0000
L16	44	PL4x1	95.00 - 96.75	1.0000	1.0000
L16	45	PL4x1	95.00 - 96.75	1.0000	1.0000
L16	52	6.5" x 1.25" Plate	95.00 - 99.75	1.0000	1.0000
L16	53	6.5" x 1.25" Plate	95.00 - 99.75	1.0000	1.0000
L16	54	6.5" x 1.25" Plate	95.00 - 99.75	1.0000	1.0000
L17	8	WR-VG86ST-BRD(3/4)	94.75 - 95.00	1.0000	1.0000
L17	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	94.75 - 95.00	1.0000	1.0000
L17	29	HB158-1-08U8-S8J18(1-5/8")	94.75 - 95.00	1.0000	1.0000
L17	42	Safety Line 3/8	94.75 - 95.00	1.0000	1.0000
L17	44	PL4x1	94.75 - 95.00	1.0000	1.0000
L17	45	PL4x1	94.75 - 95.00	1.0000	1.0000
L17	52	6.5" x 1.25" Plate	94.75 - 95.00	1.0000	1.0000
L17	53	6.5" x 1.25" Plate	94.75 - 95.00	1.0000	1.0000
L17	54	6.5" x 1.25" Plate	94.75 - 95.00	1.0000	1.0000
L18	8	WR-VG86ST-BRD(3/4)	89.75 - 94.75	1.0000	1.0000
L18	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	89.75 - 94.75	1.0000	1.0000
L18	29	HB158-1-08U8-S8J18(1-5/8")	89.75 - 94.75	1.0000	1.0000
L18	42	Safety Line 3/8	89.75 - 94.75	1.0000	1.0000
L18	44	PL4x1	89.75 - 94.75	1.0000	1.0000
L18	45	PL4x1	89.75 - 94.75	1.0000	1.0000
L18	52	6.5" x 1.25" Plate	89.75 - 94.75	1.0000	1.0000
L18	53	6.5" x 1.25" Plate	89.75 - 94.75	1.0000	1.0000
L18	54	6.5" x 1.25" Plate	89.75 - 94.75	1.0000	1.0000
L19	8	WR-VG86ST-BRD(3/4)	87.75 - 89.75	1.0000	1.0000
L19	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	87.75 - 89.75	1.0000	1.0000
L19	29	HB158-1-08U8-S8J18(1-5/8")	87.75 - 89.75	1.0000	1.0000
L19	42	Safety Line 3/8	87.75 - 89.75	1.0000	1.0000
L19	44	PL4x1	87.75 - 89.75	1.0000	1.0000
L19	45	PL4x1	87.75 - 89.75	1.0000	1.0000
L19	52	6.5" x 1.25" Plate	87.75 - 89.75	1.0000	1.0000
L19	53	6.5" x 1.25" Plate	87.75 - 89.75	1.0000	1.0000
L19	54	6.5" x 1.25" Plate	87.75 - 89.75	1.0000	1.0000
L20	8	WR-VG86ST-BRD(3/4)	87.50 - 87.75	1.0000	1.0000
L20	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	87.50 - 87.75	1.0000	1.0000
L20	29	HB158-1-08U8-S8J18(1-5/8")	87.50 - 87.75	1.0000	1.0000
L20	42	Safety Line 3/8	87.50 - 87.75	1.0000	1.0000
L20	44	PL4x1	87.50 - 87.75	1.0000	1.0000
L20	45	PL4x1	87.50 - 87.75	1.0000	1.0000
L20	52	6.5" x 1.25" Plate	87.50 - 87.75	1.0000	1.0000
L20	53	6.5" x 1.25" Plate	87.50 - 87.75	1.0000	1.0000
L20	54	6.5" x 1.25" Plate	87.50 - 87.75	1.0000	1.0000
L21	8	WR-VG86ST-BRD(3/4)	85.50 - 87.50	1.0000	1.0000
L21	19	MLE Hybrid 9Power/18Fiber	85.50 - 87.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		RL 2(1-5/8")			
L21	29	HB158-1-08U8-S8J18(1-5/8")	85.50 - 87.50	1.0000	1.0000
L21	42	Safety Line 3/8	85.50 - 87.50	1.0000	1.0000
L21	44	PL4x1	85.50 - 87.50	1.0000	1.0000
L21	45	PL4x1	85.50 - 87.50	1.0000	1.0000
L21	52	6.5" x 1.25" Plate	85.50 - 87.50	1.0000	1.0000
L21	53	6.5" x 1.25" Plate	85.50 - 87.50	1.0000	1.0000
L21	54	6.5" x 1.25" Plate	85.50 - 87.50	1.0000	1.0000
L21	78	CCI 4.5" x 1" Plate	85.50 - 87.00	1.0000	1.0000
L21	80	CCI 4.5" x 1" Plate	85.50 - 87.00	1.0000	1.0000
L22	8	WR-VG86ST-BRD(3/4)	85.25 - 85.50	1.0000	1.0000
L22	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	85.25 - 85.50	1.0000	1.0000
L22	29	HB158-1-08U8-S8J18(1-5/8")	85.25 - 85.50	1.0000	1.0000
L22	42	Safety Line 3/8	85.25 - 85.50	1.0000	1.0000
L22	44	PL4x1	85.25 - 85.50	1.0000	1.0000
L22	45	PL4x1	85.25 - 85.50	1.0000	1.0000
L22	52	6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L22	53	6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L22	54	6.5" x 1.25" Plate	85.25 - 85.50	1.0000	1.0000
L22	78	CCI 4.5" x 1" Plate	85.25 - 85.50	1.0000	1.0000
L22	80	CCI 4.5" x 1" Plate	85.25 - 85.50	1.0000	1.0000
L23	8	WR-VG86ST-BRD(3/4)	83.00 - 85.25	1.0000	1.0000
L23	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	83.00 - 85.25	1.0000	1.0000
L23	29	HB158-1-08U8-S8J18(1-5/8")	83.00 - 85.25	1.0000	1.0000
L23	42	Safety Line 3/8	83.00 - 85.25	1.0000	1.0000
L23	44	PL4x1	83.00 - 85.25	1.0000	1.0000
L23	45	PL4x1	83.00 - 85.25	1.0000	1.0000
L23	48	6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L23	49	6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L23	50	6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L23	52	6.5" x 1.25" Plate	85.00 - 85.25	1.0000	1.0000
L23	53	6.5" x 1.25" Plate	85.00 - 85.25	1.0000	1.0000
L23	54	6.5" x 1.25" Plate	83.00 - 85.25	1.0000	1.0000
L23	78	CCI 4.5" x 1" Plate	83.00 - 85.25	1.0000	1.0000
L23	80	CCI 4.5" x 1" Plate	83.00 - 85.25	1.0000	1.0000
L24	8	WR-VG86ST-BRD(3/4)	82.65 - 83.00	1.0000	1.0000
L24	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	82.65 - 83.00	1.0000	1.0000
L24	29	HB158-1-08U8-S8J18(1-5/8")	82.65 - 83.00	1.0000	1.0000
L24	42	Safety Line 3/8	82.65 - 83.00	1.0000	1.0000
L24	44	PL4x1	82.65 - 83.00	1.0000	1.0000
L24	45	PL4x1	82.65 - 83.00	1.0000	1.0000
L24	48	6" x 1" Plate	82.65 - 83.00	1.0000	1.0000
L24	49	6" x 1" Plate	82.65 - 83.00	1.0000	1.0000
L24	50	6" x 1" Plate	82.65 - 83.00	1.0000	1.0000
L24	54	6.5" x 1.25" Plate	82.65 - 83.00	1.0000	1.0000
L24	78	CCI 4.5" x 1" Plate	82.65 - 83.00	1.0000	1.0000
L24	80	CCI 4.5" x 1" Plate	82.65 - 83.00	1.0000	1.0000
L25	8	WR-VG86ST-BRD(3/4)	82.42 - 82.65	1.0000	1.0000
L25	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	82.42 - 82.65	1.0000	1.0000
L25	29	HB158-1-08U8-S8J18(1-5/8")	82.42 - 82.65	1.0000	1.0000
L25	42	Safety Line 3/8	82.42 - 82.65	1.0000	1.0000
L25	44	PL4x1	82.42 - 82.65	1.0000	1.0000
L25	45	PL4x1	82.42 - 82.65	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	48	6" x 1" Plate	82.42 - 82.65	1.0000	1.0000
L25	49	6" x 1" Plate	82.42 - 82.65	1.0000	1.0000
L25	50	6" x 1" Plate	82.42 - 82.65	1.0000	1.0000
L25	54	6.5" x 1.25" Plate	82.42 - 82.65	1.0000	1.0000
L25	78	CCI 4.5" x 1" Plate	82.42 - 82.65	1.0000	1.0000
L25	80	CCI 4.5" x 1" Plate	82.42 - 82.65	1.0000	1.0000
L26	8	WR-VG86ST-BRD(3/4)	77.42 - 82.42	1.0000	1.0000
L26	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	77.42 - 82.42	1.0000	1.0000
L26	29	HB158-1-08U8-S8J18(1-5/8")	77.42 - 82.42	1.0000	1.0000
L26	42	Safety Line 3/8	77.42 - 82.42	1.0000	1.0000
L26	44	PL4x1	77.42 - 82.42	1.0000	1.0000
L26	45	PL4x1	77.42 - 82.42	1.0000	1.0000
L26	48	6" x 1" Plate	77.42 - 82.42	1.0000	1.0000
L26	49	6" x 1" Plate	77.42 - 82.42	1.0000	1.0000
L26	50	6" x 1" Plate	77.42 - 82.42	1.0000	1.0000
L26	54	6.5" x 1.25" Plate	80.00 - 82.42	1.0000	1.0000
L26	78	CCI 4.5" x 1" Plate	77.42 - 82.42	1.0000	1.0000
L26	80	CCI 4.5" x 1" Plate	77.42 - 82.42	1.0000	1.0000
L27	8	WR-VG86ST-BRD(3/4)	73.00 - 77.42	1.0000	1.0000
L27	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	73.00 - 77.42	1.0000	1.0000
L27	29	HB158-1-08U8-S8J18(1-5/8")	73.00 - 77.42	1.0000	1.0000
L27	42	Safety Line 3/8	73.00 - 77.42	1.0000	1.0000
L27	44	PL4x1	73.00 - 77.42	1.0000	1.0000
L27	45	PL4x1	73.00 - 77.42	1.0000	1.0000
L27	48	6" x 1" Plate	73.00 - 77.42	1.0000	1.0000
L27	49	6" x 1" Plate	73.00 - 77.42	1.0000	1.0000
L27	50	6" x 1" Plate	73.00 - 77.42	1.0000	1.0000
L27	78	CCI 4.5" x 1" Plate	73.00 - 77.42	1.0000	1.0000
L27	80	CCI 4.5" x 1" Plate	73.00 - 77.42	1.0000	1.0000
L28	8	WR-VG86ST-BRD(3/4)	72.75 - 73.00	1.0000	1.0000
L28	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	72.75 - 73.00	1.0000	1.0000
L28	29	HB158-1-08U8-S8J18(1-5/8")	72.75 - 73.00	1.0000	1.0000
L28	42	Safety Line 3/8	72.75 - 73.00	1.0000	1.0000
L28	44	PL4x1	72.75 - 73.00	1.0000	1.0000
L28	45	PL4x1	72.75 - 73.00	1.0000	1.0000
L28	48	6" x 1" Plate	72.75 - 73.00	1.0000	1.0000
L28	49	6" x 1" Plate	72.75 - 73.00	1.0000	1.0000
L28	50	6" x 1" Plate	72.75 - 73.00	1.0000	1.0000
L28	78	CCI 4.5" x 1" Plate	72.75 - 73.00	1.0000	1.0000
L28	80	CCI 4.5" x 1" Plate	72.75 - 73.00	1.0000	1.0000
L29	8	WR-VG86ST-BRD(3/4)	67.50 - 72.75	1.0000	1.0000
L29	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	67.50 - 72.75	1.0000	1.0000
L29	29	HB158-1-08U8-S8J18(1-5/8")	67.50 - 72.75	1.0000	1.0000
L29	34	LDF4-50A(1/2")	67.50 - 71.00	1.0000	1.0000
L29	42	Safety Line 3/8	67.50 - 72.75	1.0000	1.0000
L29	44	PL4x1	71.75 - 72.75	1.0000	1.0000
L29	45	PL4x1	71.75 - 72.75	1.0000	1.0000
L29	48	6" x 1" Plate	67.50 - 72.75	1.0000	1.0000
L29	49	6" x 1" Plate	67.50 - 72.75	1.0000	1.0000
L29	50	6" x 1" Plate	67.50 - 72.75	1.0000	1.0000
L29	78	CCI 4.5" x 1" Plate	67.50 - 72.75	1.0000	1.0000
L29	80	CCI 4.5" x 1" Plate	67.50 - 72.75	1.0000	1.0000
L31	8	WR-VG86ST-BRD(3/4)	61.00 - 66.00	1.0000	1.0000
L31	19	MLE Hybrid 9Power/18Fiber	61.00 - 66.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		RL 2(1-5/8")			
L31	29	HB158-1-08U8-S8J18(1-5/8")	61.00 - 66.00	1.0000	1.0000
L31	34	LDF4-50A(1/2")	61.00 - 66.00	1.0000	1.0000
L31	42	Safety Line 3/8	61.00 - 66.00	1.0000	1.0000
L31	48	6" x 1" Plate	61.00 - 66.00	1.0000	1.0000
L31	49	6" x 1" Plate	61.00 - 66.00	1.0000	1.0000
L31	50	6" x 1" Plate	61.00 - 66.00	1.0000	1.0000
L31	78	CCI 4.5" x 1" Plate	61.00 - 66.00	1.0000	1.0000
L31	80	CCI 4.5" x 1" Plate	61.00 - 66.00	1.0000	1.0000
L32	8	WR-VG86ST-BRD(3/4)	56.00 - 61.00	1.0000	1.0000
L32	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	56.00 - 61.00	1.0000	1.0000
L32	29	HB158-1-08U8-S8J18(1-5/8")	56.00 - 61.00	1.0000	1.0000
L32	34	LDF4-50A(1/2")	56.00 - 61.00	1.0000	1.0000
L32	42	Safety Line 3/8	56.00 - 61.00	1.0000	1.0000
L32	48	6" x 1" Plate	56.00 - 61.00	1.0000	1.0000
L32	49	6" x 1" Plate	56.00 - 61.00	1.0000	1.0000
L32	50	6" x 1" Plate	56.00 - 61.00	1.0000	1.0000
L32	78	CCI 4.5" x 1" Plate	56.00 - 61.00	1.0000	1.0000
L32	80	CCI 4.5" x 1" Plate	56.00 - 61.00	1.0000	1.0000
L33	8	WR-VG86ST-BRD(3/4)	55.42 - 56.00	1.0000	1.0000
L33	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	55.42 - 56.00	1.0000	1.0000
L33	29	HB158-1-08U8-S8J18(1-5/8")	55.42 - 56.00	1.0000	1.0000
L33	34	LDF4-50A(1/2")	55.42 - 56.00	1.0000	1.0000
L33	42	Safety Line 3/8	55.42 - 56.00	1.0000	1.0000
L33	48	6" x 1" Plate	55.42 - 56.00	1.0000	1.0000
L33	49	6" x 1" Plate	55.42 - 56.00	1.0000	1.0000
L33	50	6" x 1" Plate	55.42 - 56.00	1.0000	1.0000
L33	78	CCI 4.5" x 1" Plate	55.42 - 56.00	1.0000	1.0000
L33	80	CCI 4.5" x 1" Plate	55.42 - 56.00	1.0000	1.0000
L34	8	WR-VG86ST-BRD(3/4)	55.17 - 55.42	1.0000	1.0000
L34	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	55.17 - 55.42	1.0000	1.0000
L34	29	HB158-1-08U8-S8J18(1-5/8")	55.17 - 55.42	1.0000	1.0000
L34	34	LDF4-50A(1/2")	55.17 - 55.42	1.0000	1.0000
L34	42	Safety Line 3/8	55.17 - 55.42	1.0000	1.0000
L34	48	6" x 1" Plate	55.17 - 55.42	1.0000	1.0000
L34	49	6" x 1" Plate	55.17 - 55.42	1.0000	1.0000
L34	50	6" x 1" Plate	55.17 - 55.42	1.0000	1.0000
L34	78	CCI 4.5" x 1" Plate	55.17 - 55.42	1.0000	1.0000
L34	80	CCI 4.5" x 1" Plate	55.17 - 55.42	1.0000	1.0000
L35	8	WR-VG86ST-BRD(3/4)	50.17 - 55.17	1.0000	1.0000
L35	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	50.17 - 55.17	1.0000	1.0000
L35	29	HB158-1-08U8-S8J18(1-5/8")	50.17 - 55.17	1.0000	1.0000
L35	34	LDF4-50A(1/2")	50.17 - 55.17	1.0000	1.0000
L35	42	Safety Line 3/8	50.17 - 55.17	1.0000	1.0000
L35	48	6" x 1" Plate	50.17 - 55.17	1.0000	1.0000
L35	49	6" x 1" Plate	50.17 - 55.17	1.0000	1.0000
L35	50	6" x 1" Plate	50.17 - 55.17	1.0000	1.0000
L35	78	CCI 4.5" x 1" Plate	50.17 - 55.17	1.0000	1.0000
L35	80	CCI 4.5" x 1" Plate	50.17 - 55.17	1.0000	1.0000
L36	8	WR-VG86ST-BRD(3/4)	47.17 - 50.17	1.0000	1.0000
L36	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	47.17 - 50.17	1.0000	1.0000
L36	29	HB158-1-08U8-S8J18(	47.17 - 50.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		1-5/8")			
L36	34	LDF4-50A(1/2")	47.17 - 50.17	1.0000	1.0000
L36	42	Safety Line 3/8	47.17 - 50.17	1.0000	1.0000
L36	48	6" x 1" Plate	50.00 - 50.17	1.0000	1.0000
L36	49	6" x 1" Plate	50.00 - 50.17	1.0000	1.0000
L36	50	6" x 1" Plate	50.00 - 50.17	1.0000	1.0000
L36	61	CCI 6.5" x 1.25" Plate	47.17 - 49.92	1.0000	1.0000
L36	62	CCI 6.5" x 1.25" Plate	47.17 - 49.92	1.0000	1.0000
L36	63	CCI 6.5" x 1.25" Plate	47.17 - 49.92	1.0000	1.0000
L36	78	CCI 4.5" x 1" Plate	47.17 - 50.17	1.0000	1.0000
L36	80	CCI 4.5" x 1" Plate	47.17 - 50.17	1.0000	1.0000
L37	8	WR-VG86ST-BRD(3/4)	46.92 - 47.17	1.0000	1.0000
L37	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	46.92 - 47.17	1.0000	1.0000
L37	29	HB158-1-08U8-S8J18(1-5/8")	46.92 - 47.17	1.0000	1.0000
L37	34	LDF4-50A(1/2")	46.92 - 47.17	1.0000	1.0000
L37	42	Safety Line 3/8	46.92 - 47.17	1.0000	1.0000
L37	61	CCI 6.5" x 1.25" Plate	46.92 - 47.17	1.0000	1.0000
L37	62	CCI 6.5" x 1.25" Plate	46.92 - 47.17	1.0000	1.0000
L37	63	CCI 6.5" x 1.25" Plate	46.92 - 47.17	1.0000	1.0000
L37	78	CCI 4.5" x 1" Plate	46.92 - 47.17	1.0000	1.0000
L37	80	CCI 4.5" x 1" Plate	46.92 - 47.17	1.0000	1.0000
L38	8	WR-VG86ST-BRD(3/4)	43.42 - 46.92	1.0000	1.0000
L38	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	43.42 - 46.92	1.0000	1.0000
L38	29	HB158-1-08U8-S8J18(1-5/8")	43.42 - 46.92	1.0000	1.0000
L38	34	LDF4-50A(1/2")	43.42 - 46.92	1.0000	1.0000
L38	42	Safety Line 3/8	43.42 - 46.92	1.0000	1.0000
L38	61	CCI 6.5" x 1.25" Plate	43.42 - 46.92	1.0000	1.0000
L38	62	CCI 6.5" x 1.25" Plate	43.42 - 46.92	1.0000	1.0000
L38	63	CCI 6.5" x 1.25" Plate	43.42 - 46.92	1.0000	1.0000
L38	78	CCI 4.5" x 1" Plate	43.42 - 46.92	1.0000	1.0000
L38	80	CCI 4.5" x 1" Plate	43.42 - 46.92	1.0000	1.0000
L39	8	WR-VG86ST-BRD(3/4)	43.17 - 43.42	1.0000	1.0000
L39	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	43.17 - 43.42	1.0000	1.0000
L39	29	HB158-1-08U8-S8J18(1-5/8")	43.17 - 43.42	1.0000	1.0000
L39	34	LDF4-50A(1/2")	43.17 - 43.42	1.0000	1.0000
L39	42	Safety Line 3/8	43.17 - 43.42	1.0000	1.0000
L39	61	CCI 6.5" x 1.25" Plate	43.17 - 43.42	1.0000	1.0000
L39	62	CCI 6.5" x 1.25" Plate	43.17 - 43.42	1.0000	1.0000
L39	63	CCI 6.5" x 1.25" Plate	43.17 - 43.42	1.0000	1.0000
L39	78	CCI 4.5" x 1" Plate	43.17 - 43.42	1.0000	1.0000
L39	80	CCI 4.5" x 1" Plate	43.17 - 43.42	1.0000	1.0000
L40	8	WR-VG86ST-BRD(3/4)	38.17 - 43.17	1.0000	1.0000
L40	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	38.17 - 43.17	1.0000	1.0000
L40	29	HB158-1-08U8-S8J18(1-5/8")	38.17 - 43.17	1.0000	1.0000
L40	34	LDF4-50A(1/2")	38.17 - 43.17	1.0000	1.0000
L40	42	Safety Line 3/8	38.17 - 43.17	1.0000	1.0000
L40	61	CCI 6.5" x 1.25" Plate	38.17 - 43.17	1.0000	1.0000
L40	62	CCI 6.5" x 1.25" Plate	38.17 - 43.17	1.0000	1.0000
L40	63	CCI 6.5" x 1.25" Plate	38.17 - 43.17	1.0000	1.0000
L40	78	CCI 4.5" x 1" Plate	41.92 - 43.17	1.0000	1.0000
L40	80	CCI 4.5" x 1" Plate	41.92 - 43.17	1.0000	1.0000
L41	8	WR-VG86ST-BRD(3/4)	33.00 - 38.17	1.0000	1.0000
L41	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	33.00 - 38.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L41	29	HB158-1-08U8-S8J18(1-5/8")	33.00 - 38.17	1.0000	1.0000
L41	34	LDF4-50A(1/2")	33.00 - 38.17	1.0000	1.0000
L41	42	Safety Line 3/8	33.00 - 38.17	1.0000	1.0000
L41	61	CCI 6.5" x 1.25" Plate	33.00 - 38.17	1.0000	1.0000
L41	62	CCI 6.5" x 1.25" Plate	33.00 - 38.17	1.0000	1.0000
L41	63	CCI 6.5" x 1.25" Plate	33.00 - 38.17	1.0000	1.0000
L43	8	WR-VG86ST-BRD(3/4)	32.42 - 32.67	1.0000	1.0000
L43	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	32.42 - 32.67	1.0000	1.0000
L43	29	HB158-1-08U8-S8J18(1-5/8")	32.42 - 32.67	1.0000	1.0000
L43	34	LDF4-50A(1/2")	32.42 - 32.67	1.0000	1.0000
L43	42	Safety Line 3/8	32.42 - 32.67	1.0000	1.0000
L43	61	CCI 6.5" x 1.25" Plate	32.42 - 32.67	1.0000	1.0000
L43	62	CCI 6.5" x 1.25" Plate	32.42 - 32.67	1.0000	1.0000
L43	63	CCI 6.5" x 1.25" Plate	32.42 - 32.67	1.0000	1.0000
L44	8	WR-VG86ST-BRD(3/4)	27.42 - 32.42	1.0000	1.0000
L44	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	27.42 - 32.42	1.0000	1.0000
L44	29	HB158-1-08U8-S8J18(1-5/8")	27.42 - 32.42	1.0000	1.0000
L44	34	LDF4-50A(1/2")	27.42 - 32.42	1.0000	1.0000
L44	42	Safety Line 3/8	27.42 - 32.42	1.0000	1.0000
L44	61	CCI 6.5" x 1.25" Plate	29.92 - 32.42	1.0000	1.0000
L44	62	CCI 6.5" x 1.25" Plate	29.92 - 32.42	1.0000	1.0000
L44	63	CCI 6.5" x 1.25" Plate	29.92 - 32.42	1.0000	1.0000
L45	8	WR-VG86ST-BRD(3/4)	22.42 - 27.42	1.0000	1.0000
L45	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	22.42 - 27.42	1.0000	1.0000
L45	29	HB158-1-08U8-S8J18(1-5/8")	22.42 - 27.42	1.0000	1.0000
L45	34	LDF4-50A(1/2")	22.42 - 27.42	1.0000	1.0000
L45	42	Safety Line 3/8	22.42 - 27.42	1.0000	1.0000
L46	8	WR-VG86ST-BRD(3/4)	17.42 - 22.42	1.0000	1.0000
L46	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	17.42 - 22.42	1.0000	1.0000
L46	29	HB158-1-08U8-S8J18(1-5/8")	17.42 - 22.42	1.0000	1.0000
L46	34	LDF4-50A(1/2")	17.42 - 22.42	1.0000	1.0000
L46	37	ATCB-B01(5/16")	17.42 - 22.00	1.0000	1.0000
L46	42	Safety Line 3/8	17.42 - 22.42	1.0000	1.0000
L47	8	WR-VG86ST-BRD(3/4)	12.42 - 17.42	1.0000	1.0000
L47	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	12.42 - 17.42	1.0000	1.0000
L47	29	HB158-1-08U8-S8J18(1-5/8")	12.42 - 17.42	1.0000	1.0000
L47	34	LDF4-50A(1/2")	12.42 - 17.42	1.0000	1.0000
L47	37	ATCB-B01(5/16")	12.42 - 17.42	1.0000	1.0000
L47	42	Safety Line 3/8	12.42 - 17.42	1.0000	1.0000
L48	8	WR-VG86ST-BRD(3/4)	7.42 - 12.42	1.0000	1.0000
L48	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	7.42 - 12.42	1.0000	1.0000
L48	29	HB158-1-08U8-S8J18(1-5/8")	7.42 - 12.42	1.0000	1.0000
L48	34	LDF4-50A(1/2")	7.42 - 12.42	1.0000	1.0000
L48	37	ATCB-B01(5/16")	7.42 - 12.42	1.0000	1.0000
L48	42	Safety Line 3/8	7.42 - 12.42	1.0000	1.0000
L49	8	WR-VG86ST-BRD(3/4)	2.42 - 7.42	1.0000	1.0000
L49	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	2.42 - 7.42	1.0000	1.0000
L49	29	HB158-1-08U8-S8J18(	2.42 - 7.42	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		1-5/8")			
L49	34	LDF4-50A(1/2")	2.42 - 7.42	1.0000	1.0000
L49	37	ATCB-B01(5/16")	2.42 - 7.42	1.0000	1.0000
L49	42	Safety Line 3/8	2.42 - 7.42	1.0000	1.0000
L50	8	WR-VG86ST-BRD(3/4)	0.00 - 2.42	1.0000	1.0000
L50	19	MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	0.00 - 2.42	1.0000	1.0000
L50	29	HB158-1-08U8-S8J18(1-5/8")	0.00 - 2.42	1.0000	1.0000
L50	34	LDF4-50A(1/2")	0.00 - 2.42	1.0000	1.0000
L50	37	ATCB-B01(5/16")	0.00 - 2.42	1.0000	1.0000
L50	42	Safety Line 3/8	0.00 - 2.42	1.0000	1.0000

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
V									
V									
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	149.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			3.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	149.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			3.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	149.000	No Ice	5.746	4.254	0.055
(E)			0.000			1/2" Ice	6.179	5.014	0.103
			3.000			1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
TT19-08BP111-001	A	From Leg	4.000	0.000	149.000	No Ice	0.553	0.446	0.016
(E)			0.000			1/2" Ice	0.649	0.534	0.022
			3.000			1" Ice	0.752	0.630	0.029
						2" Ice	0.981	0.845	0.050
(2) TT19-08BP111-001	B	From Leg	4.000	0.000	149.000	No Ice	0.553	0.446	0.016
(E)			0.000			1/2" Ice	0.649	0.534	0.022
			3.000			1" Ice	0.752	0.630	0.029
						2" Ice	0.981	0.845	0.050
(3) RRUS 11	C	From Leg	4.000	0.000	149.000	No Ice	2.791	1.192	0.051
(E)			0.000			1/2" Ice	2.998	1.340	0.072
			1.000			1" Ice	3.213	1.496	0.095
						2" Ice	3.666	1.839	0.153
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.000	0.000	149.000	No Ice	5.954	5.190	0.061
(P)			0.000			1/2" Ice	6.390	5.961	0.114
			3.000			1" Ice	6.820	6.658	0.174
						2" Ice	7.706	8.089	0.316
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.000	0.000	149.000	No Ice	5.954	5.190	0.061
(P)			0.000			1/2" Ice	6.390	5.961	0.114
			3.000			1" Ice	6.820	6.658	0.174

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	7.706	8.089	0.316
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	149.000	No Ice 1/2" Ice	5.954 6.390	5.190 5.961	0.061 0.114
(P)			3.000			1" Ice	6.820	6.658	0.174
						2" Ice	7.706	8.089	0.316
QS46512-2 w/ Mount Pipe	A	From Leg	4.000	0.000	149.000	No Ice	5.791	5.876	0.123
(P)			0.000 3.000			1/2" Ice 1" Ice	6.207 6.623	6.579 7.252	0.180 0.243
						2" Ice	7.483	8.647	0.392
80010799 w/ Mount Pipe	B	From Leg	4.000	0.000	149.000	No Ice	15.549	10.690	0.144
(P)			0.000 3.000			1/2" Ice 1" Ice	16.327 17.095	12.347 14.028	0.251 0.369
						2" Ice	18.585	16.757	0.642
QS46512-2 w/ Mount Pipe	C	From Leg	4.000	0.000	149.000	No Ice	5.791	5.876	0.123
(P)			0.000 3.000			1/2" Ice 1" Ice	6.207 6.623	6.579 7.252	0.180 0.243
						2" Ice	7.483	8.647	0.392
(3) RADIO 8843	A	From Leg	4.000	0.000	149.000	No Ice	3.500	2.359	0.085
(P)			0.000 3.000			1/2" Ice 1" Ice	3.743 3.993	2.566 2.779	0.114 0.147
						2" Ice	4.515	3.237	0.225
RRUS 4478 B5	A	From Leg	4.000	0.000	149.000	No Ice	1.843	1.059	0.060
(P)			0.000 3.000			1/2" Ice 1" Ice	2.012 2.190	1.197 1.342	0.076 0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B5	B	From Leg	4.000	0.000	149.000	No Ice	1.843	1.059	0.060
(P)			0.000 3.000			1/2" Ice 1" Ice	2.012 2.190	1.197 1.342	0.076 0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B5	C	From Leg	4.000	0.000	149.000	No Ice	1.843	1.059	0.060
(P)			0.000 3.000			1/2" Ice 1" Ice	2.012 2.190	1.197 1.342	0.076 0.094
						2" Ice	2.566	1.656	0.140
RRUS 32 B2	A	From Leg	4.000	0.000	149.000	No Ice	2.731	1.668	0.053
(P)			0.000 3.000			1/2" Ice 1" Ice	2.953 3.182	1.855 2.049	0.074 0.098
						2" Ice	3.663	2.458	0.157
(2) RRUS 32 B2	C	From Leg	4.000	0.000	149.000	No Ice	2.731	1.668	0.053
(P)			0.000 3.000			1/2" Ice 1" Ice	2.953 3.182	1.855 2.049	0.074 0.098
						2" Ice	3.663	2.458	0.157
(2) DC6-48-60-18-8C	B	From Leg	4.000	0.000	149.000	No Ice	2.737	2.737	0.026
(P)			0.000 3.000			1/2" Ice 1" Ice	2.963 3.196	2.963 3.196	0.052 0.082
						2" Ice	3.684	3.684	0.152
DC6-48-60-18-8C	C	From Leg	4.000	0.000	149.000	No Ice	2.737	2.737	0.026
(P)			0.000 3.000			1/2" Ice 1" Ice	2.963 3.196	2.963 3.196	0.052 0.082
						2" Ice	3.684	3.684	0.152
(4) DBC0061F1V51-2	B	From Leg	4.000	0.000	149.000	No Ice	0.433	0.413	0.025
(P)			0.000 3.000			1/2" Ice 1" Ice	0.518 0.609	0.496 0.586	0.031 0.038
						2" Ice	0.815	0.788	0.057
(2) DBC0061F1V51-2	C	From Leg	4.000	0.000	149.000	No Ice	0.433	0.413	0.025
(P)			0.000 3.000			1/2" Ice 1" Ice	0.518 0.609	0.496 0.586	0.031 0.038
						2" Ice	0.815	0.788	0.057

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' x 2" Mount Pipe (Dish/Photo)	B	From Leg	4.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
5' x 2" Pipe Mount (Empty/Photo)	A	From Leg	4.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 1.393 1.703 2.351	1.000 1.393 1.703 2.351	0.029 0.037 0.048 0.082
5' x 2" Pipe Mount (Empty/Photo)	B	From Leg	4.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 1.393 1.703 2.351	1.000 1.393 1.703 2.351	0.029 0.037 0.048 0.082
5' x 2" Pipe Mount (Empty/Photo)	C	From Leg	4.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.000 1.393 1.703 2.351	1.000 1.393 1.703 2.351	0.029 0.037 0.048 0.082
Platform Mount [LP 403-1] (E)	C	None		0.000	149.000	No Ice 1/2" Ice 1" Ice 2" Ice	18.850 24.300 29.750 40.650	18.850 24.300 29.750 40.650	1.500 1.797 2.093 2.686
Miscellaneous [NA 509-3] (PRK-1245L/018 SA)	C	None		0.000	149.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.840 16.960 22.080 32.320	11.840 16.960 22.080 32.320	0.275 0.296 0.317 0.360
V									
V									
AIR 21 B2A/B4P w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.162 6.600 7.033 7.924	5.545 6.303 6.998 8.438	0.103 0.159 0.222 0.370
AIR 21 B2A/B4P w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.162 6.600 7.033 7.924	5.545 6.303 6.998 8.438	0.103 0.159 0.222 0.370
AIR 21 B2A/B4P w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.162 6.600 7.033 7.924	5.545 6.303 6.998 8.438	0.103 0.159 0.222 0.370
AIR 21 B4A/B2P w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.162 6.600 7.033 7.924	5.545 6.303 6.998 8.438	0.103 0.159 0.222 0.370
AIR 21 B4A/B2P w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.162 6.600 7.033 7.924	5.545 6.303 6.998 8.438	0.103 0.159 0.222 0.370
AIR 21 B4A/B2P w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.162 6.600 7.033 7.924	5.545 6.303 6.998 8.438	0.103 0.159 0.222 0.370
LNX-6515DS-A1M w/ Mount Pipe (E)	A	From Leg	4.000 0.000 1.000	0.000	140.000	No Ice 1/2" Ice 1" Ice 2" Ice	11.683 12.404 13.135 14.512	9.842 11.366 12.914 15.267	0.081 0.171 0.271 0.504
LNX-6515DS-A1M w/ Mount Pipe (E)	B	From Leg	4.000 0.000 1.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	11.683 12.404 13.135	9.842 11.366 12.914	0.081 0.171 0.271

