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

November 23, 2016

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2196
38 Hatchetts Hill Road, Old Lyme, CT 06371
N 41-19-03.29
W 72-16-11.89

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 165-foot level of the existing 190-foot Monopole at 38 Hatchetts Hill Road, Old Lyme, CT. The structure is owned by Crown Castle and the property is owned by Hatchetts Hill LLC. AT&T now intends to remove three (3) KMW antennas and replace them with three (3) Andrew antennas. AT&T also intends to install three (3) Ericsson RRUS-12. The new antennas and RRUs would be installed at the 165-foot level of the tower (168-ft antenna centerline).

This facility was approved by the Town of Old Lyme Zoning Commission on January 14, 1999. There were no conditions that could feasibly be violated by this modification, including the stealth design, total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Bonnie Reemsnyder, First Selectwoman for the Town of Old Lyme, as well as the property owner and the

tower owner.

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

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

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

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

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

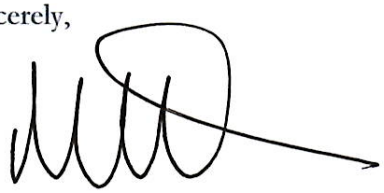
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

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

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Bonnie Reemsnyder - as elected official (via e-mail)
Crown Castle - as structure and property owner (via e-mail)
Hatchetts Hill LLC – as property owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							1.59%
AT&T GSM	1	500	168	0.0069	880	0.5867	0.12%
AT&T UMTS	6	296	168	0.0243	880	0.5867	0.41%
AT&T UMTS	1	500	168	0.0069	1900	1.0000	0.07%
AT&T LTE	1	500	168	0.0069	734	0.4933	0.14%
Site Total							2.33%

*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*							1.59%
AT&T GSM	1	315	168	0.0043	880	0.5867	0.07%
AT&T UMTS	6	251	168	0.0206	880	0.5867	0.35%
AT&T UMTS	1	350	168	0.0034	1900	1.0000	0.05%
AT&T LTE	1	630	168	0.0086	734	0.4933	0.17%
AT&T LTE	1	2133	168	0.0292	1900	1.0000	0.29%
Site Total							2.53%

*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

Note: Proposed Loading may also include corrections to certain Existing Loading values

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (LTE 2C 2017 UPGRADE):
SITE ADDRESS:	38 HATCHETTS HILL ROAD OLD LYME, CT 06371
LATITUDE:	41.317575° N 41° 19' 3.27" N
LONGITUDE:	72.269971° W 72° 16' 11.89" W
TYPE OF SITE:	MONOPOLE / INDOOR EQUIPMENT
TOWER HEIGHT:	191'-0" ±
RAD CENTER:	168'-0" ±
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT2196

SITE NAME: OLD LYME HATCHETTS HILL

PROJECT: LTE 2C 2017 UPGRADE

DRAWING INDEX

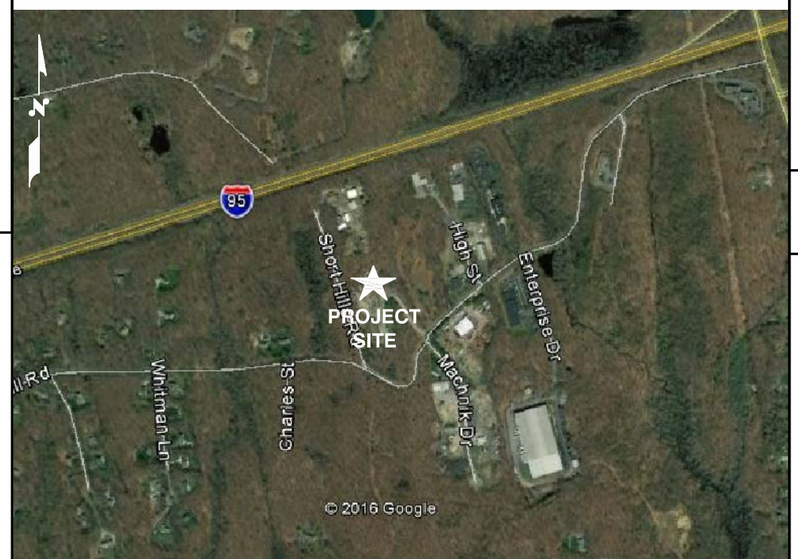
SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	ANTENNA LAYOUT & ELEVATION	1
A-3	DETAILS	1
RF-1	RF-PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

CROWN CASTLE SITE NAME: OLD LYME HATCHETTS HILL
CROWN CASTLE SITE #: 823529

VICINITY MAP

DIRECTIONS TO SITE:

HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. 0.3 MILES. TURN LEFT AT CAPITAL BLVD. 0.3 MILES. TURN LEFT AT WEST ST. 0.3 MILES. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN. 1.5 MILES. TAKE EXIT 22S ON THE LEFT TO MERGE ONTO CT-9 S TOWARD MIDDLETOWN/OLD SAYBROOK. 5.8 MILES. CONTINUE ONTO CT-17 S. 0.5 MILES. CONTINUE ONTO CT-9 S. 22.9 MILES. TAKE THE EXIT ONTO I-95 N/US-1 N TOWARD NEW LON/PROVIDENCE. CONTINUE TO FOLLOW I-95 N. 5.7 MILES. TAKE EXIT 71 FOR 4 MILE RIVER RD. 0.2 MILES. TURN RIGHT AT 4 MILE RIVER RD. 236 FT. TAKE THE 1ST LEFT ONTO HATCHETTS HILL RD. 0.8 MILES. SLIGHT RIGHT AT SHORT HILLS RD. DESTINATION WILL BE 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.

UNDERGROUND SERVICE ALERT

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

72 HOURS

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CHASE · No. 21858 · LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
(LTE 2C)

SITE NUMBER	DRAWING NUMBER	REV
CT2196	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: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    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-F, STRUCTURAL STANDARDS FOR STEEL

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

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

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
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

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

STATE OF CONNECTICUT – DEREK J. CREASEY – No. 23554 – LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C)

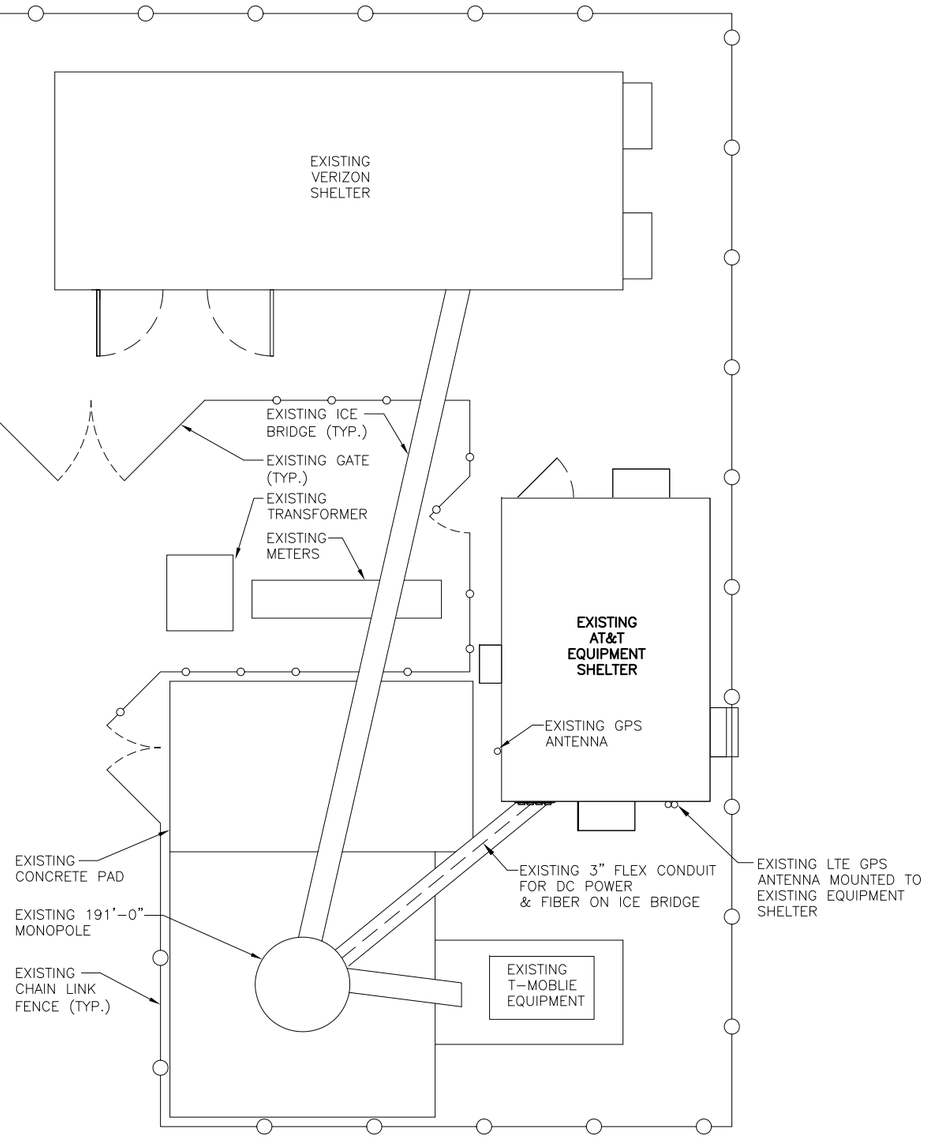
SITE NUMBER	DRAWING NUMBER	REV
CT2196	GN-1	1

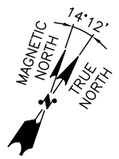
NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

NOTE:

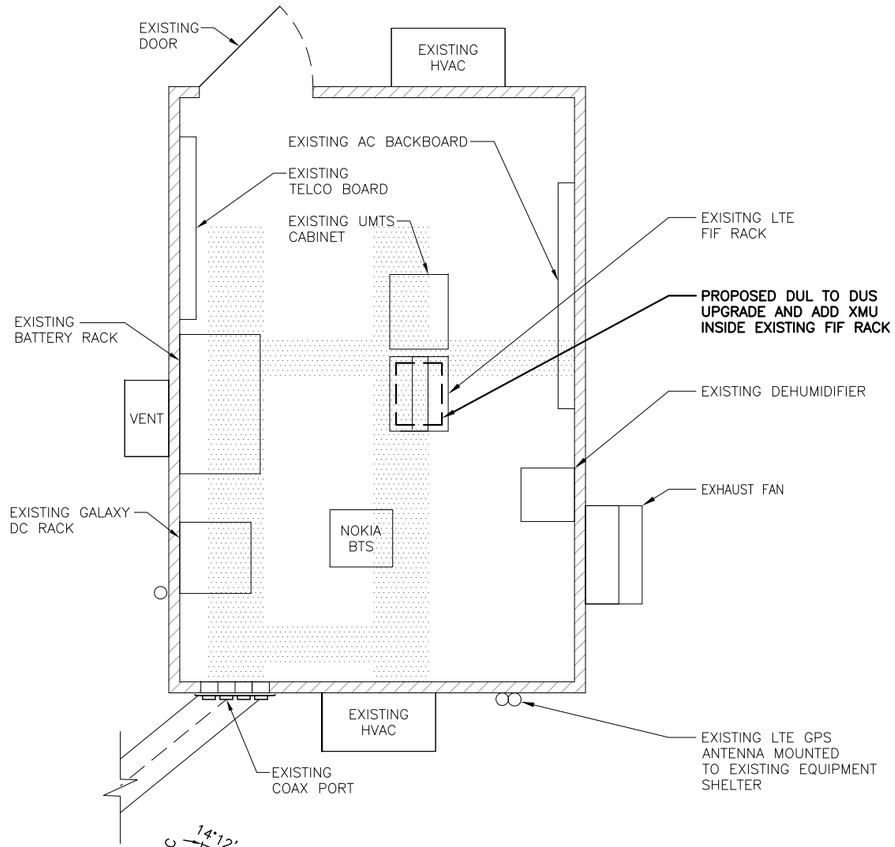
REFER TO STRUCTURAL ASSESSMENT LETTER BY: HUDSON DESIGN GROUP, LLC, DATED: AUGUST 5, 2016, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

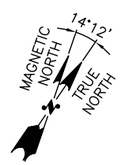




COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

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





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

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

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

27 NORTHWESTERN DR.
SALEM, NH 03079

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

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

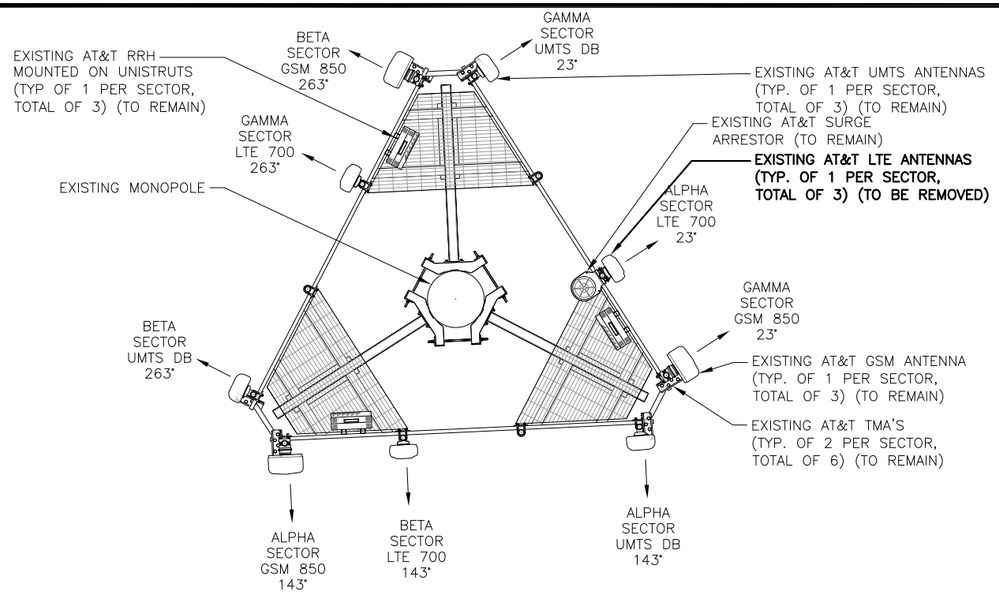
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RB

STATE OF CONNECTICUT · DEREK J. CREASEY · NO. 23,854 · LICENSED PROFESSIONAL ENGINEER

AT&T

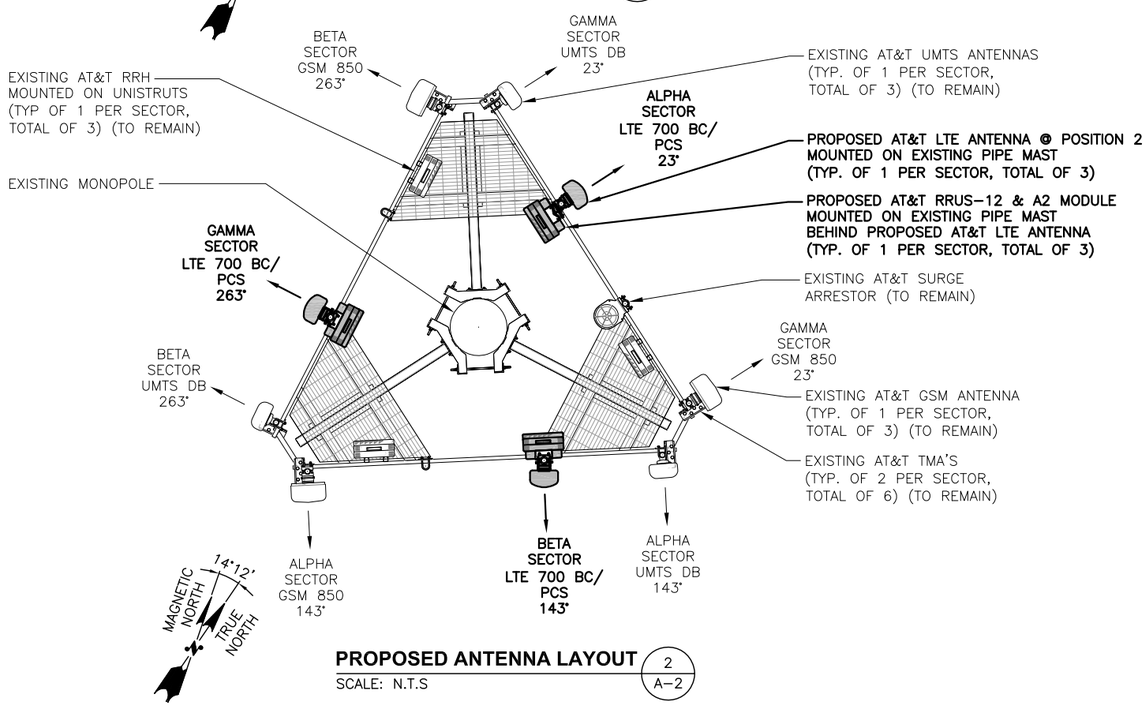
COMPOUND & EQUIPMENT PLANS (LTE 2C)

SITE NUMBER	DRAWING NUMBER	REV
CT2196	A-1	1



EXISTING ANTENNA LAYOUT (1 / A-2)

SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)

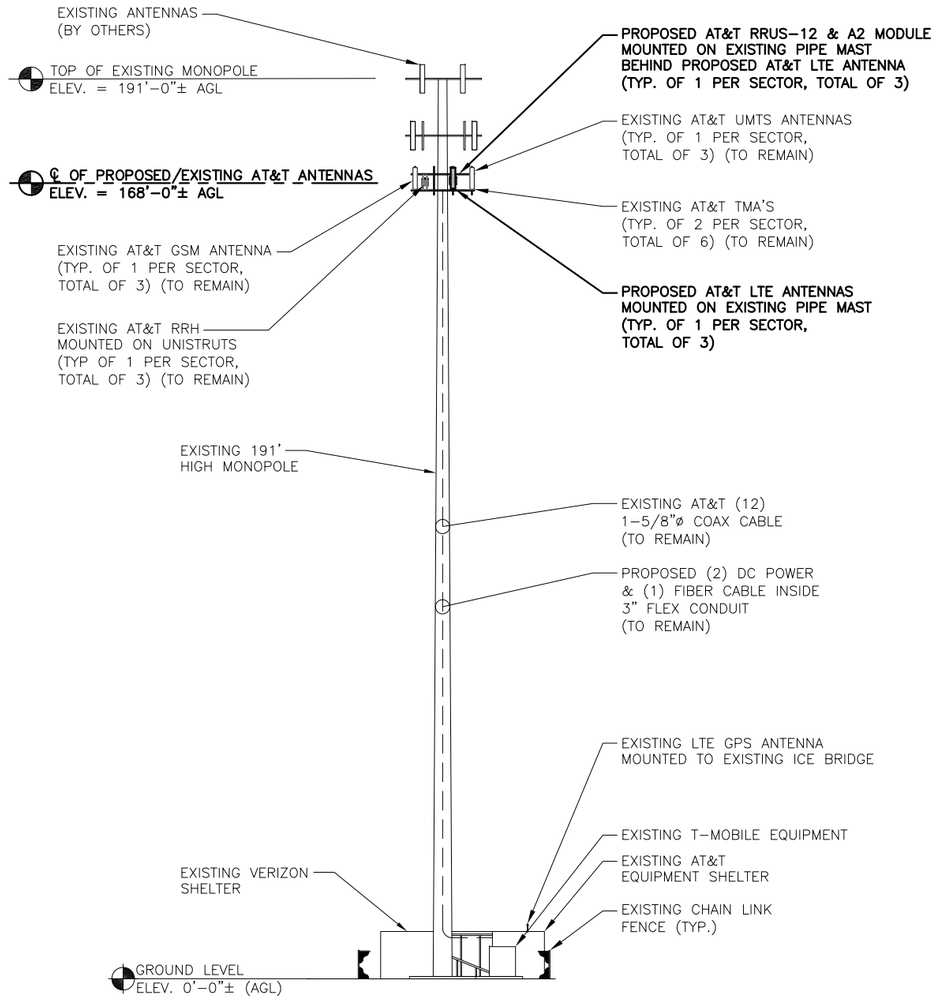
SCALE: N.T.S

NOTE:

REFER TO STRUCTURAL ASSESSMENT LETTER BY: HUDSON DESIGN GROUP, LLC, DATED: AUGUST 5, 2016, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.



