Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

November 29, 2016

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

RE: **Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 806376**
AT&T Site ID: CT5276
1455 Forbes Street, East Hartford, CT 06118
Latitude: 41° 43' 53.3" / Longitude: -72° 36' 28.0"

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the 120-foot level of the existing 131-foot monopole at 1455 Forbes Street, East Hartford, CT. The tower is owned by Crown Castle. The property is owned by Robert Handel. AT&T intends to replace three (3) RRU11 B2s with three (3) RRU32 B2s.

This facility was approved by the Connecticut Siting Council Petition No. 535 on May 21, 2002. This approval was given without conditions.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Marcia A. Leclerc, Mayor, Town of East Hartford as well as the property owner, and Crown Castle is the tower owner.

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

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

3. The proposed modification 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 Communication 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-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Marcia A. Leclerc, Mayor, Town of East Hartford
740 Main Street
East Hartford, CT 06108

Robert Handel
1473 Forbes Street
East Hartford, CT 06118

DOCKET NO. 139 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of cellular facilities in the Towns of Enfield, East Hartford, and Wethersfield, Connecticut. : Connecticut : Siting : Council

September 18, 1991

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications towers and equipment buildings at the proposed Enfield, Connecticut, alternate site and the proposed East Hartford, Connecticut, prime site including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need as provided by section 16-50k of the Connecticut General Statutes (CGS), be issued to Metro Mobile CTS of Hartford, Inc., for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed alternate site in Enfield, Connecticut, and the proposed prime site in East Hartford, Connecticut.

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

1. The self-supporting monopole towers shall be no taller than necessary to provide the proposed communication service and in no event shall the towers exceed a total height of 163 feet above ground level (AGL) at the proposed Enfield alternate site and 123 feet AGL at the proposed East Hartford prime site, with antennas and appurtenances.

2. The Certificate holder shall prepare a Development and Management (D&M) Plan, for approval by the Council, for these sites in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. This D&M plan

shall include detailed plans of the towers, tower foundations, soil boring reports, equipment buildings, access roads, security fences, landscaping plans, detailed erosion and sedimentation control plans, and a final schedule. In addition, the D&M plan shall include for Council consideration, detailed plans and itemized costs for the placement of service utilities underground in order to further mitigate the visual effect of the facilities.

3. The Certificate holder shall comply with any existing and future radio frequency (RF) standards promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted herein shall be brought into compliance with such standards.

4. The Certificate holder shall provide the Council with a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

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

6. If the facility does not initially provide or permanently ceases to provide cellular service following completion of construction, this Decision and Order shall be void, and the tower and all associated equipment shall be dismantled and removed or reapplication for any new use shall be made to the Council as soon as practicable before any such new use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to CGS section 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of this issuance shall be published in the Hartford Courant and the Journal Inquirer.

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

The parties to this proceeding are:

PARTIES	ITS REPRESENTATIVE
Metro Mobile CTS of Hartford, Inc. 20 Alexander Drive P.O. Box 5029 Wallingford, CT 06492 Attn: Gary Schulman	Robinson and Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Earl Phillips, Jr. (203) 275-8200
The Town of East Hartford	G. Barry Goodberg Assistant Corporation Counsel Town of East Hartford 740 Main Street East Hartford, CT 06108 (203) 289-2781
The Town of Enfield	Christopher W. Bromson Enfield Town Attorney 47 No. Main Street Enfield, CT 06082 (203) 745-0371 Ext. 290

SMH:bw

5534E

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in DOCKET NO. 139 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of cellular facilities in the Towns of Enfield, East Hartford, and Wethersfield, Connecticut, or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 18th day of September, 1991.

Council Members	Vote Cast
Mortimer A. Gelston Chairman	YES
Commissioner Clifton A. Leonhardt Designee: Commissioner Richard G. Patterson	ABSTAIN
Commissioner Timothy R.E. Keeney Designee: Brian Emerick	ABSENT
Harry E. Covey	NO
Daniel P. Lynch, Jr.	NO
Gloria Dibble Pond	YES
Paulann H. Sheets	YES
William H. Smith	YES
Colin C. Tait	YES

PETITION NO. 535 - AT&T Wireless PCS, LLC and Crown Atlantic Company LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for proposed modification of an existing telecommunications tower located at 1455 Forbes Street, East Hartford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	May 21, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the extension of an existing telecommunications tower and installation of associated equipment at an existing facility located at 1455 Forbes Street in East Hartford, Connecticut, are not significant, are not disproportionate either alone or cumulatively with other effects, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny this petition.

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

1. The tower extension shall be compatible with and installed on the existing monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless PCS, LLC (AT&T) and XM Satellite Radio, but such extension shall not exceed a height of 133 feet above ground level, including antennas and appurtenances.

2. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

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

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

5. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

6. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not completed within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

8. All other applicable provisions of the Council's September 18, 1991 Decision and Order in Docket No. 139 remain in effect.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and The East Hartford Gazette.

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

The parties and intervenors to this proceeding are:

Crown Atlantic Company LLC and AT&T Wireless PCS, LLC	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	**CAMA PID:**	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

OWNER OF RECORD
HANDEL ROBERT D 1473 FORBES ST EAST HARTFORD, CT 06118

LIVING AREA:	720	**ZONING:**	R2	**ACREAGE:**	25.74

SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
HANDEL ROBERT D	3582/ 113	25-Jan-2016	$0.00
HANDEL JESSIE K EST OF C/O ROBERT D HANDEL EXECUTOR	3534/ 329	21-May-2015	$0.00
HANDEL JESSIE K	1874/ 345	03-Jan-2000	$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	0/ 0	01-Jan-2000	$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	1693/ 161	05-Aug-1997	$0.00

CURRENT PARCEL ASSESSMENT

TOTAL:	$330,170.00	**IMPROVEMENTS:**	$285,940.00	**LAND:**	$44,230.00

ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2015	$346,650.00	$302,420.00	$44,230.00
2014	$346,650.00	$302,420.00	$44,230.00
2013	$346,650.00	$302,420.00	$44,230.00
2012	$346,650.00	$302,420.00	$44,230.00
2011	$346,650.00	$302,420.00	$44,230.00

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	**CAMA PID:**	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 1

YEAR BUILT	1865	**EXT WALL 1**	Vinyl Siding
STYLE	Colonial	**INT WALLS 1**	Plaster
MODEL	Residential	**HEAT FUEL**	Gas
STORIES	2.0	**HEAT TYPE**	Hot Water
OCCUPANCY	One Family	**AC TYPE**	None
ROOF	Gable	**BEDROOMS**	4
ROOF COVER	Asphalt	**FULL BATHS**	1
FLOOR COVER 1	Hardwood	**HALF BATHS**	1
% BSMT	100	**TOTAL ROOMS**	9
% FIN BSMT	0	**% REC RM**	60
% SEMI FIN BSMT	0	**% ATTIC FINISH**	0
BSMT GARAGE		**FIREPLACES**	0

OUTBUILDINGS

DESCRIPTION	CODE	UNITS
1 Story Barn	BRN1	1x5112 (5112 SF)
Shed	SHD1	1x64 (64 S.F.)
1 Story Barn	BRN1	1x3072 (3072 SF)
Shed	SHD1	1x300 (300 S.F.)
Shed	SHD1	1x561 (561 S.F.)
1 Story Barn	BRN1	1x4928 (4928 SF)
Shed	SHD1	1x600 (600 S.F.)

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	**CAMA PID:**	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 2

YEAR BUILT	1934	**EXT WALL 1**	Vinyl Siding
STYLE	Single Family	**INT WALLS 1**	Plaster
MODEL	Residential	**HEAT FUEL**	Other
STORIES	1.0	**HEAT TYPE**	Other
OCCUPANCY	One Family	**AC TYPE**	None
ROOF	Gable	**BEDROOMS**	1
ROOF COVER	Asphalt	**FULL BATHS**	1
FLOOR COVER 1	Hardwood	**HALF BATHS**	0
% BSMT	0	**TOTAL ROOMS**	4
% FIN BSMT	0	**% REC RM**	0
% SEMI FIN BSMT	0	**% ATTIC FINISH**	0
BSMT GARAGE		**FIREPLACES**	0

OUTBUILDINGS

DESCRIPTION	CODE	UNITS
Shed	SHD1	1x105 (105 S.F.)
1 Story Barn	BRN1	1x840 (840 SF)
Shed	SHD1	1x144 (144 S.F.)
1 Story Barn	BRN1	1x3840 (3840 SF)
Shed	SHD1	1x308 (308 S.F.)
FR/SHED		30 SF

PROJECT INFORMATION

SCOPE OF WORK:

- AT&T ANTENNAS: (3) EXISTING ANTENNAS TO REMAIN (1 PER SECTOR); (3) EXISTING ANTENNAS TO BE REPLACED (1 PER SECTOR); (3) NEW ANTENNAS REPLACING EXISTING ANTENNA (1 PER SECTOR).
- AT&T RRUS: (1) NEW RRUS PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) NEW RRUS; (2) EXISTING RRUS PER SECTOR TO REMAIN, FOR A TOTAL OF (6) EXISTING RRUS; (1) EXISTING RRUS & A2 MODULE PER SECTOR TO BE REMOVED
- AT&T SQUIDS: ADD (1) NEW DC FIBER SQUID
- ADD (2) NEW DC TRUNKS & (1) NEW FIBER TRUNK.

SITE ADDRESS:	1455 FORBES STREET EAST HARTFORD, CT 06118
LATITUDE:	41.73139200 41° 43' 53.011"N
LONGITUDE:	-72.60809900 -72° 36' 29.156"W
USID:	25922
TOWER OWNER:	CROWN CASTLE – 806376
TYPE OF SITE:	MONOPOLE/OUTDOOR EQUIPMENT
MONOPOLE HEIGHT:	130'-0"±
RAD CENTER:	120'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

DRAWING INDEX

		REV.
T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	COMPOUND LAYOUT	0
A-2	EQUIPMENT LAYOUT	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS	0

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

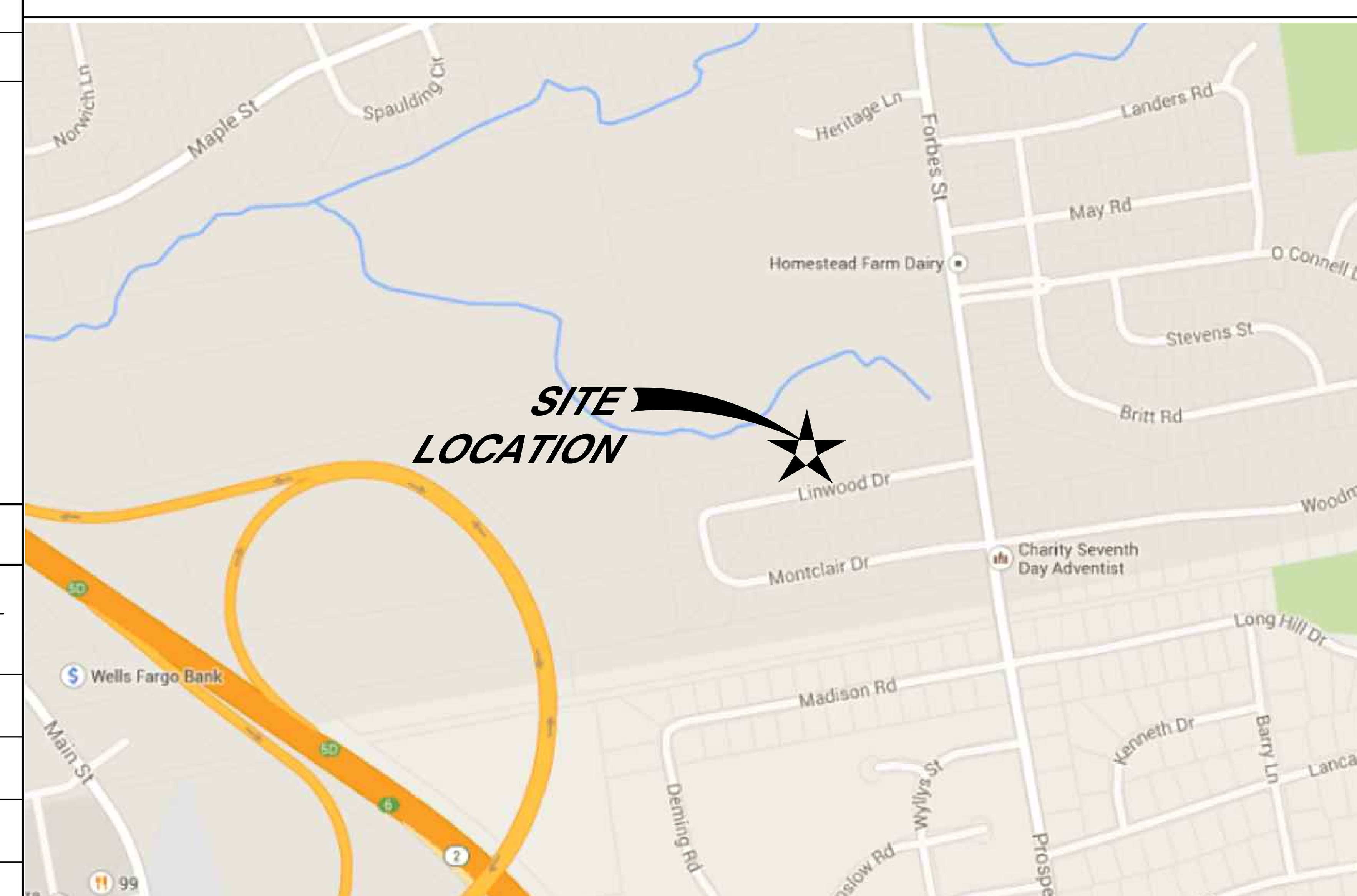
DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10090919
SITE NUMBER: CT5276
SITE NAME: EAST HARTFORD SOUTH
BUN # 806376

VICINITY MAP

550 COCHITUATE RD FRAMINGHAM, MA 01701 HEAD NORTHEAST. TURN RIGHT TOWARD SPEEN ST. TURN RIGHT ONTO SPEEN ST. TURN RIGHT ONTO COCHITUATE RD. TAKE THE RAMP TO I-90/MASSPIKE/SPRINGFIELD/BOSTON. TOLL ROAD. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS. TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE. PARTIAL TOLL ROAD. TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. TOLL ROAD. CONTINUE ONTO I-84. PARTIAL TOLL ROAD. ENTERING CONNECTICUT. TAKE EXIT 59 FOR SPENCER STREET. TURN RIGHT ONTO SILVER LN. TURN LEFT ONTO FORBES ST.



PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

SITE ACQUISITION:

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

ZONING:

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

ENGINEERING:

COMPANY:	COM-EX CONSULTANTS, LLC
ADDRESS:	115 ROUTE 46 SUITE E39 MOUNTAIN LAKES, NJ 07046
CONTACT:	NICHOLAS D. BARILE, P.E.
PHONE:	862-209-4300
EMAIL:	nbarile@comexconsultants.com

RF ENGINEER:

COMPANY:	AT&T MOBILITY – NEW ENGLAND
ADDRESS:	550 COCHITUATE ROAD SUITE 550 13 & 14 FRAMINGHAM, MA 01701
CONTACT:	CAMERON SYME
PHONE:	508-596-7146
EMAIL:	cs6970@att.com

CONSTRUCTION MANAGEMENT:

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	GRZEGORZ "GREG" DORMAN
PHONE:	484-683-1750
EMAIL:	gdorman@empiretelecomm.com

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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP-CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5276
SITE NAME: EAST HARTFORD SOUTH
1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/18/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV

SEAL: STATE OF CONNECTICUT NICHOLAS D. BARILE No. 28643 LICENSED PROFESSIONAL ENGINEER
11/18/16

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	T-1	0

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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER 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 AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   - CONTRACTOR – EMPIRE TELECOM
   - SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   - OWNER – AT&T MOBILITY
   - OEM – ORIGINAL EQUIPMENT MANUFACTURER
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 (EMPIRE TELECOM).
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. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. 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.
8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. 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.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF 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.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. 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). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. 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.
17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
19. 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.
    - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
    - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
    - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. 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, THIRTEENTH EDITION
    - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
    - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
    - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
    - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
    - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
    - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. 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.
22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.
23. INFORMATION SHOWN ON THIS SET OF DRAWINGS TAKEN FROM PLANS PREPARED BY HUDSON DESIGN GROUP FOR AT&T DATED 7/25/12. CONTRACTOR TO NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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PHONE: 862.209.4300
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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5276
SITE NAME: EAST HARTFORD SOUTH
1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/18/16	ISSUED AS FINAL	NJM	NDB	NDB

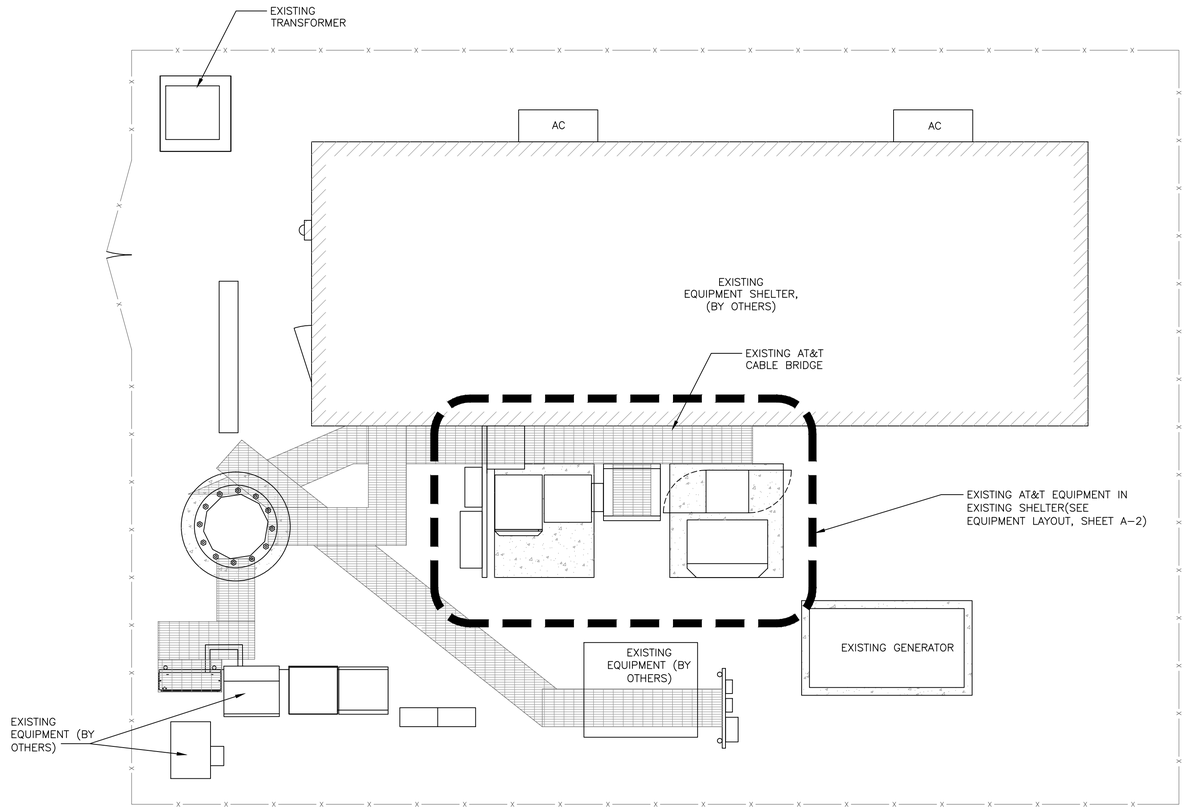
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV

SEAL: STATE OF CONNECTICUT, NICHOLAS D. BARILE, No. 28643, LICENSED PROFESSIONAL ENGINEER
11/18/16

AT&T

DRAWING TITLE: GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	GN-1	0



COMPOUND LAYOUT

SCALE: 1" = 4'-0"

4 0 2 4 8 16

(IN FEET)
1/4 Inch = 1 Foot

NORTH

NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/18/16	ISSUED AS FINAL	NJM	NDB	NDB

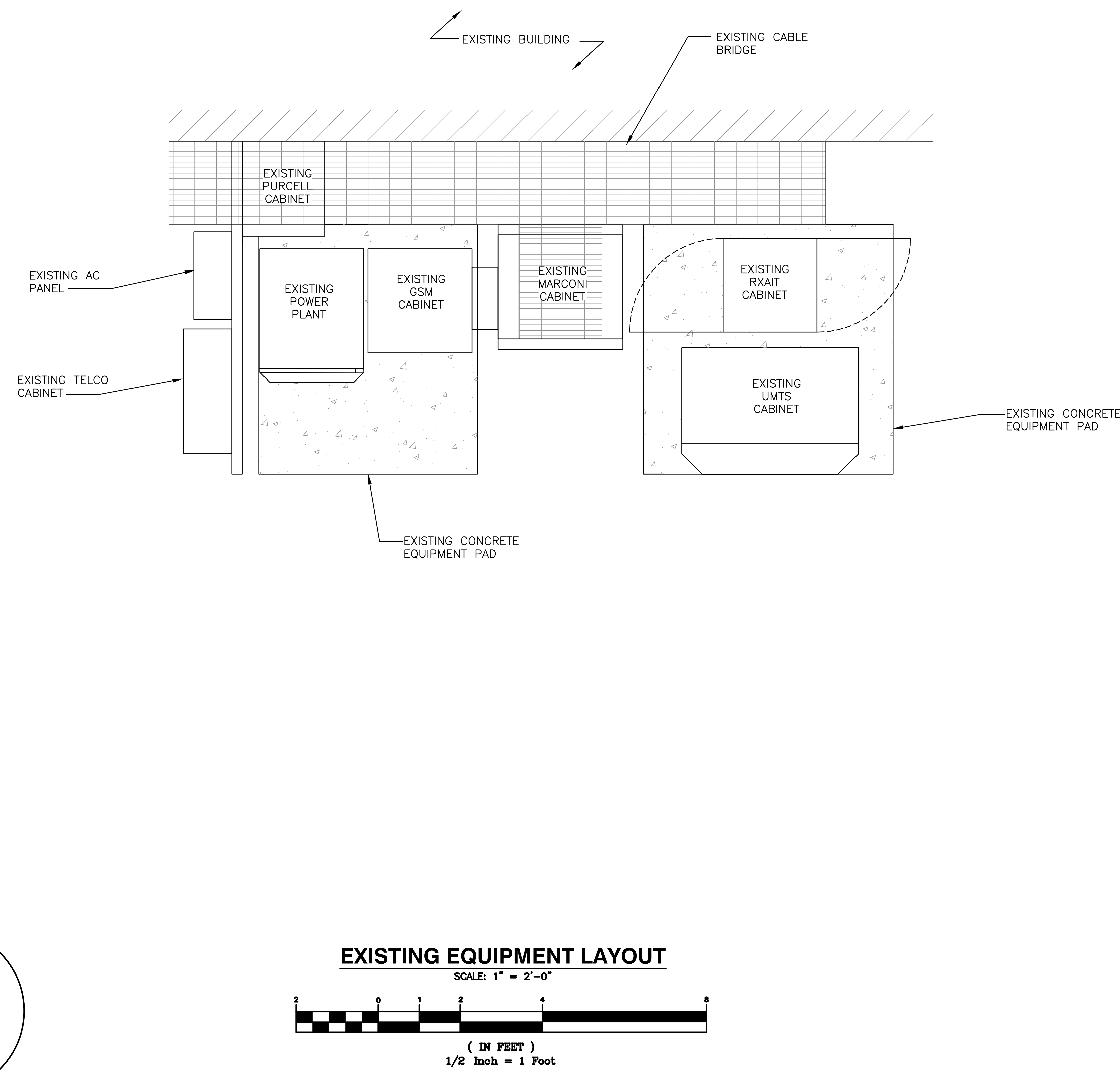
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV

SEAL:
STATE OF CONNECTICUT
DOUGLAS D. BURKE
No. 28634
LICENSED PROFESSIONAL ENGINEER
11/18/16

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

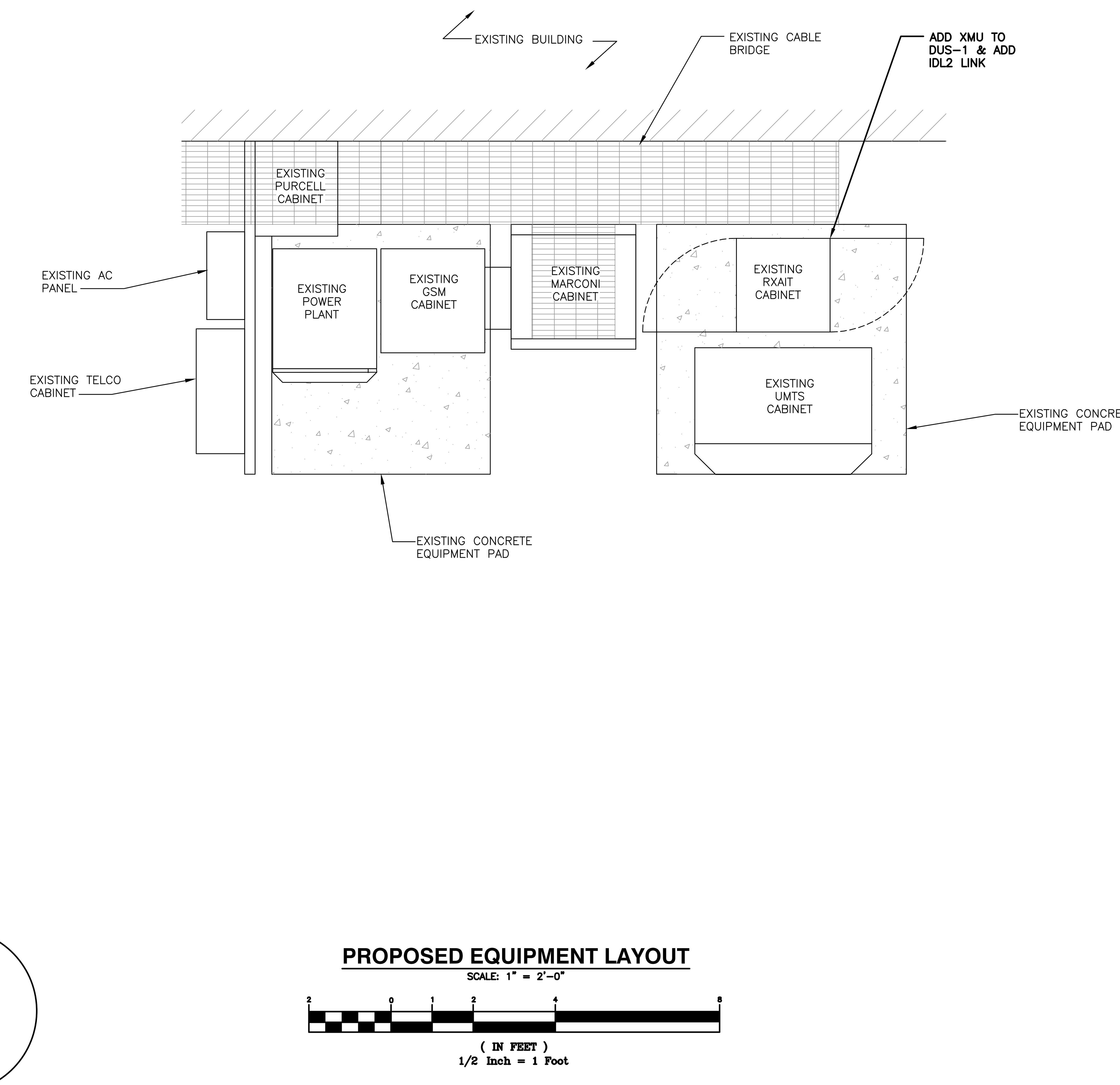
JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	A-1	0



EXISTING EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

(IN FEET)
1/2 Inch = 1 Foot



PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

(IN FEET)
1/2 Inch = 1 Foot

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/18/16	ISSUED AS FINAL	NJM	NDB	NDB

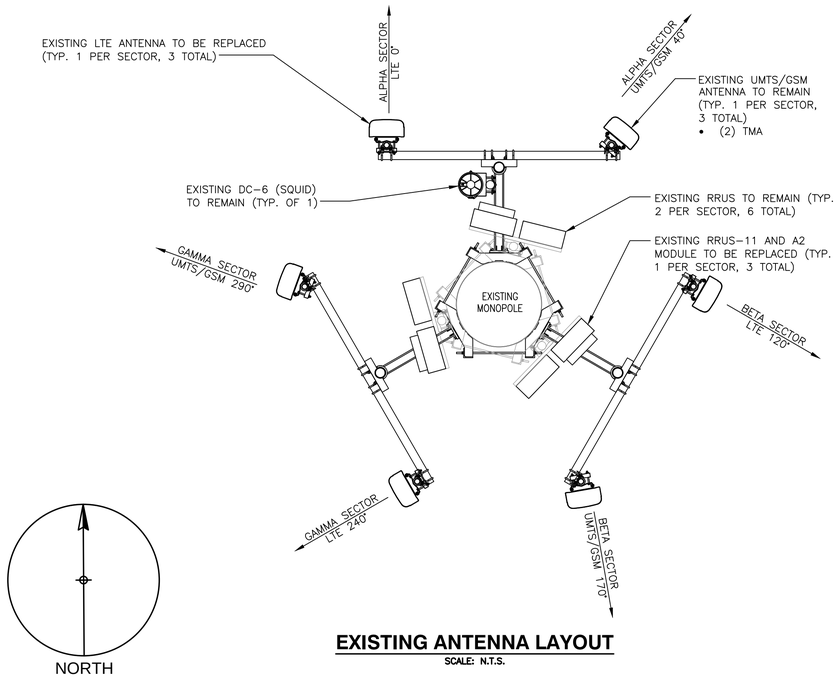
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV

SEAL: STATE OF CONNECTICUT, NICHOLAS D. BARILE, No. 29043, LICENSED PROFESSIONAL ENGINEER
11/18/16

AT&T

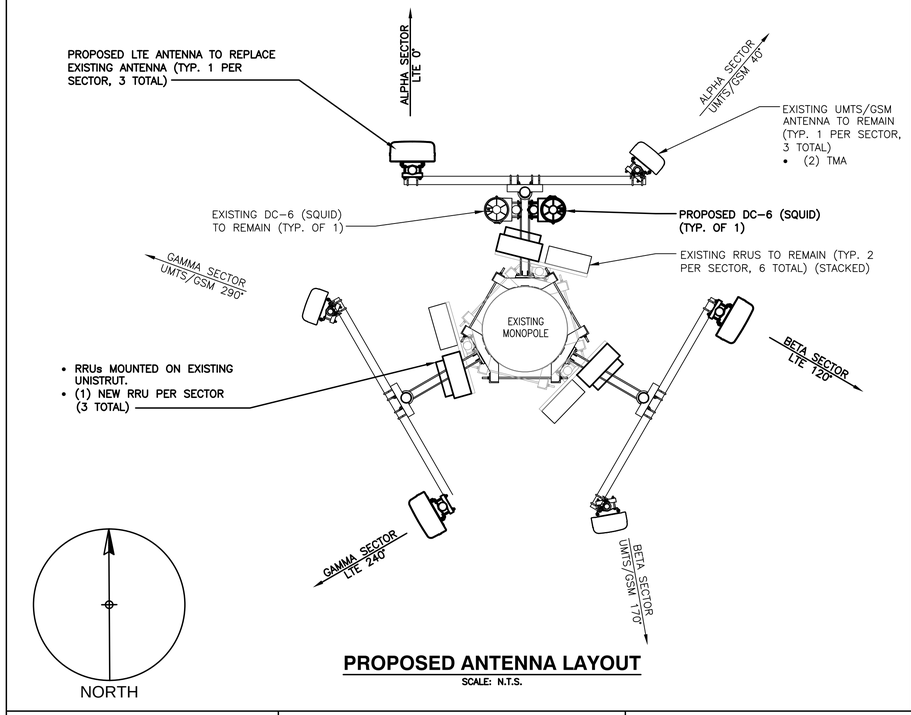
DRAWING TITLE: EQUIPMENT LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	A-2	0



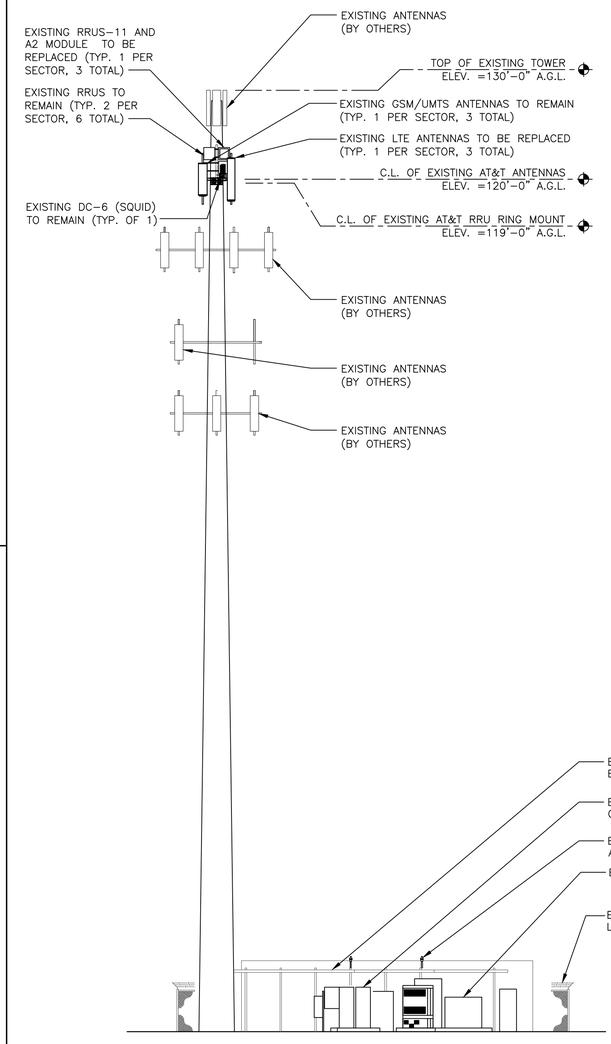
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



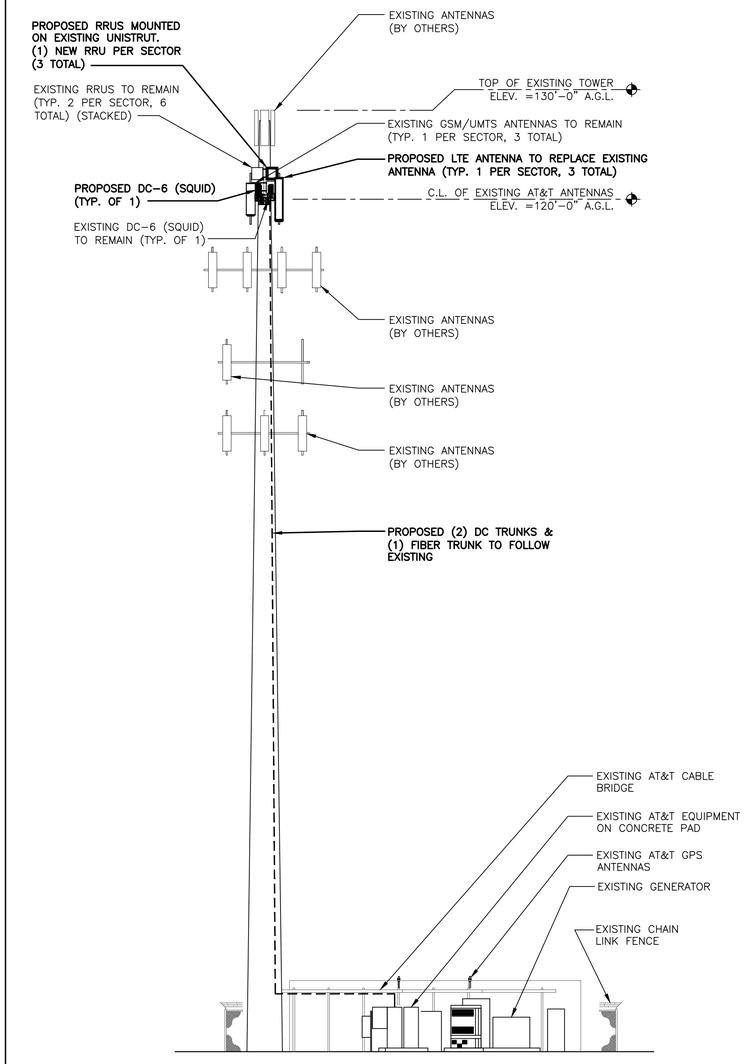
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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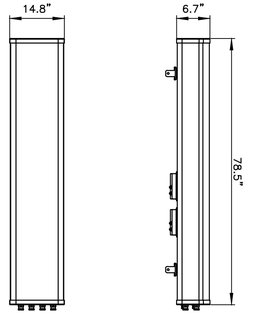
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV

SEAL:
STATE OF CONNECTICUT
DOUGLAS G. WARD
No. 28043
LICENSED PROFESSIONAL ENGINEER
11/18/16

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	A-3	0



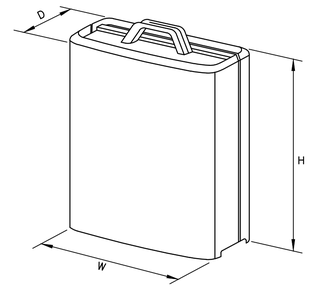
FRONT VIEW SIDE VIEW

PLAN VIEW

MANUFACTURER	KATHREIN
MODEL	800-10798
WEIGHT	86.2

LTE ANTENNA DETAIL

SCALE: N.T.S.

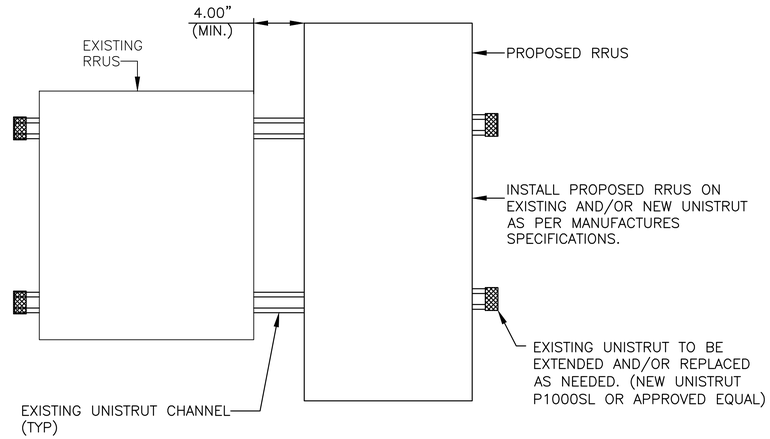


MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
*RRUS-32	29.9" x 13.3" x 9.5"	77 LBS
RRUS-32 B2	29.9" x 13.3" x 9.5"	77 LBS

*DENOTES EXISTING.

RRUS DETAIL

SCALE: N.T.S.



ELEVATION

NOTES:

1. AT&T SUPPLIES THE RRH. SUBCONTRACTOR SHALL SUPPLY ALL OTHER MATERIALS AND INSTALL ALL MOUNTING HARDWARE. ALU INSTALLS RRH AND MAKES CABLE TERMINATIONS.
2. A SUPPORT FOR A SINGLE RRH SHALL HAVE A MINIMUM OF TWO ANCHORS/FASTENERS FOR EACH UNISTRUT CHANNEL.
3. INSTALL ANCHORS/FASTENERS A MAXIMUM OF 2'-0" ON CENTERS.
   - WOOD STUDS – 1/4"ø LAG BOLT W/ 2" EMBEDMENT IN WOOD.
   - CONCRETE – 1/2"ø HILTI KWIK BOLT III W/ 2-1/4" EMBEDMENT OR EQUIVALENT.
   - THROUGH BOLT – 1/4"ø A36/A307 THREADED ROD W/ NUTS AND WASHERS.
   - MASONRY – 1/2"ø THREADED ROD WITH HILTI HY70 W/5" MINIMUM EMBEDMENT.

   ANCHORS AND UNISTRUT CHANNEL SHALL HAVE HOT-DIPPED GALVANIZED FINISH.
4. MOUNT RRH TO UNISTRUT WITH 3/8"ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET. SUBCONTRACTOR SHALL SUPPLY.
5. NO PAINTING OF THE RRH OR SOLAR SHIELD IS ALLOWED.

RRUS MOUNTING DETAIL

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A2	–	–	–
	A3	–	–	–
	A4	KATHREIN	800-10121	54.5"x10.2"x5.9"
BETA	B1	KMW	AM-X-CD-16-65-00T-RET	72"X11.8"X5.9"
	B2	–	–	–
	B3	–	–	–
	B4	KATHREIN	800-10121	54.5"x10.2"x5.9"
GAMMA	G1	KMW	AM-X-CD-16-65-00T-RET	72"X11.8"X5.9"
	G2	–	–	–
	G3	–	–	–
	G4	KATHREIN	800-10121	54.5"x10.2"x5.9"

PROPOSED ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	**KATHREIN**	**800-10798**	**78.5"x14.8"x6.7"**
	A2	–	–	–
	A3	–	–	–
	A4	KATHREIN	800-10121	54.5"x10.2"x5.9"
BETA	B1	**KATHREIN**	**800-10798**	**78.5"x14.8"x6.7"**
	B2	–	–	–
	B3	–	–	–
	B4	KATHREIN	800-10121	54.5"x10.2"x5.9"
GAMMA	G1	**KATHREIN**	**800-10798**	**78.5"x14.8"x6.7"**
	G2	–	–	–
	G3	–	–	–
	G4	KATHREIN	800-10121	54.5"x10.2"x5.9"

PROPOSED RRH SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"	–	–
	ERICSSON	**RRUS-32 B2**	**29.9"x13.3"x9.5"**	–	–
BETA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"	–	–
	ERICSSON	**RRUS-32 B2**	**29.9"x13.3"x9.5"**	–	–
GAMMA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"	–	–
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"	–	–
	ERICSSON	**RRUS-32 B2**	**29.9"x13.3"x9.5"**	–	–

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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0	11/18/16	ISSUED AS FINAL	NJM	NDB	NDB

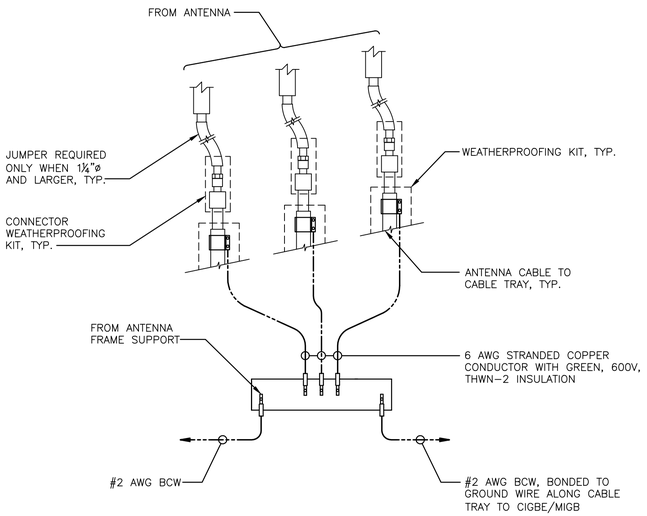
SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV

SEAL: STATE OF CONNECTICUT · NICHOLAS B. WARD · No. 29045 · LICENSED PROFESSIONAL ENGINEER
11/18/16

AT&T

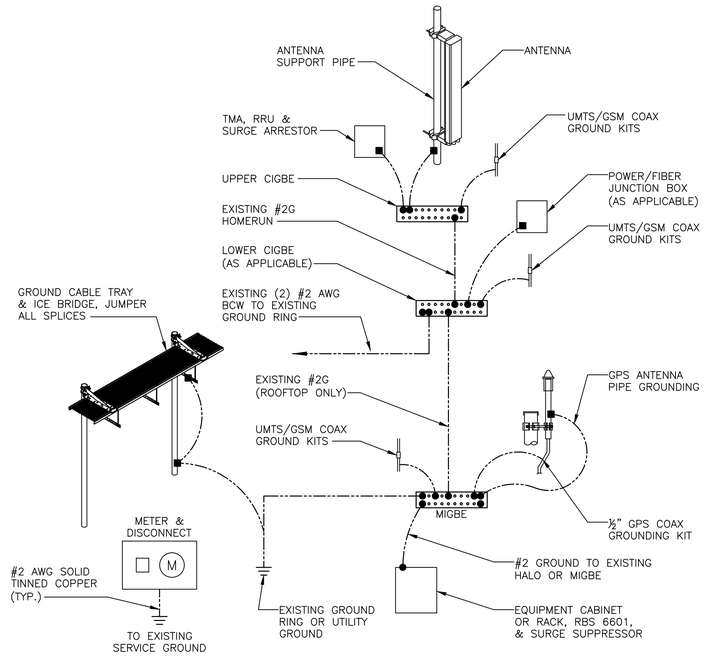
DRAWING TITLE: DETAILS

JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	A-4	0



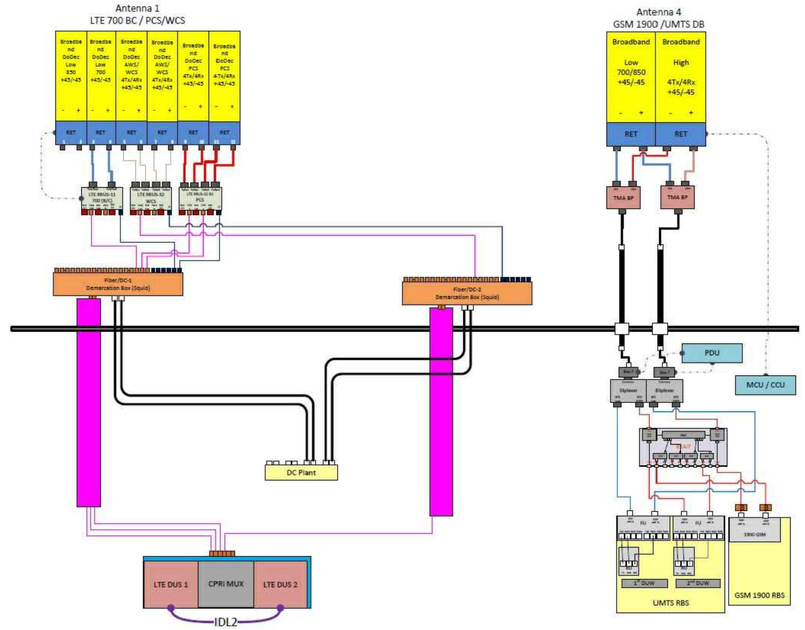
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



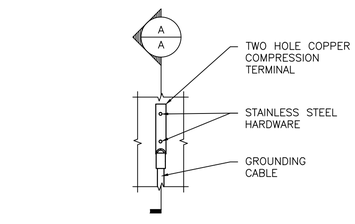
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

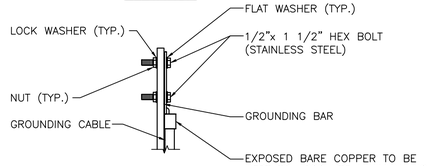


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



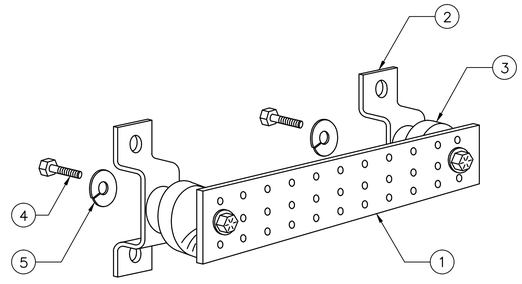
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

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.