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	14.512	15.267	0.504
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	140.000	No Ice 1/2" Ice	11.683 12.404	9.842 11.366	0.081 0.171
(E)			1.000			1" Ice 2" Ice	13.135 14.512	12.914 15.267	0.271 0.504
TMAT7LA-11A	A	From Leg	4.000	0.000	140.000	No Ice	0.645	0.347	0.022
(E)			0.000 2.000			1/2" Ice 1" Ice	0.748 0.859	0.423 0.506	0.029 0.037
						2" Ice	1.102	0.695	0.060
TMAT7LA-11A	B	From Leg	4.000	0.000	140.000	No Ice	0.645	0.347	0.022
(E)			0.000 2.000			1/2" Ice 1" Ice	0.748 0.859	0.423 0.506	0.029 0.037
						2" Ice	1.102	0.695	0.060
TMAT7LA-11A	C	From Leg	4.000	0.000	140.000	No Ice	0.645	0.347	0.022
(E)			0.000 2.000			1/2" Ice 1" Ice	0.748 0.859	0.423 0.506	0.029 0.037
						2" Ice	1.102	0.695	0.060
RRUS 11 B12	A	From Leg	4.000	0.000	140.000	No Ice	2.833	1.182	0.051
(E)			0.000 1.000			1/2" Ice 1" Ice	3.043 3.259	1.330 1.485	0.072 0.095
						2" Ice	3.715	1.826	0.153
RRUS 11 B12	B	From Leg	4.000	0.000	140.000	No Ice	2.833	1.182	0.051
(E)			0.000 1.000			1/2" Ice 1" Ice	3.043 3.259	1.330 1.485	0.072 0.095
						2" Ice	3.715	1.826	0.153
RRUS 11 B12	C	From Leg	4.000	0.000	140.000	No Ice	2.833	1.182	0.051
(E)			0.000 1.000			1/2" Ice 1" Ice	3.043 3.259	1.330 1.485	0.072 0.095
						2" Ice	3.715	1.826	0.153
Platform Mount [LP 303-1]	C	None		0.000	140.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice 1" Ice	18.870 23.080	18.870 23.080	1.481 1.713
						2" Ice	31.500	31.500	2.175
Miscellaneous [NA 507-1]	C	None		0.000	140.000	No Ice	4.800	4.800	0.245
(E)						1/2" Ice 1" Ice	6.700 8.600	6.700 8.600	0.294 0.343
						2" Ice	12.400	12.400	0.441
v									
BXA-80080/4CF w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	130.000	No Ice 1/2" Ice	5.037 5.421	4.033 4.655	0.033 0.077
(E)			3.000			1" Ice 2" Ice	5.813 6.624	5.281 6.561	0.127 0.248
BXA-80080/4CF w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	130.000	No Ice 1/2" Ice	5.037 5.421	4.033 4.655	0.033 0.077
(E)			3.000			1" Ice 2" Ice	5.813 6.624	5.281 6.561	0.127 0.248
BXA-80080/4CF w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	130.000	No Ice 1/2" Ice	5.037 5.421	4.033 4.655	0.033 0.077
(E)			3.000			1" Ice 2" Ice	5.813 6.624	5.281 6.561	0.127 0.248
DB-B1-6C-12AB-0Z	A	From Leg	4.000 0.000	0.000	130.000	No Ice 1/2" Ice	3.364 3.597	2.192 2.395	0.021 0.050
(E)			3.000			1" Ice 2" Ice	3.838 4.343	2.606 3.049	0.082 0.158
HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	130.000	No Ice 1/2" Ice	8.765 9.342	6.963 8.182	0.067 0.137
(E)			2.000			1" Ice	9.889	9.144	0.215

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	10.994	11.022	0.398
HBXX-6517DS-A2M w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.765 9.342 9.889 10.994	6.963 8.182 9.144 11.022	0.067 0.137 0.215 0.398
HBXX-6517DS-A2M w/ Mount Pipe (E)	C	From Leg	4.000 0.000 2.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.765 9.342 9.889 10.994	6.963 8.182 9.144 11.022	0.067 0.137 0.215 0.398
LNX-6514DS-A1M w/ Mount Pipe (E)	A	From Leg	4.000 0.000 2.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.411 8.975 9.505 10.585	7.082 8.273 9.185 11.023	0.065 0.134 0.211 0.393
LNX-6514DS-A1M w/ Mount Pipe (E)	B	From Leg	4.000 0.000 2.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.411 8.975 9.505 10.585	7.082 8.273 9.185 11.023	0.065 0.134 0.211 0.393
LNX-6514DS-A1M w/ Mount Pipe (E)	C	From Leg	4.000 0.000 2.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.411 8.975 9.505 10.585	7.082 8.273 9.185 11.023	0.065 0.134 0.211 0.393
BXA-171085-8BF-EDIN-0 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.179 3.555 3.930 4.692	3.353 3.971 4.595 5.893	0.029 0.061 0.099 0.193
BXA-171085-8BF-EDIN-0 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.179 3.555 3.930 4.692	3.353 3.971 4.595 5.893	0.029 0.061 0.099 0.193
BXA-171085-8BF-EDIN-0 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.179 3.555 3.930 4.692	3.353 3.971 4.595 5.893	0.029 0.061 0.099 0.193
RRH2X60-AWS (E)	A	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-AWS (E)	B	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-AWS (E)	C	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-PCS (E)	A	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
RRH2X60-PCS (E)	B	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
RRH2X60-PCS (E)	C	From Leg	4.000 0.000 3.000	0.000	130.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000	130.000	No Ice	0.314	0.076	0.003
(E)			0.000			1/2" Ice	0.386	0.119	0.005
			3.000			1" Ice	0.466	0.169	0.009
						2" Ice	0.647	0.294	0.020
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000	130.000	No Ice	0.314	0.076	0.003
(E)			0.000			1/2" Ice	0.386	0.119	0.005
			3.000			1" Ice	0.466	0.169	0.009
						2" Ice	0.647	0.294	0.020
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	130.000	No Ice	0.314	0.076	0.003
(E)			0.000			1/2" Ice	0.386	0.119	0.005
			3.000			1" Ice	0.466	0.169	0.009
						2" Ice	0.647	0.294	0.020
Platform Mount [LP 403-1]	C	None		0.000	130.000	No Ice	18.850	18.850	1.500
(E)						1/2" Ice	24.300	24.300	1.797
						1" Ice	29.750	29.750	2.093
						2" Ice	40.650	40.650	2.686
v									
FMO	C	From Leg	2.000	0.000	71.000	No Ice	8.400	8.400	0.010
(E)			0.000			1/2" Ice	8.815	8.815	0.181
			1.000			1" Ice	9.237	9.237	0.361
						2" Ice	10.104	10.104	0.747
Side Arm Mount [SO 301-1]	C	From Leg	1.000	0.000	71.000	No Ice	1.000	0.900	0.023
(E)			0.000			1/2" Ice	1.390	1.420	0.033
			0.000			1" Ice	1.780	1.940	0.042
						2" Ice	2.560	2.980	0.061
Reflector	A	From Leg	3.000	0.000	71.000	No Ice	0.163	0.117	0.010
(Per Photo)			0.000			1/2" Ice	0.218	0.165	0.012
			0.000			1" Ice	0.279	0.221	0.015
						2" Ice	0.425	0.356	0.024
3' x 2" Pipe Mount	A	From Leg	3.000	0.000	71.000	No Ice	0.583	0.583	0.011
(Per Photo)			0.000			1/2" Ice	0.770	0.770	0.017
			0.000			1" Ice	0.967	0.967	0.024
						2" Ice	1.388	1.388	0.047
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	71.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
v									
MYA-43012N	C	From Leg	3.000	0.000	22.000	No Ice	0.620	0.620	0.005
(E)			0.000			1/2" Ice	1.116	1.116	0.006
			0.000			1" Ice	1.612	1.612	0.008
						2" Ice	2.604	2.604	0.011
4' x 2" Pipe Mount	C	From Leg	3.000	0.000	22.000	No Ice	0.785	0.785	0.029
(Yagi/Photo)			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	22.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
v									
GPS (3"x7")	C	From Leg	4.000	0.000	134.000	No Ice	0.175	0.175	0.008
(Per Photo)			0.000			1/2" Ice	0.234	0.234	0.010
			4.000			1" Ice	0.301	0.301	0.013
						2" Ice	0.456	0.456	0.023
v									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
KP4F-23A (E) **v**	B	Grid	From Leg	4.000 0.000 7.000	0.000		149.000	4.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.570 13.090 16.130 22.210	0.070 0.140 0.200 0.340

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

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	150 - 145	Pole	Max Tension	4	0.000	-0.000	-0.000
			Max. Compression	14	-9.448	-0.772	-1.059
			Max. Mx	5	-3.517	-47.407	-0.731
			Max. My	8	-3.941	-0.334	-45.559
			Max. Vy	5	7.972	-47.407	-0.731
			Max. Vx	8	7.626	-0.334	-45.559
			Max. Torque	9			1.977
L2	145 - 140	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-10.029	-0.838	-1.193
			Max. Mx	5	-3.838	-88.215	-1.442
			Max. My	8	-4.279	-0.564	-84.620
			Max. Vy	5	8.356	-88.215	-1.442
			Max. Vx	8	7.992	-0.564	-84.620
			Max. Torque	9			1.977
L3	140 - 135	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-17.024	-1.050	-1.310
			Max. Mx	5	-6.672	-154.773	-2.561
			Max. My	8	-7.352	-0.869	-148.641
			Max. Vy	5	13.168	-154.773	-2.561
			Max. Vx	8	12.655	-0.869	-148.641
			Max. Torque	9			1.985
L4	135 - 130	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-17.815	-1.187	-1.473
			Max. Mx	5	-7.150	-221.596	-3.727
			Max. My	8	-7.845	-1.134	-212.876
			Max. Vy	5	13.554	-221.596	-3.727
			Max. Vx	8	13.018	-1.134	-212.876
			Max. Torque	9			1.984
L5	130 - 125	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-25.483	-1.524	-1.126
			Max. Mx	5	-10.037	-322.790	-5.256
			Max. My	8	-10.983	-1.489	-310.862
			Max. Vy	5	18.751	-322.790	-5.256
			Max. Vx	8	18.077	-1.489	-310.862
			Max. Torque	9			1.961
L6	125 - 123.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-25.777	-1.609	-1.185
			Max. Mx	5	-10.187	-346.322	-5.649
			Max. My	8	-11.141	-1.576	-333.521
			Max. Vy	5	18.904	-346.322	-5.649
			Max. Vx	8	18.193	-1.576	-333.521
			Max. Torque	9			1.796
L7	123.75 - 123.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-25.850	-1.627	-1.198
			Max. Mx	5	-10.250	-351.055	-5.752
			Max. My	8	-11.205	-1.594	-338.069
			Max. Vy	5	18.954	-351.055	-5.752
			Max. Vx	8	18.199	-1.594	-338.069
			Max. Torque	9			1.796
L8	123.5 - 118.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-27.311	-1.974	-1.438
			Max. Mx	5	-11.057	-447.438	-7.365
			Max. My	8	-12.050	-1.946	-430.419
			Max. Vy	5	19.618	-447.438	-7.365
			Max. Vx	8	18.734	-1.946	-430.419
			Max. Torque	9			1.796
L9	118.5 - 113.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.121	-2.311	-1.676

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	5	-12.994	-547.975	-9.136
			Max. My	8	-14.028	-2.300	-526.206
			Max. Vy	5	20.596	-547.975	-9.136
			Max. Vx	8	19.589	-2.300	-526.206
			Max. Torque	9			1.824
L10	113.5 - 112	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-31.119	-2.399	-1.741
			Max. Mx	5	-13.720	-579.096	-9.707
			Max. My	8	-14.767	-2.405	-555.780
			Max. Vy	5	20.909	-579.096	-9.707
			Max. Vx	8	19.863	-2.405	-555.780
			Max. Torque	9			1.831
L11	112 - 111.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-31.296	-2.415	-1.752
			Max. Mx	5	-13.873	-584.333	-9.838
			Max. My	8	-14.920	-2.423	-560.748
			Max. Vy	5	20.997	-584.333	-9.838
			Max. Vx	8	19.888	-2.423	-560.748
			Max. Torque	9			1.832
L12	111.75 - 110	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.388	-2.518	-1.829
			Max. Mx	5	-14.670	-621.305	-10.512
			Max. My	8	-15.733	-2.548	-595.834
			Max. Vy	5	21.311	-621.305	-10.512
			Max. Vx	8	20.213	-2.548	-595.834
			Max. Torque	9			1.839
L13	110 - 109.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.507	-2.534	-1.841
			Max. Mx	5	-14.771	-626.641	-10.643
			Max. My	8	-15.834	-2.566	-600.888
			Max. Vy	5	21.382	-626.641	-10.643
			Max. Vx	8	20.227	-2.566	-600.888
			Max. Torque	9			1.840
L14	109.75 - 104.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-36.124	-2.837	-2.073
			Max. Mx	5	-17.465	-735.956	-12.830
			Max. My	8	-18.571	-2.937	-704.310
			Max. Vy	5	22.391	-735.956	-12.830
			Max. Vx	8	21.141	-2.937	-704.310
			Max. Torque	9			1.857
L15	104.75 - 99.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-38.529	-3.156	-2.320
			Max. Mx	5	-19.245	-849.652	-15.274
			Max. My	8	-20.375	-3.323	-811.539
			Max. Vy	5	23.101	-849.652	-15.274
			Max. Vx	8	21.769	-3.323	-811.539
			Max. Torque	9			1.858
L16	99.75 - 95	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-40.216	-3.471	-2.546
			Max. Mx	5	-20.450	-960.655	-17.723
			Max. My	8	-21.596	-3.697	-916.100
			Max. Vy	5	23.657	-960.655	-17.723
			Max. Vx	8	22.283	-3.697	-916.100
			Max. Torque	9			1.860
L17	95 - 94.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-40.317	-3.489	-2.557
			Max. Mx	5	-20.539	-966.577	-17.885
			Max. My	8	-21.684	-3.717	-921.670
			Max. Vy	5	23.739	-966.577	-17.885
			Max. Vx	8	22.293	-3.717	-921.670

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	9			1.860
L18	94.75 - 89.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-42.327	-3.834	-2.774
			Max. Mx	5	-21.960	-1086.520	-20.566
			Max. My	8	-23.124	-4.118	-1034.635
			Max. Vy	5	24.312	-1086.520	-20.566
			Max. Vx	8	22.899	-4.118	-1034.635
			Max. Torque	9			1.861
L19	89.75 - 87.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-276.340	-954.817	-429.852
			Max. Mx	5	-267.512	-1057.967	14.387
			Max. My	2	-148.307	-0.090	928.124
			Max. Vy	6	16.835	-938.226	-423.462
			Max. Vx	2	14.116	-0.507	914.105
			Max. Torque	6			4.583
		Guy A	Bottom Tension	6	184.769		
			Top Tension	6	185.238		
			Top Cable Vert	6	180.128		
			Top Cable Norm	6	42.466		
			Top Cable Tan	6	7.970		
			Bot Cable Vert	6	-179.563		
			Bot Cable Norm	6	42.723		
			Bot Cable Tan	6	8.435		
		Guy B	Bottom Tension	11	102.154		
			Top Tension	11	102.505		
			Top Cable Vert	11	92.903		
			Top Cable Norm	11	43.303		
			Top Cable Tan	11	1.002		
			Bot Cable Vert	11	-92.360		
			Bot Cable Norm	11	43.631		
			Bot Cable Tan	11	1.232		
		Guy C	Bottom Tension	4	113.350		
			Top Tension	4	113.697		
			Top Cable Vert	4	103.175		
			Top Cable Norm	4	47.697		
			Top Cable Tan	4	2.641		
			Bot Cable Vert	4	-102.633		
			Bot Cable Norm	4	48.027		
			Bot Cable Tan	4	2.865		
L20	87.75 - 87.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-276.415	-958.947	-431.460
			Max. Mx	5	-267.582	-1061.073	11.539
			Max. My	2	-148.820	-0.923	900.045
			Max. Vy	6	16.601	-958.947	-431.460
			Max. Vx	2	14.079	-0.923	900.045
			Max. Torque	6			4.581
L21	87.5 - 85.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-276.937	-991.451	-443.965
			Max. Mx	5	-268.095	-1085.418	-11.049
			Max. My	2	-148.874	-1.029	896.525
			Max. Vy	6	16.420	-975.291	-437.738
			Max. Vx	2	14.199	-1.447	882.419
			Max. Torque	6			4.581
L22	85.5 - 85.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-277.020	-995.478	-445.541
			Max. Mx	5	-268.174	-1088.423	-13.912
			Max. My	2	-149.356	-1.863	868.278
			Max. Vy	6	16.206	-995.478	-445.541
			Max. Vx	2	14.153	-1.863	868.278
			Max. Torque	6			4.580
L23	85.25 - 83	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	6	-277.677	-1031.331	-459.372
			Max. Mx	5	-268.829	-1115.067	-39.346
			Max. My	2	-149.421	-1.969	864.741
			Max. Vy	6	16.082	-1013.454	-452.456
			Max. Vx	2	14.215	-1.969	864.741
			Max. Torque	6			4.579
L24	83 - 82.65	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-277.785	-1036.874	-461.531
			Max. Mx	5	-268.935	-1119.171	-43.322
			Max. My	2	-150.056	-2.910	832.943
			Max. Vy	6	15.900	-1036.874	-461.531
			Max. Vx	2	14.119	-2.910	832.943
			Max. Torque	6			4.576
L25	82.65 - 82.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-277.854	-1040.561	-462.969
			Max. Mx	5	-269.003	-1121.898	-45.976
			Max. My	2	-150.152	-3.055	828.006
			Max. Vy	6	15.930	-1040.561	-462.969
			Max. Vx	2	14.099	-3.055	828.006
			Max. Torque	6			4.575
L26	82.4167 - 77.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-279.315	-1117.380	-492.815
			Max. Mx	5	-270.441	-1178.367	-102.395
			Max. My	2	-150.211	-3.154	824.717
			Max. Vy	6	15.752	-1056.233	-469.029
			Max. Vx	2	14.160	-3.154	824.717
			Max. Torque	6			4.575
L27	77.4167 - 73	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-280.626	-1181.956	-518.072
			Max. Mx	5	-271.732	-1225.391	-151.875
			Max. My	8	-191.432	-12.109	-784.727
			Max. Vy	6	14.956	-1133.815	-499.228
			Max. Vx	2	14.084	-5.244	754.346
			Max. Torque	6			4.570
L28	73 - 72.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-280.700	-1185.529	-519.489
			Max. Mx	5	-271.804	-1227.984	-154.683
			Max. My	8	-192.678	-14.582	-755.304
			Max. Vy	6	14.361	-1185.529	-519.489
			Max. Vx	2	13.907	-7.083	692.618
			Max. Torque	6			4.567
L29	72.75 - 67.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-281.157	-1210.165	-529.156
			Max. Mx	5	-272.257	-1245.798	-174.100
			Max. My	8	-192.738	-14.722	-753.649
			Max. Vy	6	14.190	-1210.165	-529.156
			Max. Vx	2	13.980	-7.187	689.143
			Max. Torque	6			4.566
L30	67.5 - 66	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-283.474	-1282.054	-557.698
			Max. Mx	5	-274.566	-1298.983	-229.060
			Max. My	8	-195.074	-17.557	-721.188
			Max. Vy	6	14.336	-1282.054	-557.698
			Max. Vx	2	13.130	-9.298	619.161
			Max. Torque	6			3.816
L31	66 - 61	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-284.943	-1350.768	-585.506
			Max. Mx	6	-284.943	-1350.768	-585.506
			Max. My	8	-195.493	-18.377	-712.457

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	6	14.107	-1296.102	-563.362
			Max. Vx	2	13.034	-9.921	599.602
			Max. Torque	6			3.816
L32	61 - 56	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-286.426	-1415.743	-612.090
			Max. Mx	6	-286.426	-1415.743	-612.090
			Max. My	8	-196.896	-21.072	-683.840
			Max. Vy	6	13.351	-1364.061	-590.920
			Max. Vx	2	12.732	-11.983	535.302
			Max. Torque	6			3.812
L33	56 - 55.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-286.604	-1423.083	-615.116
			Max. Mx	6	-286.604	-1423.083	-615.116
			Max. My	7	-231.423	-930.880	-668.471
			Max. Vy	6	12.628	-1423.083	-615.116
			Max. Vx	2	12.366	-14.020	472.619
			Max. Torque	6			3.810
L34	55.417 - 55.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-286.682	-1426.221	-616.416
			Max. Mx	6	-286.682	-1426.221	-616.416
			Max. My	7	-231.594	-937.124	-667.301
			Max. Vy	6	12.608	-1426.221	-616.416
			Max. Vx	2	12.309	-14.256	465.428
			Max. Torque	6			3.810
L35	55.167 - 50.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-288.181	-1486.963	-641.632
			Max. Mx	6	-288.181	-1486.963	-641.632
			Max. My	7	-231.670	-939.797	-666.806
			Max. Vy	6	12.494	-1438.652	-621.542
			Max. Vx	2	12.313	-14.357	462.353
			Max. Torque	6			3.809
L36	50.167 - 47.1667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-289.095	-1521.722	-656.234
			Max. Mx	6	-289.095	-1521.722	-656.234
			Max. My	7	-233.151	-992.265	-656.970
			Max. Vy	6	11.781	-1498.691	-646.544
			Max. Vx	4	11.915	-947.885	-35.350
			Max. Torque	6			3.807
L37	47.1667 - 46.9167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-289.182	-1524.568	-657.442
			Max. Mx	6	-289.182	-1524.568	-657.442
			Max. My	6	-289.182	-1524.568	-657.442
			Max. Vy	6	11.427	-1524.568	-657.442
			Max. Vx	4	11.727	-954.567	-70.798
			Max. Torque	6			3.806
L38	46.9167 - 43.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-290.338	-1563.598	-674.012
			Max. Mx	6	-290.338	-1563.598	-674.012
			Max. My	6	-290.338	-1563.598	-674.012
			Max. Vy	6	11.347	-1537.725	-663.002
			Max. Vx	4	11.685	-955.125	-73.724
			Max. Torque	6			3.805
L39	43.417 - 43.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-290.417	-1566.338	-675.188
			Max. Mx	6	-290.417	-1566.338	-675.188

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	6	-290.417	-1566.338	-675.188
			Max. Vy	6	10.995	-1566.338	-675.188
			Max. Vx	4	11.448	-963.004	-114.201
			Max. Torque	6			3.804
L40	43.167 - 38.167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-291.915	-1619.022	-697.892
			Max. Mx	6	-291.915	-1619.022	-697.892
			Max. My	6	-291.915	-1619.022	-697.892
			Max. Vy	6	10.895	-1577.180	-679.826
			Max. Vx	4	11.408	-963.574	-117.059
			Max. Torque	6			3.804
L41	38.167 - 33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-292.269	-1630.764	-703.005
			Max. Mx	6	-292.269	-1630.764	-703.005
			Max. My	6	-292.269	-1630.764	-703.005
			Max. Vy	6	10.106	-1630.764	-703.005
			Max. Vx	4	11.012	-974.877	-173.185
			Max. Torque	6			3.802
L42	33 - 32.6667	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-294.725	-1673.732	-721.866
			Max. Mx	6	-294.725	-1673.732	-721.866
			Max. My	6	-294.725	-1673.732	-721.866
			Max. Vy	6	9.872	-1673.732	-721.866
			Max. Vx	4	10.658	-986.993	-229.193
			Max. Torque	6			3.801
L43	32.6667 - 32.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-294.784	-1676.178	-722.946
			Max. Mx	6	-294.784	-1676.178	-722.946
			Max. My	6	-294.784	-1676.178	-722.946
			Max. Vy	6	9.809	-1676.178	-722.946
			Max. Vx	4	10.631	-987.825	-232.742
			Max. Torque	6			3.801
L44	32.4167 - 27.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-295.972	-1721.116	-742.995
			Max. Mx	6	-295.972	-1721.116	-742.995
			Max. My	6	-295.972	-1721.116	-742.995
			Max. Vy	6	9.625	-1685.769	-727.191
			Max. Vx	4	10.584	-988.448	-235.397
			Max. Torque	6			3.801
L45	27.4167 - 22.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-297.178	-1758.736	-760.171
			Max. Mx	6	-297.178	-1758.736	-760.171
			Max. My	6	-297.178	-1758.736	-760.171
			Max. Vy	7	8.323	-1217.278	-616.903
			Max. Vx	4	10.149	-999.751	-287.371
			Max. Torque	6			3.798
L46	22.4167 - 17.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-298.516	-1789.456	-775.109
			Max. Mx	6	-298.516	-1789.456	-775.109
			Max. My	6	-298.516	-1789.456	-775.109
			Max. Vy	11	7.915	362.281	-287.694
			Max. Vx	4	9.683	-1009.009	-337.105
			Max. Torque	6			3.797
L47	17.4167 - 12.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-299.752	-1814.099	-787.366

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	6	-299.752	-1814.099	-787.366
			Max. My	6	-299.752	-1814.099	-787.366
			Max. Vy	11	7.620	324.000	-306.793
			Max. Vx	4	9.155	-1016.419	-384.495
			Max. Torque	6			3.487
L48	12.4167 - 7.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-301.005	-1832.726	-797.306
			Max. Mx	6	-301.005	-1832.726	-797.306
			Max. My	6	-301.005	-1832.726	-797.306
			Max. Vy	11	7.353	286.580	-324.604
			Max. Vx	2	8.683	-29.630	13.164
			Max. Torque	6			3.486
L49	7.4167 - 2.4167	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-302.277	-1845.773	-805.119
			Max. Mx	6	-302.277	-1845.773	-805.119
			Max. My	6	-302.277	-1845.773	-805.119
			Max. Vy	11	7.041	250.591	-341.340
			Max. Vx	2	8.195	-31.115	-29.068
			Max. Torque	6			3.486
L50	2.4167 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	6	-302.898	-1850.207	-808.188
			Max. Mx	6	-302.898	-1850.207	-808.188
			Max. My	6	-302.898	-1850.207	-808.188
			Max. Vy	11	6.689	216.254	-357.006
			Max. Vx	2	7.662	-32.527	-68.791
			Max. Torque	6			3.486

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	6	302.899	-1.577	-1.173
	Max. H_x	3	146.632	2.551	-6.465
	Max. H_z	8	214.366	-0.278	2.814
	Max. M_x	14	-45.449	-0.212	-0.517
	Max. M_z	6	1850.207	-1.577	-1.173
	Max. Torsion	6	3.486	-1.577	-1.173
	Min. Vert	33	102.195	-0.320	0.357
	Min. H_x	11	227.092	-6.490	-2.920
	Min. H_z	2	174.560	-0.253	-7.420
	Min. M_x	6	-808.189	-1.577	-1.173
	Min. M_z	9	-414.799	-1.271	1.879
	Min. Torsion	3	-0.930	2.551	-6.465
Guy C @ 42 ft Elev 0 ft Azimuth 211 deg	Max. Vert	9	-0.429	-0.034	0.055
	Max. H_x	10	-0.566	0.019	0.178
	Max. H_z	4	-102.633	-26.992	39.828
	Min. Vert	4	-102.633	-26.992	39.828
	Min. H_x	5	-100.039	-27.990	37.835
	Min. H_z	9	-0.429	-0.034	0.055
Guy B @ 42.5 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-0.246	-0.015	-0.006

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	11	-92.360	38.401	20.749
	Max. H_z	12	-90.936	37.277	21.337
	Min. Vert	11	-92.360	38.401	20.749
	Min. H_x	5	-0.328	-0.021	0.109
	Min. H_z	7	-0.374	0.102	-0.059
Guy A @ 20.5 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-2.578	-0.002	-0.340
	Max. H_x	10	-140.462	2.273	-32.566
	Max. H_z	2	-2.578	-0.002	-0.340
	Min. Vert	6	-179.563	-8.435	-42.723
	Min. H_x	6	-179.563	-8.435	-42.723
	Min. H_z	6	-179.563	-8.435	-42.723

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	106.684	0.304	0.745	56.621	-35.197	-0.008
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	174.560	0.253	7.420	87.028	-33.175	0.513
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	146.632	-2.551	6.465	109.526	-89.913	0.930
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	226.300	0.576	7.326	528.608	-1032.961	0.764
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	293.915	0.628	4.996	793.106	-1709.964	-1.476
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	302.899	1.577	1.173	808.189	-1850.207	-3.486
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	247.742	4.446	-1.748	569.975	-1382.575	-3.019
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	214.366	0.278	-2.814	433.440	-46.966	-0.645
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	260.783	1.271	-1.879	545.100	414.799	0.706
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	267.157	4.520	0.210	518.256	365.648	0.346
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	227.092	6.490	2.920	364.198	200.309	-0.665
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	159.740	5.844	4.260	102.212	8.438	-0.893
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	177.413	3.449	6.356	79.353	-16.654	-0.038
1.2 Dead+1.0 Ice+1.0 Temp+Guy	124.300	0.212	0.517	45.449	-29.384	-0.004
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	128.634	0.344	2.222	68.207	-28.545	0.082
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	126.729	-0.467	1.964	69.421	-39.812	0.383
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	136.107	-0.212	1.770	106.122	-142.808	0.503
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	148.156	0.427	1.422	148.410	-262.938	0.417
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	150.500	0.817	0.645	150.445	-295.396	0.035
1.2 Dead+1.0 Wind 150	139.226	0.792	-0.281	100.414	-201.017	-0.305

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 180	127.934	0.410	-0.841	53.930	-54.594	-0.379
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 210	134.033	0.671	-0.508	67.660	6.800	-0.345
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 240	136.791	1.417	0.121	71.726	1.389	-0.200
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 270	133.894	1.775	0.729	60.628	-15.972	-0.136
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 300	132.312	1.655	1.431	58.357	-23.882	-0.195
deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 330	130.925	1.068	1.939	62.934	-26.387	-0.170
deg+1.0 Ice+1.0 Temp+1.0 Guy Dead+Wind 0 deg - Service+Guy	111.295	0.301	1.931	68.985	-35.012	0.103
Dead+Wind 30 deg - Service+Guy	108.124	-0.236	1.757	67.300	-39.275	0.139
Dead+Wind 60 deg - Service+Guy	106.227	-0.454	1.358	67.815	-57.484	0.209
Dead+Wind 90 deg - Service+Guy	113.806	0.098	1.159	100.121	-142.690	0.177
Dead+Wind 120 deg - Service+Guy	115.088	0.371	0.648	104.550	-163.019	0.033
Dead+Wind 150 deg - Service+Guy	106.160	0.182	-0.073	67.568	-86.893	-0.070
Dead+Wind 180 deg - Service+Guy	102.195	0.320	-0.357	48.203	-37.124	-0.120
Dead+Wind 210 deg - Service+Guy	105.375	0.802	-0.208	49.055	-29.605	-0.134
Dead+Wind 240 deg - Service+Guy	109.007	1.231	0.165	51.128	-28.435	-0.206
Dead+Wind 270 deg - Service+Guy	111.997	1.509	0.739	56.675	-30.724	-0.240
Dead+Wind 300 deg - Service+Guy	113.852	1.263	1.342	62.191	-27.340	-0.128
Dead+Wind 330 deg - Service+Guy	113.446	0.824	1.732	65.551	-30.276	0.023

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-43.544	0.000	0.000	43.544	0.000	0.000%
2	-0.021	-52.125	-33.376	0.021	52.125	33.376	0.000%
3	16.692	-52.068	-28.775	-16.692	52.068	28.775	0.000%
4	29.639	-51.998	-17.025	-29.639	51.998	17.025	0.000%
5	35.072	-51.935	0.024	-35.072	51.935	-0.024	0.000%
6	30.167	-51.882	17.376	-30.167	51.882	-17.376	0.000%
7	16.834	-51.849	29.039	-16.834	51.849	-29.039	0.000%
8	0.040	-51.863	34.517	-0.040	51.863	-34.517	0.000%
9	-17.201	-51.921	29.789	17.201	51.921	-29.789	0.000%
10	-28.800	-51.990	16.563	28.800	51.990	-16.563	0.000%
11	-33.148	-52.053	-0.004	33.148	52.053	0.004	0.000%
12	-30.495	-52.106	-17.566	30.495	52.106	17.566	0.000%
13	-17.291	-52.139	-29.872	17.291	52.139	29.872	0.000%
14	0.000	-83.470	0.000	0.000	83.470	0.000	0.000%
15	-0.170	-83.527	-6.537	0.170	83.527	6.537	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
16	3.218	-83.503	-5.555	-3.218	83.503	5.555	0.000%
17	5.689	-83.474	-3.259	-5.689	83.474	3.259	0.000%
18	6.752	-83.447	0.001	-6.752	83.447	-0.001	0.000%
19	5.924	-83.423	3.412	-5.924	83.423	-3.412	0.000%
20	3.268	-83.408	5.645	-3.268	83.408	-5.645	0.000%
21	0.015	-83.413	6.633	-0.015	83.413	-6.633	0.000%
22	-3.290	-83.437	5.688	3.290	83.437	-5.688	0.000%
23	-5.708	-83.466	3.091	5.708	83.466	-3.091	0.000%
24	-6.620	-83.493	-0.103	6.620	83.493	0.103	0.000%
25	-6.023	-83.517	-3.469	6.023	83.517	3.469	0.000%
26	-3.450	-83.532	-5.755	3.450	83.532	5.755	0.000%
27	-0.004	-43.568	-6.209	0.004	43.568	6.209	0.000%
28	3.105	-43.558	-5.353	-3.105	43.558	5.353	0.000%
29	5.514	-43.545	-3.167	-5.514	43.545	3.167	0.000%
30	6.525	-43.533	0.005	-6.525	43.533	-0.005	0.000%
31	5.612	-43.523	3.233	-5.612	43.523	-3.233	0.000%
32	3.132	-43.517	5.402	-3.132	43.517	-5.402	0.000%
33	0.007	-43.519	6.422	-0.007	43.519	-6.421	0.000%
34	-3.200	-43.530	5.542	3.200	43.530	-5.542	0.000%
35	-5.358	-43.543	3.081	5.358	43.543	-3.081	0.000%
36	-6.167	-43.555	-0.001	6.167	43.555	0.001	0.000%
37	-5.673	-43.565	-3.268	5.673	43.565	3.268	0.000%
38	-3.217	-43.571	-5.557	3.217	43.571	5.557	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	5	0.00000001	0.00004507
2	Yes	6	0.00000001	0.00075501
3	Yes	7	0.00000001	0.00039094
4	Yes	10	0.00000001	0.00023972
5	Yes	12	0.00000001	0.00088851
6	Yes	13	0.00000001	0.00061725
7	Yes	11	0.00000001	0.00043271
8	Yes	8	0.00000001	0.00016717
9	Yes	9	0.00000001	0.00058573
10	Yes	9	0.00000001	0.00057335
11	Yes	8	0.00000001	0.00043964
12	Yes	7	0.00000001	0.00013008
13	Yes	7	0.00000001	0.00017722
14	Yes	6	0.00000001	0.00035820
15	Yes	6	0.00000001	0.00056960
16	Yes	7	0.00000001	0.00024142
17	Yes	9	0.00000001	0.00024320
18	Yes	9	0.00000001	0.00056378
19	Yes	9	0.00000001	0.00062128
20	Yes	9	0.00000001	0.00036752
21	Yes	8	0.00000001	0.00027491
22	Yes	8	0.00000001	0.00013971
23	Yes	8	0.00000001	0.00012778
24	Yes	7	0.00000001	0.00031707
25	Yes	6	0.00000001	0.00079768
26	Yes	6	0.00000001	0.00065426
27	Yes	5	0.00000001	0.00023281
28	Yes	5	0.00000001	0.00035697

29	Yes	6	0.00000001	0.00052771
30	Yes	7	0.00000001	0.00063442
31	Yes	7	0.00000001	0.00074134
32	Yes	7	0.00000001	0.00030800
33	Yes	5	0.00000001	0.00045028
34	Yes	5	0.00000001	0.00034796
35	Yes	5	0.00000001	0.00046275
36	Yes	5	0.00000001	0.00030007
37	Yes	5	0.00000001	0.00023890
38	Yes	5	0.00000001	0.00020883