ELEVATION (3 / A-2)

22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

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

STATE OF CONNECTICUT — DEREK J. CREASEY — No. 25... — LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION (LTE 2C)

SITE NUMBER	DRAWING NUMBER	REV
CT2196	A-2	1

EXISTING ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	POWERWAVE	7770	55X11X5
	–	–	–
	KMW	AM-X-CD-14-65-00T-RET	48X11.8X5.9
	CSS	DUO1417-8686-4-0	48.4X14X9
BETA:	POWERWAVE	7770	55X11X5
	–	–	–
	KMW	AM-X-CD-14-65-00T-RET	48X11.8X5.9
	CSS	DUO1417-8686-4-0	48.4X14X9
GAMMA:	POWERWAVE	7770	55X11X5
	–	–	–
	KMW	AM-X-CD-14-65-00T-RET	48X11.8X5.9
	CSS	DUO1417-8686-4-0	48.4X14X9

PROPOSED ANTENNA SCHEDULE

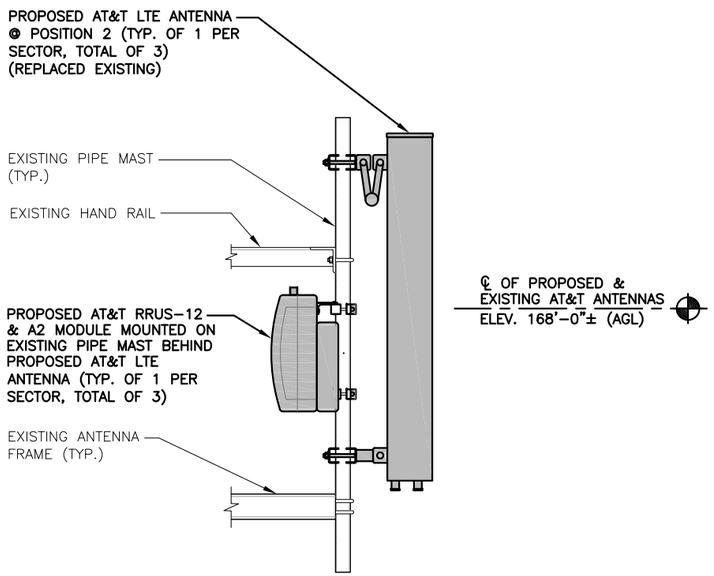
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	POWERWAVE	7770	55X11X5
	ANDREW	SBNHH-1D65A	55X11.9X7.1
	–	–	–
	CSS	DUO1417-8686-4-0	48.4X14X9
BETA:	POWERWAVE	7770	55X11X5
	ANDREW	SBNHH-1D65A	55X11.9X7.1
	–	–	–
	CSS	DUO1417-8686-4-0	48.4X14X9
GAMMA:	POWERWAVE	7770	55X11X5
	ANDREW	SBNHH-1D65A	55X11.9X7.1
	–	–	–
	CSS	DUO1417-8686-4-0	48.4X14X9

NOTE:

REFER TO STRUCTURAL ASSESSMENT LETTER BY: HUDSON DESIGN GROUP, LLC, DATED: AUGUST 5, 2016, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.



PROPOSED ANTENNA MOUNTING DETAIL (1 / A-3)

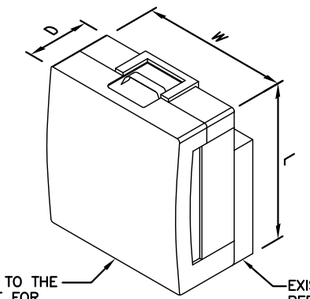
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

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

RRU CHART

QUANTITY	MODEL	L	W	D
3 (E)	RRUS-11	19.7"	17.0"	7.2"
3 (P)	RRUS-12	20.4"	18.5"	7.5"
–	RRUS-32	27.2"	12.1"	7.0"
–	RRUS-E2	20.4"	18.5"	7.5"
3 (P)	LTE-A2	16.4"	15.2"	3.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



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

EXISTING A2 REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRU DETAIL (2 / A-3)

SCALE: N.T.S

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

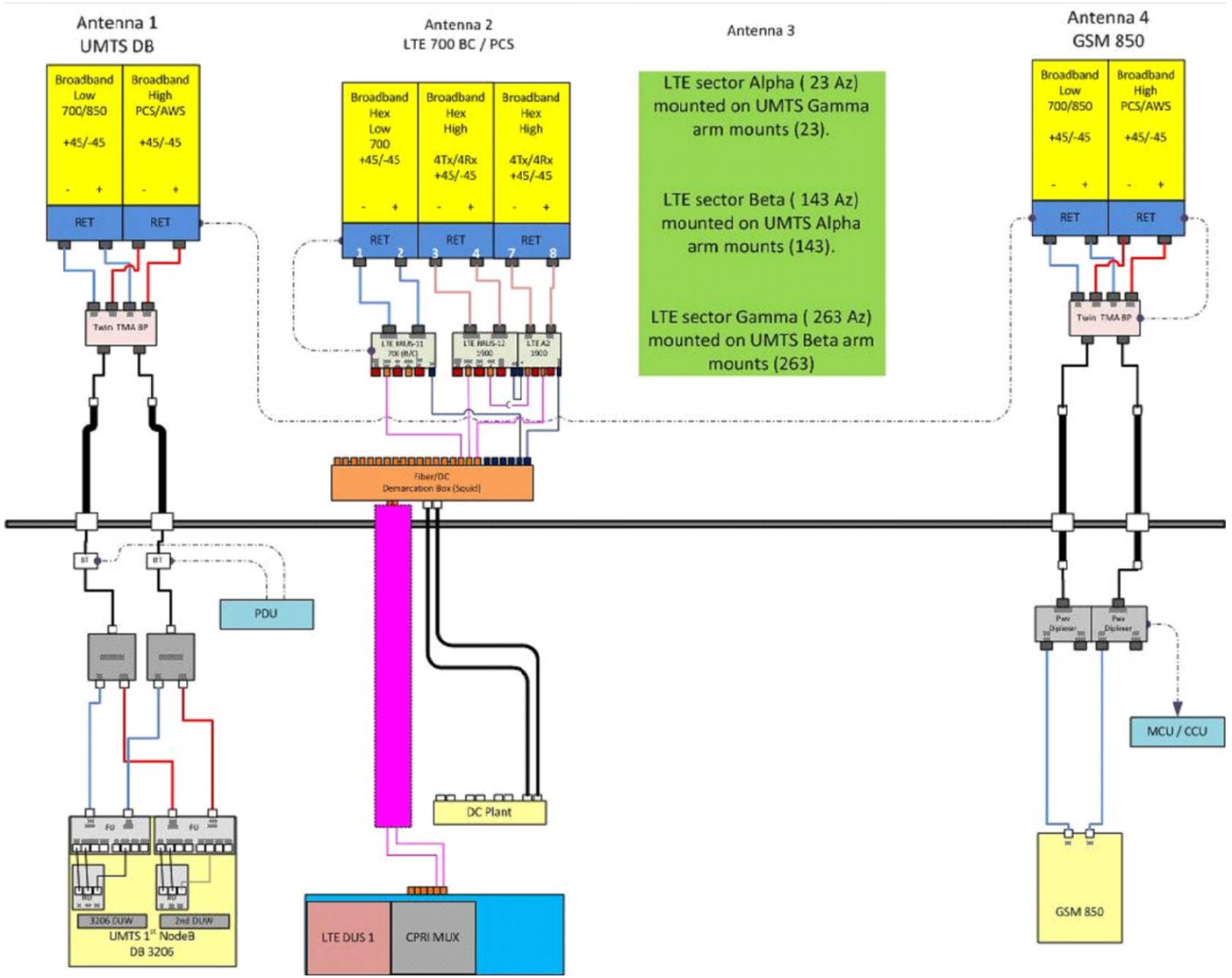
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RB

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

AT&T

DETAILS
(LTE 2C)

SITE NUMBER	DRAWING NUMBER	REV
CT2196	A-3	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
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

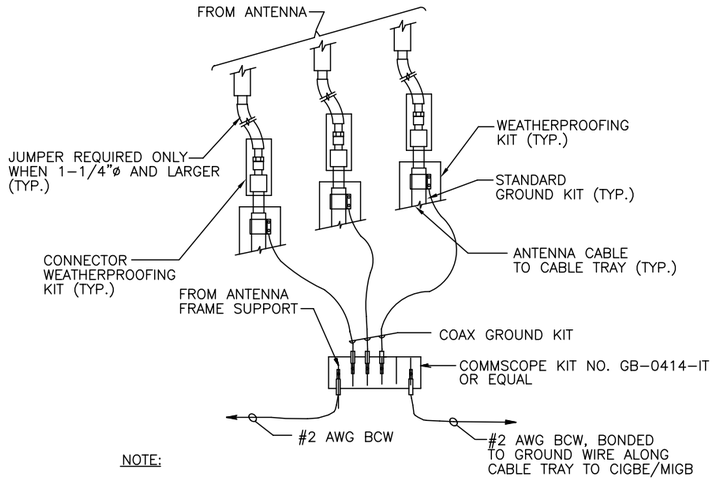
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: RB

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

AT&T

RF PLUMBING DIAGRAM
(LTE 2C)

SITE NUMBER	DRAWING NUMBER	REV
CT2196	RF–1	1

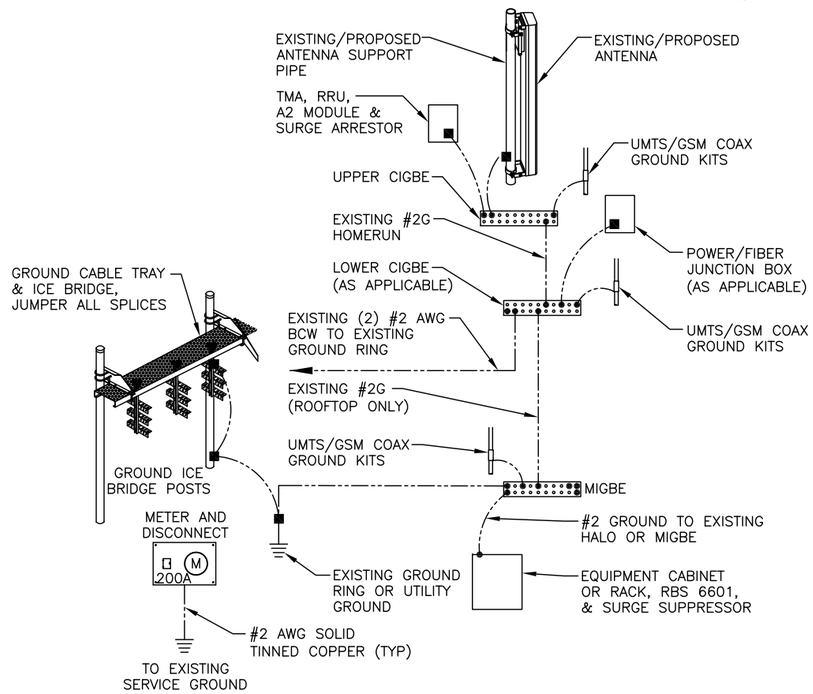


NOTE:

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

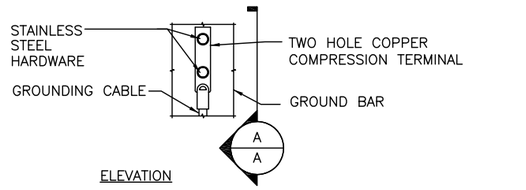
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S — 1 / G–1



GROUNDING RISER DIAGRAM

SCALE: N.T.S — 2 / G–1



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

SCALE: N.T.S — 3 / G–1

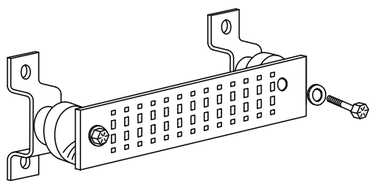
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
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

SCALE: N.T.S — 4 / G–1

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT2196
SITE NAME: OLD LYME HATCHETTS HILL
CCI SITE #823529
38 HATCHETTS HILL ROAD
OLD LYME, CT 06371
NEW LONDON COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/10/16	ISSUED FOR CONSTRUCTION	RB	AT	DJC
A	08/02/16	ISSUED FOR REVIEW	RB	AT	DJC

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

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

AT&T

GROUNDING DETAILS
(LTE 2C)

SITE NUMBER	DRAWING NUMBER	REV
CT2196	G–1	1

PJF PAUL J. FORD & COMPANY

Date: **October 25, 2016**

Timothy Howell
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(980) 209-8242

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
kthorpe@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2196
	Carrier Site Name:	East Lyme
Crown Castle Designation:	**Crown Castle BU Number:**	823529
	Crown Castle Site Name:	CT038/EastLyme/ I-95/ X72
	Crown Castle JDE Job Number:	388413
	Crown Castle Work Order Number:	1318098
	Crown Castle Application Number:	355952 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-3105.003.7805
Site Data:	**38 Hatchetts Hill Road, Old Lyme, New London County, CT** **Latitude *41° 19' 3.26"*, Longitude *-72° 16' 11.87"*** **190 Foot - Monopole Tower**	

Dear Timothy Howell,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 962072, in accordance with application 355952, revision 0.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Kyle Thorpe, E.I.
Structural Designer

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER

10.25.16

Date: **October 25, 2016**

Timothy Howell
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(980) 209-8242

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
kthorpe@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT2196
	Carrier Site Name:	East Lyme
Crown Castle Designation:	**Crown Castle BU Number:**	823529
	Crown Castle Site Name:	CT038/EastLyme/ I-95/ X72
	Crown Castle JDE Job Number:	388413
	Crown Castle Work Order Number:	1318098
	Crown Castle Application Number:	355952 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-3105.003.7805
Site Data:	**38 Hatchetts Hill Road, Old Lyme, New London County, CT** **Latitude *41° 19' 3.26"*, Longitude *-72° 16' 11.87"*** **190 Foot - Monopole Tower**	

Dear Timothy Howell,

Paul J Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 962072, in accordance with application 355952, revision 0.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Kyle Thorpe, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 190 ft Monopole tower designed by PIROD MANUFACTURES INC. in December of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	168.0	3	andrew	SBNHH-1D65A w/ Mount Pipe	-	-	1
		3	ericsson	RRUS12/RRUS A2			

Notes:
1) Proposed Equipment

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
190.0	190.0	3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	12 (I)	1-5/8	1
		6	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Platform Mount [LP 405-1]			
175.0	178.0	1	gps	GPS_A	1 (I) 12 (I)	1/2 1-5/8	1
	175.0	6	antel	LPA-80080/4CF w/ Mount Pipe			
		3	antel	BXA-171085-8BF-EDIN-0 w/ Mount Pipe			
		3	antel	BXA-70063/6CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Platform Mount [LP 403-1]			
165.0	168.0	3	ericsson	RRUS 11	-	-	3
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		3	ericsson	RRUS 11	1 (C) 2 (C) 12 (I) 2 (I)	3/8 3/4 1-1/4 2	1
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
	165.0	1	-	Flat-Membered Handrail			
		1	tower mounts	Platform Mount [LP 714-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed
(I) Coax mounted internally and shielded from the wind. See coax layout in Appendix B.
(C) Coax mounted within a 2” conduit and shielded from the wind. See coax layout in Appendix B.