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5276
SITE NAME: EAST HARTFORD SOUTH

1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/18/16	ISSUED AS FINAL	NJM	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: NJM | DRAWN BY: PAV | 11/18/16

SEAL: STATE OF CONNECTICUT · NICHOLAS G. WARNER · No. 29045 · LICENSED PROFESSIONAL ENGINEER

AT&T

DRAWING TITLE: GROUNDING, ONE-LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
16056-EMP	G-1	0

Date: **October 21, 2016**

GPD Engineering and Architecture
Professional Corporation

Ardalan Arabi
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6602

520 South Main Street Suite 2531
Akron, Ohio 44311
(216) 927-8663
dpalkovic@gpdgroup.com

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL05276
	Carrier Site Name:	East Hartford South
Crown Castle Designation:	**Crown Castle BU Number:**	806376
	Crown Castle Site Name:	HRT 100 943239
	Crown Castle JDE Job Number:	386407
	Crown Castle Work Order Number:	1286658
	Crown Castle Application Number:	354601 Rev. 0
Engineering Firm Designation:	**GPD Project Number:**	2016777.806376.03
Site Data:	**1455 FORBES STREET, EAST HARTFORD, Hartford County, CT** **Latitude *41° 43' 53.3"*, Longitude *-72° 36' 28"*** **130.667 Foot - Monopole Tower**	

Dear Ardalan Arabi,

GPD is pleased to submit this **"Structural Modification 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 937731, in accordance with application 354601, 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:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved 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 125 mph converted to a nominal 3-second gust wind speed of 97 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 C and Risk Category II were used in this analysis.

All modifications designed by GPD (Project #: 2016777.806376.03, dated 10/21/2016) and equipment proposed in the reports shall be installed in accordance with the attached drawings for the determined structural capacity to be effective.

We at *GPD* 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.

Structural analysis prepared by: Troy Eveslage

Respectfully submitted by:

Christopher J. Scheks, P.E.
Connecticut #: 0030026

STATE OF CONNECTICUT · CHRISTOPHER J. SCHEKS · 30122 · LICENSED PROFESSIONAL ENGINEER

10/21/2016

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 131 ft Monopole tower designed by Valmont in January of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower geometry was additionally mapped by TEP in October of 2016.

The existing tower has four major sections connected by a two slip-joints and a flange connection at 110'. It has 12 sides and is evenly tapered from 41.90" (flat-flat) at the base to 10.525" (flat-flat) at the top. The structure is galvanized and has no tower lighting.

Modifications designed by PJF (Project #: 37512-1659, dated: 6/22/2012) have been considered in this analysis. The modifications consist of installing transition stiffeners to the tower base and installing flat plate reinforcement from 0'-6" to 60'-6" and from 72' to 82'.

Modifications designed by PJF (Project #: 37513-0342, dated: 2/26/2013) have been considered in this analysis. The modifications consist of installing transition stiffeners to the tower base and installing flat plate reinforcement from 0'-6" to 85'-10".

Modifications designed by PJF (Project #: 37515-1502.004.7700, dated: 5/12/2015) have been considered in this analysis. The modifications consist of installing transition stiffeners to the tower base and installing flat plate reinforcement from 0'-6" to 66'-1" and from 81'-6" to 91'-6".

Modifications designed by GPD (Project #: 2016777.858403.03, dated: 10/21/2016) have been considered in this analysis. The modifications consist of removing existing flat plate reinforcement and installing new flat plate reinforcement form 0'-0" to 20'-9".

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 125 mph converted to a nominal 3-second gust wind speed of 97 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 C 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
121.0	120.0	1	Raycap	DC6-48-60-18-8F	1 2	3/8 3/4	1
		3	Ericsson	RRUS 32			
		3	Ericsson	RRUS 32 B2			
		3	Kathrein	80010798			

Notes:
1) Refer to Appendix B for the proposed coax layout.

Table 2 - Existing and Reserved 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
121.0	121.0	3	Ericsson	RRUS 11 B2			1
		3	Kmw Communications	AM-X-CD-16-65-00T-RET			
		1	Tower Mounts	T-Arm Mount [TA 601-3]	1 2 6	3/8 3/4 1-1/4	
	120.0	3	Ericsson	RRUS-11			
		3	Kathrein	800 10121			
		6	Powerwave Technologies	LGP21401			
		1	Raycap	DC6-48-60-18-8F			
107.0	111.0	6	Andrew	SBNHH-1D65B	12 1 1	1 5/8 1-1/4 1/2	
		3	Antel	BXA-70063/6CFx4			
		3	Antel	BXA-80063/4CF			
		3	Alcatel Lucent	RRH2X60-AWS			
		3	Alcatel Lucent	RRH2X60-PCS			
		1	Raycap	RRFDC-3315-PF-48			
	107.0	6	RFS Celwave	FD9R6004/2C-3L			
		1		Platform Mount [LP 101-1]			
101.9	101.9	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER			
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz			
		3	Samsung	RRH2WB			
		1		Side Arm Mount [SO 101-3]			
94.4	101.0	1	Andrew	VHLP2.5-18-DW1	3 3 3	1-1/4 5/16 1/2	
		1	Andrew	VHLP2-18-DW1			
		1	Dragonwave	HORIZON COMPACT			
	96.5	3	Argus	LLPX310R-V1			
		3	RFS Celwave	APXVSPP18-C-A20			
		1		Platform Mount [LP 101-1]			
87.0	87.0	3	Ericsson	AIR -32 B2A/B66AA	1	7/8	2
		3	Commscope	LNX-6515DS-VTM	12 1	1 1/4 1 5/8	
		3	Ericsson	ERICSSON AIR 21 B2A B4P			
		3	Ericsson	KRY 112 144/1			
		3	Ericsson	RRUS 11 B12			
		1		Site Pro1 RMV12-396 [TA 602-3]			

Notes:
1) Equipment To Be Removed; Not considered in this analysis.
2) Reserved Equipment

Table 3 - Design 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)
Information Not Available						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
GEOTECHNICAL REPORTS	Dr. Welti, dated 11/11/91	262381	CCISITES
TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont, 10613-91 & 10614-91, dated 11/30/91	262389	CCISITES
TOWER MANUFACTURER DRAWINGS	Valmont, dated 1/22/91	262386	CCISITES
MODIFICATION DRAWINGS	PJF Project #: 37512-1659, dated 6/22/2012	3249954	CCISITES
POST-MODIFICATION INSPECTION	TEP Project #: 127151, dated 2/26/2013	3675451	CCISITES
MODIFICATION DRAWINGS	PJF Project #: 37513-0342, dated 2/26/2013	3635976	CCISITES
POST-MODIFICATION INSPECTION	TEP Project #: 25676, dated 6/4/2014	5099148	CCISITES
MODIFICATION DRAWINGS	PJF Project #: 37515-1502.004.770, dated 5/12/2015	5681337	CCISITES
POST-MODIFICATION INSPECTION	ETS Project #: 150936, dated 10/2/15	5921968	CCISITES
MODIFICATION DRAWINGS	GPD Project #: 2016777.806376.03, dated 10/21/2016	Dan Palkovic	GPD

3.1) Analysis Method

tnxTower (version 7.0.7.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	130.667 - 125.667	Pole	TP11.7672x10.525x0.1875	1	-0.11	515.33	0.6%	Pass
L2	125.667 - 120.667	Pole	TP13.0095x11.7672x0.1875	2	-7.90	570.61	1.6%	Pass
L3	120.667 - 115.667	Pole	TP14.2517x13.0095x0.1875	3	-2.20	625.89	14.1%	Pass
L4	115.667 - 110.667	Pole	TP15.4939x14.2517x0.1875	4	-2.37	681.17	24.2%	Pass
L5	110.667 - 110.542	Pole	TP15.525x15.4939x0.1875	5	-2.38	682.56	24.5%	Pass
L6	110.542 - 105.542	Pole	TP16.7756x15.525x0.25	6	-4.76	980.57	31.8%	Pass
L7	105.542 - 100.542	Pole	TP18.0263x16.7756x0.25	7	-6.03	1054.78	44.1%	Pass
L8	100.542 - 95.5417	Pole	TP19.2769x18.0263x0.25	8	-6.53	1128.99	55.2%	Pass
L9	95.5417 - 90.5417	Pole	TP20.5275x19.2769x0.25	9	-8.97	1203.20	67.3%	Pass
L10	90.5417 - 90	Pole	TP20.663x20.5275x0.25	10	-9.04	1211.24	68.4%	Pass
L11	90 - 89.75	Pole	TP20.7255x20.663x0.5	11	-9.09	2400.23	61.9%	Pass
L12	89.75 - 84.75	Pole	TP21.9761x20.7255x0.475	12	-12.08	2424.03	73.9%	Pass
L13	84.75 - 84.583	Pole	TP22.0179x21.9761x0.475	13	-12.12	2428.74	74.4%	Pass
L14	84.583 - 84.333	Pole	TP22.0805x22.0179x0.6375	14	-12.17	3244.49	57.7%	Pass
L15	84.333 - 83	Pole	TP22.4139x22.0805x0.625	15	-12.45	3232.19	60.4%	Pass
L16	83 - 82.75	Pole	TP22.4764x22.4139x0.3938	16	-12.50	2063.74	71.0%	Pass
L17	82.75 - 81	Pole	TP22.9141x22.4764x0.3875	17	-12.78	2071.81	74.6%	Pass
L18	81 - 80.75	Pole	TP22.9766x22.9141x0.5375	18	-12.86	2862.64	78.0%	Pass
L19	80.75 - 75.75	Pole	TP24.2273x22.9766x0.5125	19	-13.89	2884.66	88.3%	Pass
L20	75.75 - 70.5417	Pole	TP25.53x24.2273x0.5125	20	-14.16	2924.47	90.8%	Pass
L21	70.5417 - 69.5417	Pole	TP25.2778x24.0545x0.4375	21	-15.70	2579.39	83.3%	Pass
L22	69.5417 - 67	Pole	TP25.9124x25.2778x0.4375	22	-16.24	2645.29	86.2%	Pass
L23	67 - 66.75	Pole	TP25.9748x25.9124x0.4375	23	-16.31	2651.77	86.4%	Pass
L24	66.75 - 64.083	Pole	TP26.6406x25.9748x0.4313	24	-16.87	2682.68	89.2%	Pass
L25	64.083 - 63.833	Pole	TP26.703x26.6406x0.475	25	-16.96	2956.94	85.4%	Pass
L26	63.833 - 62.417	Pole	TP27.0566x26.703x0.475	26	-17.29	2996.79	86.7%	Pass
L27	62.417 - 62.167	Pole	TP27.119x27.0566x0.6125	27	-17.38	3853.37	85.7%	Pass
L28	62.167 - 59.458	Pole	TP27.7953x27.119x0.6	28	-18.09	3872.82	88.5%	Pass
L29	59.458 - 59.208	Pole	TP27.8577x27.7953x0.725	29	-18.18	4668.89	79.7%	Pass
L30	59.208 - 54.208	Pole	TP29.106x27.8577x0.7	30	-19.69	4719.44	84.3%	Pass
L31	54.208 - 53.5	Pole	TP29.2828x29.106x0.7	31	-19.92	4748.81	84.9%	Pass
L32	53.5 - 53.25	Pole	TP29.3452x29.2828x0.725	32	-20.00	4924.84	83.7%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L33	53.25 - 48.25	Pole	TP30.5935x29.3452x0.7125	33	-21.61	5053.14	87.8%	Pass
L34	48.25 - 44.583	Pole	TP31.5089x30.5935x0.6875	34	-22.82	5029.31	90.6%	Pass
L35	44.583 - 44.333	Pole	TP31.5714x31.5089x0.6875	35	-22.91	5039.49	90.8%	Pass
L36	44.333 - 41.833	Pole	TP32.1955x31.5714x0.6875	36	-23.74	5141.34	92.6%	Pass
L37	41.833 - 41.583	Pole	TP32.2579x32.1955x0.7125	37	-23.84	5334.62	87.8%	Pass
L38	41.583 - 34.525	Pole	TP34.02x32.2579x0.7	38	-24.71	5350.25	89.5%	Pass
L39	34.525 - 34	Pole	TP33.5114x32.2778x0.7188	39	-27.73	5594.18	91.3%	Pass
L40	34 - 31.458	Pole	TP34.1386x33.5114x0.7188	40	-28.65	5701.17	92.7%	Pass
L41	31.458 - 31.208	Pole	TP34.2003x34.1386x0.6188	41	-28.75	4931.71	91.0%	Pass
L42	31.208 - 29.458	Pole	TP34.632x34.2003x0.6188	42	-29.31	4995.12	91.9%	Pass
L43	29.458 - 29.208	Pole	TP34.6937x34.632x0.7063	43	-29.43	5697.17	94.0%	Pass
L44	29.208 - 26.833	Pole	TP35.2797x34.6937x0.7063	44	-30.30	5795.40	95.2%	Pass
L45	26.833 - 26.583	Pole	TP35.3413x35.2797x0.8313	45	-30.42	6808.64	83.5%	Pass
L46	26.583 - 21.583	Pole	TP36.575x35.3413x0.8188	46	-32.51	6948.41	85.9%	Pass
L47	21.583 - 18.75	Pole	TP37.2739x36.575x0.8063	47	-33.71	6978.47	87.2%	Pass
L48	18.75 - 18.5	Pole	TP37.3356x37.2739x0.7938	48	-33.83	6884.25	87.3%	Pass
L49	18.5 - 18	Pole	TP37.459x37.3356x0.7938	49	-34.05	6907.49	87.5%	Pass
L50	18 - 17.75	Pole	TP37.5207x37.459x0.8938	50	-34.17	7769.60	77.2%	Pass
L51	17.75 - 17.083	Pole	TP37.6852x37.5207x0.8938	51	-34.48	7804.51	77.5%	Pass
L52	17.083 - 16.833	Pole	TP37.7469x37.6852x0.8063	52	-34.60	7068.98	85.4%	Pass
L53	16.833 - 13	Pole	TP38.6926x37.7469x0.7938	53	-36.30	7139.90	87.0%	Pass
L54	13 - 12.75	Pole	TP38.7543x38.6926x0.9688	54	-36.44	8687.99	72.5%	Pass
L55	12.75 - 11.833	Pole	TP38.9805x38.7543x0.9688	55	-36.91	8740.01	72.8%	Pass
L56	11.833 - 11.583	Pole	TP39.0422x38.9805x0.7313	56	-37.03	6649.23	96.1%	Pass
L57	11.583 - 6.483	Pole	TP40.3005x39.0422x0.8438	57	-39.42	7901.64	90.5%	Pass
L58	6.483 - 6.25	Pole	TP40.358x40.3005x0.8438	58	-39.53	7913.15	90.5%	Pass
L59	6.25 - 1.25	Pole	TP41.5916x40.358x0.8188	59	-41.76	7923.27	92.3%	Pass
L60	1.25 - 0	Pole	TP41.9x41.5916x0.8188	60	-42.33	7983.20	92.7%	Pass
							Summary	
						Pole	86.7%	Pass
						Reinf.	96.1%	Pass
						Rating =	96.1%	Pass

Table 6 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	98.7	Pass
1	Base Plate	0	66.6	Pass
1	Base Foundation	0	57.2	Pass
1	Base Foundation Soil Interaction	0	45.7	Pass
1	Flange Connection	110.5	22.8	Pass

Structure Rating (max from all components) =	98.7%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The design of the modified tower will be sufficient for the proposed loading once the modifications are installed in reference to the design drawings by GPD (Project #: 2016777.806376.03, dated 10/21/2016, see Appendix D).

5) DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

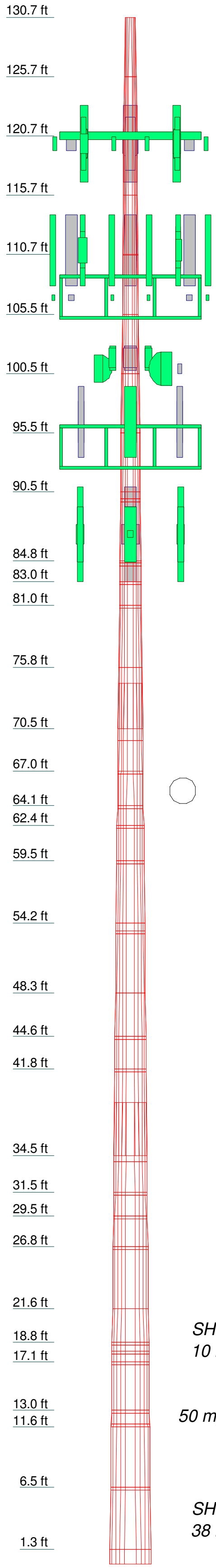
Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	12	0.1875		10.5250	11.7672	A572-65	0.1
2	5.0000	12	0.1875		11.7672	13.0095		0.1
3	5.0000	12	0.1875		13.0095	14.2517		0.1
4	5.0000	12	0.1875		14.2517	15.4939		0.2
5	[illegible]	12	[illegible]		15.4939	15.5250		0.0
6	5.0000	12	0.2500		15.5250	16.7756		0.2
7	5.0000	12	0.2500		16.7756	18.0263		0.2
8	5.0000	12	0.2500		18.0263	19.2769		0.3
9	5.0000	12	0.2500		19.2769	20.5275		0.3
10–18	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
19	5.0000	12	0.5125		[illegible]	[illegible]		0.6
20	[illegible]	12	0.5125	3.9000	[illegible]	25.5300		0.7
21–29	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
30	5.0000	12	0.7000		[illegible]	[illegible]		1.0
31–32	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
33	5.0000	12	[illegible]		[illegible]	[illegible]		1.1
34–37	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
38	[illegible]	12	0.7000	4.4750	[illegible]	[illegible]		1.7
39–45	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
46	5.0000	12	[illegible]		[illegible]	[illegible]		1.5
47–56	[illegible]	12	[illegible]		[illegible]	[illegible]		[illegible]
57	[illegible]	12	[illegible]		[illegible]	[illegible]		1.8
58	[illegible]	12	[illegible]		[illegible]	[illegible]		0.1
59	[illegible]	12	[illegible]		[illegible]	[illegible]		1.8
60	1.2500	12	[illegible]		[illegible]	[illegible]		0.4
								23.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
800 10121 w/ Mount Pipe	121	RRFDC-3315-PF-48	107
800 10121 w/ Mount Pipe	121	Platform Mount [LP 101-1]	107
800 10121 w/ Mount Pipe	121	800MHz 2X50W RRH W/FILTER	101.9
RRUS-11	121	800MHz 2X50W RRH W/FILTER	101.9
RRUS-11	121	800MHz 2X50W RRH W/FILTER	101.9
RRUS-11	121	PCS 1900MHz 4x45W-65MHz	101.9
(2) LGP21401	121	PCS 1900MHz 4x45W-65MHz	101.9
(2) LGP21401	121	PCS 1900MHz 4x45W-65MHz	101.9
(2) LGP21401	121	RRH-2WB	101.9
DC6-48-60-18-8F Surge Suppression Unit	121	RRH-2WB	101.9
		RRH-2WB	101.9
80010798 w/ Mount Pipe	121	Side Arm Mount [SO 101-3]	101.9
80010798 w/ Mount Pipe	121	LLPX310R-V1	94.4
80010798 w/ Mount Pipe	121	LLPX310R-V1	94.4
RRUS 32	121	LLPX310R-V1	94.4
RRUS 32	121	HORIZON COMPACT	94.4
RRUS 32	121	APXVSPP18-C-A20	94.4
RRUS 32 B2	121	APXVSPP18-C-A20	94.4
RRUS 32 B2	121	APXVSPP18-C-A20	94.4
RRUS 32 B2	121	Platform Mount [LP 101-1]	94.4
DC6-48-60-18-8F Surge Suppression Unit	121	VHLP2.5-18	94.4
		VHLP2-18-DW1	94.4
T-Arm Mount [TA 601-3]	121	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
BXA-80063/4CF	107		
BXA-80063/4CF	107	LNX-6515DS-VTM w/ Mount Pipe	87
BXA-80063/4CF	107	LNX-6515DS-VTM w/ Mount Pipe	87
BXA-70063/6CFx4	107	LNX-6515DS-VTM w/ Mount Pipe	87
BXA-70063/6CFx4	107	KRY 112 144/1	87
BXA-70063/6CFx4	107	KRY 112 144/1	87
(2) FD9R6004/2C-3L	107	KRY 112 144/1	87
(2) FD9R6004/2C-3L	107	RRUS 11 B12	87
(2) FD9R6004/2C-3L	107	RRUS 11 B12	87
(2) SBNHH-1D65B	107	RRUS 11 B12	87
(2) SBNHH-1D65B	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
(2) SBNHH-1D65B	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
RRH2X60-AWS	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
RRH2X60-AWS	107	Site Pro1 RMV12-396 [TA 602-3]	87
RRH2X60-AWS	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
RRH2X60-PCS	107		
RRH2X60-PCS	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
RRH2X60-PCS	107		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 69.3%

ALL REACTIONS ARE FACTORED

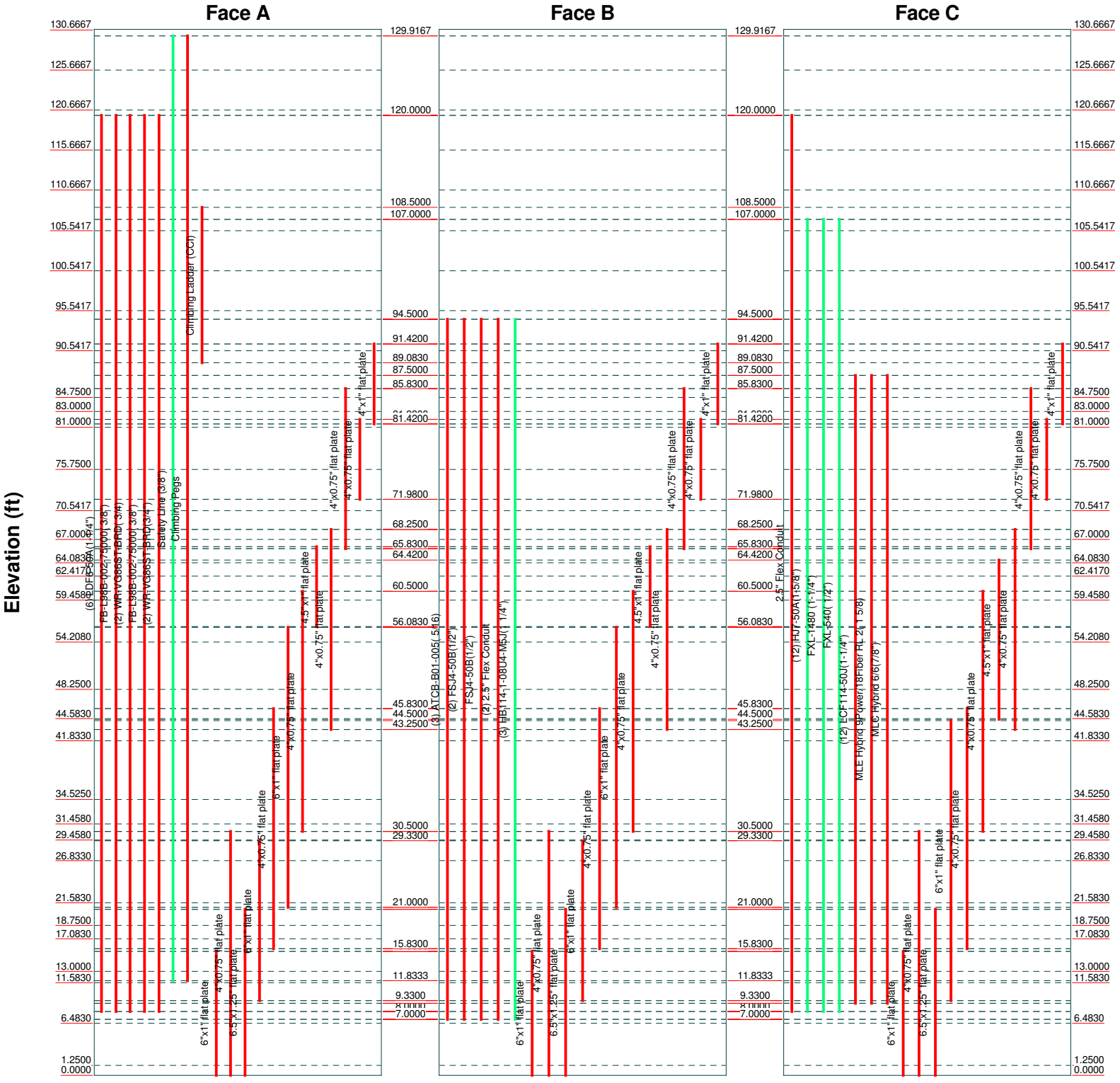
AXIAL 103 K
SHEAR 10 K
MOMENT 913 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 42 K
SHEAR 38 K
MOMENT 3079 kip-ft
TORQUE 1 kip-ft
REACTIONS - 97 mph WIND

GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-3709	Job: **HRT 100 943239 - BU #: 806376**		
	Project: **2016777.806376.03**		
	Client: Crown Castle	Drawn by: Teveslage	App'd:
	Code: TIA-222-G	Date: 10/21/16	Scale: NTS
	Path: \\AKRN05.gpdco.com\TELECOM\Crown\806376\03 Mods\Rev. 0\tnx\806376 modified.eri		Dwg No. E-1

Feed Line Distribution Chart
0' - 130'8"

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



GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-3709

Job: ***HRT 100 943239 - BU #: 806376***			
Project: ***2016777.806376.03***			
Client: Crown Castle	Drawn by: Teveslage	App'd:	
Code: TIA-222-G	Date: 10/21/16	Scale: NTS	
Path: \\AKRN05.gpdco.com\TELECOM\Crown\806376\03 Mods\Rev. 0\tnx\806376 modified.eri		Dwg No. E-7	

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class II.
4) Exposure Category C.
5) Topographic Category 1.
6) Crest Height 0.0000 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56.00 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) 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				

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	130.6667-125.6667	5.0000	0.00	12	10.5250	11.7672	0.1875	0.7500	A572-65 (65 ksi)
L2	125.6667-120.6667	5.0000	0.00	12	11.7672	13.0095	0.1875	0.7500	A572-65 (65 ksi)
L3	120.6667-115.6667	5.0000	0.00	12	13.0095	14.2517	0.1875	0.7500	A572-65 (65 ksi)
L4	115.6667-110.6667	5.0000	0.00	12	14.2517	15.4939	0.1875	0.7500	A572-65 (65 ksi)
L5	110.6667-110.5417	0.1250	0.00	12	15.4939	15.5250	0.1875	0.7500	A572-65 (65 ksi)
L6	110.5417-	5.0000	0.00	12	15.5250	16.7756	0.2500	1.0000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
	105.5417								(65 ksi)
L7	105.5417-100.5417	5.0000	0.00	12	16.7756	18.0263	0.2500	1.0000	A572-65 (65 ksi)
L8	100.5417-95.5417	5.0000	0.00	12	18.0263	19.2769	0.2500	1.0000	A572-65 (65 ksi)
L9	95.5417-90.5417	5.0000	0.00	12	19.2769	20.5275	0.2500	1.0000	A572-65 (65 ksi)
L10	90.5417-90.0000	0.5417	0.00	12	20.5275	20.6630	0.2500	1.0000	A572-65 (65 ksi)
L11	90.0000-89.7500	0.2500	0.00	12	20.6630	20.7255	0.5000	2.0000	A572-65 (65 ksi)
L12	89.7500-84.7500	5.0000	0.00	12	20.7255	21.9761	0.4750	1.9000	A572-65 (65 ksi)
L13	84.7500-84.5830	0.1670	0.00	12	21.9761	22.0179	0.4750	1.9000	A572-65 (65 ksi)
L14	84.5830-84.3330	0.2500	0.00	12	22.0179	22.0805	0.6375	2.5500	A572-65 (65 ksi)
L15	84.3330-83.0000	1.3330	0.00	12	22.0805	22.4139	0.6250	2.5000	A572-65 (65 ksi)
L16	83.0000-82.7500	0.2500	0.00	12	22.4139	22.4764	0.3937	1.5750	A572-65 (65 ksi)
L17	82.7500-81.0000	1.7500	0.00	12	22.4764	22.9141	0.3875	1.5500	A572-65 (65 ksi)
L18	81.0000-80.7500	0.2500	0.00	12	22.9141	22.9766	0.5375	2.1500	A572-65 (65 ksi)
L19	80.7500-75.7500	5.0000	0.00	12	22.9766	24.2273	0.5125	2.0500	A572-65 (65 ksi)
L20	75.7500-70.5417	5.2083	3.90	12	24.2273	25.5300	0.5125	2.0500	A572-65 (65 ksi)
L21	70.5417-69.5417	4.9000	0.00	12	24.0545	25.2778	0.4375	1.7500	A572-65 (65 ksi)
L22	69.5417-67.0000	2.5417	0.00	12	25.2778	25.9124	0.4375	1.7500	A572-65 (65 ksi)
L23	67.0000-66.7500	0.2500	0.00	12	25.9124	25.9748	0.4375	1.7500	A572-65 (65 ksi)
L24	66.7500-64.0830	2.6670	0.00	12	25.9748	26.6406	0.4313	1.7250	A572-65 (65 ksi)
L25	64.0830-63.8330	0.2500	0.00	12	26.6406	26.7030	0.4750	1.9000	A572-65 (65 ksi)
L26	63.8330-62.4170	1.4160	0.00	12	26.7030	27.0566	0.4750	1.9000	A572-65 (65 ksi)
L27	62.4170-62.1670	0.2500	0.00	12	27.0566	27.1190	0.6125	2.4500	A572-65 (65 ksi)
L28	62.1670-59.4580	2.7090	0.00	12	27.1190	27.7953	0.6000	2.4000	A572-65 (65 ksi)
L29	59.4580-59.2080	0.2500	0.00	12	27.7953	27.8577	0.7250	2.9000	A572-65 (65 ksi)
L30	59.2080-54.2080	5.0000	0.00	12	27.8577	29.1060	0.7000	2.8000	A572-65 (65 ksi)
L31	54.2080-53.5000	0.7080	0.00	12	29.1060	29.2828	0.7000	2.8000	A572-65 (65 ksi)
L32	53.5000-53.2500	0.2500	0.00	12	29.2828	29.3452	0.7250	2.9000	A572-65 (65 ksi)
L33	53.2500-48.2500	5.0000	0.00	12	29.3452	30.5935	0.7125	2.8500	A572-65 (65 ksi)
L34	48.2500-44.5830	3.6670	0.00	12	30.5935	31.5089	0.6875	2.7500	A572-65 (65 ksi)
L35	44.5830-44.3330	0.2500	0.00	12	31.5089	31.5714	0.6875	2.7500	A572-65 (65 ksi)
L36	44.3330-41.8330	2.5000	0.00	12	31.5714	32.1955	0.6875	2.7500	A572-65 (65 ksi)
L37	41.8330-41.5830	0.2500	0.00	12	32.1955	32.2579	0.7125	2.8500	A572-65 (65 ksi)
L38	41.5830-34.5250	7.0580	4.48	12	32.2579	34.0200	0.7000	2.8000	A572-65 (65 ksi)
L39	34.5250-34.0000	5.0000	0.00	12	32.2778	33.5114	0.7188	2.8750	A572-65 (65 ksi)
L40	34.0000-31.4580	2.5420	0.00	12	33.5114	34.1386	0.7188	2.8750	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L41	31.4580-31.2080	0.2500	0.00	12	34.1386	34.2003	0.6188	2.4750	A572-65 (65 ksi)
L42	31.2080-29.4580	1.7500	0.00	12	34.2003	34.6320	0.6188	2.4750	A572-65 (65 ksi)
L43	29.4580-29.2080	0.2500	0.00	12	34.6320	34.6937	0.7063	2.8250	A572-65 (65 ksi)
L44	29.2080-26.8330	2.3750	0.00	12	34.6937	35.2797	0.7063	2.8250	A572-65 (65 ksi)
L45	26.8330-26.5830	0.2500	0.00	12	35.2797	35.3413	0.8313	3.3250	A572-65 (65 ksi)
L46	26.5830-21.5830	5.0000	0.00	12	35.3413	36.5750	0.8187	3.2750	A572-65 (65 ksi)
L47	21.5830-18.7500	2.8330	0.00	12	36.5750	37.2739	0.8063	3.2250	A572-65 (65 ksi)
L48	18.7500-18.5000	0.2500	0.00	12	37.2739	37.3356	0.7937	3.1750	A572-65 (65 ksi)
L49	18.5000-18.0000	0.5000	0.00	12	37.3356	37.4590	0.7937	3.1750	A572-65 (65 ksi)
L50	18.0000-17.7500	0.2500	0.00	12	37.4590	37.5207	0.8938	3.5750	A572-65 (65 ksi)
L51	17.7500-17.0830	0.6670	0.00	12	37.5207	37.6852	0.8938	3.5750	A572-65 (65 ksi)
L52	17.0830-16.8330	0.2500	0.00	12	37.6852	37.7469	0.8063	3.2250	A572-65 (65 ksi)
L53	16.8330-13.0000	3.8330	0.00	12	37.7469	38.6926	0.7937	3.1750	A572-65 (65 ksi)
L54	13.0000-12.7500	0.2500	0.00	12	38.6926	38.7543	0.9688	3.8750	A572-65 (65 ksi)
L55	12.7500-11.8330	0.9170	0.00	12	38.7543	38.9805	0.9688	3.8750	A572-65 (65 ksi)
L56	11.8330-11.5830	0.2500	0.00	12	38.9805	39.0422	0.7312	2.9250	A572-65 (65 ksi)
L57	11.5830-6.4830	5.1000	0.00	12	39.0422	40.3005	0.8438	3.3750	A572-65 (65 ksi)
L58	6.4830-6.2500	0.2330	0.00	12	40.3005	40.3580	0.8438	3.3750	A572-65 (65 ksi)
L59	6.2500-1.2500	5.0000	0.00	12	40.3580	41.5916	0.8187	3.2750	A572-65 (65 ksi)
L60	1.2500-0.0000	1.2500		12	41.5916	41.9000	0.8187	3.2750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	10.8963	6.2413	85.1314	3.7008	5.4520	15.6148	172.4993	3.0718	2.3182	12.364
	12.1823	6.9913	119.6573	4.1455	6.0954	19.6307	242.4581	3.4409	2.6511	14.139
L2	12.1823	6.9913	119.6573	4.1455	6.0954	19.6307	242.4581	3.4409	2.6511	14.139
	13.4684	7.7413	162.4455	4.5903	6.7389	24.1056	329.1585	3.8100	2.9840	15.915
L3	13.4684	7.7413	162.4455	4.5903	6.7389	24.1056	329.1585	3.8100	2.9840	15.915
	14.7545	8.4913	214.3823	5.0350	7.3824	29.0397	434.3967	4.1791	3.3170	17.69
L4	14.7545	8.4913	214.3823	5.0350	7.3824	29.0397	434.3967	4.1791	3.3170	17.69
	16.0405	9.2413	276.3542	5.4797	8.0259	34.4330	559.9685	4.5483	3.6499	19.466
L5	16.0405	9.2413	276.3542	5.4797	8.0259	34.4330	559.9685	4.5483	3.6499	19.466
	16.0727	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
L6	16.0727	12.2964	366.2060	5.4684	8.0419	45.5370	742.0327	6.0519	3.4907	13.963
	17.3674	13.3031	463.7197	5.9162	8.6898	53.3638	939.6218	6.5474	3.8259	15.303
L7	17.3674	13.3031	463.7197	5.9162	8.6898	53.3638	939.6218	6.5474	3.8259	15.303
	18.6621	14.3099	577.1680	6.3639	9.3376	61.8112	1169.4989	7.0429	4.1610	16.644
L8	18.6621	14.3099	577.1680	6.3639	9.3376	61.8112	1169.4989	7.0429	4.1610	16.644
	19.9569	15.3166	707.7571	6.8116	9.9854	70.8790	1434.1077	7.5384	4.4962	17.985
L9	19.9569	15.3166	707.7571	6.8116	9.9854	70.8790	1434.1077	7.5384	4.4962	17.985
	21.2516	16.3234	856.6927	7.2593	10.6332	80.5674	1735.8916	8.0339	4.8314	19.325
L10	21.2516	16.3234	856.6927	7.2593	10.6332	80.5674	1735.8916	8.0339	4.8314	19.325
	21.3919	16.4325	873.9808	7.3079	10.7034	81.6543	1770.9220	8.0876	4.8677	19.471

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L11	21.3919	32.4624	1684.5225	7.2184	10.7034	157.3816	3413.2992	15.9770	4.1977	8.395
	21.4566	32.5631	1700.2437	7.2407	10.7358	158.3711	3445.1547	16.0266	4.2144	8.429
L12	21.4566	30.9732	1621.2285	7.2497	10.7358	151.0111	3285.0484	15.2441	4.2814	9.014
	22.7514	32.8860	1940.5303	7.6974	11.3836	170.4665	3932.0406	16.1855	4.6166	9.719
L13	22.7514	32.8860	1940.5303	7.6974	11.3836	170.4665	3932.0406	16.1855	4.6166	9.719
	22.7946	32.9499	1951.8621	7.7124	11.4053	171.1367	3955.0018	16.2169	4.6278	9.743
L14	22.7946	43.8887	2560.7707	7.6542	11.4053	224.5250	5188.8158	21.6007	4.1923	6.576
	22.8594	44.0170	2583.3049	7.6766	11.4377	225.8593	5234.4762	21.6638	4.2091	6.602
L15	22.8594	43.1791	2537.0837	7.6811	11.4377	221.8182	5140.8193	21.2514	4.2426	6.788
	23.2045	43.8501	2657.2097	7.8004	11.6104	228.8649	5384.2272	21.5817	4.3319	6.931
L16	23.2045	27.9188	1727.9107	7.8832	11.6104	148.8246	3501.2156	13.7408	4.9517	12.576
	23.2693	27.9980	1742.6730	7.9056	11.6428	149.6785	3531.1279	13.7798	4.9684	12.618
L17	23.2693	27.5614	1716.4681	7.9078	11.6428	147.4278	3478.0297	13.5649	4.9852	12.865
	23.7224	28.1076	1820.5453	8.0645	11.8695	153.3800	3688.9184	13.8337	5.1025	13.168
L18	23.7224	38.7283	2475.1619	8.0108	11.8695	208.5310	5015.3491	19.0609	4.7005	8.745
	23.7872	38.8366	2495.9704	8.0332	11.9019	209.7119	5057.5128	19.1142	4.7172	8.776
L19	23.7872	37.0715	2387.8421	8.0422	11.9019	200.6269	4838.4154	18.2454	4.7842	9.335
	25.0819	39.1353	2809.2647	8.4899	12.5497	223.8506	5692.3319	19.2612	5.1194	9.989
L20	25.0819	39.1353	2809.2647	8.4899	12.5497	223.8506	5692.3319	19.2612	5.1194	9.989
	26.4306	41.2851	3298.1273	8.9563	13.2245	249.3945	6682.9001	20.3193	5.4685	10.67
L21	25.9111	33.2705	2368.6165	8.4549	12.4602	190.0940	4799.4593	16.3747	5.2741	12.055
	26.1695	34.9938	2756.0817	8.8928	13.0939	210.4857	5584.5687	17.2229	5.6020	12.804
L22	26.1695	34.9938	2756.0817	8.8928	13.0939	210.4857	5584.5687	17.2229	5.6020	12.804
	26.8265	35.8877	2972.7379	9.1200	13.4226	221.4723	6023.5728	17.6629	5.7720	13.193
L23	26.8265	35.8877	2972.7379	9.1200	13.4226	221.4723	6023.5728	17.6629	5.7720	13.193
	26.8911	35.9757	2994.6413	9.1424	13.4549	222.5681	6067.9552	17.7061	5.7887	13.231
L24	26.8911	35.4704	2954.0286	9.1446	13.4549	219.5496	5985.6628	17.4575	5.8055	13.462
	27.5804	36.3950	3191.1076	9.3830	13.7998	231.2422	6466.0491	17.9125	5.9839	13.876
L25	27.5804	40.0203	3497.2710	9.3673	13.7998	253.4282	7086.4193	19.6968	5.8667	12.351
	27.6450	40.1158	3522.3575	9.3896	13.8322	254.6495	7137.2512	19.7438	5.8834	12.386
L26	27.6450	40.1158	3522.3575	9.3896	13.8322	254.6495	7137.2512	19.7438	5.8834	12.386
	28.0110	40.6565	3666.7140	9.5162	14.0153	261.6222	7429.7566	20.0099	5.9782	12.586
L27	28.0110	52.1543	4655.1376	9.4670	14.0153	332.1468	9432.5709	25.6688	5.6097	9.159
	28.0756	52.2774	4688.1772	9.4893	14.0476	333.7344	9499.5180	25.7293	5.6264	9.186
L28	28.0756	51.2347	4599.0004	9.4938	14.0476	327.3862	9318.8216	25.2161	5.6599	9.433
	28.7758	52.5413	4959.9193	9.7359	14.3980	344.4875	10050.141 3	25.8592	5.8411	9.735
L29	28.7758	63.1956	5910.9735	9.6912	14.3980	410.5423	11977.234 9	31.1030	5.5061	7.595
	28.8404	63.3413	5951.9535	9.7135	14.4303	412.4623	12060.271 5	31.1747	5.5229	7.618
L30	28.8404	61.2135	5762.6134	9.7225	14.4303	399.3413	11676.617 1	30.1274	5.5899	7.986
	30.1327	64.0271	6594.3209	10.1693	15.0769	437.3789	13361.882 0	31.5122	5.9244	8.463
L31	30.1327	64.0271	6594.3209	10.1693	15.0769	437.3789	13361.882 0	31.5122	5.9244	8.463
	30.3157	64.4255	6718.1886	10.2326	15.1685	442.9049	13612.871 5	31.7083	5.9718	8.531
L32	30.3157	66.6681	6939.8821	10.2237	15.1685	457.5203	14062.082 5	32.8120	5.9048	8.145
	30.3804	66.8138	6985.4839	10.2460	15.2008	459.5472	14154.484 2	32.8837	5.9215	8.168
L33	30.3804	65.6905	6874.0434	10.2505	15.2008	452.2159	13928.675 7	32.3309	5.9550	8.358
	31.6727	68.5544	7812.8623	10.6974	15.8474	493.0056	15830.977 1	33.7404	6.2895	8.827
L34	31.6727	66.2043	7557.6645	10.7063	15.8474	476.9022	15313.877 3	32.5837	6.3565	9.246
	32.6205	68.2310	8273.2029	11.0341	16.3216	506.8857	16763.752 1	33.5812	6.6019	9.603
L35	32.6205	68.2310	8273.2029	11.0341	16.3216	506.8857	16763.752 1	33.5812	6.6019	9.603
	32.6851	68.3692	8323.5652	11.0564	16.3540	508.9631	16865.799 6	33.6492	6.6186	9.627
L36	32.6851	68.3692	8323.5652	11.0564	16.3540	508.9631	16865.799 6	33.6492	6.6186	9.627
	33.3312	69.7508	8838.4738	11.2799	16.6773	529.9712	17909.144 2	34.3292	6.7859	9.87
L37	33.3312	72.2299	9138.0865	11.2709	16.6773	547.9365	18516.240	35.5494	6.7189	9.43