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	18.826	31	1.442	0.011
L2	145 - 140	17.322	31	1.425	0.010
L3	140 - 135	15.848	31	1.387	0.008
L4	135 - 130	14.425	31	1.327	0.007
L5	130 - 125	13.077	31	1.246	0.005
L6	125 - 123.75	11.825	31	1.141	0.004
L7	123.75 - 123.5	11.530	31	1.112	0.004
L8	123.5 - 118.5	11.472	31	1.109	0.004
L9	118.5 - 113.5	10.346	31	1.041	0.004
L10	113.5 - 112	9.295	31	0.965	0.003
L11	112 - 111.75	8.996	31	0.941	0.003
L12	111.75 - 110	8.947	31	0.938	0.003
L13	110 - 109.75	8.607	31	0.917	0.003
L14	109.75 - 104.75	8.559	31	0.914	0.003
L15	104.75 - 99.75	7.638	31	0.844	0.003
L16	99.75 - 95	6.793	31	0.769	0.002
L17	95 - 94.75	6.066	31	0.694	0.002
L18	94.75 - 89.75	6.029	31	0.690	0.002
L19	89.75 - 87.75	5.343	31	0.622	0.002
L20	87.75 - 87.5	5.087	31	0.598	0.001
L21	87.5 - 85.5	5.056	31	0.595	0.001
L22	85.5 - 85.25	4.812	31	0.571	0.001
L23	85.25 - 83	4.782	31	0.569	0.001
L24	83 - 82.65	4.519	31	0.549	0.001
L25	82.65 - 82.4167	4.479	31	0.545	0.001
L26	82.4167 - 77.4167	4.453	31	0.543	0.001
L27	77.4167 - 73	3.910	31	0.495	0.001
L28	73 - 72.75	3.471	31	0.455	0.001
L29	72.75 - 67.5	3.448	31	0.453	0.001
L30	71 - 66	3.284	31	0.438	0.001
L31	66 - 61	2.837	31	0.412	0.001
L32	61 - 56	2.425	31	0.376	0.001
L33	56 - 55.417	2.049	31	0.342	0.001
L34	55.417 - 55.167	2.008	31	0.339	0.001
L35	55.167 - 50.167	1.990	31	0.337	0.001
L36	50.167 - 47.1667	1.654	31	0.306	0.001
L37	47.1667 - 46.9167	1.467	31	0.288	0.000
L38	46.9167 - 43.417	1.452	31	0.287	0.000
L39	43.417 - 43.167	1.249	31	0.269	0.000
L40	43.167 - 38.167	1.235	31	0.267	0.000
L41	38.167 - 33	0.970	31	0.239	0.000
L42	37 - 32.6667	0.913	31	0.232	0.000
L43	32.6667 - 32.4167	0.707	31	0.220	0.000
L44	32.4167 - 27.4167	0.696	31	0.218	0.000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L45	27.4167 - 22.4167	0.489	31	0.179	0.000
L46	22.4167 - 17.4167	0.321	31	0.142	0.000
L47	17.4167 - 12.4167	0.190	31	0.107	0.000
L48	12.4167 - 7.4167	0.095	31	0.075	0.000
L49	7.4167 - 2.4167	0.033	31	0.043	0.000
L50	2.4167 - 0	0.003	31	0.014	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	KP4F-23A	31	18.826	1.442	0.011	9422
149.000	7770.00 w/ Mount Pipe	31	18.524	1.440	0.011	9422
140.000	AIR 21 B2A/B4P w/ Mount Pipe	31	15.848	1.387	0.008	5685
134.000	GPS (3"x7")	31	14.149	1.312	0.006	3746
130.000	BXA-80080/4CF w/ Mount Pipe	31	13.077	1.246	0.005	3078
89.750	Guy	31	5.343	0.622	0.002	1804
71.000	FMO	31	3.284	0.438	0.001	8761
22.000	MYA-43012N	31	0.308	0.139	0.000	8065

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 145	154.657	6	10.126	0.195
L2	145 - 140	144.179	6	10.034	0.186
L3	140 - 135	133.861	6	9.823	0.174
L4	135 - 130	123.818	6	9.491	0.160
L5	130 - 125	114.176	6	9.044	0.143
L6	125 - 123.75	105.057	6	8.466	0.125
L7	123.75 - 123.5	102.874	6	8.306	0.120
L8	123.5 - 118.5	102.442	6	8.289	0.120
L9	118.5 - 113.5	93.999	6	7.918	0.108
L10	113.5 - 112	85.966	6	7.496	0.096
L11	112 - 111.75	83.642	6	7.365	0.092
L12	111.75 - 110	83.259	6	7.349	0.091
L13	110 - 109.75	80.598	6	7.236	0.088
L14	109.75 - 104.75	80.221	6	7.218	0.088
L15	104.75 - 99.75	72.892	6	6.833	0.076
L16	99.75 - 95	65.978	6	6.417	0.064
L17	95 - 94.75	59.820	6	6.001	0.052
L18	94.75 - 89.75	59.507	6	5.982	0.052
L19	89.75 - 87.75	53.456	6	5.603	0.041
L20	87.75 - 87.5	51.144	6	5.463	0.037
L21	87.5 - 85.5	50.859	6	5.444	0.037
L22	85.5 - 85.25	48.616	6	5.294	0.033
L23	85.25 - 83	48.340	6	5.280	0.032
L24	83 - 82.65	45.888	6	5.150	0.029
L25	82.65 - 82.4167	45.512	6	5.127	0.029
L26	82.4167 - 77.4167	45.262	6	5.111	0.029

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L27	77.4167 - 73	40.096	6	4.777	0.022
L28	73 - 72.75	35.822	6	4.483	0.017
L29	72.75 - 67.5	35.588	6	4.466	0.017
L30	71 - 66	33.975	6	4.348	0.015
L31	66 - 61	29.521	6	4.137	0.013
L32	61 - 56	25.357	6	3.828	0.010
L33	56 - 55.417	21.513	6	3.526	0.008
L34	55.417 - 55.167	21.085	6	3.491	0.007
L35	55.167 - 50.167	20.902	6	3.477	0.007
L36	50.167 - 47.1667	17.420	6	3.183	0.005
L37	47.1667 - 46.9167	15.475	6	3.010	0.005
L38	46.9167 - 43.417	15.318	6	2.998	0.005
L39	43.417 - 43.167	13.188	6	2.819	0.004
L40	43.167 - 38.167	13.041	6	2.805	0.004
L41	38.167 - 33	10.258	6	2.516	0.003
L42	37 - 32.6667	9.652	6	2.451	0.003
L43	32.6667 - 32.4167	7.482	6	2.324	0.002
L44	32.4167 - 27.4167	7.361	6	2.304	0.002
L45	27.4167 - 22.4167	5.165	6	1.895	0.002
L46	22.4167 - 17.4167	3.387	6	1.506	0.001
L47	17.4167 - 12.4167	2.005	6	1.137	0.001
L48	12.4167 - 7.4167	0.999	6	0.787	0.000
L49	7.4167 - 2.4167	0.350	6	0.457	0.000
L50	2.4167 - 0	0.036	6	0.144	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
156.000	KP4F-23A	6	154.657	10.126	0.195	1800
149.000	7770.00 w/ Mount Pipe	6	152.556	10.113	0.194	1800
140.000	AIR 21 B2A/B4P w/ Mount Pipe	6	133.861	9.823	0.174	1095
134.000	GPS (3"x7")	6	121.854	9.410	0.160	718
130.000	BXA-80080/4CF w/ Mount Pipe	6	114.176	9.044	0.148	588
89.750	Guy	6	53.456	5.603	0.045	792
71.000	FMO	6	33.975	4.348	0.020	1134
22.000	MYA-43012N	6	3.257	1.475	0.003	760

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
L19	89.750 (A) (53)	1 5/8 BS	32.400	324.001	185.238	194.400	1.000	1.049 ✔
	89.750 (B) (52)	1 3/8 BS	23.200	232.000	102.505	139.200	1.000	1.358 ✔
	89.750 (C) (51)	1 3/8 BS	23.200	232.000	113.697	139.200	1.000	1.224 ✔

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	150 - 145 (1)	TP16.31x15.53x0.25	5.000	0.000	0.0	12.928	-3.437	756.306	0.005
L2	145 - 140 (2)	TP17.09x16.31x0.25	5.000	0.000	0.0	13.556	-3.755	793.038	0.005
L3	140 - 135 (3)	TP17.87x17.09x0.25	5.000	0.000	0.0	14.184	-6.543	829.770	0.008
L4	135 - 130 (4)	TP18.65x17.87x0.25	5.000	0.000	0.0	14.812	-7.018	866.502	0.008
L5	130 - 125 (5)	TP19.43x18.65x0.25	5.000	0.000	0.0	15.440	-9.830	903.234	0.011
L6	125 - 123.75 (6)	TP19.625x19.43x0.25	1.250	0.000	0.0	15.597	-9.979	912.417	0.011
L7	123.75 - 123.5 (7)	TP19.664x19.625x0.513	0.250	0.000	0.0	31.605	-10.043	1848.880	0.005
L8	123.5 - 118.5 (8)	TP20.444x19.664x0.5	5.000	0.000	0.0	32.110	-10.845	1878.430	0.006
L9	118.5 - 113.5 (9)	TP21.224x20.444x0.488	5.000	0.000	0.0	32.551	-12.778	1904.240	0.007
L10	113.5 - 112 (10)	TP21.458x21.224x0.488	1.500	0.000	0.0	32.918	-13.503	1925.730	0.007
L11	112 - 111.75 (11)	TP21.497x21.458x0.7	0.250	0.000	0.0	46.876	-13.656	2742.270	0.005
L12	111.75 - 110 (12)	TP21.77x21.497x0.7	1.750	0.000	0.0	47.492	-14.450	2778.270	0.005
L13	110 - 109.75 (13)	TP21.81x21.77x0.625	0.250	0.000	0.0	42.636	-14.551	2494.190	0.006
L14	109.75 - 104.75 (14)	TP22.619x21.81x0.613	5.000	0.000	0.0	43.402	-17.235	2539.000	0.007
L15	104.75 - 99.75 (15)	TP23.427x22.619x0.588	5.000	0.000	0.0	43.206	-19.003	2527.570	0.008
L16	99.75 - 95 (16)	TP24.195x23.427x0.575	4.750	0.000	0.0	43.732	-20.211	2558.320	0.008
L17	95 - 94.75 (17)	TP24.235x24.195x0.713	0.250	0.000	0.0	53.967	-20.301	3157.060	0.006
L18	94.75 - 89.75 (18)	TP25.043x24.235x0.688	5.000	0.000	0.0	53.918	-21.724	3154.190	0.007
L19	89.75 - 87.75 (19)	TP25.367x25.043x0.688	2.000	0.000	0.0	53.918	-267.107	3154.190	0.085
L20	87.75 - 87.5 (20)	TP25.407x25.367x0.65	0.250	0.000	0.0	51.732	-267.552	3026.320	0.088
L21	87.5 - 85.5 (21)	TP25.73x25.407x0.638	2.000	0.000	0.0	51.509	-276.937	3013.300	0.092
L22	85.5 - 85.25 (22)	TP25.771x25.73x0.85	0.250	0.000	0.0	68.208	-277.020	3990.180	0.069
L23	85.25 - 83 (23)	TP26.134x25.771x0.838	2.250	0.000	0.0	68.220	-277.677	3990.850	0.070
L24	83 - 82.65 (24)	TP26.191x26.134x0.713	0.350	0.000	0.0	58.454	-277.785	3419.570	0.081
L25	82.65 - 82.4167 (25)	TP26.229x26.191x0.713	0.233	0.000	0.0	58.541	-277.854	3424.630	0.081
L26	82.4167 - 77.4167 (26)	TP27.037x26.229x0.7	5.000	0.000	0.0	59.364	-279.315	3472.770	0.080
L27	77.4167 - 73 (27)	TP27.751x27.037x0.688	4.417	0.000	0.0	58.331	-279.335	3412.370	0.082
L28	73 - 72.75 (28)	TP27.791x27.751x0.663	0.250	0.000	0.0	57.786	-280.638	3380.510	0.083
L29	72.75 - 67.5 (29)	TP28.64x27.791x0.663	5.250	0.000	0.0	57.873	-280.718	3385.550	0.083
L30	67.5 - 66 (30)	TP28.266x27.449x0.725	5.000	0.000	0.0	63.723	-283.061	3727.810	0.076
L31	66 - 61 (31)	TP29.084x28.266x0.738	5.000	0.000	0.0	65.374	-283.495	3824.400	0.074
L32	61 - 56 (32)	TP29.901x29.084x0.725	5.000	0.000	0.0	66.203	-284.959	3872.890	0.074
L33	56 - 55.417 (33)	TP29.996x29.901x0.725	0.583	0.000	0.0	68.111	-286.438	3984.500	0.072
L34	55.417 -	TP30.037x29.996x0.725	0.250	0.000	0.0	68.334	-286.610	3997.510	0.072

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L35	55.167 (34) - 50.167 (35)	TP30.854x30.037x0.713	5.000	0.000	0.0	67.278	-286.690	3935.750	0.073
L36	50.167 - 47.1667 (36)	TP31.345x30.854x0.7	3.000	0.000	0.0	67.968	-288.194	3976.100	0.072
L37	47.1667 - 46.9167 (37)	TP31.385x31.345x0.788	0.250	0.000	0.0	77.485	-289.102	4532.880	0.064
L38	46.9167 - 43.417 (38)	TP31.957x31.385x0.775	3.500	0.000	0.0	76.388	-289.190	4468.720	0.065
L39	43.417 - 43.167 (39)	TP31.998x31.957x0.65	0.250	0.000	0.0	65.526	-290.346	3833.300	0.076
L40	43.167 - 38.167 (40)	TP32.815x31.998x0.65	5.000	0.000	0.0	65.612	-290.425	3838.300	0.076
L41	38.167 - 33 (41)	TP33.66x32.815x0.65	5.167	0.000	0.0	67.322	-291.926	3938.360	0.074
L42	33 - 32.6667 (42)	TP32.963x32.256x0.713	4.333	0.000	0.0	73.866	-294.618	4321.150	0.068
L43	32.6667 - 32.4167 (43)	TP33.004x32.963x0.438	0.250	0.000	0.0	45.820	-294.729	2680.480	0.110
L44	32.4167 - 27.4167 (44)	TP33.819x33.004x0.438	5.000	0.000	0.0	45.878	-294.794	2683.840	0.110
L45	27.4167 - 22.4167 (45)	TP34.634x33.819x0.438	5.000	0.000	0.0	47.026	-295.984	2751.030	0.108
L46	22.4167 - 17.4167 (46)	TP35.45x34.634x0.438	5.000	0.000	0.0	48.175	-297.188	2818.230	0.105
L47	17.4167 - 12.4167 (47)	TP36.265x35.45x0.438	5.000	0.000	0.0	49.324	-298.523	2885.430	0.103
L48	12.4167 - 7.4167 (48)	TP37.081x36.265x0.438	5.000	0.000	0.0	50.472	-299.758	2952.620	0.102
L49	7.4167 - 2.4167 (49)	TP37.896x37.081x0.438	5.000	0.000	0.0	51.621	-301.009	3019.820	0.100
L50	2.4167 - 0 (50)	TP38.29x37.896x0.438	2.417	0.000	0.0	52.770	-302.280	3087.020	0.098

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	150 - 145 (1)	TP16.31x15.53x0.25	48.032	309.443	0.155	0.000	309.443	0.000
L2	145 - 140 (2)	TP17.09x16.31x0.25	89.093	340.472	0.262	0.000	340.472	0.000
L3	140 - 135 (3)	TP17.87x17.09x0.25	156.027	372.984	0.418	0.000	372.984	0.000
L4	135 - 130 (4)	TP18.65x17.87x0.25	223.260	406.979	0.549	0.000	406.979	0.000
L5	130 - 125 (5)	TP19.43x18.65x0.25	325.463	442.456	0.736	0.000	442.456	0.000
L6	125 - 123.75 (6)	TP19.625x19.43x0.25	349.362	451.558	0.774	0.000	451.558	0.000
L7	123.75 - 123.5 (7)	TP19.664x19.625x0.513	354.187	892.250	0.397	0.000	892.250	0.000
L8	123.5 - 118.5 (8)	TP20.444x19.664x0.5	452.054	945.583	0.478	0.000	945.583	0.000
L9	118.5 - 113.5 (9)	TP21.224x20.444x0.488	554.103	998.183	0.555	0.000	998.183	0.000
L10	113.5 - 112 (10)	TP21.458x21.224x0.488	585.678	1021.100	0.574	0.000	1021.100	0.000
L11	112 - 111.75 (11)	TP21.497x21.458x0.7	591.015	1427.508	0.414	0.000	1427.508	0.000
L12	111.75 - 110	TP21.77x21.497x0.7	628.508	1465.850	0.429	0.000	1465.850	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
L13	110 - 109.75 (13)	TP21.81x21.77x0.625	633.942	1327.958	0.477	0.000	1327.958	0.000
L14	109.75 - 104.75 (14)	TP22.619x21.81x0.613	744.941	1406.467	0.530	0.000	1406.467	0.000
L15	104.75 - 99.75 (15)	TP23.427x22.619x0.588	860.725	1456.142	0.591	0.000	1456.142	0.000
L16	99.75 - 95 (16)	TP24.195x23.427x0.575	973.892	1526.258	0.638	0.000	1526.258	0.000
L17	95 - 94.75 (17)	TP24.235x24.195x0.713	979.933	1864.892	0.525	0.000	1864.892	0.000
L18	94.75 - 89.75 (18)	TP25.043x24.235x0.688	1101.958	1933.067	0.570	0.000	1933.067	0.000
L19	89.75 - 87.75 (19)	TP25.367x25.043x0.688	1033.433	1933.067	0.535	0.000	1933.067	0.000
L20	87.75 - 87.5 (20)	TP25.407x25.367x0.65	1058.050	1885.717	0.561	0.000	1885.717	0.000
L21	87.5 - 85.5 (21)	TP25.73x25.407x0.638	1086.317	1907.842	0.569	0.000	1907.842	0.000
L22	85.5 - 85.25 (22)	TP25.771x25.73x0.85	1090.633	2487.900	0.438	0.000	2487.900	0.000
L23	85.25 - 83 (23)	TP26.134x25.771x0.838	1129.008	2528.333	0.447	0.000	2528.333	0.000
L24	83 - 82.65 (24)	TP26.191x26.134x0.713	1134.950	2192.875	0.518	0.000	2192.875	0.000
L25	82.65 - 82.4167 (25)	TP26.229x26.191x0.713	1138.908	2199.458	0.518	0.000	2199.458	0.000
L26	82.4167 - 77.4167 (26)	TP27.037x26.229x0.7	1221.233	2305.133	0.530	0.000	2305.133	0.000
L27	77.4167 - 73 (27)	TP27.751x27.037x0.688	1221.217	2267.192	0.539	0.000	2267.192	0.000
L28	73 - 72.75 (28)	TP27.791x27.751x0.663	1290.483	2312.692	0.558	0.000	2312.692	0.000
L29	72.75 - 67.5 (29)	TP28.64x27.791x0.663	1294.325	2319.675	0.558	0.000	2319.675	0.000
L30	67.5 - 66 (30)	TP28.266x27.449x0.725	1375.075	2564.592	0.536	0.000	2564.592	0.000
L31	66 - 61 (31)	TP29.084x28.266x0.738	1398.092	2652.875	0.527	0.000	2652.875	0.000
L32	61 - 56 (32)	TP29.901x29.084x0.725	1472.200	2770.783	0.531	0.000	2770.783	0.000
L33	56 - 55.417 (33)	TP29.996x29.901x0.725	1542.383	2934.825	0.526	0.000	2934.825	0.000
L34	55.417 - 55.167 (34)	TP30.037x29.996x0.725	1550.317	2954.258	0.525	0.000	2954.258	0.000
L35	55.167 - 50.167 (35)	TP30.854x30.037x0.713	1553.708	2915.258	0.533	0.000	2915.258	0.000
L36	50.167 - 47.1667 (36)	TP31.345x30.854x0.7	1619.483	3031.692	0.534	0.000	3031.692	0.000
L37	47.1667 - 46.9167 (37)	TP31.385x31.345x0.788	1657.175	3493.658	0.474	0.000	3493.658	0.000
L38	46.9167 - 43.417 (38)	TP31.957x31.385x0.775	1660.267	3451.750	0.481	0.000	3451.750	0.000
L39	43.417 - 43.167 (39)	TP31.998x31.957x0.65	1702.675	3041.875	0.560	0.000	3041.875	0.000
L40	43.167 - 38.167 (40)	TP32.815x31.998x0.65	1705.658	3049.900	0.559	0.000	3049.900	0.000
L41	38.167 - 33 (41)	TP33.66x32.815x0.65	1763.033	3212.642	0.549	0.000	3212.642	0.000
L42	33 - 32.6667 (42)	TP32.963x32.256x0.713	1819.167	3521.608	0.517	0.000	3521.608	0.000
L43	32.6667 - 32.4167 (43)	TP33.004x32.963x0.438	1822.758	2225.758	0.819	0.000	2225.758	0.000
L44	32.4167 - 27.4167 (44)	TP33.819x33.004x0.438	1825.433	2231.375	0.818	0.000	2231.375	0.000
L45	27.4167 - 22.4167 (45)	TP34.634x33.819x0.438	1874.642	2345.267	0.799	0.000	2345.267	0.000
L46	22.4167 - 17.4167 (46)	TP35.45x34.634x0.438	1915.992	2462.000	0.778	0.000	2462.000	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
L47	17.4167 - 12.4167 (47)	TP36.265x35.45x0.438	1950.117	2581.567	0.755	0.000	2581.567	0.000
L48	12.4167 - 7.4167 (48)	TP37.081x36.265x0.438	1977.600	2703.967	0.731	0.000	2703.967	0.000
L49	7.4167 - 2.4167 (49)	TP37.896x37.081x0.438	1998.642	2812.017	0.711	0.000	2812.017	0.000
L50	2.4167 - 0 (50)	TP38.29x37.896x0.438	2013.725	2919.642	0.690	0.000	2919.642	0.000

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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	150 - 145 (1)	TP16.31x15.53x0.25	8.024	226.892	0.035	0.391	320.527	0.001
L2	145 - 140 (2)	TP17.09x16.31x0.25	8.411	237.911	0.035	0.392	352.418	0.001
L3	140 - 135 (3)	TP17.87x17.09x0.25	13.250	248.931	0.053	0.413	385.820	0.001
L4	135 - 130 (4)	TP18.65x17.87x0.25	13.641	259.951	0.052	0.458	420.735	0.001
L5	130 - 125 (5)	TP19.43x18.65x0.25	19.048	270.970	0.070	0.204	457.162	0.000
L6	125 - 123.75 (6)	TP19.625x19.43x0.25	19.201	273.725	0.070	0.207	466.505	0.000
L7	123.75 - 123.5 (7)	TP19.664x19.625x0.513	19.410	554.664	0.035	0.208	934.400	0.000
L8	123.5 - 118.5 (8)	TP20.444x19.664x0.5	19.932	563.528	0.035	0.217	988.617	0.000
L9	118.5 - 113.5 (9)	TP21.224x20.444x0.488	20.905	571.272	0.037	0.227	1042.025	0.000
L10	113.5 - 112 (10)	TP21.458x21.224x0.488	21.221	577.719	0.037	0.229	1065.675	0.000
L11	112 - 111.75 (11)	TP21.497x21.458x0.7	21.511	822.682	0.026	0.230	1504.983	0.000
L12	111.75 - 110 (12)	TP21.77x21.497x0.7	21.626	833.481	0.026	0.232	1544.758	0.000
L13	110 - 109.75 (13)	TP21.81x21.77x0.625	21.880	748.256	0.029	0.233	1394.400	0.000
L14	109.75 - 104.75 (14)	TP22.619x21.81x0.613	22.767	761.699	0.030	0.243	1474.442	0.000
L15	104.75 - 99.75 (15)	TP23.427x22.619x0.588	23.582	758.272	0.031	0.256	1523.383	0.000
L16	99.75 - 95 (16)	TP24.195x23.427x0.575	24.100	767.495	0.031	0.266	1594.592	0.000
L17	95 - 94.75 (17)	TP24.235x24.195x0.713	24.338	947.117	0.026	0.267	1959.700	0.000
L18	94.75 - 89.75 (18)	TP25.043x24.235x0.688	24.723	946.257	0.026	0.276	2027.275	0.000
L19	89.75 - 87.75 (19)	TP25.367x25.043x0.688	17.051	952.537	0.018	1.863	2027.275	0.001
L20	87.75 - 87.5 (20)	TP25.407x25.367x0.65	17.071	909.380	0.019	1.870	1973.900	0.001
L21	87.5 - 85.5 (21)	TP25.73x25.407x0.638	17.396	903.989	0.019	4.580	1995.325	0.002
L22	85.5 - 85.25 (22)	TP25.771x25.73x0.85	17.450	1197.050	0.015	4.580	2624.067	0.002
L23	85.25 - 83 (23)	TP26.134x25.771x0.838	17.145	1197.250	0.014	4.577	2664.125	0.002
L24	83 - 82.65 (24)	TP26.191x26.134x0.713	17.087	1025.870	0.017	4.576	2299.150	0.002
L25	82.65 - 82.4167 (25)	TP26.229x26.191x0.713	17.164	1027.390	0.017	4.575	2305.958	0.002
L26	82.4167 - 77.4167 (26)	TP27.037x26.229x0.7	16.233	1041.830	0.016	4.571	2413.592	0.002
L27	77.4167 - 73	TP27.751x27.037x0.688	16.062	1030.650	0.016	4.570	2372.742	0.002

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 $\frac{T_u}{\phi T_n}$
L28	73 - 72.75 (28)	TP27.791x27.751x0.663	15.481	1015.660	0.015	4.567	2416.500	0.002
L29	72.75 - 67.5 (29)	TP28.64x27.791x0.663	15.255	1026.260	0.015	4.566	2423.717	0.002
L30	67.5 - 66 (30)	TP28.266x27.449x0.725	15.459	1128.390	0.014	3.816	2685.208	0.001
L31	66 - 61 (31)	TP29.084x28.266x0.738	15.217	1154.130	0.013	3.816	2778.267	0.001
L32	61 - 56 (32)	TP29.901x29.084x0.725	14.422	1168.560	0.012	3.813	2898.292	0.001
L33	56 - 55.417 (33)	TP29.996x29.901x0.725	13.666	1199.250	0.011	3.810	3067.733	0.001
L34	55.417 - 55.167 (34)	TP30.037x29.996x0.725	13.673	1200.930	0.011	3.810	3087.808	0.001
L35	55.167 - 50.167 (35)	TP30.854x30.037x0.713	13.524	1187.310	0.011	3.809	3045.642	0.001
L36	50.167 - 47.1667 (36)	TP31.345x30.854x0.7	12.778	1199.300	0.011	3.807	3163.925	0.001
L37	47.1667 - 46.9167 (37)	TP31.385x31.345x0.788	12.431	1361.680	0.009	3.806	3655.167	0.001
L38	46.9167 - 43.417 (38)	TP31.957x31.385x0.775	12.326	1348.970	0.009	3.805	3609.725	0.001
L39	43.417 - 43.167 (39)	TP31.998x31.957x0.65	11.977	1151.490	0.010	3.804	3166.950	0.001
L40	43.167 - 38.167 (40)	TP32.815x31.998x0.65	11.856	1157.490	0.010	3.804	3175.225	0.001
L41	38.167 - 33 (41)	TP33.66x32.815x0.65	11.026	1188.510	0.009	3.802	3342.925	0.001
L42	33 - 32.6667 (42)	TP32.963x32.256x0.713	10.799	1298.530	0.008	3.801	3671.325	0.001
L43	32.6667 - 32.4167 (43)	TP33.004x32.963x0.438	10.733	805.151	0.013	3.801	2300.675	0.002
L44	32.4167 - 27.4167 (44)	TP33.819x33.004x0.438	10.529	809.183	0.013	3.801	2306.450	0.002
L45	27.4167 - 22.4167 (45)	TP34.634x33.819x0.438	8.922	829.342	0.011	3.798	2423.392	0.002
L46	22.4167 - 17.4167 (46)	TP35.45x34.634x0.438	7.498	849.501	0.009	3.797	2543.225	0.001
L47	17.4167 - 12.4167 (47)	TP36.265x35.45x0.438	6.076	869.660	0.007	3.487	2665.950	0.001
L48	12.4167 - 7.4167 (48)	TP37.081x36.265x0.438	4.754	889.819	0.005	3.486	2791.567	0.001
L49	7.4167 - 2.4167 (49)	TP37.896x37.081x0.438	3.533	909.978	0.004	3.486	2920.075	0.001
L50	2.4167 - 0 (50)	TP38.29x37.896x0.438	2.403	930.977	0.003	3.486	3051.475	0.001

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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	150 - 145 (1)	0.005	0.155	0.000	0.035	0.001	0.161 ✔	1.050	4.8.2 ✔
L2	145 - 140 (2)	0.005	0.262	0.000	0.035	0.001	0.268 ✔	1.050	4.8.2 ✔
L3	140 - 135 (3)	0.008	0.418	0.000	0.053	0.001	0.429 ✔	1.050	4.8.2 ✔
L4	135 - 130 (4)	0.008	0.549	0.000	0.052	0.001	0.560 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L5	130 - 125 (5)	0.011	0.736	0.000	0.070	0.000	0.751 ✔	1.050	4.8.2 ✔
L6	125 - 123.75 (6)	0.011	0.774	0.000	0.070	0.000	0.790 ✔	1.050	4.8.2 ✔
L7	123.75 - 123.5 (7)	0.005	0.397	0.000	0.035	0.000	0.404 ✔	1.050	4.8.2 ✔
L8	123.5 - 118.5 (8)	0.006	0.478	0.000	0.035	0.000	0.485 ✔	1.050	4.8.2 ✔
L9	118.5 - 113.5 (9)	0.007	0.555	0.000	0.037	0.000	0.563 ✔	1.050	4.8.2 ✔
L10	113.5 - 112 (10)	0.007	0.574	0.000	0.037	0.000	0.582 ✔	1.050	4.8.2 ✔
L11	112 - 111.75 (11)	0.005	0.414	0.000	0.026	0.000	0.420 ✔	1.050	4.8.2 ✔
L12	111.75 - 110 (12)	0.005	0.429	0.000	0.026	0.000	0.435 ✔	1.050	4.8.2 ✔
L13	110 - 109.75 (13)	0.006	0.477	0.000	0.029	0.000	0.484 ✔	1.050	4.8.2 ✔
L14	109.75 - 104.75 (14)	0.007	0.530	0.000	0.030	0.000	0.537 ✔	1.050	4.8.2 ✔
L15	104.75 - 99.75 (15)	0.008	0.591	0.000	0.031	0.000	0.600 ✔	1.050	4.8.2 ✔
L16	99.75 - 95 (16)	0.008	0.638	0.000	0.031	0.000	0.647 ✔	1.050	4.8.2 ✔
L17	95 - 94.75 (17)	0.006	0.525	0.000	0.026	0.000	0.533 ✔	1.050	4.8.2 ✔
L18	94.75 - 89.75 (18)	0.007	0.570	0.000	0.026	0.000	0.578 ✔	1.050	4.8.2 ✔
L19	89.75 - 87.75 (19)	0.085	0.535	0.000	0.018	0.001	0.620 ✔	1.050	4.8.2 ✔
L20	87.75 - 87.5 (20)	0.088	0.561	0.000	0.019	0.001	0.650 ✔	1.050	4.8.2 ✔
L21	87.5 - 85.5 (21)	0.092	0.569	0.000	0.019	0.002	0.662 ✔	1.050	4.8.2 ✔
L22	85.5 - 85.25 (22)	0.069	0.438	0.000	0.015	0.002	0.508 ✔	1.050	4.8.2 ✔
L23	85.25 - 83 (23)	0.070	0.447	0.000	0.014	0.002	0.516 ✔	1.050	4.8.2 ✔
L24	83 - 82.65 (24)	0.081	0.518	0.000	0.017	0.002	0.599 ✔	1.050	4.8.2 ✔
L25	82.65 - 82.4167 (25)	0.081	0.518	0.000	0.017	0.002	0.599 ✔	1.050	4.8.2 ✔
L26	82.4167 - 77.4167 (26)	0.080	0.530	0.000	0.016	0.002	0.611 ✔	1.050	4.8.2 ✔
L27	77.4167 - 73 (27)	0.082	0.539	0.000	0.016	0.002	0.621 ✔	1.050	4.8.2 ✔
L28	73 - 72.75 (28)	0.083	0.558	0.000	0.015	0.002	0.641 ✔	1.050	4.8.2 ✔
L29	72.75 - 67.5 (29)	0.083	0.558	0.000	0.015	0.002	0.641 ✔	1.050	4.8.2 ✔
L30	67.5 - 66 (30)	0.076	0.536	0.000	0.014	0.001	0.612 ✔	1.050	4.8.2 ✔

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
L31	66 - 61 (31)	0.074	0.527	0.000	0.013	0.001	0.601 ✔	1.050	4.8.2 ✔
L32	61 - 56 (32)	0.074	0.531	0.000	0.012	0.001	0.605 ✔	1.050	4.8.2 ✔
L33	56 - 55.417 (33)	0.072	0.526	0.000	0.011	0.001	0.598 ✔	1.050	4.8.2 ✔
L34	55.417 - 55.167 (34)	0.072	0.525	0.000	0.011	0.001	0.597 ✔	1.050	4.8.2 ✔
L35	55.167 - 50.167 (35)	0.073	0.533	0.000	0.011	0.001	0.606 ✔	1.050	4.8.2 ✔
L36	50.167 - 47.1667 (36)	0.072	0.534	0.000	0.011	0.001	0.607 ✔	1.050	4.8.2 ✔
L37	47.1667 - 46.9167 (37)	0.064	0.474	0.000	0.009	0.001	0.538 ✔	1.050	4.8.2 ✔
L38	46.9167 - 43.417 (38)	0.065	0.481	0.000	0.009	0.001	0.546 ✔	1.050	4.8.2 ✔
L39	43.417 - 43.167 (39)	0.076	0.560	0.000	0.010	0.001	0.636 ✔	1.050	4.8.2 ✔
L40	43.167 - 38.167 (40)	0.076	0.559	0.000	0.010	0.001	0.635 ✔	1.050	4.8.2 ✔
L41	38.167 - 33 (41)	0.074	0.549	0.000	0.009	0.001	0.623 ✔	1.050	4.8.2 ✔
L42	33 - 32.6667 (42)	0.068	0.517	0.000	0.008	0.001	0.585 ✔	1.050	4.8.2 ✔
L43	32.6667 - 32.4167 (43)	0.110	0.819	0.000	0.013	0.002	0.929 ✔	1.050	4.8.2 ✔
L44	32.4167 - 27.4167 (44)	0.110	0.818	0.000	0.013	0.002	0.928 ✔	1.050	4.8.2 ✔
L45	27.4167 - 22.4167 (45)	0.108	0.799	0.000	0.011	0.002	0.907 ✔	1.050	4.8.2 ✔
L46	22.4167 - 17.4167 (46)	0.105	0.778	0.000	0.009	0.001	0.884 ✔	1.050	4.8.2 ✔
L47	17.4167 - 12.4167 (47)	0.103	0.755	0.000	0.007	0.001	0.859 ✔	1.050	4.8.2 ✔
L48	12.4167 - 7.4167 (48)	0.102	0.731	0.000	0.005	0.001	0.833 ✔	1.050	4.8.2 ✔
L49	7.4167 - 2.4167 (49)	0.100	0.711	0.000	0.004	0.001	0.810 ✔	1.050	4.8.2 ✔
L50	2.4167 - 0 (50)	0.098	0.690	0.000	0.003	0.001	0.788 ✔	1.050	4.8.2 ✔

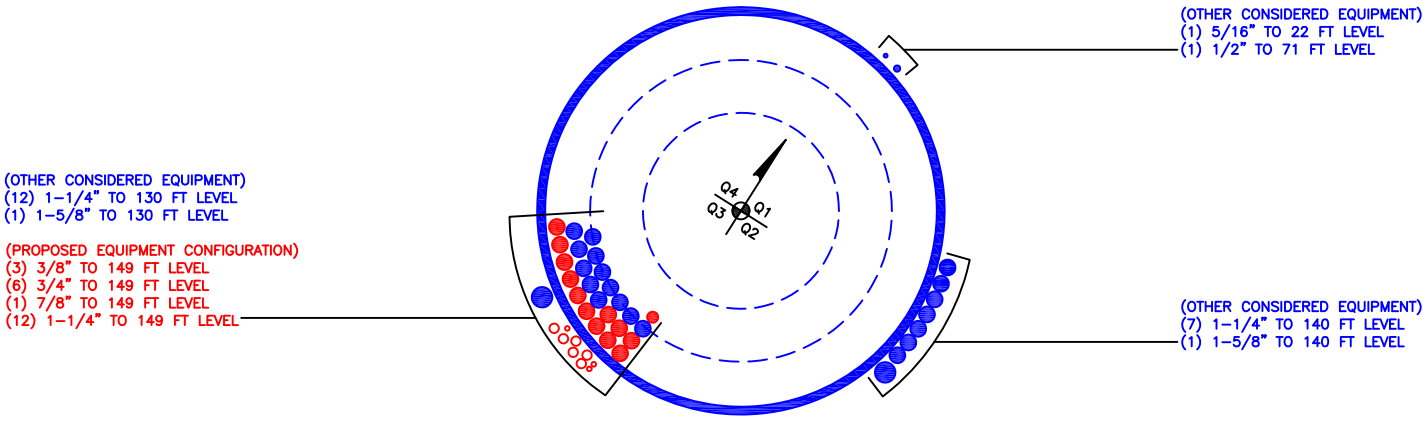
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 145	Pole	TP16.31x15.53x0.25	1	-3.438	--	15.1	Pass[1]
L2	145 - 140	Pole	TP17.09x16.31x0.25	2	-3.755	--	25.2	Pass[1]
L3	140 - 135	Pole	TP17.87x17.09x0.25	3	-6.544	--	40.4	Pass[1]
L4	135 - 130	Pole	TP18.65x17.87x0.25	4	-7.019	--	52.8	Pass[1]