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 1423I91600, 3/27/2014	3500965	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Pirod, A-115008-Q-77682, 12/09/1998	3505479	CCISITES
4-POST-MODIFICATION INSPECTION	PJF, 32912-0003, 1/9/2012	3826084	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Pirod, A-115008-Q-77682, 12/09/1998	3500968	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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 in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was reinforced in conformance with the referenced modification drawings.
5) In accordance with discussions with CCI Corporate Engineering: Based on the assumption that the monopole manufacturer (ROHN/PiRod) has designed the flange plates at splices to adequately develop the full capacity of the unreinforced shaft section using unpublished and/or proprietary methodologies, we are assuming that if our analysis shows that both the existing shaft and the existing flange bolts are at a usage capacity of 100% or less, then the existing flange plates are at a usage capacity of 100% or less and no additional analysis of the flange plate is required.
6) The existing flange reinforcing at elevations 100-ft, 80-ft, 60-ft, 40-ft and 20-ft were found to be ineffective. Therefore, they were not considered in this analysis. The reinforcing plates do have sufficient capacity to reinforce the pole shaft and were considered as shaft reinforcing.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	190 - 160	Pole	P24x0.375	1	-11.92	1052.07	34.2	Pass
L2	160 - 140	Pole	30" x 0.375"	2	-15.81	1311.06	55.8	Pass
L3	140 - 120	Pole	36" x 0.375"	3	-20.33	1490.10	66.4	Pass
L4	120 - 105.75	Pole	42" x 0.375"	4	-23.97	1668.87	65.4	Pass
L5	105.75 - 100	Pole	P42x0.45	5	-25.67	1970.63	64.0	Pass
L6	100 - 89	Pole	P48x0.375	6	-28.80	1847.49	66.5	Pass
L7	89 - 80	Pole	RPS 48" x 0.47342"	7	-31.91	2415.36	60.3	Pass
L8	80 - 60	Pole	RPS 54" x 0.46151"	8	-39.37	2564.40	63.6	Pass
L9	60 - 40	Pole	RPS 60" x 0.45217"	9	-47.43	2719.62	66.2	Pass
L10	40 - 20	Pole	P60x1/2	10	-56.27	3125.69	70.8	Pass
L11	20 - 0	Pole	P60x5/8	11	-66.93	4139.15	65.8	Pass
							Summary	
						Pole (L10)	70.8	Pass
						RATING =	70.8	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Flange Connection	160	34.2	Pass
1	Flange Connection	140	56.3	Pass
1	Flange Connection	120	68.8	Pass
1,3	Flange Connection	100	76.0	Pass
1,3	Flange Connection	80	80.5	Pass
1,3	Flange Connection	60	69.6	Pass
1,2,3	Flange Connection	40	66.2	Pass
1,2,3	Flange Connection	20	70.8	Pass
1	Anchor Rods	0	49.3	Pass
1,2	Base Plate	0	65.8	Pass
1	Base Foundation	0	66.1	Pass

Structure Rating (max from all components) =	**80.5%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) See Assumption #5.
3) See Assumption #6.

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

Tower is located in New London County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 105.00 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.0000 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56.00 pcf.
A wind speed of 50.00 mph is used in combination with ice.
Temperature drop of 50.00 °F.
Deflections calculated using a wind speed of 60.00 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	190.0000-160.0000	30.0000	P24x0.375	A53-B-42 (42 ksi)	5.00
L2	155.0000-135.0000	20.0000	30" x 0.375"	A53-B-42 (42 ksi)	5.00

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L3	135.0000-115.0000	20.0000	36" x 0.375"	A53-B-42 (42 ksi)	5.00
L4	115.0000-100.7500	14.2500	42" x 0.375"	A53-B-42 (42 ksi)	5.00
L5	100.7500-95.0000	5.7500	P42x0.45	Reinf 38.25 ksi (38 ksi)	5.00
L6	95.0000-84.0000	11.0000	P48x0.375	A53-B-42 (42 ksi)	5.00
L7	84.0000-75.0000	9.0000	RPS 48" x 0.47342"	Reinf 40.69 ksi (41 ksi)	5.00
L8	75.0000-55.0000	20.0000	RPS 54" x 0.46151"	Reinf 40.97 ksi (41 ksi)	5.00
L9	55.0000-35.0000	20.0000	RPS 60" x 0.45217"	Reinf 41.16 ksi (41 ksi)	5.00
L10	35.0000-15.0000	20.0000	P60x1/2	A53-B-42 (42 ksi)	5.00
L11	15.0000-5.0000	20.0000	P60x5/8	A53-B-42 (42 ksi)	

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 190.0000-160.0000				1	1	1			
L2 160.0000-140.0000				1	1	1			
L3 140.0000-120.0000				1	1	1			
L4 120.0000-105.7500				1	1	1			
L5 105.7500-100.0000				1	1	1			
L6 100.0000-89.0000				1	1	1			
L7 89.0000-80.0000				1	1	1			
L8 80.0000-60.0000				1	1	1			
L9 60.0000-40.0000				1	1	1			
L10 40.0000-20.0000				1	1	1			
L11 20.0000-0.0000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	C	No	Inside Pole	190.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
*								
LDF4-50A(1/2")	C	No	Inside Pole	175.0000 - 0.0000	1	No Ice	0.0000	0.15
						1/2" Ice	0.0000	0.15
						1" Ice	0.0000	0.15
LDF7-50A(1-5/8")	C	No	Inside Pole	175.0000 - 0.0000	12	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
*								
LDF6-50A(1-1/4")	C	No	Inside Pole	165.0000 - 0.0000	12	No Ice	0.0000	0.66
						1/2" Ice	0.0000	0.66
						1" Ice	0.0000	0.66
WC166(2")	C	No	Inside Pole	165.0000 - 0.0000	2	No Ice	0.0000	2.80
						1/2" Ice	0.0000	2.80
						1" Ice	0.0000	2.80
FB-L98B-034-XXX(3/8")	C	No	Inside Pole	165.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4")	C	No	Inside Pole	165.0000 - 0.0000	2	No Ice	0.0000	0.58
						1/2" Ice	0.0000	0.58
						1" Ice	0.0000	0.58
*								
Climbing Ladder	A	No	CaAa (Out Of Face)	190.0000 - 10.0000	1	No Ice	0.2900	7.90
						1/2" Ice	0.5500	10.60
						1" Ice	0.8100	13.30
1" Flat Reinforcement	A	No	CaAa (Out Of Face)	23.5000 - 17.2500	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
1" Flat Reinforcement	A	No	CaAa (Out Of Face)	90.5000 - 36.7500	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
1" Flat Reinforcement	A	No	CaAa (Out Of Face)	106.7500 - 98.2500	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
*								

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) ATMAA1412D-1A20	A	From Leg	4.0000	0.00	0.0000	190.0000	No Ice	1.0000	0.4074	0.01
			0.00				1/2" Ice	1.1259	0.4965	0.02
			0.00				1" Ice	1.2593	0.5926	0.03
(2) ATMAA1412D-1A20	B	From Leg	4.0000	0.00	0.0000	190.0000	No Ice	1.0000	0.4074	0.01
			0.00				1/2" Ice	1.1259	0.4965	0.02
			0.00				1" Ice	1.2593	0.5926	0.03
(2) ATMAA1412D-1A20	C	From Leg	4.0000	0.00	0.0000	190.0000	No Ice	1.0000	0.4074	0.01
			0.00				1/2" Ice	1.1259	0.4965	0.02
			0.00				1" Ice	1.2593	0.5926	0.03
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.0000	0.00	0.0000	190.0000	No Ice	6.8239	3.4938	0.06
			0.00				1/2" Ice	7.2751	4.2631	0.11
			0.00				1" Ice	7.7192	4.9598	0.16
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.0000	0.00	0.0000	190.0000	No Ice	6.8239	3.4938	0.06
							1/2"	7.2751	4.2631	0.11

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
			0.00			Ice	7.7192	4.9598	0.16
						1" Ice			
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	190.0000	No Ice 1/2" Ice 1" Ice	6.8239 7.2751 7.7192	3.4938 4.2631 4.9598	0.06 0.11 0.16
Platform Mount [LP 405-1]	C	None		0.0000	190.0000	No Ice 1/2" Ice 1" Ice	20.8000 28.1000 35.4000	20.8000 28.1000 35.4000	1.80 2.07 2.33
*									
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	3.1789 3.5550 3.9298	3.3530 3.9709 4.5951	0.03 0.06 0.10
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	3.1789 3.5550 3.9298	3.3530 3.9709 4.5951	0.03 0.06 0.10
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	3.1789 3.5550 3.9298	3.3530 3.9709 4.5951	0.03 0.06 0.10
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	7.8193 8.3705 8.8861	5.4071 6.5581 7.4216	0.04 0.10 0.17
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	7.8193 8.3705 8.8861	5.4071 6.5581 7.4216	0.04 0.10 0.17
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	7.8193 8.3705 8.8861	5.4071 6.5581 7.4216	0.04 0.10 0.17
GPS_A	B	From Face	4.0000 0.00 3.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	0.2550 0.3205 0.3934	0.2550 0.3205 0.3934	0.00 0.00 0.01
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	2.8561 3.2195 3.5922	6.5689 7.1948 7.8369	0.03 0.08 0.13
(2) LPA-80080/4CF w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	2.8561 3.2195 3.5922	6.5689 7.1948 7.8369	0.03 0.08 0.13
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	2.8561 3.2195 3.5922	6.5689 7.1948 7.8369	0.03 0.08 0.13
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
(2) FD9R6004/2C-3L	B	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
(2) FD9R6004/2C-3L	C	From Leg	4.0000 0.00 0.00	0.0000	175.0000	No Ice 1/2" Ice 1" Ice	0.3142 0.3862 0.4656	0.0762 0.1189 0.1685	0.00 0.01 0.01
Platform Mount [LP 403-1]	C	None		0.0000	175.0000	No Ice 1/2"	18.8500 24.3000	18.8500 24.3000	1.50 1.80

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
*						Ice 1" Ice	29.7500	29.7500	2.09
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
RRUS12/RRUS A2	A	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	3.1435 3.3632 3.5904	1.8351 2.0121 2.1965	0.07 0.10 0.13
RRUS12/RRUS A2	B	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	3.1435 3.3632 3.5904	1.8351 2.0121 2.1965	0.07 0.10 0.13
RRUS12/RRUS A2	C	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	3.1435 3.3632 3.5904	1.8351 2.0121 2.1965	0.07 0.10 0.13
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	4.0153 4.6330 5.2567	0.05 0.10 0.15
RRUS 11	A	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	B	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	C	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.8095 6.2677 6.6966	4.6091 5.5082 6.2127	0.09 0.14 0.21
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.8095 6.2677 6.6966	4.6091 5.5082 6.2127	0.09 0.14 0.21
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	5.8095 6.2677 6.6966	4.6091 5.5082 6.2127	0.09 0.14 0.21
DC6-48-60-18-8F	C	From Leg	4.0000 0.00	0.0000	165.0000	No Ice 1/2"	0.9167 1.4583	0.9167 1.4583	0.02 0.04

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
			3.00			Ice 1" Ice	1.6431	1.6431	0.06
(2) TT19-08BP111-001	A	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	0.5527 0.6487 0.7520	0.4455 0.5342 0.6303	0.02 0.02 0.03
(2) TT19-08BP111-001	B	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	0.5527 0.6487 0.7520	0.4455 0.5342 0.6303	0.02 0.02 0.03
(2) TT19-08BP111-001	C	From Leg	4.0000 0.00 3.00	0.0000	165.0000	No Ice 1/2" Ice 1" Ice	0.5527 0.6487 0.7520	0.4455 0.5342 0.6303	0.02 0.02 0.03
Platform Mount [LP 714-1]	C	None		0.0000	165.0000	No Ice 1/2" Ice 1" Ice	37.4700 44.2300 50.9900	37.4700 44.2300 50.9900	1.60 2.04 2.48
Flat-Membered Handrail	C	None		0.0000	165.0000	No Ice 1/2" Ice 1" Ice	12.0000 17.9000 22.8000	12.0000 17.9000 22.8000	0.46 0.63 0.81

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg % 	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 190.0000-160.0000	175.0000	1.16	31.09	60.000	A	0.000	60.000	60.000	100.00	0.000	8.700
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	0.000
L2 160.0000-140.0000	150.0000	1.11	29.75	50.000	A	0.000	50.000	50.000	100.00	0.000	5.800
					B	0.000	50.000		100.00	0.000	0.000
					C	0.000	50.000		100.00	0.000	0.000
L3 140.0000-120.0000	130.0000	1.065	28.56	60.000	A	0.000	60.000	60.000	100.00	0.000	5.800
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	0.000
L4 120.0000-105.7500	112.8750	1.023	27.43	49.875	A	0.000	49.875	49.875	100.00	0.000	4.299
					B	0.000	49.875		100.00	0.000	0.000
					C	0.000	49.875		100.00	0.000	0.000
L5 105.7500-100.0000	102.8750	0.996	26.71	20.125	A	0.000	20.125	20.125	100.00	0.000	2.626
					B	0.000	20.125		100.00	0.000	0.000
					C	0.000	20.125		100.00	0.000	0.000
L6 100.0000-89.0000	94.5000	0.972	26.07	44.000	A	0.000	44.000	44.000	100.00	0.000	3.732
					B	0.000	44.000		100.00	0.000	0.000
					C	0.000	44.000		100.00	0.000	0.000
L7 89.0000-80.0000	84.5000	0.942	25.25	36.000	A	0.000	36.000	36.000	100.00	0.000	4.110
					B	0.000	36.000		100.00	0.000	0.000
					C	0.000	36.000		100.00	0.000	0.000
L8 80.0000-60.0000	70.0000	0.892	23.93	90.000	A	0.000	90.000	90.000	100.00	0.000	9.133
					B	0.000	90.000		100.00	0.000	0.000
					C	0.000	90.000		100.00	0.000	0.000
L9 60.0000-40.0000	50.0000	0.811	21.74	100.000	A	0.000	100.000	100.000	100.00	0.000	9.133
					B	0.000	100.000		100.00	0.000	0.000
					C	0.000	100.000		100.00	0.000	0.000
L10 40.0000-	30.0000	0.701	18.78	100.00	A	0.000	100.000	100.000	100.00	0.000	6.925

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
20.0000				0	B	0.000	100.000		100.00	0.000	0.000
					C	0.000	100.000		100.00	0.000	0.000
L11 20.0000-0.0000	10.0000	0.7	18.77	100.000	A	0.000	100.000	100.000	100.00	0.000	3.358
					B	0.000	100.000		100.00	0.000	0.000
					C	0.000	100.000		100.00	0.000	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 190.0000-160.0000	175.0000	1.16	7.05	1.7723	68.862	A	0.000	68.862	68.862	100.00	0.000	36.348
						B	0.000	68.862		100.00	0.000	0.000
						C	0.000	68.862		100.00	0.000	0.000
L2 160.0000-140.0000	150.0000	1.11	6.75	1.7452	55.817	A	0.000	55.817	55.817	100.00	0.000	23.950
						B	0.000	55.817		100.00	0.000	0.000
						C	0.000	55.817		100.00	0.000	0.000
L3 140.0000-120.0000	130.0000	1.065	6.48	1.7204	65.735	A	0.000	65.735	65.735	100.00	0.000	23.692
						B	0.000	65.735		100.00	0.000	0.000
						C	0.000	65.735		100.00	0.000	0.000
L4 120.0000-105.7500	112.8750	1.023	6.22	1.6963	53.904	A	0.000	53.904	53.904	100.00	0.000	17.246
						B	0.000	53.904		100.00	0.000	0.000
						C	0.000	53.904		100.00	0.000	0.000
L5 105.7500-100.0000	102.8750	0.996	6.06	1.6806	21.736	A	0.000	21.736	21.736	100.00	0.000	9.798
						B	0.000	21.736		100.00	0.000	0.000
						C	0.000	21.736		100.00	0.000	0.000
L6 100.0000-89.0000	94.5000	0.972	5.91	1.6664	47.055	A	0.000	47.055	47.055	100.00	0.000	14.467
						B	0.000	47.055		100.00	0.000	0.000
						C	0.000	47.055		100.00	0.000	0.000
L7 89.0000-80.0000	84.5000	0.942	5.73	1.6479	38.472	A	0.000	38.472	38.472	100.00	0.000	15.118
						B	0.000	38.472		100.00	0.000	0.000
						C	0.000	38.472		100.00	0.000	0.000
L8 80.0000-60.0000	70.0000	0.892	5.43	1.6171	95.390	A	0.000	95.390	95.390	100.00	0.000	33.139
						B	0.000	95.390		100.00	0.000	0.000
						C	0.000	95.390		100.00	0.000	0.000
L9 60.0000-40.0000	50.0000	0.811	4.93	1.5636	105.212	A	0.000	105.212	105.212	100.00	0.000	32.345
						B	0.000	105.212		100.00	0.000	0.000
						C	0.000	105.212		100.00	0.000	0.000
L10 40.0000-20.0000	30.0000	0.701	4.26	1.4858	104.953	A	0.000	104.953	104.953	100.00	0.000	24.606
						B	0.000	104.953		100.00	0.000	0.000
						C	0.000	104.953		100.00	0.000	0.000
L11 20.0000-0.0000	10.0000	0.7	4.26	1.3312	104.437	A	0.000	104.437	104.437	100.00	0.000	11.094
						B	0.000	104.437		100.00	0.000	0.000
						C	0.000	104.437		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 190.0000-160.0000	175.0000	1.16	9.08	60.000	A	0.000	60.000	60.000	100.00	0.000	8.700
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	0.000
L2 160.0000-	150.0000	1.11	8.69	50.000	A	0.000	50.000	50.000	100.00	0.000	5.800