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	33.3959	72.3731	9192.5424	11.2933	16.7096	550.1353	18626.5837	35.6198	6.7356	9.454
L38	33.3959	71.1316	9042.0100	11.2977	16.7096	541.1266	18321.5637	35.0088	6.7691	9.67
	35.2201	75.1033	10642.7740	11.9286	17.6224	603.9358	21565.1455	36.9635	7.2414	10.345
L39	34.5595	73.0394	9285.1902	11.2981	16.7199	555.3379	18814.3126	35.9478	6.7242	9.355
	34.6936	75.8945	10417.1590	11.7398	17.3589	600.1046	21107.9885	37.3530	7.0548	9.815
L40	34.6936	75.8945	10417.1590	11.7398	17.3589	600.1046	21107.9885	37.3530	7.0548	9.815
	35.3429	77.3460	11026.3586	11.9643	17.6838	623.5295	22342.3920	38.0673	7.2229	10.049
L41	35.3429	66.7841	9577.7210	12.0001	17.6838	541.6105	19407.0594	32.8691	7.4909	12.106
	35.4067	66.9069	9630.6911	12.0222	17.7157	543.6237	19514.3912	32.9296	7.5074	12.133
L42	35.4067	66.9069	9630.6911	12.0222	17.7157	543.6237	19514.3912	32.9296	7.5074	12.133
	35.8537	67.7672	10006.9606	12.1768	17.9394	557.8207	20276.8152	33.3529	7.6231	12.32
L43	35.8537	77.1514	11334.1621	12.1454	17.9394	631.8032	22966.0852	37.9716	7.3886	10.462
	35.9176	77.2917	11396.0949	12.1675	17.9713	634.1262	23091.5779	38.0406	7.4052	10.485
L44	35.9176	77.2917	11396.0949	12.1675	17.9713	634.1262	23091.5779	38.0406	7.4052	10.485
	36.5242	78.6243	11995.7463	12.3773	18.2749	656.4067	24306.6342	38.6965	7.5622	10.708
L45	36.5242	92.2055	13966.2999	12.3325	18.2749	764.2353	28299.5101	45.3807	7.2272	8.694
	36.5881	92.3706	14041.4555	12.3546	18.3068	767.0068	28451.7957	45.4620	7.2437	8.714
L46	36.5881	91.0145	13845.3398	12.3591	18.3068	756.2941	28054.4121	44.7946	7.2772	8.888
	37.8652	94.2668	15383.2407	12.8007	18.9458	811.9591	31170.6163	46.3953	7.6078	9.292
L47	37.8652	92.8601	15164.2748	12.8052	18.9458	800.4016	30726.9320	45.7029	7.6413	9.478
	38.5888	94.6747	16070.7494	13.0554	19.3079	832.3407	32563.6952	46.5960	7.8287	9.71
L48	38.5888	93.2388	15837.8655	13.0599	19.3079	820.2791	32091.8094	45.8893	7.8622	9.905
	38.6527	93.3964	15918.3376	13.0820	19.3398	823.0849	32254.8677	45.9669	7.8787	9.926
L49	38.6527	93.3964	15918.3376	13.0820	19.3398	823.0849	32254.8677	45.9669	7.8787	9.926
	38.7804	93.7117	16080.0987	13.1262	19.4038	828.7109	32582.6395	46.1221	7.9118	9.968
L50	38.7804	105.2302	17958.1963	13.0904	19.4038	925.5013	36388.1744	51.7911	7.6438	8.552
	38.8442	105.4077	18049.2292	13.1124	19.4357	928.6637	36572.6318	51.8784	7.6603	8.571
L51	38.8442	105.4077	18049.2292	13.1124	19.4357	928.6637	36572.6318	51.8784	7.6603	8.571
	39.0146	105.8813	18293.6093	13.1713	19.5209	937.1272	37067.8121	52.1115	7.7044	8.62
L52	39.0146	95.7424	16620.6499	13.2027	19.5209	851.4265	33677.9427	47.1215	7.9389	9.847
	39.0785	95.9026	16704.1846	13.2248	19.5529	854.3074	33847.2067	47.2003	7.9554	9.867
L53	39.0785	94.4476	16461.9048	13.2292	19.5529	841.9164	33356.2823	46.4843	7.9889	10.065
	40.0575	96.8647	17758.3855	13.5678	20.0428	886.0248	35983.3035	47.6739	8.2424	10.384
L54	40.0575	117.6748	21374.7669	13.5051	20.0428	1066.4580	43311.0727	57.9160	7.7734	8.024
	40.1214	117.8672	21479.785	13.5272	20.0747	1069.9921	43523.869	58.0107	7.7899	8.041

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
			7				2			
L55	40.1214	117.8672	21479.785	13.5272	20.0747	1069.9921	43523.869	58.0107	7.7899	8.041
			7				2			
	40.3556	118.5730	21867.939	13.6082	20.1919	1083.0050	44310.373	58.3580	7.8505	8.104
			0				2			
L56	40.3556	90.0627	16818.110	13.6932	20.1919	832.9133	34078.050	44.3261	8.4870	11.606
			1				7			
	40.4195	90.2079	16899.604	13.7153	20.2239	835.6270	34243.179	44.3976	8.5036	11.629
			2				8			
L57	40.4195	103.7804	19328.266	13.6750	20.2239	955.7159	39164.307	51.0776	8.2021	9.721
			2				4			
	41.7221	107.1990	21301.945	14.1255	20.8757	1020.4205	43163.516	52.7601	8.5393	10.121
			3				4			
L58	41.7221	107.1990	21301.945	14.1255	20.8757	1020.4205	43163.516	52.7601	8.5393	10.121
			3				4			
	41.7817	107.3552	21395.188	14.1461	20.9054	1023.4272	43352.452	52.8370	8.5547	10.139
			7				8			
L59	41.7817	104.2402	20800.688	14.1550	20.9054	994.9896	42147.833	51.3039	8.6217	10.53
			0				3			
	43.0588	107.4925	22808.997	14.5967	21.5444	1058.6950	46217.213	52.9045	8.9523	10.934
			9				5			
L60	43.0588	107.4925	22808.997	14.5967	21.5444	1058.6950	46217.213	52.9045	8.9523	10.934
			9				5			
	43.3781	108.3056	23330.502	14.7071	21.7042	1074.9303	47273.922	53.3047	9.0350	11.035
			0				3			

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 130.6667-125.6667				1	1	1			
L2 125.6667-120.6667				1	1	1			
L3 120.6667-115.6667				1	1	1			
L4 115.6667-110.6667				1	1	1			
L5 110.6667-110.5417				1	1	1			
L6 110.5417-105.5417				1	1	1			
L7 105.5417-100.5417				1	1	1			
L8 100.5417-95.5417				1	1	1			
L9 95.5417-90.5417				1	1	1			
L10 90.5417-90.0000				1	1	1			
L11 90.0000-89.7500				1	1	0.921354			
L12 89.7500-84.7500				1	1	0.942921			
L13 84.7500-84.5830				1	1	0.942113			
L14 84.5830-84.3330				1	1	0.911142			
L15 84.3330-83.0000				1	1	0.920732			
L16 83.0000-82.7500				1	1	0.960966			
L17 82.7500-81.0000				1	1	0.969757			
L18 81.0000-80.7500				1	1	0.935221			
L19 80.7500-75.7500				1	1	0.953807			

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
L20 75.7500-70.5417				1	1	0.947464			
L21 70.5417-69.5417				1	1	0.975437			
L22 69.5417-67.0000				1	1	0.968932			
L23 67.0000-66.7500				1	1	0.96831			
L24 66.7500-64.0830				1	1	0.975562			
L25 64.0830-63.8330				1	1	1.11132			
L26 63.8330-62.4170				1	1	1.10528			
L27 62.4170-62.1670				1	1	0.946992			
L28 62.1670-59.4580				1	1	0.955188			
L29 59.4580-59.2080				1	1	0.935606			
L30 59.2080-54.2080				1	1	0.945203			
L31 54.2080-53.5000				1	1	0.942118			
L32 53.5000-53.2500				1	1	0.954348			
L33 53.2500-48.2500				1	1	0.948439			
L34 48.2500-44.5830				1	1	0.966436			
L35 44.5830-44.3330				1	1	0.965402			
L36 44.3330-41.8330				1	1	0.955282			
L37 41.8330-41.5830				1	1	0.942294			
L38 41.5830-34.5250				1	1	0.948481			
L39 34.5250-34.0000				1	1	0.958753			
L40 34.0000-31.4580				1	1	0.949736			
L41 31.4580-31.2080				1	1	0.964229			
L42 31.2080-29.4580				1	1	0.959041			
L43 29.4580-29.2080				1	1	0.958353			
L44 29.2080-26.8330				1	1	0.950359			
L45 26.8330-26.5830				1	1	0.939766			
L46 26.5830-21.5830				1	1	0.935348			
L47 21.5830-18.7500				1	1	0.93949			
L48 18.7500-18.5000				1	1	0.953079			
L49 18.5000-18.0000				1	1	0.951329			
L50 18.0000-17.7500				1	1	0.963988			
L51 17.7500-17.0830				1	1	0.961397			
L52 17.0830-16.8330				1	1	0.968163			
L53 16.8330-				1	1	0.969352			

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
13.0000									
L54 13.0000-12.7500				1	1	0.950138			
L55 12.7500-11.8330				1	1	0.946595			
L56 11.8330-11.5830				1	1	1.04517			
L57 11.5830-6.4830				1	1	0.968408			
L58 6.4830-6.2500				1	1	0.967592			
L59 6.2500-1.2500				1	1	0.979059			
L60 1.2500-0.0000				1	1	0.974861			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF6-50A(1-1/4")	A	Surface Ar (CaAa)	120.0000 - 8.0000	6	3	-0.500 -0.250	1.5500		0.66
FB-L98B-002-75000(3/8")	A	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.000 0.000	0.0000		0.06
WR-VG86ST-BRD(3/4)	A	Surface Ar (CaAa)	120.0000 - 8.0000	2	1	0.000 0.000	0.0000		0.58
FB-L98B-002-75000(3/8")	A	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.000 0.000	0.0000		0.06
WR-VG86ST-BRD(3/4")	A	Surface Ar (CaAa)	120.0000 - 8.0000	2	1	0.000 0.000	0.0000		0.58
2.5" Flex Conduit	C	Surface Ar (CaAa)	120.0000 - 8.0000	1	1	0.450 0.450	2.5000		0.40
***									
ATCB-B01-005(5/16)	B	Surface Ar (CaAa)	94.5000 - 7.0000	3	1	0.000 0.000	0.0000		0.07
FSJ4-50B(1/2")	B	Surface Ar (CaAa)	94.5000 - 7.0000	2	1	0.000 0.000	0.0000		0.14
FSJ4-50B(1/2")	B	Surface Ar (CaAa)	94.5000 - 7.0000	1	1	0.000 0.000	0.0000		0.14
2.5" Flex Conduit	B	Surface Ar (CaAa)	94.5000 - 7.0000	2	2	0.000 0.000	2.5000		0.40
LCF114-50J(1-1/4")	C	Surface Ar (CaAa)	87.5000 - 9.0000	12	6	-0.500 0.000	1.5800		0.70
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	Surface Ar (CaAa)	87.5000 - 9.0000	1	1	-0.250 -0.250	1.6250		1.07
MLC Hybrid 6/6(7/8")	C	Surface Ar (CaAa)	87.5000 - 9.0000	1	1	-0.200 -0.200	0.0000		1.82
Climbing Pegs	A	Surface Ar (CaAa)	129.9167 - 11.8333	1	1	0.000 0.000	0.1500		0.31
Climbing Ladder (CCI)	A	Surface Af (CaAa)	108.5000 - 89.0830	1	1	0.000 0.000	3.8400	15.3600	4.81
***									
6"x1" flat plate	A	Surface Af (CaAa)	15.5000 - 0.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
6"x1" flat plate	B	Surface Af (CaAa)	15.5000 - 0.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
6"x1" flat plate	C	Surface Af (CaAa)	15.5000 - 0.0000	1	1	0.000 0.000	6.0000	14.0000	0.00
4"x0.75" flat plate	A	Surface Af (CaAa)	30.5000 - 0.0000	1	1	-0.250 -0.250	4.0000	9.5000	0.00
4"x0.75" flat plate	B	Surface Af	30.5000 - 0.0000	1	1	-0.250	4.0000	9.5000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
		(CaAa)				-0.250			
4"x0.75" flat plate	C	Surface Af (CaAa)	30.5000 - 0.0000	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
6.5"x1.25" flat plate	A	Surface Af (CaAa)	20.7500 - 0.0000	1	1	0.500	6.5000	15.5000	0.00
						0.500			
6.5"x1.25" flat plate	B	Surface Af (CaAa)	20.7500 - 0.0000	1	1	0.500	6.5000	15.5000	0.00
						0.500			
6.5"x1.25" flat plate	C	Surface Af (CaAa)	20.7500 - 0.0000	1	1	0.250	6.5000	15.5000	0.00
						0.250			
6"x1" flat plate	A	Surface Af (CaAa)	29.3300 - 9.3300	1	1	0.000	6.0000	14.0000	0.00
						0.000			
6"x1" flat plate	B	Surface Af (CaAa)	29.3300 - 9.3300	1	1	0.000	6.0000	14.0000	0.00
						0.000			
6"x1" flat plate	C	Surface Af (CaAa)	44.3300 - 9.3300	1	1	0.500	6.0000	14.0000	0.00
						0.500			
4"x0.75" flat plate	A	Surface Af (CaAa)	45.8300 - 15.8300	1	1	0.000	4.0000	9.5000	0.00
						0.000			
4"x0.75" flat plate	B	Surface Af (CaAa)	45.8300 - 15.8300	1	1	0.000	4.0000	9.5000	0.00
						0.000			
4"x0.75" flat plate	C	Surface Af (CaAa)	45.8300 - 15.8300	1	1	0.000	4.0000	9.5000	0.00
						0.000			
6"x1" flat plate	A	Surface Af (CaAa)	56.0000 - 21.0000	1	1	0.500	6.0000	14.0000	0.00
						0.500			
6"x1" flat plate	B	Surface Af (CaAa)	56.0000 - 21.0000	1	1	0.500	6.0000	14.0000	0.00
						0.500			
4"x0.75" flat plate	A	Surface Af (CaAa)	60.5000 - 30.5000	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
4"x0.75" flat plate	B	Surface Af (CaAa)	60.5000 - 30.5000	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
4"x0.75" flat plate	C	Surface Af (CaAa)	60.5000 - 30.5000	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
4.5"x1" flat plate	A	Surface Af (CaAa)	66.0830 - 56.0830	1	1	0.500	4.0000	9.5000	0.00
						0.500			
4.5"x1" flat plate	B	Surface Af (CaAa)	66.0830 - 56.0830	1	1	0.500	4.0000	9.5000	0.00
						0.500			
4.5"x1" flat plate	C	Surface Af (CaAa)	64.4200 - 44.5000	1	1	0.500	4.5000	11.0000	0.00
						0.500			
4"x0.75" flat plate	A	Surface Af (CaAa)	68.2500 - 43.2500	1	1	0.250	4.0000	9.5000	0.00
						0.250			
4"x0.75" flat plate	B	Surface Af (CaAa)	68.2500 - 43.2500	1	1	0.250	4.0000	9.5000	0.00
						0.250			
4"x0.75" flat plate	C	Surface Af (CaAa)	68.2500 - 43.2500	1	1	0.250	4.0000	9.5000	0.00
						0.250			
4"x0.75" flat plate	A	Surface Af (CaAa)	85.8300 - 65.8300	1	1	0.000	4.0000	9.5000	0.00
						0.000			
4"x0.75" flat plate	B	Surface Af (CaAa)	85.8300 - 65.8300	1	1	0.000	4.0000	9.5000	0.00
						0.000			
4"x0.75" flat plate	C	Surface Af (CaAa)	85.8300 - 65.8300	1	1	0.000	4.0000	9.5000	0.00
						0.000			
4"x0.75" flat plate	A	Surface Af (CaAa)	81.9800 - 71.9800	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
4"x0.75" flat plate	B	Surface Af (CaAa)	81.9800 - 71.9800	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
4"x0.75" flat plate	C	Surface Af (CaAa)	81.9800 - 71.9800	1	1	-0.250	4.0000	9.5000	0.00
						-0.250			
4"x1" flat plate	A	Surface Af (CaAa)	91.4200 - 81.4200	1	1	0.500	4.0000	10.0000	0.00
						0.500			
4"x1" flat plate	B	Surface Af (CaAa)	91.4200 - 81.4200	1	1	0.500	4.0000	10.0000	0.00
						0.500			
4"x1" flat plate	C	Surface Af (CaAa)	91.4200 - 81.4200	1	1	0.500	4.0000	10.0000	0.00
						0.500			

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
***								
HJ7-50A(1-5/8")	C	No	Inside Pole	107.0000 - 8.0000	12	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
FXL-1480 (1-1/4")	C	No	Inside Pole	107.0000 - 8.0000	1	No Ice	0.0000	0.45
						1/2" Ice	0.0000	0.45
						1" Ice	0.0000	0.45
FXL-540(1/2")	C	No	Inside Pole	107.0000 - 8.0000	1	No Ice	0.0000	0.12
						1/2" Ice	0.0000	0.12
						1" Ice	0.0000	0.12
HB114-1-08U4-M5J(1 1/4")	B	No	Inside Pole	94.5000 - 7.0000	3	No Ice	0.0000	1.08
						1/2" Ice	0.0000	1.08
						1" Ice	0.0000	1.08
***								
***								
Safety Line (3/8")	A	No	CaAa (Out Of Face)	129.9167 - 11.8333	1	No Ice	0.0375	0.22
						1/2" Ice	0.1375	0.75
						1" Ice	0.2375	1.28

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	130.6667-125.6667	A	0.000	0.000	0.064	0.159	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	125.6667-120.6667	A	0.000	0.000	0.075	0.188	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	120.6667-115.6667	A	0.000	0.000	2.090	0.188	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.083	0.000	0.00
L4	115.6667-110.6667	A	0.000	0.000	2.400	0.188	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.250	0.000	0.00
L5	110.6667-110.5417	A	0.000	0.000	0.060	0.005	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.031	0.000	0.00
L6	110.5417-105.5417	A	0.000	0.000	4.293	0.188	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.250	0.000	0.02
L7	105.5417-100.5417	A	0.000	0.000	5.600	0.188	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.250	0.000	0.07
L8	100.5417-95.5417	A	0.000	0.000	5.600	0.188	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.250	0.000	0.07
L9	95.5417-90.5417	A	0.000	0.000	6.186	0.188	0.06
		B	0.000	0.000	2.565	0.000	0.02
		C	0.000	0.000	1.836	0.000	0.07
L10	90.5417-90.0000	A	0.000	0.000	0.968	0.020	0.01
		B	0.000	0.000	0.632	0.000	0.00
		C	0.000	0.000	0.497	0.000	0.01
L11	90.0000-89.7500	A	0.000	0.000	0.447	0.009	0.00
		B	0.000	0.000	0.292	0.000	0.00
		C	0.000	0.000	0.229	0.000	0.00
L12	89.7500-84.7500	A	0.000	0.000	6.880	0.188	0.04
		B	0.000	0.000	6.553	0.000	0.02
		C	0.000	0.000	8.357	0.000	0.10
L13	84.7500-84.5830	A	0.000	0.000	0.303	0.006	0.00
		B	0.000	0.000	0.306	0.000	0.00
		C	0.000	0.000	0.450	0.000	0.00
L14	84.5830-84.3330	A	0.000	0.000	0.453	0.009	0.00
		B	0.000	0.000	0.458	0.000	0.00
		C	0.000	0.000	0.673	0.000	0.01

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L15	84.3330-83.0000	A	0.000	0.000	2.417	0.050	0.01
		B	0.000	0.000	2.444	0.000	0.01
		C	0.000	0.000	3.591	0.000	0.03
L16	83.0000-82.7500	A	0.000	0.000	0.453	0.009	0.00
		B	0.000	0.000	0.458	0.000	0.00
		C	0.000	0.000	0.673	0.000	0.01
L17	82.7500-81.0000	A	0.000	0.000	3.547	0.066	0.01
		B	0.000	0.000	3.582	0.000	0.01
		C	0.000	0.000	5.088	0.000	0.04
L18	81.0000-80.7500	A	0.000	0.000	0.453	0.009	0.00
		B	0.000	0.000	0.458	0.000	0.00
		C	0.000	0.000	0.673	0.000	0.01
L19	80.7500-75.7500	A	0.000	0.000	9.067	0.188	0.03
		B	0.000	0.000	9.167	0.000	0.02
		C	0.000	0.000	13.469	0.000	0.12
L20	75.7500-70.5417	A	0.000	0.000	8.486	0.195	0.04
		B	0.000	0.000	8.590	0.000	0.02
		C	0.000	0.000	13.071	0.000	0.13
L21	70.5417-69.5417	A	0.000	0.000	1.147	0.037	0.01
		B	0.000	0.000	1.167	0.000	0.00
		C	0.000	0.000	2.027	0.000	0.02
L22	69.5417-67.0000	A	0.000	0.000	3.748	0.095	0.02
		B	0.000	0.000	3.799	0.000	0.01
		C	0.000	0.000	5.986	0.000	0.06
L23	67.0000-66.7500	A	0.000	0.000	0.453	0.009	0.00
		B	0.000	0.000	0.458	0.000	0.00
		C	0.000	0.000	0.673	0.000	0.01
L24	66.7500-64.0830	A	0.000	0.000	5.005	0.100	0.02
		B	0.000	0.000	5.058	0.000	0.01
		C	0.000	0.000	6.273	0.000	0.07
L25	64.0830-63.8330	A	0.000	0.000	0.453	0.009	0.00
		B	0.000	0.000	0.458	0.000	0.00
		C	0.000	0.000	0.694	0.000	0.01
L26	63.8330-62.4170	A	0.000	0.000	2.568	0.053	0.01
		B	0.000	0.000	2.596	0.000	0.01
		C	0.000	0.000	3.932	0.000	0.04
L27	62.4170-62.1670	A	0.000	0.000	0.453	0.009	0.00
		B	0.000	0.000	0.458	0.000	0.00
		C	0.000	0.000	0.694	0.000	0.01
L28	62.1670-59.4580	A	0.000	0.000	5.607	0.102	0.02
		B	0.000	0.000	5.661	0.000	0.01
		C	0.000	0.000	8.218	0.000	0.07
L29	59.4580-59.2080	A	0.000	0.000	0.620	0.009	0.00
		B	0.000	0.000	0.625	0.000	0.00
		C	0.000	0.000	0.861	0.000	0.01
L30	59.2080-54.2080	A	0.000	0.000	12.942	0.188	0.03
		B	0.000	0.000	13.042	0.000	0.02
		C	0.000	0.000	17.219	0.000	0.12
L31	54.2080-53.5000	A	0.000	0.000	1.992	0.027	0.00
		B	0.000	0.000	2.006	0.000	0.00
		C	0.000	0.000	2.438	0.000	0.02
L32	53.5000-53.2500	A	0.000	0.000	0.703	0.009	0.00
		B	0.000	0.000	0.708	0.000	0.00
		C	0.000	0.000	0.861	0.000	0.01
L33	53.2500-48.2500	A	0.000	0.000	14.067	0.188	0.03
		B	0.000	0.000	14.167	0.000	0.02
		C	0.000	0.000	17.219	0.000	0.12
L34	48.2500-44.5830	A	0.000	0.000	11.148	0.138	0.03
		B	0.000	0.000	11.221	0.000	0.02
		C	0.000	0.000	13.460	0.000	0.09
L35	44.5830-44.3330	A	0.000	0.000	0.870	0.009	0.00
		B	0.000	0.000	0.875	0.000	0.00
		C	0.000	0.000	0.902	0.000	0.01
L36	44.3330-41.8330	A	0.000	0.000	7.755	0.094	0.02
		B	0.000	0.000	7.805	0.000	0.01
		C	0.000	0.000	9.954	0.000	0.06
L37	41.8330-41.5830	A	0.000	0.000	0.703	0.009	0.00
		B	0.000	0.000	0.708	0.000	0.00
		C	0.000	0.000	0.923	0.000	0.01

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L38	41.5830-34.5250	A	0.000	0.000	19.857	0.265	0.05
		B	0.000	0.000	19.998	0.000	0.03
		C	0.000	0.000	26.071	0.000	0.17
L39	34.5250-34.0000	A	0.000	0.000	1.477	0.020	0.00
		B	0.000	0.000	1.488	0.000	0.00
		C	0.000	0.000	1.939	0.000	0.01
L40	34.0000-31.4580	A	0.000	0.000	7.151	0.095	0.02
		B	0.000	0.000	7.202	0.000	0.01
		C	0.000	0.000	9.390	0.000	0.06
L41	31.4580-31.2080	A	0.000	0.000	0.703	0.009	0.00
		B	0.000	0.000	0.708	0.000	0.00
		C	0.000	0.000	0.923	0.000	0.01
L42	31.2080-29.4580	A	0.000	0.000	4.923	0.066	0.01
		B	0.000	0.000	4.958	0.000	0.01
		C	0.000	0.000	6.464	0.000	0.04
L43	29.4580-29.2080	A	0.000	0.000	0.825	0.009	0.00
		B	0.000	0.000	0.830	0.000	0.00
		C	0.000	0.000	0.923	0.000	0.01
L44	29.2080-26.8330	A	0.000	0.000	9.057	0.089	0.02
		B	0.000	0.000	9.104	0.000	0.01
		C	0.000	0.000	8.773	0.000	0.06
L45	26.8330-26.5830	A	0.000	0.000	0.953	0.009	0.00
		B	0.000	0.000	0.958	0.000	0.00
		C	0.000	0.000	0.923	0.000	0.01
L46	26.5830-21.5830	A	0.000	0.000	19.067	0.188	0.03
		B	0.000	0.000	19.167	0.000	0.02
		C	0.000	0.000	18.469	0.000	0.12
L47	21.5830-18.7500	A	0.000	0.000	10.720	0.106	0.02
		B	0.000	0.000	10.777	0.000	0.01
		C	0.000	0.000	12.631	0.000	0.07
L48	18.7500-18.5000	A	0.000	0.000	0.974	0.009	0.00
		B	0.000	0.000	0.979	0.000	0.00
		C	0.000	0.000	1.194	0.000	0.01
L49	18.5000-18.0000	A	0.000	0.000	1.948	0.019	0.00
		B	0.000	0.000	1.958	0.000	0.00
		C	0.000	0.000	2.389	0.000	0.01
L50	18.0000-17.7500	A	0.000	0.000	0.974	0.009	0.00
		B	0.000	0.000	0.979	0.000	0.00
		C	0.000	0.000	1.194	0.000	0.01
L51	17.7500-17.0830	A	0.000	0.000	2.599	0.025	0.00
		B	0.000	0.000	2.612	0.000	0.00
		C	0.000	0.000	3.186	0.000	0.02
L52	17.0830-16.8330	A	0.000	0.000	0.974	0.009	0.00
		B	0.000	0.000	0.979	0.000	0.00
		C	0.000	0.000	1.194	0.000	0.01
L53	16.8330-13.0000	A	0.000	0.000	15.549	0.144	0.03
		B	0.000	0.000	15.626	0.000	0.02
		C	0.000	0.000	18.924	0.000	0.09
L54	13.0000-12.7500	A	0.000	0.000	1.058	0.009	0.00
		B	0.000	0.000	1.063	0.000	0.00
		C	0.000	0.000	1.278	0.000	0.01
L55	12.7500-11.8330	A	0.000	0.000	3.879	0.034	0.01
		B	0.000	0.000	3.897	0.000	0.00
		C	0.000	0.000	4.686	0.000	0.02
L56	11.8330-11.5830	A	0.000	0.000	1.054	0.000	0.00
		B	0.000	0.000	1.063	0.000	0.00
		C	0.000	0.000	1.278	0.000	0.01
L57	11.5830-6.4830	A	0.000	0.000	17.944	0.000	0.02
		B	0.000	0.000	18.570	0.000	0.02
		C	0.000	0.000	20.042	0.000	0.08
L58	6.4830-6.2500	A	0.000	0.000	0.641	0.000	0.00
		B	0.000	0.000	0.641	0.000	0.00
		C	0.000	0.000	0.641	0.000	0.00
L59	6.2500-1.2500	A	0.000	0.000	13.750	0.000	0.00
		B	0.000	0.000	13.750	0.000	0.00
		C	0.000	0.000	13.750	0.000	0.00
L60	1.2500-0.0000	A	0.000	0.000	3.438	0.000	0.00
		B	0.000	0.000	3.438	0.000	0.00
		C	0.000	0.000	3.438	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	130.6667-125.6667	A	2.291	0.000	0.000	2.011	2.106	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	125.6667-120.6667	A	2.281	0.000	0.000	2.356	2.469	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	120.6667-115.6667	A	2.272	0.000	0.000	15.203	2.460	0.33
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.052	0.000	0.06
L4	115.6667-110.6667	A	2.262	0.000	0.000	17.120	2.450	0.37
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.512	0.000	0.07
L5	110.6667-110.5417	A	2.257	0.000	0.000	0.427	0.061	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.088	0.000	0.00
L6	110.5417-105.5417	A	2.252	0.000	0.000	20.280	2.439	0.44
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.502	0.000	0.09
L7	105.5417-100.5417	A	2.241	0.000	0.000	22.429	2.429	0.49
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.491	0.000	0.13
L8	100.5417-95.5417	A	2.230	0.000	0.000	22.349	2.417	0.49
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.480	0.000	0.13
L9	95.5417-90.5417	A	2.218	0.000	0.000	23.094	2.406	0.50
		B		0.000	0.000	10.767	0.000	0.25
		C		0.000	0.000	4.298	0.000	0.15
L10	90.5417-90.0000	A	2.212	0.000	0.000	2.918	0.260	0.06
		B		0.000	0.000	1.868	0.000	0.04
		C		0.000	0.000	0.886	0.000	0.02
L11	90.0000-89.7500	A	2.211	0.000	0.000	1.346	0.120	0.03
		B		0.000	0.000	0.862	0.000	0.02
		C		0.000	0.000	0.409	0.000	0.01
L12	89.7500-84.7500	A	2.204	0.000	0.000	23.391	2.392	0.46
		B		0.000	0.000	18.405	0.000	0.38
		C		0.000	0.000	17.012	0.000	0.38
L13	84.7500-84.5830	A	2.198	0.000	0.000	0.900	0.080	0.02
		B		0.000	0.000	0.758	0.000	0.01
		C		0.000	0.000	0.921	0.000	0.02
L14	84.5830-84.3330	A	2.197	0.000	0.000	1.348	0.119	0.03
		B		0.000	0.000	1.135	0.000	0.02
		C		0.000	0.000	1.378	0.000	0.03
L15	84.3330-83.0000	A	2.195	0.000	0.000	7.182	0.635	0.13
		B		0.000	0.000	6.050	0.000	0.12
		C		0.000	0.000	7.347	0.000	0.15
L16	83.0000-82.7500	A	2.193	0.000	0.000	1.346	0.119	0.03
		B		0.000	0.000	1.134	0.000	0.02
		C		0.000	0.000	1.377	0.000	0.03
L17	82.7500-81.0000	A	2.190	0.000	0.000	9.944	0.832	0.18
		B		0.000	0.000	8.461	0.000	0.16
		C		0.000	0.000	10.163	0.000	0.21
L18	81.0000-80.7500	A	2.188	0.000	0.000	1.344	0.119	0.02
		B		0.000	0.000	1.133	0.000	0.02
		C		0.000	0.000	1.376	0.000	0.03
L19	80.7500-75.7500	A	2.180	0.000	0.000	26.826	2.368	0.50
		B		0.000	0.000	22.609	0.000	0.43
		C		0.000	0.000	27.472	0.000	0.56
L20	75.7500-70.5417	A	2.166	0.000	0.000	26.474	2.451	0.49
		B		0.000	0.000	22.112	0.000	0.43
		C		0.000	0.000	27.177	0.000	0.56
L21	70.5417-69.5417	A	2.156	0.000	0.000	4.403	0.471	0.08
		B		0.000	0.000	3.566	0.000	0.07
		C		0.000	0.000	4.538	0.000	0.10
L22	69.5417-67.0000	A	2.151	0.000	0.000	12.508	1.189	0.23

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	10.394	0.000	0.20
		C		0.000	0.000	12.866	0.000	0.26
L23	67.0000-66.7500	A	2.146	0.000	0.000	1.368	0.117	0.02
		B		0.000	0.000	1.160	0.000	0.02
		C		0.000	0.000	1.403	0.000	0.03
L24	66.7500-64.0830	A	2.142	0.000	0.000	14.532	1.242	0.26
		B		0.000	0.000	12.324	0.000	0.23
		C		0.000	0.000	13.440	0.000	0.27
L25	64.0830-63.8330	A	2.137	0.000	0.000	1.324	0.116	0.02
		B		0.000	0.000	1.118	0.000	0.02
		C		0.000	0.000	1.421	0.000	0.03
L26	63.8330-62.4170	A	2.134	0.000	0.000	7.496	0.657	0.14
		B		0.000	0.000	6.328	0.000	0.12
		C		0.000	0.000	8.045	0.000	0.16
L27	62.4170-62.1670	A	2.131	0.000	0.000	1.322	0.116	0.02
		B		0.000	0.000	1.116	0.000	0.02
		C		0.000	0.000	1.420	0.000	0.03
L28	62.1670-59.4580	A	2.126	0.000	0.000	15.444	1.253	0.27
		B		0.000	0.000	13.219	0.000	0.24
		C		0.000	0.000	16.502	0.000	0.31
L29	59.4580-59.2080	A	2.121	0.000	0.000	1.591	0.115	0.03
		B		0.000	0.000	1.386	0.000	0.02
		C		0.000	0.000	1.689	0.000	0.03
L30	59.2080-54.2080	A	2.111	0.000	0.000	32.533	2.299	0.55
		B		0.000	0.000	28.454	0.000	0.49
		C		0.000	0.000	33.710	0.000	0.62
L31	54.2080-53.5000	A	2.100	0.000	0.000	4.825	0.324	0.08
		B		0.000	0.000	4.251	0.000	0.07
		C		0.000	0.000	4.762	0.000	0.09
L32	53.5000-53.2500	A	2.099	0.000	0.000	1.703	0.114	0.03
		B		0.000	0.000	1.500	0.000	0.02
		C		0.000	0.000	1.681	0.000	0.03
L33	53.2500-48.2500	A	2.088	0.000	0.000	33.961	2.275	0.55
		B		0.000	0.000	29.929	0.000	0.49
		C		0.000	0.000	33.541	0.000	0.61
L34	48.2500-44.5830	A	2.069	0.000	0.000	26.129	1.655	0.42
		B		0.000	0.000	23.199	0.000	0.38
		C		0.000	0.000	25.848	0.000	0.46
L35	44.5830-44.3330	A	2.061	0.000	0.000	1.955	0.112	0.03
		B		0.000	0.000	1.756	0.000	0.03
		C		0.000	0.000	1.743	0.000	0.03
L36	44.3330-41.8330	A	2.054	0.000	0.000	17.991	1.121	0.29
		B		0.000	0.000	16.009	0.000	0.26
		C		0.000	0.000	18.436	0.000	0.32
L37	41.8330-41.5830	A	2.047	0.000	0.000	1.679	0.112	0.03
		B		0.000	0.000	1.482	0.000	0.02
		C		0.000	0.000	1.725	0.000	0.03
L38	41.5830-34.5250	A	2.029	0.000	0.000	47.164	3.128	0.75
		B		0.000	0.000	41.640	0.000	0.67
		C		0.000	0.000	48.504	0.000	0.85
L39	34.5250-34.0000	A	2.008	0.000	0.000	3.508	0.233	0.06
		B		0.000	0.000	3.097	0.000	0.05
		C		0.000	0.000	3.608	0.000	0.06
L40	34.0000-31.4580	A	1.998	0.000	0.000	16.845	1.111	0.26
		B		0.000	0.000	14.886	0.000	0.24
		C		0.000	0.000	17.358	0.000	0.30
L41	31.4580-31.2080	A	1.990	0.000	0.000	1.653	0.109	0.03
		B		0.000	0.000	1.461	0.000	0.02
		C		0.000	0.000	1.704	0.000	0.03
L42	31.2080-29.4580	A	1.983	0.000	0.000	11.547	0.760	0.18
		B		0.000	0.000	10.209	0.000	0.16
		C		0.000	0.000	11.911	0.000	0.21
L43	29.4580-29.2080	A	1.977	0.000	0.000	1.816	0.108	0.03
		B		0.000	0.000	1.626	0.000	0.02
		C		0.000	0.000	1.699	0.000	0.03
L44	29.2080-26.8330	A	1.968	0.000	0.000	18.904	1.024	0.28
		B		0.000	0.000	17.104	0.000	0.25
		C		0.000	0.000	16.111	0.000	0.28
L45	26.8330-26.5830	A	1.958	0.000	0.000	1.985	0.107	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	1.797	0.000	0.03
		C		0.000	0.000	1.693	0.000	0.03
L46	26.5830-21.5830	A	1.938	0.000	0.000	39.500	2.125	0.58
		B		0.000	0.000	35.768	0.000	0.52
		C		0.000	0.000	33.704	0.000	0.57
L47	21.5830-18.7500	A	1.904	0.000	0.000	22.001	1.185	0.32
		B		0.000	0.000	19.925	0.000	0.29
		C		0.000	0.000	21.878	0.000	0.35
L48	18.7500-18.5000	A	1.889	0.000	0.000	1.970	0.104	0.03
		B		0.000	0.000	1.789	0.000	0.03
		C		0.000	0.000	2.032	0.000	0.03
L49	18.5000-18.0000	A	1.885	0.000	0.000	3.937	0.207	0.06
		B		0.000	0.000	3.574	0.000	0.05
		C		0.000	0.000	4.061	0.000	0.06
L50	18.0000-17.7500	A	1.881	0.000	0.000	1.967	0.103	0.03
		B		0.000	0.000	1.786	0.000	0.03
		C		0.000	0.000	2.029	0.000	0.03
L51	17.7500-17.0830	A	1.876	0.000	0.000	5.240	0.275	0.07
		B		0.000	0.000	4.759	0.000	0.07
		C		0.000	0.000	5.408	0.000	0.08
L52	17.0830-16.8330	A	1.871	0.000	0.000	1.962	0.103	0.03
		B		0.000	0.000	1.782	0.000	0.03
		C		0.000	0.000	2.025	0.000	0.03
L53	16.8330-13.0000	A	1.847	0.000	0.000	30.176	1.560	0.42
		B		0.000	0.000	27.454	0.000	0.38
		C		0.000	0.000	31.181	0.000	0.48
L54	13.0000-12.7500	A	1.820	0.000	0.000	1.999	0.100	0.03
		B		0.000	0.000	1.825	0.000	0.02
		C		0.000	0.000	2.068	0.000	0.03
L55	12.7500-11.8330	A	1.812	0.000	0.000	7.319	0.367	0.10
		B		0.000	0.000	6.681	0.000	0.09
		C		0.000	0.000	7.572	0.000	0.12
L56	11.8330-11.5830	A	1.803	0.000	0.000	1.897	0.000	0.03
		B		0.000	0.000	1.818	0.000	0.02
		C		0.000	0.000	2.061	0.000	0.03
L57	11.5830-6.4830	A	1.757	0.000	0.000	30.762	0.000	0.39
		B		0.000	0.000	31.778	0.000	0.42
		C		0.000	0.000	30.655	0.000	0.43
L58	6.4830-6.2500	A	1.697	0.000	0.000	0.862	0.000	0.01
		B		0.000	0.000	0.862	0.000	0.01
		C		0.000	0.000	0.862	0.000	0.01
L59	6.2500-1.2500	A	1.609	0.000	0.000	18.284	0.000	0.18
		B		0.000	0.000	18.284	0.000	0.18
		C		0.000	0.000	18.284	0.000	0.18
L60	1.2500-0.0000	A	1.345	0.000	0.000	4.407	0.000	0.04
		B		0.000	0.000	4.407	0.000	0.04
		C		0.000	0.000	4.407	0.000	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	130.6667-125.6667	-0.0156	-0.0535	-0.2288	-0.4053
L2	125.6667-120.6667	-0.0182	-0.0623	-0.2650	-0.4697
L3	120.6667-115.6667	-0.6470	0.2167	-0.9534	-0.2082
L4	115.6667-110.6667	-0.7182	0.2466	-1.0513	-0.2087
L5	110.6667-110.5417	-0.7245	0.2486	-1.0838	-0.2171
L6	110.5417-105.5417	-0.9485	0.0244	-1.2053	-0.3116

