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

February 22, 2019

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

RE: **Notice of Exempt Modification for Sprint Crown Site BU: 806365**
AT&T Site ID: 10035240
46 Brendan Street, Brendan & Quinn Streets, Stafford, Tolland County, CT 06076
Latitude: 41° 57′ 51.20″/ **Longitude:** -72° 18′ 17.80″

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 95-foot level of the existing 128-foot monopole at 46 Brendan Street, Stafford, Connecticut 06076. The tower is owned by Crown Castle. The property is owned by Tiziani LLC. AT&T intends to replace (6) antennas, remove (3) TMAs, remove (6) diplexers, replace (3) RRUs, add (3) RRUs, add (2) DC power cables and add (1) fiber line.

The facility was approved by the Connecticut Siting Council in Docket No. 165 on December 5, 1994. This approval was given subject to the following conditions:

1. The self-supporting monopole tower shall be no taller than necessary to provide the proposed communications service and the tower shall not exceed a total height of 115 feet above ground level, with antennas and appurtenances.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies (RCSA). The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include detailed plans for the tower location and tower foundation; the placement of all antennas to be attached to this tower; placement of the emergency generator, equipment building, fuel storage tank, access road, utility line, and security fence; site clearing and tree trimming; and water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control (as amended).
3. The Certificate Holder shall acquire all regulatory permits and approvals prior to operation of the facility and submit copies upon receipt to the Council.
4. The Certificate Holder shall comply with any existing and future radio frequency (RF) standard promulgated by State or federal regulatory agencies. Upon the establishment of any new State or federal RF standards, the facility generated herein shall be brought into compliance with such standards.

5. The Certificate Holder shall provide the Council 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.
6. 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 specified legal, technical, environmental, or economic reasons precluding such tower sharing.
7. 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 reapplication for any continued or new use shall be made to the Council before any such use is made.
8. 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.
9. The Certificate Holder shall notify the Council upon completion of construction.

AT&T's proposed scope of work complies with the abovementioned 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 First Selectwoman Mary Mitta, Town of Stafford, Dennis Milanovich, Building Official for the Town of Stafford, and Tiziani LLZ as the property owner. 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, Sprint 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: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba, Esq.
Real Estate Specialist
3 Corporate Park Drive, Suite 101, Clifton Park, NY 12065
(201) 236-9224
annemarie.zsamba@crowncastle.com

Attachments:

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

cc: Mary Mitta, First Selectwoman
Warren Memorial Town Hall – 2nd Floor
1 Main Street
Stafford Springs, CT 06076

Dennis Milanovich, P.E., Building Official
Warren Memorial Town Hall – 1st Floor
1 Main Street
Stafford Springs, CT 06076

Tiziani LLC
1014 Buckley Highway
Union, CT 06076

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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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ORIGIN ID:GFLA (518) 373-3523
WILL STONE
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 22FEB19
ACTWGT: 1.50 LB
CAD: 104924194/INET4100

BILL SENDER

TO **TIZIANI LLC**

1014 BUCKLEY HIGHWAY

UNION CT 06076

(201) 236-9224
INV:
PO:

REF: 1734.7680

DEPT:

565J2/0E3D/23AD

J191019010701uv

FedEx Express

MON - 25 FEB 10:30A

PRIORITY OVERNIGHT

TRK# 0201 **7745 3430 3272**

SE QCWA

06076
BDL
CT-US

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
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DOCKET NO. 165 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Need for the construction, maintenance, and operation of a cellular telecommunications facility located at 46 Brendan Street, Stafford, Connecticut.	:	Connecticut Siting Council December 5, 1994

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 tower and equipment building at the proposed prime site in Stafford, Connecticut, 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. (Metro Mobile), for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed prime site located off 46 Brendan Street, Stafford Springs, Connecticut. We find the effects on scenic resources and adjacent land uses of the alternate site to be significant, and therefore deny certification of this site.

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 self-supporting monopole tower shall be no taller than necessary to provide the proposed communications service and the tower shall not exceed a total height of 115 feet above ground level, with antennas and appurtenances.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies (RCSA). The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include detailed plans for the tower location and tower foundation; the placement of all antennas to be attached to this tower; placement of the emergency generator, equipment building, fuel storage tank, access road, utility line, and security fence; site clearing and tree trimming; and water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control (as amended).

3. The Certificate Holder shall acquire all regulatory permits and approvals prior to operation of the facility and submit copies upon receipt to the Council.

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

5. The Certificate Holder shall provide the Council 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.

6. 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.

7. 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 reapplication for any continued or new use shall be made to the Council before any such use is made.

8. 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.

9. The Certificate Holder shall notify the Council upon completion of construction.

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 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 RCSA.

The parties and intervenors to this proceeding are:

APPLICANT	ITS REPRESENTATIVES
Metro Mobile CTS of Hartford, Inc.	Metro Mobile CTS of Hartford, Inc. 20 Alexander Drive Wallingford, CT 06492 Attn: David S. Malko, P.E., Manager Engineering & Regulatory Services Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 Attn: Brian C. S. Freeman, Esq.
INTERVENOR	ITS REPRESENTATIVE
Springwich Cellular Limited Partnership	Peter J. Tyrrell, Esq. Springwich Cellular Limited Partnership 227 Church Street New Haven, CT 06510

CERTIFICATION

The Undersigned members of the Connecticut Siting Council (Council) hereby certify that they have heard this case, or read the record thereof, in DOCKET NO. 165 - An application of Metro Mobile CTS of Hartford, Inc., for a Certificate of Environmental Compatibility and Need for the construction, maintenance, and operation of a cellular telecommunications facility located at 46 Brendan Street, Stafford, Connecticut, and voted as follows:

Council Members	Vote Cast
Mortimer A. Gelston Chairman	YES
Commissioner Reginald J. Smith Designee: Gerald J. Heffernan	YES
Commissioner Timothy R.E. Keeney Designee: Brian Emerick	YES
Harry E. Covey	YES
Daniel P. Lynch, Jr.	YES
Gloria Dibble Pond	YES
William H. Smith	YES
Colin C. Tait	ABSENT
Dana J. Wright	ABSENT

Dated at New Britain, Connecticut, December 5, 1994.

STATE OF CONNECTICUT)

ss. New Britain, Connecticut
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the Findings of Fact, Opinion, and Decision and Order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Joel M. Rinebold
Executive Director
Connecticut Siting Council

I certify that a copy of the Findings of Fact, Opinion, and Decision and Order in Docket No. 165 have been forwarded by Certified First Class Return Receipt Requested mail on December 8, 1994, to all parties and intervenors of record as listed on the attached service list, dated August 9, 1994.

ATTEST:

Stanley J. Modzelesky
Executive Secretary
Connecticut Siting Council

46 BRENDAN ST

Location	46 BRENDAN ST	**Mblu**	49/ / 4/ /
Acct#	00284400	**Owner**	TIZIANI LLC
Assessment	$190,680	**Appraisal**	$272,400
PID	3247	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$18,400	$254,000	$272,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$12,880	$177,800	$190,680

Owner of Record

Owner	TIZIANI LLC	**Sale Price**	$0
Co-Owner	C/O TIZIANI GLENN+PETER	**Certificate**	1
Address	1014 BUCKLEY HWY UNION, CT 06076	**Book & Page**	334/ 507
		Sale Date	02/26/1996
		Instrument	

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TIZIANI LLC	$0	1	334/ 507		02/26/1996
TIZIANI GLENN+PETER	$60,000	2	195/ 177	25	04/20/1982

Building Information

Building 1 : Section 1

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

Building Attributes

Field	Description
Style	Vacant Ind
Model	
Grade:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Num Kitchens	
Fireplaces	
Extra Openings	
Prefab Fpl(s)	
Attic Type	
Bsmt Type	
Bsmt Garage(s)	
Fin Bsmnt	
Fn. Bmt. Qual.	
Unfin Area	

Building Photo

(http://images.vgsi.com/photos2/StaffordCTPhotos//\00\01\26/1

Building Layout

(http://images.vgsi.com/photos2/StaffordCTPhotos//Sketches/32

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	300
Description	Ind Land
Zone	A
Neighborhood	502
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	14.5
Frontage	
Depth	
Assessed Value	$177,800
Appraised Value	$254,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	FENCE-4' CHAIN			1440 L.F.	$600	1
SHD1	Shed	MS	Masonry	600 S.F.	$4,800	1
SHD1	Shed	MS	Masonry	200 S.F.	$1,600	1
SHD1	Shed	MS	Masonry	200 S.F.	$1,600	1
PAV1	Paving Asphalt			10000 S.F.	$9,800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$18,400	$254,000	$272,400
2016	$18,400	$254,000	$272,400
2014	$5,400	$254,000	$259,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$12,880	$177,800	$190,680
2016	$12,880	$177,800	$190,680
2014	$3,780	$177,800	$181,580


46 Brendan Street
Dollar General
St Edward's School
St Edward's Church
CVS
Introvigne Funeral Home, Inc
Automatic Carwash
Olympic Ave
Jill's Way
Furnace Ave
Penny Ln
Tammy Ln
Clover Crossing
Laurel Way
Edgewood Rd
Galotto St
Quinn St
Oak St
Green St
Converse St
W Main St
Prospect Heights
Curtis St
Clinton St
Brendan St
Parkess St
Bellrose St
Prospect St
Church St
Benton St
Howland Ave
Morton St
High St
Silver St
Grant Ave
East St
Grove St
Orchard St
E Main St
Center St
19

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING TOWER:

- INSTALL AT&T ANTENNA (HPA-65R-BU8A) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T ANTENNA (80010966) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T 8843 B2/B66A (AWS/PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL (2) DC TRUNKS & (1) FIBER CABLE.

ITEMS TO BE MOUNTED INSIDE EXISTING SHELTER:

- SWAP EXISTING BBU WITH 6630
- ADD (1) 6630 FOR 5G

ITEMS TO REMAIN:

- (3) ANTENNAS, (3) TMA'S & (2) DC-6 SURGE SUPPRESSORS
- (12) 1-1/4" COAX CABLES
- (2) DC TRUNK CABLES & (1) FIBER TRUNK CABLE

SITE ADDRESS:	BRENDON & QUINN ST. STAFFORD, CT 06076
LATITUDE (NAD 83):	N 41° 57' 51.20"
LONGITUDE (NAD 83):	W 72° 18' 17.80"
LANDLORD:	CROWN CASTLE INTERNATIONAL 500 W. CUMMINGS PARK, STE 3600 WOBURN, MA 01801
TYPE OF SITE:	MONOPOLE / INDOOR
TOWER HEIGHT:	129'
RAD CENTER:	90'
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

SITE NUMBER: CTL1049

FA LOCATION CODE: 10035263
SITE NAME: STAFFORD SPRINGS BRENDON ST
CROWN SITE NAME: HRT 303943203
PROJECT: LTE 2C/3C/4C/4TX4RX SOFTWARE RETROFIT
PACE ID: MRCTB035125, MRCTB035118, MRCTB035149, MRCTB035332
BU#: 806365

NOTE:

ALL CONSTRUCTION ACTIVITIES ARE TO BE COMPLETED DIRECTLY THROUGH CROWN. CONTRACTOR MUST HAVE CONSTRUCTION PO AND NTP FROM CROWN DIRECT IN ORDER TO BEGIN. PRE-APPROVAL TO ENTER THE PROPERTY MUST BE OBTAINED. FOR ACCESS AUTHORIZATION, PLEASE CONTACT CROWN.