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
140.0000					B	0.000	50.000		100.00	0.000	0.000
					C	0.000	50.000		100.00	0.000	0.000
L3 140.0000-120.0000	130.0000	1.065	8.34	60.000	A	0.000	60.000	60.000	100.00	0.000	5.800
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	0.000
L4 120.0000-105.7500	112.8750	1.023	8.01	49.875	A	0.000	49.875	49.875	100.00	0.000	4.299
					B	0.000	49.875		100.00	0.000	0.000
					C	0.000	49.875		100.00	0.000	0.000
L5 105.7500-100.0000	102.8750	0.996	7.80	20.125	A	0.000	20.125	20.125	100.00	0.000	2.626
					B	0.000	20.125		100.00	0.000	0.000
					C	0.000	20.125		100.00	0.000	0.000
L6 100.0000-89.0000	94.5000	0.972	7.62	44.000	A	0.000	44.000	44.000	100.00	0.000	3.732
					B	0.000	44.000		100.00	0.000	0.000
					C	0.000	44.000		100.00	0.000	0.000
L7 89.0000-80.0000	84.5000	0.942	7.38	36.000	A	0.000	36.000	36.000	100.00	0.000	4.110
					B	0.000	36.000		100.00	0.000	0.000
					C	0.000	36.000		100.00	0.000	0.000
L8 80.0000-60.0000	70.0000	0.892	6.99	90.000	A	0.000	90.000	90.000	100.00	0.000	9.133
					B	0.000	90.000		100.00	0.000	0.000
					C	0.000	90.000		100.00	0.000	0.000
L9 60.0000-40.0000	50.0000	0.811	6.35	100.000	A	0.000	100.000	100.000	100.00	0.000	9.133
					B	0.000	100.000		100.00	0.000	0.000
					C	0.000	100.000		100.00	0.000	0.000
L10 40.0000-20.0000	30.0000	0.701	5.49	100.000	A	0.000	100.000	100.000	100.00	0.000	6.925
					B	0.000	100.000		100.00	0.000	0.000
					C	0.000	100.000		100.00	0.000	0.000
L11 20.0000-0.0000	10.0000	0.7	5.48	100.000	A	0.000	100.000	100.000	100.00	0.000	3.358
					B	0.000	100.000		100.00	0.000	0.000
					C	0.000	100.000		100.00	0.000	0.000

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	190 - 160	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.05	0.34	0.42
			Max. Mx	20	-11.92	205.65	0.24
			Max. My	2	-11.92	0.09	205.75
			Max. Vy	20	-14.56	205.65	0.24
			Max. Vx	2	-14.56	0.09	205.75
			Max. Torque	18			-0.41
L2	160 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.46	0.34	0.92
			Max. Mx	20	-15.81	516.90	0.50
			Max. My	2	-15.81	0.10	517.20
			Max. Vy	20	-16.54	516.90	0.50
			Max. Vx	2	-16.54	0.10	517.20
			Max. Torque	20			-0.78
L3	140 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.68	0.34	1.47
			Max. Mx	20	-20.33	869.32	0.81
			Max. My	2	-20.33	0.10	869.84
			Max. Vy	20	-18.68	869.32	0.81
			Max. Vx	2	-18.68	0.10	869.84
			Max. Torque	20			-1.22
L4	120 - 105.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.68	0.34	1.93
			Max. Mx	20	-23.97	1147.31	1.06
			Max. My	2	-23.97	0.10	1148.01
			Max. Vy	20	-20.34	1147.31	1.06
			Max. Vx	2	-20.33	0.10	1148.01
			Max. Torque	20			-1.58
L5	105.75 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.92	0.34	2.11
			Max. Mx	20	-25.67	1266.22	1.16
			Max. My	2	-25.67	0.10	1266.99
			Max. Vy	20	-21.04	1266.22	1.16
			Max. Vx	2	-21.04	0.10	1266.99
			Max. Torque	20			-1.80
L6	100 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.21	0.34	2.51
			Max. Mx	20	-28.80	1505.04	1.37
			Max. My	2	-28.80	0.10	1505.98
			Max. Vy	20	-22.39	1505.04	1.37
			Max. Vx	2	-22.39	0.10	1505.98
			Max. Torque	20			-2.14

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	89 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.25	0.34	2.83
			Max. Mx	20	-31.91	1711.60	1.55
			Max. My	2	-31.91	0.10	1712.66
			Max. Vy	20	-23.52	1711.60	1.55
			Max. Vx	2	-23.52	0.10	1712.66
			Max. Torque	20			-2.50
L8	80 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.98	0.33	3.64
			Max. Mx	20	-39.37	2207.95	1.99
			Max. My	2	-39.37	0.11	2209.34
			Max. Vy	20	-26.11	2207.95	1.99
			Max. Vx	2	-26.11	0.11	2209.34
			Max. Torque	20			-3.37
L9	60 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.43	0.33	4.52
			Max. Mx	20	-47.43	2755.19	2.47
			Max. My	2	-47.43	0.11	2756.96
			Max. Vy	20	-28.61	2755.19	2.47
			Max. Vx	2	-28.61	0.11	2756.96
			Max. Torque	20			-4.24
L10	40 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.47	0.33	5.38
			Max. Mx	20	-56.27	3346.74	2.94
			Max. My	2	-56.27	0.11	3348.88
			Max. Vy	20	-30.54	3346.74	2.94
			Max. Vx	2	-30.53	0.11	3348.88
			Max. Torque	8			4.81
L11	20 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-95.99	0.32	5.78
			Max. Mx	20	-66.93	3974.53	3.18
			Max. My	2	-66.93	0.11	3976.80
			Max. Vy	20	-32.23	3974.53	3.18
			Max. Vx	2	-32.23	0.11	3976.80
			Max. Torque	8			5.09

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	95.99	-0.00	-0.00
	Max. H_x	21	50.20	32.22	0.00
	Max. H_z	3	50.20	0.00	32.21
	Max. M_x	2	3976.80	0.00	32.21
	Max. M_z	8	3974.32	-32.22	0.00
	Max. Torsion	8	5.09	-32.22	0.00
	Min. Vert	3	50.20	0.00	32.21
	Min. H_x	9	50.20	-32.22	0.00
	Min. H_z	15	50.20	0.00	-32.21
	Min. M_x	14	-3970.42	0.00	-32.21
	Min. M_z	20	-3974.53	32.22	0.00
	Min. Torsion	20	-5.09	32.22	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	55.78	-0.00	-0.00	-2.56	0.08	0.00
1.2 Dead+1.6 Wind 0 deg -	66.94	-0.00	-32.21	-3976.80	0.11	-0.12

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
No Ice						
0.9 Dead+1.6 Wind 0 deg - No Ice	50.20	-0.00	-32.21	-3940.79	0.08	-0.12
1.2 Dead+1.6 Wind 30 deg - No Ice	66.94	16.11	-27.90	-3445.34	-1987.23	-2.65
0.9 Dead+1.6 Wind 30 deg - No Ice	50.20	16.11	-27.90	-3413.76	-1969.50	-2.65
1.2 Dead+1.6 Wind 60 deg - No Ice	66.94	27.90	-16.11	-1990.51	-3442.06	-4.47
0.9 Dead+1.6 Wind 60 deg - No Ice	50.20	27.90	-16.11	-1971.93	-3411.32	-4.47
1.2 Dead+1.6 Wind 90 deg - No Ice	66.94	32.22	-0.00	-3.18	-3974.32	-5.09
0.9 Dead+1.6 Wind 90 deg - No Ice	50.20	32.22	-0.00	-2.36	-3938.91	-5.09
1.2 Dead+1.6 Wind 120 deg - No Ice	66.94	27.90	16.11	1984.15	-3442.05	-4.35
0.9 Dead+1.6 Wind 120 deg - No Ice	50.20	27.90	16.11	1967.21	-3411.32	-4.35
1.2 Dead+1.6 Wind 150 deg - No Ice	66.94	16.11	27.90	3438.98	-1987.22	-2.44
0.9 Dead+1.6 Wind 150 deg - No Ice	50.20	16.11	27.90	3409.03	-1969.49	-2.44
1.2 Dead+1.6 Wind 180 deg - No Ice	66.94	-0.00	32.21	3970.42	0.11	0.12
0.9 Dead+1.6 Wind 180 deg - No Ice	50.20	-0.00	32.21	3936.06	0.08	0.12
1.2 Dead+1.6 Wind 210 deg - No Ice	66.94	-16.11	27.90	3438.98	1987.43	2.65
0.9 Dead+1.6 Wind 210 deg - No Ice	50.20	-16.11	27.90	3409.03	1969.65	2.65
1.2 Dead+1.6 Wind 240 deg - No Ice	66.94	-27.90	16.11	1984.15	3442.26	4.47
0.9 Dead+1.6 Wind 240 deg - No Ice	50.20	-27.90	16.11	1967.21	3411.47	4.47
1.2 Dead+1.6 Wind 270 deg - No Ice	66.94	-32.22	-0.00	-3.18	3974.53	5.09
0.9 Dead+1.6 Wind 270 deg - No Ice	50.20	-32.22	-0.00	-2.36	3939.06	5.09
1.2 Dead+1.6 Wind 300 deg - No Ice	66.94	-27.90	-16.11	-1990.51	3442.27	4.35
0.9 Dead+1.6 Wind 300 deg - No Ice	50.20	-27.90	-16.11	-1971.93	3411.48	4.35
1.2 Dead+1.6 Wind 330 deg - No Ice	66.94	-16.11	-27.90	-3445.34	1987.44	2.44
0.9 Dead+1.6 Wind 330 deg - No Ice	50.20	-16.11	-27.90	-3413.76	1969.65	2.44
1.2 Dead+1.0 Ice+1.0 Temp	95.99	0.00	0.00	-5.78	0.32	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	95.99	0.00	-9.99	-1241.20	0.38	-0.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	95.99	4.99	-8.65	-1075.75	-617.12	-1.40
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	95.99	8.65	-4.99	-623.71	-1069.15	-2.39
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	95.99	9.99	0.00	-6.21	-1234.61	-2.73
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	95.99	8.65	4.99	611.28	-1069.15	-2.35
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	95.99	4.99	8.65	1063.31	-617.11	-1.33
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	95.99	0.00	9.99	1228.77	0.38	0.04
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	95.99	-4.99	8.65	1063.31	617.87	1.40
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	95.99	-8.65	4.99	611.28	1069.90	2.39
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	95.99	-9.99	0.00	-6.21	1235.36	2.73
1.2 Dead+1.0 Wind 300	95.99	-8.65	-4.99	-623.71	1069.91	2.35

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						
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	95.99	-4.99	-8.65	-1075.75	617.87	1.33
Dead+Wind 0 deg - Service	55.78	0.00	-5.88	-724.33	0.09	-0.02
Dead+Wind 30 deg - Service	55.78	2.94	-5.09	-627.64	-360.76	-0.01
Dead+Wind 60 deg - Service	55.78	5.09	-2.94	-363.49	-624.91	-0.00
Dead+Wind 90 deg - Service	55.78	5.88	0.00	-2.64	-721.60	0.01
Dead+Wind 120 deg - Service	55.78	5.09	2.94	358.20	-624.91	0.02
Dead+Wind 150 deg - Service	55.78	2.94	5.09	622.36	-360.76	0.03
Dead+Wind 180 deg - Service	55.78	0.00	5.88	719.05	0.09	0.02
Dead+Wind 210 deg - Service	55.78	-2.94	5.09	622.36	360.93	0.01
Dead+Wind 240 deg - Service	55.78	-5.09	2.94	358.20	625.09	0.00
Dead+Wind 270 deg - Service	55.78	-5.88	0.00	-2.64	721.78	-0.01
Dead+Wind 300 deg - Service	55.78	-5.09	-2.94	-363.49	625.09	-0.02
Dead+Wind 330 deg - Service	55.78	-2.94	-5.09	-627.64	360.93	-0.03

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-55.78	0.00	0.00	55.78	0.00	0.000%
2	0.00	-66.94	-32.22	0.00	66.94	32.21	0.010%
3	0.00	-50.20	-32.22	0.00	50.20	32.21	0.008%
4	16.11	-66.94	-27.90	-16.11	66.94	27.90	0.000%
5	16.11	-50.20	-27.90	-16.11	50.20	27.90	0.000%
6	27.90	-66.94	-16.11	-27.90	66.94	16.11	0.000%
7	27.90	-50.20	-16.11	-27.90	50.20	16.11	0.000%
8	32.22	-66.94	0.00	-32.22	66.94	0.00	0.002%
9	32.22	-50.20	0.00	-32.22	50.20	0.00	0.002%
10	27.90	-66.94	16.11	-27.90	66.94	-16.11	0.000%
11	27.90	-50.20	16.11	-27.90	50.20	-16.11	0.000%
12	16.11	-66.94	27.90	-16.11	66.94	-27.90	0.000%
13	16.11	-50.20	27.90	-16.11	50.20	-27.90	0.000%
14	0.00	-66.94	32.22	0.00	66.94	-32.21	0.010%
15	0.00	-50.20	32.22	0.00	50.20	-32.21	0.008%
16	-16.11	-66.94	27.90	16.11	66.94	-27.90	0.000%
17	-16.11	-50.20	27.90	16.11	50.20	-27.90	0.000%
18	-27.90	-66.94	16.11	27.90	66.94	-16.11	0.000%
19	-27.90	-50.20	16.11	27.90	50.20	-16.11	0.000%
20	-32.22	-66.94	0.00	32.22	66.94	0.00	0.002%
21	-32.22	-50.20	0.00	32.22	50.20	0.00	0.002%
22	-27.90	-66.94	-16.11	27.90	66.94	16.11	0.000%
23	-27.90	-50.20	-16.11	27.90	50.20	16.11	0.000%
24	-16.11	-66.94	-27.90	16.11	66.94	27.90	0.000%
25	-16.11	-50.20	-27.90	16.11	50.20	27.90	0.000%
26	0.00	-95.99	0.00	-0.00	95.99	-0.00	0.001%
27	0.00	-95.99	-9.99	-0.00	95.99	9.99	0.000%
28	4.99	-95.99	-8.65	-4.99	95.99	8.65	0.000%
29	8.65	-95.99	-4.99	-8.65	95.99	4.99	0.000%
30	9.99	-95.99	0.00	-9.99	95.99	-0.00	0.000%
31	8.65	-95.99	4.99	-8.65	95.99	-4.99	0.000%
32	4.99	-95.99	8.65	-4.99	95.99	-8.65	0.000%
33	0.00	-95.99	9.99	-0.00	95.99	-9.99	0.000%
34	-4.99	-95.99	8.65	4.99	95.99	-8.65	0.000%
35	-8.65	-95.99	4.99	8.65	95.99	-4.99	0.000%
36	-9.99	-95.99	0.00	9.99	95.99	-0.00	0.000%
37	-8.65	-95.99	-4.99	8.65	95.99	4.99	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
38	-4.99	-95.99	-8.65	4.99	95.99	8.65	0.000%
39	0.00	-55.78	-5.88	-0.00	55.78	5.88	0.002%
40	2.94	-55.78	-5.10	-2.94	55.78	5.09	0.002%
41	5.10	-55.78	-2.94	-5.09	55.78	2.94	0.002%
42	5.88	-55.78	0.00	-5.88	55.78	-0.00	0.002%
43	5.10	-55.78	2.94	-5.09	55.78	-2.94	0.002%
44	2.94	-55.78	5.10	-2.94	55.78	-5.09	0.002%
45	0.00	-55.78	5.88	-0.00	55.78	-5.88	0.002%
46	-2.94	-55.78	5.10	2.94	55.78	-5.09	0.002%
47	-5.10	-55.78	2.94	5.09	55.78	-2.94	0.002%
48	-5.88	-55.78	0.00	5.88	55.78	-0.00	0.002%
49	-5.10	-55.78	-2.94	5.09	55.78	2.94	0.002%
50	-2.94	-55.78	-5.10	2.94	55.78	5.09	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	15	0.00013871	0.00005996
3	Yes	15	0.00009664	0.00006506
4	Yes	20	0.00000001	0.00011560
5	Yes	20	0.00000001	0.00009083
6	Yes	20	0.00000001	0.00012457
7	Yes	20	0.00000001	0.00009816
8	Yes	17	0.00003475	0.00010236
9	Yes	17	0.00002362	0.00008651
10	Yes	20	0.00000001	0.00011356
11	Yes	20	0.00000001	0.00008928
12	Yes	20	0.00000001	0.00012120
13	Yes	20	0.00000001	0.00009550
14	Yes	15	0.00013872	0.00005985
15	Yes	15	0.00009665	0.00006497
16	Yes	20	0.00000001	0.00012176
17	Yes	20	0.00000001	0.00009596
18	Yes	20	0.00000001	0.00011335
19	Yes	20	0.00000001	0.00008910
20	Yes	17	0.00003475	0.00010237
21	Yes	17	0.00002362	0.00008651
22	Yes	20	0.00000001	0.00012428
23	Yes	20	0.00000001	0.00009792
24	Yes	20	0.00000001	0.00011610
25	Yes	20	0.00000001	0.00009123
26	Yes	6	0.00000001	0.00003402
27	Yes	19	0.00000001	0.00008018
28	Yes	19	0.00000001	0.00008806
29	Yes	19	0.00000001	0.00008882
30	Yes	19	0.00000001	0.00008003
31	Yes	19	0.00000001	0.00008718
32	Yes	19	0.00000001	0.00008759
33	Yes	19	0.00000001	0.00007926
34	Yes	19	0.00000001	0.00008773
35	Yes	19	0.00000001	0.00008730
36	Yes	19	0.00000001	0.00008016
37	Yes	19	0.00000001	0.00008892
38	Yes	19	0.00000001	0.00008817
39	Yes	15	0.00000001	0.00001400
40	Yes	15	0.00000001	0.00001962
41	Yes	15	0.00000001	0.00001979
42	Yes	15	0.00000001	0.00001393
43	Yes	15	0.00000001	0.00001984
44	Yes	15	0.00000001	0.00001908
45	Yes	15	0.00000001	0.00001389
46	Yes	15	0.00000001	0.00001969
47	Yes	15	0.00000001	0.00001952