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L7	105.5417-100.5417	-1.0844	-0.0941	-1.3244	-0.3833
L8	100.5417-95.5417	-1.1088	-0.0958	-1.3917	-0.4047
L9	95.5417-90.5417	-0.6637	-0.2226	-0.6676	-0.5359
L10	90.5417-90.0000	-0.4206	-0.1820	-0.4618	-0.4842
L11	90.0000-89.7500	-0.4217	-0.1825	-0.4635	-0.4861
L12	89.7500-84.7500	-0.0016	0.2298	-0.1341	-0.1141
L13	84.7500-84.5830	0.1199	0.3547	-0.0024	0.0758
L14	84.5830-84.3330	0.1201	0.3552	-0.0024	0.0759
L15	84.3330-83.0000	0.1208	0.3573	-0.0024	0.0763
L16	83.0000-82.7500	0.1215	0.3593	-0.0024	0.0768
L17	82.7500-81.0000	0.1137	0.3361	-0.0023	0.0740
L18	81.0000-80.7500	0.1233	0.3645	-0.0024	0.0778
L19	80.7500-75.7500	0.1256	0.3711	-0.0024	0.0793
L20	75.7500-70.5417	0.1391	0.4104	-0.0024	0.0854
L21	70.5417-69.5417	0.1710	0.5046	-0.0028	0.0956
L22	69.5417-67.0000	0.1503	0.4433	-0.0021	0.0895
L23	67.0000-66.7500	0.1337	0.3942	-0.0019	0.0832
L24	66.7500-64.0830	0.3581	0.4636	0.1215	0.1179
L25	64.0830-63.8330	0.0884	0.3875	-0.0568	0.0733
L26	63.8330-62.4170	0.0889	0.3893	-0.0571	0.0737
L27	62.4170-62.1670	0.0893	0.3912	-0.0573	0.0742
L28	62.1670-59.4580	0.0829	0.3629	-0.0546	0.0707
L29	59.4580-59.2080	0.0741	0.3246	-0.0504	0.0655
L30	59.2080-54.2080	0.1236	0.3352	-0.0173	0.0739
L31	54.2080-53.5000	0.2195	0.3515	0.0498	0.0897
L32	53.5000-53.2500	0.2202	0.3525	0.0500	0.0901
L33	53.2500-48.2500	0.2238	0.3580	0.0514	0.0920
L34	48.2500-44.5830	0.2171	0.3469	0.0515	0.0913
L35	44.5830-44.3330	0.4124	0.3811	0.2046	0.1271
L36	44.3330-41.8330	0.1077	0.3149	0.0006	0.0790
L37	41.8330-41.5830	0.1157	0.3397	0.0005	0.0842
L38	41.5830-34.5250	0.1179	0.3462	0.0011	0.0869
L39	34.5250-34.0000	0.1187	0.3484	0.0011	0.0874
L40	34.0000-31.4580	0.1196	0.3510	0.0022	0.0902
L41	31.4580-31.2080	0.1205	0.3534	0.0025	0.0914
L42	31.2080-29.4580	0.1211	0.3552	0.0027	0.0923
L43	29.4580-29.2080	0.1128	0.1677	0.0028	-0.0258
L44	29.2080-26.8330	0.1054	-0.0032	0.0030	-0.1391
L45	26.8330-26.5830	0.1061	-0.0034	0.0033	-0.1400
L46	26.5830-21.5830	0.1075	-0.0038	0.0041	-0.1416
L47	21.5830-18.7500	-0.1264	0.1416	-0.1670	-0.0356
L48	18.7500-18.5000	-0.1651	0.2091	-0.1961	0.0174
L49	18.5000-18.0000	-0.1655	0.2094	-0.1964	0.0177
L50	18.0000-17.7500	-0.1658	0.2098	-0.1967	0.0179
L51	17.7500-17.0830	-0.1662	0.2102	-0.1971	0.0182
L52	17.0830-16.8330	-0.1666	0.2107	-0.1975	0.0186
L53	16.8330-13.0000	-0.1635	0.2064	-0.1977	0.0202
L54	13.0000-12.7500	-0.1602	0.2019	-0.1957	0.0218
L55	12.7500-11.8330	-0.1607	0.2024	-0.1961	0.0225
L56	11.8330-11.5830	-0.1579	0.2165	-0.1465	0.1230
L57	11.5830-6.4830	0.0333	0.3258	0.0435	0.1603
L58	6.4830-6.2500	0.2069	0.4625	0.2144	0.4793
L59	6.2500-1.2500	0.2091	0.4676	0.2164	0.4838
L60	1.2500-0.0000	0.2118	0.4737	0.2175	0.4865

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	24	Climbing Pegs	125.67 - 129.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	24	Climbing Pegs	120.67 - 125.67	1.0000	1.0000
L3	1	LDF6-50A(1-1/4")	115.67 - 120.00	1.0000	1.0000
L3	2	FB-L98B-002-75000(3/8")	115.67 - 120.00	1.0000	1.0000
L3	3	WR-VG86ST-BRD(3/4)	115.67 - 120.00	1.0000	1.0000
L3	4	FB-L98B-002-75000(3/8")	115.67 - 120.00	1.0000	1.0000
L3	5	WR-VG86ST-BRD(3/4")	115.67 - 120.00	1.0000	1.0000
L3	6	2.5" Flex Conduit	115.67 - 120.00	1.0000	1.0000
L3	24	Climbing Pegs	115.67 - 120.67	1.0000	1.0000
L4	1	LDF6-50A(1-1/4")	110.67 - 115.67	1.0000	1.0000
L4	2	FB-L98B-002-75000(3/8")	110.67 - 115.67	1.0000	1.0000
L4	3	WR-VG86ST-BRD(3/4)	110.67 - 115.67	1.0000	1.0000
L4	4	FB-L98B-002-75000(3/8")	110.67 - 115.67	1.0000	1.0000
L4	5	WR-VG86ST-BRD(3/4")	110.67 - 115.67	1.0000	1.0000
L4	6	2.5" Flex Conduit	110.67 - 115.67	1.0000	1.0000
L4	24	Climbing Pegs	110.67 - 115.67	1.0000	1.0000
L5	1	LDF6-50A(1-1/4")	110.54 - 110.67	1.0000	1.0000
L5	2	FB-L98B-002-75000(3/8")	110.54 - 110.67	1.0000	1.0000
L5	3	WR-VG86ST-BRD(3/4)	110.54 - 110.67	1.0000	1.0000
L5	4	FB-L98B-002-75000(3/8")	110.54 - 110.67	1.0000	1.0000
L5	5	WR-VG86ST-BRD(3/4")	110.54 - 110.67	1.0000	1.0000
L5	6	2.5" Flex Conduit	110.54 - 110.67	1.0000	1.0000
L5	24	Climbing Pegs	110.54 - 110.67	1.0000	1.0000
L6	1	LDF6-50A(1-1/4")	105.54 - 110.54	1.0000	1.0000
L6	2	FB-L98B-002-75000(3/8")	105.54 - 110.54	1.0000	1.0000
L6	3	WR-VG86ST-BRD(3/4)	105.54 - 110.54	1.0000	1.0000
L6	4	FB-L98B-002-75000(3/8")	105.54 - 110.54	1.0000	1.0000
L6	5	WR-VG86ST-BRD(3/4")	105.54 - 110.54	1.0000	1.0000
L6	6	2.5" Flex Conduit	105.54 - 110.54	1.0000	1.0000
L6	24	Climbing Pegs	105.54 - 110.54	1.0000	1.0000
L6	25	Climbing Ladder (CCI)	105.54 - 108.50	1.0000	1.0000
L7	1	LDF6-50A(1-1/4")	100.54 - 105.54	1.0000	1.0000
L7	2	FB-L98B-002-75000(3/8")	100.54 - 105.54	1.0000	1.0000
L7	3	WR-VG86ST-BRD(3/4)	100.54 - 105.54	1.0000	1.0000
L7	4	FB-L98B-002-75000(3/8")	100.54 - 105.54	1.0000	1.0000
L7	5	WR-VG86ST-BRD(3/4")	100.54 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L7	6	2.5" Flex Conduit	105.54 100.54 -	1.0000	1.0000
L7	24	Climbing Pegs	105.54 100.54 -	1.0000	1.0000
L7	25	Climbing Ladder (CCI)	105.54 100.54 -	1.0000	1.0000
L8	1	LDF6-50A(1-1/4")	105.54 95.54 -	1.0000	1.0000
L8	2	FB-L98B-002-75000(3/8")	100.54 95.54 -	1.0000	1.0000
L8	3	WR-VG86ST-BRD(3/4)	100.54 95.54 -	1.0000	1.0000
L8	4	FB-L98B-002-75000(3/8")	100.54 95.54 -	1.0000	1.0000
L8	5	WR-VG86ST-BRD(3/4")	100.54 95.54 -	1.0000	1.0000
L8	6	2.5" Flex Conduit	100.54 95.54 -	1.0000	1.0000
L8	24	Climbing Pegs	100.54 95.54 -	1.0000	1.0000
L8	25	Climbing Ladder (CCI)	100.54 95.54 -	1.0000	1.0000
L9	1	LDF6-50A(1-1/4")	100.54 90.54 -	1.0000	1.0000
L9	2	FB-L98B-002-75000(3/8")	95.54 90.54 -	1.0000	1.0000
L9	3	WR-VG86ST-BRD(3/4)	95.54 90.54 -	1.0000	1.0000
L9	4	FB-L98B-002-75000(3/8")	95.54 90.54 -	1.0000	1.0000
L9	5	WR-VG86ST-BRD(3/4")	95.54 90.54 -	1.0000	1.0000
L9	6	2.5" Flex Conduit	95.54 90.54 -	1.0000	1.0000
L9	12	ATCB-B01-005(5/16)	95.54 90.54 -	1.0000	1.0000
L9	13	FSJ4-50B(1/2")	94.50 90.54 -	1.0000	1.0000
L9	14	FSJ4-50B(1/2")	94.50 90.54 -	1.0000	1.0000
L9	15	2.5" Flex Conduit	94.50 90.54 -	1.0000	1.0000
L9	24	Climbing Pegs	94.50 90.54 -	1.0000	1.0000
L9	25	Climbing Ladder (CCI)	95.54 90.54 -	1.0000	1.0000
L9	60	4"x1" flat plate	95.54 90.54 -	1.0000	1.0000
L9	61	4"x1" flat plate	91.42 90.54 -	1.0000	1.0000
L9	62	4"x1" flat plate	91.42 90.54 -	1.0000	1.0000
L10	1	LDF6-50A(1-1/4")	91.42 90.00 -	1.0000	1.0000
L10	2	FB-L98B-002-75000(3/8")	90.54 90.00 -	1.0000	1.0000
L10	3	WR-VG86ST-BRD(3/4)	90.54 90.00 -	1.0000	1.0000
L10	4	FB-L98B-002-75000(3/8")	90.54 90.00 -	1.0000	1.0000
L10	5	WR-VG86ST-BRD(3/4")	90.54 90.00 -	1.0000	1.0000
L10	6	2.5" Flex Conduit	90.54 90.00 -	1.0000	1.0000
L10	12	ATCB-B01-005(5/16)	90.54 90.00 -	1.0000	1.0000
L10	13	FSJ4-50B(1/2")	90.54 90.00 -	1.0000	1.0000
			90.54		