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L5	130 - 125	Pole	TP19.43x18.65x0.25	5	-9.831	--	70.8	Pass[1]
L6	125 - 123.75	Pole	TP19.625x19.43x0.25	6	-9.980	--	74.4	Pass[1]
L7	123.75 - 123.5	Pole + Reinf.	TP19.664x19.625x0.513	7	-10.044	--	65.6	Pass[1]
L8	123.5 - 118.5	Pole + Reinf.	TP20.444x19.664x0.5	8	-10.847	--	78.8	Pass[1]
L9	118.5 - 113.5	Pole + Reinf.	TP21.224x20.444x0.488	9	-12.780	--	91.2	Pass[1]
L10	113.5 - 112	Pole + Reinf.	TP21.458x21.224x0.488	10	-13.504	--	94.8	Pass[1]
L11	112 - 111.75	Pole + Reinf.	TP21.497x21.458x0.7	11	-13.657	--	61.3	Pass[1]
L12	111.75 - 110	Pole + Reinf.	TP21.77x21.497x0.7	12	-14.452	--	64.1	Pass[1]
L13	110 - 109.75	Pole + Reinf.	TP21.81x21.77x0.625	13	-14.553	--	62.9	Pass[1]
L14	109.75 - 104.75	Pole + Reinf.	TP22.619x21.81x0.613	14	-17.237	--	70.1	Pass[1]
L15	104.75 - 99.75	Pole + Reinf.	TP23.427x22.619x0.588	15	-19.005	--	76.9	Pass[1]
L16	99.75 - 95	Pole + Reinf.	TP24.195x23.427x0.575	16	-20.213	--	82.8	Pass[1]
L17	95 - 94.75	Pole + Reinf.	TP24.235x24.195x0.713	17	-20.303	--	81.8	Pass[1]
L18	94.75 - 89.75	Pole + Reinf.	TP25.043x24.235x0.688	18	-21.726	--	87.8	Pass[1]
L19	89.75 - 87.75	Pole + Reinf.	TP25.367x25.043x0.688	19	-267.037	--	86.2	Pass[1]
		Guy A@89.75	1 5/8	53	185.022	194.400	95.3	Pass
		Guy B@89.75	1 3/8	52	102.499	139.200	73.6	Pass
		Guy C@89.75	1 3/8	51	113.680	139.200	81.7	Pass
L20	87.75 - 87.5	Pole + Reinf.	TP25.407x25.367x0.65	20	-267.481	--	97.9	Pass[1]
L21	87.5 - 85.5	Pole + Reinf.	TP25.73x25.407x0.638	21	-276.646	--	98.6	Pass[1]
L22	85.5 - 85.25	Pole + Reinf.	TP25.771x25.73x0.85	22	-276.728	--	78.1	Pass[1]
L23	85.25 - 83	Pole + Reinf.	TP26.134x25.771x0.838	23	-277.385	--	79.1	Pass[1]
L24	83 - 82.65	Pole + Reinf.	TP26.191x26.134x0.713	24	-277.493	--	87.5	Pass[1]
L25	82.65 - 82.42	Pole + Reinf.	TP26.229x26.191x0.713	25	-277.562	--	87.6	Pass[1]
L26	82.42 - 77.42	Pole + Reinf.	TP27.037x26.229x0.7	26	-279.024	--	89.4	Pass[1]
L27	77.42 - 73	Pole + Reinf.	TP27.751x27.037x0.688	27	-279.043	--	90.7	Pass[1]
L28	73 - 72.75	Pole + Reinf.	TP27.791x27.751x0.663	28	-280.346	--	92.2	Pass[1]
L29	72.75 - 71	Pole + Reinf.	TP28.64x27.791x0.663	29	-280.427	--	92.6	Pass[1]
L30	71 - 66	Pole + Reinf.	TP28.266x27.449x0.725	30	-282.770	--	87.6	Pass[1]
L31	66 - 61	Pole + Reinf.	TP29.084x28.266x0.738	31	-283.203	--	88.0	Pass[1]
L32	61 - 56	Pole + Reinf.	TP29.901x29.084x0.725	32	-284.667	--	88.3	Pass[1]
L33	56 - 55.42	Pole + Reinf.	TP29.996x29.901x0.725	33	-286.147	--	88.3	Pass[1]
L34	55.42 - 55.17	Pole + Reinf.	TP30.037x29.996x0.725	34	-286.319	--	88.3	Pass[1]
L35	55.17 - 50.17	Pole + Reinf.	TP30.854x30.037x0.713	35	-286.399	--	88.2	Pass[1]
L36	50.17 - 47.17	Pole + Reinf.	TP31.345x30.854x0.7	36	-287.903	--	88.0	Pass[1]
L37	47.17 - 46.92	Pole + Reinf.	TP31.385x31.345x0.788	37	-288.812	--	79.9	Pass[1]
L38	46.92 - 43.42	Pole + Reinf.	TP31.957x31.385x0.775	38	-288.900	--	79.7	Pass[1]
L39	43.42 - 43.17	Pole + Reinf.	TP31.998x31.957x0.65	39	-290.060	--	87.6	Pass[1]
L40	43.17 - 38.17	Pole + Reinf.	TP32.815x31.998x0.65	40	-290.140	--	86.9	Pass[1]
L41	38.17 - 37	Pole + Reinf.	TP33.66x32.815x0.65	41	-291.645	--	86.7	Pass[1]
L42	37 - 32.67	Pole + Reinf.	TP32.963x32.256x0.713	42	-294.337	--	81.1	Pass[1]
L43	32.67 - 32.42	Pole	TP33.004x32.963x0.438	43	-294.447	--	86.0	Pass[1]
L44	32.42 - 27.42	Pole	TP33.819x33.004x0.438	44	-294.512	--	84.0	Pass[1]
L45	27.42 - 22.42	Pole	TP34.634x33.819x0.438	45	-295.701	--	81.9	Pass[1]
L46	22.42 - 17.42	Pole	TP35.45x34.634x0.438	46	-296.903	--	79.6	Pass[1]
L47	17.42 - 12.42	Pole	TP36.265x35.45x0.438	47	-298.237	--	77.1	Pass[1]
L48	12.42 - 7.42	Pole	TP37.081x36.265x0.438	48	-299.471	--	75.1	Pass[1]
L49	7.42 - 2.42	Pole	TP37.896x37.081x0.438	49	-300.721	--	73.0	Pass[1]
L50	2.42 - 0	Pole	TP38.29x37.896x0.438	50	-301.991	--	72.0	Pass[1]
							Summary	
						Pole (L43)	86.0	Pass[1]
						Guy A (L19)	95.3	Pass
						Guy B (L19)	73.6	Pass
						Guy C (L19)	81.7	Pass
						Rating =	95.3	Pass

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 841289

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 841289

Work Order: 1668390

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	150	40	0	12	15.53	21.77	0.25	Auto	A572-65
2	110	42.5	3.5	12	21.77	28.64	0.3125	Auto	A572-65
3	71	38	4	12	27.45	33.66	0.375	Auto	A572-65
4	37	37	0	12	32.26	38.29	0.4375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Pole Flat Width (in)	1	2	3	4	5	6	7	8	9	10	11	12
1	73	95	plate	PL-4x1	6.48			E1				E1					
2	47.1667	87.75	plate	CCI-SFP-060100	6.8		E2				E2						
3	47.1667	83	plate	CCI-SFP-060100	7										E2		
4	87.75	110	plate	CCI-SFP-065125	5.83		E2				E2						
5	82.6667	110	plate	PL-6.5x1.25	5.83											E2	
6	112	123.75	plate	CCI-AFP-045100	5.26		E2				E2				E2		
7	32.6667	47.1667	plate	CCI-CFP-065125	8.4		E3				E3				E3		
8	43.417	55.417	plate	CCI-SFP-045100	8.04				P				P				
9	55.417	85.5	plate	CCI-SFP-045100	6.89				P				P				
10	110	112	plate	BS-6.5x1.25	5.75	E2				E2				E2			
11																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4	1	4	0.5	n/a	21.000	18.000	2.750	1.1875	A572-65
2	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
3	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
4	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
5	6.5	1.25	8.125	0.625	33.000	33.000	18.000	6.563	1.1875	A572-65
6	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
7	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
8	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
10	6.5	1.25	8.125	0.625	30.000	30.000	16.000	6.563	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	150 - 145	5		12	15.530	16.310	0.25	A572-65	1.000
2	145 - 140	5		12	16.310	17.090	0.25	A572-65	1.000
3	140 - 135	5		12	17.090	17.870	0.25	A572-65	1.000
4	135 - 130	5		12	17.870	18.650	0.25	A572-65	1.000
5	130 - 125	5		12	18.650	19.430	0.25	A572-65	1.000
6	125 - 123.75	1.25		12	19.430	19.625	0.25	A572-65	1.000
7	123.75 - 123.5	0.25		12	19.625	19.664	0.5125	A572-65	0.922
8	123.5 - 118.5	5		12	19.664	20.444	0.5	A572-65	0.927
9	118.5 - 113.5	5		12	20.444	21.224	0.4875	A572-65	0.934
10	113.5 - 112	1.5		12	21.224	21.458	0.4875	A572-65	0.929
11	112 - 111.75	0.25		12	21.458	21.497	0.7	A572-65	0.886
12	111.75 - 110	1.75	0	12	21.497	21.770	0.7	A572-65	0.879
13	110 - 109.75	0.25		12	21.770	21.810	0.625	A572-65	1.080
14	109.75 - 104.75	5		12	21.810	22.619	0.6125	A572-65	1.080
15	104.75 - 99.75	5		12	22.619	23.427	0.5875	A572-65	1.103
16	99.75 - 95	4.75		12	23.427	24.195	0.575	A572-65	1.108
17	95 - 94.75	0.25		12	24.195	24.235	0.7125	A572-65	1.047
18	94.75 - 89.75	5		12	24.235	25.043	0.6875	A572-65	1.063
19	89.75 - 87.75	2		12	25.043	25.367	0.6875	A572-65	1.055
20	87.75 - 87.5	0.25		12	25.367	25.407	0.65	A572-65	1.031
21	87.5 - 85.5	2		12	25.407	25.730	0.6375	A572-65	1.043
22	85.5 - 85.25	0.25		12	25.730	25.771	0.85	A572-65	0.921
23	85.25 - 83	2.25		12	25.771	26.134	0.8375	A572-65	0.926
24	83 - 82.65	0.35		12	26.134	26.191	0.7125	A572-65	1.045
25	82.65 - 82.4167	0.2333		12	26.191	26.229	0.7125	A572-65	1.044
26	82.4167 - 77.4167	5		12	26.229	27.037	0.7	A572-65	1.043
27	77.4167 - 73	4.4167		12	27.037	27.751	0.6875	A572-65	1.046
28	73 - 72.75	0.25		12	27.751	27.791	0.6625	A572-65	0.945
29	72.75 - 71	5.25	3.5	12	27.791	28.640	0.6625	A572-65	0.940
30	71 - 66	5		12	27.449	28.266	0.725	A572-65	0.944
31	66 - 61	5		12	28.266	29.084	0.7375	A572-65	0.917
32	61 - 56	5		12	29.084	29.901	0.725	A572-65	0.920
33	56 - 55.417	0.583		12	29.901	29.996	0.725	A572-65	0.919
34	55.417 - 55.167	0.25		12	29.996	30.037	0.725	A572-65	0.919
35	55.167 - 50.167	5		12	30.037	30.854	0.7125	A572-65	0.923
36	50.167 - 47.1667	3.0003		12	30.854	31.345	0.7	A572-65	0.933
37	47.1667 - 46.9167	0.25		12	31.345	31.385	0.7875	A572-65	0.913
38	46.9167 - 43.417	3.4997		12	31.385	31.957	0.775	A572-65	0.920
39	43.417 - 43.167	0.25		12	31.957	31.998	0.65	A572-65	0.954
40	43.167 - 38.167	5		12	31.998	32.815	0.65	A572-65	0.944
41	38.167 - 37	5.167	4	12	32.815	33.660	0.65	A572-65	0.942
42	37 - 32.6667	4.3333		12	32.256	32.963	0.7125	A572-65	0.949
43	32.6667 - 32.4167	0.25		12	32.963	33.004	0.4375	A572-65	1.000
44	32.4167 - 27.4167	5		12	33.004	33.819	0.4375	A572-65	1.000
45	27.4167 - 22.4167	5		12	33.819	34.634	0.4375	A572-65	1.000
46	22.4167 - 17.4167	5		12	34.634	35.450	0.4375	A572-65	1.000
47	17.4167 - 12.4167	5		12	35.450	36.265	0.4375	A572-65	1.000
48	12.4167 - 7.4167	5		12	36.265	37.081	0.4375	A572-65	1.000
49	7.4167 - 2.4167	5		12	37.081	37.896	0.4375	A572-65	1.000
50	2.4167 - 0	2.4167		12	37.896	38.290	0.4375	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	150 - 145	3.44	48.03	8.02
2	145 - 140	3.75	89.09	8.41
3	140 - 135	6.54	156.03	13.25
4	135 - 130	7.02	223.26	13.64
5	130 - 125	9.83	325.46	19.05
6	125 - 123.75	9.98	349.36	19.20
7	123.75 - 123.5	10.04	354.19	19.41
8	123.5 - 118.5	10.84	452.05	19.93
9	118.5 - 113.5	12.78	554.10	20.90
10	113.5 - 112	13.50	585.68	21.22
11	112 - 111.75	13.66	591.01	21.51
12	111.75 - 110	14.45	628.51	21.63
13	110 - 109.75	14.55	633.94	21.88
14	109.75 - 104.75	17.24	744.94	22.77
15	104.75 - 99.75	19.00	860.73	23.58
16	99.75 - 95	20.21	973.89	24.10
17	95 - 94.75	20.30	979.94	24.34
18	94.75 - 89.75	21.72	1101.96	24.72
19	89.75 - 87.75	21.72	1101.96	24.72
20	87.75 - 87.5	267.58	1061.14	17.07
21	87.5 - 85.5	276.94	1086.32	17.40
22	85.5 - 85.25	277.02	1090.63	17.45
23	85.25 - 83	277.68	1129.01	17.15
24	83 - 82.65	277.78	1134.95	17.09
25	82.65 - 82.4167	277.85	1138.91	17.16
26	82.4167 - 77.4167	279.32	1221.23	16.23
27	77.4167 - 73	280.63	1290.51	15.51
28	73 - 72.75	280.70	1294.35	15.48
29	72.75 - 71	281.16	1320.80	15.25
30	71 - 66	283.47	1398.10	15.46
31	66 - 61	284.94	1472.21	14.58
32	61 - 56	286.43	1542.39	13.80
33	56 - 55.417	286.60	1550.33	13.67
34	55.417 - 55.167	286.68	1553.73	13.67
35	55.167 - 50.167	288.18	1619.49	12.93
36	50.167 - 47.1667	289.09	1657.19	12.48
37	47.1667 - 46.9167	289.18	1660.28	12.43
38	46.9167 - 43.417	290.34	1702.68	12.06
39	43.417 - 43.167	290.42	1705.67	11.98
40	43.167 - 38.167	291.91	1763.03	11.21
41	38.167 - 37	292.27	1775.84	11.03
42	37 - 32.6667	294.73	1822.76	10.80
43	32.6667 - 32.4167	294.78	1825.44	10.73
44	32.4167 - 27.4167	295.97	1874.64	9.24
45	27.4167 - 22.4167	297.18	1915.99	7.70
46	22.4167 - 17.4167	298.52	1950.11	6.35
47	17.4167 - 12.4167	299.75	1977.60	5.01
48	12.4167 - 7.4167	301.01	1998.65	3.77
49	7.4167 - 2.4167	302.28	2013.73	2.63
50	2.4167 - 0	302.90	2019.02	2.15

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP16.31x15.53x0.25	Pole	15.1%	Pass
145 - 140	Pole	TP17.09x16.31x0.25	Pole	25.2%	Pass
140 - 135	Pole	TP17.87x17.09x0.25	Pole	40.4%	Pass
135 - 130	Pole	TP18.65x17.87x0.25	Pole	52.8%	Pass
130 - 125	Pole	TP19.43x18.65x0.25	Pole	70.8%	Pass
125 - 123.75	Pole	TP19.625x19.43x0.25	Pole	74.4%	Pass
123.75 - 123.5	Pole + Reinf.	TP19.664x19.625x0.5125	Reinf. 6 Tension Rupture	65.6%	Pass
123.5 - 118.5	Pole + Reinf.	TP20.444x19.664x0.5	Reinf. 6 Tension Rupture	78.8%	Pass
118.5 - 113.5	Pole + Reinf.	TP21.224x20.444x0.4875	Reinf. 6 Tension Rupture	91.2%	Pass
113.5 - 112	Pole + Reinf.	TP21.458x21.224x0.4875	Reinf. 6 Tension Rupture	94.8%	Pass
112 - 111.75	Pole + Reinf.	TP21.497x21.458x0.7	Reinf. 10 Tension Rupture	61.3%	Pass
111.75 - 110	Pole + Reinf.	TP21.77x21.497x0.7	Reinf. 10 Tension Rupture	64.1%	Pass
110 - 109.75	Pole + Reinf.	TP21.81x21.77x0.625	Reinf. 4 Tension Rupture	62.9%	Pass
109.75 - 104.75	Pole + Reinf.	TP22.619x21.81x0.6125	Reinf. 4 Tension Rupture	70.1%	Pass
104.75 - 99.75	Pole + Reinf.	TP23.427x22.619x0.5875	Reinf. 4 Tension Rupture	76.9%	Pass
99.75 - 95	Pole + Reinf.	TP24.195x23.427x0.575	Reinf. 4 Tension Rupture	82.8%	Pass
95 - 94.75	Pole + Reinf.	TP24.235x24.195x0.7125	Reinf. 1 Tension Rupture	81.8%	Pass
94.75 - 89.75	Pole + Reinf.	TP25.043x24.235x0.6875	Reinf. 1 Tension Rupture	87.8%	Pass
89.75 - 87.75	Pole + Reinf.	TP25.367x25.043x0.6875	Reinf. 1 Tension Rupture	86.2%	Pass
87.75 - 87.5	Pole + Reinf.	TP25.407x25.367x0.65	Reinf. 1 Tension Rupture	97.9%	Pass
87.5 - 85.5	Pole + Reinf.	TP25.73x25.407x0.6375	Reinf. 1 Tension Rupture	98.6%	Pass
85.5 - 85.25	Pole + Reinf.	TP25.771x25.73x0.85	Reinf. 1 Tension Rupture	78.1%	Pass
85.25 - 83	Pole + Reinf.	TP26.134x25.771x0.8375	Reinf. 1 Tension Rupture	79.1%	Pass
83 - 82.65	Pole + Reinf.	TP26.191x26.134x0.7125	Reinf. 3 Tension Rupture	87.5%	Pass
82.65 - 82.42	Pole + Reinf.	TP26.229x26.191x0.7125	Reinf. 3 Tension Rupture	87.6%	Pass
82.42 - 77.42	Pole + Reinf.	TP27.037x26.229x0.7	Reinf. 3 Tension Rupture	89.4%	Pass
77.42 - 73	Pole + Reinf.	TP27.751x27.037x0.6875	Reinf. 3 Tension Rupture	90.7%	Pass
73 - 72.75	Pole + Reinf.	TP27.791x27.751x0.6625	Reinf. 2 Tension Rupture	92.2%	Pass
72.75 - 71	Pole + Reinf.	TP28.64x27.791x0.6625	Reinf. 2 Tension Rupture	92.6%	Pass
71 - 66	Pole + Reinf.	TP28.266x27.449x0.725	Reinf. 2 Tension Rupture	87.6%	Pass
66 - 61	Pole + Reinf.	TP29.084x28.266x0.7375	Reinf. 9 Tension Rupture	88.0%	Pass
61 - 56	Pole + Reinf.	TP29.901x29.084x0.725	Reinf. 9 Tension Rupture	88.3%	Pass
56 - 55.42	Pole + Reinf.	TP29.996x29.901x0.725	Reinf. 9 Tension Rupture	88.3%	Pass
55.42 - 55.17	Pole + Reinf.	TP30.037x29.996x0.725	Reinf. 8 Tension Rupture	88.3%	Pass
55.17 - 50.17	Pole + Reinf.	TP30.854x30.037x0.7125	Reinf. 8 Tension Rupture	88.2%	Pass
50.17 - 47.17	Pole + Reinf.	TP31.345x30.854x0.7	Reinf. 8 Tension Rupture	88.0%	Pass
47.17 - 46.92	Pole + Reinf.	TP31.385x31.345x0.7875	Reinf. 8 Tension Rupture	79.9%	Pass
46.92 - 43.42	Pole + Reinf.	TP31.957x31.385x0.775	Reinf. 8 Tension Rupture	79.7%	Pass
43.42 - 43.17	Pole + Reinf.	TP31.998x31.957x0.65	Reinf. 7 Tension Rupture	87.6%	Pass
43.17 - 38.17	Pole + Reinf.	TP32.815x31.998x0.65	Reinf. 7 Tension Rupture	86.9%	Pass
38.17 - 37	Pole + Reinf.	TP33.66x32.815x0.65	Reinf. 7 Tension Rupture	86.7%	Pass
37 - 32.67	Pole + Reinf.	TP32.963x32.256x0.7125	Reinf. 7 Tension Rupture	81.1%	Pass
32.67 - 32.42	Pole	TP33.004x32.963x0.4375	Pole	86.0%	Pass
32.42 - 27.42	Pole	TP33.819x33.004x0.4375	Pole	84.0%	Pass
27.42 - 22.42	Pole	TP34.634x33.819x0.4375	Pole	81.9%	Pass
22.42 - 17.42	Pole	TP35.45x34.634x0.4375	Pole	79.6%	Pass
17.42 - 12.42	Pole	TP36.265x35.45x0.4375	Pole	77.1%	Pass
12.42 - 7.42	Pole	TP37.081x36.265x0.4375	Pole	75.1%	Pass
7.42 - 2.42	Pole	TP37.896x37.081x0.4375	Pole	73.0%	Pass
2.42 - 0	Pole	TP38.29x37.896x0.4375	Pole	72.0%	Pass
				Summary	
			Pole	86.0%	Pass
			Reinforcement	98.6%	Pass
			Overall	98.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*										
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
150 - 145	426	n/a	426	12.91	n/a	12.91	15.1%										
145 - 140	491	n/a	491	13.54	n/a	13.54	25.2%										
140 - 135	563	n/a	563	14.16	n/a	14.16	40.4%										
135 - 130	641	n/a	641	14.79	n/a	14.79	52.8%										
130 - 125	726	n/a	726	15.42	n/a	15.42	70.8%										
125 - 123.75	748	n/a	748	15.57	n/a	15.57	74.4%										
123.75 - 123.5	753	733	1485	15.61	13.50	29.11	36.9%						65.6%				
123.5 - 118.5	847	788	1635	16.23	13.50	29.73	44.4%						78.8%				
118.5 - 113.5	949	845	1795	16.86	13.50	30.36	51.8%						91.2%				
113.5 - 112	981	863	1845	17.05	13.50	30.55	54.1%						94.8%				
112 - 111.75	987	1621	2608	17.08	24.38	41.45	38.7%										61.3%
111.75 - 110	1025	1659	2685	17.30	24.38	41.67	40.7%										64.1%
110 - 109.75	1296	1153	2448	21.60	24.38	45.98	49.5%				62.9%	58.1%					
109.75 - 104.75	1447	1231	2678	22.41	24.38	46.79	55.0%				70.1%	64.7%					
104.75 - 99.75	1609	1313	2922	23.23	24.38	47.60	60.3%				76.9%	71.0%					
99.75 - 95	1774	1393	3167	24.00	24.38	48.37	64.9%				82.8%	76.6%					
95 - 94.75	1791	2036	3827	24.04	32.38	56.41	54.1%	81.8%			64.5%	74.7%					
94.75 - 89.75	1978	2165	4143	24.85	32.38	57.22	58.0%	87.8%			69.3%	80.0%					
89.75 - 87.75	2056	2217	4273	25.17	32.38	57.55	56.9%	86.2%			68.1%	78.5%					
87.75 - 87.5	2047	2006	4052	25.22	28.13	53.34	63.5%	97.9%	81.3%			83.7%					
87.5 - 85.5	2127	2054	4180	25.54	28.13	53.67	64.0%	98.6%	81.9%			84.3%					
85.5 - 85.25	2133	3297	5430	25.58	37.13	62.71	49.4%	78.1%	69.2%			77.3%				77.3%	
85.25 - 83	2226	3386	5612	25.95	37.13	63.07	50.2%	79.1%	70.2%			78.3%				78.4%	
83 - 82.65	2299	2624	4923	26.00	35.00	61.00	61.7%	80.5%	76.2%	87.5%						76.5%	
82.65 - 82.42	2309	2631	4940	26.04	35.00	61.04	61.8%	80.6%	76.3%	87.6%						76.6%	
82.42 - 77.42	2530	2789	5319	26.85	35.00	61.85	63.7%	82.6%	78.1%	89.4%						78.5%	
77.42 - 73	2736	2932	5668	27.57	35.00	62.57	65.0%	84.0%	79.3%	90.7%						79.8%	
73 - 72.75	2688	2776	5464	27.61	27.00	54.61	65.3%		92.2%	92.2%						91.0%	
72.75 - 71	2772	2830	5602	27.90	27.00	54.90	65.7%		92.6%	92.6%						91.4%	
71 - 66	3369	2871	6239	33.63	27.00	60.63	60.7%		87.6%	87.6%						87.4%	
66 - 61	3666	3225	6890	34.62	27.00	61.62	58.3%		88.0%	88.0%						88.0%	
61 - 56	3987	3401	7388	35.60	27.00	62.60	58.4%		88.1%	88.1%						88.3%	
56 - 55.42	4026	3422	7448	35.72	27.00	62.72	58.4%		88.1%	88.1%						88.3%	
55.42 - 55.17	4042	3431	7473	35.77	27.00	62.77	58.4%		88.1%	88.1%					88.3%		
55.17 - 50.17	4385	3612	7998	36.75	27.00	63.75	58.3%		87.9%	87.9%					88.2%		
50.17 - 47.17	4600	3724	8324	37.34	27.00	64.34	58.3%		87.7%	87.7%					88.0%		
47.17 - 46.92	4616	4640	9256	37.39	33.38	70.77	52.6%							77.9%	79.9%		
46.92 - 43.42	4875	4803	9679	38.08	33.38	71.46	52.7%							77.7%	79.7%		
43.42 - 43.17	4881	3413	8293	38.13	24.38	62.51	58.4%							87.6%			
43.17 - 38.17	5269	3580	8849	39.12	24.38	63.49	58.4%							86.9%			
38.17 - 37	5362	3620	8982	39.35	24.38	63.72	58.4%							86.7%			
37 - 32.67	6196	3611	9807	45.75	24.38	70.13	53.6%							81.1%			
32.67 - 32.42	6219	n/a	6219	45.81	n/a	45.81	86.0%										
32.42 - 27.42	6698	n/a	6698	46.96	n/a	46.96	84.0%										
27.42 - 22.42	7201	n/a	7201	48.11	n/a	48.11	81.9%										
22.42 - 17.42	7728	n/a	7728	49.25	n/a	49.25	79.6%										
17.42 - 12.42	8281	n/a	8281	50.40	n/a	50.40	77.1%										
12.42 - 7.42	8859	n/a	8859	51.55	n/a	51.55	75.1%										
7.42 - 2.42	9464	n/a	9464	52.69	n/a	52.69	73.0%										
2.42 - 0	9766	n/a	9766	53.25	n/a	53.25	72.0%										

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

PROJECT	**93496.020.01 - Old Saybrook, CT**	**Intiti**			
SUBJECT	**Bridge Stiffener - 110 ft**				
DATE	**01-04-19**	PAGE	1	OF	3

V1.0.1

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Bolted Bridge Stiffeners Reinforcement Check

Assumptions / Notes:

1. For design purposes, it is assumed that the proposed bridge stiffeners are to take the full load.
2. The plastification of the pole is not considered.
3. All shear and axial loads are taken by the flange bolts.

1. PARAMETERS

Rev. H

Elevation 110 ft Apply TIA-222-H Section 15.5? Yes

1.1 tnxTower Reactions

Moment (M)	628.51	k-ft
Axial Load (P)	14.45	kip
Shear Load (V)	21.63	kips

1.2 Shaft Properties at the Flange

Upper Shaft Diameter (Dshaft1)	21.77	in
Upper Shaft Thichkness (t1)	0.25	in
Lower Shaft Diameter (Dshaft2)	21.77	in
Lower Shaft Thickness (t2)	0.3125	in
Shaft Grade:		
Fyshaft	65	ksi
Fushaft	80	ksi

1.3 Existing Bridge Stiffeners Properties

(Verify existing bolted connection for reduced moment.)

Number of Proposed Bridge Stiffeners (Nexist)	3	
Thickness of Proposed Bridge Stiffeners (texist)	1.25	in
Width of Proposed Bridge Stiffeners (wexist)	6.5	in
Existing Bridge Stiffener Grade:		
Fyex	65	ksi
Fuex	80	ksi
Diameter to the centroid of Existing Bridge Stiffeners (BCexist)	29.25	in
Gross Area of One Existing Bridge Stiffener (Ag_exist)	8.125	in^2
Radius of Gyration about x-axis (rx)	0.361	in
Moment of Inertia of Existing Bridge Stiffeners (Iexist)	2607	in^4

1.4 Flange Bolt Properties

Number of Flange Bolts (Nbolts)	12	
Diameter of Flange Bolts	1	in
Bolt Circle of Flange Bolts (BCbolts)	25.5	in
Gross Area of One Flange Bolt (Ag_bolts)	0.785	in^2
Moment of Inertia of Flange Bolts (Ibolts)	766	in^4

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1.5 Division of Forces

Total Gross Area (Ag_total)	33.80	in^2
Total Moment of Inertia (Itotal)	3373	in^4

1.6 Reactions to Existing Bridge Stiffeners

Moment Reaction to Existing Bridge Stiffeners (Mexist)	485.8	kip-ft
Axial Reaction to Existing Bridge Stiffeners (Pexist)	0.0	kips
Shear Reaction to Flange Bolts (Vexist)	0.0	kips

1.7 Reactions to Flange Bolts

(It is assumed that all shear and axial loads are taken by the flange bolts)

Moment Reaction to Flange Bolts (Mbolts)	142.8	kip-ft	**Check Flange Connection**
Axial Reaction to Flange Bolts (Pbolts)	14.5	kips	**with these Reactions**
Shear Reaction to Flange Bolts (Vbolts)	21.6	kips	

2. Existing Bridge Stiffener

2.1 Maximum Axial Forces in Single Existing

Outer Radius of Bolt Circle (C)	14.625	in
Critical Compression Bending Stress (Pcomp)	265.7	kips
Critical Tension Bending Stress (Ptens)	265.7	kips

2.2 Available Compression Strength

[AISC 15th Edition E3-1]

Resistance Factor (φc)	0.9		
Unbraced Length (Lu)	16	in	
Effective Length Factor (K)	1		
Strength of Bridge Stiffener:			
Fy	65	ksi	
Fu	80	ksi	
Effective Length of Member (Lc)	16.00	in	[AISC 15th Edition E3-2]
Elastic Buckling Stress (Fe)	145.6	ksi	[AISC 15th Edition,Eq. E3-4]
Limit	99.5		
Determination of Crticial Stress (Fcr)	53.9	ksi	

[AISC 15th Edition,Eqs. E3-2 and E3-3]

Allowable Compressive Strength (φPn)	394.3	kips

[AISC 15th Ed., Eqs. J4-6 and E3-1]

Check Compressive Strength (Checkcomp)	64.2%	Pass

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2.3 Available Tension Strength

Gross Section Yield

Available Tension Yield Strength (φPty)	475.3	kips
[AISC 15th Ed., Ch.D2]		

Net Section Fracture

Bolt Hole Diameter (BH)	1.188	in
Thickness (T)	1.25	in
Net Area (Anet)	6.563	in^2
Net Area Limitation (Ae)	6.563	in^2
Available Fractile Strength (φPtr)	393.8	kips

Tension Check

Controlling Mode of Failure (Check mode)	Fracture Controls		
(φPnt)	393.8	kips	
Controlling Tension Mode Check (Checktension)	64.3%		Pass

SUMMARY

tnxTower Reactions

M	628.5	kip-ft
P	14.5	kip
V	21.6	kip

Flange Bolts

Diameter of Flange Bolts (Dbolts)	1.00	in	
Bolt Circle of Flange Bolts (BCbolts)	25.5	in	
Loads to Flange Bolts			
Mbolts	142.8	kip-ft	
P	14.5	kip	See Flange tool for Flange
V	21.6	kip	Bolt and Plate Capacities

Existing Jump Plates

Moment to Existing Bridge Stiffeners (Mexist)	485.8	kip-ft	
Number of Existing Bridge Stiffeners (Nexist)	3		
Thickness (texist)	1.25	in	
Width (wexist)	6.50	in	
Controlling Capacity of Existing Bridge Stiffeners (Capacitymax)	64.3%		Pass

Monopole Flange Plate Connection

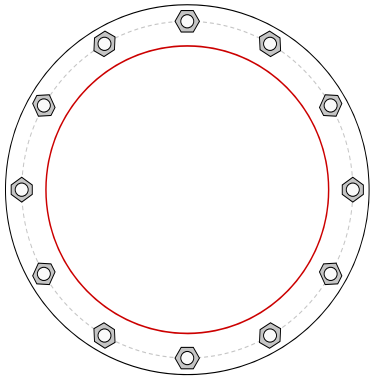
Elevation = 110 ft.