48	Yes	15	0.00000001	0.00001393
49	Yes	15	0.00000001	0.00001948
50	Yes	15	0.00000001	0.00002025

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 160	15.122	39	0.7342	0.0001
L2	160 - 140	10.599	39	0.6804	0.0001
L3	140 - 120	7.923	39	0.5837	0.0001
L4	120 - 105.75	5.683	39	0.4766	0.0000
L5	105.75 - 100	4.360	39	0.4067	0.0000
L6	100 - 89	3.887	39	0.3784	0.0000
L7	89 - 80	3.071	39	0.3289	0.0000
L8	80 - 60	2.486	39	0.2914	0.0000
L9	60 - 40	1.411	39	0.2186	0.0000
L10	40 - 20	0.633	39	0.1502	0.0000
L11	20 - 0	0.159	39	0.0738	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.0000	(2) ATMAA1412D-1A20	39	15.122	0.7342	0.0001	92014
175.0000	BXA-171085-8BF-EDIN-0 w/ Mount Pipe	39	12.817	0.7175	0.0001	30671
165.0000	SBNHH-1D65A w/ Mount Pipe	39	11.323	0.6963	0.0001	18402

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 160	83.115	2	4.0381	0.0085
L2	160 - 140	58.258	2	3.7428	0.0071
L3	140 - 120	43.544	2	3.2105	0.0060
L4	120 - 105.75	31.232	2	2.6208	0.0049
L5	105.75 - 100	23.960	2	2.2364	0.0042
L6	100 - 89	21.360	2	2.0806	0.0039
L7	89 - 80	16.873	2	1.8080	0.0034
L8	80 - 60	13.656	2	1.6016	0.0030
L9	60 - 40	7.751	24	1.2013	0.0023
L10	40 - 20	3.479	24	0.8250	0.0015
L11	20 - 0	0.873	24	0.4054	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.0000	(2) ATMAA1412D-1A20	2	83.115	4.0381	0.0085	16897
175.0000	BXA-171085-8BF-EDIN-0 w/ Mount Pipe	2	70.445	3.9467	0.0078	5631

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.0000	SBNHH-1D65A w/ Mount Pipe	2	62.237	3.8302	0.0074	3377

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	190 - 160 (1)	P24x0.375	30.0000	0.0000	0.0	27.8325	-11.92	1052.07	0.011
L2	160 - 140 (2)	30" x 0.375"	20.0000	0.0000	0.0	34.9011	-15.81	1311.06	0.012
L3	140 - 120 (3)	36" x 0.375"	20.0000	0.0000	0.0	41.9697	-20.33	1490.10	0.014
L4	120 - 105.75 (4)	42" x 0.375"	14.2500	0.0000	0.0	49.0383	-23.97	1668.87	0.014
L5	105.75 - 100 (5)	P42x0.45	5.7500	0.0000	0.0	58.7399	-25.67	1970.63	0.013
L6	100 - 89 (6)	P48x0.375	11.0000	0.0000	0.0	56.1069	-28.80	1847.49	0.016
L7	89 - 80 (7)	RPS 48" x 0.47342"	9.0000	0.0000	0.0	70.6859	-31.91	2415.36	0.013
L8	80 - 60 (8)	RPS 54" x 0.46151"	20.0000	0.0000	0.0	77.6242	-39.37	2564.40	0.015
L9	60 - 40 (9)	RPS 60" x 0.45217"	20.0000	0.0000	0.0	84.5897	-47.43	2719.62	0.017
L10	40 - 20 (10)	P60x1/2	20.0000	0.0000	0.0	93.4624	-56.27	3125.69	0.018
L11	20 - 0 (11)	P60x5/8	20.0000	0.0000	0.0	116.5830	-66.93	4139.15	0.016

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	190 - 160 (1)	P24x0.375	205.81	623.72	0.330	0.00	623.72	0.000
L2	160 - 140 (2)	30" x 0.375"	517.31	947.86	0.546	0.00	947.86	0.000
L3	140 - 120 (3)	36" x 0.375"	870.00	1338.81	0.650	0.00	1338.81	0.000
L4	120 - 105.75 (4)	42" x 0.375"	1148.22	1796.56	0.639	0.00	1796.56	0.000
L5	105.75 - 100 (5)	P42x0.45	1267.22	2023.06	0.626	0.00	2023.06	0.000
L6	100 - 89 (6)	P48x0.375	1506.26	2321.11	0.649	0.00	2321.11	0.000
L7	89 - 80 (7)	RPS 48" x 0.47342"	1712.98	2907.33	0.589	0.00	2907.33	0.000
L8	80 - 60 (8)	RPS 54" x 0.46151"	2209.74	3561.84	0.620	0.00	3561.84	0.000
L9	60 - 40 (9)	RPS 60" x 0.45217"	2757.44	4282.41	0.644	0.00	4282.41	0.000
L10	40 - 20 (10)	P60x1/2	3349.44	4860.41	0.689	0.00	4860.41	0.000
L11	20 - 0 (11)	P60x5/8	3977.47	6198.18	0.642	0.00	6198.18	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	190 - 160 (1)	P24x0.375	14.57	526.03	0.028	0.10	1019.71	0.000
L2	160 - 140 (2)	30" x 0.375"	16.55	655.53	0.025	0.29	1598.37	0.000
L3	140 - 120 (3)	36" x 0.375"	18.69	745.05	0.025	0.51	2189.07	0.000
L4	120 - 105.75 (4)	42" x 0.375"	20.34	834.44	0.024	0.69	2868.84	0.000
L5	105.75 - 100 (5)	P42x0.45	21.04	985.32	0.021	0.79	3375.50	0.000
L6	100 - 89 (6)	P48x0.375	22.40	923.75	0.024	0.96	3637.70	0.000
L7	89 - 80 (7)	RPS 48" x 0.47342"	23.52	1207.68	0.019	1.15	4736.37	0.000
L8	80 - 60 (8)	RPS 54" x 0.46151"	26.11	1282.20	0.020	1.58	5672.12	0.000
L9	60 - 40 (9)	RPS 60" x 0.45217"	28.61	1359.81	0.021	2.02	6697.34	0.000
L10	40 - 20 (10)	P60x1/2	30.54	1562.84	0.020	2.30	7685.07	0.000
L11	20 - 0 (11)	P60x5/8	32.23	2069.58	0.016	2.44	10134.58	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	190 - 160 (1)	0.011	0.330	0.000	0.028	0.000	0.342 ✔	1.000	4.8.2 ✔
L2	160 - 140 (2)	0.012	0.546	0.000	0.025	0.000	0.558 ✔	1.000	4.8.2 ✔
L3	140 - 120 (3)	0.014	0.650	0.000	0.025	0.000	0.664 ✔	1.000	4.8.2 ✔
L4	120 - 105.75 (4)	0.014	0.639	0.000	0.024	0.000	0.654 ✔	1.000	4.8.2 ✔
L5	105.75 - 100 (5)	0.013	0.626	0.000	0.021	0.000	0.640 ✔	1.000	4.8.2 ✔
L6	100 - 89 (6)	0.016	0.649	0.000	0.024	0.000	0.665 ✔	1.000	4.8.2 ✔
L7	89 - 80 (7)	0.013	0.589	0.000	0.019	0.000	0.603 ✔	1.000	4.8.2 ✔
L8	80 - 60 (8)	0.015	0.620	0.000	0.020	0.000	0.636 ✔	1.000	4.8.2 ✔
L9	60 - 40 (9)	0.017	0.644	0.000	0.021	0.000	0.662 ✔	1.000	4.8.2 ✔
L10	40 - 20 (10)	0.018	0.689	0.000	0.020	0.000	0.708 ✔	1.000	4.8.2 ✔
L11	20 - 0 (11)	0.016	0.642	0.000	0.016	0.000	0.658 ✔	1.000	4.8.2 ✔

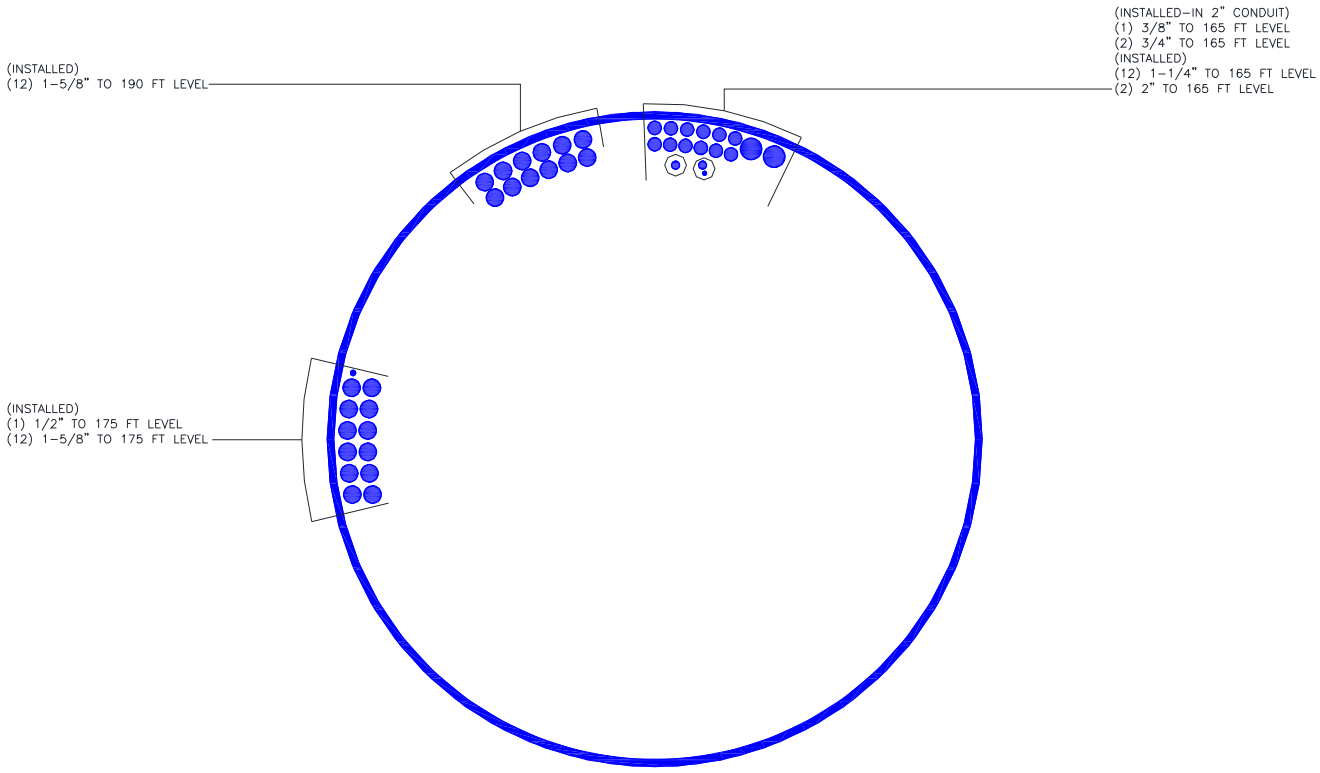
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	190 - 160	Pole	P24x0.375	1	-11.92	1052.07	34.2	Pass
L2	160 - 140	Pole	30" x 0.375"	2	-15.81	1311.06	55.8	Pass
L3	140 - 120	Pole	36" x 0.375"	3	-20.33	1490.10	66.4	Pass
L4	120 - 105.75	Pole	42" x 0.375"	4	-23.97	1668.87	65.4	Pass
L5	105.75 - 100	Pole	P42x0.45	5	-25.67	1970.63	64.0	Pass
L6	100 - 89	Pole	P48x0.375	6	-28.80	1847.49	66.5	Pass
L7	89 - 80	Pole	RPS 48" x 0.47342"	7	-31.91	2415.36	60.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L8	80 - 60	Pole	RPS 54" x 0.46151"	8	-39.37	2564.40	63.6	Pass
L9	60 - 40	Pole	RPS 60" x 0.45217"	9	-47.43	2719.62	66.2	Pass
L10	40 - 20	Pole	P60x1/2	10	-56.27	3125.69	70.8	Pass
L11	20 - 0	Pole	P60x5/8	11	-66.93	4139.15	65.8	Pass
							Summary	
						Pole (L10)	70.8	Pass
						RATING =	**70.8**	**Pass**

APPENDIX B

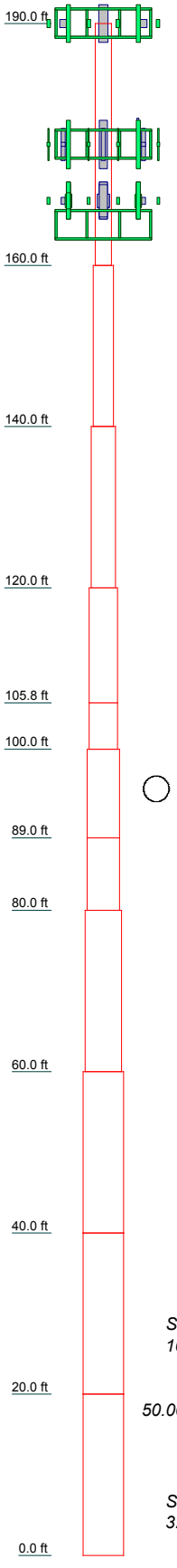
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	Size	Length (ft)	Socket Length (ft)	Grade	Weight (K)
1	P24x0.375	30.0000	5.0000	A53-B-42	2.8
2	30" x 0.375"	20.0000	5.0000		2.4
3	36" x 0.375"	20.0000	5.0000		2.9
4	42" x 0.375"	14.2500	5.0000		2.4
5	P42x0.45	5.7500	5.0000	Reinf 38.25 ksi	1.1
6	P48x0.375	11.0000	5.0000	A53-B-42	2.1
7	48" x 0.4734" RPS	9.0000	5.0000	Reinf 40.69 ksi	2.2
8	RPS 54" x 0.4615"	20.0000	5.0000	Reinf 40.97 ksi	5.3
9	RPS 60" x 0.4521"	20.0000	5.0000	Reinf 41.16 ksi	5.8
10	P60x1/2	20.0000	5.0000	A53-B-42	6.4
11	P60x5/8	20.0000			7.9
					41.2



ALL REACTIONS ARE FACTORED

AXIAL 96 K

SHEAR 10 K *MOMENT 1241 kip-ft*

TORQUE 3 kip-ft

50.00 mph WIND - 0.7500 in ICE

AXIAL 67 K

SHEAR 32 K *MOMENT 3977 kip-ft*

TORQUE 5 kip-ft

REACTIONS - 105.00 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) ATMAA1412D-1A20	190	Platform Mount [LP 403-1]	175
(2) ATMAA1412D-1A20	190	SBNHH-1D65A w/ Mount Pipe	165
(2) ATMAA1412D-1A20	190	SBNHH-1D65A w/ Mount Pipe	165
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	190	SBNHH-1D65A w/ Mount Pipe	165
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	190	RRUS12/RRUS A2	165
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	190	RRUS12/RRUS A2	165
Platform Mount [LP 405-1]	190	RRUS12/RRUS A2	165
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	175	AM-X-CD-14-65-00T-RET w/ Mount Pipe	165
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	175	AM-X-CD-14-65-00T-RET w/ Mount Pipe	165
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	175	AM-X-CD-14-65-00T-RET w/ Mount Pipe	165
BXA-70063/6CF w/ Mount Pipe	175	RRUS 11	165
BXA-70063/6CF w/ Mount Pipe	175	RRUS 11	165
BXA-70063/6CF w/ Mount Pipe	175	RRUS 11	165
GPS_A	175	7770.00 w/ Mount Pipe	165
(2) LPA-80080/4CF w/ Mount Pipe	175	7770.00 w/ Mount Pipe	165
(2) LPA-80080/4CF w/ Mount Pipe	175	7770.00 w/ Mount Pipe	165
(2) LPA-80080/4CF w/ Mount Pipe	175	DC6-48-60-18-8F	165
(2) FD9R6004/2C-3L	175	(2) TT19-08BP111-001	165
(2) FD9R6004/2C-3L	175	(2) TT19-08BP111-001	165
(2) FD9R6004/2C-3L	175	(2) TT19-08BP111-001	165
		Platform Mount [LP 714-1]	165
		Flat-Membered Handrail	165

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi	Reinf 40.97 ksi	41 ksi	52 ksi
Reinf 38.25 ksi	38 ksi	48 ksi	Reinf 41.16 ksi	41 ksi	52 ksi
Reinf 40.69 ksi	41 ksi	51 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 70.8%

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: ***190 ft Step Pole [CT038/EASTLYME/I-95/X72***		
Project: ***PJF #37516-3105 / BU #823529***		
Client: CCI	Drawn by: Kyle Thorpe	App'd:
Code: TIA-222-G	Date: 10/25/16	Scale: NTS
Path:		Dwg No. E-1

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Reactions		
Mu	205.81	ft-kips
Axial, Pu:	11.92	kips
Shear, Vu:	14.57	kips
Elevation:	160	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	27		

Plate Data		
Diam:	30	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

Pole Data		
Diam:	24	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	17.70	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.052	in	
Min PL "treq" for actual **T w/ Pry**:	0.457	in	
Min PL "t1" for actual **T w/o Pry**:	0.599	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	17.70	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	32.5%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length: 12.37
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	13.4%	**Pass**	

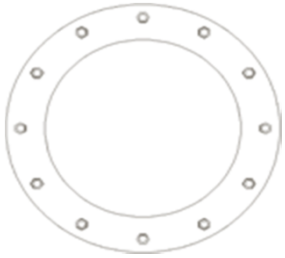
n/a

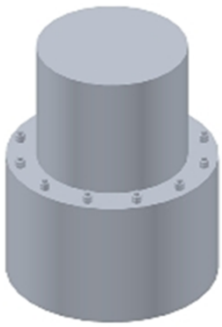
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Bolt Data			
Qty:	20		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	27	in	