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
L10	14	FSJ4-50B(1/2")	90.00 - 90.54	1.0000	1.0000
L10	15	2.5" Flex Conduit	90.00 - 90.54	1.0000	1.0000
L10	24	Climbing Pegs	90.00 - 90.54	1.0000	1.0000
L10	25	Climbing Ladder (CCI)	90.00 - 90.54	1.0000	1.0000
L10	60	4"x1" flat plate	90.00 - 90.54	1.0000	1.0000
L10	61	4"x1" flat plate	90.00 - 90.54	1.0000	1.0000
L10	62	4"x1" flat plate	90.00 - 90.54	1.0000	1.0000
L11	1	LDF6-50A(1-1/4")	89.75 - 90.00	1.0000	1.0000
L11	2	FB-L98B-002-75000(3/8")	89.75 - 90.00	1.0000	1.0000
L11	3	WR-VG86ST-BRD(3/4)	89.75 - 90.00	1.0000	1.0000
L11	4	FB-L98B-002-75000(3/8")	89.75 - 90.00	1.0000	1.0000
L11	5	WR-VG86ST-BRD(3/4")	89.75 - 90.00	1.0000	1.0000
L11	6	2.5" Flex Conduit	89.75 - 90.00	1.0000	1.0000
L11	12	ATCB-B01-005(5/16)	89.75 - 90.00	1.0000	1.0000
L11	13	FSJ4-50B(1/2")	89.75 - 90.00	1.0000	1.0000
L11	14	FSJ4-50B(1/2")	89.75 - 90.00	1.0000	1.0000
L11	15	2.5" Flex Conduit	89.75 - 90.00	1.0000	1.0000
L11	24	Climbing Pegs	89.75 - 90.00	1.0000	1.0000
L11	25	Climbing Ladder (CCI)	89.75 - 90.00	1.0000	1.0000
L11	60	4"x1" flat plate	89.75 - 90.00	1.0000	1.0000
L11	61	4"x1" flat plate	89.75 - 90.00	1.0000	1.0000
L11	62	4"x1" flat plate	89.75 - 90.00	1.0000	1.0000
L12	1	LDF6-50A(1-1/4")	84.75 - 89.75	1.0000	1.0000
L12	2	FB-L98B-002-75000(3/8")	84.75 - 89.75	1.0000	1.0000
L12	3	WR-VG86ST-BRD(3/4)	84.75 - 89.75	1.0000	1.0000
L12	4	FB-L98B-002-75000(3/8")	84.75 - 89.75	1.0000	1.0000
L12	5	WR-VG86ST-BRD(3/4")	84.75 - 89.75	1.0000	1.0000
L12	6	2.5" Flex Conduit	84.75 - 89.75	1.0000	1.0000
L12	12	ATCB-B01-005(5/16)	84.75 - 89.75	1.0000	1.0000
L12	13	FSJ4-50B(1/2")	84.75 - 89.75	1.0000	1.0000
L12	14	FSJ4-50B(1/2")	84.75 - 89.75	1.0000	1.0000
L12	15	2.5" Flex Conduit	84.75 - 89.75	1.0000	1.0000
L12	19	LCF114-50J(1-1/4")	84.75 - 87.50	1.0000	1.0000
L12	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	84.75 - 87.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L12	21	MLC Hybrid 6/6(7/8")	84.75 - 87.50	1.0000	1.0000
L12	24	Climbing Pegs	84.75 - 89.75	1.0000	1.0000
L12	25	Climbing Ladder (CCI)	89.08 - 89.75	1.0000	1.0000
L12	54	4"x0.75" flat plate	84.75 - 85.83	1.0000	1.0000
L12	55	4"x0.75" flat plate	84.75 - 85.83	1.0000	1.0000
L12	56	4"x0.75" flat plate	84.75 - 85.83	1.0000	1.0000
L12	60	4"x1" flat plate	84.75 - 89.75	1.0000	1.0000
L12	61	4"x1" flat plate	84.75 - 89.75	1.0000	1.0000
L12	62	4"x1" flat plate	84.75 - 89.75	1.0000	1.0000
L13	1	LDF6-50A(1-1/4")	84.58 - 84.75	1.0000	1.0000
L13	2	FB-L98B-002-75000(3/8")	84.58 - 84.75	1.0000	1.0000
L13	3	WR-VG86ST-BRD(3/4)	84.58 - 84.75	1.0000	1.0000
L13	4	FB-L98B-002-75000(3/8")	84.58 - 84.75	1.0000	1.0000
L13	5	WR-VG86ST-BRD(3/4")	84.58 - 84.75	1.0000	1.0000
L13	6	2.5" Flex Conduit	84.58 - 84.75	1.0000	1.0000
L13	12	ATCB-B01-005(5/16)	84.58 - 84.75	1.0000	1.0000
L13	13	FSJ4-50B(1/2")	84.58 - 84.75	1.0000	1.0000
L13	14	FSJ4-50B(1/2")	84.58 - 84.75	1.0000	1.0000
L13	15	2.5" Flex Conduit	84.58 - 84.75	1.0000	1.0000
L13	19	LCF114-50J(1-1/4")	84.58 - 84.75	1.0000	1.0000
L13	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	84.58 - 84.75	1.0000	1.0000
L13	21	MLC Hybrid 6/6(7/8")	84.58 - 84.75	1.0000	1.0000
L13	24	Climbing Pegs	84.58 - 84.75	1.0000	1.0000
L13	54	4"x0.75" flat plate	84.58 - 84.75	1.0000	1.0000
L13	55	4"x0.75" flat plate	84.58 - 84.75	1.0000	1.0000
L13	56	4"x0.75" flat plate	84.58 - 84.75	1.0000	1.0000
L13	60	4"x1" flat plate	84.58 - 84.75	1.0000	1.0000
L13	61	4"x1" flat plate	84.58 - 84.75	1.0000	1.0000
L13	62	4"x1" flat plate	84.58 - 84.75	1.0000	1.0000
L14	1	LDF6-50A(1-1/4")	84.33 - 84.58	1.0000	1.0000
L14	2	FB-L98B-002-75000(3/8")	84.33 - 84.58	1.0000	1.0000
L14	3	WR-VG86ST-BRD(3/4)	84.33 - 84.58	1.0000	1.0000
L14	4	FB-L98B-002-75000(3/8")	84.33 - 84.58	1.0000	1.0000
L14	5	WR-VG86ST-BRD(3/4")	84.33 - 84.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L14	6	2.5" Flex Conduit	84.33 - 84.58	1.0000	1.0000
L14	12	ATCB-B01-005(5/16)	84.33 - 84.58	1.0000	1.0000
L14	13	FSJ4-50B(1/2")	84.33 - 84.58	1.0000	1.0000
L14	14	FSJ4-50B(1/2")	84.33 - 84.58	1.0000	1.0000
L14	15	2.5" Flex Conduit	84.33 - 84.58	1.0000	1.0000
L14	19	LCF114-50J(1-1/4")	84.33 - 84.58	1.0000	1.0000
L14	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	84.33 - 84.58	1.0000	1.0000
L14	21	MLC Hybrid 6/6(7/8")	84.33 - 84.58	1.0000	1.0000
L14	24	Climbing Pegs	84.33 - 84.58	1.0000	1.0000
L14	54	4"x0.75" flat plate	84.33 - 84.58	1.0000	1.0000
L14	55	4"x0.75" flat plate	84.33 - 84.58	1.0000	1.0000
L14	56	4"x0.75" flat plate	84.33 - 84.58	1.0000	1.0000
L14	60	4"x1" flat plate	84.33 - 84.58	1.0000	1.0000
L14	61	4"x1" flat plate	84.33 - 84.58	1.0000	1.0000
L14	62	4"x1" flat plate	84.33 - 84.58	1.0000	1.0000
L15	1	LDF6-50A(1-1/4")	83.00 - 84.33	1.0000	1.0000
L15	2	FB-L98B-002-75000(3/8")	83.00 - 84.33	1.0000	1.0000
L15	3	WR-VG86ST-BRD(3/4)	83.00 - 84.33	1.0000	1.0000
L15	4	FB-L98B-002-75000(3/8")	83.00 - 84.33	1.0000	1.0000
L15	5	WR-VG86ST-BRD(3/4")	83.00 - 84.33	1.0000	1.0000
L15	6	2.5" Flex Conduit	83.00 - 84.33	1.0000	1.0000
L15	12	ATCB-B01-005(5/16)	83.00 - 84.33	1.0000	1.0000
L15	13	FSJ4-50B(1/2")	83.00 - 84.33	1.0000	1.0000
L15	14	FSJ4-50B(1/2")	83.00 - 84.33	1.0000	1.0000
L15	15	2.5" Flex Conduit	83.00 - 84.33	1.0000	1.0000
L15	19	LCF114-50J(1-1/4")	83.00 - 84.33	1.0000	1.0000
L15	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	83.00 - 84.33	1.0000	1.0000
L15	21	MLC Hybrid 6/6(7/8")	83.00 - 84.33	1.0000	1.0000
L15	24	Climbing Pegs	83.00 - 84.33	1.0000	1.0000
L15	54	4"x0.75" flat plate	83.00 - 84.33	1.0000	1.0000
L15	55	4"x0.75" flat plate	83.00 - 84.33	1.0000	1.0000
L15	56	4"x0.75" flat plate	83.00 - 84.33	1.0000	1.0000
L15	60	4"x1" flat plate	83.00 - 84.33	1.0000	1.0000
L15	61	4"x1" flat plate	83.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	62	4"x1" flat plate	84.33 83.00 -	1.0000	1.0000
L16	1	LDF6-50A(1-1/4")	84.33 82.75 - 83.00	1.0000	1.0000
L16	2	FB-L98B-002-75000(3/8")	82.75 - 83.00	1.0000	1.0000
L16	3	WR-VG86ST-BRD(3/4)	82.75 - 83.00	1.0000	1.0000
L16	4	FB-L98B-002-75000(3/8")	82.75 - 83.00	1.0000	1.0000
L16	5	WR-VG86ST-BRD(3/4")	82.75 - 83.00	1.0000	1.0000
L16	6	2.5" Flex Conduit	82.75 - 83.00	1.0000	1.0000
L16	12	ATCB-B01-005(5/16)	82.75 - 83.00	1.0000	1.0000
L16	13	FSJ4-50B(1/2")	82.75 - 83.00	1.0000	1.0000
L16	14	FSJ4-50B(1/2")	82.75 - 83.00	1.0000	1.0000
L16	15	2.5" Flex Conduit	82.75 - 83.00	1.0000	1.0000
L16	19	LCF114-50J(1-1/4")	82.75 - 83.00	1.0000	1.0000
L16	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	82.75 - 83.00	1.0000	1.0000
L16	21	MLC Hybrid 6/6(7/8")	82.75 - 83.00	1.0000	1.0000
L16	24	Climbing Pegs	82.75 - 83.00	1.0000	1.0000
L16	54	4"x0.75" flat plate	82.75 - 83.00	1.0000	1.0000
L16	55	4"x0.75" flat plate	82.75 - 83.00	1.0000	1.0000
L16	56	4"x0.75" flat plate	82.75 - 83.00	1.0000	1.0000
L16	60	4"x1" flat plate	82.75 - 83.00	1.0000	1.0000
L16	61	4"x1" flat plate	82.75 - 83.00	1.0000	1.0000
L16	62	4"x1" flat plate	82.75 - 83.00	1.0000	1.0000
L17	1	LDF6-50A(1-1/4")	81.00 - 82.75	1.0000	1.0000
L17	2	FB-L98B-002-75000(3/8")	81.00 - 82.75	1.0000	1.0000
L17	3	WR-VG86ST-BRD(3/4)	81.00 - 82.75	1.0000	1.0000
L17	4	FB-L98B-002-75000(3/8")	81.00 - 82.75	1.0000	1.0000
L17	5	WR-VG86ST-BRD(3/4")	81.00 - 82.75	1.0000	1.0000
L17	6	2.5" Flex Conduit	81.00 - 82.75	1.0000	1.0000
L17	12	ATCB-B01-005(5/16)	81.00 - 82.75	1.0000	1.0000
L17	13	FSJ4-50B(1/2")	81.00 - 82.75	1.0000	1.0000
L17	14	FSJ4-50B(1/2")	81.00 - 82.75	1.0000	1.0000
L17	15	2.5" Flex Conduit	81.00 - 82.75	1.0000	1.0000
L17	19	LCF114-50J(1-1/4")	81.00 - 82.75	1.0000	1.0000
L17	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	81.00 - 82.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	21	MLC Hybrid 6/6(7/8")	81.00 - 82.75	1.0000	1.0000
L17	24	Climbing Pegs	81.00 - 82.75	1.0000	1.0000
L17	54	4"x0.75" flat plate	81.00 - 82.75	1.0000	1.0000
L17	55	4"x0.75" flat plate	81.00 - 82.75	1.0000	1.0000
L17	56	4"x0.75" flat plate	81.00 - 82.75	1.0000	1.0000
L17	57	4"x0.75" flat plate	81.00 - 81.98	1.0000	1.0000
L17	58	4"x0.75" flat plate	81.00 - 81.98	1.0000	1.0000
L17	59	4"x0.75" flat plate	81.00 - 81.98	1.0000	1.0000
L17	60	4"x1" flat plate	81.42 - 82.75	1.0000	1.0000
L17	61	4"x1" flat plate	81.42 - 82.75	1.0000	1.0000
L17	62	4"x1" flat plate	81.42 - 82.75	1.0000	1.0000
L18	1	LDF6-50A(1-1/4")	80.75 - 81.00	1.0000	1.0000
L18	2	FB-L98B-002-75000(3/8")	80.75 - 81.00	1.0000	1.0000
L18	3	WR-VG86ST-BRD(3/4)	80.75 - 81.00	1.0000	1.0000
L18	4	FB-L98B-002-75000(3/8")	80.75 - 81.00	1.0000	1.0000
L18	5	WR-VG86ST-BRD(3/4")	80.75 - 81.00	1.0000	1.0000
L18	6	2.5" Flex Conduit	80.75 - 81.00	1.0000	1.0000
L18	12	ATCB-B01-005(5/16)	80.75 - 81.00	1.0000	1.0000
L18	13	FSJ4-50B(1/2")	80.75 - 81.00	1.0000	1.0000
L18	14	FSJ4-50B(1/2")	80.75 - 81.00	1.0000	1.0000
L18	15	2.5" Flex Conduit	80.75 - 81.00	1.0000	1.0000
L18	19	LCF114-50J(1-1/4")	80.75 - 81.00	1.0000	1.0000
L18	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	80.75 - 81.00	1.0000	1.0000
L18	21	MLC Hybrid 6/6(7/8")	80.75 - 81.00	1.0000	1.0000
L18	24	Climbing Pegs	80.75 - 81.00	1.0000	1.0000
L18	54	4"x0.75" flat plate	80.75 - 81.00	1.0000	1.0000
L18	55	4"x0.75" flat plate	80.75 - 81.00	1.0000	1.0000
L18	56	4"x0.75" flat plate	80.75 - 81.00	1.0000	1.0000
L18	57	4"x0.75" flat plate	80.75 - 81.00	1.0000	1.0000
L18	58	4"x0.75" flat plate	80.75 - 81.00	1.0000	1.0000
L18	59	4"x0.75" flat plate	80.75 - 81.00	1.0000	1.0000
L19	1	LDF6-50A(1-1/4")	75.75 - 80.75	1.0000	1.0000
L19	2	FB-L98B-002-75000(3/8")	75.75 - 80.75	1.0000	1.0000
L19	3	WR-VG86ST-BRD(3/4)	75.75 - 80.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	4	FB-L98B-002-75000(3/8")	75.75 - 80.75	1.0000	1.0000
L19	5	WR-VG86ST-BRD(3/4")	75.75 - 80.75	1.0000	1.0000
L19	6	2.5" Flex Conduit	75.75 - 80.75	1.0000	1.0000
L19	12	ATCB-B01-005(5/16)	75.75 - 80.75	1.0000	1.0000
L19	13	FSJ4-50B(1/2")	75.75 - 80.75	1.0000	1.0000
L19	14	FSJ4-50B(1/2")	75.75 - 80.75	1.0000	1.0000
L19	15	2.5" Flex Conduit	75.75 - 80.75	1.0000	1.0000
L19	19	LCF114-50J(1-1/4")	75.75 - 80.75	1.0000	1.0000
L19	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	75.75 - 80.75	1.0000	1.0000
L19	21	MLC Hybrid 6/6(7/8")	75.75 - 80.75	1.0000	1.0000
L19	24	Climbing Pegs	75.75 - 80.75	1.0000	1.0000
L19	54	4"x0.75" flat plate	75.75 - 80.75	1.0000	1.0000
L19	55	4"x0.75" flat plate	75.75 - 80.75	1.0000	1.0000
L19	56	4"x0.75" flat plate	75.75 - 80.75	1.0000	1.0000
L19	57	4"x0.75" flat plate	75.75 - 80.75	1.0000	1.0000
L19	58	4"x0.75" flat plate	75.75 - 80.75	1.0000	1.0000
L19	59	4"x0.75" flat plate	75.75 - 80.75	1.0000	1.0000
L20	1	LDF6-50A(1-1/4")	70.54 - 75.75	1.0000	1.0000
L20	2	FB-L98B-002-75000(3/8")	70.54 - 75.75	1.0000	1.0000
L20	3	WR-VG86ST-BRD(3/4)	70.54 - 75.75	1.0000	1.0000
L20	4	FB-L98B-002-75000(3/8")	70.54 - 75.75	1.0000	1.0000
L20	5	WR-VG86ST-BRD(3/4")	70.54 - 75.75	1.0000	1.0000
L20	6	2.5" Flex Conduit	70.54 - 75.75	1.0000	1.0000
L20	12	ATCB-B01-005(5/16)	70.54 - 75.75	1.0000	1.0000
L20	13	FSJ4-50B(1/2")	70.54 - 75.75	1.0000	1.0000
L20	14	FSJ4-50B(1/2")	70.54 - 75.75	1.0000	1.0000
L20	15	2.5" Flex Conduit	70.54 - 75.75	1.0000	1.0000
L20	19	LCF114-50J(1-1/4")	70.54 - 75.75	1.0000	1.0000
L20	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	70.54 - 75.75	1.0000	1.0000
L20	21	MLC Hybrid 6/6(7/8")	70.54 - 75.75	1.0000	1.0000
L20	24	Climbing Pegs	70.54 - 75.75	1.0000	1.0000
L20	54	4"x0.75" flat plate	70.54 - 75.75	1.0000	1.0000
L20	55	4"x0.75" flat plate	70.54 - 75.75	1.0000	1.0000
L20	56	4"x0.75" flat plate	70.54 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L20	57	4"x0.75" flat plate	75.75 71.98 -	1.0000	1.0000
L20	58	4"x0.75" flat plate	75.75 71.98 -	1.0000	1.0000
L20	59	4"x0.75" flat plate	75.75 71.98 -	1.0000	1.0000
L22	1	LDF6-50A(1-1/4")	75.75 67.00 -	1.0000	1.0000
L22	2	FB-L98B-002-75000(3/8")	69.54 67.00 -	1.0000	1.0000
L22	3	WR-VG86ST-BRD(3/4)	69.54 67.00 -	1.0000	1.0000
L22	4	FB-L98B-002-75000(3/8")	69.54 67.00 -	1.0000	1.0000
L22	5	WR-VG86ST-BRD(3/4")	69.54 67.00 -	1.0000	1.0000
L22	6	2.5" Flex Conduit	69.54 67.00 -	1.0000	1.0000
L22	12	ATCB-B01-005(5/16)	69.54 67.00 -	1.0000	1.0000
L22	13	FSJ4-50B(1/2")	69.54 67.00 -	1.0000	1.0000
L22	14	FSJ4-50B(1/2")	69.54 67.00 -	1.0000	1.0000
L22	15	2.5" Flex Conduit	69.54 67.00 -	1.0000	1.0000
L22	19	LCF114-50J(1-1/4")	69.54 67.00 -	1.0000	1.0000
L22	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	69.54 67.00 - 69.54	1.0000	1.0000
L22	21	MLC Hybrid 6/6(7/8")	67.00 -	1.0000	1.0000
L22	24	Climbing Pegs	69.54 67.00 -	1.0000	1.0000
L22	51	4"x0.75" flat plate	69.54 67.00 -	1.0000	1.0000
L22	52	4"x0.75" flat plate	68.25 67.00 -	1.0000	1.0000
L22	53	4"x0.75" flat plate	68.25 67.00 -	1.0000	1.0000
L22	54	4"x0.75" flat plate	68.25 67.00 -	1.0000	1.0000
L22	55	4"x0.75" flat plate	69.54 67.00 -	1.0000	1.0000
L22	56	4"x0.75" flat plate	69.54 67.00 -	1.0000	1.0000
L23	1	LDF6-50A(1-1/4")	69.54 66.75 -	1.0000	1.0000
L23	2	FB-L98B-002-75000(3/8")	67.00 66.75 -	1.0000	1.0000
L23	3	WR-VG86ST-BRD(3/4)	67.00 66.75 -	1.0000	1.0000
L23	4	FB-L98B-002-75000(3/8")	67.00 66.75 -	1.0000	1.0000
L23	5	WR-VG86ST-BRD(3/4")	67.00 66.75 -	1.0000	1.0000
L23	6	2.5" Flex Conduit	67.00 66.75 -	1.0000	1.0000
L23	12	ATCB-B01-005(5/16)	67.00 66.75 -	1.0000	1.0000
L23	13	FSJ4-50B(1/2")	67.00 66.75 -	1.0000	1.0000
L23	14	FSJ4-50B(1/2")	67.00 66.75 -	1.0000	1.0000
L23	15	2.5" Flex Conduit	67.00 66.75 -	1.0000	1.0000
L23	19	LCF114-50J(1-1/4")	67.00 66.75 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			67.00		
L23	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	66.75 - 67.00	1.0000	1.0000
L23	21	MLC Hybrid 6/6(7/8")	66.75 - 67.00	1.0000	1.0000
L23	24	Climbing Pegs	66.75 - 67.00	1.0000	1.0000
L23	51	4"x0.75" flat plate	66.75 - 67.00	1.0000	1.0000
L23	52	4"x0.75" flat plate	66.75 - 67.00	1.0000	1.0000
L23	53	4"x0.75" flat plate	66.75 - 67.00	1.0000	1.0000
L23	54	4"x0.75" flat plate	66.75 - 67.00	1.0000	1.0000
L23	55	4"x0.75" flat plate	66.75 - 67.00	1.0000	1.0000
L23	56	4"x0.75" flat plate	66.75 - 67.00	1.0000	1.0000
L24	1	LDF6-50A(1-1/4")	64.08 - 66.75	1.0000	1.0000
L24	2	FB-L98B-002-75000(3/8")	64.08 - 66.75	1.0000	1.0000
L24	3	WR-VG86ST-BRD(3/4)	64.08 - 66.75	1.0000	1.0000
L24	4	FB-L98B-002-75000(3/8")	64.08 - 66.75	1.0000	1.0000
L24	5	WR-VG86ST-BRD(3/4")	64.08 - 66.75	1.0000	1.0000
L24	6	2.5" Flex Conduit	64.08 - 66.75	1.0000	1.0000
L24	12	ATCB-B01-005(5/16)	64.08 - 66.75	1.0000	1.0000
L24	13	FSJ4-50B(1/2")	64.08 - 66.75	1.0000	1.0000
L24	14	FSJ4-50B(1/2")	64.08 - 66.75	1.0000	1.0000
L24	15	2.5" Flex Conduit	64.08 - 66.75	1.0000	1.0000
L24	19	LCF114-50J(1-1/4")	64.08 - 66.75	1.0000	1.0000
L24	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	64.08 - 66.75	1.0000	1.0000
L24	21	MLC Hybrid 6/6(7/8")	64.08 - 66.75	1.0000	1.0000
L24	24	Climbing Pegs	64.08 - 66.75	1.0000	1.0000
L24	48	4.5"x1" flat plate	64.08 - 66.08	1.0000	1.0000
L24	49	4.5"x1" flat plate	64.08 - 66.08	1.0000	1.0000
L24	50	4.5"x1" flat plate	64.08 - 64.42	1.0000	1.0000
L24	51	4"x0.75" flat plate	64.08 - 66.75	1.0000	1.0000
L24	52	4"x0.75" flat plate	64.08 - 66.75	1.0000	1.0000
L24	53	4"x0.75" flat plate	64.08 - 66.75	1.0000	1.0000
L24	54	4"x0.75" flat plate	65.83 - 66.75	1.0000	1.0000
L24	55	4"x0.75" flat plate	65.83 - 66.75	1.0000	1.0000
L24	56	4"x0.75" flat plate	65.83 - 66.75	1.0000	1.0000
L25	1	LDF6-50A(1-1/4")	63.83 - 64.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	2	FB-L98B-002-75000(3/8")	63.83 - 64.08	1.0000	1.0000
L25	3	WR-VG86ST-BRD(3/4)	63.83 - 64.08	1.0000	1.0000
L25	4	FB-L98B-002-75000(3/8")	63.83 - 64.08	1.0000	1.0000
L25	5	WR-VG86ST-BRD(3/4")	63.83 - 64.08	1.0000	1.0000
L25	6	2.5" Flex Conduit	63.83 - 64.08	1.0000	1.0000
L25	12	ATCB-B01-005(5/16)	63.83 - 64.08	1.0000	1.0000
L25	13	FSJ4-50B(1/2")	63.83 - 64.08	1.0000	1.0000
L25	14	FSJ4-50B(1/2")	63.83 - 64.08	1.0000	1.0000
L25	15	2.5" Flex Conduit	63.83 - 64.08	1.0000	1.0000
L25	19	LCF114-50J(1-1/4")	63.83 - 64.08	1.0000	1.0000
L25	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	63.83 - 64.08	1.0000	1.0000
L25	21	MLC Hybrid 6/6(7/8")	63.83 - 64.08	1.0000	1.0000
L25	24	Climbing Pegs	63.83 - 64.08	1.0000	1.0000
L25	48	4.5"x1" flat plate	63.83 - 64.08	1.0000	1.0000
L25	49	4.5"x1" flat plate	63.83 - 64.08	1.0000	1.0000
L25	50	4.5"x1" flat plate	63.83 - 64.08	1.0000	1.0000
L25	51	4"x0.75" flat plate	63.83 - 64.08	1.0000	1.0000
L25	52	4"x0.75" flat plate	63.83 - 64.08	1.0000	1.0000
L25	53	4"x0.75" flat plate	63.83 - 64.08	1.0000	1.0000
L26	1	LDF6-50A(1-1/4")	62.42 - 63.83	1.0000	1.0000
L26	2	FB-L98B-002-75000(3/8")	62.42 - 63.83	1.0000	1.0000
L26	3	WR-VG86ST-BRD(3/4)	62.42 - 63.83	1.0000	1.0000
L26	4	FB-L98B-002-75000(3/8")	62.42 - 63.83	1.0000	1.0000
L26	5	WR-VG86ST-BRD(3/4")	62.42 - 63.83	1.0000	1.0000
L26	6	2.5" Flex Conduit	62.42 - 63.83	1.0000	1.0000
L26	12	ATCB-B01-005(5/16)	62.42 - 63.83	1.0000	1.0000
L26	13	FSJ4-50B(1/2")	62.42 - 63.83	1.0000	1.0000
L26	14	FSJ4-50B(1/2")	62.42 - 63.83	1.0000	1.0000
L26	15	2.5" Flex Conduit	62.42 - 63.83	1.0000	1.0000
L26	19	LCF114-50J(1-1/4")	62.42 - 63.83	1.0000	1.0000
L26	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	62.42 - 63.83	1.0000	1.0000
L26	21	MLC Hybrid 6/6(7/8")	62.42 - 63.83	1.0000	1.0000
L26	24	Climbing Pegs	62.42 - 63.83	1.0000	1.0000
L26	48	4.5"x1" flat plate	62.42 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L26	49	4.5"x1" flat plate	63.83 - 62.42	1.0000	1.0000
L26	50	4.5"x1" flat plate	63.83 - 62.42	1.0000	1.0000
L26	51	4"x0.75" flat plate	63.83 - 62.42	1.0000	1.0000
L26	52	4"x0.75" flat plate	63.83 - 62.42	1.0000	1.0000
L26	53	4"x0.75" flat plate	63.83 - 62.42	1.0000	1.0000
L27	1	LDF6-50A(1-1/4")	63.83 - 62.17	1.0000	1.0000
L27	2	FB-L98B-002-75000(3/8")	62.42 - 62.17	1.0000	1.0000
L27	3	WR-VG86ST-BRD(3/4)	62.42 - 62.17	1.0000	1.0000
L27	4	FB-L98B-002-75000(3/8")	62.42 - 62.17	1.0000	1.0000
L27	5	WR-VG86ST-BRD(3/4")	62.42 - 62.17	1.0000	1.0000
L27	6	2.5" Flex Conduit	62.42 - 62.17	1.0000	1.0000
L27	12	ATCB-B01-005(5/16)	62.42 - 62.17	1.0000	1.0000
L27	13	FSJ4-50B(1/2")	62.42 - 62.17	1.0000	1.0000
L27	14	FSJ4-50B(1/2")	62.42 - 62.17	1.0000	1.0000
L27	15	2.5" Flex Conduit	62.42 - 62.17	1.0000	1.0000
L27	19	LCF114-50J(1-1/4")	62.42 - 62.17	1.0000	1.0000
L27	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	62.42 - 62.17	1.0000	1.0000
L27	21	MLC Hybrid 6/6(7/8")	62.42 - 62.17	1.0000	1.0000
L27	24	Climbing Pegs	62.42 - 62.17	1.0000	1.0000
L27	48	4.5"x1" flat plate	62.42 - 62.17	1.0000	1.0000
L27	49	4.5"x1" flat plate	62.42 - 62.17	1.0000	1.0000
L27	50	4.5"x1" flat plate	62.42 - 62.17	1.0000	1.0000
L27	51	4"x0.75" flat plate	62.42 - 62.17	1.0000	1.0000
L27	52	4"x0.75" flat plate	62.42 - 62.17	1.0000	1.0000
L27	53	4"x0.75" flat plate	62.42 - 62.17	1.0000	1.0000
L28	1	LDF6-50A(1-1/4")	62.17 - 59.46	1.0000	1.0000
L28	2	FB-L98B-002-75000(3/8")	62.17 - 59.46	1.0000	1.0000
L28	3	WR-VG86ST-BRD(3/4)	62.17 - 59.46	1.0000	1.0000
L28	4	FB-L98B-002-75000(3/8")	62.17 - 59.46	1.0000	1.0000
L28	5	WR-VG86ST-BRD(3/4")	62.17 - 59.46	1.0000	1.0000
L28	6	2.5" Flex Conduit	62.17 - 59.46	1.0000	1.0000
L28	12	ATCB-B01-005(5/16)	62.17 - 59.46	1.0000	1.0000
L28	13	FSJ4-50B(1/2")	62.17 - 59.46	1.0000	1.0000
L28	14	FSJ4-50B(1/2")	62.17 - 59.46	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			62.17		
L28	15	2.5" Flex Conduit	59.46 - 62.17	1.0000	1.0000
L28	19	LCF114-50J(1-1/4")	59.46 - 62.17	1.0000	1.0000
L28	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	59.46 - 62.17	1.0000	1.0000
L28	21	MLC Hybrid 6/6(7/8")	59.46 - 62.17	1.0000	1.0000
L28	24	Climbing Pegs	59.46 - 62.17	1.0000	1.0000
L28	45	4"x0.75" flat plate	59.46 - 60.50	1.0000	1.0000
L28	46	4"x0.75" flat plate	59.46 - 60.50	1.0000	1.0000
L28	47	4"x0.75" flat plate	59.46 - 60.50	1.0000	1.0000
L28	48	4.5"x1" flat plate	59.46 - 62.17	1.0000	1.0000
L28	49	4.5"x1" flat plate	59.46 - 62.17	1.0000	1.0000
L28	50	4.5"x1" flat plate	59.46 - 62.17	1.0000	1.0000
L28	51	4"x0.75" flat plate	59.46 - 62.17	1.0000	1.0000
L28	52	4"x0.75" flat plate	59.46 - 62.17	1.0000	1.0000
L28	53	4"x0.75" flat plate	59.46 - 62.17	1.0000	1.0000
L29	1	LDF6-50A(1-1/4")	59.21 - 59.46	1.0000	1.0000
L29	2	FB-L98B-002-75000(3/8")	59.21 - 59.46	1.0000	1.0000
L29	3	WR-VG86ST-BRD(3/4)	59.21 - 59.46	1.0000	1.0000
L29	4	FB-L98B-002-75000(3/8")	59.21 - 59.46	1.0000	1.0000
L29	5	WR-VG86ST-BRD(3/4")	59.21 - 59.46	1.0000	1.0000
L29	6	2.5" Flex Conduit	59.21 - 59.46	1.0000	1.0000
L29	12	ATCB-B01-005(5/16)	59.21 - 59.46	1.0000	1.0000
L29	13	FSJ4-50B(1/2")	59.21 - 59.46	1.0000	1.0000
L29	14	FSJ4-50B(1/2")	59.21 - 59.46	1.0000	1.0000
L29	15	2.5" Flex Conduit	59.21 - 59.46	1.0000	1.0000
L29	19	LCF114-50J(1-1/4")	59.21 - 59.46	1.0000	1.0000
L29	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	59.21 - 59.46	1.0000	1.0000
L29	21	MLC Hybrid 6/6(7/8")	59.21 - 59.46	1.0000	1.0000
L29	24	Climbing Pegs	59.21 - 59.46	1.0000	1.0000
L29	45	4"x0.75" flat plate	59.21 - 59.46	1.0000	1.0000
L29	46	4"x0.75" flat plate	59.21 - 59.46	1.0000	1.0000
L29	47	4"x0.75" flat plate	59.21 - 59.46	1.0000	1.0000
L29	48	4.5"x1" flat plate	59.21 - 59.46	1.0000	1.0000
L29	49	4.5"x1" flat plate	59.21 - 59.46	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L29	50	4.5"x1" flat plate	59.21 - 59.46	1.0000	1.0000
L29	51	4"x0.75" flat plate	59.21 - 59.46	1.0000	1.0000
L29	52	4"x0.75" flat plate	59.21 - 59.46	1.0000	1.0000
L29	53	4"x0.75" flat plate	59.21 - 59.46	1.0000	1.0000
L30	1	LDF6-50A(1-1/4")	54.21 - 59.21	1.0000	1.0000
L30	2	FB-L98B-002-75000(3/8")	54.21 - 59.21	1.0000	1.0000
L30	3	WR-VG86ST-BRD(3/4)	54.21 - 59.21	1.0000	1.0000
L30	4	FB-L98B-002-75000(3/8")	54.21 - 59.21	1.0000	1.0000
L30	5	WR-VG86ST-BRD(3/4")	54.21 - 59.21	1.0000	1.0000
L30	6	2.5" Flex Conduit	54.21 - 59.21	1.0000	1.0000
L30	12	ATCB-B01-005(5/16)	54.21 - 59.21	1.0000	1.0000
L30	13	FSJ4-50B(1/2")	54.21 - 59.21	1.0000	1.0000
L30	14	FSJ4-50B(1/2")	54.21 - 59.21	1.0000	1.0000
L30	15	2.5" Flex Conduit	54.21 - 59.21	1.0000	1.0000
L30	19	LCF114-50J(1-1/4")	54.21 - 59.21	1.0000	1.0000
L30	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	54.21 - 59.21	1.0000	1.0000
L30	21	MLC Hybrid 6/6(7/8")	54.21 - 59.21	1.0000	1.0000
L30	24	Climbing Pegs	54.21 - 59.21	1.0000	1.0000
L30	42	6"x1" flat plate	54.21 - 56.00	1.0000	1.0000
L30	43	6"x1" flat plate	54.21 - 56.00	1.0000	1.0000
L30	45	4"x0.75" flat plate	54.21 - 59.21	1.0000	1.0000
L30	46	4"x0.75" flat plate	54.21 - 59.21	1.0000	1.0000
L30	47	4"x0.75" flat plate	54.21 - 59.21	1.0000	1.0000
L30	48	4.5"x1" flat plate	56.08 - 59.21	1.0000	1.0000
L30	49	4.5"x1" flat plate	56.08 - 59.21	1.0000	1.0000
L30	50	4.5"x1" flat plate	54.21 - 59.21	1.0000	1.0000
L30	51	4"x0.75" flat plate	54.21 - 59.21	1.0000	1.0000
L30	52	4"x0.75" flat plate	54.21 - 59.21	1.0000	1.0000
L30	53	4"x0.75" flat plate	54.21 - 59.21	1.0000	1.0000
L31	1	LDF6-50A(1-1/4")	53.50 - 54.21	1.0000	1.0000
L31	2	FB-L98B-002-75000(3/8")	53.50 - 54.21	1.0000	1.0000
L31	3	WR-VG86ST-BRD(3/4)	53.50 - 54.21	1.0000	1.0000
L31	4	FB-L98B-002-75000(3/8")	53.50 - 54.21	1.0000	1.0000
L31	5	WR-VG86ST-BRD(3/4")	53.50 - 54.21	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	6	2.5" Flex Conduit	53.50 - 54.21	1.0000	1.0000
L31	12	ATCB-B01-005(5/16)	53.50 - 54.21	1.0000	1.0000
L31	13	FSJ4-50B(1/2")	53.50 - 54.21	1.0000	1.0000
L31	14	FSJ4-50B(1/2")	53.50 - 54.21	1.0000	1.0000
L31	15	2.5" Flex Conduit	53.50 - 54.21	1.0000	1.0000
L31	19	LCF114-50J(1-1/4")	53.50 - 54.21	1.0000	1.0000
L31	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	53.50 - 54.21	1.0000	1.0000
L31	21	MLC Hybrid 6/6(7/8")	53.50 - 54.21	1.0000	1.0000
L31	24	Climbing Pegs	53.50 - 54.21	1.0000	1.0000
L31	42	6"x1" flat plate	53.50 - 54.21	1.0000	1.0000
L31	43	6"x1" flat plate	53.50 - 54.21	1.0000	1.0000
L31	45	4"x0.75" flat plate	53.50 - 54.21	1.0000	1.0000
L31	46	4"x0.75" flat plate	53.50 - 54.21	1.0000	1.0000
L31	47	4"x0.75" flat plate	53.50 - 54.21	1.0000	1.0000
L31	50	4.5"x1" flat plate	53.50 - 54.21	1.0000	1.0000
L31	51	4"x0.75" flat plate	53.50 - 54.21	1.0000	1.0000
L31	52	4"x0.75" flat plate	53.50 - 54.21	1.0000	1.0000
L31	53	4"x0.75" flat plate	53.50 - 54.21	1.0000	1.0000
L32	1	LDF6-50A(1-1/4")	53.25 - 53.50	1.0000	1.0000
L32	2	FB-L98B-002-75000(3/8")	53.25 - 53.50	1.0000	1.0000
L32	3	WR-VG86ST-BRD(3/4)	53.25 - 53.50	1.0000	1.0000
L32	4	FB-L98B-002-75000(3/8")	53.25 - 53.50	1.0000	1.0000
L32	5	WR-VG86ST-BRD(3/4")	53.25 - 53.50	1.0000	1.0000
L32	6	2.5" Flex Conduit	53.25 - 53.50	1.0000	1.0000
L32	12	ATCB-B01-005(5/16)	53.25 - 53.50	1.0000	1.0000
L32	13	FSJ4-50B(1/2")	53.25 - 53.50	1.0000	1.0000
L32	14	FSJ4-50B(1/2")	53.25 - 53.50	1.0000	1.0000
L32	15	2.5" Flex Conduit	53.25 - 53.50	1.0000	1.0000
L32	19	LCF114-50J(1-1/4")	53.25 - 53.50	1.0000	1.0000
L32	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	53.25 - 53.50	1.0000	1.0000
L32	21	MLC Hybrid 6/6(7/8")	53.25 - 53.50	1.0000	1.0000
L32	24	Climbing Pegs	53.25 - 53.50	1.0000	1.0000
L32	42	6"x1" flat plate	53.25 - 53.50	1.0000	1.0000
L32	43	6"x1" flat plate	53.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	45	4"x0.75" flat plate	53.50 53.25 - 53.50	1.0000	1.0000
L32	46	4"x0.75" flat plate	53.25 - 53.50	1.0000	1.0000
L32	47	4"x0.75" flat plate	53.25 - 53.50	1.0000	1.0000
L32	50	4.5"x1" flat plate	53.25 - 53.50	1.0000	1.0000
L32	51	4"x0.75" flat plate	53.25 - 53.50	1.0000	1.0000
L32	52	4"x0.75" flat plate	53.25 - 53.50	1.0000	1.0000
L32	53	4"x0.75" flat plate	53.25 - 53.50	1.0000	1.0000
L33	1	LDF6-50A(1-1/4")	48.25 - 53.25	1.0000	1.0000
L33	2	FB-L98B-002-75000(3/8")	48.25 - 53.25	1.0000	1.0000
L33	3	WR-VG86ST-BRD(3/4)	48.25 - 53.25	1.0000	1.0000
L33	4	FB-L98B-002-75000(3/8")	48.25 - 53.25	1.0000	1.0000
L33	5	WR-VG86ST-BRD(3/4")	48.25 - 53.25	1.0000	1.0000
L33	6	2.5" Flex Conduit	48.25 - 53.25	1.0000	1.0000
L33	12	ATCB-B01-005(5/16)	48.25 - 53.25	1.0000	1.0000
L33	13	FSJ4-50B(1/2")	48.25 - 53.25	1.0000	1.0000
L33	14	FSJ4-50B(1/2")	48.25 - 53.25	1.0000	1.0000
L33	15	2.5" Flex Conduit	48.25 - 53.25	1.0000	1.0000
L33	19	LCF114-50J(1-1/4")	48.25 - 53.25	1.0000	1.0000
L33	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	48.25 - 53.25	1.0000	1.0000
L33	21	MLC Hybrid 6/6(7/8")	48.25 - 53.25	1.0000	1.0000
L33	24	Climbing Pegs	48.25 - 53.25	1.0000	1.0000
L33	42	6"x1" flat plate	48.25 - 53.25	1.0000	1.0000
L33	43	6"x1" flat plate	48.25 - 53.25	1.0000	1.0000
L33	45	4"x0.75" flat plate	48.25 - 53.25	1.0000	1.0000
L33	46	4"x0.75" flat plate	48.25 - 53.25	1.0000	1.0000
L33	47	4"x0.75" flat plate	48.25 - 53.25	1.0000	1.0000
L33	50	4.5"x1" flat plate	48.25 - 53.25	1.0000	1.0000
L33	51	4"x0.75" flat plate	48.25 - 53.25	1.0000	1.0000
L33	52	4"x0.75" flat plate	48.25 - 53.25	1.0000	1.0000
L33	53	4"x0.75" flat plate	48.25 - 53.25	1.0000	1.0000
L34	1	LDF6-50A(1-1/4")	44.58 - 48.25	1.0000	1.0000
L34	2	FB-L98B-002-75000(3/8")	44.58 - 48.25	1.0000	1.0000
L34	3	WR-VG86ST-BRD(3/4)	44.58 - 48.25	1.0000	1.0000
L34	4	FB-L98B-002-75000(3/8")	44.58 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L34	5	WR-VG86ST-BRD(3/4")	48.25 - 44.58	1.0000	1.0000
L34	6	2.5" Flex Conduit	48.25 - 44.58	1.0000	1.0000
L34	12	ATCB-B01-005(5/16)	48.25 - 44.58	1.0000	1.0000
L34	13	FSJ4-50B(1/2")	48.25 - 44.58	1.0000	1.0000
L34	14	FSJ4-50B(1/2")	48.25 - 44.58	1.0000	1.0000
L34	15	2.5" Flex Conduit	48.25 - 44.58	1.0000	1.0000
L34	19	LCF114-50J(1-1/4")	48.25 - 44.58	1.0000	1.0000
L34	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	48.25 - 44.58	1.0000	1.0000
L34	21	MLC Hybrid 6/6(7/8")	48.25 - 44.58	1.0000	1.0000
L34	24	Climbing Pegs	48.25 - 44.58	1.0000	1.0000
L34	39	4"x0.75" flat plate	45.83 - 44.58	1.0000	1.0000
L34	40	4"x0.75" flat plate	45.83 - 44.58	1.0000	1.0000
L34	41	4"x0.75" flat plate	45.83 - 44.58	1.0000	1.0000
L34	42	6"x1" flat plate	48.25 - 44.58	1.0000	1.0000
L34	43	6"x1" flat plate	48.25 - 44.58	1.0000	1.0000
L34	45	4"x0.75" flat plate	48.25 - 44.58	1.0000	1.0000
L34	46	4"x0.75" flat plate	48.25 - 44.58	1.0000	1.0000
L34	47	4"x0.75" flat plate	48.25 - 44.58	1.0000	1.0000
L34	50	4.5"x1" flat plate	48.25 - 44.58	1.0000	1.0000
L34	51	4"x0.75" flat plate	48.25 - 44.58	1.0000	1.0000
L34	52	4"x0.75" flat plate	48.25 - 44.58	1.0000	1.0000
L34	53	4"x0.75" flat plate	48.25 - 44.58	1.0000	1.0000
L35	1	LDF6-50A(1-1/4")	44.33 - 44.58	1.0000	1.0000
L35	2	FB-L98B-002-75000(3/8")	44.33 - 44.58	1.0000	1.0000
L35	3	WR-VG86ST-BRD(3/4)	44.33 - 44.58	1.0000	1.0000
L35	4	FB-L98B-002-75000(3/8")	44.33 - 44.58	1.0000	1.0000
L35	5	WR-VG86ST-BRD(3/4")	44.33 - 44.58	1.0000	1.0000
L35	6	2.5" Flex Conduit	44.33 - 44.58	1.0000	1.0000
L35	12	ATCB-B01-005(5/16)	44.33 - 44.58	1.0000	1.0000
L35	13	FSJ4-50B(1/2")	44.33 - 44.58	1.0000	1.0000
L35	14	FSJ4-50B(1/2")	44.33 - 44.58	1.0000	1.0000
L35	15	2.5" Flex Conduit	44.33 - 44.58	1.0000	1.0000
L35	19	LCF114-50J(1-1/4")	44.33 - 44.58	1.0000	1.0000
L35	20	MLE Hybrid	44.33 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		9Power/18Fiber RL 2(1 5/8)	44.58		
L35	21	MLC Hybrid 6/6(7/8")	44.33 - 44.58	1.0000	1.0000
L35	24	Climbing Pegs	44.33 - 44.58	1.0000	1.0000
L35	39	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	40	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	41	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	42	6"x1" flat plate	44.33 - 44.58	1.0000	1.0000
L35	43	6"x1" flat plate	44.33 - 44.58	1.0000	1.0000
L35	45	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	46	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	47	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	50	4.5"x1" flat plate	44.50 - 44.58	1.0000	1.0000
L35	51	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	52	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L35	53	4"x0.75" flat plate	44.33 - 44.58	1.0000	1.0000
L36	1	LDF6-50A(1-1/4")	41.83 - 44.33	1.0000	1.0000
L36	2	FB-L98B-002-75000(3/8")	41.83 - 44.33	1.0000	1.0000
L36	3	WR-VG86ST-BRD(3/4)	41.83 - 44.33	1.0000	1.0000
L36	4	FB-L98B-002-75000(3/8")	41.83 - 44.33	1.0000	1.0000
L36	5	WR-VG86ST-BRD(3/4")	41.83 - 44.33	1.0000	1.0000
L36	6	2.5" Flex Conduit	41.83 - 44.33	1.0000	1.0000
L36	12	ATCB-B01-005(5/16)	41.83 - 44.33	1.0000	1.0000
L36	13	FSJ4-50B(1/2")	41.83 - 44.33	1.0000	1.0000
L36	14	FSJ4-50B(1/2")	41.83 - 44.33	1.0000	1.0000
L36	15	2.5" Flex Conduit	41.83 - 44.33	1.0000	1.0000
L36	19	LCF114-50J(1-1/4")	41.83 - 44.33	1.0000	1.0000
L36	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	41.83 - 44.33	1.0000	1.0000
L36	21	MLC Hybrid 6/6(7/8")	41.83 - 44.33	1.0000	1.0000
L36	24	Climbing Pegs	41.83 - 44.33	1.0000	1.0000
L36	38	6"x1" flat plate	41.83 - 44.33	1.0000	1.0000
L36	39	4"x0.75" flat plate	41.83 - 44.33	1.0000	1.0000
L36	40	4"x0.75" flat plate	41.83 - 44.33	1.0000	1.0000
L36	41	4"x0.75" flat plate	41.83 - 44.33	1.0000	1.0000
L36	42	6"x1" flat plate	41.83 - 44.33	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L36	43	6"x1" flat plate	41.83 - 44.33	1.0000	1.0000
L36	45	4"x0.75" flat plate	41.83 - 44.33	1.0000	1.0000
L36	46	4"x0.75" flat plate	41.83 - 44.33	1.0000	1.0000
L36	47	4"x0.75" flat plate	41.83 - 44.33	1.0000	1.0000
L36	51	4"x0.75" flat plate	43.25 - 44.33	1.0000	1.0000
L36	52	4"x0.75" flat plate	43.25 - 44.33	1.0000	1.0000
L36	53	4"x0.75" flat plate	43.25 - 44.33	1.0000	1.0000
L37	1	LDF6-50A(1-1/4")	41.58 - 41.83	1.0000	1.0000
L37	2	FB-L98B-002-75000(3/8")	41.58 - 41.83	1.0000	1.0000
L37	3	WR-VG86ST-BRD(3/4)	41.58 - 41.83	1.0000	1.0000
L37	4	FB-L98B-002-75000(3/8")	41.58 - 41.83	1.0000	1.0000
L37	5	WR-VG86ST-BRD(3/4")	41.58 - 41.83	1.0000	1.0000
L37	6	2.5" Flex Conduit	41.58 - 41.83	1.0000	1.0000
L37	12	ATCB-B01-005(5/16)	41.58 - 41.83	1.0000	1.0000
L37	13	FSJ4-50B(1/2")	41.58 - 41.83	1.0000	1.0000
L37	14	FSJ4-50B(1/2")	41.58 - 41.83	1.0000	1.0000
L37	15	2.5" Flex Conduit	41.58 - 41.83	1.0000	1.0000
L37	19	LCF114-50J(1-1/4")	41.58 - 41.83	1.0000	1.0000
L37	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	41.58 - 41.83	1.0000	1.0000
L37	21	MLC Hybrid 6/6(7/8")	41.58 - 41.83	1.0000	1.0000
L37	24	Climbing Pegs	41.58 - 41.83	1.0000	1.0000
L37	38	6"x1" flat plate	41.58 - 41.83	1.0000	1.0000
L37	39	4"x0.75" flat plate	41.58 - 41.83	1.0000	1.0000
L37	40	4"x0.75" flat plate	41.58 - 41.83	1.0000	1.0000
L37	41	4"x0.75" flat plate	41.58 - 41.83	1.0000	1.0000
L37	42	6"x1" flat plate	41.58 - 41.83	1.0000	1.0000
L37	43	6"x1" flat plate	41.58 - 41.83	1.0000	1.0000
L37	45	4"x0.75" flat plate	41.58 - 41.83	1.0000	1.0000
L37	46	4"x0.75" flat plate	41.58 - 41.83	1.0000	1.0000
L37	47	4"x0.75" flat plate	41.58 - 41.83	1.0000	1.0000
L38	1	LDF6-50A(1-1/4")	34.52 - 41.58	1.0000	1.0000
L38	2	FB-L98B-002-75000(3/8")	34.52 - 41.58	1.0000	1.0000
L38	3	WR-VG86ST-BRD(3/4)	34.52 - 41.58	1.0000	1.0000
L38	4	FB-L98B-002-75000(3/8")	34.52 - 41.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L38	5	WR-VG86ST-BRD(3/4")	34.52 - 41.58	1.0000	1.0000
L38	6	2.5" Flex Conduit	34.52 - 41.58	1.0000	1.0000
L38	12	ATCB-B01-005(5/16)	34.52 - 41.58	1.0000	1.0000
L38	13	FSJ4-50B(1/2")	34.52 - 41.58	1.0000	1.0000
L38	14	FSJ4-50B(1/2")	34.52 - 41.58	1.0000	1.0000
L38	15	2.5" Flex Conduit	34.52 - 41.58	1.0000	1.0000
L38	19	LCF114-50J(1-1/4")	34.52 - 41.58	1.0000	1.0000
L38	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	34.52 - 41.58	1.0000	1.0000
L38	21	MLC Hybrid 6/6(7/8")	34.52 - 41.58	1.0000	1.0000
L38	24	Climbing Pegs	34.52 - 41.58	1.0000	1.0000
L38	38	6"x1" flat plate	34.52 - 41.58	1.0000	1.0000
L38	39	4"x0.75" flat plate	34.52 - 41.58	1.0000	1.0000
L38	40	4"x0.75" flat plate	34.52 - 41.58	1.0000	1.0000
L38	41	4"x0.75" flat plate	34.52 - 41.58	1.0000	1.0000
L38	42	6"x1" flat plate	34.52 - 41.58	1.0000	1.0000
L38	43	6"x1" flat plate	34.52 - 41.58	1.0000	1.0000
L38	45	4"x0.75" flat plate	34.52 - 41.58	1.0000	1.0000
L38	46	4"x0.75" flat plate	34.52 - 41.58	1.0000	1.0000
L38	47	4"x0.75" flat plate	34.52 - 41.58	1.0000	1.0000
L40	1	LDF6-50A(1-1/4")	31.46 - 34.00	1.0000	1.0000
L40	2	FB-L98B-002-75000(3/8")	31.46 - 34.00	1.0000	1.0000
L40	3	WR-VG86ST-BRD(3/4)	31.46 - 34.00	1.0000	1.0000
L40	4	FB-L98B-002-75000(3/8")	31.46 - 34.00	1.0000	1.0000
L40	5	WR-VG86ST-BRD(3/4")	31.46 - 34.00	1.0000	1.0000
L40	6	2.5" Flex Conduit	31.46 - 34.00	1.0000	1.0000
L40	12	ATCB-B01-005(5/16)	31.46 - 34.00	1.0000	1.0000
L40	13	FSJ4-50B(1/2")	31.46 - 34.00	1.0000	1.0000
L40	14	FSJ4-50B(1/2")	31.46 - 34.00	1.0000	1.0000
L40	15	2.5" Flex Conduit	31.46 - 34.00	1.0000	1.0000
L40	19	LCF114-50J(1-1/4")	31.46 - 34.00	1.0000	1.0000
L40	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	31.46 - 34.00	1.0000	1.0000
L40	21	MLC Hybrid 6/6(7/8")	31.46 - 34.00	1.0000	1.0000
L40	24	Climbing Pegs	31.46 - 34.00	1.0000	1.0000
L40	38	6"x1" flat plate	31.46 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L40	39	4"x0.75" flat plate	34.00 31.46 -	1.0000	1.0000
L40	40	4"x0.75" flat plate	34.00 31.46 -	1.0000	1.0000
L40	41	4"x0.75" flat plate	34.00 31.46 -	1.0000	1.0000
L40	42	6"x1" flat plate	34.00 31.46 -	1.0000	1.0000
L40	43	6"x1" flat plate	34.00 31.46 -	1.0000	1.0000
L40	45	4"x0.75" flat plate	34.00 31.46 -	1.0000	1.0000
L40	46	4"x0.75" flat plate	34.00 31.46 -	1.0000	1.0000
L40	47	4"x0.75" flat plate	34.00 31.46 -	1.0000	1.0000
L41	1	LDF6-50A(1-1/4")	34.00 31.21 -	1.0000	1.0000
L41	2	FB-L98B-002-75000(3/8")	31.46 31.21 -	1.0000	1.0000
L41	3	WR-VG86ST-BRD(3/4)	31.46 31.21 -	1.0000	1.0000
L41	4	FB-L98B-002-75000(3/8")	31.46 31.21 -	1.0000	1.0000
L41	5	WR-VG86ST-BRD(3/4")	31.46 31.21 -	1.0000	1.0000
L41	6	2.5" Flex Conduit	31.46 31.21 -	1.0000	1.0000
L41	12	ATCB-B01-005(5/16)	31.46 31.21 -	1.0000	1.0000
L41	13	FSJ4-50B(1/2")	31.46 31.21 -	1.0000	1.0000
L41	14	FSJ4-50B(1/2")	31.46 31.21 -	1.0000	1.0000
L41	15	2.5" Flex Conduit	31.46 31.21 -	1.0000	1.0000
L41	19	LCF114-50J(1-1/4")	31.46 31.21 -	1.0000	1.0000
L41	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	31.46 31.21 - 31.46	1.0000	1.0000
L41	21	MLC Hybrid 6/6(7/8")	31.21 -	1.0000	1.0000
L41	24	Climbing Pegs	31.46 31.21 -	1.0000	1.0000
L41	38	6"x1" flat plate	31.46 31.21 -	1.0000	1.0000
L41	39	4"x0.75" flat plate	31.46 31.21 -	1.0000	1.0000
L41	40	4"x0.75" flat plate	31.46 31.21 -	1.0000	1.0000
L41	41	4"x0.75" flat plate	31.46 31.21 -	1.0000	1.0000
L41	42	6"x1" flat plate	31.46 31.21 -	1.0000	1.0000
L41	43	6"x1" flat plate	31.46 31.21 -	1.0000	1.0000
L41	45	4"x0.75" flat plate	31.46 31.21 -	1.0000	1.0000
L41	46	4"x0.75" flat plate	31.46 31.21 -	1.0000	1.0000
L41	47	4"x0.75" flat plate	31.46 31.21 -	1.0000	1.0000
L42	1	LDF6-50A(1-1/4")	31.46 29.46 -	1.0000	1.0000
L42	2	FB-L98B-002-75000(3/8")	31.21 29.46 -	1.0000	1.0000
L42	3	WR-VG86ST-BRD(3/4)	31.21 29.46 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L42	4	FB-L98B-002-75000(3/8")	31.21 29.46 - 31.21	1.0000	1.0000
L42	5	WR-VG86ST-BRD(3/4")	29.46 - 31.21	1.0000	1.0000
L42	6	2.5" Flex Conduit	29.46 - 31.21	1.0000	1.0000
L42	12	ATCB-B01-005(5/16)	29.46 - 31.21	1.0000	1.0000
L42	13	FSJ4-50B(1/2")	29.46 - 31.21	1.0000	1.0000
L42	14	FSJ4-50B(1/2")	29.46 - 31.21	1.0000	1.0000
L42	15	2.5" Flex Conduit	29.46 - 31.21	1.0000	1.0000
L42	19	LCF114-50J(1-1/4")	29.46 - 31.21	1.0000	1.0000
L42	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	29.46 - 31.21	1.0000	1.0000
L42	21	MLC Hybrid 6/6(7/8")	29.46 - 31.21	1.0000	1.0000
L42	24	Climbing Pegs	29.46 - 31.21	1.0000	1.0000
L42	30	4"x0.75" flat plate	29.46 - 30.50	1.0000	1.0000
L42	31	4"x0.75" flat plate	29.46 - 30.50	1.0000	1.0000
L42	32	4"x0.75" flat plate	29.46 - 30.50	1.0000	1.0000
L42	38	6"x1" flat plate	29.46 - 31.21	1.0000	1.0000
L42	39	4"x0.75" flat plate	29.46 - 31.21	1.0000	1.0000
L42	40	4"x0.75" flat plate	29.46 - 31.21	1.0000	1.0000
L42	41	4"x0.75" flat plate	29.46 - 31.21	1.0000	1.0000
L42	42	6"x1" flat plate	29.46 - 31.21	1.0000	1.0000
L42	43	6"x1" flat plate	29.46 - 31.21	1.0000	1.0000
L42	45	4"x0.75" flat plate	30.50 - 31.21	1.0000	1.0000
L42	46	4"x0.75" flat plate	30.50 - 31.21	1.0000	1.0000
L42	47	4"x0.75" flat plate	30.50 - 31.21	1.0000	1.0000
L43	1	LDF6-50A(1-1/4")	29.21 - 29.46	1.0000	1.0000
L43	2	FB-L98B-002-75000(3/8")	29.21 - 29.46	1.0000	1.0000
L43	3	WR-VG86ST-BRD(3/4)	29.21 - 29.46	1.0000	1.0000
L43	4	FB-L98B-002-75000(3/8")	29.21 - 29.46	1.0000	1.0000
L43	5	WR-VG86ST-BRD(3/4")	29.21 - 29.46	1.0000	1.0000
L43	6	2.5" Flex Conduit	29.21 - 29.46	1.0000	1.0000
L43	12	ATCB-B01-005(5/16)	29.21 - 29.46	1.0000	1.0000
L43	13	FSJ4-50B(1/2")	29.21 - 29.46	1.0000	1.0000
L43	14	FSJ4-50B(1/2")	29.21 - 29.46	1.0000	1.0000
L43	15	2.5" Flex Conduit	29.21 - 29.46	1.0000	1.0000
L43	19	LCF114-50J(1-1/4")	29.21 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			29.46		
L43	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	29.21 - 29.46	1.0000	1.0000
L43	21	MLC Hybrid 6/6(7/8")	29.21 - 29.46	1.0000	1.0000
L43	24	Climbing Pegs	29.21 - 29.46	1.0000	1.0000
L43	30	4"x0.75" flat plate	29.21 - 29.46	1.0000	1.0000
L43	31	4"x0.75" flat plate	29.21 - 29.46	1.0000	1.0000
L43	32	4"x0.75" flat plate	29.21 - 29.46	1.0000	1.0000
L43	36	6"x1" flat plate	29.21 - 29.33	1.0000	1.0000
L43	37	6"x1" flat plate	29.21 - 29.33	1.0000	1.0000
L43	38	6"x1" flat plate	29.21 - 29.46	1.0000	1.0000
L43	39	4"x0.75" flat plate	29.21 - 29.46	1.0000	1.0000
L43	40	4"x0.75" flat plate	29.21 - 29.46	1.0000	1.0000
L43	41	4"x0.75" flat plate	29.21 - 29.46	1.0000	1.0000
L43	42	6"x1" flat plate	29.21 - 29.46	1.0000	1.0000
L43	43	6"x1" flat plate	29.21 - 29.46	1.0000	1.0000
L44	1	LDF6-50A(1-1/4")	26.83 - 29.21	1.0000	1.0000
L44	2	FB-L98B-002-75000(3/8")	26.83 - 29.21	1.0000	1.0000
L44	3	WR-VG86ST-BRD(3/4)	26.83 - 29.21	1.0000	1.0000
L44	4	FB-L98B-002-75000(3/8")	26.83 - 29.21	1.0000	1.0000
L44	5	WR-VG86ST-BRD(3/4")	26.83 - 29.21	1.0000	1.0000
L44	6	2.5" Flex Conduit	26.83 - 29.21	1.0000	1.0000
L44	12	ATCB-B01-005(5/16)	26.83 - 29.21	1.0000	1.0000
L44	13	FSJ4-50B(1/2")	26.83 - 29.21	1.0000	1.0000
L44	14	FSJ4-50B(1/2")	26.83 - 29.21	1.0000	1.0000
L44	15	2.5" Flex Conduit	26.83 - 29.21	1.0000	1.0000
L44	19	LCF114-50J(1-1/4")	26.83 - 29.21	1.0000	1.0000
L44	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	26.83 - 29.21	1.0000	1.0000
L44	21	MLC Hybrid 6/6(7/8")	26.83 - 29.21	1.0000	1.0000
L44	24	Climbing Pegs	26.83 - 29.21	1.0000	1.0000
L44	30	4"x0.75" flat plate	26.83 - 29.21	1.0000	1.0000
L44	31	4"x0.75" flat plate	26.83 - 29.21	1.0000	1.0000
L44	32	4"x0.75" flat plate	26.83 - 29.21	1.0000	1.0000
L44	36	6"x1" flat plate	26.83 - 29.21	1.0000	1.0000
L44	37	6"x1" flat plate	26.83 - 29.21	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	38	6"x1" flat plate	26.83 - 29.21	1.0000	1.0000
L44	39	4"x0.75" flat plate	26.83 - 29.21	1.0000	1.0000
L44	40	4"x0.75" flat plate	26.83 - 29.21	1.0000	1.0000
L44	41	4"x0.75" flat plate	26.83 - 29.21	1.0000	1.0000
L44	42	6"x1" flat plate	26.83 - 29.21	1.0000	1.0000
L44	43	6"x1" flat plate	26.83 - 29.21	1.0000	1.0000
L45	1	LDF6-50A(1-1/4")	26.58 - 26.83	1.0000	1.0000
L45	2	FB-L98B-002-75000(3/8")	26.58 - 26.83	1.0000	1.0000
L45	3	WR-VG86ST-BRD(3/4)	26.58 - 26.83	1.0000	1.0000
L45	4	FB-L98B-002-75000(3/8")	26.58 - 26.83	1.0000	1.0000
L45	5	WR-VG86ST-BRD(3/4")	26.58 - 26.83	1.0000	1.0000
L45	6	2.5" Flex Conduit	26.58 - 26.83	1.0000	1.0000
L45	12	ATCB-B01-005(5/16)	26.58 - 26.83	1.0000	1.0000
L45	13	FSJ4-50B(1/2")	26.58 - 26.83	1.0000	1.0000
L45	14	FSJ4-50B(1/2")	26.58 - 26.83	1.0000	1.0000
L45	15	2.5" Flex Conduit	26.58 - 26.83	1.0000	1.0000
L45	19	LCF114-50J(1-1/4")	26.58 - 26.83	1.0000	1.0000
L45	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	26.58 - 26.83	1.0000	1.0000
L45	21	MLC Hybrid 6/6(7/8")	26.58 - 26.83	1.0000	1.0000
L45	24	Climbing Pegs	26.58 - 26.83	1.0000	1.0000
L45	30	4"x0.75" flat plate	26.58 - 26.83	1.0000	1.0000
L45	31	4"x0.75" flat plate	26.58 - 26.83	1.0000	1.0000
L45	32	4"x0.75" flat plate	26.58 - 26.83	1.0000	1.0000
L45	36	6"x1" flat plate	26.58 - 26.83	1.0000	1.0000
L45	37	6"x1" flat plate	26.58 - 26.83	1.0000	1.0000
L45	38	6"x1" flat plate	26.58 - 26.83	1.0000	1.0000
L45	39	4"x0.75" flat plate	26.58 - 26.83	1.0000	1.0000
L45	40	4"x0.75" flat plate	26.58 - 26.83	1.0000	1.0000
L45	41	4"x0.75" flat plate	26.58 - 26.83	1.0000	1.0000
L45	42	6"x1" flat plate	26.58 - 26.83	1.0000	1.0000
L45	43	6"x1" flat plate	26.58 - 26.83	1.0000	1.0000
L46	1	LDF6-50A(1-1/4")	21.58 - 26.58	1.0000	1.0000
L46	2	FB-L98B-002-75000(3/8")	21.58 - 26.58	1.0000	1.0000
L46	3	WR-VG86ST-BRD(3/4)	21.58 - 26.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L46	4	FB-L98B-002-75000(3/8")	21.58 - 26.58	1.0000	1.0000
L46	5	WR-VG86ST-BRD(3/4")	21.58 - 26.58	1.0000	1.0000
L46	6	2.5" Flex Conduit	21.58 - 26.58	1.0000	1.0000
L46	12	ATCB-B01-005(5/16)	21.58 - 26.58	1.0000	1.0000
L46	13	FSJ4-50B(1/2")	21.58 - 26.58	1.0000	1.0000
L46	14	FSJ4-50B(1/2")	21.58 - 26.58	1.0000	1.0000
L46	15	2.5" Flex Conduit	21.58 - 26.58	1.0000	1.0000
L46	19	LCF114-50J(1-1/4")	21.58 - 26.58	1.0000	1.0000
L46	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	21.58 - 26.58	1.0000	1.0000
L46	21	MLC Hybrid 6/6(7/8")	21.58 - 26.58	1.0000	1.0000
L46	24	Climbing Pegs	21.58 - 26.58	1.0000	1.0000
L46	30	4"x0.75" flat plate	21.58 - 26.58	1.0000	1.0000
L46	31	4"x0.75" flat plate	21.58 - 26.58	1.0000	1.0000
L46	32	4"x0.75" flat plate	21.58 - 26.58	1.0000	1.0000
L46	36	6"x1" flat plate	21.58 - 26.58	1.0000	1.0000
L46	37	6"x1" flat plate	21.58 - 26.58	1.0000	1.0000
L46	38	6"x1" flat plate	21.58 - 26.58	1.0000	1.0000
L46	39	4"x0.75" flat plate	21.58 - 26.58	1.0000	1.0000
L46	40	4"x0.75" flat plate	21.58 - 26.58	1.0000	1.0000
L46	41	4"x0.75" flat plate	21.58 - 26.58	1.0000	1.0000
L46	42	6"x1" flat plate	21.58 - 26.58	1.0000	1.0000
L46	43	6"x1" flat plate	21.58 - 26.58	1.0000	1.0000
L47	1	LDF6-50A(1-1/4")	18.75 - 21.58	1.0000	1.0000
L47	2	FB-L98B-002-75000(3/8")	18.75 - 21.58	1.0000	1.0000
L47	3	WR-VG86ST-BRD(3/4)	18.75 - 21.58	1.0000	1.0000
L47	4	FB-L98B-002-75000(3/8")	18.75 - 21.58	1.0000	1.0000
L47	5	WR-VG86ST-BRD(3/4")	18.75 - 21.58	1.0000	1.0000
L47	6	2.5" Flex Conduit	18.75 - 21.58	1.0000	1.0000
L47	12	ATCB-B01-005(5/16)	18.75 - 21.58	1.0000	1.0000
L47	13	FSJ4-50B(1/2")	18.75 - 21.58	1.0000	1.0000
L47	14	FSJ4-50B(1/2")	18.75 - 21.58	1.0000	1.0000
L47	15	2.5" Flex Conduit	18.75 - 21.58	1.0000	1.0000
L47	19	LCF114-50J(1-1/4")	18.75 - 21.58	1.0000	1.0000
L47	20	MLE Hybrid 9Power/18Fiber RL 2(1	18.75 - 21.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		5/8)			
L47	21	MLC Hybrid 6/6(7/8")	18.75 - 21.58	1.0000	1.0000
L47	24	Climbing Pegs	18.75 - 21.58	1.0000	1.0000
L47	30	4"x0.75" flat plate	18.75 - 21.58	1.0000	1.0000
L47	31	4"x0.75" flat plate	18.75 - 21.58	1.0000	1.0000
L47	32	4"x0.75" flat plate	18.75 - 21.58	1.0000	1.0000
L47	33	6.5"x1.25" flat plate	18.75 - 20.75	1.0000	1.0000
L47	34	6.5"x1.25" flat plate	18.75 - 20.75	1.0000	1.0000
L47	35	6.5"x1.25" flat plate	18.75 - 20.75	1.0000	1.0000
L47	36	6"x1" flat plate	18.75 - 21.58	1.0000	1.0000
L47	37	6"x1" flat plate	18.75 - 21.58	1.0000	1.0000
L47	38	6"x1" flat plate	18.75 - 21.58	1.0000	1.0000
L47	39	4"x0.75" flat plate	18.75 - 21.58	1.0000	1.0000
L47	40	4"x0.75" flat plate	18.75 - 21.58	1.0000	1.0000
L47	41	4"x0.75" flat plate	18.75 - 21.58	1.0000	1.0000
L47	42	6"x1" flat plate	21.00 - 21.58	1.0000	1.0000
L47	43	6"x1" flat plate	21.00 - 21.58	1.0000	1.0000
L48	1	LDF6-50A(1-1/4")	18.50 - 18.75	1.0000	1.0000
L48	2	FB-L98B-002-75000(3/8")	18.50 - 18.75	1.0000	1.0000
L48	3	WR-VG86ST-BRD(3/4)	18.50 - 18.75	1.0000	1.0000
L48	4	FB-L98B-002-75000(3/8")	18.50 - 18.75	1.0000	1.0000
L48	5	WR-VG86ST-BRD(3/4")	18.50 - 18.75	1.0000	1.0000
L48	6	2.5" Flex Conduit	18.50 - 18.75	1.0000	1.0000
L48	12	ATCB-B01-005(5/16)	18.50 - 18.75	1.0000	1.0000
L48	13	FSJ4-50B(1/2")	18.50 - 18.75	1.0000	1.0000
L48	14	FSJ4-50B(1/2")	18.50 - 18.75	1.0000	1.0000
L48	15	2.5" Flex Conduit	18.50 - 18.75	1.0000	1.0000
L48	19	LCF114-50J(1-1/4")	18.50 - 18.75	1.0000	1.0000
L48	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	18.50 - 18.75	1.0000	1.0000
L48	21	MLC Hybrid 6/6(7/8")	18.50 - 18.75	1.0000	1.0000
L48	24	Climbing Pegs	18.50 - 18.75	1.0000	1.0000
L48	30	4"x0.75" flat plate	18.50 - 18.75	1.0000	1.0000
L48	31	4"x0.75" flat plate	18.50 - 18.75	1.0000	1.0000
L48	32	4"x0.75" flat plate	18.50 - 18.75	1.0000	1.0000
L48	33	6.5"x1.25" flat plate	18.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	34	6.5"x1.25" flat plate	18.75 18.50 - 18.75	1.0000	1.0000
L48	35	6.5"x1.25" flat plate	18.50 - 18.75	1.0000	1.0000
L48	36	6"x1" flat plate	18.50 - 18.75	1.0000	1.0000
L48	37	6"x1" flat plate	18.50 - 18.75	1.0000	1.0000
L48	38	6"x1" flat plate	18.50 - 18.75	1.0000	1.0000
L48	39	4"x0.75" flat plate	18.50 - 18.75	1.0000	1.0000
L48	40	4"x0.75" flat plate	18.50 - 18.75	1.0000	1.0000
L48	41	4"x0.75" flat plate	18.50 - 18.75	1.0000	1.0000
L49	1	LDF6-50A(1-1/4")	18.00 - 18.50	1.0000	1.0000
L49	2	FB-L98B-002-75000(3/8")	18.00 - 18.50	1.0000	1.0000
L49	3	WR-VG86ST-BRD(3/4)	18.00 - 18.50	1.0000	1.0000
L49	4	FB-L98B-002-75000(3/8")	18.00 - 18.50	1.0000	1.0000
L49	5	WR-VG86ST-BRD(3/4")	18.00 - 18.50	1.0000	1.0000
L49	6	2.5" Flex Conduit	18.00 - 18.50	1.0000	1.0000
L49	12	ATCB-B01-005(5/16)	18.00 - 18.50	1.0000	1.0000
L49	13	FSJ4-50B(1/2")	18.00 - 18.50	1.0000	1.0000
L49	14	FSJ4-50B(1/2")	18.00 - 18.50	1.0000	1.0000
L49	15	2.5" Flex Conduit	18.00 - 18.50	1.0000	1.0000
L49	19	LCF114-50J(1-1/4")	18.00 - 18.50	1.0000	1.0000
L49	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	18.00 - 18.50	1.0000	1.0000
L49	21	MLC Hybrid 6/6(7/8")	18.00 - 18.50	1.0000	1.0000
L49	24	Climbing Pegs	18.00 - 18.50	1.0000	1.0000
L49	30	4"x0.75" flat plate	18.00 - 18.50	1.0000	1.0000
L49	31	4"x0.75" flat plate	18.00 - 18.50	1.0000	1.0000
L49	32	4"x0.75" flat plate	18.00 - 18.50	1.0000	1.0000
L49	33	6.5"x1.25" flat plate	18.00 - 18.50	1.0000	1.0000
L49	34	6.5"x1.25" flat plate	18.00 - 18.50	1.0000	1.0000
L49	35	6.5"x1.25" flat plate	18.00 - 18.50	1.0000	1.0000
L49	36	6"x1" flat plate	18.00 - 18.50	1.0000	1.0000
L49	37	6"x1" flat plate	18.00 - 18.50	1.0000	1.0000
L49	38	6"x1" flat plate	18.00 - 18.50	1.0000	1.0000
L49	39	4"x0.75" flat plate	18.00 - 18.50	1.0000	1.0000
L49	40	4"x0.75" flat plate	18.00 - 18.50	1.0000	1.0000
L49	41	4"x0.75" flat plate	18.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L50	1	LDF6-50A(1-1/4")	18.50 17.75 - 18.00	1.0000	1.0000
L50	2	FB-L98B-002-75000(3/8")	17.75 - 18.00	1.0000	1.0000
L50	3	WR-VG86ST-BRD(3/4)	17.75 - 18.00	1.0000	1.0000
L50	4	FB-L98B-002-75000(3/8")	17.75 - 18.00	1.0000	1.0000
L50	5	WR-VG86ST-BRD(3/4")	17.75 - 18.00	1.0000	1.0000
L50	6	2.5" Flex Conduit	17.75 - 18.00	1.0000	1.0000
L50	12	ATCB-B01-005(5/16)	17.75 - 18.00	1.0000	1.0000
L50	13	FSJ4-50B(1/2")	17.75 - 18.00	1.0000	1.0000
L50	14	FSJ4-50B(1/2")	17.75 - 18.00	1.0000	1.0000
L50	15	2.5" Flex Conduit	17.75 - 18.00	1.0000	1.0000
L50	19	LCF114-50J(1-1/4")	17.75 - 18.00	1.0000	1.0000
L50	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	17.75 - 18.00	1.0000	1.0000
L50	21	MLC Hybrid 6/6(7/8")	17.75 - 18.00	1.0000	1.0000
L50	24	Climbing Pegs	17.75 - 18.00	1.0000	1.0000
L50	30	4"x0.75" flat plate	17.75 - 18.00	1.0000	1.0000
L50	31	4"x0.75" flat plate	17.75 - 18.00	1.0000	1.0000
L50	32	4"x0.75" flat plate	17.75 - 18.00	1.0000	1.0000
L50	33	6.5"x1.25" flat plate	17.75 - 18.00	1.0000	1.0000
L50	34	6.5"x1.25" flat plate	17.75 - 18.00	1.0000	1.0000
L50	35	6.5"x1.25" flat plate	17.75 - 18.00	1.0000	1.0000
L50	36	6"x1" flat plate	17.75 - 18.00	1.0000	1.0000
L50	37	6"x1" flat plate	17.75 - 18.00	1.0000	1.0000
L50	38	6"x1" flat plate	17.75 - 18.00	1.0000	1.0000
L50	39	4"x0.75" flat plate	17.75 - 18.00	1.0000	1.0000
L50	40	4"x0.75" flat plate	17.75 - 18.00	1.0000	1.0000
L50	41	4"x0.75" flat plate	17.75 - 18.00	1.0000	1.0000
L51	1	LDF6-50A(1-1/4")	17.08 - 17.75	1.0000	1.0000
L51	2	FB-L98B-002-75000(3/8")	17.08 - 17.75	1.0000	1.0000
L51	3	WR-VG86ST-BRD(3/4)	17.08 - 17.75	1.0000	1.0000
L51	4	FB-L98B-002-75000(3/8")	17.08 - 17.75	1.0000	1.0000
L51	5	WR-VG86ST-BRD(3/4")	17.08 - 17.75	1.0000	1.0000
L51	6	2.5" Flex Conduit	17.08 - 17.75	1.0000	1.0000
L51	12	ATCB-B01-005(5/16)	17.08 - 17.75	1.0000	1.0000
L51	13	FSJ4-50B(1/2")	17.08 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			17.75		
L51	14	FSJ4-50B(1/2")	17.08 - 17.75	1.0000	1.0000
L51	15	2.5" Flex Conduit	17.08 - 17.75	1.0000	1.0000
L51	19	LCF114-50J(1-1/4")	17.08 - 17.75	1.0000	1.0000
L51	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	17.08 - 17.75	1.0000	1.0000
L51	21	MLC Hybrid 6/6(7/8")	17.08 - 17.75	1.0000	1.0000
L51	24	Climbing Pegs	17.08 - 17.75	1.0000	1.0000
L51	30	4"x0.75" flat plate	17.08 - 17.75	1.0000	1.0000
L51	31	4"x0.75" flat plate	17.08 - 17.75	1.0000	1.0000
L51	32	4"x0.75" flat plate	17.08 - 17.75	1.0000	1.0000
L51	33	6.5"x1.25" flat plate	17.08 - 17.75	1.0000	1.0000
L51	34	6.5"x1.25" flat plate	17.08 - 17.75	1.0000	1.0000
L51	35	6.5"x1.25" flat plate	17.08 - 17.75	1.0000	1.0000
L51	36	6"x1" flat plate	17.08 - 17.75	1.0000	1.0000
L51	37	6"x1" flat plate	17.08 - 17.75	1.0000	1.0000
L51	38	6"x1" flat plate	17.08 - 17.75	1.0000	1.0000
L51	39	4"x0.75" flat plate	17.08 - 17.75	1.0000	1.0000
L51	40	4"x0.75" flat plate	17.08 - 17.75	1.0000	1.0000
L51	41	4"x0.75" flat plate	17.08 - 17.75	1.0000	1.0000
L52	1	LDF6-50A(1-1/4")	16.83 - 17.08	1.0000	1.0000
L52	2	FB-L98B-002-75000(3/8")	16.83 - 17.08	1.0000	1.0000
L52	3	WR-VG86ST-BRD(3/4)	16.83 - 17.08	1.0000	1.0000
L52	4	FB-L98B-002-75000(3/8")	16.83 - 17.08	1.0000	1.0000
L52	5	WR-VG86ST-BRD(3/4")	16.83 - 17.08	1.0000	1.0000
L52	6	2.5" Flex Conduit	16.83 - 17.08	1.0000	1.0000
L52	12	ATCB-B01-005(5/16)	16.83 - 17.08	1.0000	1.0000
L52	13	FSJ4-50B(1/2")	16.83 - 17.08	1.0000	1.0000
L52	14	FSJ4-50B(1/2")	16.83 - 17.08	1.0000	1.0000
L52	15	2.5" Flex Conduit	16.83 - 17.08	1.0000	1.0000
L52	19	LCF114-50J(1-1/4")	16.83 - 17.08	1.0000	1.0000
L52	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	16.83 - 17.08	1.0000	1.0000
L52	21	MLC Hybrid 6/6(7/8")	16.83 - 17.08	1.0000	1.0000
L52	24	Climbing Pegs	16.83 - 17.08	1.0000	1.0000
L52	30	4"x0.75" flat plate	16.83 - 17.08	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L52	31	4"x0.75" flat plate	16.83 - 17.08	1.0000	1.0000
L52	32	4"x0.75" flat plate	16.83 - 17.08	1.0000	1.0000
L52	33	6.5"x1.25" flat plate	16.83 - 17.08	1.0000	1.0000
L52	34	6.5"x1.25" flat plate	16.83 - 17.08	1.0000	1.0000
L52	35	6.5"x1.25" flat plate	16.83 - 17.08	1.0000	1.0000
L52	36	6"x1" flat plate	16.83 - 17.08	1.0000	1.0000
L52	37	6"x1" flat plate	16.83 - 17.08	1.0000	1.0000
L52	38	6"x1" flat plate	16.83 - 17.08	1.0000	1.0000
L52	39	4"x0.75" flat plate	16.83 - 17.08	1.0000	1.0000
L52	40	4"x0.75" flat plate	16.83 - 17.08	1.0000	1.0000
L52	41	4"x0.75" flat plate	16.83 - 17.08	1.0000	1.0000
L53	1	LDF6-50A(1-1/4")	13.00 - 16.83	1.0000	1.0000
L53	2	FB-L98B-002-75000(3/8")	13.00 - 16.83	1.0000	1.0000
L53	3	WR-VG86ST-BRD(3/4)	13.00 - 16.83	1.0000	1.0000
L53	4	FB-L98B-002-75000(3/8")	13.00 - 16.83	1.0000	1.0000
L53	5	WR-VG86ST-BRD(3/4")	13.00 - 16.83	1.0000	1.0000
L53	6	2.5" Flex Conduit	13.00 - 16.83	1.0000	1.0000
L53	12	ATCB-B01-005(5/16)	13.00 - 16.83	1.0000	1.0000
L53	13	FSJ4-50B(1/2")	13.00 - 16.83	1.0000	1.0000
L53	14	FSJ4-50B(1/2")	13.00 - 16.83	1.0000	1.0000
L53	15	2.5" Flex Conduit	13.00 - 16.83	1.0000	1.0000
L53	19	LCF114-50J(1-1/4")	13.00 - 16.83	1.0000	1.0000
L53	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	13.00 - 16.83	1.0000	1.0000
L53	21	MLC Hybrid 6/6(7/8")	13.00 - 16.83	1.0000	1.0000
L53	24	Climbing Pegs	13.00 - 16.83	1.0000	1.0000
L53	27	6"x1" flat plate	13.00 - 15.50	1.0000	1.0000
L53	28	6"x1" flat plate	13.00 - 15.50	1.0000	1.0000
L53	29	6"x1" flat plate	13.00 - 15.50	1.0000	1.0000
L53	30	4"x0.75" flat plate	13.00 - 16.83	1.0000	1.0000
L53	31	4"x0.75" flat plate	13.00 - 16.83	1.0000	1.0000
L53	32	4"x0.75" flat plate	13.00 - 16.83	1.0000	1.0000
L53	33	6.5"x1.25" flat plate	13.00 - 16.83	1.0000	1.0000
L53	34	6.5"x1.25" flat plate	13.00 - 16.83	1.0000	1.0000
L53	35	6.5"x1.25" flat plate	13.00 - 16.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L53	36	6"x1" flat plate	13.00 - 16.83	1.0000	1.0000
L53	37	6"x1" flat plate	13.00 - 16.83	1.0000	1.0000
L53	38	6"x1" flat plate	13.00 - 16.83	1.0000	1.0000
L53	39	4"x0.75" flat plate	15.83 - 16.83	1.0000	1.0000
L53	40	4"x0.75" flat plate	15.83 - 16.83	1.0000	1.0000
L53	41	4"x0.75" flat plate	15.83 - 16.83	1.0000	1.0000
L54	1	LDF6-50A(1-1/4")	12.75 - 13.00	1.0000	1.0000
L54	2	FB-L98B-002-75000(3/8")	12.75 - 13.00	1.0000	1.0000
L54	3	WR-VG86ST-BRD(3/4)	12.75 - 13.00	1.0000	1.0000
L54	4	FB-L98B-002-75000(3/8")	12.75 - 13.00	1.0000	1.0000
L54	5	WR-VG86ST-BRD(3/4")	12.75 - 13.00	1.0000	1.0000
L54	6	2.5" Flex Conduit	12.75 - 13.00	1.0000	1.0000
L54	12	ATCB-B01-005(5/16)	12.75 - 13.00	1.0000	1.0000
L54	13	FSJ4-50B(1/2")	12.75 - 13.00	1.0000	1.0000
L54	14	FSJ4-50B(1/2")	12.75 - 13.00	1.0000	1.0000
L54	15	2.5" Flex Conduit	12.75 - 13.00	1.0000	1.0000
L54	19	LCF114-50J(1-1/4")	12.75 - 13.00	1.0000	1.0000
L54	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	12.75 - 13.00	1.0000	1.0000
L54	21	MLC Hybrid 6/6(7/8")	12.75 - 13.00	1.0000	1.0000
L54	24	Climbing Pegs	12.75 - 13.00	1.0000	1.0000
L54	27	6"x1" flat plate	12.75 - 13.00	1.0000	1.0000
L54	28	6"x1" flat plate	12.75 - 13.00	1.0000	1.0000
L54	29	6"x1" flat plate	12.75 - 13.00	1.0000	1.0000
L54	30	4"x0.75" flat plate	12.75 - 13.00	1.0000	1.0000
L54	31	4"x0.75" flat plate	12.75 - 13.00	1.0000	1.0000
L54	32	4"x0.75" flat plate	12.75 - 13.00	1.0000	1.0000
L54	33	6.5"x1.25" flat plate	12.75 - 13.00	1.0000	1.0000
L54	34	6.5"x1.25" flat plate	12.75 - 13.00	1.0000	1.0000
L54	35	6.5"x1.25" flat plate	12.75 - 13.00	1.0000	1.0000
L54	36	6"x1" flat plate	12.75 - 13.00	1.0000	1.0000
L54	37	6"x1" flat plate	12.75 - 13.00	1.0000	1.0000
L54	38	6"x1" flat plate	12.75 - 13.00	1.0000	1.0000
L55	1	LDF6-50A(1-1/4")	11.83 - 12.75	1.0000	1.0000
L55	2	FB-L98B-002-75000(3/8")	11.83 - 12.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L55	3	WR-VG86ST-BRD(3/4)	11.83 - 12.75	1.0000	1.0000
L55	4	FB-L98B-002-75000(3/8")	11.83 - 12.75	1.0000	1.0000
L55	5	WR-VG86ST-BRD(3/4")	11.83 - 12.75	1.0000	1.0000
L55	6	2.5" Flex Conduit	11.83 - 12.75	1.0000	1.0000
L55	12	ATCB-B01-005(5/16)	11.83 - 12.75	1.0000	1.0000
L55	13	FSJ4-50B(1/2")	11.83 - 12.75	1.0000	1.0000
L55	14	FSJ4-50B(1/2")	11.83 - 12.75	1.0000	1.0000
L55	15	2.5" Flex Conduit	11.83 - 12.75	1.0000	1.0000
L55	19	LCF114-50J(1-1/4")	11.83 - 12.75	1.0000	1.0000
L55	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	11.83 - 12.75	1.0000	1.0000
L55	21	MLC Hybrid 6/6(7/8")	11.83 - 12.75	1.0000	1.0000
L55	24	Climbing Pegs	11.83 - 12.75	1.0000	1.0000
L55	27	6"x1" flat plate	11.83 - 12.75	1.0000	1.0000
L55	28	6"x1" flat plate	11.83 - 12.75	1.0000	1.0000
L55	29	6"x1" flat plate	11.83 - 12.75	1.0000	1.0000
L55	30	4"x0.75" flat plate	11.83 - 12.75	1.0000	1.0000
L55	31	4"x0.75" flat plate	11.83 - 12.75	1.0000	1.0000
L55	32	4"x0.75" flat plate	11.83 - 12.75	1.0000	1.0000
L55	33	6.5"x1.25" flat plate	11.83 - 12.75	1.0000	1.0000
L55	34	6.5"x1.25" flat plate	11.83 - 12.75	1.0000	1.0000
L55	35	6.5"x1.25" flat plate	11.83 - 12.75	1.0000	1.0000
L55	36	6"x1" flat plate	11.83 - 12.75	1.0000	1.0000
L55	37	6"x1" flat plate	11.83 - 12.75	1.0000	1.0000
L55	38	6"x1" flat plate	11.83 - 12.75	1.0000	1.0000
L56	1	LDF6-50A(1-1/4")	11.58 - 11.83	1.0000	1.0000
L56	2	FB-L98B-002-75000(3/8")	11.58 - 11.83	1.0000	1.0000
L56	3	WR-VG86ST-BRD(3/4)	11.58 - 11.83	1.0000	1.0000
L56	4	FB-L98B-002-75000(3/8")	11.58 - 11.83	1.0000	1.0000
L56	5	WR-VG86ST-BRD(3/4")	11.58 - 11.83	1.0000	1.0000
L56	6	2.5" Flex Conduit	11.58 - 11.83	1.0000	1.0000
L56	12	ATCB-B01-005(5/16)	11.58 - 11.83	1.0000	1.0000
L56	13	FSJ4-50B(1/2")	11.58 - 11.83	1.0000	1.0000
L56	14	FSJ4-50B(1/2")	11.58 - 11.83	1.0000	1.0000
L56	15	2.5" Flex Conduit	11.58 - 11.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L56	19	LCF114-50J(1-1/4")	11.58 - 11.83	1.0000	1.0000
L56	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	11.58 - 11.83	1.0000	1.0000
L56	21	MLC Hybrid 6/6(7/8")	11.58 - 11.83	1.0000	1.0000
L56	27	6"x1" flat plate	11.58 - 11.83	1.0000	1.0000
L56	28	6"x1" flat plate	11.58 - 11.83	1.0000	1.0000
L56	29	6"x1" flat plate	11.58 - 11.83	1.0000	1.0000
L56	30	4"x0.75" flat plate	11.58 - 11.83	1.0000	1.0000
L56	31	4"x0.75" flat plate	11.58 - 11.83	1.0000	1.0000
L56	32	4"x0.75" flat plate	11.58 - 11.83	1.0000	1.0000
L56	33	6.5"x1.25" flat plate	11.58 - 11.83	1.0000	1.0000
L56	34	6.5"x1.25" flat plate	11.58 - 11.83	1.0000	1.0000
L56	35	6.5"x1.25" flat plate	11.58 - 11.83	1.0000	1.0000
L56	36	6"x1" flat plate	11.58 - 11.83	1.0000	1.0000
L56	37	6"x1" flat plate	11.58 - 11.83	1.0000	1.0000
L56	38	6"x1" flat plate	11.58 - 11.83	1.0000	1.0000
L57	1	LDF6-50A(1-1/4")	8.00 - 11.58	1.0000	1.0000
L57	2	FB-L98B-002-75000(3/8")	8.00 - 11.58	1.0000	1.0000
L57	3	WR-VG86ST-BRD(3/4)	8.00 - 11.58	1.0000	1.0000
L57	4	FB-L98B-002-75000(3/8")	8.00 - 11.58	1.0000	1.0000
L57	5	WR-VG86ST-BRD(3/4")	8.00 - 11.58	1.0000	1.0000
L57	6	2.5" Flex Conduit	8.00 - 11.58	1.0000	1.0000
L57	12	ATCB-B01-005(5/16)	7.00 - 11.58	1.0000	1.0000
L57	13	FSJ4-50B(1/2")	7.00 - 11.58	1.0000	1.0000
L57	14	FSJ4-50B(1/2")	7.00 - 11.58	1.0000	1.0000
L57	15	2.5" Flex Conduit	7.00 - 11.58	1.0000	1.0000
L57	19	LCF114-50J(1-1/4")	9.00 - 11.58	1.0000	1.0000
L57	20	MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	9.00 - 11.58	1.0000	1.0000
L57	21	MLC Hybrid 6/6(7/8")	9.00 - 11.58	1.0000	1.0000
L57	27	6"x1" flat plate	6.48 - 11.58	1.0000	1.0000
L57	28	6"x1" flat plate	6.48 - 11.58	1.0000	1.0000
L57	29	6"x1" flat plate	6.48 - 11.58	1.0000	1.0000
L57	30	4"x0.75" flat plate	6.48 - 11.58	1.0000	1.0000
L57	31	4"x0.75" flat plate	6.48 - 11.58	1.0000	1.0000
L57	32	4"x0.75" flat plate	6.48 - 11.58	1.0000	1.0000
L57	33	6.5"x1.25" flat plate	6.48 - 11.58	1.0000	1.0000
L57	34	6.5"x1.25" flat plate	6.48 - 11.58	1.0000	1.0000
L57	35	6.5"x1.25" flat plate	6.48 - 11.58	1.0000	1.0000
L57	36	6"x1" flat plate	9.33 - 11.58	1.0000	1.0000
L57	37	6"x1" flat plate	9.33 - 11.58	1.0000	1.0000
L57	38	6"x1" flat plate	9.33 - 11.58	1.0000	1.0000
L58	27	6"x1" flat plate	6.25 - 6.48	1.0000	1.0000
L58	28	6"x1" flat plate	6.25 - 6.48	1.0000	1.0000
L58	29	6"x1" flat plate	6.25 - 6.48	1.0000	1.0000
L58	30	4"x0.75" flat plate	6.25 - 6.48	1.0000	1.0000
L58	31	4"x0.75" flat plate	6.25 - 6.48	1.0000	1.0000
L58	32	4"x0.75" flat plate	6.25 - 6.48	1.0000	1.0000
L58	33	6.5"x1.25" flat plate	6.25 - 6.48	1.0000	1.0000
L58	34	6.5"x1.25" flat plate	6.25 - 6.48	1.0000	1.0000
L58	35	6.5"x1.25" flat plate	6.25 - 6.48	1.0000	1.0000
L59	27	6"x1" flat plate	1.25 - 6.25	1.0000	1.0000
L59	28	6"x1" flat plate	1.25 - 6.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L59	29	6"x1" flat plate	1.25 - 6.25	1.0000	1.0000
L59	30	4"x0.75" flat plate	1.25 - 6.25	1.0000	1.0000
L59	31	4"x0.75" flat plate	1.25 - 6.25	1.0000	1.0000
L59	32	4"x0.75" flat plate	1.25 - 6.25	1.0000	1.0000
L59	33	6.5"x1.25" flat plate	1.25 - 6.25	1.0000	1.0000
L59	34	6.5"x1.25" flat plate	1.25 - 6.25	1.0000	1.0000
L59	35	6.5"x1.25" flat plate	1.25 - 6.25	1.0000	1.0000
L60	27	6"x1" flat plate	0.00 - 1.25	1.0000	1.0000
L60	28	6"x1" flat plate	0.00 - 1.25	1.0000	1.0000
L60	29	6"x1" flat plate	0.00 - 1.25	1.0000	1.0000
L60	30	4"x0.75" flat plate	0.00 - 1.25	1.0000	1.0000
L60	31	4"x0.75" flat plate	0.00 - 1.25	1.0000	1.0000
L60	32	4"x0.75" flat plate	0.00 - 1.25	1.0000	1.0000
L60	33	6.5"x1.25" flat plate	0.00 - 1.25	1.0000	1.0000
L60	34	6.5"x1.25" flat plate	0.00 - 1.25	1.0000	1.0000
L60	35	6.5"x1.25" flat plate	0.00 - 1.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800 10121 w/ Mount Pipe	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	5.2612 5.6420 6.0301	4.4729 5.1272 5.7923	0.06 0.11 0.16
800 10121 w/ Mount Pipe	B	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	5.2612 5.6420 6.0301	4.4729 5.1272 5.7923	0.06 0.11 0.16
800 10121 w/ Mount Pipe	C	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	5.2612 5.6420 6.0301	4.4729 5.1272 5.7923	0.06 0.11 0.16
RRUS-11	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	2.7845 2.9919 3.2066	1.1872 1.3342 1.4897	0.05 0.07 0.09
RRUS-11	B	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	2.7845 2.9919 3.2066	1.1872 1.3342 1.4897	0.05 0.07 0.09
RRUS-11	C	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	2.7845 2.9919 3.2066	1.1872 1.3342 1.4897	0.05 0.07 0.09
(2) LGP21401	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03