BU #	841289
Site Name	Old Saybrook, CT
Order #	447927 Rev. 3
TIA-222 Revision	H

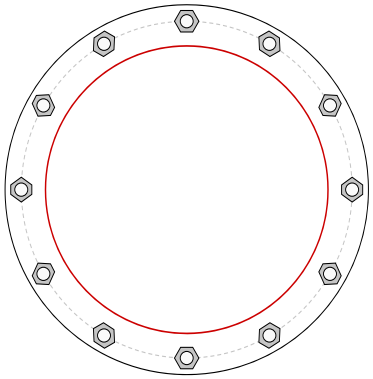
Applied Loads	
Moment (kip-ft)	142.80
Axial Force (kips)	14.50
Shear Force (kips)	21.60

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 25.5" BC

Top Plate Data

28" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

28" OD x 1" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

21.77" x 0.25" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Pole Data

21.77" x 0.3125" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	21.18	
Allowable (kips)	54.47	
Stress Rating:	**37.0%**	Pass

Top Plate Capacity

Max Stress (ksi):	19.68	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**57.8%**	Pass
Tension Side Stress Rating:	**20.4%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	19.68	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**57.8%**	Pass
Tension Side Stress Rating:	**20.4%**	Pass

PROJECT	**93496.020.01 - Old Saybrook, CT**	**Intiti**			
SUBJECT	**Anchor Rod and Anchor Rod Bracket**				
DATE	**01/04/19**	PAGE	1	OF	5

V1.1.1

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Additional Anchor Rods: Division of Forces

Rev. H

Base Reactions from tnxTower:

Apply TIA-222-H Section 15.5? Yes

Moment	2019.0	kip-ft
Axial	302.9	kip
Shear	7.0	kip

Existing Anchor Rod Group Moment of Inertia

Number of rods, Nexisting	8	
Diameter of rods, Dexisting	2 1/4	in
Bolt Circle, BCexisting	44	in
Net Area, Anetexisting	3.25	in^2
Iexisting	6292	in^4

Additonal (New) Anchor Rod Group Moment of Inertia

Number of rods, Nnew	3	
Diameter of rods, Dnew	1 3/4	in
Fyrod	105	ksi
Furod	125	ksi
Bolt Circle, BCnew	60.0	in
Net Area, Anew	1.90	in^2
Inew	2565	in^4

Division of Forces

Itotal	8857	in^4
Percentage_existing	71%	
Percentage_new	29%	

Forces Remaining in Existing Anchor Rods

Mexisting	1434.3	kip-ft
Axexisting	302.9	kip
Sexisting	7.0	kip

Forces to New Anchor Rods

Mnew	584.7	kip-ft
Axnew	0	kip
Snew	0	kip

(It is assumed that all of the Axial and Shear loads will go to the existing anchor rods)

[See attached Flange tool output for additional anchor rod group capacity and structural rating values]

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Anchor Rod Bracket Calculations

(Design the anchor rod bracket and all components to resist the full capacity of the additional anchors)

Bracket Design Load (Anchor Tensile/Compression Capacity):(TIA-222-H, Section 4.9.9)

ϕPnc	199.5	kip		
ϕPnt	178.1	kip	Check Bracket for Anchor Rod:	Capacity
ϕPn	199.5	kip		
Expected Load	180	kip		

Tube Design (Square HSS)

Member Size	HSS4x4x1/2	

Member Properties
(AISC 15th Ed., Table 1-12)

Outside Diameter (ODHSS)	4.00	in
Area (AHSS)	6.02	in^2
(AeHSS)	4.52	in^2
Thickness (tHSS)	0.500	in
FyHSS	50	ksi
FuHSS	65	ksi
Length (LHSS)	30.0	in
Moment of Inertia (IHSS)	11.9	in^4
Radius of Gyration (rHSS)	1.41	in
Inside Dimension (IDHSS)	3.00	in
Extension of Tube Above Gusset	3	in

Bearing Check
(AISC 15th Ed., Equation J7-1)

ϕb	0.75		
Apb	2.96	in^2	
Check_bear	**OK**		0.49

Compression Check
(AISC 15th Ed., Eqs. E3-1 to E3-4)

ϕc	0.9	
K	1.0	
Lc	30.0	in
Fe	632.3	ksi
Fcr	48.4	ksi
ϕPn_comp	270.9	kips

(AISC 15th Ed., Equation J4-6)

Checkcomp	**OK**		0.74

Gusset Plate Design

Gusset Plate width (wplate)	8.625	in
Gusset Plate thickness (tplate)	1.25	in
Lplate1	30	in
Lplate2	24	in
Gusset Plate Strength:		
Fyplate	65	ksi
Fuplate	80	ksi
Pole thickness (tpole)	0.4375	in
Load Angle	45	degrees

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Shear Check
(AISC 15th Ed., Eqs. J4-3 and J4-4)

Ag	30.0	in^2
Anv	30.0	in^2

Shear Yielding

ϕv	1.0	
ϕVplate	1170	kip
Checkshear	**OK**	0.17

Shear Rupture

ϕv	0.75	
ϕVplate	1080	kip
Checkshear	**OK**	0.18

Gusset Plate to Pole and Base Plate
Weld Design (Horizontal and Vertical Weld)
(AISC 15th Ed., Part 8)

Gusset plate thickness (tplate)	1.25	in
Pole Grade		
Fypole	65	ksi
Fupole	80	ksi
Base Plate Grade		
Fybase	50	
Fubase	65	
Gussett Plate Grade		
Fyplate	65	ksi
Fuplate	80	ksi
Height of vertical weld from base plate (H)	30	in
Notch	0.75	in
Gap between Base Plate and HSS	5.625	in
Vertical fillet weld size to pole (Dvpole)	7	(in sixteenths of an inch)
weldsizepole	7/16	
Weld Material Grade (FEXX)	70	ksi
Checkweld	**OK**	0.661

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Gusset Plate to HSS Weld Design (AISC 15th Ed., Table 8-4)

Electrode Strength (FEXX)	70	ksi
Weld Size (in sixteenths of an inch) (D1)	6	in
weldsize1	3/8	in

(Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS)

ecc2	2.625	in
Load not in plane with weld group, k	0	
a	0.109	in
C1	1.00	
Coeff1	3.71	
ϕw	0.75	
Dmin1	3	(in sixteenths of an inch)
minweldsize	3/16	in
checkweld	OK	
ϕRnweld1	400.68	kip
Checkweld1	**OK**	0.50

Gusset Plate to Pole Punching Shear Check (max per unit length)
(AISC 15th Ed., Section J4.2)
(Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS)

ϕsy	1.0		
ϕsr	0.75		
ecc1	11.250	in	
M1	2244	kip-in	
S1	188	in^3	
fv	14.96	kip/in	
ϕFsy	34.13	kip/in	**(AISC 15th Ed., Equation J4-3)**
ϕFsr	31.50	kip/in	**(AISC 15th Ed., Equation J4-4)**
ϕFv	31.50	kip/in	
Check.PS1	**OK**	0.48	

Gusset Plate to HSS Punching Shear Check(max per unit length)
(AISC 15th Ed., Section J4.2)
(Assume the worst-case installation scenario where the rod is positioned directly against the far side of the HSS)

ecc2	2.625	in	
M2	523.7	kip-in	
S2	120	in^3	
fv	5.46	kip/in	
ϕFsy	30.00	kip/in	**(AISC 15th Ed., Equation J4-3)**
ϕFsr	29.25	kip/in	**(AISC 15th Ed., Equation J4-4)**
ϕFv	29.25	kip/in	
CheckPS2	**OK**	0.19	

PROJECT	**93496.020.01 - Old Saybrook, CT**				**Intiti**
SUBJECT	**Anchor Rod and Anchor Rod Bracket**				
DATE	**01/04/19**	PAGE	5	OF	5

V1.1.1

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Embedment Depth Calculations

Projected Embedment Depth (Lem)	6.5	ft	
Yield Strength of Rebar (fy)	60	ksi	
Concrete Strength (f'c)	3000	psi	
Transverse Reinforcement Index (ktr)	0		(Can be taken as 0 for design per ACI 318-14)
Epoxy Factor (ψe)	1		
Rebar Size Factor (ψs)	1		
Casting Position Factor(ψt)	1		
Concrete Weight Factor (λ)	1	√psi	
Pier Diameter (Dpier)	8.0	ft	
Cover (Cc)	3	in	
Rebar Size (ds)	11		
db	1.41	in	
Tie Size (Tie)	4		
Ts	0.5	in	
Number of vertical rebars (n)	44		

Development Length (ACI 318-14 Chapter 25)

BCrebar	87.6	in	
Srebar	6.3	in	
cb	3.1	in	
ld	52.2	in	**(ACI 318-14, Equation 25.4.2.3a)**

Calculate Max Distance Between Rebar and New Anchor Rods

A	3.1	in
B	13.8	in
G	14.1	in
l'd	5.39	ft

Epoxy Development Length

Bond Strength		
Epoxy	AF35LVE	
ϕbond	0.65	
sb	1717	psi
Lbe	32.5	in

Required Embedment Length

Lmin	6.5	ft
Check embedment	**OK**	

Anchor Rod Pullout Test

ϕp	0.75	
Is this a CA DSA site?	No	
Pullout	**111**	kip

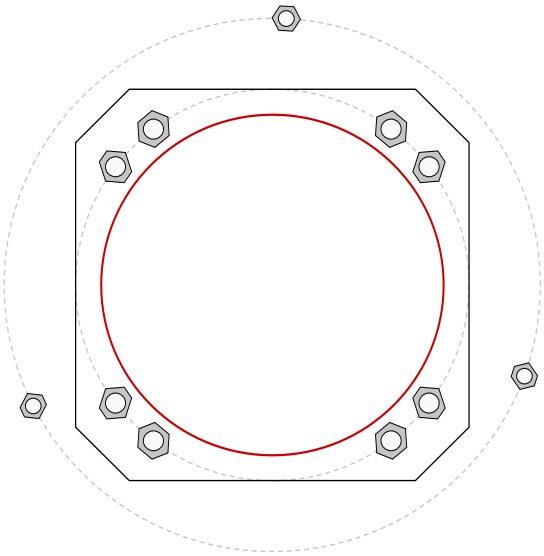
Monopole Base Plate Connection

Site Info	
BU #	841289
Site Name	Old Saybrook, CT
Order #	447927 Rev. 3

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	2019.02
Axial Force (kips)	302.90
Shear Force (kips)	7.00

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 44" BC

GROUP 2: (3) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 60" BC

pos. (deg): 87, 207, 340

Base Plate Data

44" OD x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

38.29" x 0.4375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_c = 242.34	ϕPn_c = 243.75	**Stress Rating**
Vu = 0.88	ϕVn = 73.13	**94.7%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_t = 159.28	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**76.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	33.7	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**71.3%**	**Pass**

Pier and Pad Foundation

BU # :	841289
Site Name:	Old Saybrook, CT
App. Number:	447927 Rev. 3

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	302.9	kips
Base Shear, Vu_comp:	7	kips
Moment, M_u:	2019.02	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	2.25	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	8	ft
Ext. Above Grade, **E**:	0.3	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	44	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	8.7	ft
Pad Width, **W**:	12	ft
Pad Thickness, **T**:	2.5	ft
Pad Rebar Size (Bottom), **Sp**:	7	
Pad Rebar Quantity (Bottom), **mp**:	13	
Pad Clear Cover, cc_{pad}:	3	in

0.18% min steel assumed.

Material Properties

Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties

Total Soil Unit Weight, **γ**:	110	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, **ϕ**:	42	degrees
SPT Blow Count, N_{blows}:		
Base Friction, **μ**:	0.4	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	2.7	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	193.47	7.00	**3.4%**	**Pass**
Bearing Pressure (ksf)	22.50	22.18	**98.6%**	**Pass**
*Overturning (kip*ft)*	2093.09	2083.33	**99.5%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	12476.25	2064.52	**15.8%**	**Pass**
Pier Compression (kip)	22913.28	361.01	**1.5%**	**Pass**
*Pad Flexure (kip*ft)*	879.26	650.29	**70.4%**	**Pass**
Pad Shear - 1-way (kips)	303.90	0.00	**0.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1758.53	1238.71	**67.1%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**99.5%**
Structural Rating*:	**70.4%**

Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	841289
Site Name:	OLD SAYBROOK,CT
Order Number:	447927 Rev# 3
Location:	*Inner*

TIA-222 Revision:	H

Design Reactions		
Shear, **S**:	43.00	kips
Uplift, **Ua**:	180.00	kips
Resultant Force, **Rf**:	185.1	kips
Tower Height, **H**:	150.00	ft
Guy Anchor Radius, **R**:	20.50	ft
Resultant Angle to Horizontal, **θ**:	76.6	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	8.0	ft
Anchor Width, **Wa**:	5.0	ft
Anchor Thickness, **Ta**:	2.0	ft
Anchor Length, **La**:	37.0	ft
Concrete Volume, **Vc**:	13.7	yd^3
Toe Width, **toe**:	0	ft
Guyed Anchor Top Rebar Size, **Sat**:	9	
No. of Bars in Top of Block:	13	
Guyed Anchor Front Rebar Size, **Saf**:	9	
No. of Bars in Front of Block:	3	
Stirrup Size:	4	
Anchor Shaft Diameter, **ds**:	1.75	in
Anchor Shaft Quantity. **n**:	2	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Rebar Grade, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Wt. Avg.Concrete Density, **δx**:	0.088	kcf
Clear Cover, **cc**:	3	in
Anchor Shaft Grade, **Fy'**:	50	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	65	ksi

Design Checks	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	243.59	43.00	**16.8%**	**Pass**
Uplift Capacity (kips):	213.85	180.00	**80.2%**	**Pass**
*Lateral Flexural Capacity (ft*kips):*	740.25	198.88	**25.6%**	**Pass**
*Uplift Flexural Capacity (ft*kips):*	1054.42	832.50	**75.2%**	**Pass**
Anchor Shaft (kips):	192.42	185.06	**91.6%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Frost Depth, **Fd**:	3.33	ft
Groundwater Level, **gw**:	2.7	ft

Soil Properties:	No. of Soil Layers?			4		
Layer	**φ, deg**	**cu, ksf**	**δ, kcf**	**d, ft**	**Ultimate fs (ksf)**	**N (blows/ft)**
1	0	0.000	0.110	2.70	0.000	
2	0	0.000	0.048	3.33		
3	31	0.000	0.048	4.00		
4	42	0.000	0.073	8.00		50

*key: φ = *Internal Angle of Friction*

cu = Cohesion / Undrained Shear Strength

δ = *Buoyant Soil Unit Weight*

d = Depth to Bottom of Layer

Ultimate fs = Geotechnical Report-provided skin friction / adhesion

N = SPT Blow Count

Anchor Block Foundation

Checks capacity of anchor blocks for a guyed tower.

BU#:	841289
Site Name:	OLD SAYBROOK,CT
Order Number:	447927 Rev# 3
Location:	*Outer*

TIA-222 Revision: H

Design Reactions		
Shear, **S**:	48.00	kips
Uplift, **Ua**:	103.00	kips
Resultant Force, **Rf**:	113.6	kips
Tower Height, **H**:	150.00	ft
Guy Anchor Radius, **R**:	42.00	ft
Resultant Angle to Horizontal, **θ**:	65.0	deg

Guy Anchor Properties		
Depth to Bottom of Deadman, **Da**:	8.0	ft
Anchor Width, **Wa**:	5.0	ft
Anchor Thickness, **Ta**:	2.0	ft
Anchor Length, **La**:	30.0	ft
Concrete Volume, **Vc**:	11.1	yd^3
Toe Width, **toe**:	0	ft
Guyed Anchor Top Rebar Size, **Sat**:	9	
No. of Bars in Top of Block:	13	
Guyed Anchor Front Rebar Size, **Saf**:	9	
No. of Bars in Front of Block:	3	
Stirrup Size:	4	
Anchor Shaft Diameter, **ds**:	1.75	in
Anchor Shaft Quantity. **n**:	2	
Anchor Shaft Area Override:		in^2
Shear Lag Factor, **u**:	1	

Material Properties		
Rebar Grade, **Fy**:	60000	psi
Concrete Strength, **F'c**:	4000	psi
Wt. Avg.Concrete Density, **δx**:	0.088	kcf
Clear Cover, **cc**:	3	in
Anchor Shaft Grade, **Fy'**:	50	ksi
Anchor Shaft Ultimate Strength, **Fu'**:	65	ksi

Design Checks	Capacity	Demand	Rating*	Check
Lateral Capacity (kips):	197.85	48.00	**23.1%**	**Pass**
Uplift Capacity (kips):	175.93	103.00	**55.8%**	**Pass**
*Lateral Flexural Capacity (ft*kips):*	740.25	180.00	**23.2%**	**Pass**
*Uplift Flexural Capacity (ft*kips):*	1054.42	386.25	**34.9%**	**Pass**
Anchor Shaft (kips):	192.42	113.64	**56.2%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Frost Depth, **Fd**:	3.33	ft
Groundwater Level, **gw**:	2.7	ft

Soil Properties:	**No. of Soil Layers?**			4		
Layer	**φ, deg**	**cu, ksf**	**δ, kcf**	**d, ft**	**Ultimate fs (ksf)**	**N (blows/ft)**
1	0	0.000	0.110	2.70	0.000	
2	0	0.000	0.048	3.33		
3	31	0.000	0.048	4.00		
4	42	0.000	0.073	8.00		50

*key: φ = *Internal Angle of Friction*

cu = Cohesion / Undrained Shear Strength

δ = *Buoyant Soil Unit Weight*

d = Depth to Bottom of Layer

Ultimate fs = Geotechnical Report-provided skin friction / adhesion

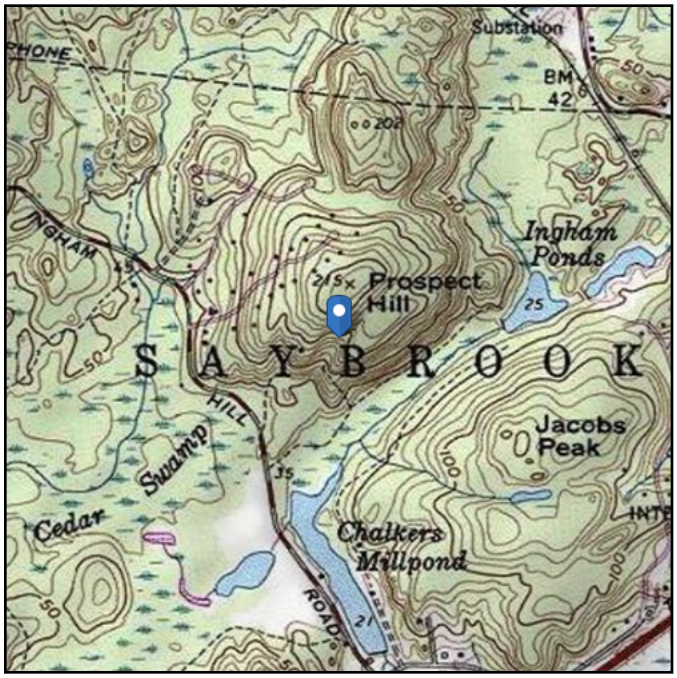
N = SPT Blow Count

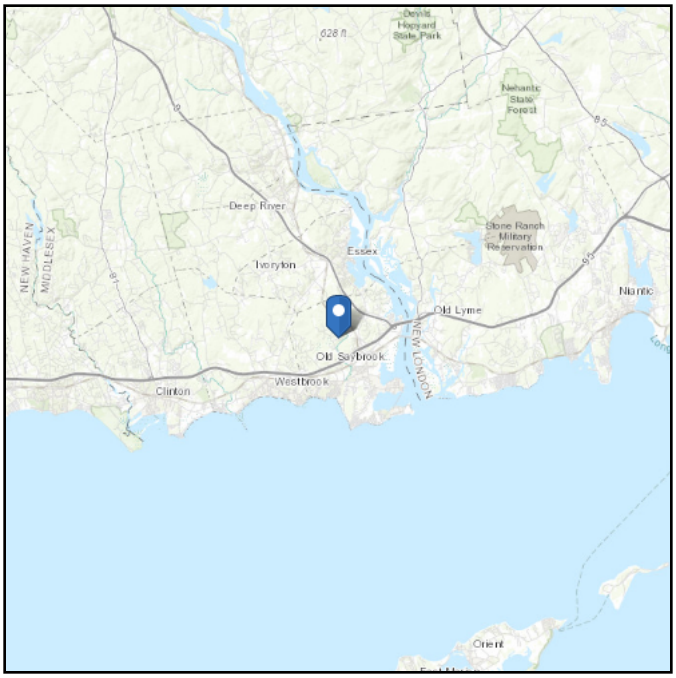
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 133.08 ft (NAVD 88)
Latitude: 41.309875
Longitude: -72.397536





Wind

Results:

Wind Speed:	132 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	97 Vmph
100-year MRI	107 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Oct 23 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

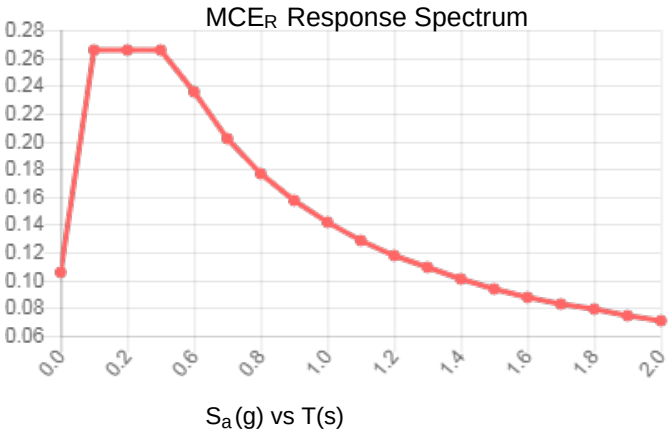
Seismic

Site Soil Class: D - Stiff Soil

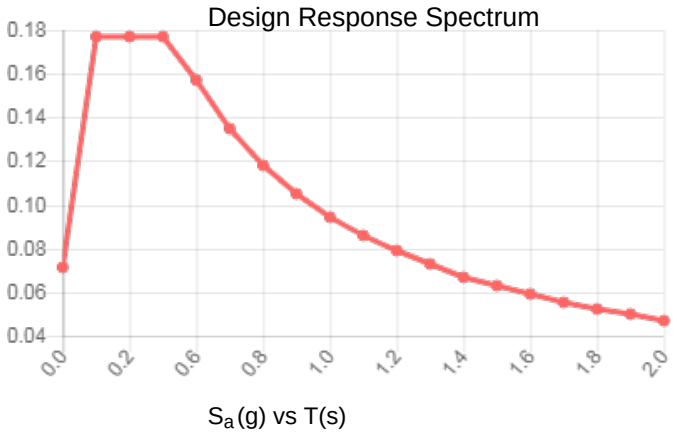
Results:

S_S :	0.166	S_{DS} :	0.177
S_1 :	0.059	S_{D1} :	0.094
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.083
S_{MS} :	0.265	PGA_M :	0.133
S_{M1} :	0.142	F_{PGA} :	1.600
		I_e :	1

Seismic Design Category B



Sa(g) vs T(s)



Sa(g) vs T(s)

Data Accessed: Tue Oct 23 2018

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Oct 23 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

APPENDIX D

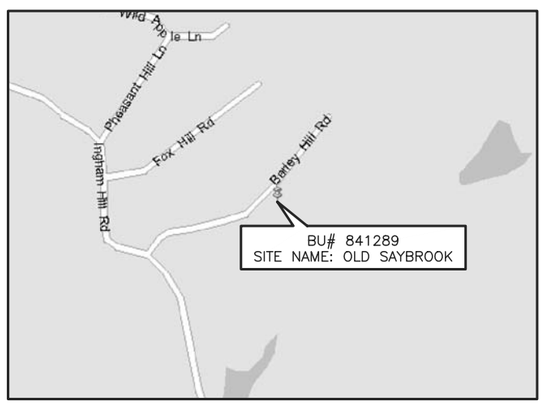
MODIFICATION DRAWINGS

TOWER MODIFICATION DRAWINGS
PREPARED FOR: CROWN CASTLE

SAFETY CLIMB: 'LOOK UP'
THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION AND INSPECTION. TOWER REINFORCEMENTS AND EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS.

SITE NAME: OLD SAYBROOK
BU NUMBER: 841289

SITE ADDRESS:
170 INGHAM HILL ROAD
OLD SAYBROOK, CT 06475
MIDDLESEX COUNTY, USA



MAP

DIRECTIONS

FROM I–95 SOUTH: – TAKE EXIT 67 TOWARD ELM ST
0.2 MI – TURN RIGHT ONTO ELM ST/INGHAM HILL RD
CONTINUE TO FOLLOW INGHAM HILL RD DESTINATION
WILL BE ON THE RIGHT.

PROJECT CONTACTS:

1. CROWN PROJECT MANAGER
DAN VADNEY
(518) 373-3510
DAN.VADNEY@CROWNCASTLE.COM

2. CROWN CONSTRUCTION MANAGER
JASON D'AMICO
(860) 209-0104
JASON.DAMICO@CROWNCASTLE.COM

3. ENGINEERING RFI CONTACT
UMESH SHRESTHA
(918) 587-4630
USHRESTHA@BTGRP.COM
MODDWGS@BTGRP.COM
1717 S BOULDER AVENUE, SUITE 300
TULSA, OK 74119

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM B+T GROUP TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT B+T GROUP AT MODDWGS@BTGRP.COM.

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT 800–788–7011.

HOT WORK INCLUDED	
N/A	BASE GRINDING ONLY
X	BASE WELDING (AND GRINDING)
N/A	AERIAL GRINDING ONLY
N/A	AERIAL WELDING (AND GRINDING)

TOWER INFORMATION

TOWER MAPPING / PROJECT #:	RELIAPOLE SOLUTIONS, INC. / 14-0703NED
TOWER HEIGHT / TYPE:	150' MONOPOLE
TOWER LOCATION: DATUM: (NAD 1983)	LAT. 41° 18' 35.55" LONG. -72° 23' 51.13" ELEV. 133 FT AMSL
STRUCTURAL DESIGN DRAWING REPORT:	B+T GROUP / WO. # 1668390
STRUCTURAL ANALYSIS REPORT:	B+T GROUP / WO. # 1649623
STRUCTURAL ANALYSIS DATE:	10/30/18
ORDER ID / REVISION #:	447927 / 3
CCISITES DOCUMENT ID:	7951511

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN HAS BEEN PERFORMED IN ACCORDANCE WITH THE TIA-222-H STANDARD. THIS REINFORCEMENT DESIGN UTILIZES AN ULTIMATE 3-SECOND GUST WIND SPEED OF 135 MPH AS REQUIRED BY THE 2018 CONNECTICUT STATE BUILDING CODE. EXPOSURE CATEGORY B AND RISK CATEGORY II WERE USED IN THIS REINFORCEMENT DESIGN.

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S1	TITLE SHEET
S2	MODIFICATION INSPECTION NOTES & CHECKLIST
S3	GENERAL NOTES
S4	NG2 BOLT NOTES & DETAILS
S5	FORGBOLT NOTES & DETAILS
S6	AJAX ONESIDE™ BOLT SPECIFICATIONS & TIGHTENING PROCEDURE
S7	TOWER ELEV., SCHEDULES & TX LINE DIST. DIAG.
S8	TOWER SECTION AT BASE & ANCHOR ROD BRACKET DETAILS
S9	TOWER SECTIONS (41.9'–56.9' AND 57'–87')
S10	IN–LINE SPICE DETAILS
D1	ANCHOR ROD BRACKET DETAILS

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/04/19	ISSUED FOR CONSTRUCTION

PROJECT NO:	93496.020.01
PROJECT ENG:	UMESH SHRESTHA
DRAWN BY:	MG
CHECKED BY:	VKP / SK

B+T ENGINEERING, INC.
PEC.0001564
Expires 02/10/19

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE
TITLE SHEET

SHEET NUMBER: S1
REVISION: 0

MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
PRE-CONSTRUCTION			
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			
CONSTRUCTION			
N/A	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
N/A	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY AN APPROVED FOUNDATION INSPECTOR AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
N/A	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
X	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149 ENG-BUL-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
N/A	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			
POST-CONSTRUCTION			
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
X	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
N/A	BOLT INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			

NOTE: "X" DENOTES A DOCUMENT NEEDED FOR THE MI REPORT AND "N/A" DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT.

MODIFICATION INSPECTION NOTES

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).

REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED-SOW-10007.

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TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/04/19	ISSUED FOR CONSTRUCTION

PROJECT NO:	93496.020.01
PROJECT ENG:	UMESH SHRESTHA
DRAWN BY:	MG
CHECKED BY:	VKP / SK

B+T ENGINEERING, INC.
PEC.0001564
Expires 02/10/19

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
1/4/19

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE
MODIFICATION INSPECTION NOTES AND CHECKLIST

SHEET NUMBER: S2

REVISION: 0

GENERAL NOTES

1.1 ALL WORK SHALL COMPLY WITH THE **TIA–222–H,** ANSI/ASSE A10.48 AND ANSI/TIA–322 AS WELL AS ANY OTHER GOVERNING BUILDING CODES.
1.2 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE.
1.3 A MINIMUM OF TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES IN ACCORDANCEWITH ENG–BUL–10149 TOWER PROTECTIVE COATINGS BULLETIN.
1.4 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.
1.5 IN LIEU OF TEMPORARY BRACING CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3–SEC) PER TIA–1019.
1.6 ALL CONSTRUCTION MEANS AND METHODS: INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED–STD–10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA–322 (LATEST EDITION).
1.7 ALL THE PARTS STARTING WITH "CCI–" DESIGNATION – REFER TO "CROWN CASTLE APPROVED REINFORCEMENT COMPONENTS CATALOGUE EDITION 1" FOR PART DETAILS.
1.8 BLIND BOLTS ARE TO BE 20MM DIAMETER WITH CORRESPONDING 29MM DIAMETER SLEEVE WITH SPECIFIED STEEL GRADE.
1.9 ALL STEEL SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION PER ASTM A153 / A153M OR A123, AS APPLICABLE. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO BRUSH COATS OF CROWN APPROVED ZINC RICH PAINT SHALL BE APPLIED IN ACCORDANCE WITH ENG–BUL–10149 TOWER PROTECTIVE COATINGS BULLETIN.
1.10 ALL SHIMS SHALL BE ASTM A36.
1.11 HOLES FOR BOLTS AND SHEAR SLEEVES ARE 30MM, U.N.O.
1.12 SHOP WELDS ARE ASSUMED E80XX OR GREATER, PER STANDARD SPLICE DETAIL.
1.13 IF SCOPE OF MODIFICATION REQUIRES REMOVAL OF TOWER ID TAG, IT MUST BE REPLACED.
1.14 THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS WRITTEN APPROVAL OF YOUR CROWN P.O.C. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE–FABRICATION MAPPING, OR WHILE ON–SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN P.O.C. TO DETERMINE A METHOD OF RESOLUTION.
1.15 WHERE POSSIBLE, CLIMBING HARDWARE SHOULD REMAIN IN–LINE ALONG THE POLE. IF AN OBSTRUCTION CAUSES A LATERAL OFFSET OF 2'–0" OR MORE, CLIMBING ANCHORS SHALL BE PROVIDED AT EACH CHANGE IN ALIGNMENT. IF NEW REINFORCEMENT REQUIRES STEP BOLT BRACKETS, INSTALL PRIOR TO GALVANIZATION OF STEEL.
1.16 ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.
1.17 IF, DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE, AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE E.O.R. FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS TO BE INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATIONS AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE E.O.R. FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS.

FABRICATION

2.1 ALL WORK SHALL BE DONE IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
A. STEEL SHAPES AND PLATES, U.N.O.	65ksi	A572
B. STEEL PIPE (HSS)	50ksi	A500 GR. C

2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.
2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE **E80** SERIES.
2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 5 DAYS PRIOR TO FABRICATION.

FIELD NDE MINIMUM REQUIREMENTS

3.1 ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
3.2 FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
3.3 FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'–0".
3.4 FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG–SOW–10033: TOWER BASE PLATE NDE, AND ENG–BUL–10051: NDE REQUIREMENTS FOR MONOPOLE TO PREVENT CONNECTION FAILURE. NOTIFY THE E.O.R. AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
3.5 ALL TESTING LIMITATIONS SHALL BE NOTED IN THE NDE REPORT.

BASEPLATE GROUT REMOVAL

4.1 THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.
4.2 IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT CED AND THE CROWN POC (TYPICALLY THE MOD PM) FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
4.3 OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG–PRC–10012 "BASE PLATE GROUT REPAIR". IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE CROWN POC (TYPICALLY THE MOD PM). REFERENCE ENG–BUL–10114 "RUST CLASSIFICATION" FOR EXAMPLES OF MATERIAL LOSS. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.
4.4 IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION PER ENG–BUL–10114 "RUST CLASSIFICATION", REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG–PRC–10012 "BASE PLATE GROUT REPAIR".
4.5 CONSISTENT WITH SECTION 1.3.2.4 OF ENG–PRC–10012 "BASE PLATE GROUT REPAIR", HAND TOOL CLEAN TO SSPC–SP2 AND SOLVENT CLEAN TO SSPC–SP1, ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE, ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.
4.6 APPLY BY BRUSH TWO COATS OF A CROWN–APPROVED COLD–GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. A LIST OF CROWN–APPROVED DIRECT APPLICATION COLD–GALVANIZING COMPOUNDS CAN BE FOUND IN ENG–STD–10149 "TOWER PROTECTIVE COATINGS GUIDELINES" SECTION 2.1.1.
4.7 THE GC SHALL PROVIDE PHOTOS OF EACH ANCHOR ROD WITH LEVELING NUT AFTER CLEANING BUT BEFORE COLD–GALVANIZATION AND ALSO AGAIN AFTER COLD–GALVANIZATION, FOR INCLUSION IN THE MI REPORT.

KEY NOTES

(#) TOWER MODIFICATION I.D.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/04/19	ISSUED FOR CONSTRUCTION

PROJECT NO:	93496.020.01
PROJECT ENG:	UMESH SHRESTHA
DRAWN BY:	MG
CHECKED BY:	VKP / SK

B+T ENGINEERING, INC.
PEC.0001564
Expires 02/10/19

STATE OF CONNECTICUT
SCOTT KLEIN
31627
LICENSED
PROFESSIONAL ENGINEER
1/4/19

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

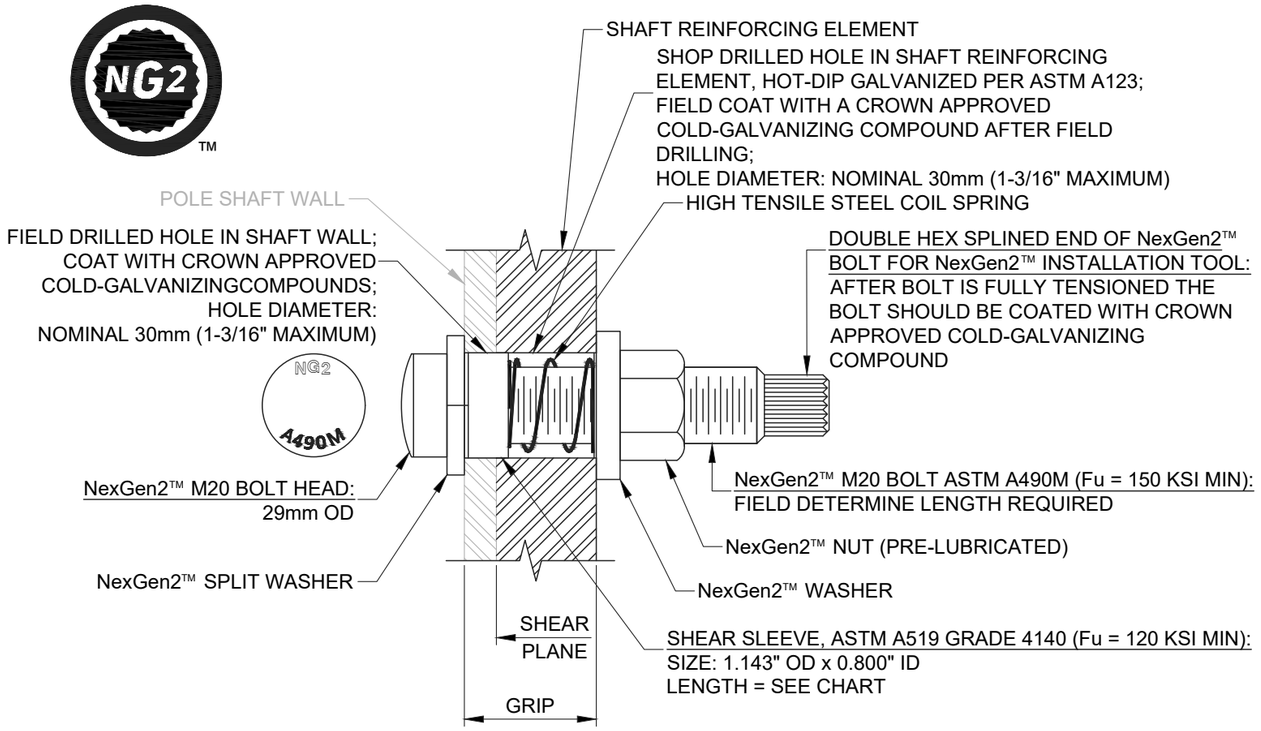
EXISTING 150' MONOPOLE

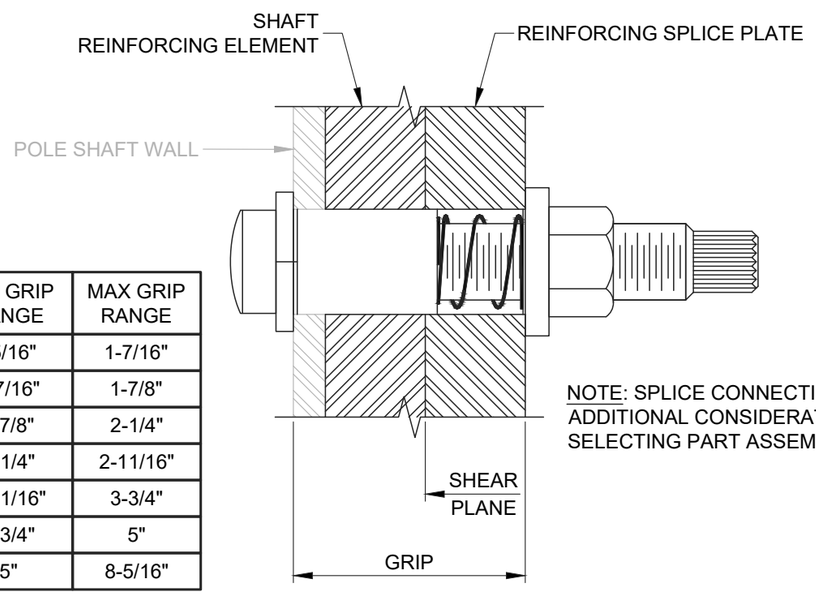
SHEET TITLE

GENERAL NOTES

SHEET NUMBER:	REVISION:
S3	0

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT





NOTE: SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
2NG2036	M20x95	11/16"	15/16"	1-7/16"
2NG2048	M20x95	1-3/16"	1-7/16"	1-7/8"
2NG2057	M20x95	1-5/8"	1-7/8"	2-1/4"
2NG2068	M20x135	2"	2-1/4"	2-11/16"
2NG2096	M20x135	2-7/16"	2-11/16"	3-3/4"
2NG2127	M20x175	3"	3-3/4"	5"
2NG2212	M20x250	4"	5"	8-5/16"

NOTES:

1. ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1 3/16".
2. NexGen2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.
3. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

MANUFACTURER:

ALLFASTENERS
959 LAKE ROAD
MEDINA, OHIO, USA 44256
PHONE: 440-232-6060
WEBSITES: WWW.ALLFASTENERS.COM WWW.AFTOWER.COM

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/04/19	ISSUED FOR CONSTRUCTION

PROJECT NO:	93496.020.01
PROJECT ENG:	UMESH SHRESTHA
DRAWN BY:	MG
CHECKED BY:	VKP / SK

B+T ENGINEERING, INC.
PEC.0001564
Expires 02/10/19

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE

NG2 BOLT NOTES AND DETAILS

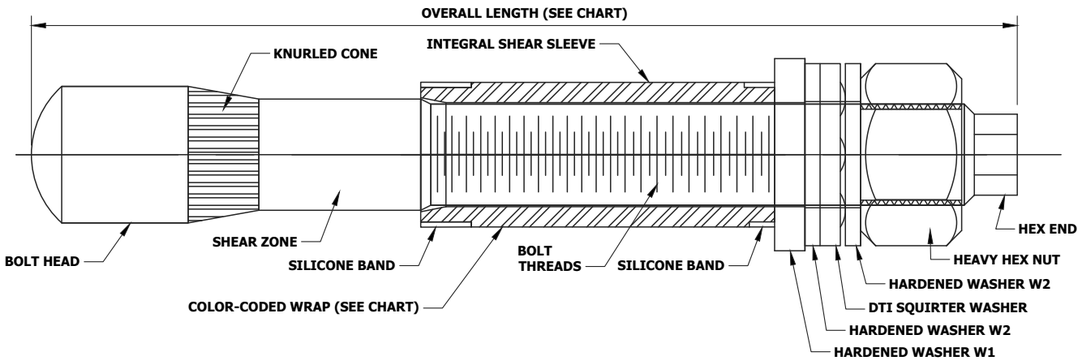
SHEET NUMBER: S4

REVISION: 0

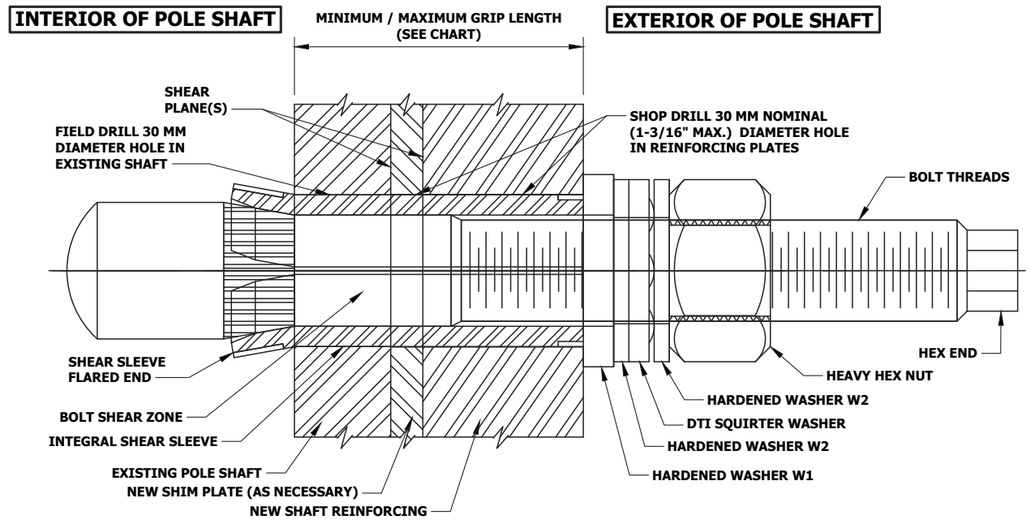
FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015; Rev. 1.0 04/23/2015

NOTES:

1. **ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**
2. **ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

BOLT HOLE NOTES:

1. **ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".**
2. **ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.**

DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
PHONE: **888-926-4857**
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

CONTAINS PROPRIETARY INFORMATION
PATENT PENDING

FORGBolt™		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)				
GROUP A	FORGBolt™ Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt™ A325 - PC8.8 1	**135**	5.31	1.3	3/8" to 1"	--	**RED**
2	**160**	6.30	1.6	3/4" to 1-1/2"	--	**GREEN**
3	**195**	7.68	1.9	1-1/4" to 2-1/4"	--	**BLUE**
4	**260**	10.24	2.6	2" to 3-1/2"	Splice Bolt	**YELLOW**
5	**365**	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	**ORANGE**
6	**440**	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	**BLACK**
DTI Note	Each Group A (A325/PC8.8) FORGBolt™ assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

FORGBolt™ Installation

Follow all Manufacturer/Distributer Recommendations for Installation, Tightening, and Inspection.