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO:	ERCC0004
DRAWN BY:	FLP/JB
CHECKED BY:	CAT

SUBMITTALS

1	02/21/19	ISSUED FOR CONSTRUCTION
0	12/28/18	ISSUED FOR PERMITTING

FA# 10035263
SITE# CTL1049
STAFFORD SPRINGS
BRENDON ST
BRENDON & QUINN ST.
STAFFORD, CT 06076

TITLE SHEET

T-1

DRAWING INDEX

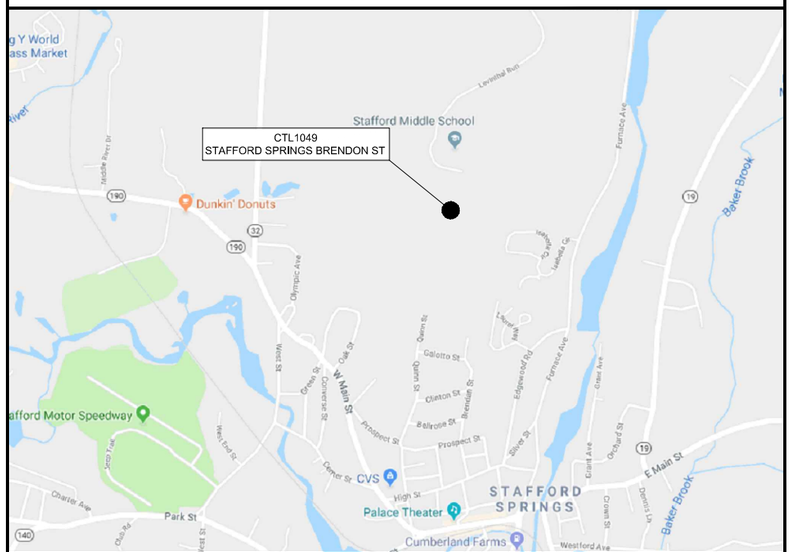
SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
GN-1	GENERAL NOTES I
GN-2	GENERAL NOTES II
C-1	SITE PLAN
C-2	EQUIPMENT LAYOUT & PROPOSED TOWER ELEVATION
C-3	EXISTING & PROPOSED ANTENNA LAYOUT
C-4	EQUIPMENT DETAILS I
RF-1	ANTENNA CHART & RF EQUIPMENT SCHEMATIC
G-1	GROUNDING DETAILS

CROWN CASTLE SITE ID #: 806365
CROWN CASTLE SITE NAME: HRT 303943203

ENGINEERING

2018 CONNECTICUT STATE BUILDING CODE
2018 AMENDMENT WITH 2015 INTERNATIONAL BUILDING CODE
2009 ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE
2017 NATIONAL ELECTRICAL CODE (NFPA 70 2017)
ANSI/TIA-222-G

VICINITY MAP



STAFFORD SPRINGS TAKE 84 EAST TO EXIT 70, TURN LEFT ONTO RT 32 TO STAFFORD SPRINGS CENTER, BEAR LEFT AT THE ROTARY ONTO RT 190 WEST THROUGH STAFFORD SPRINGS CENTER, CONTINUE ON RT 190 WEST JUST OUT OF TOWN AT TOP OF HILL TURN RIGHT ONTO HIGH STREET. TAKE 3RD LEFT ONTO HOWLAND STREET AND CONTINUE TO STOP SIGN AND GO STRAIGHT ACROSS TO BRENDAN STREET. CONTINUE TO END OF STREET AND CROWN TOWER GATE COMBO 2500, CONTINUE UP GATE ROAD TO CELL. IF COMING SOUTH OR NORTH ON RT 91 TAKE EXIT 47E RT 190 EAST INTO STAFFORD SPRINGS, TAKE LEFT ONTO HIGH STREET AND FOLLOW ABOVE DIRECTIONS FROM HIGH STREET TO CELL. GATE COMBO 2500 SHELTER.

GENERAL NOTES

1. 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.
2. 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!

UNDERGROUND SERVICE ALERT

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

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.

B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION PERFORMANCE FOR THE WORK UNDER THIS SECTION.

C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWING SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES.

A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

1.3 REFERENCES:

A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE. THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS OTHERWISE NOTED. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.

1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
3. ICEA (INSULATED CABLE ENGINEERS ASSOCIATION)
4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
7. UL (UNDERWRITERS LABORATORIES INC.)
8. AT&T GROUNDING AND BONDING STANDARDS TP-76416

1.4 SCOPE OF WORK

A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND BE OPERATIONAL.

B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.

D. THE CONTRACTOR SHALL FURNISH TO THE OWNER WITH CERTIFICATES OF A FINAL INSPECTION AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION.

E. THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS-BUILT DRAWINGS, DOCUMENT ALL WIRING EQUIPMENT CONDITIONS, AND CHANGES WHILE COMPLETING THIS CONTRACT. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT.

PART 2 - PRODUCTS

2.1 GENERAL:

A. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED, NEW, AND FREE FROM DEFECTS.

B. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.

C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

2.2 MATERIALS AND EQUIPMENT:

A. CONDUIT:

1. RIGID METAL CONDUIT (RMC) SHALL BE HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE TIGHT TYPE. GROUNDING BUSHINGS WITH INSULATED THROATS SHALL BE INSTALLED ON ALL CONDUIT TERMINATIONS.
4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC. INSTALL USING SOLVENT-CEMENT-TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

B. CONDUCTORS AND CABLE:

1. CONDUCTORS AND CABLE SHALL BE FLAME-RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN-2, 600 VOLT, SIZE AS INDICATED, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR USED.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS, COMPRESSION-TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN-RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J-BOXES, EQUIPMENT AND CABINETS AND SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD-FRONT, QUICK-MAKE, QUICK-BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, SQUARE-D OR ENGINEER APPROVED EQUAL.

D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM:

1. INSTALL CHEMICAL GROUNDING AS REQUIRED. THE SYSTEM SHALL BE ELECTROLYTIC MAINTENANCE FREE ELECTRODE CONSISTING OF RODS WITH A MINIMUM #2 AWG CU EXOTHERMICALLY WELDED PIGTAIL, PROTECTIVE BOXES, AND BACKFILL MATERIAL. MANUFACTURER SHALL BE LYNCOLE XIT GROUNDING ROD TYPES K2-(*)CS OR K2L-(*)CS (*) LENGTH AS REQUIRED.
2. GROUND ACCESS BOX SHALL BE A POLYPLASTIC BOX FOR NON-TRAFFIC APPLICATIONS, INCLUDING BOLT DOWN FLUSH COVER WITH "BREATHER" HOLES, XIT MODEL #XB-22. ALL DISCONNECT SWITCHES AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS ID NUMBERING, AND THE ELECTRICAL POWER SOURCE.
3. BACKFILL MATERIAL SHALL BE LYNCONITE AND LYNCOLE GROUNDING GRAVEL.

E. SYSTEM GROUNDING:

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED, COPPER. ABOVE GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH-CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO-HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS. INTERIOR CONNECTIONS USE TWO-HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, 5/8"x10'-0". ALL GROUNDING RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES.
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE AT&T SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.

F. OTHER MATERIALS:

6. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
7. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

PART 3 - EXECUTION

3.1 GENERAL:

A. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

3.2 LABOR AND WORKMANSHIP:

A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN, IN A NEAT AND WORKMAN-LIKE MANNER.

B. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.

C. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

3.3 COORDINATION:

A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER-FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

3.4 INSTALLATION:

A. CONDUIT:

1. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4 INCH TRADE SIZE.
2. PROVIDE RIGID PVC SCHEDULE 80 CONDUITS FOR ALL RISERS, RMC OTHERWISE NOTED. EMT MAY BE INSTALLED FOR EXTERIOR CONDUITS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
3. INSTALL SCHEDULE 40 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL OTHER NON-TRAFFIC APPLICATIONS (REFER TO 2017 NEC, TABLE 300.5).
4. USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION TO EQUIPMENT WITH MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORT TO ALLOW FOR EXPANSION AND CONTRACTION.
5. A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE QUARTER-BENDS. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
6. FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
7. PROVIDE INSULATED GROUNDING BUSHING FOR ALL CONDUITS.
8. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
9. ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
10. INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
11. INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
12. CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
13. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS TO ALLOW FOR RACEWAYS AND CABLES TO BE ROUTED THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE EFFECTIVELY SEALED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FIRE STOPS AT FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE, AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

B. CONDUCTORS AND CABLE:

1. ALL POWER WIRING SHALL BE COLOR CODED AS FOLLOWS:

DESCRIPTION	208/240/120 VOLT SYSTEMS
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUNDING	GREEN

2. SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAY CONDUITS APPROVED FOR THIS PURPOSE.
3. PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
4. CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES & EQUIPMENT TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS IS PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

C. DISCONNECT SWITCHES:

1. INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS INDICATED.

D. GROUNDING:

1. ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING MANUFACTURER, AT&T GROUNDING AND BONDING STANDARDS TP-76416, ND-00135, AND THE NATIONAL ELECTRICAL CODE.
2. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
4. BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT AND WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 AWG COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). SEE STANDARD 6.3.2.2.
5. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
6. CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE-IN-POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION BEFORE BEING PERMANENTLY CONCEALED.
8. APPLY CORROSION-RESISTANT FINISH TO FIELD CONNECTIONS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE KOPR-SHIELD ANTI-OXIDATION COMPOUND ON ALL COMPRESSION GROUNDING CONNECTIONS.
9. A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
10. BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE #6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
11. DIRECT BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 36" MINIMUM BELOW GRADE, OR 6" BELOW THE FROST LINE, USE THE GREATER OF THE TWO DISTANCES.
12. ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
13. THE INSTALLATION OF CHEMICAL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
14. DRIVE GROUND RODS UNTIL TOPS ARE A MINIMUM DISTANCE OF 36" DEPTH OR 6" BELOW FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
15. IF COAX ON THE ICE BRIDGE IS MORE THAN 6 FT. FROM THE GROUNDING BAR AT THE BASE OF THE TOWER, A SECOND GROUNDING BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE, TO GROUND THE COAX CABLE GROUNDING KITS AND IN-LINE ARRESTORS.
16. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

3.5 ACCEPTANCE TESTING:

A. CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.

B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NON-COMPLYING ITEMS SHALL BE REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE FOR NON-COMPLIANCE.

C. TEST PROCEDURES:

1. ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. PROVIDE WRITTEN DOCUMENTATION FOR ALL TEST RESULTS.
2. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
3. MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
4. PERFORM GROUNDING TEST TO MEASURE GROUNDING RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3-POINT "FALL-OF-POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO: ERCC0004

DRAWN BY: FLP/JB

CHECKED BY: CAT

SUBMITTALS

1	02/21/19	ISSUED FOR CONSTRUCTION
0	12/28/18	ISSUED FOR PERMITTING

FA# 10035263
SITE# CTL1049
STAFFORD SPRINGS
BRENDON ST
BRENDON & QUINN ST.
STAFFORD, CT 06076

GENERAL NOTES I

GN-1

ANTENNA MOUNTING

1. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
2. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
4. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
6. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
7. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
8. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246.
9. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.
10. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
11. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

TORQUE REQUIREMENTS

12. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
13. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
    A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
    B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
    C. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
14. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
15. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
16. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).
17. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM).

FIBER & POWER CABLE MOUNTING

18. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
19. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
20. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

21. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS, PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
22. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
23. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.
24. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA, LDF AND SHALL NOT EXCEED 6'-0".
25. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" O.C.
26. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
27. CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE WITH AT&T STANDARDS.
28. CONTRACTOR SHALL GROUND ALL EQUIPMENT. INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATION.
29. CONTRACTOR SHALL PROVIDE STRAIN-RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN-RELIEFS AND CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
30. CONTRACTOR TO VERIFY THAT EXISTING COAX HANGERS ARE STACKABLE SNAP IN HANGERS. IF EXISTING HANGERS ARE NOT STACKABLE SNAP IN HANGERS THE CONTRACTOR SHALL REPLACE EXISTING HANGERS WITH NEW SNAP IN HANGERS IF APPLICABLE.

GENERAL CABLE AND EQUIPMENT NOTES

31. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
32. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
33. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
34. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
35. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
    A. TEMPERATURE SHALL BE ABOVE 50° F.
    B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
    C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
    D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
36. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
    A. GROUNDING AT THE ANTENNA LEVEL.
    B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
    C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
    E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
37. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND
38. BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
39. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANTENNA AND THE COAX CONFIGURATION IS THE CORRECT MAKE AND MODELS, PRIOR TO INSTALLATION.
40. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.
41. ANTENNA CONTRACTOR SHALL FURNISH AND INSTALL A 12'-0" T-BOOM SECTOR ANTENNA MOUNT, IF APPLICABLE, INCLUDING ALL HARDWARE.

GROUNDING NOTES

42. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
43. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND AT&T GROUNDING AND BONDING REQUIREMENTS (ATT-TP-76416) AND MANUFACTURER'S SPECIFICATIONS.
44. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.
45. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUNDING KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
    A. GROUNDING AT THE ANTENNA LEVEL.
    B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200', ADDITIONAL CABLE GROUNDING REQUIRED.
    C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
    E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
46. ALL PROPOSED GROUNDING BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUNDING BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUNDING BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
EXOTHERMIC WITH INSPECTION SLEEVE
GROUNDING BAR
SHELTER GROUNDING BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
SINGLE POLE SWITCH
DUPLEX RECEPTACLE
DUPLEX GFCI RECEPTACLE
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8 — F
EXISTING SMOKE DETECTION (DC) — SD
EXISTING EMERGENCY LIGHTING (DC)
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED-1-25A400/51K-SR4-120-PE-DDBTXD
EXISTING UTILITY POLE
EXISTING CHAIN LINK FENCE
EXISTING WOOD/WROUGHT IRON FENCE
EXISTING WALL STRUCTURE
LEASE AREA
PROPERTY LINE (PL)
SETBACKS
PROPOSED/EXISTING ICE BRIDGE
PROPOSED/EXISTING CABLE TRAY
EXISTING WATER LINE
PROPOSED UNDERGROUND POWER
PROPOSED UNDERGROUND TELCO
PROPOSED OVERHEAD POWER
PROPOSED OVERHEAD TELCO
PROPOSED OVERHEAD UTILITIES
PROPOSED ABOVE GROUND POWER
PROPOSED ABOVE GROUND TELCO

CALLOUT REFERENCE — X
REVISION REFERENCE — 1
WORKPOINT — W.P.
SECTION REFERENCE — XX / X-X
DETAIL REFERENCE — XX / X-X
ELEVATION REFERENCE — X / X

THESE DOCUMENTS ARE IN COMPLIANCE WITH AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FOLLOW CODES AND STANDARDS AS APPLICABLE: 2018 CONNECTICUT STATE BUILDING CODE. 2017 NATIONAL ELECTRIC CODE OR LATEST EDITION.