Plate Data		
Plate Outer Diam:	29.25	in
Plate Inner Diam:	24	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.59	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

Pole Data		
Pole OuterDiam:	30	in
Thick:	0.375	in
Pole Inner Diam:	29.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	205.81	ft-kips
Axial:	11.92	kips
Shear:	14.57	kips
Exterior Flange Run, T+q:	17.7	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 160 feet

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	17.7	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty)	54.5	Kips
Bolt Stress Ratio:	32.5%	**Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	18.9	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

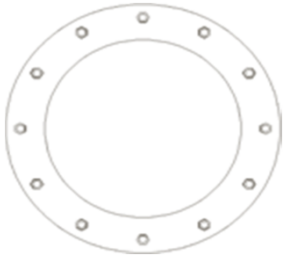
n/a

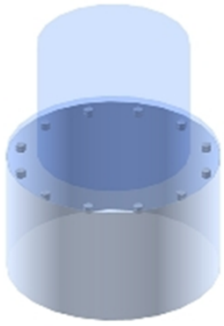
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Reactions		
Mu	517.31	ft-kips
Axial, Pu:	15.81	kips
Shear, Vu:	16.55	kips
Elevation:	140	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	33		

Plate Data		
Diam:	36	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.93	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

Pole Data		
Diam:	30	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	30.69	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.031	in	
Min PL "treq" for actual **T w/ Pry**:	0.588	in	
Min PL "t1" for actual **T w/o Pry**:	0.774	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	30.69	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	56.3%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length: 13.75
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	22.1%	**Pass**	

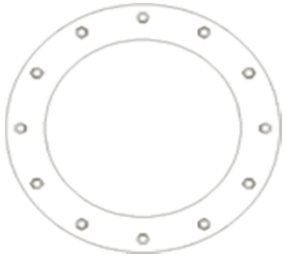
n/a

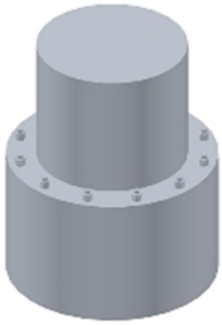
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Bolt Data			
Qty:	24		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	33	in	

Plate Data		
Plate Outer Diam:	35.25	in
Plate Inner Diam:	30	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.61	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

Pole Data		
Pole OuterDiam:	36	in
Thick:	0.375	in
Pole Inner Diam:	35.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	517.31	ft-kips
Axial:	15.81	kips
Shear:	16.55	kips
Exterior Flange Run, T+q:	30.69	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 140 feet

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	30.7	Kips, Ext. Tu=Interior Tu
Adjusted φ*Tn (due to Vu=Vu/Qty)	54.5	Kips
Bolt Stress Ratio:	56.3%	**Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	32.0	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

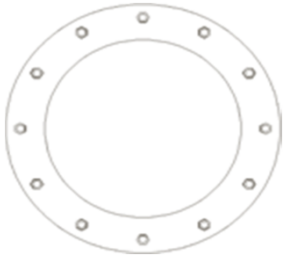
n/a

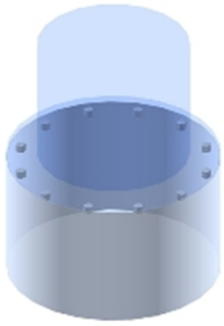
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Reactions		
Mu	870	ft-kips
Axial, Pu:	20.33	kips
Shear, Vu:	18.69	kips
Elevation:	120	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria: TIA G <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	28		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	39		

Plate Data		
Diam:	42	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.04	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results | Rigid

Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	37.52	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.017	in	
Min PL "treq" for actual **T w/ Pry**:	0.640	in	
Min PL "t1" for actual **T w/o Pry**:	0.843	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	37.52	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	68.8%	**Pass**	

Exterior Flange Plate Results Flexural Check | Rigid

Compression Side Plate Stress:	Rohn/Pirod, OK	TIA G
Allowable Plate Stress:	32.4 ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length: 15.00
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	26.2% **Pass**	

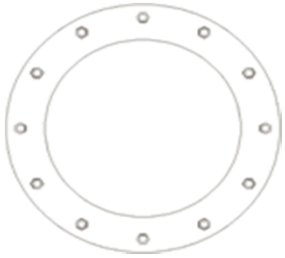
n/a

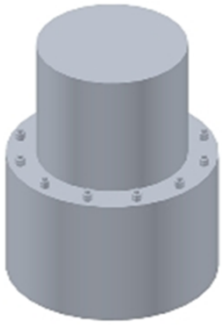
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Bolt Data			
Qty:	28		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	39	in	

Plate Data		
Plate Outer Diam:	41.25	in
Plate Inner Diam:	36	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.63	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:	0	
Groove Depth:	0	in **
Groove Angle:	0	degrees
Fillet H. Weld:	0	<-- Disregard
Fillet V. Weld:	0	in
Width:	0	in
Height:	0	in
Thick:	0	in
Notch:	0	in
Grade:	0	ksi
Weld str.:	0	ksi

Pole Data		
Pole OuterDiam:	42	in
Thick:	0.375	in
Pole Inner Diam:	41.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	870	ft-kips
Axial:	20.33	kips
Shear:	18.69	kips
Exterior Flange Run, T+q:	37.52	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 120 feet

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	37.5	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty)	54.5	Kips
Bolt Stress Ratio:	68.8%	**Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	39.0	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

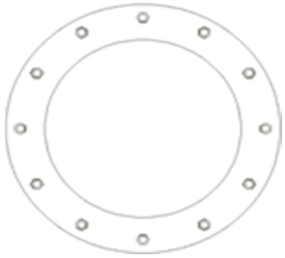
n/a

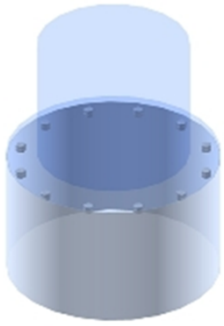
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Reactions		
Mu	1267.22	ft-kips
Axial, Pu:	25.67	kips
Shear, Vu:	21.04	kips
Elevation:	100	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	32		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	45		

Plate Data		
Diam:	48	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.12	in

Stiffener Data (Welding at Both Sides)		
Config:	2	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	5	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

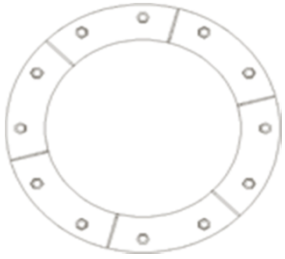
			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	41.44	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.006	in	
Min PL "treq" for actual **T w/ Pry**:	0.664	in	
Min PL "t1" for actual **T w/o Pry**:	0.877	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	41.44	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	76.0%	**Pass**	

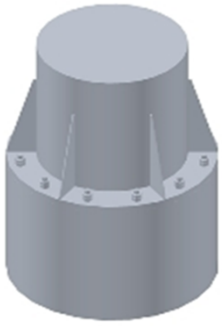
Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	32.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length: 16.16
No Prying			
Tension Side Stress Ratio, (treq/t)^2:	28.3%	**Pass**	

b/Le>2, Stiffeners are not fully effective

Stiffener Results	N/A for Rohn / Pirod
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	N/A
Plate Comp. (AISC Bracket):	N/A
Pole Results	
Pole Punching Shear Check:	N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	1267.22	ft-kips
Axial:	25.67	kips
Shear:	21.04	kips
Exterior Flange Run, T+q:	41.44	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 100 feet

Bolt Data			
Qty:	32		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	45	in	

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	41.4	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty)	54.5	Kips
Bolt Stress Ratio:	76.0%	**Pass**

Plate Data		
Plate Outer Diam:	47.25	in
Plate Inner Diam:	42	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.64	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	43.0	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

Stiffener Data (Welding at Both Sides)		
Config:	2	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	2	in
Height:	3.5	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

b/Le>2, Stiffeners are not fully effective

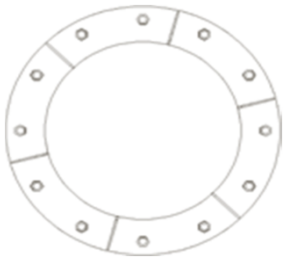
Stiffener Results N/A for Rohn / Pirod

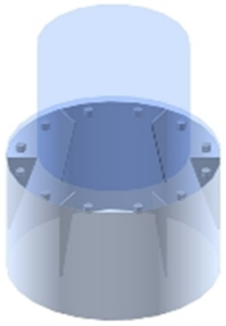
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	48	in
Thick:	0.375	in
Pole Inner Diam:	47.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Reactions		
Mu	1712.98	ft-kips
Axial, Pu:	31.91	kips
Shear, Vu:	23.52	kips
Elevation:	80	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria:	TIA G	<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	36		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	51		

Plate Data		
Diam:	54	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.19	in

Stiffener Data (Welding at Both Sides)		
Config:	2	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	5	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	48	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results

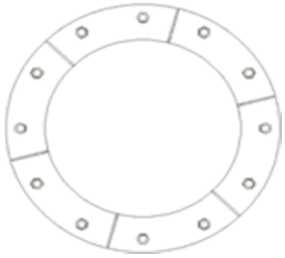
			Rigid
Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	43.90	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	0.998	in	
Min PL "treq" for actual **T w/ Pry**:	0.678	in	
Min PL "t1" for actual **T w/o Pry**:	0.896	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	43.90	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	80.5%	**Pass**	

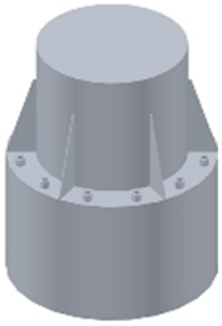
Exterior Flange Plate Results Flexural Check

		Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	TIA G
Allowable Plate Stress:	32.4 ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length: 17.23
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	29.4% **Pass**	

b/Le>2, Stiffeners are not fully effective

Stiffener Results	N/A for Rohn / Pirod
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	N/A
Plate Comp. (AISC Bracket):	N/A
Pole Results	
Pole Punching Shear Check:	N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Bolt Data			
Qty:	36		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	51	in	

Plate Data		
Plate Outer Diam:	53.25	in
Plate Inner Diam:	48	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.65	in

Stiffener Data (Welding at Both Sides)		
Config:	2	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	2	in
Height:	3.5	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Pole OuterDiam:	54	in
Thick:	0.375	in
Pole Inner Diam:	53.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	1712.98	ft-kips
Axial:	31.91	kips
Shear:	23.52	kips
Exterior Flange Run, T+q:	43.9	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 80 feet

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	43.9	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty)	54.5	Kips
Bolt Stress Ratio:	80.5%	**Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	45.7	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

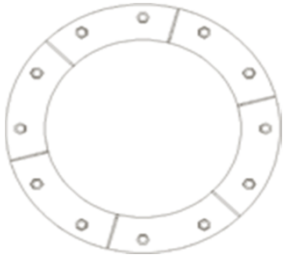
b/Le>2, Stiffeners are not fully effective

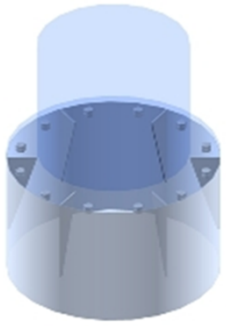
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Reactions		
Mu	2209.74	ft-kips
Axial, Pu:	39.37	kips
Shear, Vu:	26.11	kips
Elevation:	60	feet

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Pole Manufacturer:	Pirod

If No stiffeners, Criteria:	TIA G

<-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	48		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle (in.):	57		

Plate Data		
Diam:	60	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.53	in

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	5	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	54	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Flange Bolt Results | Stiffened

Bolt Tension Capacity, φ*Tn,**B1**:	54.54	kips	φ*Tn
Adjusted φ*Tn (due to Vu=Vu/Qty), **B**:	54.53	kips	φTn[(1-(Vu/φVn)^2]^0.5
Max Bolt directly applied Tu:	37.95	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	Stiffened	in	
Min PL "treq" for actual **T w/ Pry**:	Stiffened	in	
Min PL "t1" for actual **T w/o Pry**:	Stiffened	in	
T allowable	54.54	kips	<-- B, Stiffened
Prying Force, q:	0.00	kips	Stiffened
Total Bolt Tension=Tu+q:	37.95	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	69.6%	**Pass**	

Exterior Flange Plate Results Shear Check Only | Stiffened

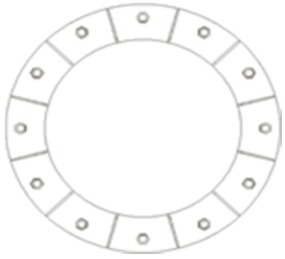
Compression Side Plate Stress:	Rohn/Pirod,	OK	TIA G
Allowable Plate Stress:	19.4	ksi	φ*Fy
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
Stiffened			N/A, Roark
Tension Side Stress Ratio, (treq/t)^2:	N/A		

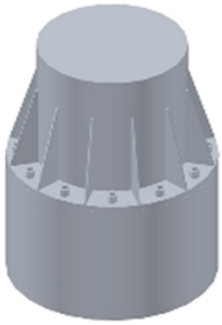
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Bolt Data			
Qty:	48		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	57	in	

Plate Data		
Plate Outer Diam:	59.25	in
Plate Inner Diam:	54	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	3.88	in

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	2	in
Height:	3.5	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.375	in
Pole Inner Diam:	59.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	2209.74	ft-kips
Axial:	39.37	kips
Shear:	26.11	kips
Exterior Flange Run, T+q:	37.95	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
38.88

Elevation: 60 feet

Interior Flange Bolt Results

Maximum Bolt Tension, Tu:	38.0	Kips, Ext. Flange Tu+q
Adjusted φ*Tn (due to Vu=Vu/Qty)	54.5	Kips
Bolt Stress Ratio:	69.6%	**Pass**

Interior Flange Plate Results Shear Check Only

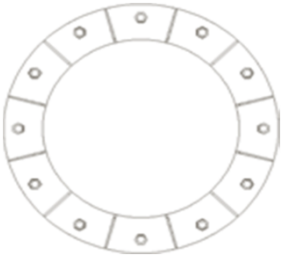
Controlling Bolt Axial Force:	39.6	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	19.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

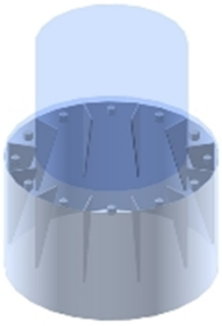
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 10/25/2016
PJF Project: 37516-3105.003.7805
Client Ref. # BU 823529
Site Name:
Description: Flange @ 40'
Owner: CCI
Engineer: KAT

Asymmetric Bolt Analysis

Moment =	2757.4	k-ft	TIA Ref.	G	Location =	Flange Plate		
Axial =	47.4	kips	ASIF =	1.0000	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	28.6	kips	Max Ratio =	100.0%	Threads =	X-Excluded	for FP, Rev. G	
Anchor Qty =	64							

** For Flange Plates: Prying action is not considered in the bolt loads. **

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.250	A325	81	105	0.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
2	1.250	A325	81	105	11.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
3	1.250	A325	81	105	22.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
4	1.250	A325	81	105	33.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
5	1.250	A325	81	105	45.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
6	1.250	A325	81	105	56.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
7	1.250	A325	81	105	67.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
8	1.250	A325	81	105	78.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
9	1.250	A325	81	105	90.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
10	1.250	A325	81	105	101.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
11	1.250	A325	81	105	112.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
12	1.250	A325	81	105	123.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
13	1.250	A325	81	105	135.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
14	1.250	A325	81	105	146.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
15	1.250	A325	81	105	157.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
16	1.250	A325	81	105	168.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
17	1.250	A325	81	105	180.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
18	1.250	A325	81	105	191.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
19	1.250	A325	81	105	202.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
20	1.250	A325	81	105	213.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
21	1.250	A325	81	105	225.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
22	1.250	A325	81	105	236.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
23	1.250	A325	81	105	247.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
24	1.250	A325	81	105	258.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
25	1.250	A325	81	105	270.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
26	1.250	A325	81	105	281.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
27	1.250	A325	81	105	292.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
28	1.250	A325	81	105	303.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
29	1.250	A325	81	105	315.0	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
30	1.250	A325	81	105	326.3	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
31	1.250	A325	81	105	337.5	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
32	1.250	A325	81	105	348.8	47.00	0.00	1.23	39.48	38.00	38.00	0.00	76.31	49.8%
33	1.250	A325	81	105	0.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
34	1.250	A325	81	105	11.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
35	1.250	A325	81	105	22.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
36	1.250	A325	81	105	33.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
37	1.250	A325	81	105	45.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
38	1.250	A325	81	105	56.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
39	1.250	A325	81	105	67.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
40	1.250	A325	81	105	78.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
41	1.250	A325	81	105	90.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
42	1.250	A325	81	105	101.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
43	1.250	A325	81	105	112.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
44	1.250	A325	81	105	123.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
45	1.250	A325	81	105	135.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
46	1.250	A325	81	105	146.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
47	1.250	A325	81	105	157.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
48	1.250	A325	81	105	168.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
49	1.250	A325	81	105	180.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
50	1.250	A325	81	105	191.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
51	1.250	A325	81	105	202.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
52	1.250	A325	81	105	213.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
53	1.250	A325	81	105	225.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
54	1.250	A325	81	105	236.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
55	1.250	A325	81	105	247.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
56	1.250	A325	81	105	258.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
57	1.250	A325	81	105	270.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
58	1.250	A325	81	105	281.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
59	1.250	A325	81	105	292.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
60	1.250	A325	81	105	303.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
61	1.250	A325	81	105	315.0	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
62	1.250	A325	81	105	326.3	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
63	1.250	A325	81	105	337.5	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 10/25/2016
PJF Project: 37516-3105.003.7805
Client Ref. # BU 823529
Site Name:
Description: Flange @ 40'
Owner: CCI
Engineer: KAT