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
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.02 0.04 0.06
80010798 w/ Mount Pipe	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	10.9246 11.5345 12.1217	7.4788 8.7492 9.8028	0.11 0.19 0.28
80010798 w/ Mount Pipe	B	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	10.9246 11.5345 12.1217	7.4788 8.7492 9.8028	0.11 0.19 0.28
80010798 w/ Mount Pipe	C	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	10.9246 11.5345 12.1217	7.4788 8.7492 9.8028	0.11 0.19 0.28
RRUS 32	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	3.3139 3.5576 3.8087	2.4238 2.6383 2.8597	0.08 0.10 0.14
RRUS 32	B	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	3.3139 3.5576 3.8087	2.4238 2.6383 2.8597	0.08 0.10 0.14
RRUS 32	C	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	3.3139 3.5576 3.8087	2.4238 2.6383 2.8597	0.08 0.10 0.14
RRUS 32 B2	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	2.7313 2.9531 3.1823	1.6681 1.8552 2.0493	0.05 0.07 0.10
RRUS 32 B2	B	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	2.7313 2.9531 3.1823	1.6681 1.8552 2.0493	0.05 0.07 0.10
RRUS 32 B2	C	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	2.7313 2.9531 3.1823	1.6681 1.8552 2.0493	0.05 0.07 0.10
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	4.0000 0.00 -1.00	0.00	121.0000	No Ice 1/2" Ice 1" Ice	0.9167 1.4583 1.6431	0.9167 1.4583 1.6431	0.02 0.04 0.06
T-Arm Mount [TA 601-3]	C	None		0.00	121.0000	No Ice 1/2" Ice 1" Ice	10.9000 14.6500 18.4000	10.9000 14.6500 18.4000	0.73 0.93 1.13
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BXA-80063/4CF	A	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	4.7078 5.0262 5.3516	2.2482 2.5469 2.8529	0.01 0.04 0.07
BXA-80063/4CF	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	4.7078 5.0262 5.3516	2.2482 2.5469 2.8529	0.01 0.04 0.07
BXA-80063/4CF	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	4.7078 5.0262 5.3516	2.2482 2.5469 2.8529	0.01 0.04 0.07
BXA-70063/6CFx4	A	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	7.5818 8.0294 8.4841	3.7624 4.1964 4.6377	0.02 0.06 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-70063/6CFx4	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	7.5818 8.0294 8.4841	3.7624 4.1964 4.6377	0.02 0.06 0.10
BXA-70063/6CFx4	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	7.5818 8.0294 8.4841	3.7624 4.1964 4.6377	0.02 0.06 0.10
(2) FD9R6004/2C-3L	A	From Leg	4.0000 0.00 0.00	0.00	107.0000	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	0.00	107.0000	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	0.00	107.0000	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) SBNHH-1D65B	A	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	8.1597 8.6190 9.0854	5.3963 5.8529 6.3169	0.04 0.09 0.15
(2) SBNHH-1D65B	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	8.1597 8.6190 9.0854	5.3963 5.8529 6.3169	0.04 0.09 0.15
(2) SBNHH-1D65B	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	8.1597 8.6190 9.0854	5.3963 5.8529 6.3169	0.04 0.09 0.15
RRH2X60-AWS	A	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	2.1012 2.3367 2.5792	0.06 0.08 0.11
RRH2X60-AWS	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	2.1012 2.3367 2.5792	0.06 0.08 0.11
RRH2X60-AWS	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	2.1012 2.3367 2.5792	0.06 0.08 0.11
RRH2X60-PCS	A	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.3555 1.5155 1.6825	0.06 0.07 0.09
RRH2X60-PCS	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.3555 1.5155 1.6825	0.06 0.07 0.09
RRH2X60-PCS	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.3555 1.5155 1.6825	0.06 0.07 0.09
RRFDC-3315-PF-48	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice	3.7079 3.9505 4.2005	2.1921 2.3950 2.6056	0.02 0.05 0.09
Platform Mount [LP 101-1]	C	None		0.00	107.0000	No Ice 1/2" Ice 1" Ice	36.2100 42.8200 49.4300	36.2100 42.8200 49.4300	1.50 2.30 3.10

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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
800MHz 2X50W RRH W/FILTER	A	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	B	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
RRH-2WB	A	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.3047 2.4961 2.6949	0.7816 0.9155 1.0563	0.04 0.06 0.08
RRH-2WB	B	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.3047 2.4961 2.6949	0.7816 0.9155 1.0563	0.04 0.06 0.08
RRH-2WB	C	From Leg	1.0000 0.00 0.00	0.00	101.9000	No Ice 1/2" Ice 1" Ice	2.3047 2.4961 2.6949	0.7816 0.9155 1.0563	0.04 0.06 0.08
Side Arm Mount [SO 101-3]	C	None		0.00	101.9000	No Ice 1/2" Ice 1" Ice	7.5000 8.9000 10.3000	7.5000 8.9000 10.3000	0.25 0.33 0.41
Clearwire									
LLPX310R-V1	A	From Face	4.0000 0.00 2.10	0.00	94.4000	No Ice 1/2" Ice 1" Ice	4.3101 4.6028 4.9025	1.9562 2.2249 2.5010	0.03 0.05 0.08
LLPX310R-V1	B	From Face	4.0000 0.00 2.10	0.00	94.4000	No Ice 1/2" Ice 1" Ice	4.3101 4.6028 4.9025	1.9562 2.2249 2.5010	0.03 0.05 0.08
LLPX310R-V1	C	From Face	4.0000 0.00 2.10	0.00	94.4000	No Ice 1/2" Ice 1" Ice	4.3101 4.6028 4.9025	1.9562 2.2249 2.5010	0.03 0.05 0.08
HORIZON COMPACT	B	From Face	4.0000 0.00 6.60	0.00	94.4000	No Ice 1/2" Ice 1" Ice	0.7208 0.8278 0.9422	0.3681 0.4499 0.5391	0.01 0.02 0.03
Sprint									
APXVSPP18-C-A20	A	From Face	4.0000 0.00 2.10	0.00	94.4000	No Ice 1/2" Ice 1" Ice	8.0244 8.4800 8.9426	5.2833 5.7360 6.1960	0.06 0.11 0.16
APXVSPP18-C-A20	B	From Face	4.0000 0.00 2.10	0.00	94.4000	No Ice 1/2" Ice	8.0244 8.4800 8.9426	5.2833 5.7360 6.1960	0.06 0.11 0.16

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
						1" Ice			
APXVSPP18-C-A20	C	From Face	4.0000 0.00 2.10	0.00	94.4000	No Ice 1/2" Ice 1" Ice	8.0244 8.4800 8.9426	5.2833 5.7360 6.1960	0.06 0.11 0.16
Platform Mount [LP 101-1]	C	None		0.00	94.4000	No Ice 1/2" Ice 1" Ice	36.2100 42.8200 49.4300	36.2100 42.8200 49.4300	1.50 2.30 3.10
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	6.4084 6.8893 7.3482	5.7216 6.5740 7.2985	0.11 0.17 0.24
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	6.4084 6.8893 7.3482	5.7216 6.5740 7.2985	0.11 0.17 0.24
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	6.4084 6.8893 7.3482	5.7216 6.5740 7.2985	0.11 0.17 0.24
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	11.6353 12.3362 13.0440	9.7943 11.2982 12.8033	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	11.6353 12.3362 13.0440	9.7943 11.2982 12.8033	0.08 0.17 0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	11.6353 12.3362 13.0440	9.7943 11.2982 12.8033	0.08 0.17 0.27
KRY 112 144/1	A	From Face	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
KRY 112 144/1	B	From Face	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
KRY 112 144/1	C	From Face	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
RRUS 11 B12	A	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice 1" Ice	6.8788 7.3337 7.7972	6.4373 7.1566 7.8908	0.17 0.23 0.30
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	87.0000	No Ice 1/2" Ice	6.8788 7.3337 7.7972	6.4373 7.1566 7.8908	0.17 0.23 0.30

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
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	87.0000	1" Ice No Ice 1/2" Ice 1" Ice	6.8788 7.3337 7.7972	6.4373 7.1566 7.8908	0.17 0.23 0.30
Site Pro1 RMV12-396 [TA 602-3]	C	None		0.00	87.0000	1" Ice No Ice 1/2" Ice 1" Ice	11.5900 15.4400 19.2900	11.5900 15.4400 19.2900	0.77 0.99 1.21

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2.5-18	B	Paraboloid w/Shroud (HP)	From Leg	1.0000 0.00 6.60	0.00		94.4000	2.9166	No Ice 1/2" Ice 1" Ice	6.6800 7.0700 7.4600	0.07 0.10 0.13
VHLP2-18-DW1	C	Paraboloid w/Shroud (HP)	From Leg	1.0000 0.00 6.60	0.00		94.4000	2.2900	No Ice 1/2" Ice 1" Ice	4.1200 4.4200 4.7300	0.03 0.05 0.08

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

Comb. No.	Description
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130.667 - 125.667	19.54	50	1.43	0.00
L2	125.667 - 120.667	18.05	50	1.43	0.00
L3	120.667 - 115.667	16.56	50	1.42	0.00
L4	115.667 - 110.667	15.08	50	1.40	0.00
L5	110.667 - 110.542	13.63	50	1.35	0.00
L6	110.542 - 105.542	13.60	50	1.35	0.00
L7	105.542 - 100.542	12.20	50	1.30	0.00
L8	100.542 - 95.5417	10.88	50	1.22	0.00
L9	95.5417 - 90.5417	9.65	50	1.13	0.00
L10	90.5417 - 90	8.52	50	1.02	0.00
L11	90 - 89.75	8.41	50	1.01	0.00
L12	89.75 - 84.75	8.36	50	1.00	0.00
L13	84.75 - 84.583	7.34	50	0.94	0.00
L14	84.583 - 84.333	7.31	50	0.93	0.00
L15	84.333 - 83	7.26	50	0.93	0.00
L16	83 - 82.75	7.00	50	0.92	0.00
L17	82.75 - 81	6.95	50	0.91	0.00
L18	81 - 80.75	6.62	50	0.88	0.00
L19	80.75 - 75.75	6.58	50	0.88	0.00
L20	75.75 - 70.5417	5.70	50	0.81	0.00
L21	74.4417 - 69.5417	5.48	50	0.79	0.00
L22	69.5417 - 67	4.69	50	0.74	0.00
L23	67 - 66.75	4.31	50	0.69	0.00
L24	66.75 - 64.083	4.27	50	0.69	0.00
L25	64.083 - 63.833	3.90	50	0.64	0.00
L26	63.833 - 62.417	3.87	50	0.63	0.00
L27	62.417 - 62.167	3.69	50	0.61	0.00
L28	62.167 - 59.458	3.65	50	0.61	0.00
L29	59.458 - 59.208	3.32	50	0.57	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L30	59.208 - 54.208	3.29	50	0.57	0.00
L31	54.208 - 53.5	2.73	50	0.51	0.00
L32	53.5 - 53.25	2.65	50	0.50	0.00
L33	53.25 - 48.25	2.62	50	0.50	0.00
L34	48.25 - 44.583	2.13	50	0.44	0.00
L35	44.583 - 44.333	1.81	50	0.40	0.00
L36	44.333 - 41.833	1.79	50	0.40	0.00
L37	41.833 - 41.583	1.59	50	0.37	0.00
L38	41.583 - 34.525	1.57	50	0.37	0.00
L39	39 - 34	1.37	50	0.34	0.00
L40	34 - 31.458	1.03	50	0.31	0.00
L41	31.458 - 31.208	0.88	50	0.28	0.00
L42	31.208 - 29.458	0.86	50	0.28	0.00
L43	29.458 - 29.208	0.76	50	0.26	0.00
L44	29.208 - 26.833	0.75	50	0.26	0.00
L45	26.833 - 26.583	0.63	50	0.23	0.00
L46	26.583 - 21.583	0.62	50	0.23	0.00
L47	21.583 - 18.75	0.40	50	0.18	0.00
L48	18.75 - 18.5	0.30	50	0.16	0.00
L49	18.5 - 18	0.29	50	0.15	0.00
L50	18 - 17.75	0.28	50	0.15	0.00
L51	17.75 - 17.083	0.27	50	0.15	0.00
L52	17.083 - 16.833	0.25	50	0.14	0.00
L53	16.833 - 13	0.24	50	0.14	0.00
L54	13 - 12.75	0.14	50	0.11	0.00
L55	12.75 - 11.833	0.14	50	0.10	0.00
L56	11.833 - 11.583	0.12	50	0.10	0.00
L57	11.583 - 6.483	0.11	50	0.09	0.00
L58	6.483 - 6.25	0.04	50	0.05	0.00
L59	6.25 - 1.25	0.03	50	0.05	0.00
L60	1.25 - 0	0.00	50	0.01	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	800 10121 w/ Mount Pipe	50	16.66	1.42	0.00	33678
107.0000	BXA-80063/4CF	50	12.60	1.32	0.00	4882
101.9000	800MHz 2X50W RRH W/FILTER	50	11.23	1.25	0.00	3505
101.0000	VHLP2.5-18	50	11.00	1.23	0.00	3363
94.4000	LLPX310R-V1	50	9.38	1.11	0.00	2716
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	50	7.79	0.97	0.00	4097

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130.667 - 125.667	91.46	24	6.68	0.01
L2	125.667 - 120.667	84.49	24	6.67	0.01
L3	120.667 - 115.667	77.54	24	6.66	0.01
L4	115.667 - 110.667	70.63	24	6.57	0.01
L5	110.667 - 110.542	63.88	24	6.35	0.01
L6	110.542 -	63.71	24	6.35	0.01

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
	105.542				
L7	105.542 - 100.542	57.21	24	6.10	0.01
L8	100.542 - 95.5417	51.02	24	5.74	0.01
L9	95.5417 - 90.5417	45.25	24	5.29	0.01
L10	90.5417 - 90	39.98	24	4.78	0.01
L11	90 - 89.75	39.44	24	4.72	0.01
L12	89.75 - 84.75	39.20	24	4.71	0.01
L13	84.75 - 84.583	34.44	24	4.39	0.00
L14	84.583 - 84.333	34.29	24	4.38	0.00
L15	84.333 - 83	34.06	24	4.37	0.00
L16	83 - 82.75	32.85	24	4.30	0.00
L17	82.75 - 81	32.63	24	4.28	0.00
L18	81 - 80.75	31.08	24	4.14	0.00
L19	80.75 - 75.75	30.87	24	4.12	0.00
L20	75.75 - 70.5417	26.73	24	3.79	0.00
L21	74.4417 - 69.5417	25.71	24	3.70	0.00
L22	69.5417 - 67	22.01	24	3.47	0.00
L23	67 - 66.75	20.23	24	3.25	0.00
L24	66.75 - 64.083	20.06	24	3.23	0.00
L25	64.083 - 63.833	18.32	24	3.00	0.00
L26	63.833 - 62.417	18.16	24	2.98	0.00
L27	62.417 - 62.167	17.30	24	2.87	0.00
L28	62.167 - 59.458	17.15	24	2.85	0.00
L29	59.458 - 59.208	15.58	24	2.68	0.00
L30	59.208 - 54.208	15.44	24	2.67	0.00
L31	54.208 - 53.5	12.80	24	2.39	0.00
L32	53.5 - 53.25	12.44	24	2.36	0.00
L33	53.25 - 48.25	12.32	24	2.34	0.00
L34	48.25 - 44.583	10.01	24	2.08	0.00
L35	44.583 - 44.333	8.48	24	1.88	0.00
L36	44.333 - 41.833	8.39	24	1.87	0.00
L37	41.833 - 41.583	7.44	24	1.74	0.00
L38	41.583 - 34.525	7.35	24	1.73	0.00
L39	39 - 34	6.45	24	1.60	0.00
L40	34 - 31.458	4.85	24	1.45	0.00
L41	31.458 - 31.208	4.11	24	1.33	0.00
L42	31.208 - 29.458	4.04	24	1.31	0.00
L43	29.458 - 29.208	3.58	24	1.21	0.00
L44	29.208 - 26.833	3.51	24	1.20	0.00
L45	26.833 - 26.583	2.95	24	1.08	0.00
L46	26.583 - 21.583	2.89	24	1.07	0.00
L47	21.583 - 18.75	1.88	24	0.85	0.00
L48	18.75 - 18.5	1.41	24	0.73	0.00
L49	18.5 - 18	1.38	24	0.72	0.00
L50	18 - 17.75	1.30	24	0.70	0.00
L51	17.75 - 17.083	1.27	24	0.69	0.00
L52	17.083 - 16.833	1.17	24	0.67	0.00
L53	16.833 - 13	1.14	24	0.66	0.00
L54	13 - 12.75	0.67	24	0.49	0.00
L55	12.75 - 11.833	0.65	24	0.49	0.00
L56	11.833 - 11.583	0.56	24	0.45	0.00
L57	11.583 - 6.483	0.54	24	0.44	0.00
L58	6.483 - 6.25	0.17	24	0.25	0.00
L59	6.25 - 1.25	0.15	24	0.24	0.00
L60	1.25 - 0	0.01	24	0.05	0.00

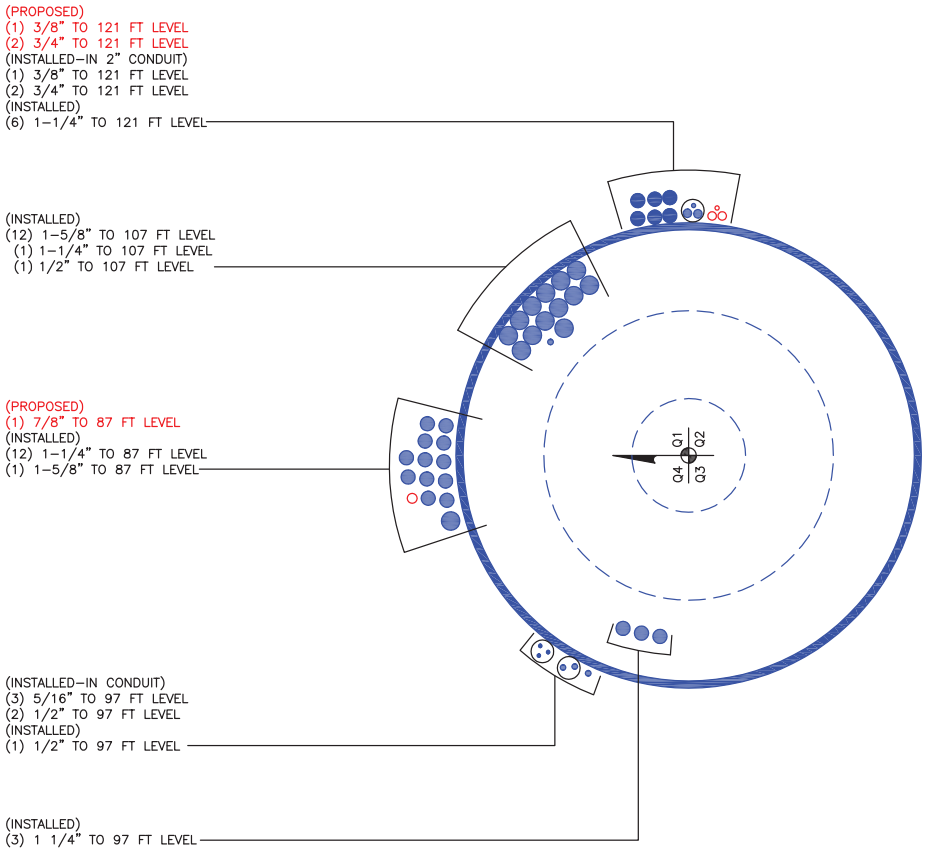
Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	800 10121 w/ Mount Pipe	24	78.00	6.66	0.01	7853
107.0000	BXA-80063/4CF	24	59.08	6.18	0.01	1077
101.9000	800MHz 2X50W RRH W/FILTER	24	52.66	5.85	0.01	768
101.0000	VHLP2.5-18	24	51.57	5.78	0.01	736
94.4000	LLPX310R-V1	24	44.00	5.19	0.01	591
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	24	36.54	4.54	0.01	887

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806376 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

Site Data

BU#: *806376*
Site Name: *HRT 100 943239*
App #: *354601 REV. 0*

Reactions		
Mu	51.29	ft-kips
Axial, Pu:	2.38	kips
Shear, Vu:	5.53	kips
Elevation:	110.5	feet

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

Pole Manufacturer:	Other

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

Bolt Data			
Qty:	10		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	
N/A:		<-- Disregard	
Circle (in.):	19.45		

Plate Data		
Diam:	22.125	in
Thick, t:	1.5	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.99	in

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

Pole Data		
Diam:	15.53	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	65	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:	12.42	Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	1.056	in	
Min PL "treq" for actual **T w/ Pry**:	0.377	in	
Min PL "t1" for actual **T w/o Pry**:	0.504	in	
T allowable w/o Prying:	54.54	kips	α'<0 case
Prying Force, q:	0.00	kips	
Total Bolt Tension=Tu+q:	12.42	kips	
Non-Prying Bolt Stress Ratio, Tu/B:	22.8%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	5.5	ksi	TIA G
Allowable Plate Stress:	45.0	ksi	φ*Fy
Compression Plate Stress Ratio:	12.3%	**Pass**	Comp. Y.L. Length:
No Prying			11.71
Tension Side Stress Ratio, (treq/t)^2:	6.3%	**Pass**	

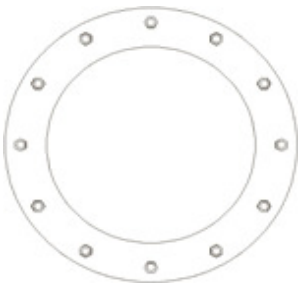
n/a

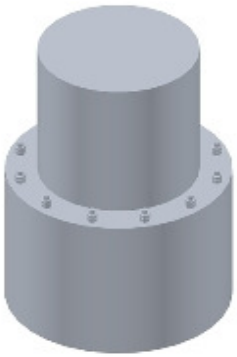
Stiffener Results

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#:	*806376*
Site Name:	*HRT 100 943239*
App #:	*354601 Rev. 0*
Pole Manufacturer:	*Other*

Reactions		
Mu:	3079	ft-kips
Axial, Pu:	42	kips
Shear, Vu:	38	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	49.88	in

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

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	256.7 Kips	Rigid
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	AISC LRFD
Anchor Rod Stress Ratio:	98.7% **Pass**	φ*Tn

Plate Data		
Diam:	55.88	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	11.23	in

Base Plate Results Flexural Check

Base Plate Stress:	35.9 ksi	Rigid
Allowable Plate Stress:	54.0 ksi	AISC LRFD
Base Plate Stress Ratio:	66.6% **Pass**	φ*Fy
		Y.L. Length: 27.06

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

n/a

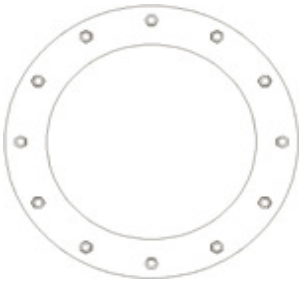
Stiffener Results

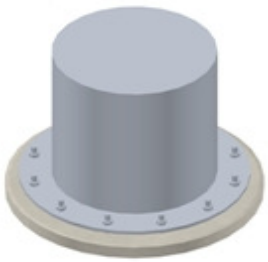
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	41.9	in
Thick:	0.34375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None





* 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

Mat Foundation Analysis

General Info	
TIA Code	TIA-222-G
Soil Code	AASHTO 2010
Concrete Code	ACI 318-08
Seismic Design Category	B
Bearing On	Soil
Foundation Type	Monopole Pad
Pier Type	Round
Reinforcing Known	Yes
Max Bearing Capacity	110%
Max Overturning Capacity	100%