AB	ANCHOR BOLT	COL	COLUMN	FIN	FINISH(ED)	MAS	MASONRY	QTY	QUANTITY	TOF	TOP OF FOUNDATION
ABV	ABOVE	COMM	COMMON	FLR	FLOOR	MAX	MAXIMUM	RAD	RADIUS	TOP	TOP OF PLATE (PARAPET)
AC	ALTERNATING CURRENT	CONC	CONCRETE	FDN	FOUNDATION	MB	MACHINE BOLT	RECT	RECTIFIER	TOS	TOP OF STEEL
ADDL	ADDITIONAL	CONSTR	CONSTRUCTION	FOC	FACE OF CONCRETE	MECH	MECHANICAL	REF	REFERENCE	TOW	TOP OF WALL
AFF	ABOVE FINISHED FLOOR	DBL	DOUBLE	FOM	FACE OF MASONRY	MFR	MANUFACTURER	REINF	REINFORCEMENT	TVSS	TRANSIENT VOLTAGE SUPPRESSION
AFG	ABOVE FINISHED GRADE	DC	DIRECT CURRENT	FOS	FACE OF STUD	MGB	MASTER GROUND BAR	REQ'D	REQUIRED		SYSTEM
AIC	AMPERAGE INTERRUPTION CAPACITY	DEPT	DEPARTMENT	FOW	FACE OF WALL	MIN	MINIMUM	RET	REMOTE ELECTRIC TILT	TYP	TYPICAL
ALUM	ALUMINUM	DF	DOUGLAS FIR	FS	FINISH SURFACE	MISC	MISCELLANEOUS	RMC	RIGID METALLIC CONDUIT	UG	UNDERGROUND
ALT	ALTERNATE	DIA	DIAMETER	FT	FOOT	MTL	METAL	RRH	REMOTE RADIO HEAD	UL	UNDERWRITERS LABORATORY
ANT	ANTENNA	DIAG	DIAGONAL	FTG	FOOTING	MTS	MANUAL TRANSFER SWITCH	RRU	REMOTE RADIO UNIT	UNO	UNLESS NOTED OTHERWISE
APPROX	APPROXIMATE	DIM	DIMENSION	GA	GAUGE	MW	MICROWAVE	RWY	RACEWAY	UMTS	UNIVERSAL MOBILE
ARCH	ARCHITECTURAL	DWG	DRAWING	GEN	GENERATOR	(N)	NEW	SCH	SCHEDULE		TELECOMMUNICATIONS SYSTEM
ATS	AUTOMATIC TRANSFER SWITCH	DWL	DOWEL	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NEC	NATIONAL ELECTRIC CODE	SHT	SHEET	UPS	UNINTERRUPTIBLE POWER SYSTEM
AWG	AMERICAN WIRE GAUGE	(E)	EXISTING	GLB	GLUE LAMINATED BEAM	NO.(#)	NUMBER	SIAD	SMART INTEGRATED DEVICE		(DC POWER PLANT)
BATT	BATTERY	EA	EACH	GLV	GALVANIZED	NTS	NOT TO SCALE	SIM	SIMILAR	VIF	VERIFIED IN FIELD
BLDG	BUILDING	EC	ELECTRICAL CONDUCTOR	GPS	GLOBAL POSITIONING SYSTEM	OC	ON CENTER	SPEC	SPECIFICATION	W	WIDE
BLK	BLOCK	EL	ELEVATION	GND	GROUND	OPNG	OPENING	SQ	SQUARE	W/	WITH
BLKG	BLOCKING	ELEC	ELECTRICAL	GSM	GLOBAL SYSTEM FOR MOBILE	(P)	PROPOSED	SS	STAINLESS STEEL	WD	WOOD
BM	BEAM	EMT	ELECTRICAL METALLIC TUBING	HDR	HEADER	P/C	PRECAST CONCRETE	STD	STANDARD	W.P.	WORK POINT
BTC	BARE TINNED COPPER CONDUCTOR	ENG	ENGINEER	HGR	HANGER	PCS	PERSONAL COMMUNICATION SERVICES	STL	STEEL	WP	WEATHERPROOF
BOF	BOTTOM OF FOOTING	EQ	EQUAL	HVAC	HEAT/VENTILATION/AIR CONDITIONING	PCU	PRIMARY CONTROL UNIT	STRUCT	STRUCTURAL	WT	WEIGHT
CAB	CABINET	EXP	EXPANSION	HT	HEIGHT	PRC	PRIMARY RADIO CABINET	TEMP	TEMPORARY		
CANT	CANTILEVERED	EXT	EXTERIOR	IGR	INTERIOR GROUND RING	PP	POLARIZING PRESERVING	THK	THICKNESS		
CEC	CALIFORNIA ELECTRIC CODE	FAB	FABRICATION	IN	INCH	PSF	POUNDS PER SQUARE FOOT	TMA	TOWER MOUNTED AMPLIFIER		
CHG	CHARGING	FF	FINISH FLOOR	INT	INTERIOR	PSI	POUNDS PER SQUARE INCH	TN	TOE NAIL		
CLG	CEILING	FG	FINISH GRADE	LB(S)	POUND(S)	PT	PRESSURE TREATED	TOA	TOP OF ANTENNA		
CLR	CLEAR	FIF	FACILITY INTERFACE FRAME	LF	LINEAR FEET	PWR	POWER CABINET	TOC	TOP OF CURB		

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CROWN CASTLE
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SUITE 101
CLIFTON PARK, NY 12065

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT — CRAIG A. THOMAS — No. 0029052 — LICENSED PROFESSIONAL ENGINEER

PROJECT NO: ERCC0004

DRAWN BY: FLP/JB

CHECKED BY: CAT

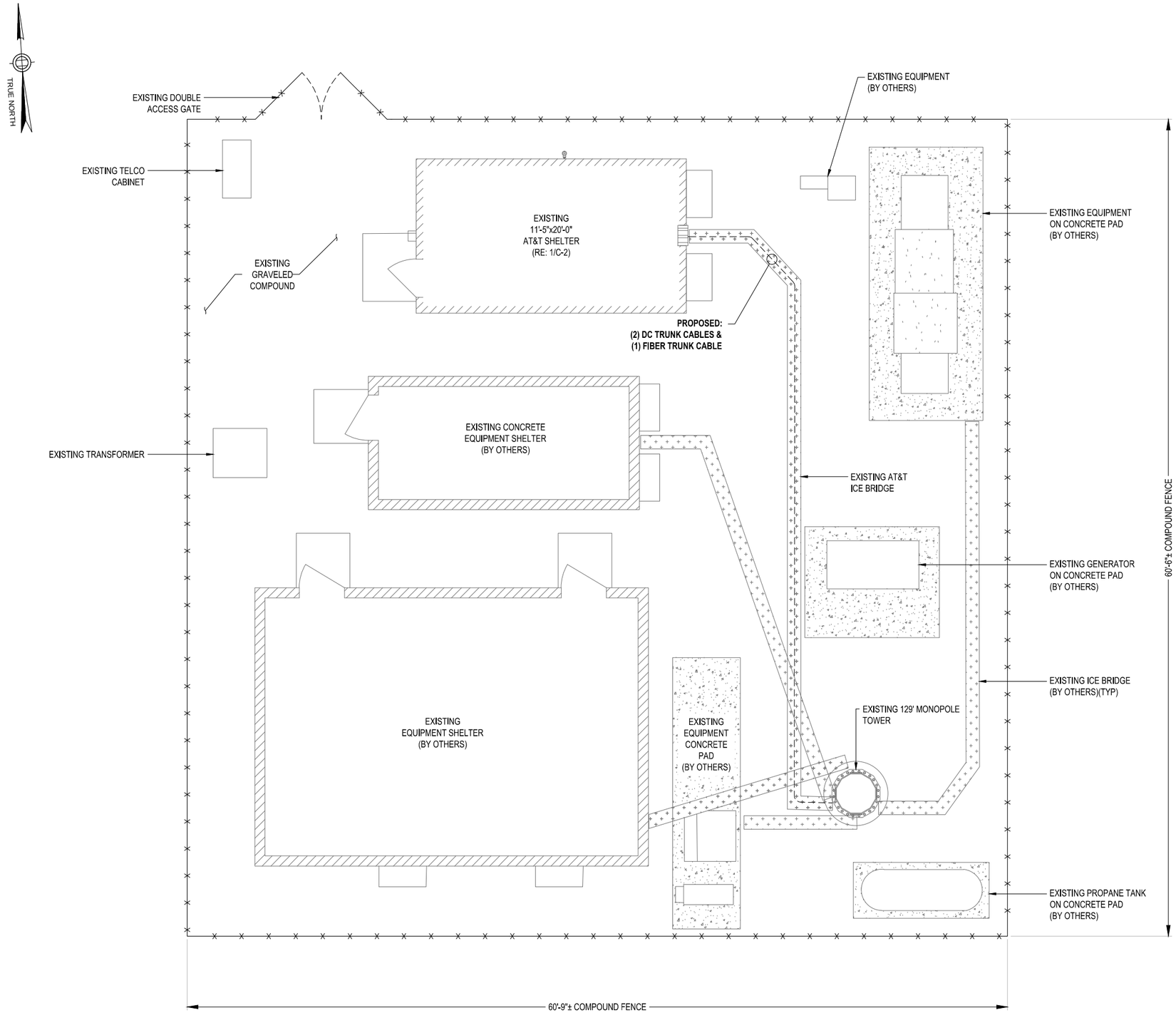
SUBMITTALS

1	02/21/19	ISSUED FOR CONSTRUCTION
0	12/28/18	ISSUED FOR PERMITTING

FA# 10035263
SITE# CTL1049
STAFFORD SPRINGS
BRENDON ST
BRENDON & QUINN ST.
STAFFORD, CT 06076

GENERAL NOTES II

GN-2



NOTES:

1. PLAN BASED ON AS-BUILT DRAWINGS ISSUED BY HUDSON DESIGN GROUP ON 04/23/12. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.

1 SITE PLAN

SCALE: 1/4" = 1'-0"