1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/04/19	ISSUED FOR CONSTRUCTION

PROJECT NO:	93496.020.01
PROJECT ENG:	UMESH SHRESTHA
DRAWN BY:	MG
CHECKED BY:	VKP / SK

B+T ENGINEERING, INC.
PEC.0001564
Expires 02/10/19

STATE OF CONNECTICUT 31627 LICENSED PROFESSIONAL ENGINEER
1/4/19

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE
FORGBOLT NOTES AND DETAILS

SHEET NUMBER: S5

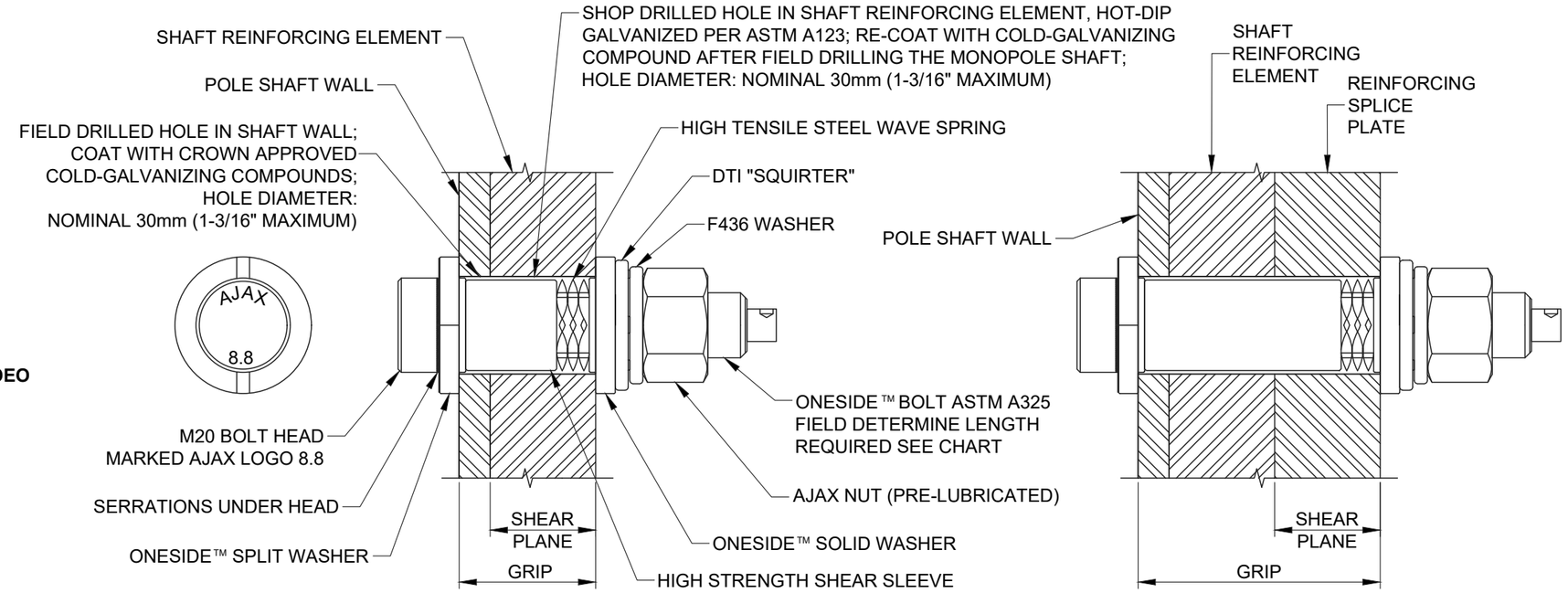
REVISION: 0

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT

AJAX FASTENERS

ONESIDE™

PATENT US 7,373,709B2



MANUFACTURER INSTALLATION VIDEO

https://www.youtube.com/watch?v=ZGBS0eLrZsw&feature=em-share_video_user

NOTE:
SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

AJAX ONESIDE™ BOLT DETAIL

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR
IRA SVENSGAARD AND ASSOCIATES
PETER SVENDSGAARD - PETERS@IRASVENS.COM
JOHN KILLAM - JOHN@IRASVENS.COM
PHONE (530) 647-8225
FAX (530) 647-8229

BOLT ASSEMBLY AND INSTALLATION:
1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

INSPECTION:
1. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
2. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

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OLD SAYBROOK
841289

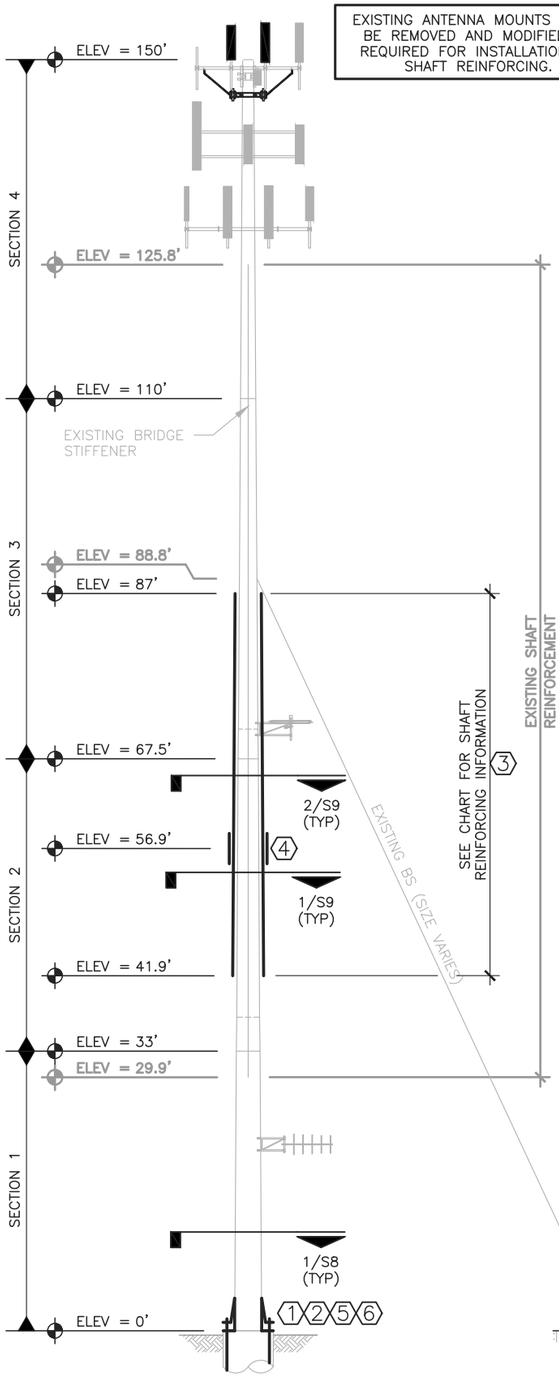
170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE
AJAX ONESIDE™ BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

SHEET NUMBER:	REVISION:
S6	0

EXISTING ANTENNA MOUNTS SHALL BE REMOVED AND MODIFIED AS REQUIRED FOR INSTALLATION OF SHAFT REINFORCING.



1 TOWER ELEVATION
SCALE: N.T.S.

TOWER MODIFICATIONS:

1. INSTALL NEW ANCHOR RODS AND ANCHOR ROD BRACKETS AT 0'
   RE: SHEET S8.
2. REMOVE GROUT UNDER EXISTING BASE PLATE. REFER GROUT REMOVAL NOTES, SHEET S3.
3. INSTALL NEW REINFORCING ELEMENTS FROM 41.9'-87'
   RE: SHEET S9.
4. INSTALL NEW IN-LINE SPLICES AT 56.9'
   RE: SHEET S10.
5. PAINT THE REINFORCEMENT TO MATCH EXISTING TOWER.
6. CLIMBING FACILITIES NOT PRESENT, MAN LIFT MAY BE REQUIRED.

A. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL BUDGET A SITE VISIT TO CHECK CRITICAL DIMENSIONS AND VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GENERAL CONTRACTOR AND/OR FABRICATOR.
B. THE NEW AND EXISTING TRANSMISSION LINES MUST BE DISTRIBUTED AS SHOWN IN THE TX LINE DIST. DIAGRAM RE: DETAIL 2/S7.
C. MODIFICATIONS SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES. AN IBM PROVIDED BY A REGISTERED PROFESSIONAL ENGINEER WILL SUPERSEDE THIS CONDITION / REQUIREMENT.
D. FOR PARTS NOT DETAILED WITHIN THE DRAWING AND STARTING WITH "CCI-", SEE THE FOLLOWING CATALOG FOR DETAILS: CED-CAT-10300, MONOPOLE STANDARD DRAWINGS AND APPROVED REINFORCEMENT COMPONENTS.

CCI: FLAT PLATE-BILL OF MATERIALS (65KSI)

BOTTOM ELEVATION	TOP ELEVATION	FLAT PLATE DESIGNATION	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	FLAT # OR AZIMUTH	BOLTS PER PLATE	TOTAL BOLT QTY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	TOTAL STEEL WEIGHT	
41'-11"	56'-11"	CCI-SFP-04510015	15'-0"	2	4 & 8	19	38	6	6	20"	459	LBS.
57'-0"	87'-0"	CCI-SFP-04510030	30'-0"	2	4 & 8	28	56	6	6	20"	919	LBS.
ALL BOLTS SHALL BE PRE-APPROVED BLIND M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A519 WITH MIN. Fu=120 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE AND BOLTS) AND INSTALLATION PROCEDURES.							94				1378	LBS.

EXISTING MEMBER SCHEDULE

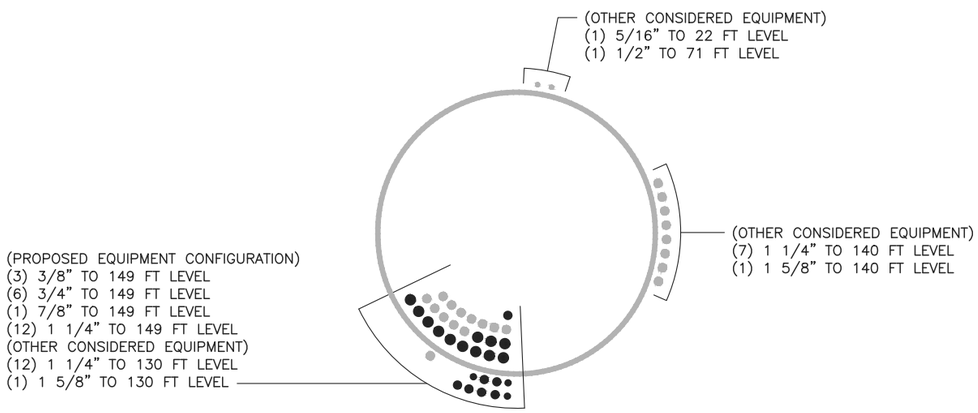
SECTION	NUMBER OF SIDES	THICKNESS	ASTM STEEL GRADE	Fy (ksi)	BOTTOM DIAMETER	TOP DIAMETER	LAP SPLICE
1	12	0.438"	A572	65	38.290"	32.256"	48"
2	12	0.375"	A572	65	33.660"	27.449"	42"
3	12	0.313"	A572	65	28.640"	21.770"	---
4	12	0.250"	A572	65	21.770"	15.530"	---
EXISTING BASE PLATE GRADE = 50 ksi (ASTM STEEL GRADE = N/A)							
EXISTING ANCHOR RODS = 2 1/4"ø AND GRADE = 75 ksi (ASTM STEEL GRADE = A615)							

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER FITTING OF REINFORCEMENT ON MONOPOLES. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKED SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT E.O.R. APPROVAL.
2. FOR PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" +/- 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION +/- 3". FOR MULTIPLE PLATE SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.

EXISTING TOWER HAS BEEN PREVIOUSLY MODIFIED

REFERENCE DRAWINGS BY:	DATE
GPD GROUP	09/30/08
GPD GROUP	12/15/11
B+T GROUP	08/26/15
B+T GROUP	05/06/16



2 TX LINE DISTRIBUTION DIAGRAM
SCALE: N.T.S.

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STATE OF CONNECTICUT
SCOTT K. PHILLIPS
31627
LICENSED PROFESSIONAL ENGINEER
1/4/19

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

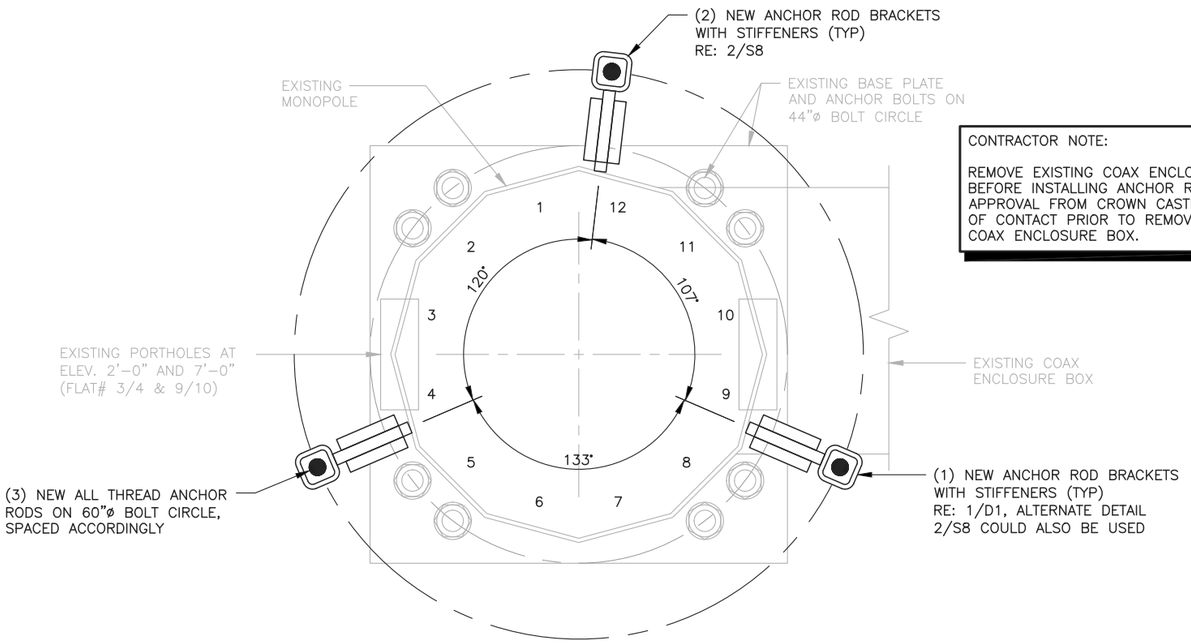
EXISTING 150' MONOPOLE

SHEET TITLE

TOWER ELEV., SCHEDULES, AND TX LINE DIST. DIAGRAM

SHEET NUMBER:	REVISION:
S7	0

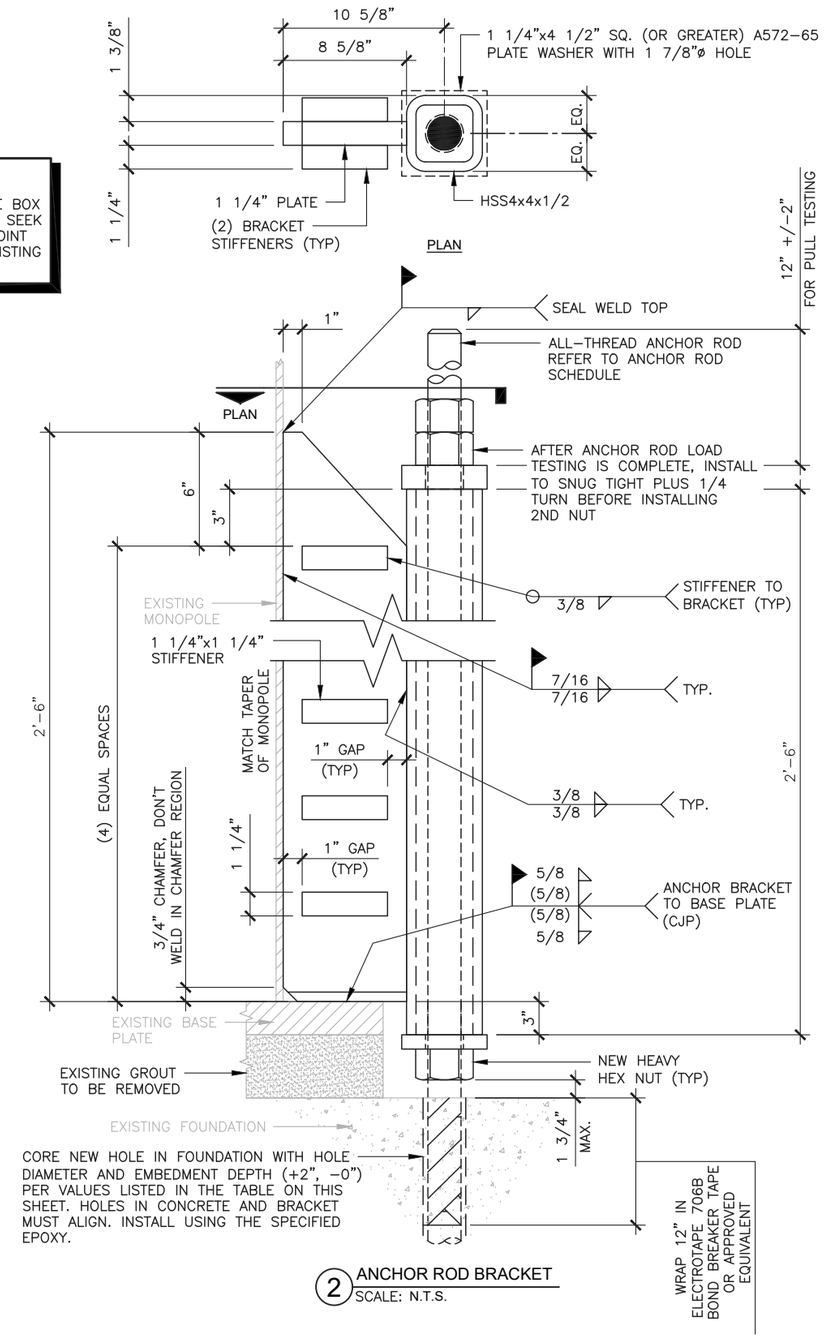
ANCHOR ROD SCHEDULE							
PART NUMBER	DIAMETER	LENGTH	MATERIALS	EMBEDMENT DEPTH	HOLE SIZE	EPOXY	TARGET TENSION
---	1 3/4"	10'-1 1/4"	A193-B7	6'-6"	2"	ALLFASTNERS AF35LV EPOXY GROUT	111



1 TOWER SECTION AT BASE
SCALE: N.T.S.

CONTRACTOR NOTE:

REMOVE EXISTING COAX ENCLOSURE BOX BEFORE INSTALLING ANCHOR RODS. SEEK APPROVAL FROM CROWN CASTLE POINT OF CONTACT PRIOR TO REMOVE EXISTING COAX ENCLOSURE BOX.



2 ANCHOR ROD BRACKET
SCALE: N.T.S.

ANCHOR ROD NOTES:

1. PLATE WASHER MUST FULLY BEAR ON THE TUBE.
2. REFERENCE CC APPROVED COMPONENTS (CURRENT VERISON) FOR ANCHOR ROD DIMENSIONS.
3. RODS MUST BE GALVANIZED FROM THE TOP OF THE PROJECTION TO 15" BELOW THE SURFACE OF THE CONCRETE, AT A MINIMUM.
4. CORED HOLES MUST BE MECHANICALLY ROUGHENED USING A CARBIDE HOLE ROUGHENER OR EQUIVALENT. BRUSHING WITH A NYLON OR WIRE BRUSH SHALL BE USED IN THE PROCESS OF HOLE CLEANING, BUT DOES NOT SATISFY THE HOLE ROUGHENING REQUIREMENT.
5. FOLLOW EPOXY MANUFACTURER'S RECOMMENDATIONS FOR HOLE CLEANING.
6. ALL HOLES MUST BE DRY PRIOR TO PLACING EPOXY.
7. FOLLOW EPOXY MANUFACTURER'S RECOMMENDATIONS REGARDING HANDLING OF THREADED ROD AND EPOXY, AS WELL AS ALL INSTALLATION INSTRUCTIONS AND REQUIREMENTS.
8. TAKE ALL MEASUREMENTS NECESSARY TO AVOID DAMAGING EXISTING REINFORCING BARS DURING CORING OPERATIONS. NOTIFY E.O.R. IMMEDIATELY IF EXISTING REINFORCING BARS ARE ENCOUNTERED AND INTERFERE WITH PLACEMENT OF NEW ANCHORS. MINOR ADJUSTMENT TO PROPOSED LOCATION OF NEW ANCHORS MAY BE REQUIRED.
9. IF BASE PLATE GROUT REMOVAL IS REQUIRED FOR ANCHOR ROD INSTALLATION, SEE ENG-PRC-10012: BASE PLATE GROUT REPAIR, FOR PROCEDURES AND RECOMMENDED MANUFACTURERS. CONTRACTOR TO DETERMINE THE QUANTITY REQUIRED.
10. ONCE ALL RESIN AND GROUT HAVE CURED, NEW ANCHOR ROD REINFORCING SHALL BE TARGET TENSIONED TO THE VALUE LISTED IN THE TABLE ON THIS SHEET. SEE ENG-PRC-10119: PULL-OUT TESTING POST-INSTALLED ANCHOR RODS, FOR SPECIFICATIONS.
11. CONTRACTOR TO VERIFY THAT A PULL TEST IS ABLE TO BE PERFORMED USING THE ANCHOR ROD PRJECTION SHOWN.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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CROWN CASTLE

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REV	DATE	DESCRIPTION
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PROJECT NO:	93496.020.01
PROJECT ENG:	UMESH SHRESTHA
DRAWN BY:	MG
CHECKED BY:	VKP / SK

B+T ENGINEERING, INC.
PEC.0001564
Expires 02/10/19

STATE OF CONNECTICUT
SCOTT KNOWLTON
31627
LICENSED PROFESSIONAL ENGINEER
1/4/19

OLD SAYBROOK
841289

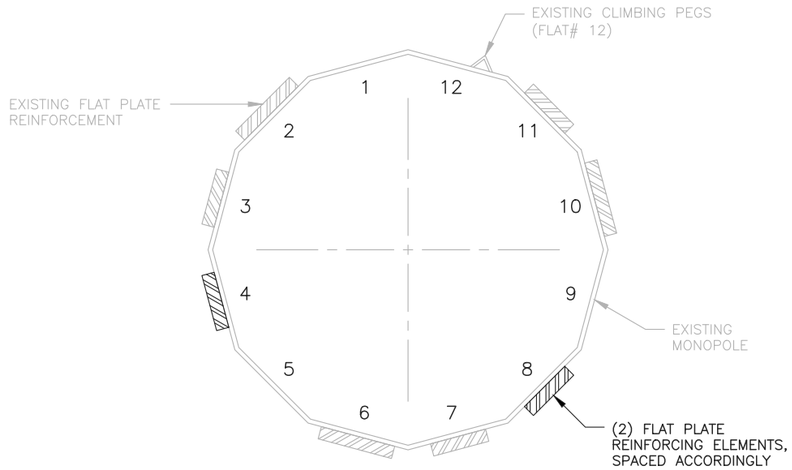
170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

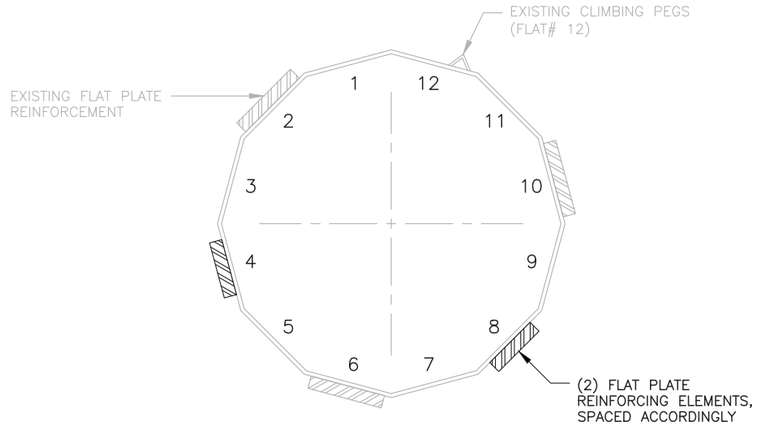
SHEET TITLE

TOWER SECTION AT BASE AND ANCHOR ROD BRACKET DETAILS

SHEET NUMBER:	REVISION:
S8	0



1 TOWER SECTION (41.9'-56.9')
SCALE: N.T.S.



2 TOWER SECTION (57'-87')
SCALE: N.T.S.

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1717 S. BOULDER AVE.
SUITE 300
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OLD SAYBROOK
841289

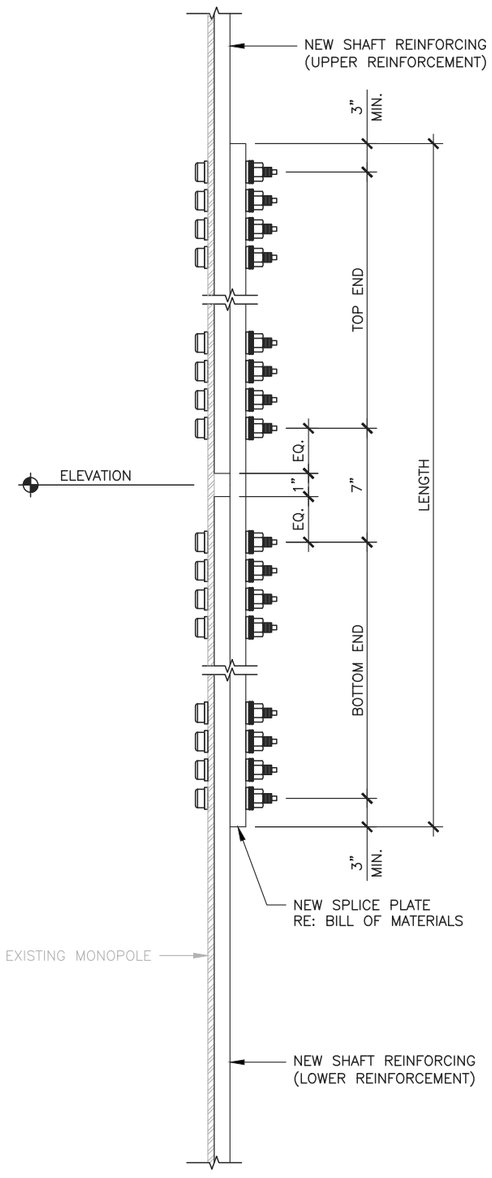
170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE

TOWER SECTIONS
41.9'-56.9' AND 57'-87'

SHEET NUMBER:	REVISION:
S9	0



1 FLAT PLATE IN-LINE SPLICE DETAIL
SCALE: N.T.S.

SPLICE PLATE-BILL OF MATERIALS (65KSI)											
ELEVATION	PART NUMBER	WIDTH	THICKNESS	LENGTH	QTY	QTY OF BOLTS (TOP END)	QTY OF BOLTS (BOTTOM END)	BOLT HOLES PER SPLICE	TOTAL BOLT HOLES	TOTAL STEEL WEIGHT	
56'–11 1/2"	CCI–SP–045100–6–6	4 1/2"	1"	3'–7"	2	6	6	12	24	110	LBS.

(A) O.C. DISTANCE ON TERMINATION BOLTS TO BE 3 IN. U.N.O.
(B) USE SHIM PLATES AS REQUIRED.
(C) STEEL WEIGHT NOT INCLUDED IN S7 BILL OF MATERIALS.

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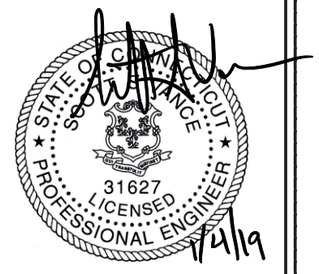


OLD SAYBROOK
841289

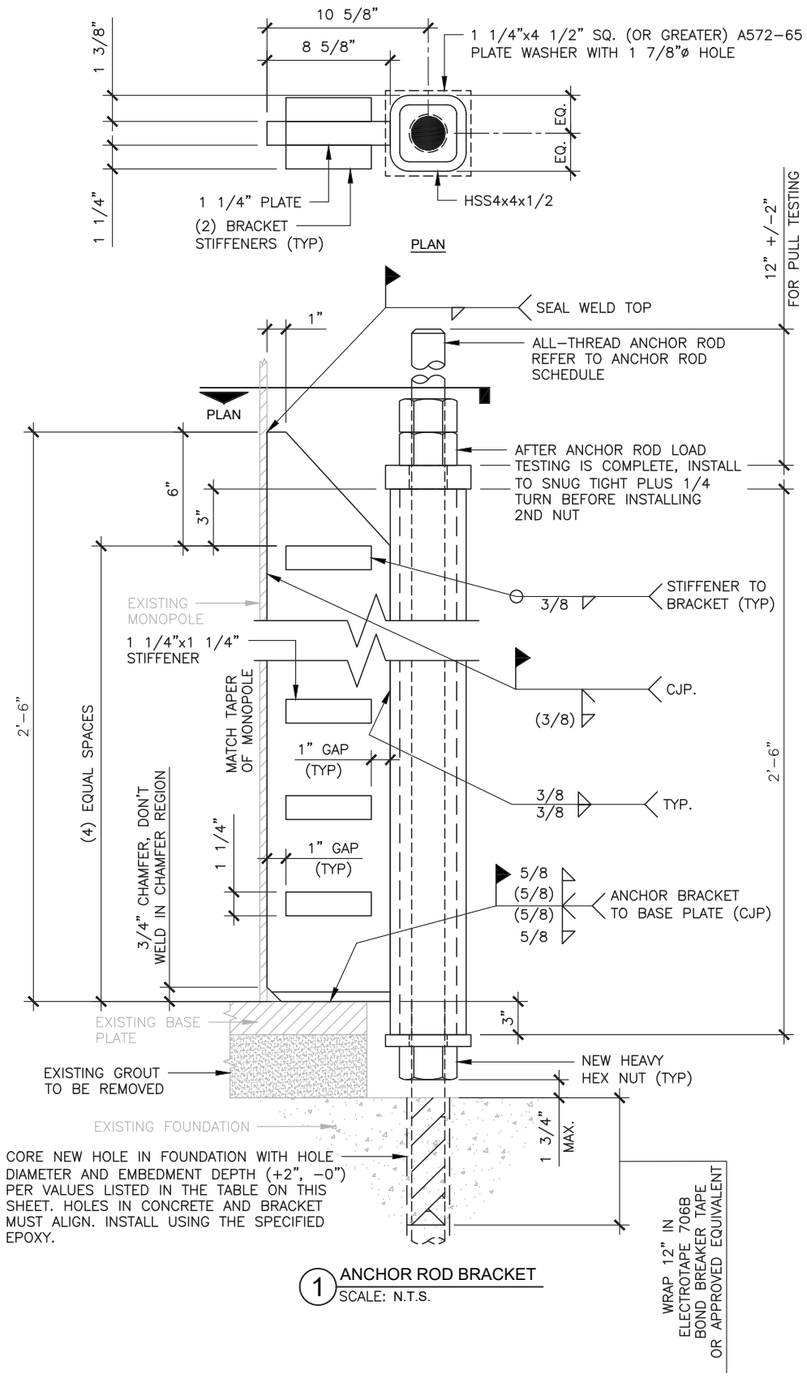
170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE

IN-LINE SPLICE DETAIL

SHEET NUMBER:	REVISION:
S10	0



1 ANCHOR ROD BRACKET
SCALE: N.T.S.

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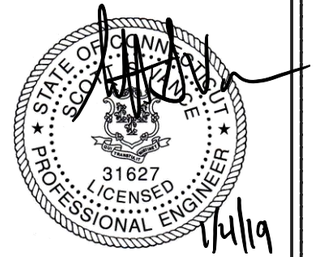

OLD SAYBROOK
841289

170 INGHAM HILL ROAD
OLD SAYBROOK, CT

EXISTING 150' MONOPOLE

SHEET TITLE
ANCHOR ROD BRACKET DETAILS

SHEET NUMBER: D1

REVISION: 0

June 5, 2018
February 7, 2019 (Rev.1)

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT2019 (LTE 4C/5C/6C)
	FA Number:	10034982
	PACE Number:	MRCTB031501
	PTN Number:	2051A0GGA8
	Site Name:	OLD SAYBROOK
	Site Address:	170 Ingham Hill Road Old Saybrook, CT 06475

To Whom It May Concern:

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

- (2) QS46512-2 Antennas (52.0"x12.0"x10.8" – Wt. = 75 lbs. /each)
- (1) 800-10799 Antenna (106.0"x14.8"x6.7" – Wt. = 108 lbs.)
- (3) SBNHH-1D65A Antennas (55.6"x11.9"x7.1" – Wt. = 34 lbs. /each)
- (3) 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each) (Tower Mounted)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) TT19-08BP111-001 TMA's (9.9"x6.7"x5.4" – Wt. = 16 lbs. /each)
- (2) Squid Surge Arrestors (24.0"x9.7" Ø – Wt. = 33 lbs. /each) (Tower Mounted)
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each) (Tower Mounted)**
- **(3) 4478 B5 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.) (Tower Mounted)**

**Proposed equipment shown in bold.*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on March 3, 2016.

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 – R11.
- 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 133 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 1.24 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located at the upper half of a hill.
- The mount has been analyzed with load combinations consisting of 250 lbs. live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs. live load in a worst case location on the mount.