Tower Reactions		
Moment, M	3079	k-ft
Axial, P	42	k
Shear, V	38	k

Pad & Pier Geometry		
Pier Diameter, ø	6	ft
Pad Length, L [y]	22	ft
Pad Width, W [x]	22	ft
Pad Thickness, t	3	ft
Depth, D	8	ft
Height Above Grade, HG	0.5	ft
Tower Centroid, X	11	ft
Tower Centroid, Y	11	ft
Tower Eccentricity	0.0000	ft

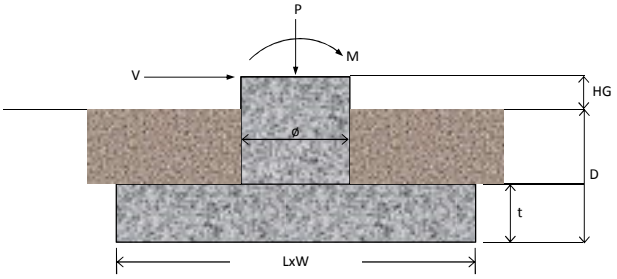
Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete F'c	3	ksi
Clear Cover	3	in
Pier Tie Size	# 5	
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 10	
Pad Quantity Per Layer	17	
Pier Rebar Size	# 10	
Pier Quantity of Rebar	36	

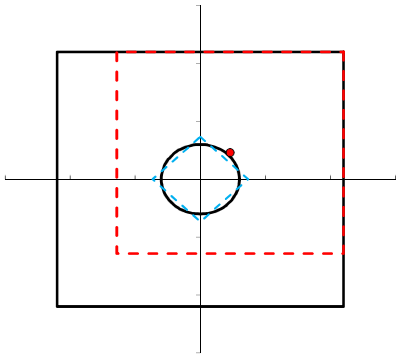
Soil Properties		
Soil Type	Granular	
Soil Unit Weight	115	pcf
Angle of Friction, ø	33	°
Bearing Type	Gross	
Ultimate Bearing	10	ksf
Water Table Depth	12	ft
Frost Depth	3.5	ft

Bearing Summary			Load Case
Qxmax	2.05	ksf	1.2D+1.6W
Qymax	2.05	ksf	1.2D+1.6W
Qmax @ 45°	2.13	ksf	1.2D+1.6W
Q(all) Gross	7.50	ksf	
Controlling Capacity	**28.4%**	**Pass**	

Overturning Summary			Load Case
Ovtx	45.7%	OK	0.9D+1.6W
Ovty	45.7%	OK	0.9D+1.6W
Ovtxy	27.5%	OK	0.9D+1.6W
Controlling Capacity	**45.7%**	**Pass**	

Reinforcement Summary			Load Case
Moment in Pad	30.1%	OK	1.2D+1.6W
Shear in Pad	27.4%	OK	0.9D+1.6W
Compression on Pier	1.0%	OK	1.2D+1.6W
Moment on Pier	57.2%	OK	1.2D+1.6W
As Min Met?	Yes		
Controlling Capacity	**57.2%**	**Pass**	





Additional Calculations

CCIpole

per TIA-222- G

Site BU: 806376

Work Order: 1286658

CROWN CASTLE

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	130.6667	20.125	0	12	10.525	15.525	0.1875	0.75	A572-65
2	110.5417	40	3.9	12	15.53	25.53	0.25	1	A572-65
3	74.4417	39.9167	4.475	12	24.05	34.02	0.3125	1.25	A572-65
4	39	39	0	12	32.28	41.9	0.34375	1.375	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	29.458	plate	MS-400 (1.1875")	3		1				1				1		
2	31.458	59.458	plate	MS-400 (1.1875")	3		1				1				1		
3	73	81	plate	MS-400 (1.1875")	3		1				1				1		
4	0	18.75	plate	4"x1" (100ksi)													
5	17.083	44.583	plate	4"x0.75" (100ksi)	3	1				1				1			
6	44.583	67	plate	4"x0.75" (100ksi)	3				1				1				1
7	67	84.583	plate	4"x0.75" (100ksi)	3	1				1				1			
8	0	13	plate	CCI-AFP-060100	3	1				1				1			
9	11.833	26.833	plate	CCI-AFP-060100	2								1				1
10	11.833	41.833	plate	CCI-AFP-060100	1			1									
11	18	53.5	plate	CCI-AFP-060100	2						1				1		
12	41.833	62.417	plate	CCI-AFP-045100	1			1									
13	53.5	64.083	plate	CCI-AFP-045100	2						1				1		
14	83	90	plate	CCI-SFP-045100	3			1			1				1		
15	0	6.5	plate	CCI-SFP-065125	4				1		1	1			1		
16	6.5	18	plate	CCI-SFP-065125	3				1		1				1		
17																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	4	0.75	3	0.375	12.000	12.000	16.875	2.063	1.1875	A572-65
2	4	0.75	3	0.375	12.000	12.000	16.875	2.063	1.1875	A572-65
3	4	0.75	3	0.375	12.000	12.000	16.875	2.063	1.1875	A572-65
4	4	1	4	0.5	18.000	18.000	20.000	2.750	1.1875	A514-GR100
5	4	0.75	3	0.375	12.000	12.000	15.000	2.063	1.1875	A514-GR100
6	4	0.75	3	0.375	12.000	12.000	15.000	2.063	1.1875	A514-GR100
7	4	0.75	3	0.375	12.000	12.000	15.000	2.063	1.1875	A514-GR100
8	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
9	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
10	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
11	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
12	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
13	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
14	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
15	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
16	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	130.6667 - 125.6667	5		12	10.525	11.767	0.1875	A572-65	1.000
2	125.6667 - 120.6667	5		12	11.767	13.009	0.1875	A572-65	1.000
3	120.6667 - 115.6667	5		12	13.009	14.252	0.1875	A572-65	1.000
4	115.6667 - 110.6667	5		12	14.252	15.494	0.1875	A572-65	1.000
5	110.6667 - 110.5417	0.125	0	12	15.494	15.525	0.1875	A572-65	1.000
6	110.5417 - 105.5417	5		12	15.525	16.776	0.25	A572-65	1.000
7	105.5417 - 100.5417	5		12	16.776	18.026	0.25	A572-65	1.000
8	100.5417 - 95.5417	5		12	18.026	19.277	0.25	A572-65	1.000
9	95.5417 - 90.5417	5		12	19.277	20.528	0.25	A572-65	1.000
10	90.5417 - 90	0.5417		12	20.528	20.663	0.25	A572-65	1.000
11	90 - 89.75	0.25		12	20.663	20.726	0.5	A572-65	0.921
12	89.75 - 84.75	5		12	20.726	21.976	0.475	A572-65	0.943
13	84.75 - 84.583	0.167		12	21.976	22.018	0.475	A572-65	0.942
14	84.583 - 84.333	0.25		12	22.018	22.080	0.6375	A572-65	0.911
15	84.333 - 83	1.333		12	22.080	22.414	0.625	A572-65	0.921
16	83 - 82.75	0.25		12	22.414	22.476	0.39375	A572-65	0.961
17	82.75 - 81	1.75		12	22.476	22.914	0.3875	A572-65	0.970
18	81 - 80.75	0.25		12	22.914	22.977	0.5375	A572-65	0.935
19	80.75 - 75.75	5		12	22.977	24.227	0.5125	A572-65	0.954
20	75.75 - 74.4417	5.2083	3.9	12	24.227	25.530	0.5125	A572-65	0.947
21	74.4417 - 69.5417	4.9		12	24.055	25.278	0.4375	A572-65	0.975
22	69.5417 - 67	2.5417		12	25.278	25.912	0.4375	A572-65	0.969
23	67 - 66.75	0.25		12	25.912	25.975	0.4375	A572-65	0.968
24	66.75 - 64.083	2.667		12	25.975	26.641	0.43125	A572-65	0.976
25	64.083 - 63.833	0.25		12	26.641	26.703	0.475	A572-65	1.111
26	63.833 - 62.417	1.416		12	26.703	27.057	0.475	A572-65	1.105
27	62.417 - 62.167	0.25		12	27.057	27.119	0.6125	A572-65	0.947
28	62.167 - 59.458	2.709		12	27.119	27.795	0.6	A572-65	0.955
29	59.458 - 59.208	0.25		12	27.795	27.858	0.725	A572-65	0.936
30	59.208 - 54.208	5		12	27.858	29.106	0.7	A572-65	0.945
31	54.208 - 53.5	0.708		12	29.106	29.283	0.7	A572-65	0.942
32	53.5 - 53.25	0.25		12	29.283	29.345	0.725	A572-65	0.954
33	53.25 - 48.25	5		12	29.345	30.593	0.7125	A572-65	0.948
34	48.25 - 44.583	3.667		12	30.593	31.509	0.6875	A572-65	0.966
35	44.583 - 44.333	0.25		12	31.509	31.571	0.6875	A572-65	0.965
36	44.333 - 41.833	2.5		12	31.571	32.196	0.6875	A572-65	0.955
37	41.833 - 41.583	0.25		12	32.196	32.258	0.7125	A572-65	0.942
38	41.583 - 39	7.058	4.475	12	32.258	34.020	0.7	A572-65	0.948
39	39 - 34	5		12	32.278	33.511	0.71875	A572-65	0.959
40	34 - 31.458	2.542		12	33.511	34.139	0.71875	A572-65	0.950
41	31.458 - 31.208	0.25		12	34.139	34.200	0.61875	A572-65	0.964
42	31.208 - 29.458	1.75		12	34.200	34.632	0.61875	A572-65	0.959
43	29.458 - 29.208	0.25		12	34.632	34.694	0.70625	A572-65	0.958
44	29.208 - 26.833	2.375		12	34.694	35.280	0.70625	A572-65	0.950
45	26.833 - 26.583	0.25		12	35.280	35.341	0.83125	A572-65	0.940
46	26.583 - 21.583	5		12	35.341	36.575	0.81875	A572-65	0.935
47	21.583 - 18.75	2.833		12	36.575	37.274	0.80625	A572-65	0.939
48	18.75 - 18.5	0.25		12	37.274	37.336	0.79375	A572-65	0.953
49	18.5 - 18	0.5		12	37.336	37.459	0.79375	A572-65	0.951
50	18 - 17.75	0.25		12	37.459	37.521	0.89375	A572-65	0.964
51	17.75 - 17.083	0.667		12	37.521	37.685	0.89375	A572-65	0.961
52	17.083 - 16.833	0.25		12	37.685	37.747	0.80625	A572-65	0.968
53	16.833 - 13	3.833		12	37.747	38.693	0.79375	A572-65	0.969
54	13 - 12.75	0.25		12	38.693	38.754	0.96875	A572-65	0.950
55	12.75 - 11.833	0.917		12	38.754	38.981	0.96875	A572-65	0.947
56	11.833 - 11.583	0.25		12	38.981	39.042	0.73125	A572-65	1.045
57	11.583 - 6.483	5.1		12	39.042	40.300	0.84375	A572-65	0.968
58	6.483 - 6.25	0.233		12	40.300	40.358	0.84375	A572-65	0.968
59	6.25 - 1.25	5		12	40.358	41.592	0.81875	A572-65	0.979
60	1.25 - 0	1.25		12	41.592	41.900	0.81875	A572-65	0.975

TNX Section Forces

	Increment (ft): 5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	130.6667 - 125.6667	0.1058	0.6905	0.281
2	125.6667 - 120.6667	0.1996	2.3004	0.5268
3	120.6667 - 115.6667	2.1984	24.537	4.9113
4	115.6667 - 110.6667	2.3738	50.6	5.5176
5	110.6667 - 110.5417	2.3807	51.291	5.5328
6	110.5417 - 105.5417	4.7608	102.75	11.857
7	105.5417 - 100.5417	6.0289	165.41	14.237
8	100.5417 - 95.5417	6.5266	238.26	14.904
9	95.5417 - 90.5417	8.9653	329.59	18.848
10	90.5417 - 90	9.041	339.82	18.928
11	90 - 89.75	9.0892	344.56	18.967
12	89.75 - 84.75	12.078	450.04	23.626
13	84.75 - 84.583	12.12	453.99	23.65
14	84.583 - 84.333	12.173	459.9	23.694
15	84.333 - 83	12.447	491.63	23.938
16	83 - 82.75	12.501	497.62	23.976
17	82.75 - 81	12.78	539.81	24.283
18	81 - 80.75	12.859	545.88	24.311
19	80.75 - 75.75	13.889	669.49	25.169
20	75.75 - 74.4417	14.165	702.54	25.394
21	74.4417 - 69.5417	15.704	829.11	26.296
22	69.5417 - 67	16.238	896.42	26.718
23	67 - 66.75	16.313	903.1	26.747
24	66.75 - 64.083	16.871	974.97	27.194
25	64.083 - 63.833	16.957	981.77	27.222
26	63.833 - 62.417	17.294	1020.5	27.477
27	62.417 - 62.167	17.383	1027.3	27.507
28	62.167 - 59.458	18.091	1102.5	27.995
29	59.458 - 59.208	18.184	1109.5	28.029
30	59.208 - 54.208	19.693	1251.8	28.938
31	54.208 - 53.5	19.917	1272.3	29.063
32	53.5 - 53.25	20.003	1279.6	29.105
33	53.25 - 48.25	21.609	1427.3	30.017
34	48.25 - 44.583	22.816	1538.5	30.685
35	44.583 - 44.333	22.914	1546.1	30.719
36	44.333 - 41.833	23.737	1623.5	31.188
37	41.833 - 41.583	23.838	1631.2	31.223
38	41.583 - 39	24.712	1712.5	31.697
39	39 - 34	27.7	1873.3	32.7
40	34 - 31.458	28.6	1956.9	33.1
41	31.458 - 31.208	28.7	1965.2	33.2
42	31.208 - 29.458	29.3	2023.5	33.5
43	29.458 - 29.208	29.4	2031.8	33.5
44	29.208 - 26.833	30.3	2111.9	33.9
45	26.833 - 26.583	30.4	2120.4	34.0
46	26.583 - 21.583	32.5	2292.3	34.9
47	21.583 - 18.75	33.7	2391.7	35.3
48	18.75 - 18.5	33.8	2400.5	35.4
49	18.5 - 18	34.0	2418.2	35.5
50	18 - 17.75	34.2	2427.1	35.5
51	17.75 - 17.083	34.5	2450.8	35.6
52	17.083 - 16.833	34.6	2459.7	35.7
53	16.833 - 13	36.3	2597.4	36.3
54	13 - 12.75	36.4	2606.5	36.3
55	12.75 - 11.833	36.9	2639.9	36.5
56	11.833 - 11.583	37.0	2649.0	36.5
57	11.583 - 6.483	39.4	2836.6	37.1
58	6.483 - 6.25	39.5	2845.3	37.1
59	6.25 - 1.25	41.8	3032.1	37.6
60	1.25 - 0	42.3	3079.2	37.7

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
130.67 - 125.67	Pole	TP11.767x10.525x0.1875	Pole	0.6%	Pass
125.67 - 120.67	Pole	TP13.009x11.767x0.1875	Pole	1.6%	Pass
120.67 - 115.67	Pole	TP14.252x13.009x0.1875	Pole	14.1%	Pass
115.67 - 110.67	Pole	TP15.494x14.252x0.1875	Pole	24.2%	Pass
110.67 - 110.54	Pole	TP15.525x15.494x0.1875	Pole	24.5%	Pass
110.54 - 105.54	Pole	TP16.776x15.525x0.25	Pole	31.8%	Pass
105.54 - 100.54	Pole	TP18.026x16.776x0.25	Pole	44.1%	Pass
100.54 - 95.54	Pole	TP19.277x18.026x0.25	Pole	55.2%	Pass
95.54 - 90.54	Pole	TP20.528x19.277x0.25	Pole	67.3%	Pass
90.54 - 90	Pole	TP20.663x20.528x0.25	Pole	68.4%	Pass
90 - 89.75	Pole + Reinf.	TP20.726x20.663x0.5	Reinf. 14 Tension Rupture	61.9%	Pass
89.75 - 84.75	Pole + Reinf.	TP21.976x20.726x0.475	Reinf. 14 Tension Rupture	73.9%	Pass
84.75 - 84.58	Pole + Reinf.	TP22.018x21.976x0.475	Reinf. 14 Tension Rupture	74.4%	Pass
84.58 - 84.33	Pole + Reinf.	TP22.08x22.018x0.6375	Reinf. 14 Tension Rupture	57.7%	Pass
84.33 - 83	Pole + Reinf.	TP22.414x22.08x0.625	Reinf. 14 Tension Rupture	60.4%	Pass
83 - 82.75	Pole + Reinf.	TP22.476x22.414x0.3938	Reinf. 7 Tension Rupture	71.0%	Pass
82.75 - 81	Pole + Reinf.	TP22.914x22.476x0.3875	Reinf. 7 Tension Rupture	74.6%	Pass
81 - 80.75	Pole + Reinf.	TP22.977x22.914x0.5375	Reinf. 3 Compression	78.0%	Pass
80.75 - 75.75	Pole + Reinf.	TP24.227x22.977x0.5125	Reinf. 3 Compression	88.3%	Pass
75.75 - 74.44	Pole + Reinf.	TP25.53x24.227x0.5125	Reinf. 3 Compression	90.8%	Pass
74.44 - 69.54	Pole + Reinf.	TP25.278x24.055x0.4375	Reinf. 7 Tension Rupture	83.3%	Pass
69.54 - 67	Pole + Reinf.	TP25.912x25.278x0.4375	Reinf. 7 Tension Rupture	86.2%	Pass
67 - 66.75	Pole + Reinf.	TP25.975x25.912x0.4375	Reinf. 6 Tension Rupture	86.4%	Pass
66.75 - 64.08	Pole + Reinf.	TP26.641x25.975x0.4313	Reinf. 6 Tension Rupture	89.2%	Pass
64.08 - 63.83	Pole + Reinf.	TP26.703x26.641x0.475	Pole	85.4%	Pass
63.83 - 62.42	Pole + Reinf.	TP27.057x26.703x0.475	Pole	86.7%	Pass
62.42 - 62.17	Pole + Reinf.	TP27.119x27.057x0.6125	Reinf. 12 Tension Rupture	85.7%	Pass
62.17 - 59.46	Pole + Reinf.	TP27.795x27.119x0.6	Reinf. 12 Tension Rupture	88.5%	Pass
59.46 - 59.21	Pole + Reinf.	TP27.858x27.795x0.725	Reinf. 2 Compression	79.7%	Pass
59.21 - 54.21	Pole + Reinf.	TP29.106x27.858x0.7	Reinf. 2 Compression	84.3%	Pass
54.21 - 53.5	Pole + Reinf.	TP29.283x29.106x0.7	Reinf. 2 Compression	84.9%	Pass
53.5 - 53.25	Pole + Reinf.	TP29.345x29.283x0.725	Reinf. 2 Compression	83.7%	Pass
53.25 - 48.25	Pole + Reinf.	TP30.593x29.345x0.7125	Reinf. 2 Compression	87.8%	Pass
48.25 - 44.58	Pole + Reinf.	TP31.509x30.593x0.6875	Reinf. 2 Compression	90.6%	Pass
44.58 - 44.33	Pole + Reinf.	TP31.571x31.509x0.6875	Reinf. 2 Compression	90.8%	Pass
44.33 - 41.83	Pole + Reinf.	TP32.196x31.571x0.6875	Reinf. 2 Compression	92.6%	Pass
41.83 - 41.58	Pole + Reinf.	TP32.258x32.196x0.7125	Reinf. 2 Compression	87.8%	Pass
41.58 - 39	Pole + Reinf.	TP34.02x32.258x0.7	Reinf. 2 Compression	89.5%	Pass
39 - 34	Pole + Reinf.	TP33.511x32.278x0.7188	Reinf. 2 Compression	91.3%	Pass
34 - 31.46	Pole + Reinf.	TP34.139x33.511x0.7188	Reinf. 2 Compression	92.7%	Pass
31.46 - 31.21	Pole + Reinf.	TP34.2x34.139x0.6188	Reinf. 10 Tension Rupture	91.0%	Pass
31.21 - 29.46	Pole + Reinf.	TP34.632x34.2x0.6188	Reinf. 10 Tension Rupture	91.9%	Pass
29.46 - 29.21	Pole + Reinf.	TP34.694x34.632x0.7063	Reinf. 1 Compression	94.0%	Pass
29.21 - 26.83	Pole + Reinf.	TP35.28x34.694x0.7063	Reinf. 1 Compression	95.2%	Pass
26.83 - 26.58	Pole + Reinf.	TP35.341x35.28x0.8313	Reinf. 1 Compression	83.5%	Pass
26.58 - 21.58	Pole + Reinf.	TP36.575x35.341x0.8188	Reinf. 1 Compression	85.9%	Pass
21.58 - 18.75	Pole + Reinf.	TP37.274x36.575x0.8063	Reinf. 1 Compression	87.2%	Pass
18.75 - 18.5	Pole + Reinf.	TP37.336x37.274x0.7938	Reinf. 1 Compression	87.3%	Pass
18.5 - 18	Pole + Reinf.	TP37.459x37.336x0.7938	Reinf. 1 Compression	87.5%	Pass
18 - 17.75	Pole + Reinf.	TP37.521x37.459x0.8938	Reinf. 1 Compression	77.2%	Pass
17.75 - 17.08	Pole + Reinf.	TP37.685x37.521x0.8938	Reinf. 1 Compression	77.5%	Pass
17.08 - 16.83	Pole + Reinf.	TP37.747x37.685x0.8063	Reinf. 1 Compression	85.4%	Pass
16.83 - 13	Pole + Reinf.	TP38.693x37.747x0.7938	Reinf. 1 Compression	87.0%	Pass
13 - 12.75	Pole + Reinf.	TP38.754x38.693x0.9688	Reinf. 1 Compression	72.5%	Pass
12.75 - 11.83	Pole + Reinf.	TP38.981x38.754x0.9688	Reinf. 1 Compression	72.8%	Pass
11.83 - 11.58	Pole + Reinf.	TP39.042x38.981x0.7313	Reinf. 1 Compression	96.1%	Pass
11.58 - 6.48	Pole + Reinf.	TP40.3x39.042x0.8438	Reinf. 1 Compression	90.5%	Pass
6.48 - 6.25	Pole + Reinf.	TP40.358x40.3x0.8438	Reinf. 1 Compression	90.5%	Pass
6.25 - 1.25	Pole + Reinf.	TP41.592x40.358x0.8188	Reinf. 1 Compression	92.3%	Pass
1.25 - 0	Pole + Reinf.	TP41.9x41.592x0.8188	Reinf. 1 Compression	92.7%	Pass
				Summary	
			Pole	86.7%	Pass
			Reinforcement	96.1%	Pass
			Overall	96.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity															
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16
130.67 - 125.67	120	n/a	120	6.98	n/a	6.98	0.6%																
125.67 - 120.67	163	n/a	163	7.73	n/a	7.73	1.6%																
120.67 - 115.67	215	n/a	215	8.48	n/a	8.48	14.1%																
115.67 - 110.67	277	n/a	277	9.23	n/a	9.23	24.2%																
110.67 - 110.54	278	n/a	278	9.25	n/a	9.25	24.5%																
110.54 - 105.54	464	n/a	464	13.28	n/a	13.28	31.8%																
105.54 - 100.54	578	n/a	578	14.29	n/a	14.29	44.1%																
100.54 - 95.54	709	n/a	709	15.29	n/a	15.29	55.2%																
95.54 - 90.54	858	n/a	858	16.30	n/a	16.30	67.3%																
90.54 - 90	875	n/a	875	16.41	n/a	16.41	68.4%																
90 - 89.75	883	808	1692	16.46	13.50	29.96	43.9%														61.9%		
89.75 - 84.75	1055	903	1958	17.46	13.50	30.96	52.6%														73.9%		
84.75 - 84.58	1061	906	1967	17.50	13.50	31.00	52.9%														74.4%		
84.58 - 84.33	1070	1503	2574	17.55	22.50	40.05	41.1%							43.8%							57.7%		
84.33 - 83	1120	1547	2667	17.82	22.50	40.32	43.0%							45.8%							60.4%		
83 - 82.75	1130	613	1743	17.87	9.00	26.87	66.7%							71.0%									
82.75 - 81	1198	636	1834	18.22	9.00	27.22	70.0%							74.6%									
81 - 80.75	1208	1279	2487	18.27	18.00	36.27	52.4%			78.0%				55.8%									
80.75 - 75.75	1418	1416	2834	19.27	18.00	37.27	59.4%			88.3%				63.1%									
75.75 - 74.44	1477	1453	2930	19.54	18.00	37.54	61.1%			90.8%				64.9%									
74.44 - 69.54	2001	768	2770	25.09	9.00	34.09	78.5%							83.3%									
69.54 - 67	2158	806	2964	25.72	9.00	34.72	81.2%							86.2%									
67 - 66.75	2174	810	2983	25.79	9.00	34.79	81.5%						86.4%										
66.75 - 64.08	2347	850	3197	26.45	9.00	35.45	84.2%						89.2%										
64.08 - 63.83	2414	1188	3602	26.52	18.00	44.52	85.4%						84.4%							84.7%			
63.83 - 62.42	2512	1219	3731	26.87	18.00	44.87	86.7%						85.7%							86.3%			
62.42 - 62.17	2477	2226	4704	26.94	22.50	49.44	61.4%						65.1%						85.7%	85.7%			
62.17 - 59.46	2670	2334	5004	27.61	22.50	50.11	63.5%						67.2%						88.5%	88.5%			
59.46 - 59.21	2688	3271	5959	27.68	31.50	59.18	53.8%		79.7%				57.0%						75.0%	75.0%			
59.21 - 54.21	3070	3559	6630	28.93	31.50	60.43	57.0%		84.3%				60.3%						79.4%	79.4%			
54.21 - 53.5	3127	3601	6728	29.11	31.50	60.61	57.4%		84.9%				60.7%						79.9%	79.9%			
53.5 - 53.25	3150	3855	7005	29.17	34.50	63.67	57.9%		83.7%				59.8%					67.9%	79.9%				
53.25 - 48.25	3574	4177	7751	30.43	34.50	64.93	60.8%		87.8%				62.8%					71.3%	83.8%				
48.25 - 44.58	3908	4421	8329	31.35	34.50	65.85	62.8%		90.6%				64.8%					73.7%	86.4%				
44.58 - 44.33	3932	4438	8370	31.41	34.50	65.91	62.9%		90.8%			63.0%						73.8%	86.6%				
44.33 - 41.83	4172	4609	8781	32.04	34.50	66.54	64.2%		92.6%			64.3%						75.3%	88.3%				
41.83 - 41.58	4193	4980	9173	32.10	36.00	68.10	59.5%		87.8%			62.8%					75.4%	75.4%					
41.58 - 39	4452	5174	9626	32.75	36.00	68.75	60.7%		89.5%			64.0%					76.9%	76.9%					
39 - 34	5162	5361	10523	36.66	36.00	72.66	61.9%		91.3%			65.3%					78.3%	78.3%					
34 - 31.46	5460	5557	11017	37.35	36.00	73.35	62.9%		92.7%			66.3%					79.6%	79.6%					
31.46 - 31.21	5490	4196	9686	37.42	27.00	64.42	72.0%					75.8%					91.0%	91.0%					
31.21 - 29.46	5703	4299	10002	37.90	27.00	64.90	72.7%					76.6%					91.9%	91.9%					
29.46 - 29.21	5734	5733	11467	37.97	36.00	73.97	63.8%	94.0%				67.2%					80.6%	80.6%					
29.21 - 26.83	6032	5922	11955	38.61	36.00	74.61	64.7%	95.2%				68.1%					81.7%	81.7%					
26.83 - 26.58	6090	8031	14120	38.68	48.00	86.68	59.3%	83.5%				65.4%				65.8%	78.5%	69.2%					
26.58 - 21.58	6756	8583	15339	40.05	48.00	88.05	61.0%	85.9%				67.2%				67.8%	80.6%	71.2%					
21.58 - 18.75	7154	8905	16059	40.82	48.00	88.82	62.0%	87.2%				68.1%				68.8%	81.7%	72.3%					
18.75 - 18.5	7190	8934	16123	40.89	48.00	88.89	62.0%	87.3%				68.2%				68.9%	81.8%	72.4%					
18.5 - 18	7262	8991	16253	41.02	48.00	89.02	62.2%	87.5%				68.4%				69.1%	82.0%	72.6%					
18 - 17.75	7270	10887	18157	41.09	60.38	101.47	52.5%	77.2%				54.7%				65.2%	65.2%						63.4%
17.75 - 17.08	7367	10979	18346	41.27	60.38	101.65	52.7%	77.5%				54.9%				65.4%	65.4%						63.7%
17.08 - 16.83	7404	9340	16744	41.34	51.38	92.72	58.1%	85.4%								72.0%	72.0%						70.0%
16.83 - 13	7980	9797	17777	42.39	51.38	93.76	59.2%	87.0%								73.4%	73.4%						71.3%
13 - 12.75	8018	13412	21430	42.45	69.38	111.83	49.3%	72.5%							61.7%	61.3%	61.3%						59.7%
12.75 - 11.83	8161	13563	21724	42.70	69.38	112.08	49.6%	72.8%							62.0%	61.6%	61.6%						60.0%
11.83 - 11.58	8216	8723	16939	42.77	51.38	94.15	65.4%	96.1%							80.3%								72.9%
11.58 - 6.48	9243	12109	21353	44.16	59.50	103.66	61.7%	90.5%							77.5%							70.0%	
6.48 - 6.25	9283	12143	21426	44.23	59.50	103.73	61.8%	90.5%							77.6%							70.0%	
6.25 - 1.25	10162	12877	23038	45.59	59.50	105.09	63.0%	92.3%							79.1%							71.5%	
1.25 - 0	10390	13064	23453	45.93	59.50	105.43	63.5%	92.7%							79.5%							71.8%	

Note: Section capacity checked in 5 degree increments.

APPENDIX D

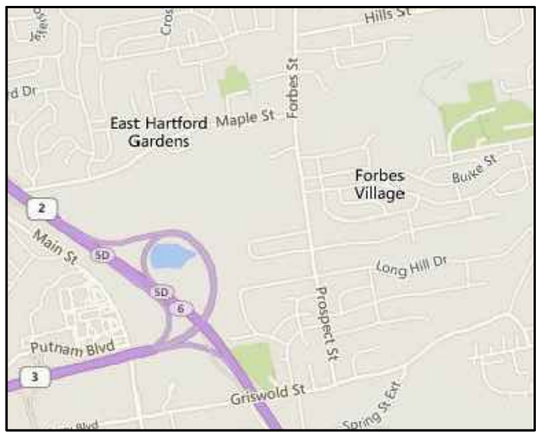
MODIFICATION DRAWINGS

MONOPOLE REINFORCEMENT DRAWINGS

PREPARED FOR
CROWN CASTLE

SITE NAME: HRT 100 943239
BU NUMBER: 806376

SITE ADDRESS:
1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD COUNTY, USA



DIRECTIONS: MASS PIKE WEST TO RT 84 SOUTH(WEST) TO EXIT 55 (RT 2 SOUTH). FOLLOW 2 SOUTH TO EXIT 6 (GRISWOLD ST.). TAKE A LEFT ONTO GRISWOLD ST. TAKE A LEFT ONTO PROSPECT ST. (1/2 MILE). TAKE A LEFT INTO A FARM COMPLEX JUST AFTER LINWOOD ST. ON LEFT. SITE IS IN LEFT REAR OF OLD BARN.

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

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM GPD TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES PLEASE CONTACT GPD AT CROWNMODS@GPDGROUP.COM.

PROJECT CONTACTS:

1. CROWN PROJECT MANAGER
   DAN VADNEY
   (518) 373-3510
   DAN.VADNEY@CROWNCASTLE.COM
   3 CORPORATE PARK DRIVE, SUITE 101
   CLIFTON PARK, NY 12065
2. CROWN CONSTRUCTION MANAGER
   JASON D'AMICO
   (860) 209-0104
   JASON.D'AMICO@CROWNCASTLE.COM
   3 CORPORATE PARK DRIVE, SUITE 101
   CLIFTON PARK, NY 12065
3. ENGINEER OF RECORD:
   GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION
   520 SOUTH MAIN STREET, SUITE 2531
   AKRON, OH 44311
   FOR QUESTIONS PLEASE EMAIL:
   CROWNMODS@GPDGROUP.COM

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S-1	TITLE PAGE
S-2	MODIFICATION INSPECTION CHECKLIST
S-3	NOTES
S-4	FORGBolt™ SPECIFICATIONS AND TIGHTENING PROCEDURE
S-5	NexGen2™ BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE
S-6	AJAX ONESIDE™ BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE
S-7	TOWER ELEVATION
S-8	TOWER SECTIONS
S-9	ADDITIONAL TOWER SECTIONS
S-10	CUSTOM FLAT PLATE DETAILS
S-11	STIFFENER DETAILS
S-12	BASE PLATE WELD DETAILS

TOWER INFORMATION

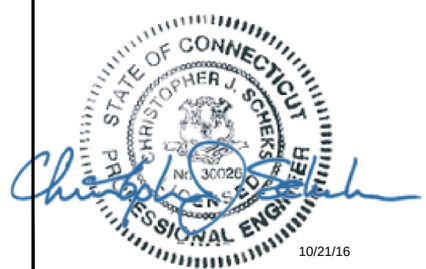
TOWER MANUFACTURER / DWG:	VALMONT/DWG #: 262386
TOWER HEIGHT / TYPE:	130.7 FT MODIFIED MONOPOLE
TOWER LOCATION:	LAT: 41° 43' 53.3"
DATUM: (NAD 1983)	LONG: -72° 36' 28.0"
	ELEV: 69 FT AMSL
STRUCTURAL DESIGN DRAWING:	CCI/WO #: 1286658
STRUCTURAL ANALYSIS REPORT:	PJF/WO #: 1265121
STRUCTURAL ANALYSIS DATE:	07/11/16
APPLICATION ID:	354601 REV #: 0
CCISITES DOCUMENT ID:	6353052

CODE COMPLIANCE

GOVERNING CODES:	TIA-222-G & 2016 CBC
WIND SPEEDS:	125 MPH 3-SECOND GUST (ULTIMATE)
	97 MPH 3-SECOND GUST (NOMINAL)
	50 MPH 3-SECOND GUST (W/ ICE)
ICE THICKNESS:	1"
RISK CATEGORY:	II
EXPOSURE CATEGORY:	C
TOPO CATEGORY:	1

NO.	DATE	DESCRIPTION	BY

REVISIONS



10/21/16

GPD Engineering and Architecture Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 330.572.2101

GPD PROJECT NUMBER
2016777.806376.03

SITE NAME: HRT 100 943239

BU NUMBER: 806376

WO NUMBER: 1286658

SITE ADDRESS:
1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD COUNTY, USA

ENG/QA BY: TRE DATE: 10/21/16

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APRV'D BY: CJS DATE: 10/21/16

SCALE: N.T.S.

TITLE PAGE

S-1

REV 0

MODIFICATION INSPECTION NOTES

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING
X	EOR REVIEW
X	FABRICATION INSPECTION
NA	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
NA	NDE REPORT OF MONOPOLE BASE PLATE PER ENG-SOW-10033
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
NA	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION AND NDE REPORTS
NA	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT REQUIRED FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE CROWN ENG-BUL-10173, "APPROVED MI VENDORS".

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

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

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GC INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MI INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND CROWN ENG-SOW-10007.

RECOMMENDATIONS

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

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW THE FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY, NOR FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

CROWN RESERVES THE RIGHT TO CONDUCT AN MI VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MI INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH CROWN ENG-SOW-10007.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT AEV/AESV FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "**PASSING MI**" OR "**PASS AS NOTED MI**" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

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

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

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

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

NO.	DATE	DESCRIPTION	BY

REVISIONS

STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKS
No. 30026
LICENSED
PROFESSIONAL ENGINEER

10/21/16

GPD Engineering and Architecture Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 330.572.2101

GPD PROJECT NUMBER
2016777.806376.03

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SCALE: N.T.S.

MODIFICATION INSPECTION CHECKLIST

S-2

REV 0

GENERAL NOTES

1. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED, THAT HE IS PROPERLY LICENSED, AND THAT HE IS PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.
2. THE GENERAL NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE STRUCTURE AND SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVALS FROM ALL AUTHORITIES HAVING JURISDICTION FOR THIS PROJECT AND SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
5. ERECT GUARDS AND BARRIERS PER APPLICABLE LABOR AND CONSTRUCTION SAFETY REGULATIONS.
6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, POSSIBLE INTERFERENCES, AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO THE ENGINEER OF RECORD (EOR) AND FIELD PERSONNEL IMMEDIATELY. ANY AND ALL FIELD CHANGES SHALL BE APPROVED AND DOCUMENTED BY THE EOR PRIOR TO FIELD IMPLEMENTATION.
7. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR TWO (2) YEARS FROM THE DATE OF COMPLETED CONSTRUCTION.
8. USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS, UNO.
9. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH ANSI, ASTM, ACI, TIA, AND AISC STANDARDS AS REFERENCED IN THE APPLICABLE CODE.
10. STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES/STANDARDS. ALL CONSTRUCTION, EXCEPT WHERE NOTED OTHERWISE, SHALL COMPLY WITH THOSE CODES/STANDARDS.
11. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS, AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE DULY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
12. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION PROCEDURES MEET THE REQUIREMENTS OF OSHA, THE OWNER, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
15. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS, WITH THE RESIDENT LEASING AGENT.
16. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR BURIED SERVICES AFFECTED BY THIS CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR TEMPORARILY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.
17. STRUCTURAL DESIGN IS FOR THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT OF AN EXISTING TOWER HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.
18. DO NOT SCALE DRAWINGS.
19. THE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF CROWN CASTLE. THEY MAY NOT BE REPRODUCED IN ANY FORM WITHOUT THE EXPRESSED WRITTEN CONSENT/PERMISSION OF CROWN CASTLE
20. FOR THIS ANALYSIS AND MODIFICATION, THE TOWER HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY DEFECTS. IF THE CONTRACTOR DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE ENGINEER OF RECORD IMMEDIATELY.
21. MODIFICATION WORK SHALL BE COMPLETED IN CALM WIND CONDITIONS / OR APPROPRIATE WIND SPEED FOR THE TYPE OF MODIFICATION WORK TO BE INSTALLED.
22. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER OF RECORD.
23. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

WELDING NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE-STEEL".
2. THE CERTIFIED WELD INSPECTOR SHALL INDICATE, IN A WRITTEN CWI REPORT, THAT ALL WELDING OPERATIONS, PRE-DURING-POST, WERE CONDUCTED IN ACCORDANCE WITH AWS D1.1 WITH PHOTOGRAPHS AND DOCUMENTATION SUPPORTING THE ACCEPTANCE OR REJECTION OF ALL WELDING. FOR INFORMATION, SEE ENG-STD-10069: GC INSPECTION STANDARD FOR FABRICATION AND FIELD WELDING OF STRUCTURAL STEEL AND ENG-SOW-10007 POST MODIFICATION INSPECTION SOW. ALL CWI WELD INSPECTION DOCUMENTATION AND PHOTOS SHALL BE SUBMITTED TO THE PMI INSPECTOR.
3. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
4. FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
5. FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0"
6. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD. GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: *TOWER BASE PLATE NDE*, AND ENG-BUL-10051: *NDE REQUIREMENTS FOR MONOPOLE BASEPLATE TO PREVENT CONNECTION FAILURE*. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
7. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.
8. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
9. ALL ARC WELDING ON CROWN STRUCTURES SHALL BE DONE IN ACCORDANCE WITH THE CROWN ENG-PLN-10015, "CUTTING AND WELDING SAFETY PLAN" AND AWS D1.1 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELDING INSPECTOR (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE-DURING-POST, USING THE ACCEPTANCE CRITERIA OF AWS D1.1. THE CWI SHALL WORK WITH THE GC ON THE LEVEL OF INTERACTION NEEDED TO CONDUCT THE WELDING INSPECTION. THE CERTIFIED WELDING INSPECTION IS THE RESPONSIBILITY OF THE GC.
10. FOR ALL WELDING, USE E80XX ELECTRODES FOR SMAW PROCESS AND E8XT-XX ELECTRODES FOR FCAW PROCESS, UNO.
11. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING.
12. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0° F. WHEN THE TEMPERATURE IS BETWEEN 0° F AND 32° F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70° F DURING THE WELDING PROCESS.
13. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.
14. WELDING CERTIFICATES MUST BE PROVIDED TO CWI AND GPD GROUP PRIOR TO WELDING CONTRACTOR BEGINNING WORK ON SITE. CERTIFICATE WILL BE ASKED FOR AS PART OF INSPECTION PROCESS. ALL WELDING SHOULD BE PERFORMED BY AN AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES AND IN ACCORDANCE WITH ANSI/AWS D1.1 AND ANSI Z 49.1 OR LATEST EDITIONS.
15. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.
16. INSTALL 3000° (NFPA 701) FIRE BLANKET AROUND ALL COAX.
17. MORE SPLATTER AND SPARKS SHALL BE ANTICIPATED GIVEN THE PREVIOUSLY GALV. SURFACE.
18. COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM ALL WELDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH WELDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING IS BEING PERFORMED.
19. FUMES CREATED FROM WELDING ON A PREVIOUSLY GALV. SURFACE CAN BE HAZARDOUS.
20. PRIOR TO WELDING, ALL SURFACES SHALL BE PROPERLY GROUND TO REMOVE GALVANIZING.
21. ALL FIELD WELDS SHALL BE TOUCHED UP WITH A GALVANIZING PAINT REPAIR (ZRC OR APPROVED EQUIVALENT).
22. WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. A MINIMUM OF 500 GAL. OF WATER SHALL BE PROVIDED. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, A MINIMUM OF SIX (6) 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).

STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION, ERECTION, ALTERATION AND MAINTENANCE SHALL CONFORM TO THE FOLLOWING, UNLESS NOTED OTHERWISE (UNO).
   A. TIA-222-G: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   B. TIA-1019-A: INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   C. AISC: MANUAL OF STEEL CONSTRUCTION
2. ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS, UNO.
   A. PLATE, ASTM A572 GRADE 65
   B. ALL BOLTS, ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS
3. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER OF RECORD.
4. ALL FASTENERS SHALL NOT BE REUSED.
5. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED ASTM A325 BOLTS. ALL BOLTS, INCLUDING U-BOLTS, SHALL BE TIGHTENED IN ACCORDANCE WITH AISC "SNUG TIGHT" REQUIREMENTS, U.N.O.
6. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
7. HOT-DIP GALVANIZE ALL ITEMS, UNO.
   GALVANIZE PER ASTM A123, ASTM A153/A153M OR ASTM A653 G90, AS APPLICABLE.
8. FOR A LIST OF CROWN APPROVED COLD GALVANIZING COMPOUNDS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".
9. AFTER FINAL INSPECTION, ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING WELDS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE ACCESSIBLE), SHALL BE CLEANED AND COLD GALVANIZING APPLIED BY BRUSH IN ACCORDANCE WITH CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN". PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MI INSPECTOR
10. ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING PAINTED STEEL. FOR A LIST OF CROWN APPROVED PAINT COATINGS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".

NO.	DATE	DESCRIPTION	BY

REVISIONS

STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKS
No. 30026
REGISTERED
PROFESSIONAL ENGINEER

10/21/16

GPD Engineering and Architecture Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 330.572.2101

GPD PROJECT NUMBER
2016777.806376.03

SITE NAME: HRT 100 943239

BU NUMBER: 806376

WO NUMBER: 1286658

SITE ADDRESS:
1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD COUNTY, USA

ENG/QA BY: TRE DATE: 10/21/16

DFT BY: RR DATE: 10/21/16

DFT/QA BY: CB DATE: 10/21/16

APRV'D BY: CJS DATE: 10/21/16

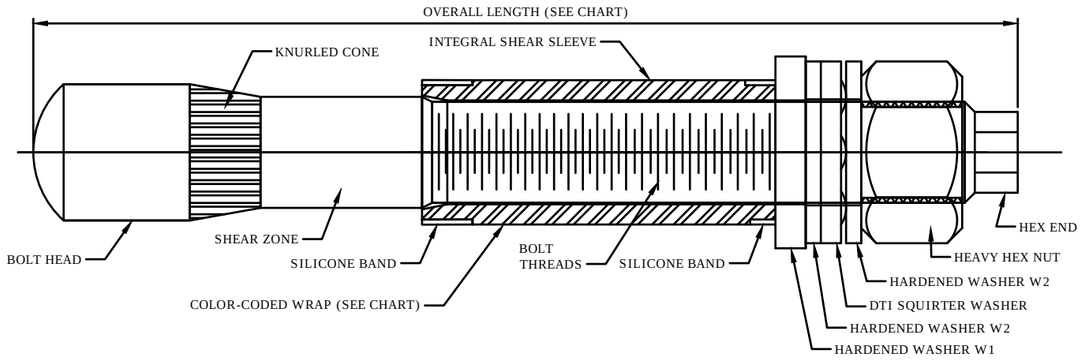
SCALE: N.T.S.