Asymmetric Bolt Analysis

Moment =	2757.4	k-ft	TIA Ref.	G	Location =	Flange Plate		
Axial =	47.4	kips	ASIF =	1.0000	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	28.6	kips	Max Ratio =	100.0%	Threads =	X-Excluded	for FP, Rev. G	
Anchor Qty =	64							

**** For Flange Plates: Prying action is not considered in the bolt loads. ****

64	1.250	A325	81	105	348.8	53.00	0.00	1.23	44.43	42.94	42.94	0.00	76.31	56.3%
								78.54						

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	2757.44	ft-kips
Axial:	47.43	kips
Shear:	28.61	kips
Exterior Flange Run, T+q:		kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
53.15

Elevation: 40 feet

Bolt Data			
Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	50.18	in	

See "Asymetric Bolt Analysis" for bolt capacity

Plate Data		
Plate Outer Diam:	59.25	in
Plate Inner Diam:	54	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.82	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	83.9	Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress, φ*Fy:	32.4	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	10	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

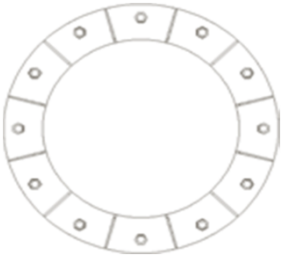
Stiffener Results N/A for Rohn / Pirod

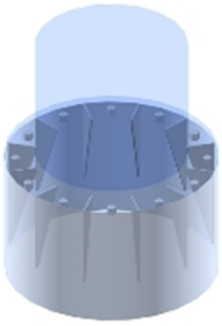
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.375	in
Pole Inner Diam:	59.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/I-95/ X7*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	2757.44	ft-kips
Axial:	47.43	kips
Shear:	28.61	kips
Exterior Flange Run, T+q:	0	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
53.15

Elevation: 40 feet

Bolt Data			
Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	50.18	in	

See "Asymetric Bolt Analysis" for bolt capacity

Plate Data		
Plate Outer Diam:	59	in
Plate Inner Diam:	54	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	35	ksi
Effective Width:	5.79	in

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	10	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.5	in
Pole Inner Diam:	59	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Interior Flange Plate Results Flexural Check

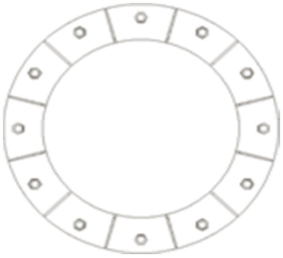
Controlling Bolt Axial Force:	83.9 Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod OK
Allowable Plate Stress, φ*Fy:	31.5 ksi
Plate Stress Ratio:	Rohn/Pirod OK

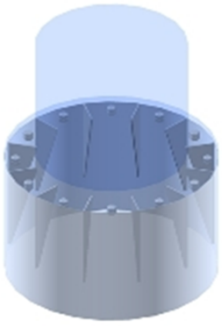
Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 10/25/2016
PJF Project: 37516-3105.003.7805
Client Ref. # BU 823529
Site Name:
Description: Flange @ 20'
Owner: CCI
Engineer: KAT

Asymmetric Bolt Analysis

Moment =	3349	k-ft	TIA Ref.	G	Location =	Flange Plate		
Axial =	56.3	kips	ASIF =	1.0000	η =	N/A	for BP, Rev. G Sect. 4.9.9	
Shear =	30.5	kips	Max Ratio =	100.0%	Threads =	X-Excluded	for FP, Rev. G	
Anchor Qty =	64							

** For Flange Plates: Prying action is not considered in the bolt loads. **

Item	Nominal Bolt Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Bolt Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	1.250	A325	81	105	0.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
2	1.250	A325	81	105	11.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
3	1.250	A325	81	105	22.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
4	1.250	A325	81	105	33.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
5	1.250	A325	81	105	45.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
6	1.250	A325	81	105	56.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
7	1.250	A325	81	105	67.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
8	1.250	A325	81	105	78.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
9	1.250	A325	81	105	90.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
10	1.250	A325	81	105	101.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
11	1.250	A325	81	105	112.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
12	1.250	A325	81	105	123.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
13	1.250	A325	81	105	135.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
14	1.250	A325	81	105	146.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
15	1.250	A325	81	105	157.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
16	1.250	A325	81	105	168.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
17	1.250	A325	81	105	180.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
18	1.250	A325	81	105	191.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
19	1.250	A325	81	105	202.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
20	1.250	A325	81	105	213.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
21	1.250	A325	81	105	225.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
22	1.250	A325	81	105	236.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
23	1.250	A325	81	105	247.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
24	1.250	A325	81	105	258.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
25	1.250	A325	81	105	270.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
26	1.250	A325	81	105	281.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
27	1.250	A325	81	105	292.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
28	1.250	A325	81	105	303.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
29	1.250	A325	81	105	315.0	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
30	1.250	A325	81	105	326.3	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
31	1.250	A325	81	105	337.5	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
32	1.250	A325	81	105	348.8	47.00	0.00	1.23	47.94	46.18	46.18	0.00	76.31	60.5%
33	1.250	A325	81	105	0.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
34	1.250	A325	81	105	11.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
35	1.250	A325	81	105	22.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
36	1.250	A325	81	105	33.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
37	1.250	A325	81	105	45.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
38	1.250	A325	81	105	56.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
39	1.250	A325	81	105	67.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
40	1.250	A325	81	105	78.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
41	1.250	A325	81	105	90.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
42	1.250	A325	81	105	101.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
43	1.250	A325	81	105	112.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
44	1.250	A325	81	105	123.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
45	1.250	A325	81	105	135.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
46	1.250	A325	81	105	146.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
47	1.250	A325	81	105	157.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
48	1.250	A325	81	105	168.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
49	1.250	A325	81	105	180.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
50	1.250	A325	81	105	191.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
51	1.250	A325	81	105	202.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
52	1.250	A325	81	105	213.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
53	1.250	A325	81	105	225.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
54	1.250	A325	81	105	236.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
55	1.250	A325	81	105	247.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
56	1.250	A325	81	105	258.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
57	1.250	A325	81	105	270.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
58	1.250	A325	81	105	281.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
59	1.250	A325	81	105	292.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
60	1.250	A325	81	105	303.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
61	1.250	A325	81	105	315.0	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
62	1.250	A325	81	105	326.3	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
63	1.250	A325	81	105	337.5	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 10/25/2016
PJF Project: 37516-3105.003.7805
Client Ref. # BU 823529
Site Name:
Description: Flange @ 20'
Owner: CCI
Engineer: KAT

Asymmetric Bolt Analysis

Moment =	3349	k-ft	TIA Ref.	G	Location =	Flange Plate								
Axial =	56.3	kips	ASIF =	1.0000	η =	N/A	for BP, Rev. G Sect. 4.9.9							
Shear =	30.5	kips	Max Ratio =	100.0%	Threads =	X-Excluded	for FP, Rev. G							
Anchor Qty =	64													

**** For Flange Plates: Prying action is not considered in the bolt loads. ****

64	1.250	A325	81	105	348.8	53.00	0.00	1.23	53.94	52.18	52.18	0.00	76.31	68.4%
								78.54						

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data	
BU#:	*823529*
Site Name:	*CT038/EastLyme/I-95/ X7*2
App #:	

Manufacturer:	Pirod

Bolt Data			
Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	50.18	in	

Plate Data		
Plate Outer Diam:	59	in
Plate Inner Diam:	54	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.79	in

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	10	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.5	in
Pole Inner Diam:	59	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	3349.44	ft-kips
Axial:	56.27	kips
Shear:	30.54	kips
Exterior Flange Run, T+q:		kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
53.15

Elevation: 20 feet

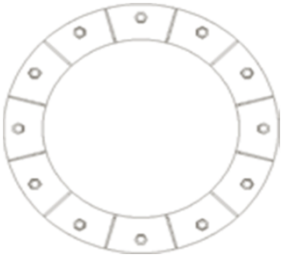
See "Asymetric Bolt Analysis" for bolt capacity

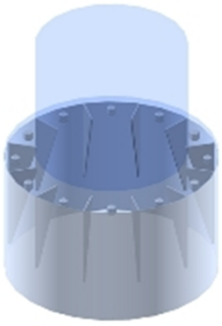
Interior Flange Plate Results	Flexural Check
Controlling Bolt Axial Force:	101.9 Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod OK
Allowable Plate Stress, φ*Fy:	32.4 ksi
Plate Stress Ratio:	Rohn/Pirod OK

Stiffener Results	N/A for Rohn / Pirod
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev G

Site Data	
BU#:	*823529*
Site Name:	*CT038/EastLyme/I-95/ X7*2
App #:	

Manufacturer:	Pirod

Bolt Data			
Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:	0	<-- Disregard	
N/A:	0	<-- Disregard	
Circle:	50.18	in	

Plate Data		
Plate Outer Diam:	58.75	in
Plate Inner Diam:	54	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	35	ksi
Effective Width:	5.77	in

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	0	<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	7	in
Height:	10	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.625	in
Pole Inner Diam:	58.75	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Reactions		
Moment:	3349.44	ft-kips
Axial:	56.27	kips
Shear:	30.54	kips
Exterior Flange Run, T+q:	0	kips

Bolt Threads:
X-Excluded
φVn=φ(0.55*Ab*Fu)
φ=0.75, φ*Vn (kips):
53.15

Elevation: 20 feet

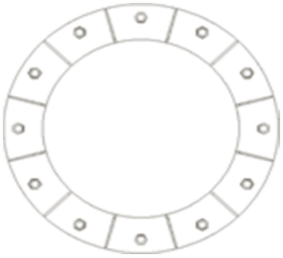
See "Asymetric Bolt Analysis" for bolt capacity

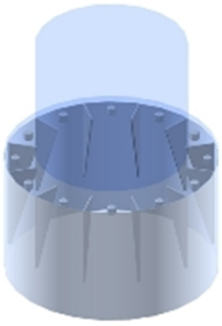
Interior Flange Plate Results	Flexural Check
Controlling Bolt Axial Force:	101.9 Kips, Ext. Cu=Interior Cu
Plate Stress:	Rohn/Pirod OK
Allowable Plate Stress, φ*Fy:	31.5 ksi
Plate Stress Ratio:	Rohn/Pirod OK

Stiffener Results	N/A for Rohn / Pirod
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *823529*
Site Name: *CT038/EastLyme/ I-95/ X72*
App #:

Pole Manufacturer:	*Pirod*

Anchor Rod Data		
Qty:	52	
Diam:	1.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	67	in

Plate Data		
Diam:	70	in
Thick:	1.25	in
Grade:	36	ksi
Single-Rod B-eff:	3.62	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.375	in
Fillet V. Weld:	0.375	in
Width:	4.5	in
Height:	8	in
Thick:	0.625	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	60	in
Thick:	0.625	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	3977	ft-kips
Axial, Pu:	67	kips
Shear, Vu:	32	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria: AISC LRFD <-Only Applcable to Unstiffened Cases

Anchor Rod Results

		Stiffened
Max Rod (Cu+ Vu/ή):	57.3 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	116.3 Kips	φ*Tn
Anchor Rod Stress Ratio:	49.3% **Pass**	

Base Plate Results Shear Check Only

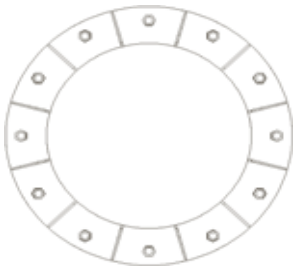
		Stiffened
Base Plate Stress:	Rohn/Pirod, OK	AISC LRFD
Allowable Plate Stress:	19.4 ksi	φ*Fy
Base Plate Stress Ratio:	Rohn/Pirod, OK	Y.L. Length: N/A, Roark

Stiffener Results N/A for Rohn / Pirod

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

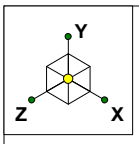
Pole Results

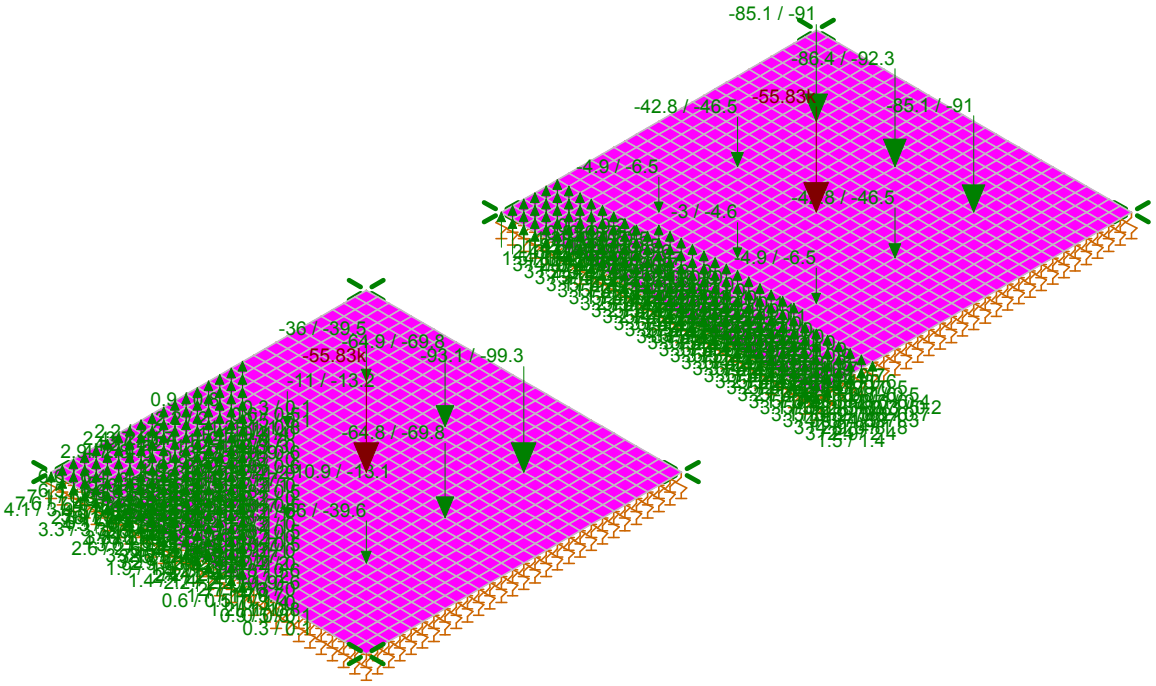
Pole Punching Shear Check: N/A



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes





2" Williams (Ag=2.896in2, An = 2.427in2, Fy=91ksi, Fu=124ksi)
Capacity = 0.8*Fu*An = 240.8kips

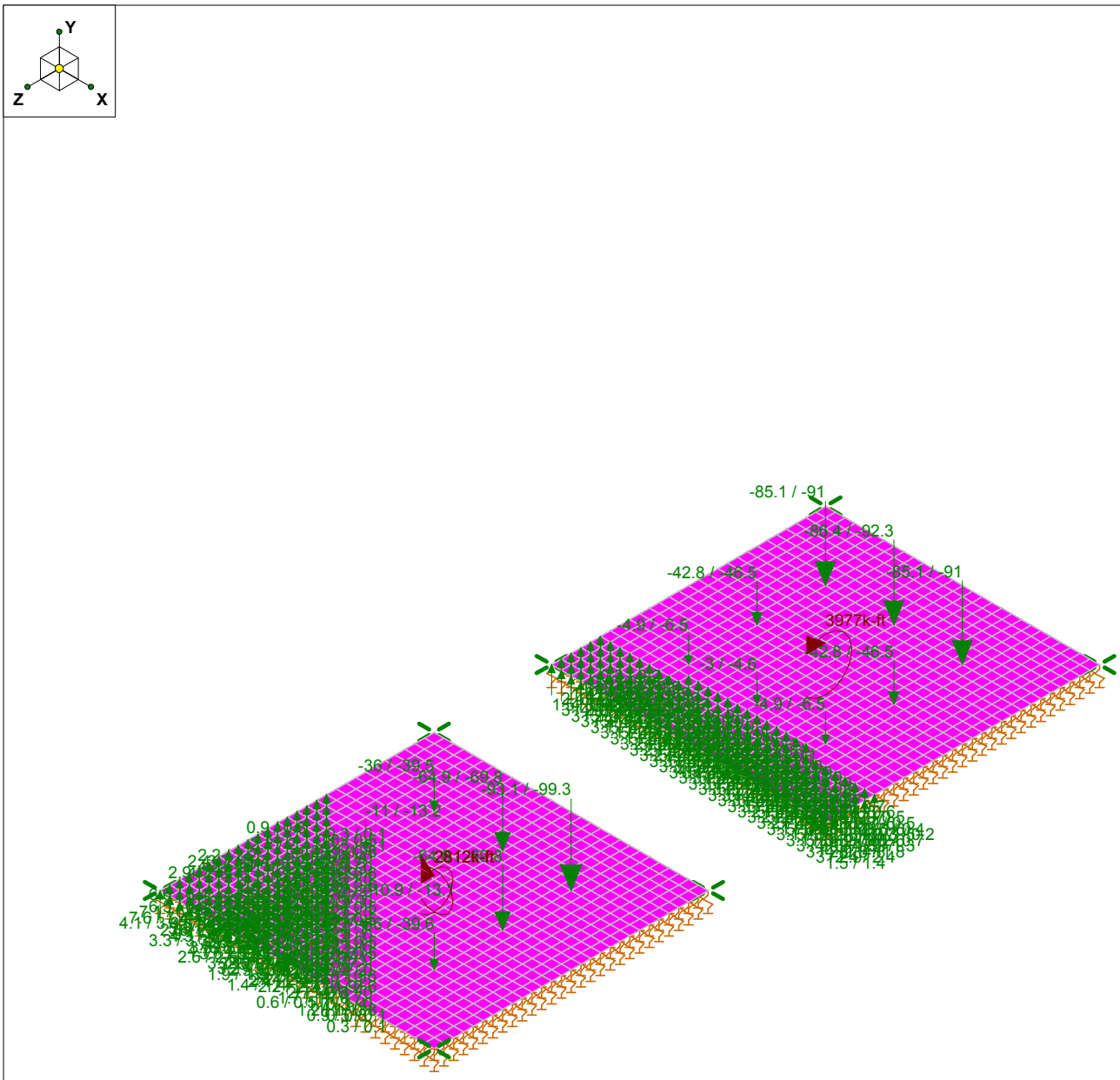
Capacity = 99.3/240.8 = 41.2%

Rock Anchor Spring Constant

k = An*E/10-ft =
(2.427*29000)/(10-ft*12in/ft)
= 587 k/in

Loads: BLC 1, Dead
Envelope Only Solution
Y-direction Reaction Units are k and k-ft (Enveloped)

Paul J. Ford and Company		SK - 1
KAT	BU 823529	Oct 25, 2016 at 9:35 AM
37516-3105.003.7805		37516-3105.003.7805_MAT Analy...