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

- **Install new platform reinforcement kit, SitePro1 P/N PRK-1245L (or approved equal).**
- **Install new handrail kit, SitePro1 P/N HRK-14 (or approved equal).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 4C/5C/6C) Mount Rating	103	LC1	185%	**FAIL**
Modified (LTE 4C/5C/6C) Mount Rating	135	LC7	86%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Structural Dept. Head

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:






p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845
p: 413.588.8139 f: 413.517.0590 a: 116 Pleasant Street, Ste 302, Easthampton, MA 01027

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	149	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.107**	

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

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}= 1.206862533

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

Category= **3**

K_h=	4.8390556	
K_c=	0.9	(from Table 2-4)
K_t=	0.53	(from Table 2-5)
f=	2	(from Table 2-5)
z=	149	
z_s=	216	(Mean elevation of base of structure above sea level)
H=	189	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.21	(from 2.6.6.2.1)
K_e=	0.99	(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} =	1.16	(from Sec. 2.6.10)

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

t_{iz} = 1.24 in

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD Checked By: MSC

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	150	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

G_h=	1.35	Gh=	1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.107	(from 2.6.5.2)
		K_{zt}=	1.2	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	57.05	K_e=	0.99	(from 2.6.8)
$q_{z\,(Ice)}$=	8.06	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	2.90	V_{max}=	133	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: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD 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 = **1.24 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	314	57	16
QS46512-2 Antenna	52.0	12.0	10.8	4.33	4.33	1.28	317	57	16
800-10799 Antenna	106.0	14.8	6.7	10.89	7.16	1.41	874	148	44
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	4.67	1.30	340	61	17
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	159	29	8
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	156	29	8
4478 B5 RRH	18.1	13.4	8.3	1.68	1.35	1.20	115	22	6
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	71	15	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	94	18	5
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	77	16	4
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	1.83	1.20	25	7	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	65	13	3
2" Pipe	2.4	12.0		0.20	0.20	1.20	14	5	1
3" Pipe	3.5	12.0		0.29	0.29	1.20	20	6	1
2-1/2x1-1/2x1/4 Angle	2.5	12.0		0.21	0.21	2.00	24	8	1
HSS 3x3	3.0	12.0		0.25	0.25	1.25	18	6	1
PL 8x5/8	8.0	12.0		0.67	0.67	1.25	48	11	2

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.24	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)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	314	167	277
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	317	290	310
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	874	477	774
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	340	223	311
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	159	68	136
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	156	95	141
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	115	71	104
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	115	82
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	94	77	89
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	94	81
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	25	32	27

WIND LOADS WITH ICE:

7770 Antenna	57.5	13.5	7.5	5.38	2.99	4.26	7.68	1.28	1.42	55	34	50
QS46512-2 Antenna	54.5	14.5	13.3	5.48	5.03	3.76	4.10	1.26	1.27	56	52	55
800-10799 Antenna	108.5	17.3	9.2	13.02	6.92	6.28	11.81	1.37	1.56	144	87	129
SBNHH-1D65A Antenna	58.1	14.4	9.6	5.80	3.87	4.04	6.06	1.27	1.36	59	42	55
RRUS-11 RRH	22.2	19.5	9.7	3.00	1.49	1.14	2.29	1.20	1.20	29	14	25
RRUS-32 B2 RRH	29.7	14.6	9.5	3.01	1.95	2.04	3.13	1.20	1.23	29	19	27
4478 B5 RRH	20.6	15.9	10.8	2.27	1.54	1.30	1.91	1.20	1.20	22	15	20
4478 B5 RRH (Side)	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	15	22	17
B2/B66A 8843 RRH	17.4	15.7	13.4	1.89	1.62	1.11	1.30	1.20	1.20	18	16	18
B2/B66A 8843 RRH (Side)	17.4	13.4	15.7	1.62	1.89	1.30	1.11	1.20	1.20	16	18	16
TT19-08BP111-001 TMA	12.4	7.9	9.2	0.68	0.79	1.57	1.35	1.20	1.20	7	8	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	8	14
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	16	15	16
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	44	24	39
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	17	11	16
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	8	3	7
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	2	1

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.24	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	314	167	204
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	317	290	297
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	874	477	576
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	340	223	252
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	159	68	91
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	156	95	110
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	115	71	82
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	115	104
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	94	77	81
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	94	89
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	25	32	30

WIND LOADS WITH ICE:

7770 Antenna	57.5	13.5	7.5	5.38	2.99	4.26	7.68	1.28	1.42	55	34	40
QS46512-2 Antenna	54.5	14.5	13.3	5.48	5.03	3.76	4.10	1.26	1.27	56	52	53
800-10799 Antenna	108.5	17.3	9.2	13.02	6.92	6.28	11.81	1.37	1.56	144	87	101
SBNHH-1D65A Antenna	58.1	14.4	9.6	5.80	3.87	4.04	6.06	1.27	1.36	59	42	47
RRUS-11 RRH	22.2	19.5	9.7	3.00	1.49	1.14	2.29	1.20	1.20	29	14	18
RRUS-32 B2 RRH	29.7	14.6	9.5	3.01	1.95	2.04	3.13	1.20	1.23	29	19	22
4478 B5 RRH	20.6	15.9	10.8	2.27	1.54	1.30	1.91	1.20	1.20	22	15	17
4478 B5 RRH (Side)	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	15	22	20
B2/B66A 8843 RRH	17.4	15.7	13.4	1.89	1.62	1.11	1.30	1.20	1.20	18	16	16
B2/B66A 8843 RRH (Side)	17.4	13.4	15.7	1.62	1.89	1.30	1.11	1.20	1.20	16	18	18
TT19-08BP111-001 TMA	12.4	7.9	9.2	0.68	0.79	1.57	1.35	1.20	1.20	7	8	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	8	10
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	16	15	15
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	44	24	29
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	17	11	13
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	8	3	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	2	2

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.24	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	314	167	167
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	317	290	290
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	874	477	477
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	340	223	223
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	159	68	68
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	156	95	95
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	115	71	71
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	115	115
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	94	77	77
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	94	94
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	25	32	32

WIND LOADS WITH ICE:

7770 Antenna	57.5	13.5	7.5	5.38	2.99	4.26	7.68	1.28	1.42	55	34	34
QS46512-2 Antenna	54.5	14.5	13.3	5.48	5.03	3.76	4.10	1.26	1.27	56	52	52
800-10799 Antenna	108.5	17.3	9.2	13.02	6.92	6.28	11.81	1.37	1.56	144	87	87
SBNHH-1D65A Antenna	58.1	14.4	9.6	5.80	3.87	4.04	6.06	1.27	1.36	59	42	42
RRUS-11 RRH	22.2	19.5	9.7	3.00	1.49	1.14	2.29	1.20	1.20	29	14	14
RRUS-32 B2 RRH	29.7	14.6	9.5	3.01	1.95	2.04	3.13	1.20	1.23	29	19	19
4478 B5 RRH	20.6	15.9	10.8	2.27	1.54	1.30	1.91	1.20	1.20	22	15	15
4478 B5 RRH (Side)	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	15	22	22
B2/B66A 8843 RRH	17.4	15.7	13.4	1.89	1.62	1.11	1.30	1.20	1.20	18	16	16
B2/B66A 8843 RRH (Side)	17.4	13.4	15.7	1.62	1.89	1.30	1.11	1.20	1.20	16	18	18
TT19-08BP111-001 TMA	12.4	7.9	9.2	0.68	0.79	1.57	1.35	1.20	1.20	7	8	8

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	8	8
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	16	15	15
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	44	24	24
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	17	11	11
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	8	3	3
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	5
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	2	2

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.24	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	314	167	204
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	317	290	297
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	874	477	576
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	340	223	252
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	159	68	91
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	156	95	110
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	115	71	82
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	115	104
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	94	77	81
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	94	89
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	25	32	30

WIND LOADS WITH ICE:

7770 Antenna	57.5	13.5	7.5	5.38	2.99	4.26	7.68	1.28	1.42	55	34	40
QS46512-2 Antenna	54.5	14.5	13.3	5.48	5.03	3.76	4.10	1.26	1.27	56	52	53
800-10799 Antenna	108.5	17.3	9.2	13.02	6.92	6.28	11.81	1.37	1.56	144	87	101
SBNHH-1D65A Antenna	58.1	14.4	9.6	5.80	3.87	4.04	6.06	1.27	1.36	59	42	47
RRUS-11 RRH	22.2	19.5	9.7	3.00	1.49	1.14	2.29	1.20	1.20	29	14	18
RRUS-32 B2 RRH	29.7	14.6	9.5	3.01	1.95	2.04	3.13	1.20	1.23	29	19	22
4478 B5 RRH	20.6	15.9	10.8	2.27	1.54	1.30	1.91	1.20	1.20	22	15	17
4478 B5 RRH (Side)	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	15	22	20
B2/B66A 8843 RRH	17.4	15.7	13.4	1.89	1.62	1.11	1.30	1.20	1.20	18	16	16
B2/B66A 8843 RRH (Side)	17.4	13.4	15.7	1.62	1.89	1.30	1.11	1.20	1.20	16	18	18
TT19-08BP111-001 TMA	12.4	7.9	9.2	0.68	0.79	1.57	1.35	1.20	1.20	7	8	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	8	10
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	16	15	15
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	44	24	29
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	17	11	13
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	8	3	5
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	5
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	2	2

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.24 in.

Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	314	167	277
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	317	290	310
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	874	477	774
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	340	223	311
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	159	68	136
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	156	95	141
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	115	71	104
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	71	115	82
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	94	77	89
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	77	94	81
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	25	32	27

WIND LOADS WITH ICE:

7770 Antenna	57.5	13.5	7.5	5.38	2.99	4.26	7.68	1.28	1.42	55	34	50
QS46512-2 Antenna	54.5	14.5	13.3	5.48	5.03	3.76	4.10	1.26	1.27	56	52	55
800-10799 Antenna	108.5	17.3	9.2	13.02	6.92	6.28	11.81	1.37	1.56	144	87	129
SBNHH-1D65A Antenna	58.1	14.4	9.6	5.80	3.87	4.04	6.06	1.27	1.36	59	42	55
RRUS-11 RRH	22.2	19.5	9.7	3.00	1.49	1.14	2.29	1.20	1.20	29	14	25
RRUS-32 B2 RRH	29.7	14.6	9.5	3.01	1.95	2.04	3.13	1.20	1.23	29	19	27
4478 B5 RRH	20.6	15.9	10.8	2.27	1.54	1.30	1.91	1.20	1.20	22	15	20
4478 B5 RRH (Side)	20.6	10.8	15.9	1.54	2.27	1.91	1.30	1.20	1.20	15	22	17
B2/B66A 8843 RRH	17.4	15.7	13.4	1.89	1.62	1.11	1.30	1.20	1.20	18	16	18
B2/B66A 8843 RRH (Side)	17.4	13.4	15.7	1.62	1.89	1.30	1.11	1.20	1.20	16	18	16
TT19-08BP111-001 TMA	12.4	7.9	9.2	0.68	0.79	1.57	1.35	1.20	1.20	7	8	7

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	16	8	14
QS46512-2 Antenna	52.0	12.0	10.8	4.33	3.90	4.33	4.81	1.28	1.30	16	15	16
800-10799 Antenna	106.0	14.8	6.7	10.89	4.93	7.16	15.82	1.41	1.69	44	24	39
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	2.74	4.67	7.83	1.30	1.43	17	11	16
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	8	3	7
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
4478 B5 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
4478 B5 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	4
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	5
B2/B66A 8843 RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	4
TT19-08BP111-001 TMA	9.9	5.4	6.7	0.37	0.46	1.83	1.48	1.20	1.20	1	2	1

Date: 2/7/2019
Project Name: OLD SAYBROOK
Project No.: CT2019
Designed By: BD **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.24 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		93 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		128 lbs

QS46512-2 Antenna

Weight of ice based on total radial SF area:

Height (in):	52.0	
Width (in):	12.0	
Depth (in):	10.8	
Total weight of ice on object:		114 lbs
Weight of object:	75.0 lbs	
Combined weight of ice and object:		189 lbs

800-10799 Antenna

Weight of ice based on total radial SF area:

Height (in):	106.0	
Width (in):	14.8	
Depth (in):	6.7	
Total weight of ice on object:		234 lbs
Weight of object:	108.0 lbs	
Combined weight of ice and object:		342 lbs

SBNHH-1D65A Antenna

Weight of ice based on total radial SF area:

Height (in):	55.6	
Width (in):	11.9	
Depth (in):	7.1	
Total weight of ice on object:		106 lbs
Weight of object:	34.0 lbs	
Combined weight of ice and object:		140 lbs

RRUS-11 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:		49 lbs
Weight of object:	51.0 lbs	
Combined weight of ice and object:		100 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:		52 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		112 lbs

4478 B5 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		39 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		99 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		35 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		107 lbs

TT19-08BP111-001 TMA

Weight of ice based on total radial SF area:

Height (in):	9.9	
Width (in):	5.4	
Depth (in):	6.7	
Total weight of ice on object:		12 lbs
Weight of object:	16.0 lbs	
Combined weight of ice and object:		28 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:		33 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		66 lbs

2" pipe

Per foot weight of ice:

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

L 2-1/2x1-1/2 Angles

Weight of ice based on total radial SF area:

Height (in):	2.5	
Width (in):	1.5	
Per foot weight of ice on object:		6 plf

3" pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		7 plf

HSS 3x3

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		8 plf

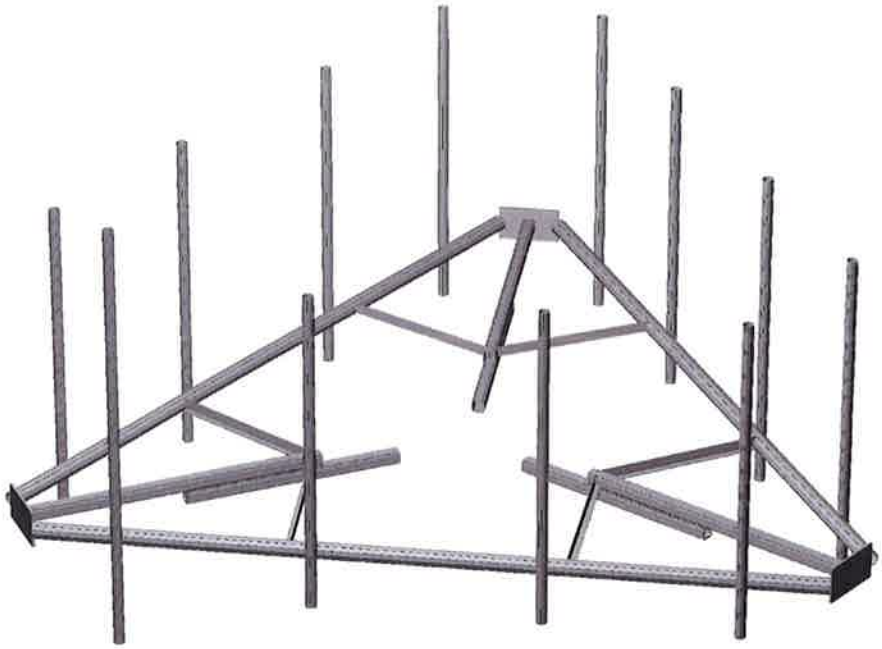
PL 8x5/8

Weight of ice based on total radial SF area:

Height (in):	8	
Width (in):	0.63	
Per foot weight of ice on object:		14 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)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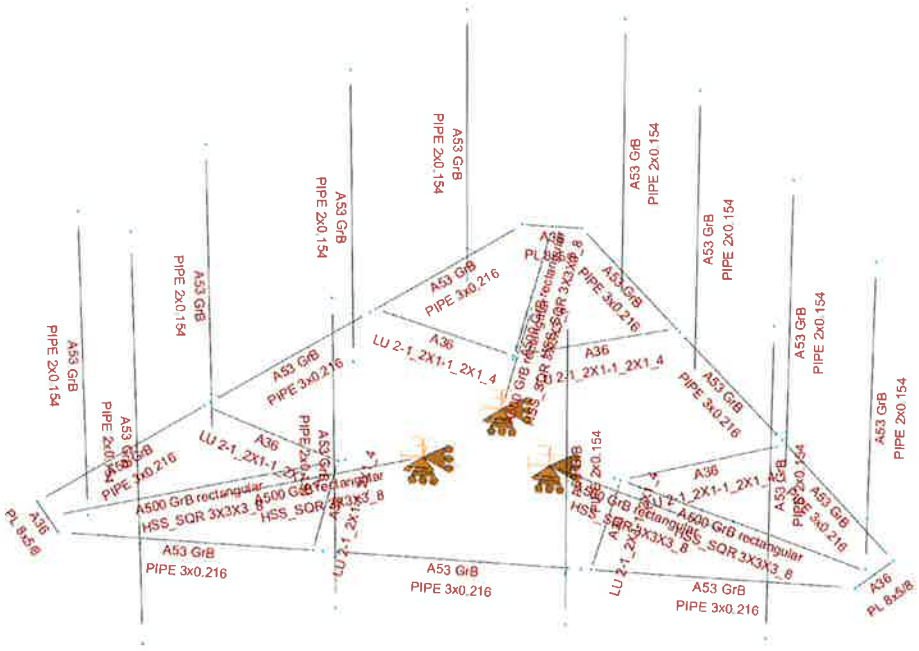
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A36
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HSS_SQR 3X3X3_8
LU 2-1_2X1-1_2X1_4


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X
Z

Bentley

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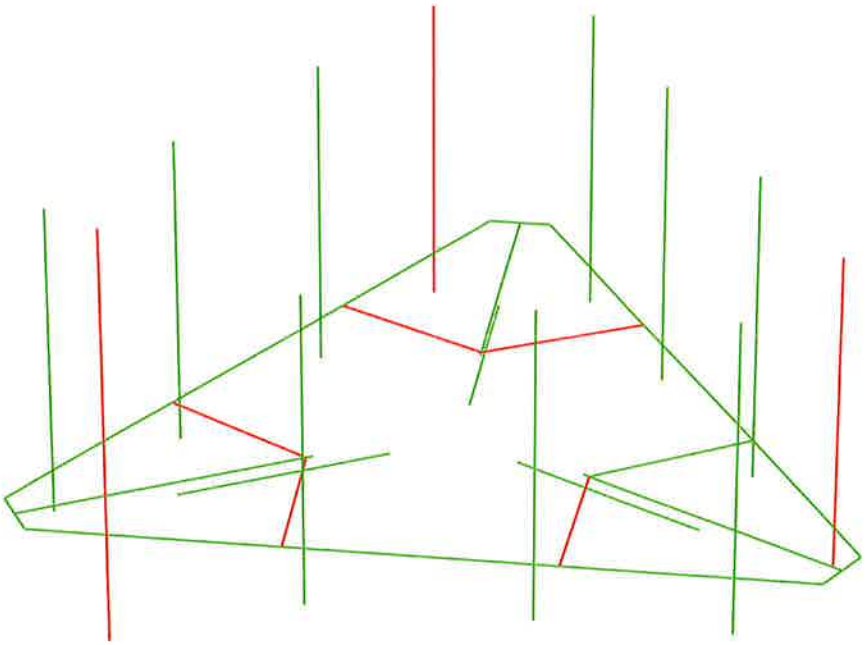
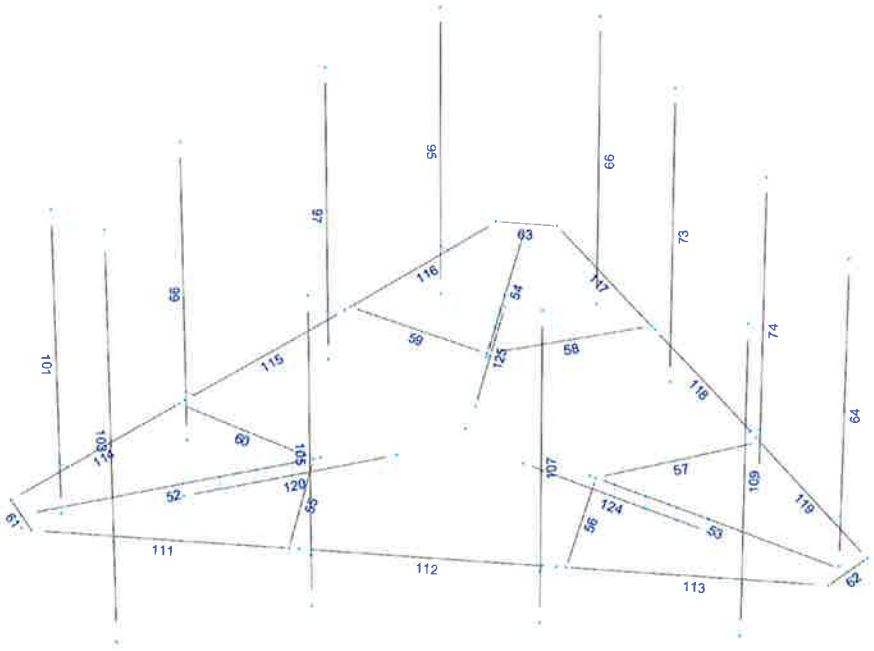
Design status

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

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Load data

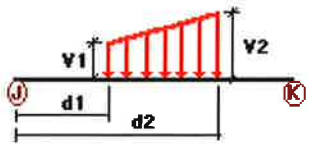
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

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

Distributed force on members

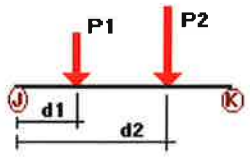


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	52	Z	-0.018	-0.018	0.00	Yes	100.00	Yes
	53	Z	-0.018	-0.018	0.00	Yes	100.00	Yes
	57	Z	-0.024	-0.024	0.00	Yes	100.00	Yes
	58	Z	-0.024	-0.024	0.00	Yes	100.00	Yes
	59	Z	-0.024	-0.024	0.00	Yes	100.00	Yes
	60	Z	-0.024	-0.024	0.00	Yes	100.00	Yes
	61	Z	-0.048	-0.048	0.00	Yes	100.00	Yes
	62	Z	-0.048	-0.048	0.00	Yes	100.00	Yes
	63	Z	-0.048	-0.048	0.00	Yes	100.00	Yes
	64	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	66	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	95	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	97	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	74	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	99	Z	-0.014	-0.014	0.00	Yes	100.00	Yes

	73	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	101	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	105	Z	-0.014	-0.014	0.00	Yes	100.00	Yes
	111	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	112	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	113	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	114	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	115	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	116	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	117	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	118	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	119	Z	-0.02	-0.02	0.00	Yes	100.00	Yes
	120	Z	-0.018	-0.018	0.00	Yes	100.00	Yes
	124	Z	-0.018	-0.018	0.00	Yes	100.00	Yes
W30	52	X	-0.018	-0.018	0.00	Yes	100.00	Yes
	53	X	-0.018	-0.018	0.00	Yes	100.00	Yes
	54	X	-0.018	-0.018	0.00	Yes	100.00	Yes
	55	X	-0.024	-0.024	0.00	Yes	100.00	Yes
	56	X	-0.024	-0.024	0.00	Yes	100.00	Yes
	57	X	-0.024	-0.024	0.00	Yes	100.00	Yes
	58	X	-0.024	-0.024	0.00	Yes	100.00	Yes
	59	X	-0.024	-0.024	0.00	Yes	100.00	Yes
	60	X	-0.024	-0.024	0.00	Yes	100.00	Yes
	61	X	-0.048	-0.048	0.00	Yes	100.00	Yes
	62	X	-0.048	-0.048	0.00	Yes	100.00	Yes
	64	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	66	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	95	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	97	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	74	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	99	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	73	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	101	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	103	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	105	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	107	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	109	X	-0.014	-0.014	0.00	Yes	100.00	Yes
	114	X	-0.02	-0.02	0.00	Yes	100.00	Yes
	115	X	-0.02	-0.02	0.00	Yes	100.00	Yes
	116	X	-0.02	-0.02	0.00	Yes	100.00	Yes
	117	X	-0.02	-0.02	0.00	Yes	100.00	Yes
	118	X	-0.02	-0.02	0.00	Yes	100.00	Yes
	119	X	-0.02	-0.02	0.00	Yes	100.00	Yes
	120	X	-0.018	-0.018	0.00	Yes	100.00	Yes
	124	X	-0.018	-0.018	0.00	Yes	100.00	Yes
	125	X	-0.018	-0.018	0.00	Yes	100.00	Yes
Di	52	Y	-0.008	-0.008	0.00	Yes	100.00	Yes
	53	Y	-0.008	-0.008	0.00	Yes	100.00	Yes
	54	Y	-0.008	-0.008	0.00	Yes	100.00	Yes
	55	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	56	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	57	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	58	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	59	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	60	Y	-0.006	-0.006	0.00	Yes	100.00	Yes
	61	Y	-0.014	-0.014	0.00	Yes	100.00	Yes
	62	Y	-0.014	-0.014	0.00	Yes	100.00	Yes
	63	Y	-0.014	-0.014	0.00	Yes	100.00	Yes
	64	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
	66	Y	-0.005	-0.005	0.00	Yes	100.00	Yes

95	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
97	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
74	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
99	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
73	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
101	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
103	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
105	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
107	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
109	Y	-0.005	-0.005	0.00	Yes	100.00	Yes
111	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
112	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
113	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
114	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
115	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
116	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
117	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
118	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
119	Y	-0.007	-0.007	0.00	Yes	100.00	Yes
120	Y	-0.008	-0.008	0.00	Yes	100.00	Yes
124	Y	-0.008	-0.008	0.00	Yes	100.00	Yes
125	Y	-0.008	-0.008	0.00	Yes	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	64	y	-0.038	0.83	No
		y	-0.038	5.17	No
		y	-0.12	3.50	No
	66	y	-0.018	0.71	No
		y	-0.018	5.29	No
		y	-0.016	3.50	No
	95	y	-0.038	0.83	No
		y	-0.038	5.17	No
		y	-0.12	3.50	No
	99	y	-0.017	0.68	No
		y	-0.017	5.32	No
	73	y	-0.017	0.68	No
		y	-0.017	5.32	No
	101	y	-0.018	0.71	No
		y	-0.018	5.29	No
		y	-0.016	3.50	No
	103	y	-0.054	0.50	No
		y	-0.054	7.50	No
		y	-0.12	4.50	No
	107	y	-0.017	0.68	No
		y	-0.017	5.32	No
	109	y	-0.018	0.71	No
		y	-0.018	5.29	No

		y	-0.016	3.50	No
W0	64	z	-0.149	0.83	No
		z	-0.149	5.17	No
	66	z	-0.102	0.71	No
		z	-0.102	5.29	No
	95	z	-0.149	0.83	No
		z	-0.149	5.17	No
	99	z	-0.126	0.68	No
		z	-0.126	5.32	No
	73	z	-0.126	0.68	No
		z	-0.126	5.32	No
	101	z	-0.102	0.71	No
		z	-0.102	5.29	No
	103	z	-0.437	0.50	No
		z	-0.437	7.50	No
	107	z	-0.17	0.68	No
		z	-0.17	5.32	No
	109	z	-0.157	0.71	No
		z	-0.157	5.29	No
W30	64	x	-0.155	0.83	No
		x	-0.155	5.17	No
		x	-0.082	3.50	No
	66	x	-0.139	0.71	No
		x	-0.139	5.29	No
		x	-0.027	3.50	No
	95	x	-0.155	0.83	No
		x	-0.155	5.17	No
		x	-0.082	3.50	No
	99	x	-0.156	0.68	No
		x	-0.156	5.32	No
	73	x	-0.156	0.68	No
		x	-0.156	5.32	No
	101	x	-0.139	0.71	No
		x	-0.139	5.29	No
		x	-0.027	3.50	No
	103	x	-0.239	0.50	No
		x	-0.239	7.50	No
		x	-0.115	4.50	No
	107	x	-0.112	0.68	No
		x	-0.112	5.32	No
	109	x	-0.084	0.71	No
		x	-0.084	5.29	No
		x	-0.032	3.50	No
Di	64	y	-0.057	0.83	No
		y	-0.057	5.17	No
		y	-0.091	3.50	No
	66	y	-0.047	0.71	No
		y	-0.047	5.29	No
		y	-0.012	3.50	No
	95	y	-0.057	0.83	No
		y	-0.057	5.17	No
		y	-0.091	3.50	No
	99	y	-0.053	0.68	No
		y	-0.053	5.32	No
	73	y	-0.053	0.68	No
		y	-0.053	5.32	No
	101	y	-0.047	0.71	No
		y	-0.047	5.29	No
		y	-0.012	3.50	No
	103	y	-0.117	0.50	No

		y	-0.117	7.50	No
		y	-0.091	4.50	No
	107	y	-0.053	0.68	No
		y	-0.053	5.32	No
	109	y	-0.047	0.71	No
		y	-0.047	5.29	No
		y	-0.012	3.50	No
Wi0	64	z	-0.027	0.83	No
		z	-0.027	5.17	No
	66	z	-0.02	0.71	No
		z	-0.02	5.29	No
	95	z	-0.027	0.83	No
		z	-0.027	5.17	No
	99	z	-0.024	0.68	No
		z	-0.024	5.32	No
	73	z	-0.024	0.68	No
		z	-0.024	5.32	No
	101	z	-0.02	0.71	No
		z	-0.02	5.29	No
	103	z	-0.074	0.50	No
		z	-0.074	7.50	No
	107	z	-0.031	0.68	No
		z	-0.031	5.32	No
	109	z	-0.029	0.71	No
		z	-0.029	5.29	No
Wi30	64	x	-0.028	0.83	No
		x	-0.028	5.17	No
		x	-0.017	3.50	No
	66	x	-0.025	0.71	No
		x	-0.025	5.29	No
		x	-0.007	3.50	No
	95	x	-0.028	0.83	No
		x	-0.028	5.17	No
		x	-0.017	3.50	No
	99	x	-0.028	0.68	No
		x	-0.028	5.32	No
	73	x	-0.028	0.68	No
		x	-0.028	5.32	No
	101	x	-0.025	0.71	No
		x	-0.025	5.29	No
		x	-0.007	3.50	No
	103	x	-0.044	0.50	No
		x	-0.044	7.50	No
		x	-0.022	4.50	No
	107	x	-0.021	0.68	No
		x	-0.021	5.32	No
	109	x	-0.017	0.71	No
		x	-0.017	5.29	No
		x	-0.008	3.50	No
WL0	64	z	-0.008	0.83	No
		z	-0.008	5.17	No
	66	z	-0.005	0.71	No
		z	-0.005	5.29	No
	95	z	-0.008	0.83	No
		z	-0.008	5.17	No
	99	z	-0.007	0.68	No
		z	-0.007	5.32	No
	73	z	-0.007	0.68	No
		z	-0.007	5.32	No
	101	z	-0.005	0.71	No

		z	-0.005	5.29	No
	103	z	-0.022	0.50	No
		z	-0.022	7.50	No
	107	z	-0.009	0.68	No
		z	-0.009	5.32	No
	109	z	-0.008	0.71	No
		z	-0.008	5.29	No
WL30	64	x	-0.008	0.83	No
		x	-0.008	5.17	No
		x	-0.004	3.50	No
	66	x	-0.007	0.71	No
		x	-0.007	5.29	No
		x	-0.001	3.50	No
	95	x	-0.008	0.83	No
		x	-0.008	5.17	No
		x	-0.004	3.50	No
	99	x	-0.008	0.68	No
		x	-0.008	5.32	No
	73	x	-0.008	0.68	No
		x	-0.008	5.32	No
	101	x	-0.007	0.71	No
		x	-0.007	5.29	No
		x	-0.001	3.50	No
	103	x	-0.012	0.50	No
		x	-0.012	7.50	No
		x	-0.006	4.50	No
	107	x	-0.006	0.68	No
		x	-0.006	5.32	No
	109	x	-0.004	0.71	No
		x	-0.004	5.29	No
		x	-0.002	3.50	No
LL1	112	y	-0.25	50.00	Yes
LL2	111	y	-0.25	100.00	Yes
LLa1	109	y	-0.25	50.00	Yes
LLa2	107	y	-0.25	50.00	Yes
LLa3	103	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

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

Earthquake (Dynamic analysis only)

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

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Current Date: 2/7/2019 2:15 PM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2019\4C-5C\Rev.1\CT2019 (LTE 4C-5C-6C).etz\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 3X3X3_8	**52**	LC3 at 65.63%	0.34	OK	Eq. H3-6
		53	LC4 at 34.38%	0.28	OK	Eq. H1-1b
		54	LC1 at 65.63%	0.28	OK	Eq. H1-1b
		120	LC3 at 100.00%	**0.97**	**OK**	Eq. H3-6
		124	LC4 at 0.00%	0.83	OK	Eq. H1-1b
		125	LC1 at 0.00%	0.85	OK	Eq. H1-1b
	LU 2-1_2X1-1_2X1_4	**55**	LC1 at 100.00%	**1.19**	**N.G.**	Eq. H2-1
		56	LC1 at 0.00%	1.08	N.G.	Eq. H2-1
		57	LC3 at 100.00%	0.98	OK	Eq. H2-1
		58	LC2 at 0.00%	1.17	N.G.	Eq. H2-1
		59	LC4 at 100.00%	1.08	N.G.	Eq. H2-1
		60	LC3 at 0.00%	1.07	N.G.	Eq. H2-1
	PIPE 2x0.154	**64**	LC2 at 81.25%	1.00	N.G.	Eq. H1-1b
		66	LC2 at 81.25%	0.86	OK	Eq. H1-1b
		95	LC2 at 81.25%	1.00	N.G.	Eq. H1-1b
		97	LC2 at 81.25%	0.18	OK	Eq. H1-1b
		74	LC3 at 81.25%	0.18	OK	Eq. H1-1b
		99	LC2 at 81.25%	0.90	OK	Eq. H1-1b
		73	LC2 at 81.25%	0.90	OK	Eq. H1-1b

	101	LC2 at 81.25%	0.86	OK	Eq. H1-1b
	103	LC1 at 71.88%	**1.85**	**N.G.**	Eq. H1-1b
	105	LC4 at 81.25%	0.13	OK	Eq. H1-1b
	107	LC1 at 81.25%	0.57	OK	Eq. H1-1b
	109	LC1 at 81.25%	0.53	OK	Eq. H1-1b
PIPE 3x0.216	**111**	LC3 at 100.00%	**0.50**	**OK**	Eq. H3-6
	112	LC1 at 0.00%	0.29	OK	Eq. H1-1b
	113	LC12 at 100.00%	0.44	OK	Eq. H1-1b
	114	LC11 at 0.00%	0.47	OK	Eq. H1-1b
	115	LC3 at 6.25%	0.40	OK	Eq. H1-1b
	116	LC9 at 100.00%	0.42	OK	Eq. H1-1b
	117	LC9 at 0.00%	0.43	OK	Eq. H1-1b
	118	LC2 at 6.25%	0.30	OK	Eq. H1-1b
	119	LC11 at 100.00%	0.44	OK	Eq. H1-1b
PL 8x5/8	**61**	LC9 at 50.00%	**0.98**	**OK**	Eq. H3-6
	62	LC11 at 50.00%	0.91	OK	Eq. H3-6
	63	LC12 at 50.00%	0.89	OK	Eq. H3-6