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EAST SYRACUSE, NY 13057

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STATE OF CONNECTICUT
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LICENSED
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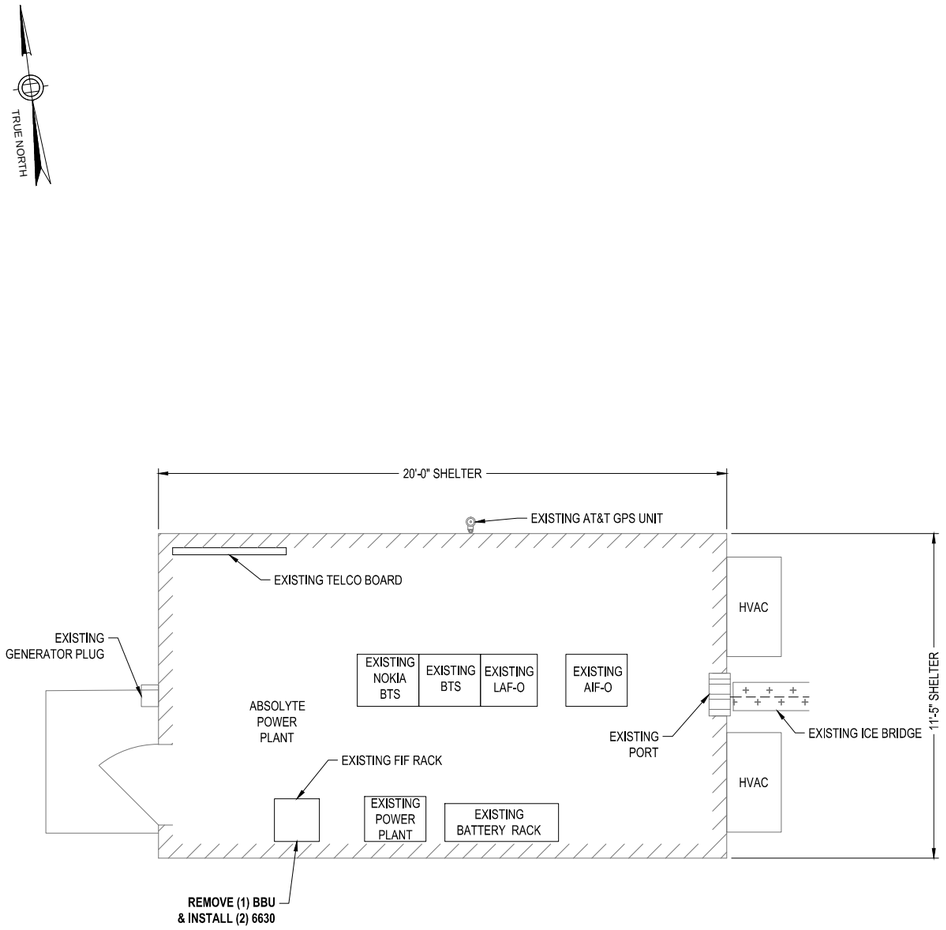
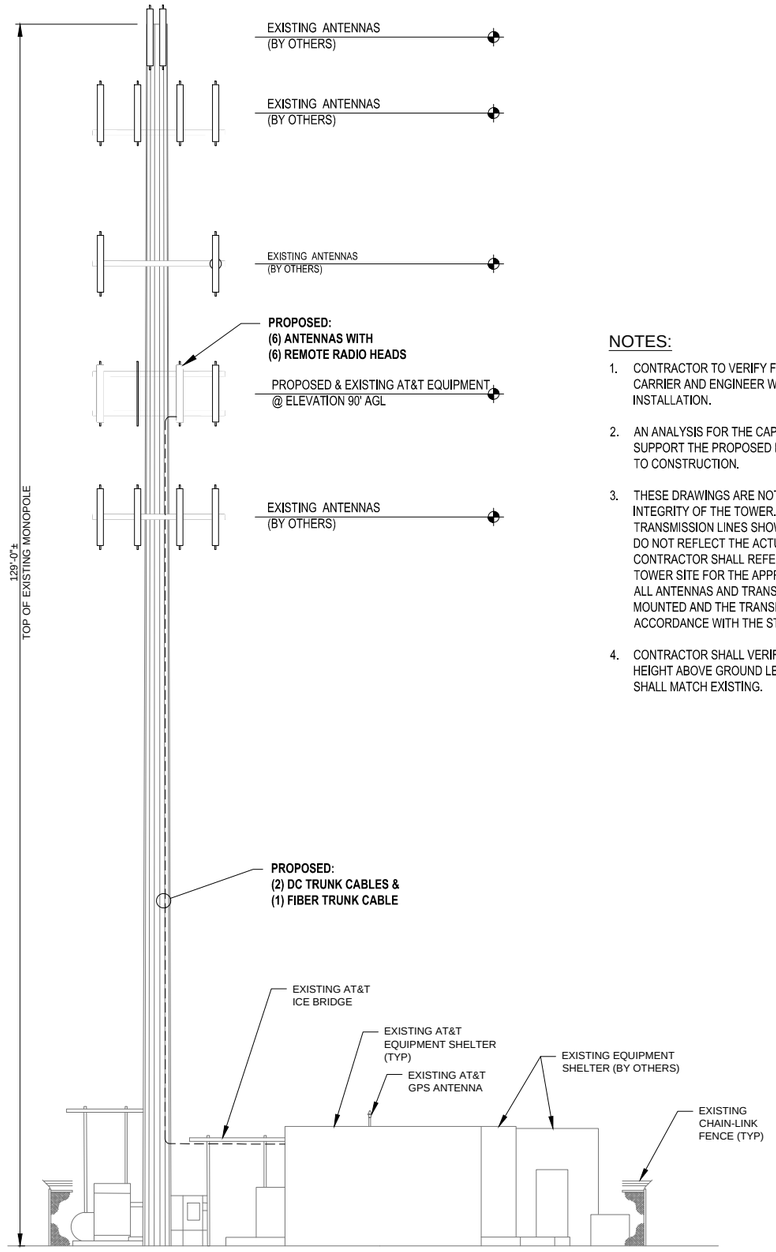
SITE PLAN

C-1



1 EQUIPMENT LAYOUT SCALE: 3/8" = 1'-0"



2 TOWER ELEVATION SCALE: 1/8" = 1'-0"

NOTES:

1. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
2. AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.
3. THESE DRAWINGS ARE NOT INTENDED TO REFLECT THE STRUCTURAL INTEGRITY OF THE TOWER. THE PROPOSED ANTENNAS AND TRANSMISSION LINES SHOWN ARE REPRESENTATIVE IN NATURE AND DO NOT REFLECT THE ACTUAL CONFIGURATIONS REQUIRED. THE CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS OF THIS TOWER SITE FOR THE APPROVED LOCATION AND CONFIGURATION OF ALL ANTENNAS AND TRANSMISSION LINES. ALL ANTENNAS MUST BE MOUNTED AND THE TRANSMISSION LINES CONFIGURED IN STRICT ACCORDANCE WITH THE STRUCTURAL ANALYSIS.
4. CONTRACTOR SHALL VERIFY THE EXISTING ANTENNA CENTERLINE HEIGHT ABOVE GROUND LEVEL. PROPOSED ANTENNA CENTERLINE SHALL MATCH EXISTING.

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STATE OF CONNECTICUT
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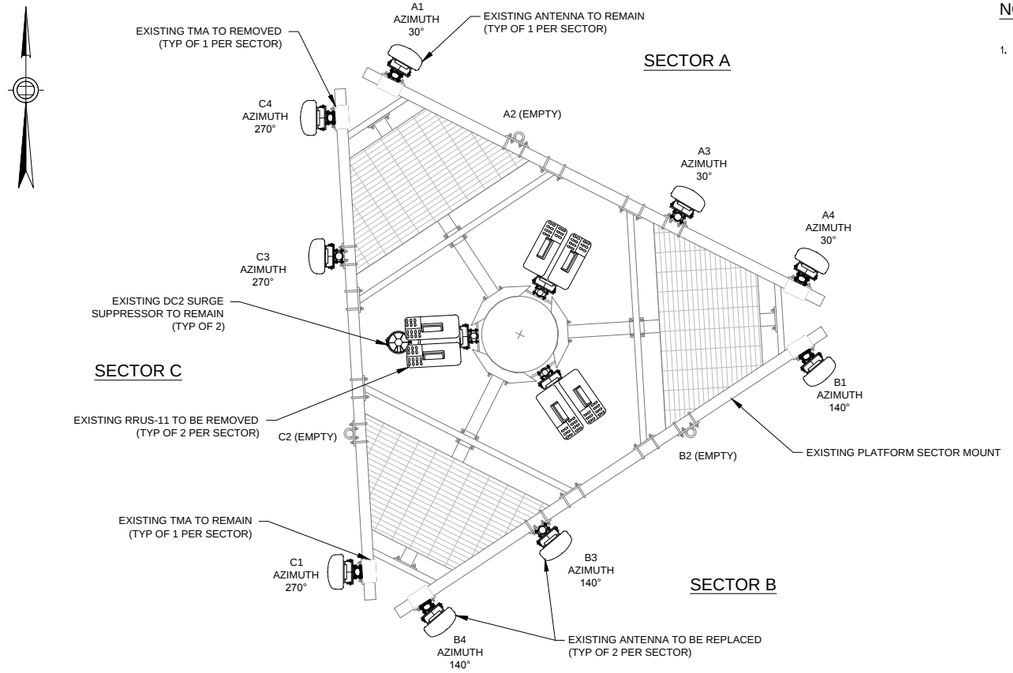
EQUIPMENT LAYOUT & PROPOSED TOWER ELEVATION

C-2



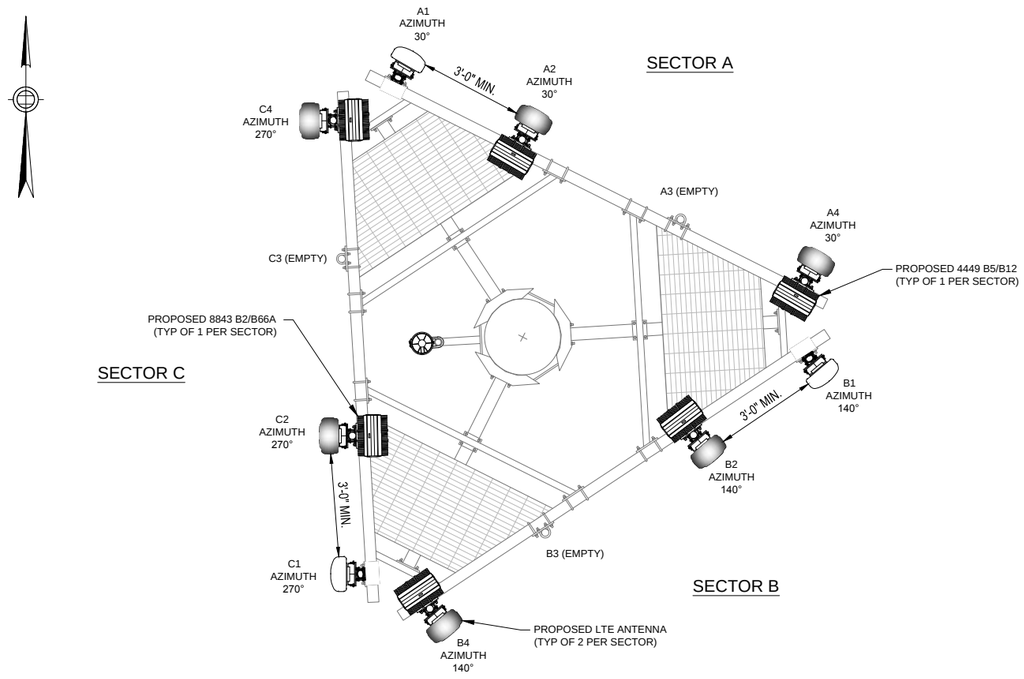
ELEVATION 90'

1 EXISTING ANTENNA LAYOUT

SCALE: N.T.S.

NOTES:

1. THESE DRAWINGS ARE NOT INTENDED TO REFLECT THE STRUCTURAL INTEGRITY OF THE TOWER. THE PROPOSED ANTENNAS AND ASSOCIATED EQUIPMENT SHOWN ARE REPRESENTATIVE IN NATURE AND DO NOT REFLECT THE ACTUAL CONFIGURATIONS REQUIRED. THE CONTRACTOR SHALL REFER TO THE MOUNT ANALYSIS OF THIS SITE FOR THE APPROVED LOCATION AND CONFIGURATION OF ALL ANTENNAS AND EQUIPMENT. ALL ANTENNAS AND EQUIPMENT MUST BE MOUNTED IN STRICT ACCORDANCE WITH THE MOUNT ANALYSIS.



ELEVATION 90'

1 PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.

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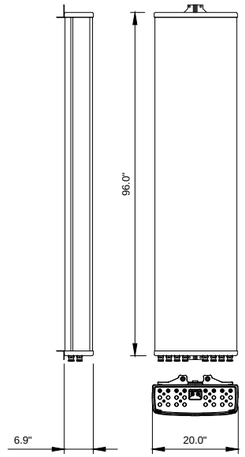
EXISTING & PROPOSED
ANTENNA LAYOUT

C-3

1 ANTENNA SPECIFICATIONS

SCALE: N.T.S.

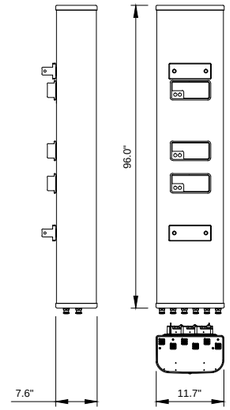
MANUFACTURER:	KATHREIN
MODEL NO.:	80010966
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
COLOR:	LIGHT GRAY
DIMENSIONS (LxWxD):	96.0" x 20.0" x 6.9" 24138mm x 508mm x 175mm
WEIGHT (lbs):	114.6
CONNECTOR:	8 x 41.3-10 FEMALE
FRONT WIND LOAD:	315 LBF @ 93 MPH 1400 N @ 150 KM/H
SIDE WIND LOAD:	316 LBF @ 93 MPH 1405 N @ 150 KM/H
WIND SPEED MAX.:	>150 MPH (>2411 KM/H)



2 ANTENNA SPECIFICATIONS

SCALE: N.T.S.

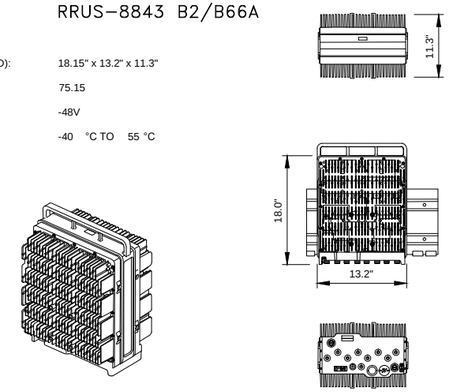
MANUFACTURER:	OFF CCI
MODEL NO.:	HPA65R-BU8A
DIMENSIONS (LxWxD):	96.0" x 11.7" x 7.6" 2437MM x 297MM X 193MM
WEIGHT (lbs):	54.0 LBS (24.5 KG)
CONNECTOR:	6 x 4.3-10 FEMALE
FRONT WIND LOAD:	287 LBS (1278 N) @100 MPH (161 KPH)
SIDE WIND LOAD:	206 LBS (916 N) @100 MPH (161 KPH)
WIND SPEED MAX.:	>150 MPH (>241 KPH)



3 RRUS SPECIFICATIONS

SCALE: N.T.S.