Loads: BLC 2, MOment + Shear
Envelope Only Solution
Y-direction Reaction Units are k and k-ft (Enveloped)

Paul J. Ford and Company	BU 823529	SK - 2
KAT		Oct 25, 2016 at 9:35 AM
37516-3105.003.7805		37516-3105.003.7805_MAT Analy...

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	ACI 318-08
Masonry Code	None
Aluminum Code	None - Building

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Om Z	1
Om X	1
Rho Z	1
Rho X	1

Concrete Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	f'c[ksi]	Lambda	Flex Steel[...	Shear Stee...
1	Conc3000NW	3156	1372	.15	.6	.145	3	1	60	60
2	Conc3500NW	3409	1482	.15	.6	.145	3.5	1	60	60
3	Conc4000NW	3644	1584	.15	.6	.145	4	1	60	60
4	Conc3000LW	2085	907	.15	.6	.11	3	.75	60	60
5	Conc3500LW	2252	979	.15	.6	.11	3.5	.75	60	60
6	Conc4000LW	2408	1047	.15	.6	.11	4	.75	60	60

Load Combinations

	Description	Solve P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2Axial	Yes	Y		1	1.2	2	1															
2	0.9 Axial	Yes	Y		1	.9	2	1															

Plate Forces (Mx) taken at face of pole from RISA-3D:

Compression (1.2)	Compression (0.9)	Tension (0.9)	
-5.665	-5.64	-2.701	
-5.707	-5.682	-2.704	
-5.824	-5.799	-2.64	
-6.018	-5.99	-2.502	
-6.298	-6.266	-2.27	
-6.689	-6.653	-1.89	
-7.247	-7.205	-1.339	
-8.07	-8.025	-0.59	
-9.328	-9.282	0.53	
-11.325	-11.279	2.407	
-14.439	-14.394	5.461	
-18.733	-18.69	9.744	
-23.338	-23.298	14.397	
-26.44	-26.402	17.565	
-26.44	-26.402	17.565	
-23.338	-23.298	14.397	
-18.733	-18.69	9.744	
-14.439	-14.394	5.461	
-11.325	-11.279	2.407	
-9.328	-9.282	0.53	
-8.07	-8.025	-0.59	
-7.247	-7.205	-1.339	
-6.689	-6.653	-1.89	
-6.298	-6.266	-2.27	
-6.018	-5.99	-2.502	
-5.824	-5.799	-2.64	
-5.707	-5.682	-2.704	
-5.665	-5.64	-2.701	
-310.242	-309.21	66.936	k-ft
-1861.452	**-1855.26**	**401.616**	k-ft

Multiply by 6 since drawn in inches and as a 6 inch plate

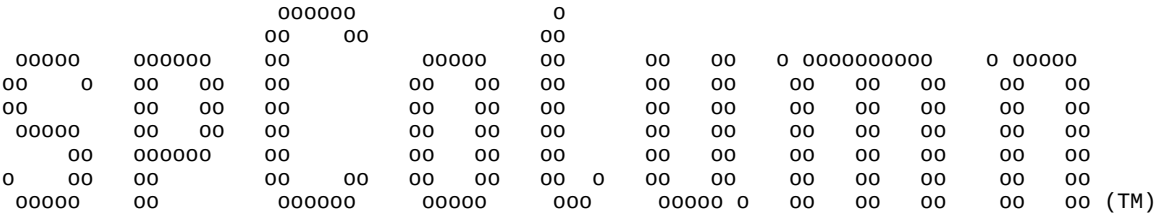
Tension from Anchors

91 kips
92.3 kips
91 kips

Distance anchors to Center of pole = 42 inches
Pole Diameter = 60 inches

Moment Arm = 42 - 60 / 2 = 12 inches

Bending Moment = 3291.6 k-in
Bending Moment (Tension) = 274.3 k-ft



spColumn v5.00 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

General Information:
==========
File Name: g:\tower\375_crown_castle\2016\37516-3105_823529_c...\37516-3105.003.7805_mat bending.col
Project: 37516-3105.002.7700
Column: 823529 Engineer: KAT
Code: ACI 318-11 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Architectural

Material Properties:
==========
Concrete: Standard Steel: Standard
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
fc = 2.55 ksi Eps_yt = 0.00206897 in/in
Eps_u = 0.003 in/in
Beta1 = 0.85

Section:
========
Rectangular: Width = 168 in Depth = 45 in

Gross section area, Ag = 7560 in^2
Ix = 1.27575e+006 in^4 Iy = 1.77811e+007 in^4
rx = 12.9904 in ry = 48.4974 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #4 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

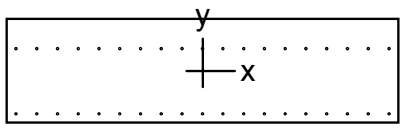
Layout: Rectangular
Pattern: Sides Different (Cover to transverse reinforcement)
Total steel area: As = 30.02 in^2 at rho = 0.40% (Note: rho < 0.50%)
Minimum clear spacing = 7.89 in

	Top	Bottom	Left	Right
Bars	19 # 8	19 # 8	0 # 3	0 # 3
Cover(in)	12	3	3	3

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	0.00	402.00	1993.28	4.958	4.81	41.00	0.01695	0.900
2	0.00	-1861.00	-2815.88	1.513	9.52	41.00	0.00991	0.900

*** End of output ***



168 x 45 in

Code: ACI 318-11

Units: English

Run axis: About X-axis

Run option: Investigation

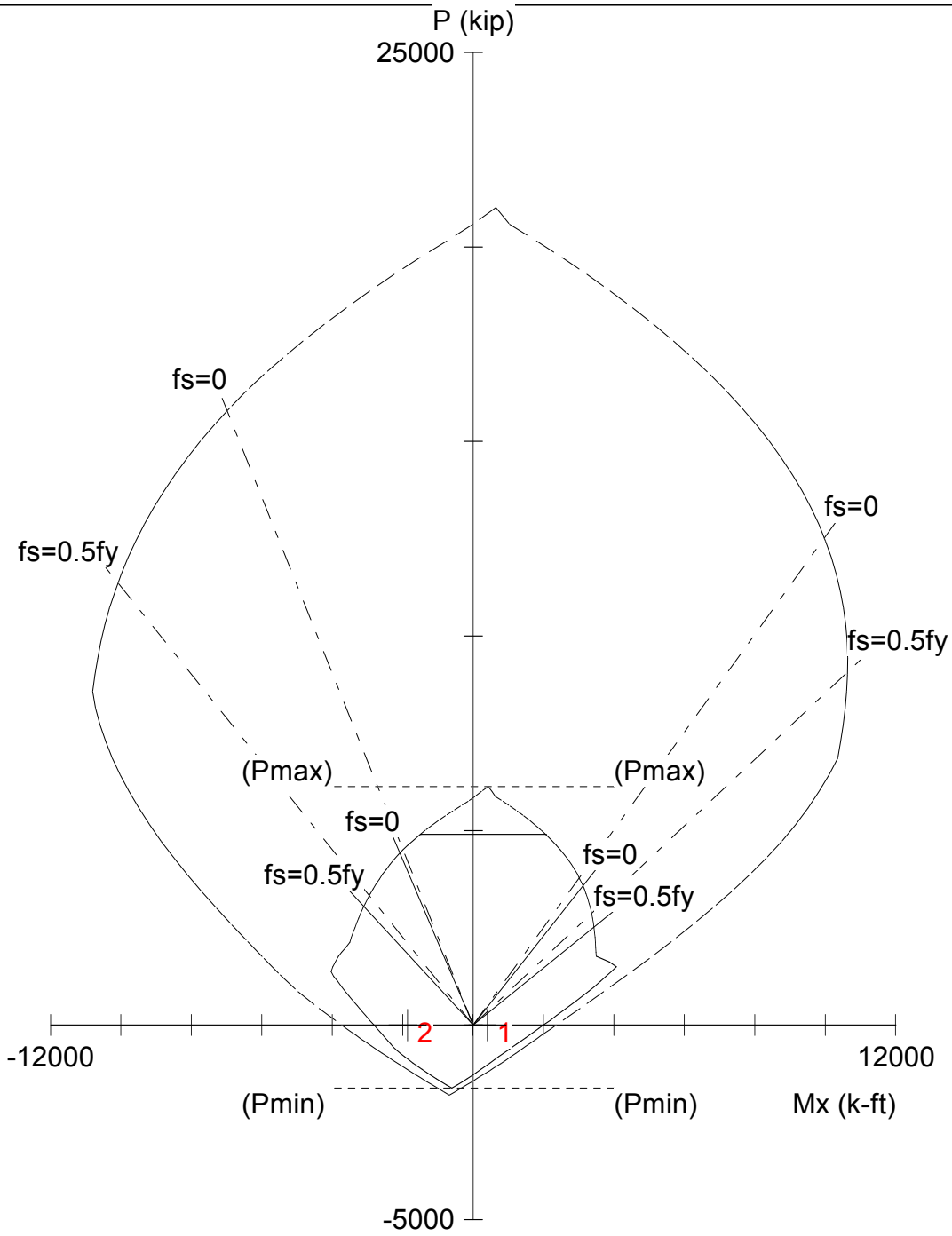
Slenderness: Not considered

Column type: Architectural

Bars: ASTM A615

Date: 10/25/16

Time: 10:00:50



File: g:\tower\375_crown_castle\2016\37516-3105_823529_ct038-eastlyme- i-95- x...\37516-3105.003.7805_mat bending.col

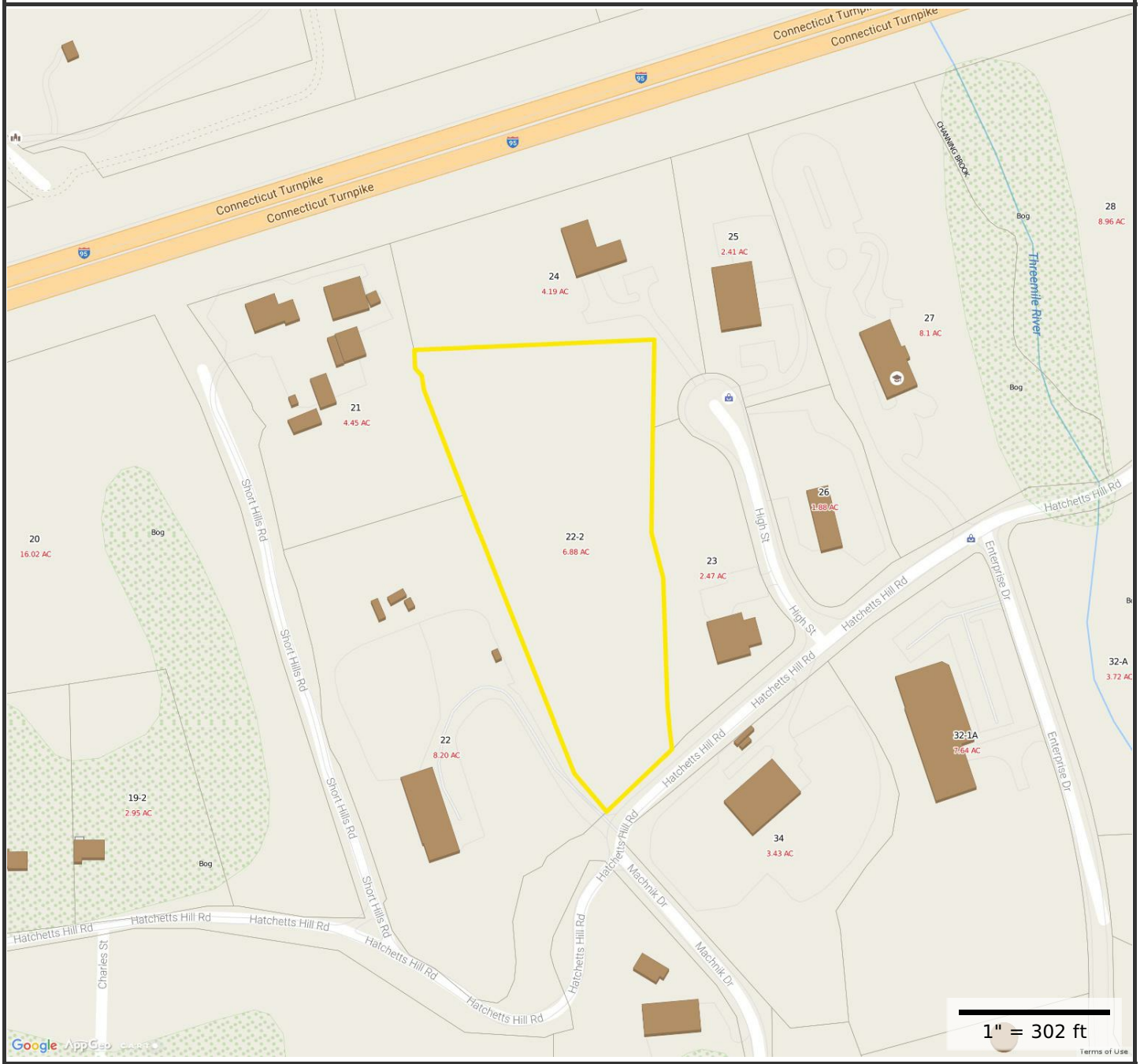
Project: 37516-3105.002.7700

Column: 823529 Engineer: KAT

f'c = 3 ksi	fy = 60 ksi	Ag = 7560 in^2	38 #8 bars
Ec = 3122 ksi	Es = 29000 ksi	As = 30.02 in^2	rho = 0.40%
fc = 2.55 ksi	e_yt = 0.00206897 in/in	Xo = 0.00 in	Ix = 1.27575e+006 in^4
e_u = 0.003 in/in		Yo = 0.00 in	Iy = 1.77811e+007 in^4
Beta1 = 0.85		Min clear spacing = 7.89 in	Clear cover = 3.50 in

Confinement: Tied

phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65



Property Information

Property ID	19-22-2
Location	38 HATCHETTS HILL RD
Owner	HATCHETTS HILL LLC

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

Parcels updated 2/1/2016
Properties updated Daily

38 HATCHETTS HILL RD

Location	38 HATCHETTS HILL RD	**Assessment**	$686,200
Mblu	19/ / 22/2 /	**Appraisal**	$980,300
Acct#	00080200	**PID**	891
Owner	HATCHETTS HILL LLC	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$600,000	$380,300	$980,300
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$420,000	$266,200	$686,200

Owner of Record

Owner	HATCHETTS HILL LLC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	38 HATCHETTS HILL RD OLD LYME, CT 06371	**Book & Page**	220/ 677
		Sale Date	08/02/1994

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
HATCHETTS HILL LLC	$0		220/ 677	08/02/1994

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Photo

Building Attributes	
Field	**Description**
Style	Outbuildings
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	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

(http://images.vgsi.com/photos/OldLymeCTPhotos//default.jpg)

Building Layout

Building Layout

Building Sub-Areas	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	4410
Description	IND LD PO
Zone	LI80
Neighborhood	IND
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.88
Frontage	0
Depth	0
Assessed Value	$266,200
Appraised Value	$380,300

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
	EASMENT VALUE			1	$600,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$0	$330,700	$330,700

2010	$0	$330,700	$330,700
2009	$0	$330,700	$330,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2011	$0	$231,500	$231,500
2010	$0	$231,500	$231,500
2009	$0	$231,500	$231,500

TOWN OF OLD LYME, CONNECTICUT

ZONING COMMISSION
52 Lyme Street
P.O. Box 160
Old Lyme, CT 06371
Tel (860) 434-9174
Fax (860) 434-5636

CERTIFICATE OF DECISION

SPECIAL EXCEPTION

Application of: Omnipoint Communication, Inc. at 36 Hatchetts Hill Road, Old Lyme, CT., Map #19, Lot #22 in a LI-80 zone.

Request for a Special Exception Approval/Site Development Plan Approval for a proposed telecommunications tower. The Public Hearing was held on November 12, 1998.

Commission Members Present and Voting: Jeff Flower, Alan Bayreuther, Connie Kastelowitz, Robert McCarthy and Steven Ross.

Decision on January 14, 1999.

In this application the Commission members voted unanimously to approve the Site Development Plan/Special Exception as shown on the plan dated September 10, 1998 revised through December 9, 1998 with the following conditions:

1. Paragraph 13 be amended in accordance with Attorney Mattern's letter of January 13, 1999.

The Planning Commission concluded that this proposal, as approved, will not adversely affect the public health, safety, welfare or property values of the Town of Old Lyme.

This Certificate of Decision must be recorded in the land records of the Town of Old Lyme, Connecticut. The Town Clerk shall index the same in the grantor's index under the name of the record owner's, and the record owner shall pay the fees for such recording.

Dated at Old Lyme, Connecticut this 28th day of January 1999.

_____, Chairman
Old Lyme Planning Commission

Received for Record 2/19/99 at 1 8:15 m P
Recorded by Eileen K. Coppa A.T.C.
Town Clerk