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Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2019\4C-5C\Rev.1\CT2019 (LTE 4C-5C-6C).etz\

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
107	-2.4167	0.00	4.667	0
108	-6.9167	0.00	4.667	0
109	-2.4167	0.00	1.3956	0
110	-7.4998	0.00	3.657	0
111	-5.2498	0.00	-0.2401	0
112	0.00	0.00	-2.7902	0
113	-2.8331	0.00	-4.4259	0
114	-0.5831	0.00	-8.323	0
115	2.4167	0.00	4.667	0
116	6.9167	0.00	4.667	0
117	2.4167	0.00	1.3956	0
118	7.4998	0.00	3.657	0
119	5.2498	0.00	-0.2401	0
120	2.8331	0.00	-4.4259	0
121	0.5831	0.00	-8.323	0
122	-7.2082	0.00	4.162	0
123	7.2082	0.00	4.162	0
124	0.00	0.00	-8.323	0
128	6.9233	5.00	2.2575	0
129	1.5066	5.00	-7.1245	0
137	6.9233	-1.00	2.2575	0

139	1.5066	-1.00	-7.1245	0
146	0.00	0.00	0.00	0
147	3.2149	5.00	-4.1656	0
148	3.2149	-1.00	-4.1656	0
149	5.2149	5.00	-0.7014	0
150	5.2149	-1.00	-0.7014	0
151	6.9233	0.00	2.2575	0
152	5.2149	0.00	-0.7014	0
153	3.2149	0.00	-4.1656	0
154	1.5066	0.00	-7.1245	0
155	1.3334	0.00	-7.0245	0
156	3.0417	0.00	-4.0656	0
157	5.0417	0.00	-0.6014	0
158	6.7501	0.00	2.3575	0
191	-1.5066	5.00	-7.1245	0
192	-1.5066	-1.00	-7.1245	0
193	-1.5066	0.00	-7.1245	0
194	-1.3334	0.00	-7.0245	0
195	-3.2149	5.00	-4.1656	0
196	-3.2149	-1.00	-4.1656	0
197	-3.2149	0.00	-4.1656	0
198	-3.0417	0.00	-4.0656	0
199	-5.2149	5.00	-0.7014	0
200	-5.2149	-1.00	-0.7014	0
201	-5.2149	0.00	-0.7014	0
202	-5.0417	0.00	-0.6014	0
203	-6.9233	5.00	2.2575	0
204	-6.9233	-1.00	2.2575	0
205	-6.9233	0.00	2.2575	0
206	-6.7501	0.00	2.3575	0
207	-5.4167	6.00	4.867	0
208	-5.4167	-2.00	4.867	0
209	-5.4167	0.00	4.867	0
210	-5.4167	0.00	4.667	0
211	-2.00	5.00	4.867	0
212	-2.00	-1.00	4.867	0
213	-2.00	0.00	4.867	0
214	-2.00	0.00	4.667	0
215	2.00	5.00	4.867	0
216	2.00	-1.00	4.867	0
217	2.00	0.00	4.867	0
218	2.00	0.00	4.667	0
219	5.4167	5.00	4.867	0
220	5.4167	-1.00	4.867	0
221	5.4167	0.00	4.867	0
222	5.4167	0.00	4.667	0
223	5.1651	0.00	-0.3878	0
224	2.9151	0.00	-4.2849	0
229	-5.1684	0.00	-0.3821	0
230	-2.9184	0.00	-4.2792	0
231	2.2533	0.00	4.667	0
232	-2.2467	0.00	4.667	0
238	2.8842	0.00	1.6648	0
244	4.6139	0.00	2.6635	0
249	-0.0003	0.00	-3.3302	0
250	-0.0003	0.00	-5.3275	0
251	-2.8839	0.00	1.6653	0
252	-4.6136	0.00	2.664	0
253	-2.8839	-0.25	1.6653	0
254	-7.2082	-0.25	4.162	0

255	-4.6136	-0.25	2.664	0
256	2.8842	-0.25	1.6648	0
257	4.6139	-0.25	2.6635	0
258	-0.0003	-0.25	-5.3275	0
259	-0.0003	-0.25	-3.3302	0
260	-1.1541	-0.25	0.6667	0
261	1.1541	-0.25	0.6667	0
262	0.00	-0.25	-1.3323	0
263	-4.037	-0.25	2.3311	0
264	-3.4604	-0.25	1.9982	0
265	-4.037	0.00	2.3311	0
266	-3.4604	0.00	1.9982	0
267	4.0373	0.00	2.3306	0
268	3.4607	0.00	1.9977	0
269	4.0373	-0.25	2.3306	0
270	3.4607	-0.25	1.9977	0
271	-0.0003	0.00	-3.9959	0
272	-0.0003	0.00	-4.6617	0
273	-0.0003	-0.25	-3.9959	0
274	-0.0003	-0.25	-4.6617	0
277	-2.5335	0.00	1.463	0
280	2.5335	0.00	1.4629	0
283	-7.15E-05	0.00	-2.9252	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
260	1	1	1	1	1	1
261	1	1	1	1	1	1
262	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
52	122	109		HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
53	117	123		HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
54	124	112		HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
55	277	107		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
56	115	280		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
57	280	119		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
58	120	283		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
59	283	113		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
60	111	277		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
61	110	108		PL 8x5/8	A36	0.00	0.00	0.00
62	116	118		PL 8x5/8	A36	0.00	0.00	0.00
63	121	114		PL 8x5/8	A36	0.00	0.00	0.00
64	128	137		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
66	129	139		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
95	191	192		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
97	195	196		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

74	149	150	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
99	199	200	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
73	147	148	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
101	203	204	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
103	207	208	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
105	211	212	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	215	216	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
109	219	220	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
111	232	108	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
112	232	231	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
113	231	116	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
114	110	229	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
115	229	230	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
116	230	114	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
117	121	224	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
118	224	223	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
119	223	118	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
120	255	260	HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
124	261	257	HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
125	262	258	HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
64	0.00	2	-0.50	0.00	-0.866
66	0.00	2	-0.50	0.00	-0.866
95	0.00	2	-0.50	0.00	0.866
97	0.00	2	-0.50	0.00	0.866
74	0.00	2	-0.50	0.00	-0.866
99	0.00	2	-0.50	0.00	0.866
73	0.00	2	-0.50	0.00	-0.866
101	0.00	2	-0.50	0.00	0.866

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

Current Date: 2/7/2019 2:13 PM
Units system: English
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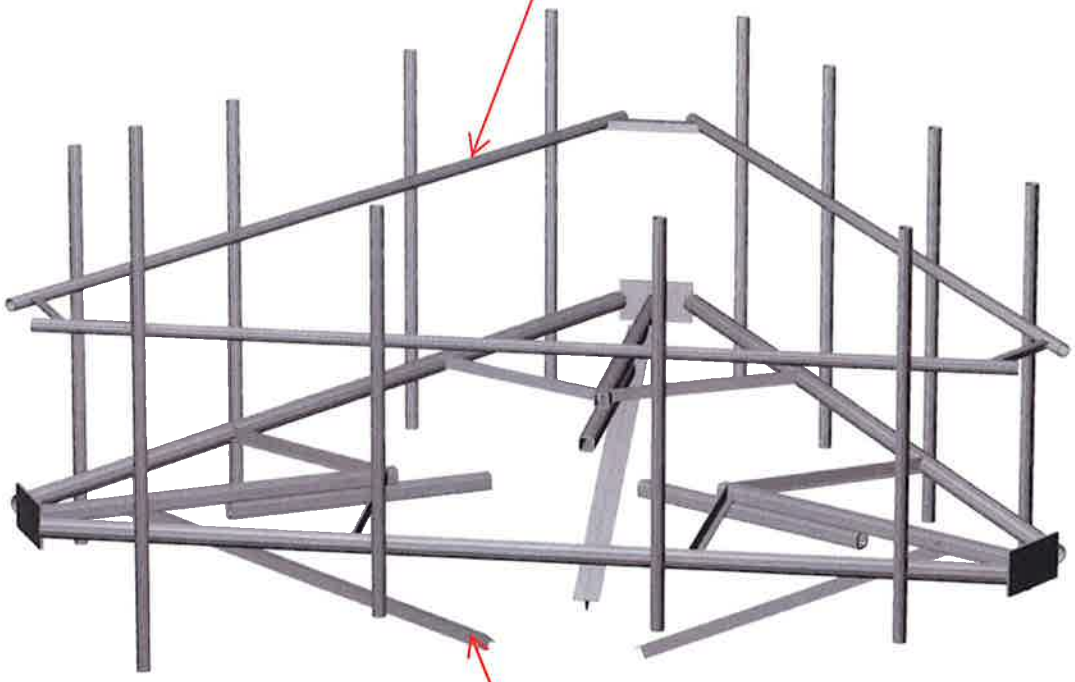

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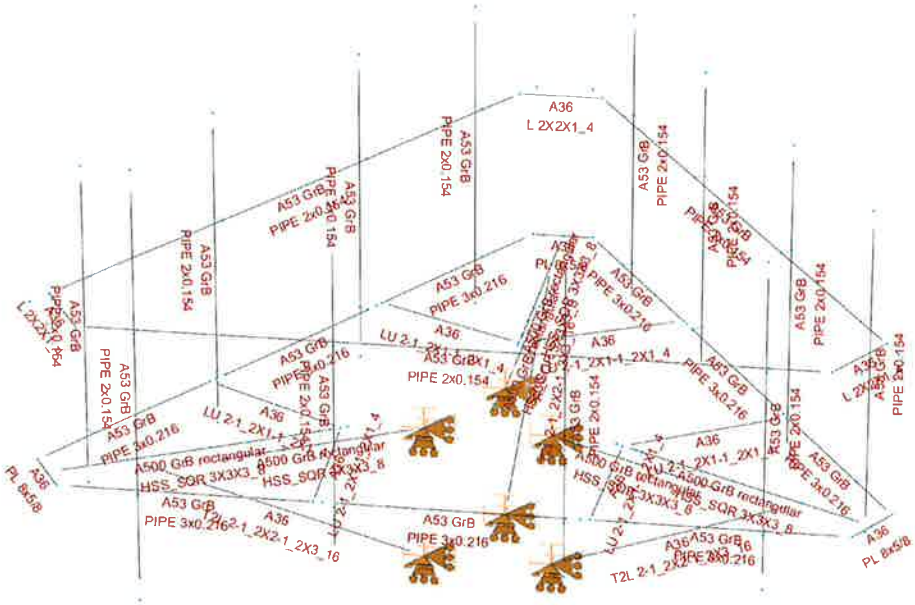
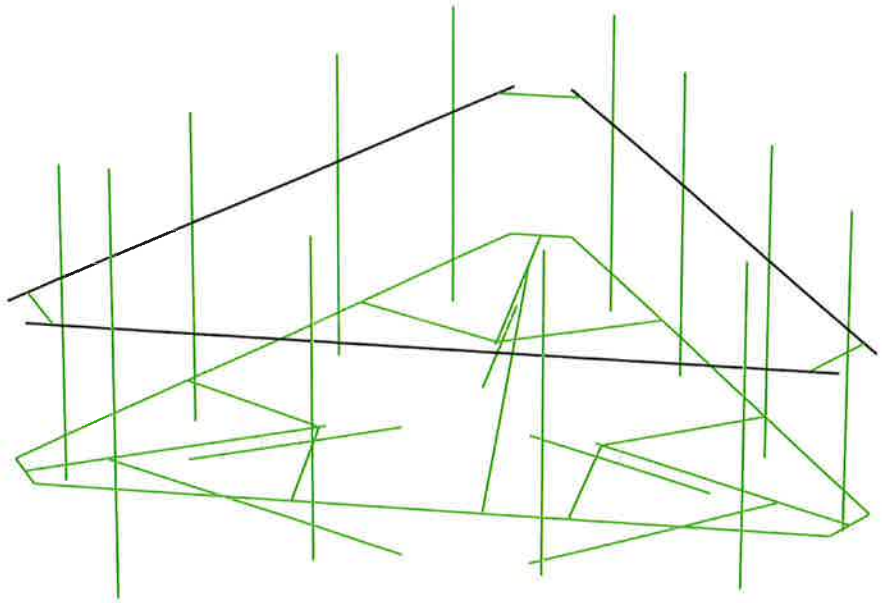


Design status

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



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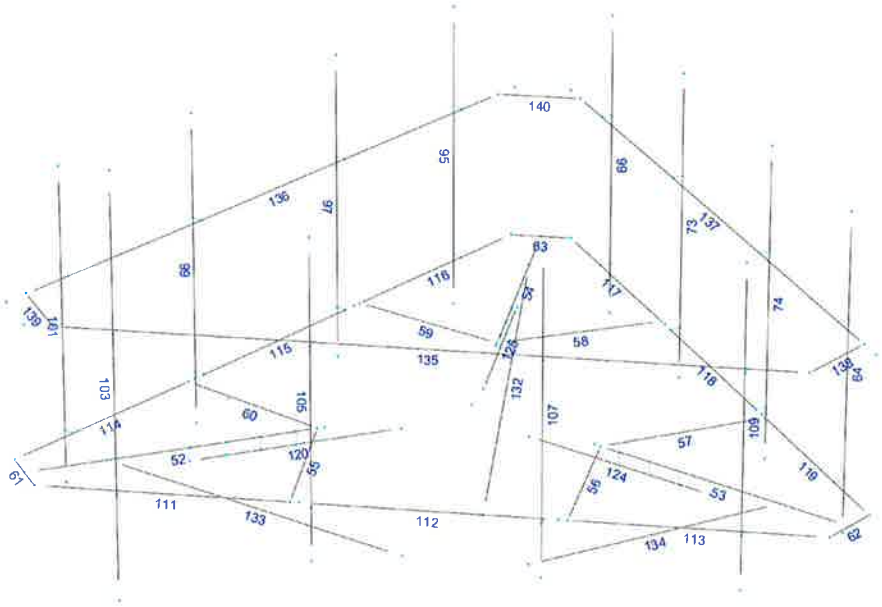

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 3X3X3_8	**52**	LC2 at 27.68%	0.20	OK	Eq. H1-1b
		53	LC4 at 72.32%	0.19	OK	Eq. H1-1b
		54	LC1 at 26.79%	0.18	OK	Eq. H1-1b
		120	LC3 at 100.00%	**0.26**	**OK**	Eq. H1-1b
		124	LC4 at 0.00%	0.14	OK	Eq. H1-1b
		125	LC2 at 0.00%	0.21	OK	Eq. H1-1b
	L 2X2X1_4	**138**	LC3 at 0.00%	0.47	OK	Sec. F1
		139	LC3 at 100.00%	**0.74**	**OK**	Eq. H2-1
		140	LC2 at 100.00%	0.43	OK	Sec. F1
	LU 2-1_2X1-1_2X1_4	**55**	LC1 at 100.00%	0.64	OK	Eq. H2-1
		56	LC1 at 0.00%	0.64	OK	Eq. H2-1
		57	LC2 at 100.00%	0.51	OK	Eq. H2-1
		58	LC2 at 0.00%	**0.64**	**OK**	Eq. H2-1
		59	LC4 at 100.00%	0.63	OK	Eq. H2-1
		60	LC4 at 0.00%	0.55	OK	Eq. H2-1
	PIPE 2x0.154	**64**	LC4 at 81.25%	0.49	OK	Eq. H1-1b
		66	LC1 at 81.25%	0.45	OK	Eq. H1-1b
		95	LC1 at 81.25%	0.47	OK	Eq. H1-1b

	97	LC3 at 81.25%	0.46	OK	Eq. H1-1b
	74	LC4 at 81.25%	0.46	OK	Eq. H1-1b
	99	LC3 at 81.25%	0.66	OK	Eq. H1-1b
	73	LC2 at 81.25%	0.60	OK	Eq. H1-1b
	101	LC2 at 81.25%	0.48	OK	Eq. H1-1b
	103	LC1 at 35.42%	0.82	OK	Eq. H1-1b
	105	LC1 at 81.25%	0.48	OK	Eq. H1-1b
	107	LC4 at 81.25%	0.46	OK	Eq. H1-1b
	109	LC4 at 81.25%	0.39	OK	Eq. H1-1b
	135	LC7 at 10.71%	**0.86**	**With warnings**	Eq. H1-1b
	136	LC1 at 10.71%	0.58	With warnings	Eq. H1-1b
	137	LC4 at 10.71%	0.50	With warnings	Eq. H1-1b
PIPE 3x0.216	**111**	LC3 at 68.75%	**0.28**	**OK**	Eq. H1-1b
	112	LC4 at 6.25%	0.19	OK	Eq. H1-1b
	113	LC4 at 100.00%	0.19	OK	Eq. H1-1b
	114	LC2 at 0.00%	0.22	OK	Eq. H1-1b
	115	LC1 at 6.25%	0.15	OK	Eq. H1-1b
	116	LC1 at 100.00%	0.22	OK	Eq. H1-1b
	117	LC1 at 0.00%	0.21	OK	Eq. H1-1b
	118	LC3 at 6.25%	0.16	OK	Eq. H1-1b
	119	LC4 at 100.00%	0.21	OK	Eq. H1-1b
PL 8x5/8	**61**	LC10 at 50.00%	0.33	OK	Eq. H3-1
	62	LC12 at 0.00%	0.30	OK	Eq. H3-1
	63	LC1 at 50.00%	**0.35**	**OK**	Eq. H3-6
T2L 2-1_2X2-1_2X3_16	**132**	LC1 at 100.00%	0.37	OK	Eq. H2-1
	133	LC11 at 100.00%	**0.42**	**OK**	Eq. H2-1
	134	LC4 at 0.00%	0.38	OK	Eq. H2-1

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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
107	-2.4167	0.00	4.667	0
108	-6.9167	0.00	4.667	0
109	-2.4167	0.00	1.3956	0
110	-7.4998	0.00	3.657	0
111	-5.2498	0.00	-0.2401	0
112	0.00	0.00	-2.7902	0
113	-2.8331	0.00	-4.4259	0
114	-0.5831	0.00	-8.323	0
115	2.4167	0.00	4.667	0
116	6.9167	0.00	4.667	0
117	2.4167	0.00	1.3956	0
118	7.4998	0.00	3.657	0
119	5.2498	0.00	-0.2401	0
120	2.8331	0.00	-4.4259	0
121	0.5831	0.00	-8.323	0
122	-7.2082	0.00	4.162	0
123	7.2082	0.00	4.162	0
124	0.00	0.00	-8.323	0
128	6.9233	5.00	2.2575	0
129	1.5066	5.00	-7.1245	0
137	6.9233	-1.00	2.2575	0

139	1.5066	-1.00	-7.1245	0
146	0.00	0.00	0.00	0
147	3.2149	5.00	-4.1656	0
148	3.2149	-1.00	-4.1656	0
149	5.2149	5.00	-0.7014	0
150	5.2149	-1.00	-0.7014	0
151	6.9233	0.00	2.2575	0
152	5.2149	0.00	-0.7014	0
153	3.2149	0.00	-4.1656	0
154	1.5066	0.00	-7.1245	0
155	1.3334	0.00	-7.0245	0
156	3.0417	0.00	-4.0656	0
157	5.0417	0.00	-0.6014	0
158	6.7501	0.00	2.3575	0
191	-1.5066	5.00	-7.1245	0
192	-1.5066	-1.00	-7.1245	0
193	-1.5066	0.00	-7.1245	0
194	-1.3334	0.00	-7.0245	0
195	-3.2149	5.00	-4.1656	0
196	-3.2149	-1.00	-4.1656	0
197	-3.2149	0.00	-4.1656	0
198	-3.0417	0.00	-4.0656	0
199	-5.2149	5.00	-0.7014	0
200	-5.2149	-1.00	-0.7014	0
201	-5.2149	0.00	-0.7014	0
202	-5.0417	0.00	-0.6014	0
203	-6.9233	5.00	2.2575	0
204	-6.9233	-1.00	2.2575	0
205	-6.9233	0.00	2.2575	0
206	-6.7501	0.00	2.3575	0
207	-5.4167	6.00	4.867	0
208	-5.4167	-2.00	4.867	0
209	-5.4167	0.00	4.867	0
210	-5.4167	0.00	4.667	0
211	-2.00	5.00	4.867	0
212	-2.00	-1.00	4.867	0
213	-2.00	0.00	4.867	0
214	-2.00	0.00	4.667	0
215	2.00	5.00	4.867	0
216	2.00	-1.00	4.867	0
217	2.00	0.00	4.867	0
218	2.00	0.00	4.667	0
219	5.4167	5.00	4.867	0
220	5.4167	-1.00	4.867	0
221	5.4167	0.00	4.867	0
222	5.4167	0.00	4.667	0
223	5.1651	0.00	-0.3878	0
224	2.9151	0.00	-4.2849	0
229	-5.1684	0.00	-0.3821	0
230	-2.9184	0.00	-4.2792	0
231	2.2533	0.00	4.667	0
232	-2.2467	0.00	4.667	0
238	2.8842	0.00	1.6648	0
244	4.6139	0.00	2.6635	0
249	-0.0003	0.00	-3.3302	0
250	-0.0003	0.00	-5.3275	0
251	-2.8839	0.00	1.6653	0
252	-4.6136	0.00	2.664	0
253	-2.8839	-0.25	1.6653	0
255	-4.6136	-0.25	2.664	0

256	2.8842	-0.25	1.6648	0
257	4.6139	-0.25	2.6635	0
258	-0.0003	-0.25	-5.3275	0
259	-0.0003	-0.25	-3.3302	0
260	-1.1541	-0.25	0.6667	0
261	1.1541	-0.25	0.6667	0
262	0.00	-0.25	-1.3323	0
263	-4.037	-0.25	2.3311	0
264	-3.4604	-0.25	1.9982	0
265	-4.037	0.00	2.3311	0
266	-3.4604	0.00	1.9982	0
267	4.0373	0.00	2.3306	0
268	3.4607	0.00	1.9977	0
269	4.0373	-0.25	2.3306	0
270	3.4607	-0.25	1.9977	0
271	-0.0003	0.00	-3.9959	0
272	-0.0003	0.00	-4.6617	0
273	-0.0003	-0.25	-3.9959	0
274	-0.0003	-0.25	-4.6617	0
277	-2.5335	0.00	1.463	0
280	2.5335	0.00	1.4629	0
283	-7.15E-05	0.00	-2.9252	0
286	-5.9109	0.00	3.413	0
289	5.9111	0.00	3.4128	0
292	-0.0001	0.00	-6.8253	0
293	0.00	-2.75	-1.3323	0
294	-1.1541	-2.75	0.6667	0
295	1.1541	-2.75	0.6667	0
297	0.5417	3.00	-8.3957	0
298	7.5417	3.00	3.7287	0
299	7.2917	3.00	3.2957	0
300	0.7917	3.00	-7.9627	0
311	-7.5417	3.00	3.7287	0
312	-7.2917	3.00	3.2957	0
314	-0.5417	3.00	-8.3957	0
315	-0.7917	3.00	-7.9627	0
316	7.00	3.00	4.667	0
317	6.50	3.00	4.667	0
319	-7.00	3.00	4.667	0
320	-6.50	3.00	4.667	0
321	-5.4167	3.00	4.867	0
322	-5.4167	3.00	4.667	0
323	-2.00	3.00	4.867	0
324	-2.00	3.00	4.667	0
325	2.00	3.00	4.867	0
326	2.00	3.00	4.667	0
327	5.4167	3.00	4.867	0
328	5.4167	3.00	4.667	0
329	-6.9233	3.00	2.2575	0
330	-6.7501	3.00	2.3575	0
331	-5.2149	3.00	-0.7014	0
332	-5.0417	3.00	-0.6014	0
333	-3.2149	3.00	-4.1656	0
334	-3.0417	3.00	-4.0656	0
335	-1.5066	3.00	-7.1245	0
336	-1.3334	3.00	-7.0245	0
337	1.5066	3.00	-7.1245	0
338	1.3334	3.00	-7.0245	0
339	3.2149	3.00	-4.1656	0
340	3.0417	3.00	-4.0656	0

341	5.2149	3.00	-0.7014	0
342	5.0417	3.00	-0.6014	0
343	6.9233	3.00	2.2575	0
344	6.7501	3.00	2.3575	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
260	1	1	1	1	1	1
261	1	1	1	1	1	1
262	1	1	1	1	1	1
293	1	1	1	1	1	1
294	1	1	1	1	1	1
295	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
52	122	109		HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
53	117	123		HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
54	124	112		HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
55	277	107		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
56	115	280		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
57	280	119		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
58	120	283		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
59	283	113		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
60	111	277		LU 2-1_2X1-1_2X1_4	A36	0.00	0.00	0.00
61	110	108		PL 8x5/8	A36	0.00	0.00	0.00
62	116	118		PL 8x5/8	A36	0.00	0.00	0.00
63	121	114		PL 8x5/8	A36	0.00	0.00	0.00
64	128	137		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
66	129	139		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
95	191	192		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
97	195	196		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
74	149	150		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
99	199	200		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
73	147	148		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
101	203	204		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
103	207	208		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
105	211	212		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
107	215	216		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
109	219	220		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
111	232	108		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
112	232	231		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
113	231	116		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
114	110	229		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
115	229	230		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
116	230	114		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
117	121	224		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
118	224	223		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00

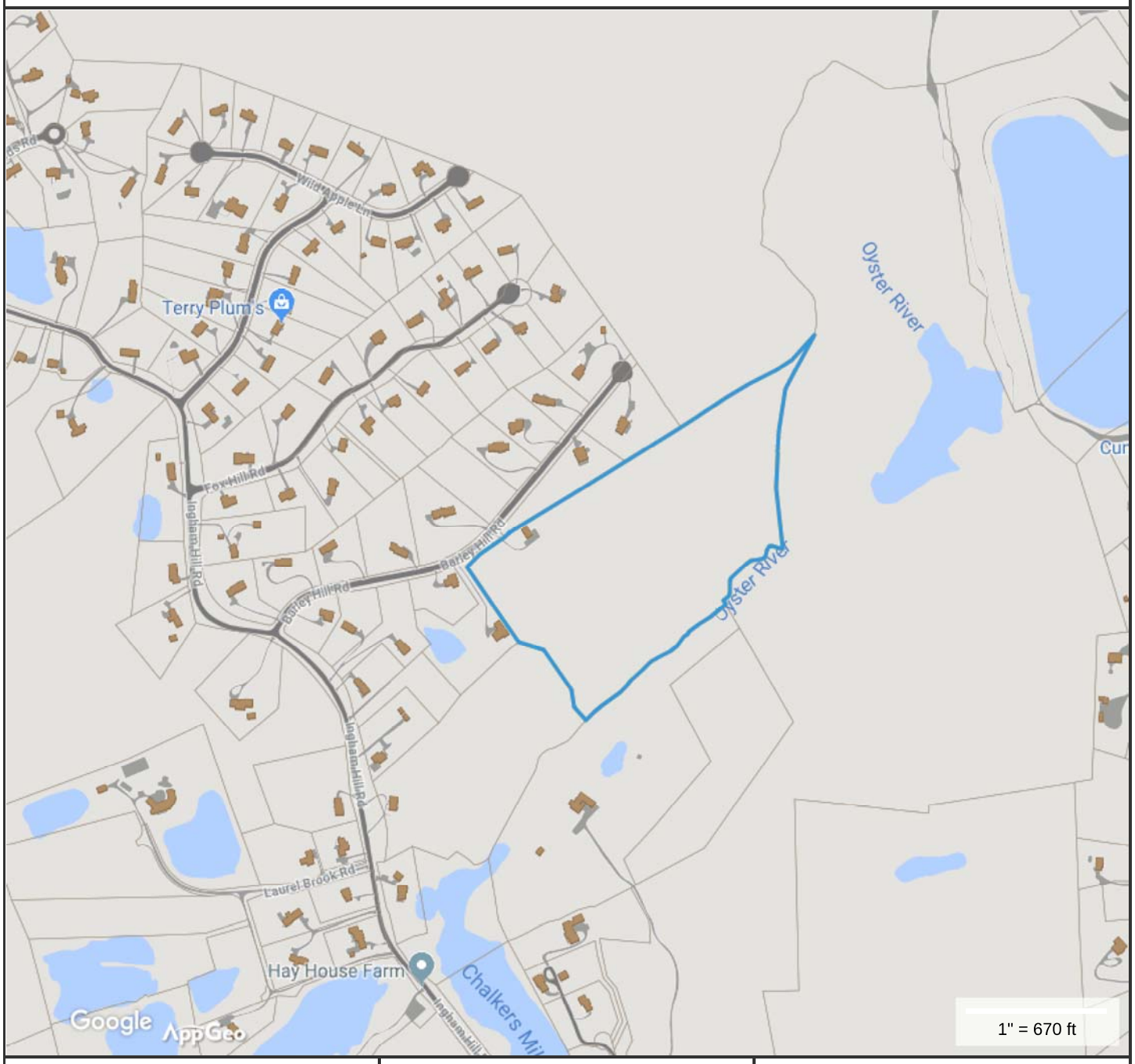
119	223	118	PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
120	255	260	HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
124	261	257	HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
125	262	258	HSS_SQR 3X3X3_8	A500 GrB rectangular	0.00	0.00	0.00
132	293	292	T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
133	294	286	T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
134	289	295	T2L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
135	319	316	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
136	311	314	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
137	297	298	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
138	299	317	L 2X2X1_4	A36	0.00	0.00	0.00
139	320	312	L 2X2X1_4	A36	0.00	0.00	0.00
140	300	315	L 2X2X1_4	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
64	0.00	2	-0.50	0.00	-0.866
66	0.00	2	-0.50	0.00	-0.866
95	0.00	2	-0.50	0.00	0.866
97	0.00	2	-0.50	0.00	0.866
74	0.00	2	-0.50	0.00	-0.866
99	0.00	2	-0.50	0.00	0.866
73	0.00	2	-0.50	0.00	-0.866
101	0.00	2	-0.50	0.00	0.866
138	180.00	0	0.00	0.00	0.00
139	180.00	0	0.00	0.00	0.00
140	90.00	0	0.00	0.00	0.00

Town of Old Saybrook, CT February 22, 2019

INGHAM HILL ROAD



Property Information

Property ID	052/004-0000
Location	INGHAM HILL RD
Owner	LORENZ CAROL J & ROBERT A

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Old Saybrook, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated July 2018
Data updated 11/19/2018

INGHAM HILL RD

Location	INGHAM HILL RD	**MBLU**	052/ 004/ / /
Acct#	00563600	**Owner**	LORENZ CAROL J & ROBERT A
Assessment	$9,900	**Appraisal**	$202,200
PID	3258	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$202,200	$202,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$9,900	$9,900

Owner of Record

Owner	LORENZ CAROL J & ROBERT A	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	P O BOX 351 CENTER OSSIPEE, NH 03814-0351	**Book & Page**	0211/0890
		Sale Date	03/15/1984

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
LORENZ CAROL J & ROBERT A	$0		0211/0890	03/15/1984

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	

Building Photo

(http://images.vgsi.com/photos/OldSaybrookCTPhotos//defaul

Building Layout

(http://images.vgsi.com/photos/OldSaybrookCTPhotos//Sketch

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	6100
Description	FOREST
Zone	AA-1

Land Line Valuation

Size (Acres)	26.12
Depth	0
Assessed Value	$9,900
Appraised Value	$202,200

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$202,200	$202,200
2016	$0	$202,200	$202,200
2015	$0	$202,200	$202,200

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$0	$9,900	$9,900
2016	$0	$9,900	$9,900
2015	$0	$9,900	$9,900

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

9405 5036 9930 0426 0343 81 0073 5000 0010 6475

usps.com
$7.35
US POSTAGE
Flat Rate Env

02/23/2019 Mailed from 06268 062S0000000311

P

PRIORITY MAIL 1-DAY™

Expected Delivery Date: 02/25/19

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

0024

Carrier -- Leave if No Response

C011

SHIP TO: THE HONORABLE CARL P. FORTUNA JR.
TOWN OF OLD SAYBROOK
302 MAIN ST
CC CHRISTINE NELSON, TOWN PLANNER
OLD SAYBROOK CT 06475-2384

USPS TRACKING #

9405 5036 9930 0426 0343 81

Electronic Rate Approved #038555749

Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0426 0343 81

Trans. #:	457424635
Print Date:	02/22/2019
Ship Date:	02/23/2019
Expected Delivery Date:	02/25/2019

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

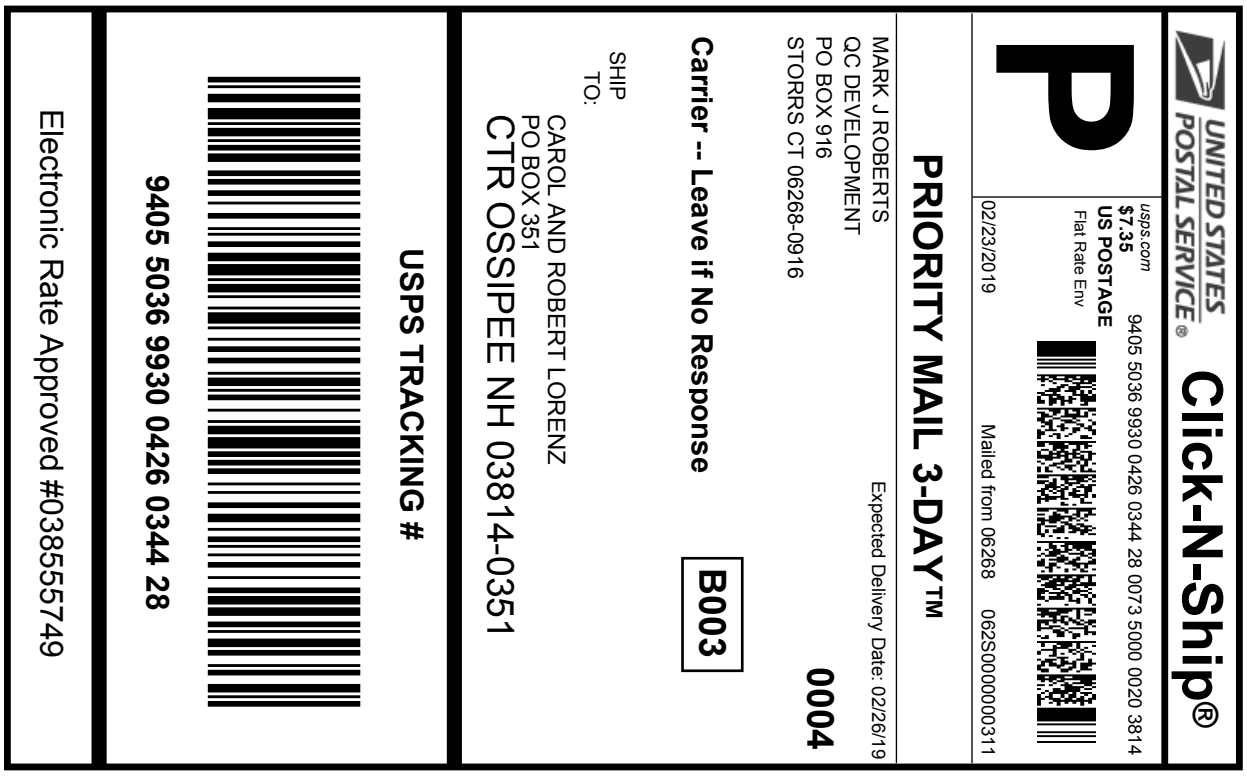
From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: THE HONORABLE CARL P. FORTUNA JR.
TOWN OF OLD SAYBROOK
302 MAIN ST
CC CHRISTINE NELSON, TOWN PLANNER
OLD SAYBROOK CT 06475-2384

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

UNITED STATES POSTAL SERVICE®

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



Cut on dotted line.

Instructions

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

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0426 0344 28

Trans. #:	457424635
Print Date:	02/22/2019
Ship Date:	02/23/2019
Expected Delivery Date:	02/26/2019

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

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

To: CAROL AND ROBERT LORENZ
PO BOX 351
CTR OSSIPEE NH 03814-0351

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

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