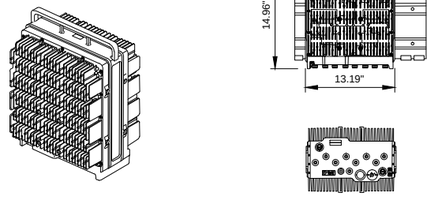
MANUFACTURER:	ERICSSON
MODEL NO.:	RRUS-8843 B2/B66A
DIMENSIONS (HxWxD):	18.15" x 13.2" x 11.3"
WEIGHT (lbs):	75.15
POWER SUPPLY:	-48V
TEMPERATURE:	-40 °C TO 55 °C



4 RRUS SPECIFICATIONS

SCALE: N.T.S.

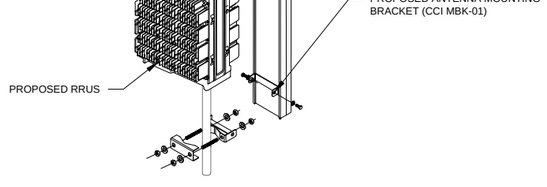
MANUFACTURER:	ERICSSON
MODEL NO.:	RRUS-4449 B5 & B12
TECHNOLOGY:	DUAL BAND
DIMENSIONS (HxWxD):	14.96" x 13.19" x 10.43"
WEIGHT (lbs):	73.0
POWER SUPPLY:	-48V
TEMPERATURE:	-40 °C TO 55 °C



5 DETAIL NOT USED

SCALE: N.T.S.

NOTE
MOUNTING OPTIONS ARE INCLUDED PRODUCTS WITH ANTENNA PURCHASE



DETAIL NOT USED

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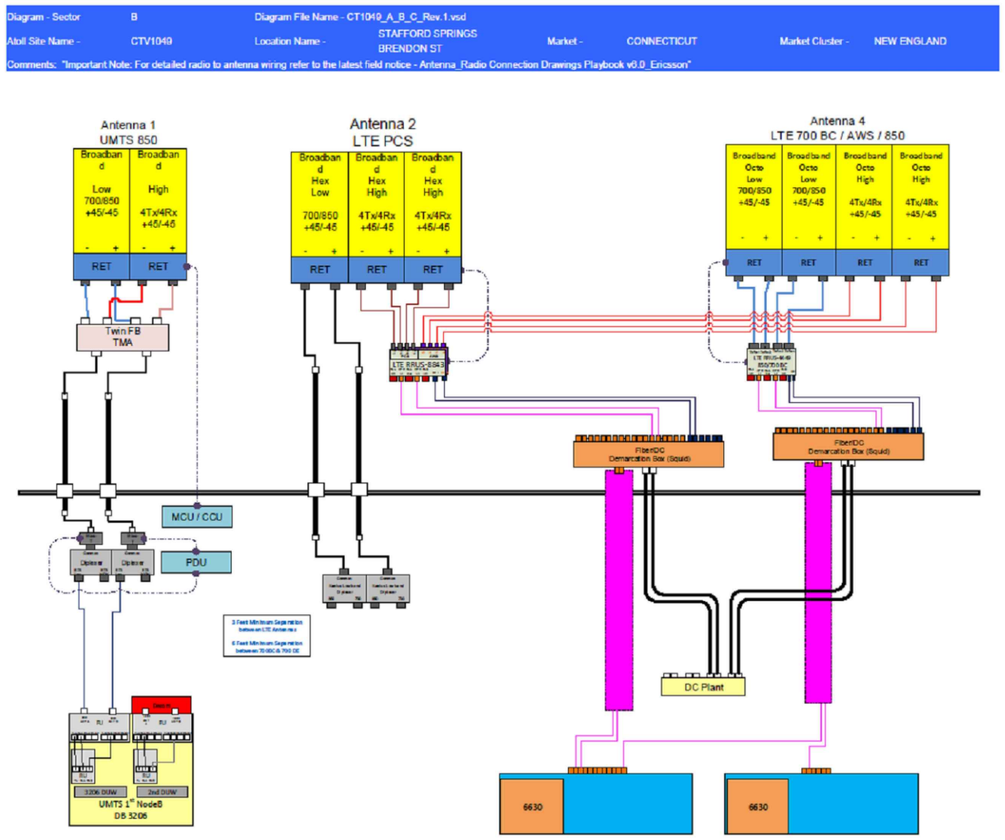
EQUIPMENT DETAILS I

C-4

ANTENNA NUMBER	ANTENNA MODEL	ANTENNA BAND	AZIMUTH	ANTENNA CENTERLINE FROM GROUND	TMA's & DIPLEXERS	RRH's	FEEDER	RAYCAP
A1	7770 (55"x11"x5")	UMTS	30°	90'	(1) DTMABP7819VG12A	-	(2) 1-1/4" EXISTING (LENGTH @ 140')	(2) RAYCAP DC6-48-60-18-8F
A2	**HPA-65R-BU8AA (96"x11.7"x7.6")**	**LTE**	**30°**	**90'**	**-**	**(1) 8843 B2/B66A (AWS/PCS)**	(2) 1-1/4" EXISTING **(1) FIBER (2) DC (LENGTH @ 140')**	
A3	-	-	-	-	-	-	-	
A4	**800-10966 (96"x20"x6.9")**	**LTE**	**30°**	**90'**	**-**	**(1) 4449 B5/B12 (850/700)**	(1) FIBER (2) DC (LENGTH @ 140')	
B1	7770 (55"x11"x5")	UMTS	140°	90'	(1) DTMABP7819VG12A	-	(2) 1-5/8" EXISTING (LENGTH @ 140')	
B2	**HPA-65R-BU8AA (96"x11.7"x7.6")**	**LTE**	**140°**	**90'**	**-**	**(1) 8843 B2/B66A (AWS/PCS)**	(2) 1-5/8" EXISTING (LENGTH @ 140')	
B3	-	-	-	-	-	-	-	
B4	**800-10966 (96"x20"x6.9")**	**LTE**	**140°**	**90'**	**-**	**(1) 4449 B5/B12 (850/700)**	-	
G1	7770 (55"x11"x5")	UMTS	270°	90'	(1) DTMABP7819VG12A	-	(2) 1-5/8" EXISTING (LENGTH @ 140')	
G2	**HPA-65R-BU8AA (96"x11.7"x7.6")**	**LTE**	**270°**	**90'**	**-**	**(1) 8843 B2/B66A (AWS/PCS)**	(2) 1-5/8" EXISTING (LENGTH @ 140')	
G3	-	-	270°	-	-	-	-	
G4	**800-10966 (96"x20"x6.9")**	**LTE**	**270°**	**90'**	**-**	**(1) 4449 B5/B12 (850/700)**	-	

*EQUIPMENT LISTED IN **BOLD**, DELINEATES THAT THE EQUIPMENT IS PROPOSED

1 ANTENNA INFORMATION CHART SCALE: NONE



2 RF EQUIPMENT SCHEMATIC SCALE: NONE

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT CRAIG A. THOMAS No. 0029052 LICENSED PROFESSIONAL ENGINEER

PROJECT NO: ERCC0004

DRAWN BY: FLP/JB

CHECKED BY: CAT

SUBMITTALS

1	02/21/19	ISSUED FOR CONSTRUCTION
0	12/28/18	ISSUED FOR PERMITTING

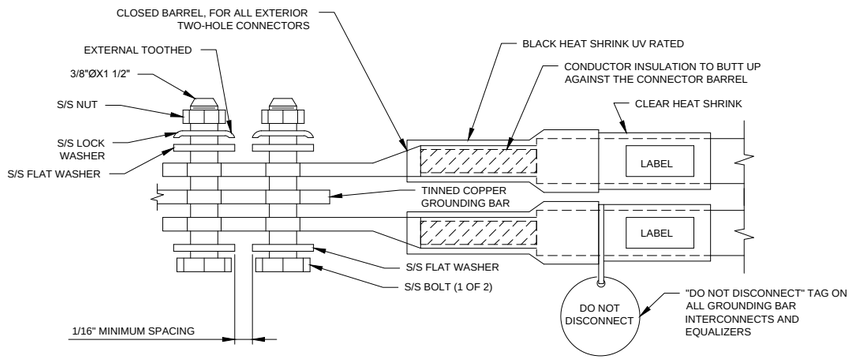
FA# 10035263
SITE# CTL1049
STAFFORD SPRINGS
BRENDON ST
BRENDON & QUINN ST.
STAFFORD, CT 06076

ANTENNA CHART & RF EQUIPMENT SCHEMATIC

RF-1

NOTES:

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL GROUNDING BARS SHALL BE STAMPED IN TO THE METAL "IF STOLEN DO NOT RECYCLE." THE CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.
3. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
5. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUNDING CONDUCTOR DOWN TO GROUNDING BUS.
6. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION, ON ALL GROUNDING TERMINATIONS. THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
7. SUPPLIED AND INSTALLED BY CONTRACTOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUNDING BAR AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).



1 EXTERIOR TWO HOLE LUG DETAIL

SCALE: NONE

GENERAL NOTES:

1. CONTRACTOR SHALL HAVE A COMPLETE UNDERSTANDING OF THE CONTENTS OF AT&T STANDARD TP-76416.
2. ALL INSTALLATIONS SHALL BE FIELD VERIFIED.
3. ALL GROUND CONNECTIONS FOR ALL RELOCATED EQUIPMENT SHALL BE RE-ESTABLISHED BY THE CONTRACTOR. CONTRACTOR SHALL FURNISH ALL MATERIALS AS REQUIRED.

GROUNDING NOTES:

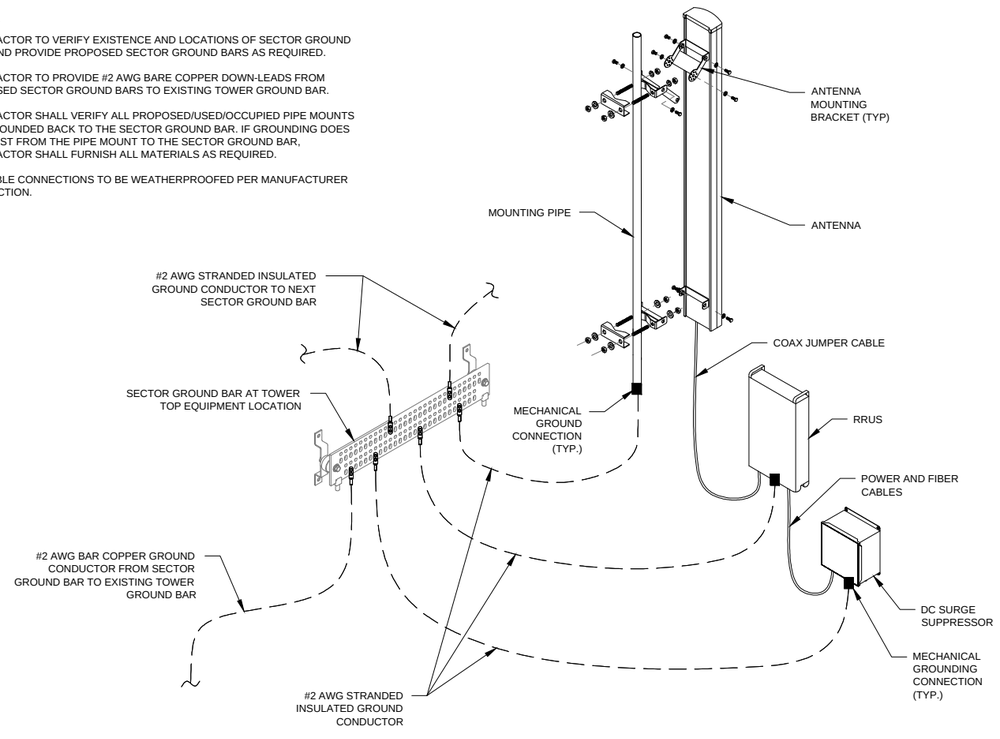
1. TOWER GROUNDING BAR: EXTEND (2) #2 AWG TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A MECHANICAL CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
2. ANTENNA GROUNDING BAR: ANDREW CORPORATION PART #UGBKIT-0424-T MOUNT GROUND BAR DIRECTLY TO TOWER. SECURE TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
3. GROUNDING BAR: LOCATED CLOSE TO GRADE LOCK BOX TESSCO PART #351546: INSTALL PER MANUFACTURER GUIDELINES.
4. EXOTHERMIC OR COMPRESSION CONNECTION FOR PIPE MOUNT TO ANTENNA ROUTE CONDUCTOR TO NEAREST GROUNDING BAR SO THE GROUNDING CONDUCTORS PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND. USE #2 AWG SOLID TINNED COPPER CONDUCTOR. GROUNDING CONNECTION SHALL BE LOCATED AT THE TOP 2" OF PIPE.
5. ALL GROUNDING CONDUCTORS SHALL BE #2 AWG COPPER TINNED UNLESS NOTED OTHERWISE.
6. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
7. KOPR-SHIELD ANTI-OXIDATION COMPOUND SHALL BE USED ON ALL COMPRESSION GROUNDING CONNECTIONS.
8. ALL EXOTHERMIC CONNECTIONS SHALL BE INSTALLED UTILIZING THE PROPER CONNECTION/MOLD AND MATERIALS FOR THE PARTICULAR APPLICATION.
9. ALL BOLTED GROUNDING CONNECTIONS SHALL BE INSTALLED WITH AN EXTERNAL TOOTHED LOCK WASHER. GROUNDING BUS BARS MAY HAVE PRE-PUNCHED HOLES OR TAPPED HOLES. ALL HARDWARE SHALL BE SECURITY TORQUE HARDWARE 3/8" STAINLESS STEEL.
10. EXTERNAL GROUNDING CONDUCTOR SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS, CONDUITS, OR SUPPORTS TO PRECLUDE ESTABLISHING A MAGNETIC CHOKE POINT.
11. PLASTIC CLIPS SHALL BE USED TO FASTEN AND SUPPORT GROUNDING CONDUCTORS. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED.
12. IF COAX ON ICE BRIDGE IS MORE THAT 6' FROM THE GROUND BAR AT THE BASE OF THE TOWER, A SECOND GROUND BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE RUN TO GROUND THE COAX GROUND KIT AND THE IN-LINE SURGE ARRESTORS (SURGE ARRESTORS INSTALLED BY LUCENT ONLY HAVE 6' GROUND TAILS).
13. CONTRACTOR SHALL REPAIR/PLACE EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.
14. DO NOT ALLOW THE COPPER CONDUCTOR TO TOUCH THE GALVANIZED GUY WIRE AT THE CONNECTION POINT OR AT ANY OTHER POINT. NO EXOTHERMICALLY WELDED CONNECTION SHALL BE MADE TO THE GUY WIRE.
15. CONTRACTOR SHALL VERIFY EXISTING SECTOR GROUNDING CONDITION AND GROUND THE PROPOSED EQUIPMENT IN THE SAME MANNER. A PROPOSED SECTOR GROUND BAR SHALL BE INSTALLED IF REQUIRED.