NOTES

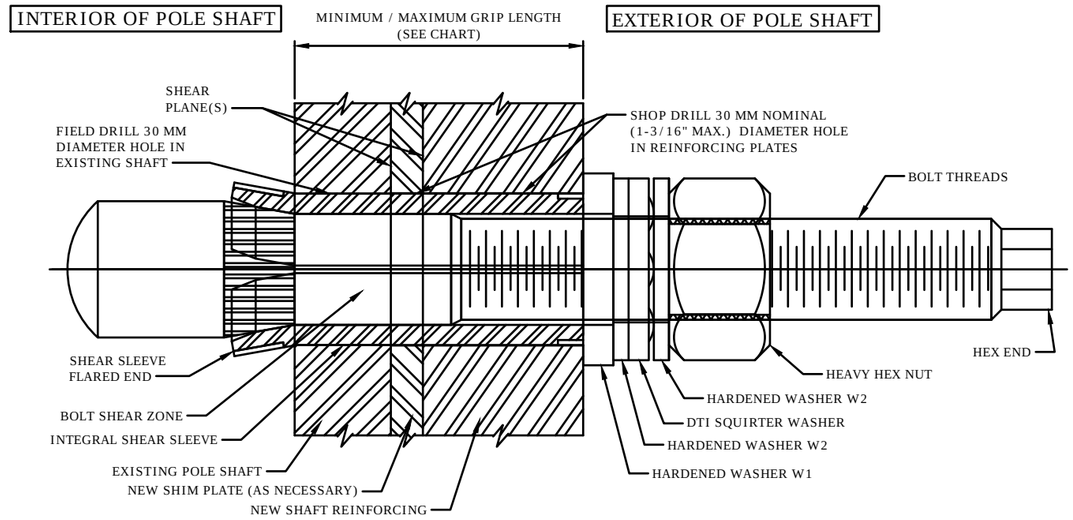
S-3

REV 0

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



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

BOLT HOLE NOTES:

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

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

CONTAINS PROPRIETARY INFORMATION
PATENT PENDING

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

FORGBolt™ Installation

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

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

NO.	DATE	DESCRIPTION	BY

REVISIONS

STATE OF CONNECTICUT · CHRISTOPHER J. SCHERER · No. 30026 · LICENSED PROFESSIONAL ENGINEER

10/21/16

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Akron, OH 44311
330.572.2100 330.572.2101

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SCALE: N.T.S.

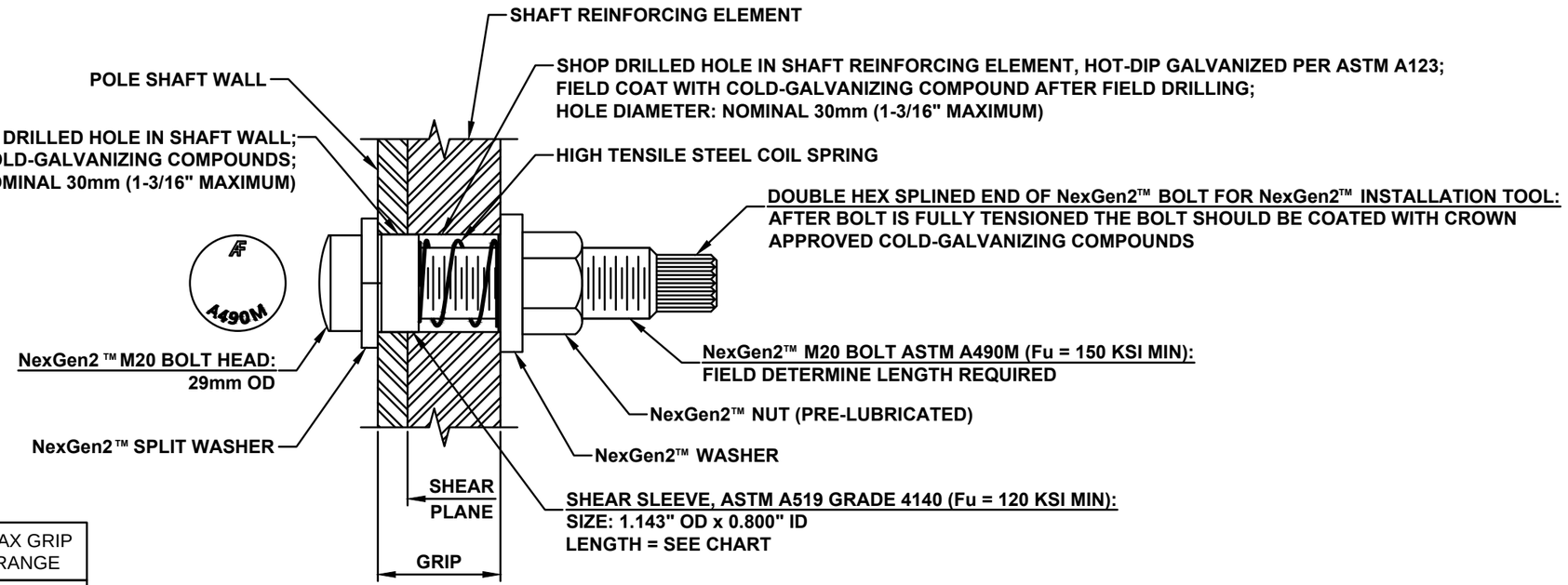
FORGBolt™ SPECIFICATIONS AND TIGHTENING PROCEDURE

S-4 REV 0

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT

NEXGEN2 BLIND BOLT ASSEMBLY

- PATENT PENDING -



PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
M20x36	M20x95	11/16"	15/16"	1-7/16"
M20x48	M20x95	1-3/16"	1-7/16"	1-7/8"
M20x57	M20x95	1-5/8"	1-7/8"	2-1/4"
M20x68	M20x135	2"	2-1/4"	2-11/16"
M20x96	M20x135	2-7/16"	2-11/16"	3-3/4"
M20x127	M20x165	3"	3-3/4"	5"
M20x212	M20x250	4"	5"	8-5/16"

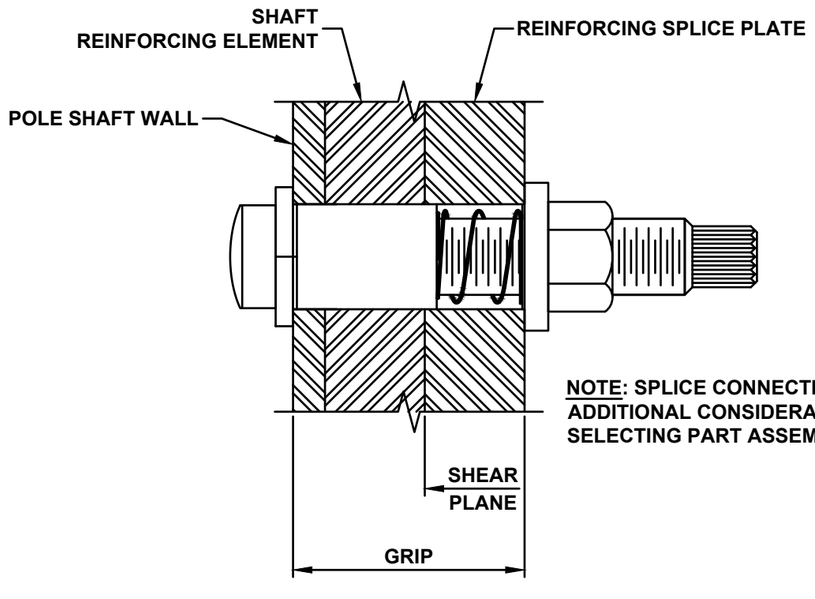
MANUFACTURER:
ALLFASTENERS
15401 COMMERCE PARK DRIVE, BROOKPARK, OHIO, USA 44142
PHONE: 440-232-6060
WEBSITE: WWW.ALLFASTENERS.COM

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: NexGen2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.

NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS.

TYPICAL NG2™ BOLT DETAIL



NOTE: SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

NO.	DATE	DESCRIPTION	BY

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STATE OF CONNECTICUT · CHRISTOPHER J. SCHEKSER · No. 30026 · REGISTERED PROFESSIONAL ENGINEER

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NexGen2™ BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

S-5 | REV 0

INTERIOR OF POLE SHAFT | EXTERIOR OF POLE SHAFT

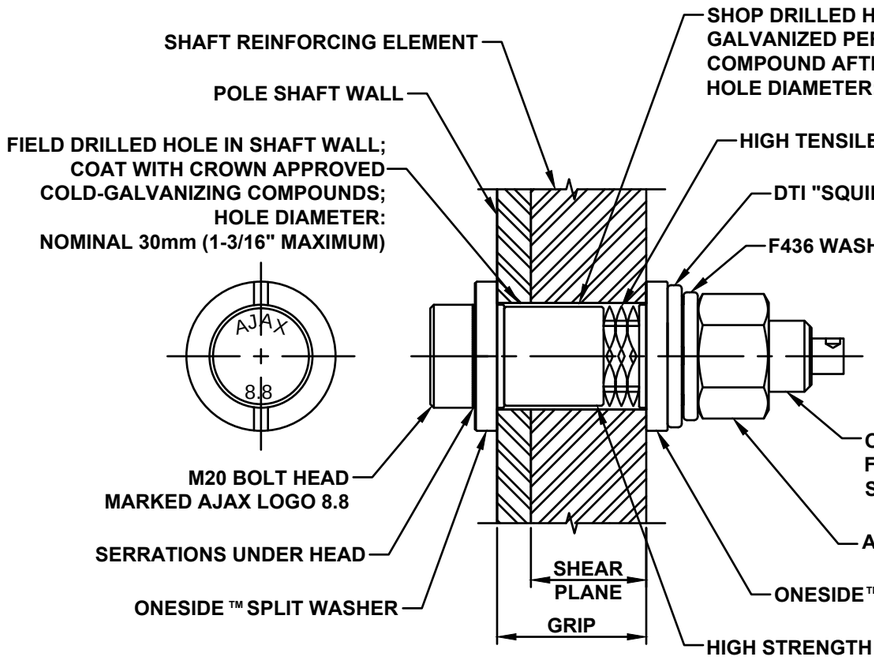
AJAX FASTENERS

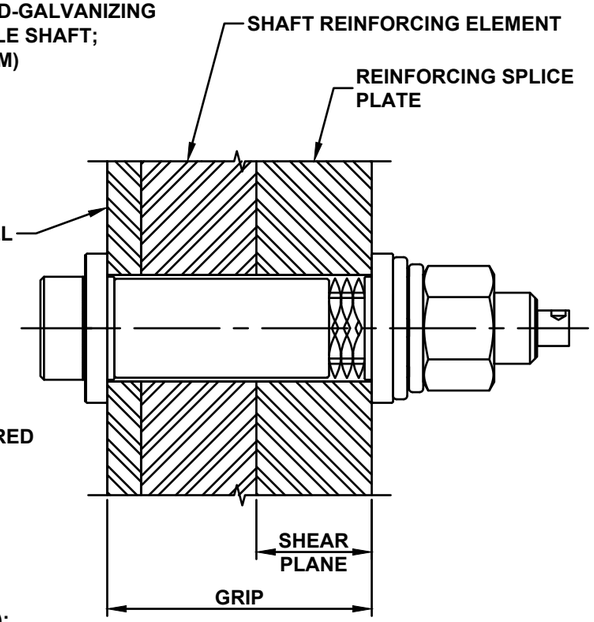
ONESIDE™

PATENT US 7,373,709B2

MANUFACTURER INSTALLATION VIDEO

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





NOTE:
SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

AJAX ONESIDE™ BOLT DETAIL

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

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

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

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

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

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STATE OF CONNECTICUT · CHRISTOPHER J. SCHEKS · No. 30026 · REGISTERED PROFESSIONAL ENGINEER

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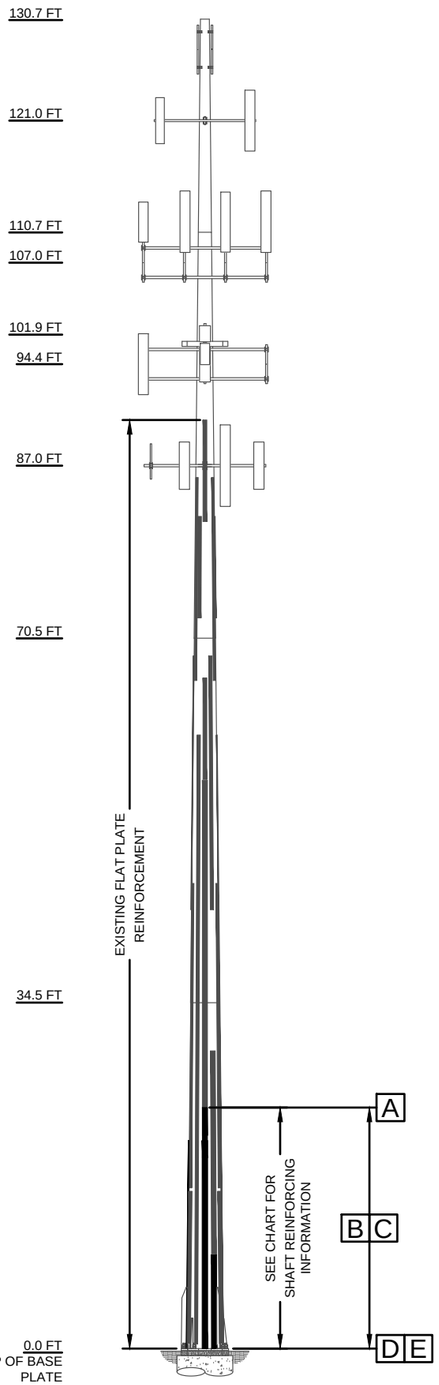
SCALE: N.T.S.

AJAX ONESIDE™ BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

S-6

REV 0



POLE ELEVATION

MANUFACTURER POLE SPECIFICATIONS

POLE SHAPE TYPE:	12-SIDED
TAPER:	0.2500 IN/FT
SHAFT STEEL:	ASTM A572 GRADE 65
BASE PL STEEL:	ASTM A572 GRADE 60
ANCHOR RODS:	2-1/4"Ø #18J ASTM A615 GR 75

POLE MODIFICATION SCHEDULE

	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
A	20.75	**SPLICE NEW AND EXISTING FLAT PLATES**	S-9
B	0.5 - 20.5	**REMOVE EXISTING FLAT PLATE REINFORCEMENT FROM EXISTING TOWER**	S-8
C	0.0 - 20.75	**INSTALL NEW FLAT PLATE REINFORCEMENT**	S-8, S-9, & S-10
D	0.0	**REMOVE EXISTING TRANSITION STIFFENERS**	S-8
E	0.0	**INSTALL A NEW TRANSITION STIFFENER**	S-11

MANUFACTURER SHAFT SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	POLE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATS (IN) @ TOP	DIAMETER ACROSS FLATS (IN) @ BOTTOM
1	20.13	0.1875		10.5250	15.5250
2	40.00	0.2500	46.80	15.5250	25.5310
3	39.92	0.3125	53.70	24.0500	34.0150
4	39.00	0.3438		32.2800	41.9000

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

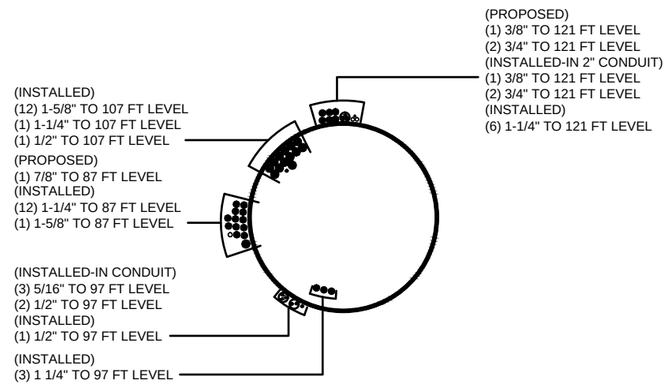
CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	PART NUMBER	FLAT / DEGREES (°)	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAX INTERMEDIATE BOLT SPACING	BOLT QUANTITY PER PLATE	STEEL WEIGHT PER PLATE (BLACK)	TOTAL BOLT QUANTITY	TOTAL STEEL WEIGHT (BLACK)
0.0'	20.75'	CCI-WCFP-06512520.75*	4, 7, & 11	NA	11	1'-7"	22**	573.7	66**	1721.0
0.0'	9.25'	CCI-WCFP-06512509.25*	8	NA	11	1'-7"	15	255.7	15	255.7
								TOTAL	81	1976.7

* SEE SHEET S-10 FOR CUSTOM FLAT PLATE DETAILS.
** BOLT QUANTITY MAY VARY DEPENDING ON EXISTING BOLT HOLE LOCATIONS. SEE DETAIL 6/S-10

NOTES FOR CROWN REINFORCING (65 KSI) MATERIAL:

1. DO NOT WELD WITHOUT APPROVAL FROM THE EOR.
2. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKED SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT EOR APPROVAL.
3. FOR PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6"±1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION ±3". FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.
4. ALL FLAT PLATE REINFORCEMENT IS TO BE INSTALLED CENTERED ON ITS DESIGNATED FLAT, UNO.
5. PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY, AND SHALL NOT BE USED FOR FABRICATION.
6. SEE CCI APPROVED REINFORCEMENT COMPONENTS CATALOG FOR PART DETAILS.
7. SEE SHEETS S-4, S-5, & S-6 FOR DETAILED INFORMATION REGARDING INSTALLATION OF THE APPROVED FASTENER ASSEMBLIES.



COAX LAYOUT

NO.	DATE	DESCRIPTION	BY

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SCALE: N.T.S.

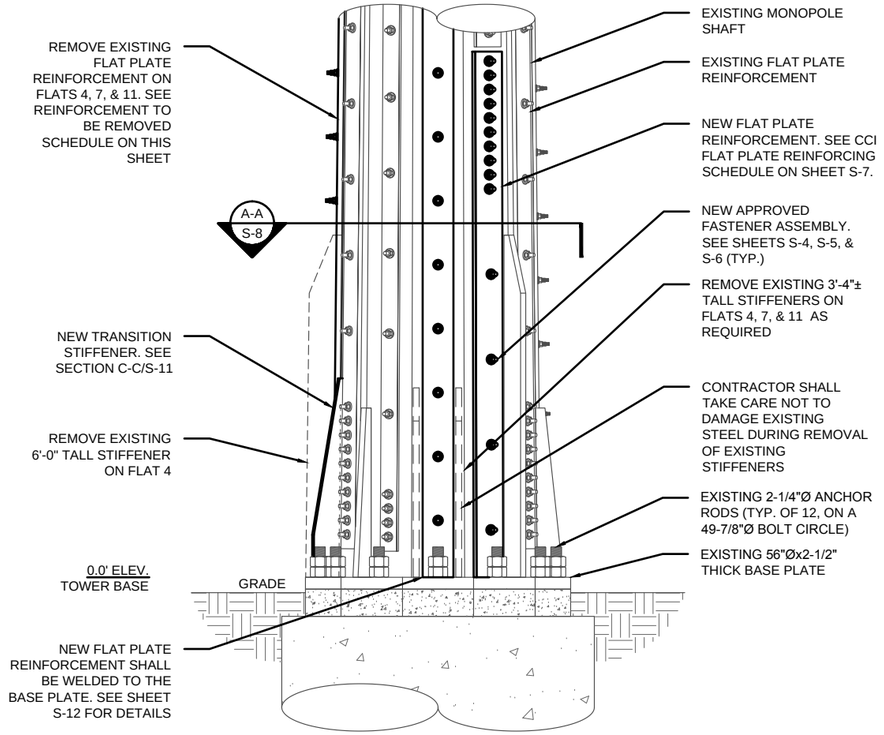
STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKSNAYDER
No. 30026
PROFESSIONAL ENGINEER

10/21/16

TOWER ELEVATION

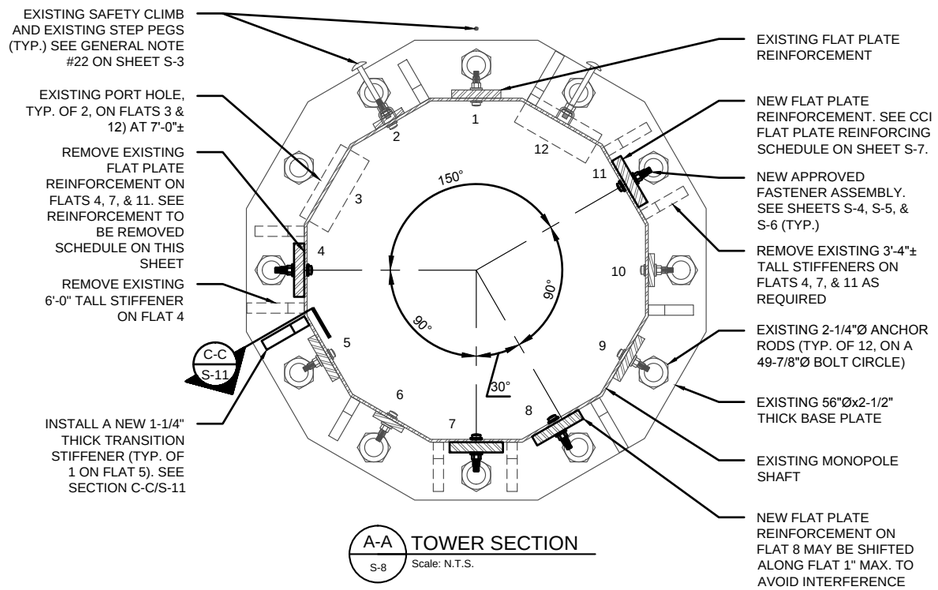
S-7

REV 0



1 S-8 ELEVATION
Scale: N.T.S.

NOTE:
1. EXISTING BOLT HOLES IN THE POLE SHAFT MAY BE USED FOR NEW APPROVED FASTENER ASSEMBLIES. NEW BOLT HOLES SHALL BE LOCATED 3" MIN. DISTANCE FROM THE EXISTING BOLT HOLES (F.V. EXISTING BOLT HOLE LOCATIONS. SEE DETAIL 6/S-10.
2. ALL MATERIALS REMOVED SHALL BE DISPOSED OF BY CONTRACTOR OFF SITE.



A-A S-8 TOWER SECTION
Scale: N.T.S.

NOTE:
1. ALL MATERIALS REMOVED SHALL BE DISPOSED OF BY CONTRACTOR OFF SITE.
2. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING STEEL DURING REMOVAL OF EXISTING STIFFENERS.

REINFORCEMENT TO BE REMOVED

ELEVATION	**FLAT PLATE SIZE**	FLATS
0'-6"± TO 20'-6"±	**4"x1"**	4, 7, & 11

NOTE: REMOVE EXISTING REINFORCING PLATES IN ACCORDANCE WITH THE TABLE ON SHEET S-8. ALL EXISTING BOLT HOLES SHALL BE SOLVENT CLEANED, WIRE BRUSHED, AND HAVE TWO COATS OF BRUSH APPLIED ZRC RICH COLD GALVANIZING PAINT APPLIED. EXISTING HOLES IN THE TOWER SHAFT LOCATED 3" OR MORE FROM A PROPOSED APPROVED FASTENER ASSEMBLY LOCATION MAY REMAIN OPEN. IF AN EXISTING HOLE IS LOCATED LESS THAN 3" FROM A PROPOSED BOLT LOCATION, THE PROPOSED BOLT SHALL BE RELOCATED TO REUSE THE EXISTING HOLE. ADDITIONAL BOLTS SHALL BE PROVIDED SUCH THAT THE MAXIMUM BOLT SPACING IS NOT EXCEEDED (F.V. EXISTING BOLT LOCATIONS, TYP.)

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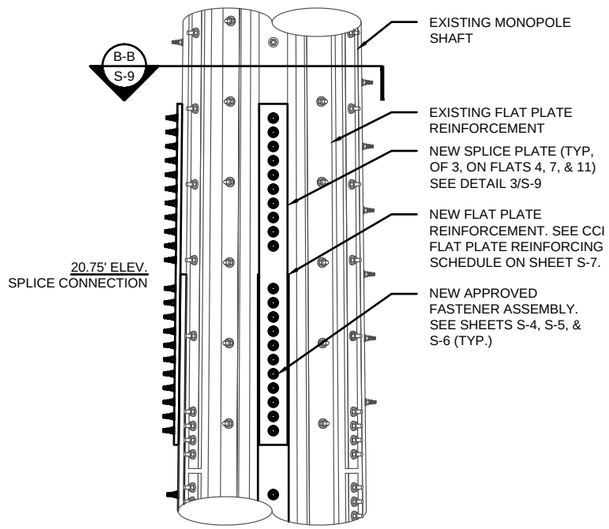
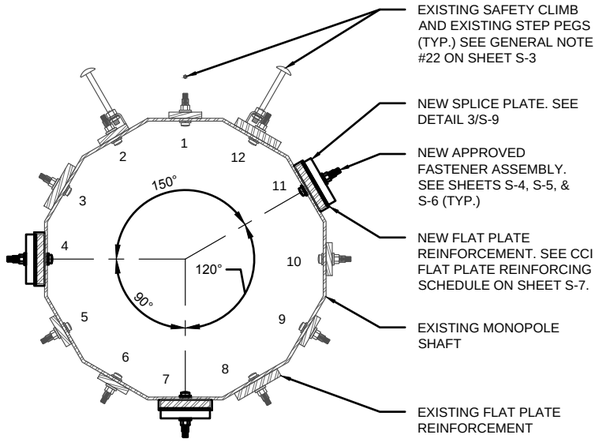
TOWER SECTIONS

S-8 REV 0



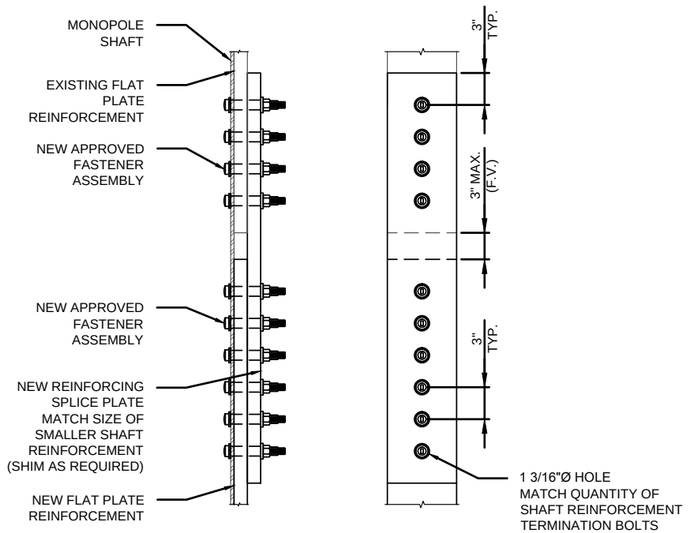
2 S-9 ELEVATION
Scale: N.T.S.

NOTE:
1. EXISTING BOLT HOLES IN THE POLE SHAFT MAY BE USED FOR NEW APPROVED FASTENER ASSEMBLIES. NEW BOLT HOLES SHALL BE LOCATED 3" MIN. DISTANCE FROM THE EXISTING BOLT HOLES (F.V. EXISTING BOLT HOLE LOCATIONS. SEE DETAIL 6/S-10.
2. ALL MATERIALS REMOVED SHALL BE DISPOSED OF BY CONTRACTOR OFF SITE.



B-B / S-9 TOWER SECTION
Scale: N.T.S.

NOTE:
1. ALL MATERIALS REMOVED SHALL BE DISPOSED OF BY CONTRACTOR OFF SITE.



3 S-9 TYP. SPLICE CONNECTION
Scale: N.T.S.

NO.	DATE	DESCRIPTION	BY

REVISIONS

GPD Engineering and Architecture Professional Corporation
520 South Main Street, Suite 2531
Akron, OH 44311
330.572.2100 330.572.2101

GPD PROJECT NUMBER
2016777.806376.03

SITE NAME: HRT 100 943239

BU NUMBER: 806376

WO NUMBER: 1286658

SITE ADDRESS:
1455 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD COUNTY, USA

ENG/QA BY: TRE DATE: 10/21/16

DFT BY: RR DATE: 10/21/16

DFT/QA BY: CB DATE: 10/21/16

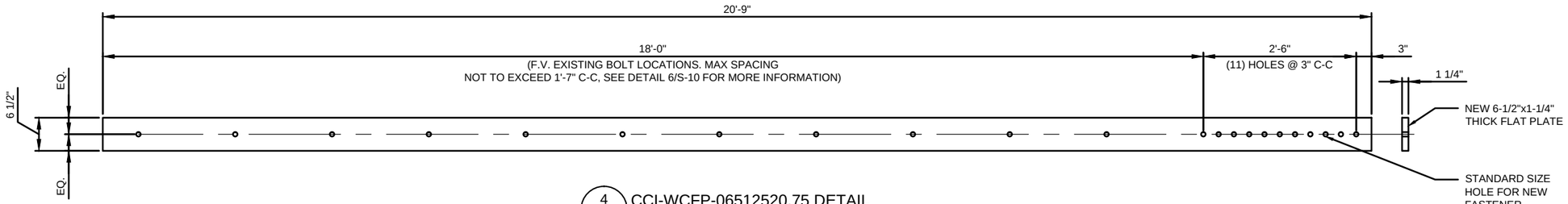
APRV'D BY: CJS DATE: 10/21/16

SCALE: N.T.S.

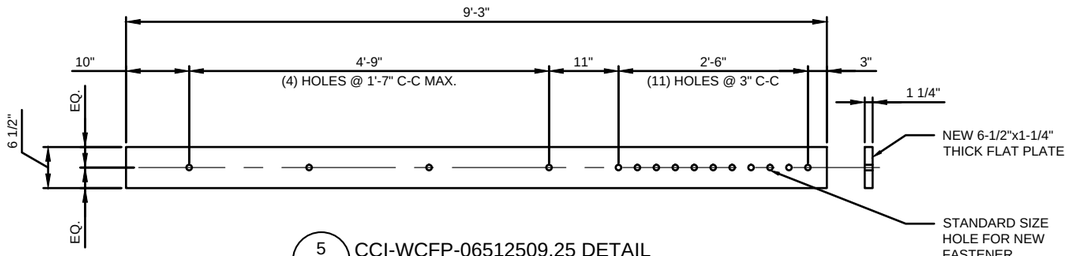
STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKS
No. 30026
LICENSED
PROFESSIONAL ENGINEER
10/21/16

ADDITIONAL TOWER SECTIONS

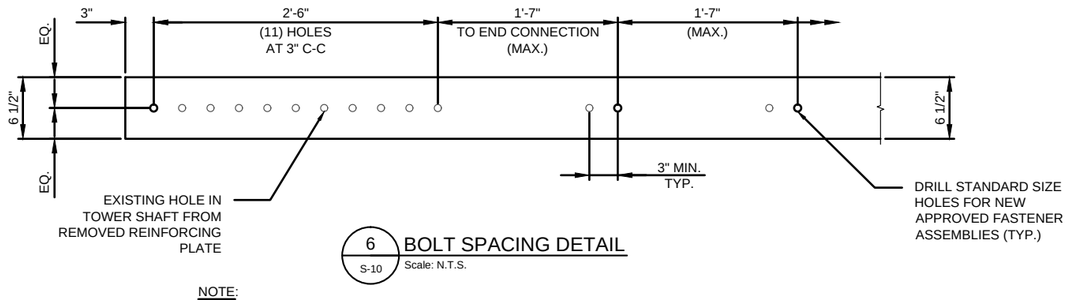
S-9 REV 0



4 S-10 CCI-WCFP-06512520.75 DETAIL
Scale: N.T.S.



5 S-10 CCI-WCFP-06512509.25 DETAIL
Scale: N.T.S.



6 S-10 BOLT SPACING DETAIL
Scale: N.T.S.

NOTE:
1. EXISTING HOLES IN THE TOWER SHAFT LOCATED 3" OR MORE FROM A PROPOSED APPROVED FASTENER ASSEMBLY LOCATION MAY REMAIN OPEN. IF AN EXISTING HOLE IS LOCATED LESS THAN 3" FROM A PROPOSED BOLT LOCATION, THE PROPOSED BOLT SHALL BE RELOCATED TO REUSE THE EXISTING HOLE. ADDITIONAL BOLTS SHALL BE PROVIDED SUCH THAT THE MAXIMUM BOLT SPACING IS NOT EXCEEDED (F.V. EXISTING BOLT LOCATIONS, TYP.)

NO.	DATE	DESCRIPTION	BY

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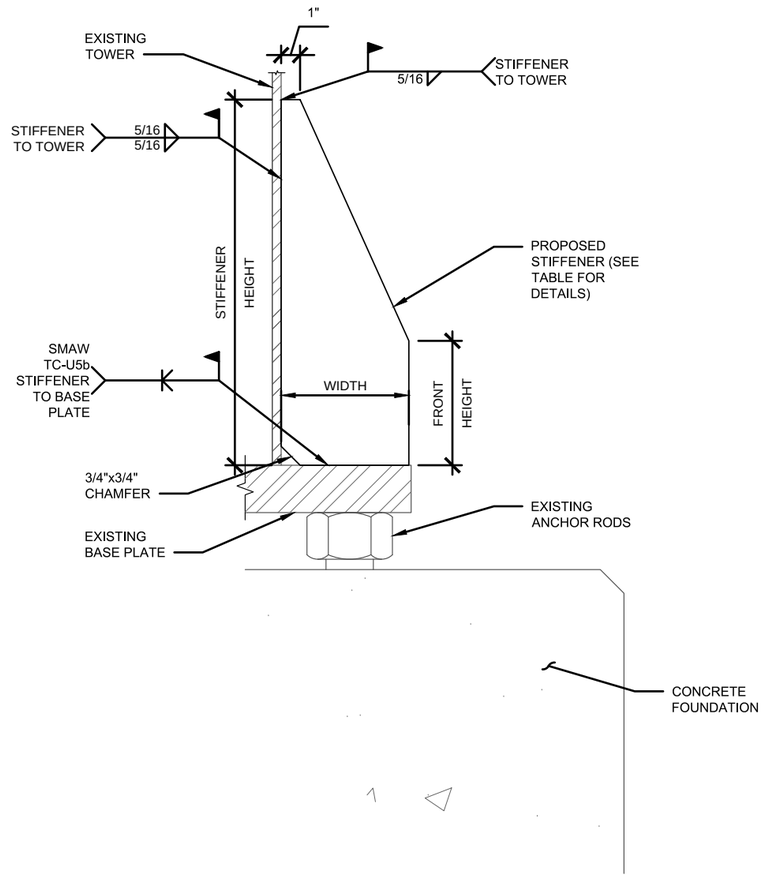
STATE OF CONNECTICUT
CHRISTOPHER J. SCHEKS
No. 30026
REGISTERED
PROFESSIONAL ENGINEER

10/21/16

CUSTOM FLAT PLATE DETAILS

S-10 REV 0



C-C / S-11 STIFFENER SECTION

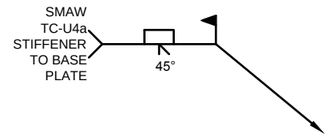
Scale: N.T.S.

STIFFENER

DESCRIPTION	MEASUREMENT (IN.)
STIFFENER HEIGHT	42
FRONT HEIGHT	9
WIDTH	6
THICKNESS	1-1/4
QUANTITY	1

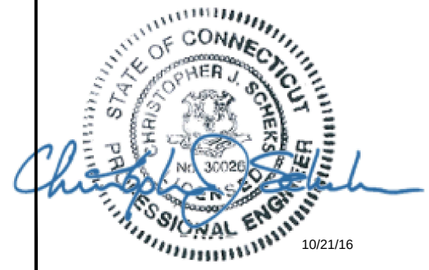
NOTES:

1. ALL SIZES AND QUANTITIES SHALL BE VERIFIED PRIOR TO FABRICATION. CONTRACTOR IS REQUIRED TO PROVIDE FINAL SHOP DRAWINGS TO ENGINEER FOR APPROVAL.
2. ALL DIMENSIONS/MEASUREMENTS ARE SHOWN IN INCHES.
3. ALTERNATE WELD FOR SCENARIOS WHERE A TWO-SIDED WELD CANNOT BE ACHIEVED SHOWN BELOW:



NO.	DATE	DESCRIPTION	BY

REVISIONS



10/21/16

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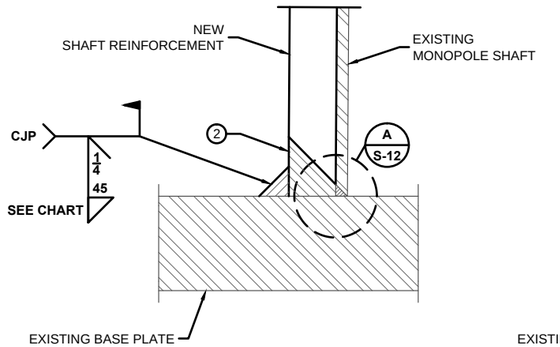
SCALE: N.T.S.

STIFFENER DETAILS

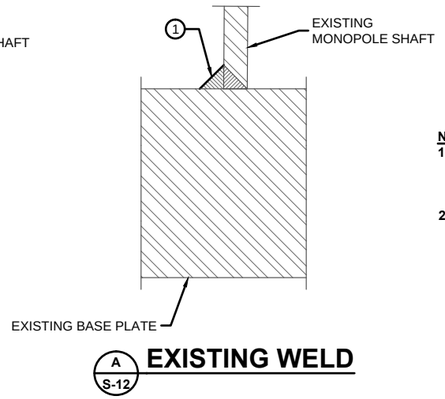
S-11

REV 0

OPTION 1



WELD DETAIL



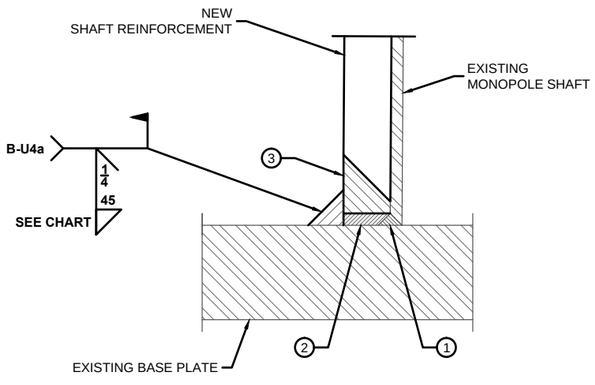
EXISTING WELD

NOTES:

1. **GRIND EXISTING FILLET WELD FLUSH TO BASE PLATE & POLE FOR THE WIDTH OF THE REINFORCEMENT PLATE PLUS 1/4" ON EACH SIDE (DO NOT OVER GRIND)**
2. **PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR**

PART NUMBER	PLATE SIZE	MINIMUM REINFORCING WELD
CCI-WSFP-040075 CCI-WAFP-040075	3/4" x 4"	1/4"
CCI-WSFP-045100 CCI-WAFP-045100	1" x 4 1/2"	1/4"
CCI-WSFP-060100 CCI-WAFP-060100	1" x 6"	3/8"
CCI-WSFP-065125 CCI-WAFP-065125 CCI-WCFP-065125	1 1/4" x 6 1/2"	1/2"
CCI-WSFP-085125 CCI-WAFP-085125	1 1/4" x 8 1/2"	5/8"

OPTION 2



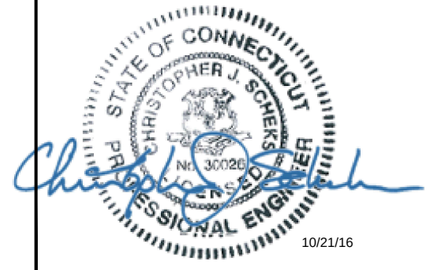
WELD DETAIL

NOTES:

1. **CLEAN EXISTING WELD FROM GALVANIZING**
2. **BUILD A PLATFORM WITH WELD AT THE SAME HEIGHT OF THE EXISTING FILLET WELD (TO REDUCE THE AMOUNT OF WELD TO BUILD THE PLATFORM, IT IS ALLOWABLE TO PARTIALLY GRIND THE HEIGHT OF THE EXISTING FILLET WELD TO A 1/4" MINIMUM)**
3. **PERFORM CJP WELD WITH REINFORCING FILLET WELD USING POLE AS BACKING BAR**

NO.	DATE	DESCRIPTION	BY

REVISIONS



10/21/16

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SCALE: N.T.S.

BASE PLATE WELD DETAIL

S-12

REV 0

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT5276

East Hartford South
1455 Forbes Street
East Hartford, CT 06118

October 29, 2016

EBI Project Number: 6216004898

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	22.05 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

October 29, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5276 – East Hartford South**

EBI Consulting was directed to analyze the proposed AT&T facility located at **1455 Forbes Street, East Hartford, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **1455 Forbes Street, East Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

2) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

3) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Powerwave 800-10798 and the Powerwave 800-10121** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerlines of the proposed antennas are **120 feet** above ground level (AGL) for **Sector A**, **120 feet** above ground level (AGL) for **Sector B** and **120 feet** above ground level (AGL) for Sector C.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Kathrein 800-10798	Make / Model:	Kathrein 800-10798	Make / Model:	Kathrein 800-10798
Gain:	13.05 / 14.35 / 15.15 dBd	Gain:	13.05 / 14.35 / 15.15 dBd	Gain:	13.05 / 14.35 / 15.15 dBd
Height (AGL):	**120 feet**	Height (AGL):	**120 feet**	Height (AGL):	**120 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	Frequency Bands	700 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)	Frequency Bands	700 MHz / 1900 MHz (PCS) / 2300 MHz (WCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	360 Watts	Total TX Power(W):	360 Watts	Total TX Power(W):	360 Watts
ERP (W):	9,617.37	ERP (W):	9,617.37	ERP (W):	9,617.37
Antenna A1 MPE%	**3.43 %**	Antenna B1 MPE%	**3.43 %**	Antenna C1 MPE%	**3.43 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 / 14.35 dBd	Gain:	11.45 / 14.35 / 14.35 dBd	Gain:	11.45 / 14.35 / 14.35 dBd
Height (AGL):	**120 feet**	Height (AGL):	**120 feet**	Height (AGL):	**120 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	4,105.06	ERP (W):	4,105.06	ERP (W):	4,105.06
Antenna A2 MPE%	**1.31 %**	Antenna B2 MPE%	**1.31 %**	Antenna C2 MPE%	**1.31 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**4.74 %**
Sprint	2.71 %
Clearwire	0.22 %
Verizon Wireless	4.41 %
T-Mobile	9.97 %
Site Total MPE %:	**22.05 %**

AT&T Sector A Total:	4.74 %
AT&T Sector B Total:	4.74 %
AT&T Sector C Total:	4.74 %
Site Total*:	22.05 %

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 700 MHz LTE	2	1,211.02	120	6.70	700 MHz	467	1.43%
AT&T 1900 MHz (PCS) LTE	2	1,633.62	120	9.04	1900 MHz (PCS)	1000	0.90%
AT&T 2300 MHz (WCS) LTE	2	1,964.04	120	10.87	2300 MHz (WCS)	1000	1.09%
AT&T 850 MHz UMTS	2	418.91	120	2.32	850 MHz	567	0.41%
AT&T 1900 MHz (PCS) UMTS	2	816.81	120	4.52	1900 MHz (PCS)	1000	0.45%
AT&T 1900 MHz (PCS) GSM	2	816.81	120	4.52	1900 MHz (PCS)	1000	0.45%
						Total*:	4.74%

*NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	4.74 %
Sector B:	4.74 %
Sector C:	4.74 %
AT&T Maximum Total (per sector):	4.74 %
Site Total:	22.05 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **22.05 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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