2 GROUNDING BAR DETAIL

SCALE: NONE

NOTES:

1. CONTRACTOR TO VERIFY EXISTENCE AND LOCATIONS OF SECTOR GROUND BARS AND PROVIDE PROPOSED SECTOR GROUND BARS AS REQUIRED.
2. CONTRACTOR TO PROVIDE #2 AWG BARE COPPER DOWN-LEADS FROM PROPOSED SECTOR GROUND BARS TO EXISTING TOWER GROUND BAR.
3. CONTRACTOR SHALL VERIFY ALL PROPOSED/USED/OCCUPIED PIPE MOUNTS ARE GROUNDED BACK TO THE SECTOR GROUND BAR. IF GROUNDING DOES NOT EXIST FROM THE PIPE MOUNT TO THE SECTOR GROUND BAR, CONTRACTOR SHALL FURNISH ALL MATERIALS AS REQUIRED.
4. ALL CABLE CONNECTIONS TO BE WEATHERPROOFED PER MANUFACTURER INSTRUCTION.



3 TYPICAL ANTENNA GROUNDING SCHEMATIC

SCALE: NONE

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065

JACOBS
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BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
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PROJECT NO:	ERCC0004
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1	02/21/19	ISSUED FOR CONSTRUCTION
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FA# 10035263
SITE# CTL1049
STAFFORD SPRINGS
BRENDON ST
BRENDON & QUINN ST.
STAFFORD, CT 06076

GROUNDING DETAILS

G-1

PAUL J. FORD & COMPANY

Date: **February 12, 2019**

Heather Simeone
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10035263
	Carrier Site Name:	CTL01049
Crown Castle Designation:	**Crown Castle BU Number:**	806365
	Crown Castle Site Name:	HRT 303 943203
	Crown Castle JDE Job Number:	548510
	Crown Castle Work Order Number:	1692600
	Crown Castle Order Number:	471524 Rev. 0
Engineering Firm Designation:	**Paul J. Ford & Company Project Number:**	37519-0549.001.7805
Site Data:	**BRENDON & QUINN STREETS, STAFFORD, Tolland County, CT** **Latitude *41° 57' 51.2"*, Longitude *-72° 18' 17.8"*** **129 Foot - Monopole Tower**	

Dear Heather Simeone,

Paul J. Ford & Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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

LC4.7: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2016 Connecticut State Building Code per section 1609.3 and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All modifications and equipment proposed in this report shall be installed in accordance with the proposed modifications drawings, referenced in Table 3 of this report, for the determined available structural capacity to be effective.

Respectfully submitted by:

Jaime Acuna
Structural Designer
jacuna@pauljford.com

STATE OF CONNECTICUT
JAMES R. ANTOSZEWSKI
31499
LICENSED
PROFESSIONAL ENGINEER

2/13/2019

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 129 ft Monopole tower designed by VALMONT.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
94.0	95.0	3	cci antennas	HPA65R-BU8A w/ Mount Pipe	12 4 2	1-1/4 3/4 3/8
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 8843 B2/B66A		
		3	kathrein	80010966 w/ Mount Pipe		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
	94.0	9	SitePro	Crossover Plate Kit, SitePro #SCX1-K		
		1	SitePro	SitePro #1 PRK -1245LW		
		1	tower mounts	Handrail Kit Pipe 2" STD		
		1	tower mounts	Platform Mount [LP 714-1]		
	90.0	3	communication components inc.	DTMABP7819VG12A		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
125.0	126.0	4	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe	4	1-5/8
		4	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		4	ericsson	RADIO 4449 B12/B71		
		4	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	125.0	1	tower mounts	Platform Mount [LP 701-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
116.0	117.0	3	alcatel lucent	AWS4 (B66) 4X45 RRH	12 2	7/8 1-1/4
		3	alcatel lucent	B13 RRH 4X30		
		3	alcatel lucent	PCS B25 RRH4X30		
		6	andrew	LNX-8513DS-VTM w/ Mount Pipe		
		6	commscope	SBNH-1D8585C w/ Mount Pipe		
		2	rfs celwave	DB-B1-6C-12AB-0Z		
	116.0	1	tower mounts	Platform Mount [LP 602-1]		
105.0	105.0	1	tower mounts	Miscellaneous [NA 510-1]	3 1	1-1/4 7/8
		1	tower mounts	Platform Mount [LP 1201-1]		
	104.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		
		6	alcatel lucent	RRH2X50-800		
		3	alcatel lucent	TD-RRH8X20-25		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, P.E., P.C., 01/09/1994	262167	CCISITES
4-POST-MODIFICATION INSPECTION	FDH, Velocitel, 15BORF1500, 06/02/2015	5734218	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 151790, 03/10/2016	6133277	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	TEP, 081976, 07/31/2008	2294383	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 11298-94, 01/03/1995	2046046	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Crown Castle, 606069, 05/09/2013	3833112	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37515-0530.002.7700, 03/03/2015	5577072	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37515-0530.005.7700, 05/04/2015	5664687	CCISITES
4-PROPOSED TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B&V, 194393, 07/29/18	7700293	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), 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.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Pier foundation vertical steel information was assumed based on the Crown Castle structural analysis referenced in Table 4 (CCi Doc #3833112).
5) Monopole was modified in conformance with the referenced modification drawings.
6) Monopole will be modified in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	129 - 124	Pole	TP16x16x0.375	Pole	7.6%	Pass
L2	124 - 119	Pole	TP16x16x0.375	Pole	25.3%	Pass
L3	119 - 115.5	Pole	TP16x16x0.375	Pole	42.4%	Pass
L4	115.5 - 115	Pole	TP17.81x16x0.375	Pole	36.9%	Pass
L5	115 - 110	Pole	TP18.96x17.81x0.2188	Pole	51.8%	Pass
L6	110 - 105	Pole	TP20.111x18.96x0.2188	Pole	67.3%	Pass
L7	105 - 100	Pole	TP21.261x20.111x0.2188	Pole	85.1%	Pass
L8	100 - 99.25	Pole	TP21.433x21.261x0.2188	Pole	87.6%	Pass
L9	99.25 - 99	Pole + Reinf.	TP21.491x21.433x0.4563	Reinf. 15 Tension Rupture	71.6%	Pass
L10	99 - 94	Pole + Reinf.	TP22.641x21.491x0.4376	Reinf. 15 Tension Rupture	85.3%	Pass
L11	94 - 92.08	Pole + Reinf.	TP23.083x22.641x0.4313	Reinf. 15 Tension Rupture	91.8%	Pass
L12	92.08 - 91.83	Pole + Reinf.	TP23.141x23.083x0.6563	Reinf. 9 Tension Rupture	62.7%	Pass
L13	91.83 - 86.83	Pole + Reinf.	TP24.291x23.141x0.6313	Reinf. 9 Tension Rupture	73.7%	Pass
L14	86.83 - 81.83	Pole + Reinf.	TP25.441x24.291x0.6063	Reinf. 9 Tension Rupture	83.5%	Pass
L15	81.83 - 78	Pole + Reinf.	TP27.3x25.441x0.5938	Reinf. 9 Tension Rupture	90.3%	Pass
L16	78 - 73	Pole + Reinf.	TP27.033x25.885x0.6875	Reinf. 9 Tension Rupture	86.5%	Pass
L17	73 - 71.5	Pole + Reinf.	TP27.378x27.033x0.675	Reinf. 9 Tension Rupture	88.4%	Pass
L18	71.5 - 71.25	Pole + Reinf.	TP27.435x27.378x0.7375	Reinf. 15 Tension Rupture	81.4%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L19	71.25 - 67.92	Pole + Reinf.	TP28.2x27.435x0.725	Reinf. 15 Tension Rupture	85.2%	Pass
L20	67.92 - 67.67	Pole + Reinf.	TP28.258x28.2x0.8875	Reinf. 8 Tension Rupture	65.0%	Pass
L21	67.67 - 66.33	Pole + Reinf.	TP28.565x28.258x0.875	Reinf. 8 Tension Rupture	66.2%	Pass
L22	66.33 - 66.08	Pole + Reinf.	TP28.623x28.565x1.0375	Reinf. 8 Tension Rupture	61.9%	Pass
L23	66.08 - 61.08	Pole + Reinf.	TP29.771x28.623x0.9875	Reinf. 8 Tension Rupture	65.8%	Pass
L24	61.08 - 56.5	Pole + Reinf.	TP30.823x29.771x0.9625	Reinf. 8 Tension Rupture	69.0%	Pass
L25	56.5 - 56.25	Pole + Reinf.	TP30.881x30.823x0.9625	Reinf. 2 Tension Rupture	69.2%	Pass
L26	56.25 - 51.25	Pole + Reinf.	TP32.029x30.881x0.9375	Reinf. 2 Tension Rupture	72.4%	Pass
L27	51.25 - 46.25	Pole + Reinf.	TP33.178x32.029x0.9125	Reinf. 2 Tension Rupture	75.4%	Pass
L28	46.25 - 42	Pole + Reinf.	TP35.36x33.178x0.8875	Reinf. 2 Tension Rupture	77.7%	Pass
L29	42 - 35.75	Pole + Reinf.	TP34.968x33.529x0.8125	Reinf. 6 Tension Rupture	82.4%	Pass
L30	35.75 - 35.08	Pole + Reinf.	TP35.122x34.968x0.8125	Reinf. 6 Tension Rupture	82.7%	Pass
L31	35.08 - 34.83	Pole + Reinf.	TP35.18x35.122x0.8125	Reinf. 6 Tension Rupture	82.8%	Pass
L32	34.83 - 31.25	Pole + Reinf.	TP36.004x35.18x0.8	Reinf. 6 Tension Rupture	84.1%	Pass
L33	31.25 - 31	Pole + Reinf.	TP36.062x36.004x0.8625	Reinf. 6 Tension Rupture	79.1%	Pass
L34	31 - 26	Pole + Reinf.	TP37.213x36.062x0.8375	Reinf. 6 Tension Rupture	80.9%	Pass
L35	26 - 22	Pole + Reinf.	TP38.134x37.213x0.825	Reinf. 6 Tension Rupture	82.3%	Pass
L36	22 - 21.75	Pole + Reinf.	TP38.192x38.134x0.9375	Reinf. 6 Tension Rupture	77.9%	Pass
L37	21.75 - 20.5	Pole + Reinf.	TP38.48x38.192x0.925	Reinf. 6 Tension Rupture	78.3%	Pass
L38	20.5 - 20.25	Pole + Reinf.	TP38.537x38.48x0.925	Reinf. 4 Tension Rupture	78.4%	Pass
L39	20.25 - 19.08	Pole + Reinf.	TP38.807x38.537x0.925	Reinf. 4 Tension Rupture	78.8%	Pass
L40	19.08 - 18.83	Pole + Reinf.	TP38.864x38.807x0.875	Reinf. 4 Tension Rupture	79.2%	Pass
L41	18.83 - 18	Pole + Reinf.	TP39.055x38.864x0.875	Reinf. 4 Tension Rupture	79.4%	Pass
L42	18 - 17.75	Pole + Reinf.	TP39.113x39.055x1	Reinf. 1 Tension Rupture	70.5%	Pass
L43	17.75 - 12.75	Pole + Reinf.	TP40.264x39.113x0.975	Reinf. 1 Tension Rupture	71.9%	Pass
L44	12.75 - 7.75	Pole + Reinf.	TP41.415x40.264x0.95	Reinf. 1 Tension Rupture	73.2%	Pass
L45	7.75 - 4	Pole + Reinf.	TP42.279x41.415x0.95	Reinf. 1 Tension Rupture	74.1%	Pass
L46	4 - 3.75	Pole + Reinf.	TP42.337x42.279x0.95	Reinf. 1 Tension Rupture	73.0%	Pass
L47	3.75 - 3	Pole + Reinf.	TP42.509x42.337x0.95	Reinf. 1 Tension Rupture	73.2%	Pass
L48	3 - 2.75	Pole + Reinf.	TP42.567x42.509x1.025	Reinf. 3 Tension Yield	63.3%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L49	2.75 - 0	Pole + Reinf.	TP43.2x42.567x1	Reinf. 3 Tension Yield	63.9%	Pass
L50					Summary	
				Pole	87.6%	Pass
				Reinforcement	91.8%	Pass
				Overall	91.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	89.1	Pass
1	Base Plate	0	51.4	Pass
1	Base Foundation Structural Steel	0	85.8	Pass
1	Base Foundation Soil Interaction	0	28.0	Pass
1	Extension Connection	115	31.2	Pass

Structure Rating (max from all components) =	91.8%

Notes:

- All structural ratings are per TIA-222-H Section 15.5

1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

The monopole and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the modifications as per the proposed modification drawings referenced in Table 3.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Tolland County, Connecticut.
2) Tower base elevation above sea level: 754.0000 ft.
3) Basic wind speed of 125.00 mph.
4) Risk Category II.
5) Exposure Category C.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height 0.0000 ft.
9) Nominal ice thickness of 1.7000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56.000 pcf.
12) A wind speed of 50.00 mph is used in combination with ice.
13) Temperature drop of 50.000 °F.
14) Deflections calculated using a wind speed of 60.00 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation ft*	*Section Length ft*	*Splice Length ft*	*Number of Sides*	*Top Diameter in*	*Bottom Diameter in*	*Wall Thickness in*	*Bend Radius in*	*Pole Grade*
L1	129.0000-124.0000	5.0000	0.000	Round	16.0000	16.0000	0.3750		A53-B-35 (35 ksi)
L2	124.0000-119.0000	5.0000	0.000	Round	16.0000	16.0000	0.3750		A53-B-35 (35 ksi)
L3	119.0000-115.5000	3.5000	0.000	Round	16.0000	16.0000	0.3750		A53-B-35 (35 ksi)
L4	115.5000-115.0000	0.5000	0.000	Round	16.0000	17.8100	0.3750		A53-B-35 (35 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
L5	115.0000-110.0000	5.0000	0.000	12	17.8100	18.9603	0.2188	0.8752	A572-65 (65 ksi)
L6	110.0000-105.0000	5.0000	0.000	12	18.9603	20.1106	0.2188	0.8752	A572-65 (65 ksi)
L7	105.0000-100.0000	5.0000	0.000	12	20.1106	21.2609	0.2188	0.8752	A572-65 (65 ksi)
L8	100.0000-99.2500	0.7500	0.000	12	21.2609	21.4335	0.2188	0.8752	A572-65 (65 ksi)
L9	99.2500-99.0000	0.2500	0.000	12	21.4335	21.4910	0.4563	1.8252	A572-65 (65 ksi)
L10	99.0000-94.0000	5.0000	0.000	12	21.4910	22.6413	0.4375	1.7502	A572-65 (65 ksi)
L11	94.0000-92.0800	1.9200	0.000	12	22.6413	23.0830	0.4313	1.7252	A572-65 (65 ksi)
L12	92.0800-91.8300	0.2500	0.000	12	23.0830	23.1405	0.6563	2.6252	A572-65 (65 ksi)
L13	91.8300-86.8300	5.0000	0.000	12	23.1405	24.2908	0.6313	2.5252	A572-65 (65 ksi)
L14	86.8300-81.8300	5.0000	0.000	12	24.2908	25.4411	0.6063	2.4252	A572-65 (65 ksi)
L15	81.8300-73.7500	8.0800	4.250	12	25.4411	27.3000	0.5938	2.3752	A572-65 (65 ksi)
L16	73.7500-73.0000	5.0000	0.000	12	25.8846	27.0332	0.6875	2.7500	A572-65 (65 ksi)
L17	73.0000-71.5000	1.5000	0.000	12	27.0332	27.3777	0.6750	2.7000	A572-65 (65 ksi)
L18	71.5000-71.2500	0.2500	0.000	12	27.3777	27.4352	0.7375	2.9500	A572-65 (65 ksi)
L19	71.2500-67.9200	3.3300	0.000	12	27.4352	28.2001	0.7250	2.9000	A572-65 (65 ksi)
L20	67.9200-67.6700	0.2500	0.000	12	28.2001	28.2575	0.8875	3.5500	A572-65 (65 ksi)
L21	67.6700-66.3300	1.3400	0.000	12	28.2575	28.5653	0.8750	3.5000	A572-65 (65 ksi)
L22	66.3300-66.0800	0.2500	0.000	12	28.5653	28.6227	1.0375	4.1500	A572-65 (65 ksi)
L23	66.0800-61.0800	5.0000	0.000	12	28.6227	29.7713	0.9875	3.9500	A572-65 (65 ksi)
L24	61.0800-56.5000	4.5800	0.000	12	29.7713	30.8233	0.9625	3.8500	A572-65 (65 ksi)
L25	56.5000-56.2500	0.2500	0.000	12	30.8233	30.8807	0.9625	3.8500	A572-65 (65 ksi)
L26	56.2500-51.2500	5.0000	0.000	12	30.8807	32.0293	0.9375	3.7500	A572-65 (65 ksi)
L27	51.2500-46.2500	5.0000	0.000	12	32.0293	33.1778	0.9125	3.6500	A572-65 (65 ksi)
L28	46.2500-36.7500	9.5000	5.250	12	33.1778	35.3600	0.8875	3.5500	A572-65 (65 ksi)
L29	36.7500-35.7500	6.2500	0.000	12	33.5290	34.9682	0.8125	3.2500	A572-65 (65 ksi)
L30	35.7500-35.0800	0.6700	0.000	12	34.9682	35.1225	0.8125	3.2500	A572-65 (65 ksi)
L31	35.0800-34.8300	0.2500	0.000	12	35.1225	35.1800	0.8125	3.2500	A572-65 (65 ksi)
L32	34.8300-31.2500	3.5800	0.000	12	35.1800	36.0043	0.8000	3.2000	A572-65 (65 ksi)
L33	31.2500-31.0000	0.2500	0.000	12	36.0043	36.0619	0.8625	3.4500	A572-65 (65 ksi)
L34	31.0000-26.0000	5.0000	0.000	12	36.0619	37.2132	0.8375	3.3500	A572-65 (65 ksi)
L35	26.0000-22.0000	4.0000	0.000	12	37.2132	38.1343	0.8250	3.3000	A572-65 (65 ksi)
L36	22.0000-21.7500	0.2500	0.000	12	38.1343	38.1918	0.9375	3.7500	A572-65 (65 ksi)
L37	21.7500-20.5000	1.2500	0.000	12	38.1918	38.4797	0.9250	3.7000	A572-65 (65 ksi)
L38	20.5000-20.2500	0.2500	0.000	12	38.4797	38.5372	0.9250	3.7000	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
L39	20.2500-19.0800	1.1700	0.000	12	38.5372	38.8066	0.9250	3.7000	A572-65 (65 ksi)
L40	19.0800-18.8300	0.2500	0.000	12	38.8066	38.8642	0.8750	3.5000	A572-65 (65 ksi)
L41	18.8300-18.0000	0.8300	0.000	12	38.8642	39.0553	0.8750	3.5000	A572-65 (65 ksi)
L42	18.0000-17.7500	0.2500	0.000	12	39.0553	39.1129	1.0000	4.0000	A572-65 (65 ksi)
L43	17.7500-12.7500	5.0000	0.000	12	39.1129	40.2642	0.9750	3.9000	A572-65 (65 ksi)
L44	12.7500-7.7500	5.0000	0.000	12	40.2642	41.4155	0.9500	3.8000	A572-65 (65 ksi)
L45	7.7500-4.0000	3.7500	0.000	12	41.4155	42.2790	0.9500	3.8000	A572-65 (65 ksi)
L46	4.0000-3.7500	0.2500	0.000	12	42.2790	42.3365	0.9500	3.8000	A572-65 (65 ksi)
L47	3.7500-3.0000	0.7500	0.000	12	42.3365	42.5092	0.9500	3.8000	A572-65 (65 ksi)
L48	3.0000-2.7500	0.2500	0.000	12	42.5092	42.5668	1.0250	4.1000	A572-65 (65 ksi)
L49	2.7500-0.0000	2.7500		12	42.5668	43.2000	1.0000	4.0000	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	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L2	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L3	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
L4	16.0000	18.4078	562.0841	5.5259	8.0000	70.2605	1124.1682	9.1984	0.0000	0
	17.8100	20.5401	780.8325	6.1656	8.9050	87.6847	1561.6650	10.2639	0.0000	0
L5	18.3611	12.3936	489.5257	6.2976	9.2256	53.0618	991.9119	6.0998	4.1867	19.135
	19.5520	13.2041	591.9737	6.7095	9.8214	60.2736	1199.4992	6.4986	4.4950	20.544
L6	19.5520	13.2041	591.9737	6.7095	9.8214	60.2736	1199.4992	6.4986	4.4950	20.544
	20.7428	14.0145	707.8020	7.1213	10.4173	67.9449	1434.1988	6.8975	4.8033	21.953
L7	20.7428	14.0145	707.8020	7.1213	10.4173	67.9449	1434.1988	6.8975	4.8033	21.953
	21.9337	14.8249	837.8320	7.5331	11.0132	76.0756	1697.6748	7.2964	5.1115	23.362
L8	21.9337	14.8249	837.8320	7.5331	11.0132	76.0756	1697.6748	7.2964	5.1115	23.362
	22.1124	14.9465	858.6122	7.5948	11.1025	77.3348	1739.7810	7.3562	5.1578	23.573
L9	22.0286	30.8214	1731.1393	7.5098	11.1025	155.9230	3507.7576	15.1694	4.5213	9.909
	22.0881	30.9059	1745.4177	7.5304	11.1323	156.7883	3536.6895	15.2110	4.5367	9.942
L10	22.0947	29.6624	1678.1758	7.5371	11.1323	150.7480	3400.4392	14.5989	4.5869	10.483
	23.2856	31.2831	1968.5520	7.9489	11.7282	167.8481	3988.8201	15.3966	4.8952	11.188
L11	23.2878	30.8449	1942.0721	7.9512	11.7282	165.5902	3935.1647	15.1809	4.9120	11.389
	23.7451	31.4583	2060.2649	8.1093	11.9570	172.3063	4174.6552	15.4828	5.0304	11.663
L12	23.6658	47.3940	3042.5639	8.0288	11.9570	254.4591	6165.0594	23.3259	4.4274	6.746
	23.7253	47.5156	3066.0328	8.0493	11.9868	255.7845	6212.6136	23.3857	4.4428	6.769
L13	23.7341	45.7564	2959.0891	8.0583	11.9868	246.8627	5995.9167	22.5199	4.5098	7.144
	24.9250	48.0947	3436.3287	8.4701	12.5826	273.1008	6962.9336	23.6708	4.8181	7.632
L14	24.9338	46.2389	3310.7200	8.4791	12.5826	263.1181	6708.4163	22.7574	4.8851	8.057
	26.1247	48.4847	3816.9101	8.8909	13.1785	289.6317	7734.0947	23.8627	5.1933	8.566
L15	26.1291	47.5090	3743.8649	8.8953	13.1785	284.0890	7586.0853	23.3825	5.2268	8.802
	28.0536	51.0632	4648.5586	9.5608	14.1414	328.7198	9419.2399	25.1318	5.7250	9.641
L16	27.5659	55.7802	4520.3118	9.0206	13.4082	337.1293	9159.3773	27.4533	5.0946	7.41
	27.7443	58.3227	5167.0456	9.4318	14.0032	368.9908	10469.8353	28.7047	5.4024	7.858
L17	27.7487	57.2895	5080.3238	9.4362	14.0032	362.7978	10294.1133	28.1961	5.4359	8.053
	28.1054	58.0384	5282.1721	9.5596	14.1817	372.4649	10703.1126	28.5647	5.5282	8.19
L18	28.0833	63.2639	5730.8324	9.5372	14.1817	404.1016	11612.2202	31.1366	5.3607	7.269

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
	28.1428	63.4003	5767.9730	9.5578	14.2114	405.8691	11687.4771	31.2037	5.3761	7.29
L19	28.1472	62.3549	5678.1790	9.5622	14.2114	399.5507	11505.5300	30.6892	5.4096	7.462
	28.9391	64.1406	6180.1142	9.8361	14.6076	423.0741	12522.5869	31.5680	5.6146	7.744
L20	28.8818	78.0525	7431.8706	9.7779	14.6076	508.7660	15058.9846	38.4151	5.1791	5.836
	28.9412	78.2166	7478.8471	9.7985	14.6374	510.9414	15154.1719	38.4958	5.1945	5.853
L21	28.9457	77.1502	7383.6184	9.8029	14.6374	504.4356	14961.2127	37.9710	5.2280	5.975
	29.2643	78.0174	7635.4247	9.9131	14.7968	516.0176	15471.4405	38.3978	5.3105	6.069
L22	29.2070	91.9635	8894.9760	9.8550	14.7968	601.1407	18023.6330	45.2616	4.8750	4.699
	29.2664	92.1554	8950.7603	9.8755	14.8266	603.6971	18136.6670	45.3561	4.8904	4.714
L23	29.2841	87.8731	8565.8082	9.8934	14.8266	577.7334	17356.6498	43.2485	5.0244	5.088
	30.4731	91.5252	9678.8015	10.3046	15.4215	627.6168	19611.8759	45.0459	5.3322	5.4
L24	30.4819	89.2856	9458.3709	10.3135	15.4215	613.3231	19165.2237	43.9436	5.3992	5.61
	31.5711	92.5461	10532.8881	10.6902	15.9665	659.6877	21342.4870	45.5484	5.6811	5.902
L25	31.5711	92.5461	10532.8881	10.6902	15.9665	659.6877	21342.4870	45.5484	5.6811	5.902
	31.6306	92.7241	10593.7736	10.7107	15.9962	662.2672	21465.8574	45.6360	5.6965	5.918
L26	31.6394	90.3912	10344.4993	10.7197	15.9962	646.6838	20960.7601	44.4878	5.7635	6.148
	32.8284	93.8583	11581.0881	11.1309	16.5912	698.0276	23466.4242	46.1942	6.0713	6.476
L27	32.8372	91.4288	11299.4720	11.1398	16.5912	681.0537	22895.7937	44.9985	6.1383	6.727
	34.0263	94.8035	12597.4219	11.5510	17.1861	733.0007	25525.7920	46.6594	6.4461	7.064
L28	34.0351	92.2776	12280.7893	11.5599	17.1861	714.5769	24884.2086	45.4162	6.5131	7.339
	36.2943	98.5138	14942.6810	12.3412	18.3165	815.8053	30277.9228	48.4855	7.0980	7.998
L29	35.6767	85.5947	11694.1190	11.7125	17.3680	673.3123	23695.4556	42.1271	6.8083	8.379
	35.9151	89.3598	13306.1934	12.2277	18.1135	734.6003	26961.9552	43.9802	7.1940	8.854
L30	35.9151	89.3598	13306.1934	12.2277	18.1135	734.6003	26961.9552	43.9802	7.1940	8.854
	36.0748	89.7634	13487.3137	12.2830	18.1934	741.3288	27328.9541	44.1788	7.2353	8.905
L31	36.0748	89.7634	13487.3137	12.2830	18.1934	741.3288	27328.9541	44.1788	7.2353	8.905
	36.1344	89.9140	13555.3147	12.3036	18.2232	743.8473	27466.7425	44.2529	7.2507	8.924
L32	36.1388	88.5629	13361.3399	12.3080	18.2232	733.2030	27073.6972	43.5880	7.2842	9.105
	36.9922	90.6864	14345.6679	12.6032	18.6503	769.1943	29068.2124	44.6331	7.5052	9.381
L33	36.9702	97.5977	15384.1944	12.5808	18.6503	824.8786	31172.5488	48.0346	7.3377	8.507
	37.0298	97.7576	15459.9200	12.6014	18.6801	827.6157	31325.9894	48.1133	7.3531	8.525
L34	37.0386	94.9914	15043.8150	12.6103	18.6801	805.3403	30482.8478	46.7519	7.4201	8.86
	38.2305	98.0962	16567.6679	13.0225	19.2764	859.4773	33570.5870	48.2800	7.7286	9.228
L35	38.2349	96.6653	16337.2199	13.0270	19.2764	847.5224	33103.6368	47.5757	7.7621	9.409
	39.1885	99.1121	17609.4480	13.3567	19.7535	891.4575	35681.5157	48.7799	8.0090	9.708

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
L36	39.1488	112.2877	19830.2643	13.3164	19.7535	1003.8837	40181.4916	55.2646	7.7075	8.221
	39.2084	112.4615	19922.4740	13.3370	19.7834	1007.0315	40368.3335	55.3501	7.7229	8.238
L37	39.2128	110.9992	19676.6341	13.3415	19.7834	994.6049	39870.1953	54.6305	7.7564	8.385
	39.5108	111.8565	20136.0749	13.4446	19.9325	1010.2152	40801.1470	55.0524	7.8335	8.469
L38	39.5108	111.8565	20136.0749	13.4446	19.9325	1010.2152	40801.1470	55.0524	7.8335	8.469
	39.5704	112.0280	20228.8130	13.4652	19.9623	1013.3519	40989.0594	55.1368	7.8490	8.485
L39	39.5704	112.0280	20228.8130	13.4652	19.9623	1013.3519	40989.0594	55.1368	7.8490	8.485
	39.8493	112.8304	20666.6129	13.5616	20.1018	1028.0960	41876.1607	55.5317	7.9212	8.563
L40	39.8669	106.8723	19627.0111	13.5795	20.1018	976.3793	39769.6456	52.5993	8.0552	9.206
	39.9265	107.0345	19716.5049	13.6001	20.1316	979.3785	39950.9843	52.6791	8.0706	9.224
L41	39.9265	107.0345	19716.5049	13.6001	20.1316	979.3785	39950.9843	52.6791	8.0706	9.224
	40.1244	107.5730	20015.5745	13.6685	20.2306	989.3689	40556.9805	52.9442	8.1218	9.282
L42	40.0803	122.5381	22651.0036	13.6238	20.2306	1119.6381	45897.0743	60.3095	7.7868	7.787
	40.1399	122.7234	22753.9498	13.6444	20.2605	1123.0713	46105.6712	60.4007	7.8022	7.802
L43	40.1487	119.7338	22228.7864	13.6534	20.2605	1097.1507	45041.5478	58.9294	7.8692	8.071
	41.3406	123.3484	24303.2945	14.0655	20.8568	1165.2432	49245.0636	60.7083	8.1778	8.387
L44	41.3494	120.2621	23725.3654	14.0745	20.8568	1137.5339	48074.0226	59.1893	8.2448	8.679
	42.5413	123.7839	25871.3727	14.4866	21.4532	1205.9437	52422.4151	60.9227	8.5533	9.004
L45	42.5413	123.7839	25871.3727	14.4866	21.4532	1205.9437	52422.4151	60.9227	8.5533	9.004
	43.4353	126.4253	27563.1440	14.7958	21.9005	1258.5623	55850.4025	62.2227	8.7848	9.247
L46	43.4353	126.4253	27563.1440	14.7958	21.9005	1258.5623	55850.4025	62.2227	8.7848	9.247
	43.4949	126.6014	27678.4788	14.8164	21.9303	1262.1102	56084.1021	62.3093	8.8002	9.263
L47	43.4949	126.6014	27678.4788	14.8164	21.9303	1262.1102	56084.1021	62.3093	8.8002	9.263
	43.6737	127.1296	28026.4127	14.8782	22.0198	1272.7838	56789.1106	62.5693	8.8465	9.312
L48	43.6472	136.9187	30075.6066	14.8513	22.0198	1365.8453	60941.3329	67.3872	8.6455	8.435
	43.7068	137.1087	30200.9829	14.8720	22.0496	1369.6843	61195.3792	67.4807	8.6609	8.45
L49	43.7156	133.8450	29517.6009	14.8809	22.0496	1338.6914	59810.6620	65.8745	8.7279	8.728
	44.3712	135.8840	30887.2451	15.1076	22.3776	1380.2751	62585.9326	66.8780	8.8976	8.898

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 129.0000-124.0000				1	1	1			
L2 124.0000-119.0000				1	1	1			
L3 119.0000-115.5000				1	1	1			

Tower Elevation ft	*Gusset Area (per face) ft²*	*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*
L4 115.5000-115.0000				1	1	1			
L5 115.0000-110.0000				1	1	1			
L6 110.0000-105.0000				1	1	1			
L7 105.0000-100.0000				1	1	1			
L8 100.0000-99.2500				1	1	1			
L9 99.2500-99.0000				1	1	0.922359			
L10 99.0000-94.0000				1	1	0.937146			
L11 94.0000-92.0800				1	1	0.941817			
L12 92.0800-91.8300				1	1	0.908921			
L13 91.8300-86.8300				1	1	0.914826			
L14 86.8300-81.8300				1	1	0.924184			
L15 81.8300-73.7500				1	1	0.923482			
L16 73.7500-73.0000				1	1	0.92462			
L17 73.0000-71.5000				1	1	0.935124			
L18 71.5000-71.2500				1	1	0.92803			
L19 71.2500-67.9200				1	1	0.929319			
L20 67.9200-67.6700				1	1	0.902051			
L21 67.6700-66.3300				1	1	0.908324			
L22 66.3300-66.0800				1	1	1.00052			
L23 66.0800-61.0800				1	1	1.02004			
L24 61.0800-56.5000				1	1	1.02022			
L25 56.5000-56.2500				1	1	1.01889			
L26 56.2500-51.2500				1	1	1.01889			
L27 51.2500-46.2500				1	1	1.02092			
L28 46.2500-36.7500				1	1	1.02842			
L29 36.7500-35.7500				1	1	0.978759			
L30 35.7500-35.0800				1	1	0.976433			
L31 35.0800-34.8300				1	1	0.975571			
L32 34.8300-31.2500				1	1	0.978238			
L33 31.2500-31.0000				1	1	1.01703			
L34 31.0000-26.0000				1	1	1.02769			
L35 26.0000-22.0000				1	1	1.02838			
L36 22.0000-21.7500				1	1	0.979278			

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
L37 21.7500-20.5000				1	1	0.987682			
L38 20.5000-20.2500				1	1	0.986791			
L39 20.2500-19.0800				1	1	0.982656			
L40 19.0800-18.8300				1	1	0.960497			
L41 18.8300-18.0000				1	1	0.957834			
L42 18.0000-17.7500				1	1	0.987036			
L43 17.7500-12.7500				1	1	0.993306			
L44 12.7500-7.7500				1	1	1.00104			
L45 7.7500-4.0000				1	1	0.988374			
L46 4.0000-3.7500				1	1	0.972717			
L47 3.7500-3.0000				1	1	0.970315			
L48 3.0000-2.7500				1	1	0.912526			
L49 2.7500-0.0000				1	1	0.926377			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
***											

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HCS 6X12 4AWG(1-5/8)	C	No	No	CaAa (Out Of Face)	125.0000 - 0.0000	1	No Ice	0.1660	0.002
							1/2" Ice	0.2660	0.004
							1" Ice	0.3660	0.006
							2" Ice	0.5660	0.011
HCS 6X12 4AWG(1-5/8)	C	No	No	CaAa (Out Of Face)	125.0000 - 0.0000	3	No Ice	0.0000	0.002
							1/2" Ice	0.0000	0.004
							1" Ice	0.0000	0.006
							2" Ice	0.0000	0.011
***									
LDF5-50A(7/8)	C	No	No	Inside Pole	116.0000 - 0.0000	12	No Ice	0.0000	0.000
							1/2" Ice	0.0000	0.000
							1" Ice	0.0000	0.000
							2" Ice	0.0000	0.000
HB114-1-05U3-S3J(1-1/4)	C	No	No	Inside Pole	116.0000 - 0.0000	2	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001
***									
HB114-1-08U4-M5F(1-1/4)	C	No	No	Inside Pole	105.0000 - 0.0000	3	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001

Description	*Face or Leg*	*Allow Shield*	*Exclude From Torque Calculation*	*Component Type*	*Placement ft*	*Total Number*		C_AA_A *ft²/ft*	*Weight klf*
HB114-08U3M12-XXXF(7/8)	C	No	No	Inside Pole	105.0000 - 0.0000	1	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001
***									
LDF6-50A(1-1/4)	C	No	No	Inside Pole	94.0000 - 0.0000	12	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	94.0000 - 0.0000	2	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001
FB-L98B-002-75000(3/8)	C	No	No	Inside Pole	94.0000 - 0.0000	1	No Ice	0.0000	0.000
							1/2" Ice	0.0000	0.000
							1" Ice	0.0000	0.000
							2" Ice	0.0000	0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	94.0000 - 0.0000	2	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	94.0000 - 0.0000	1	No Ice	0.0000	0.000
							1/2" Ice	0.0000	0.000
							1" Ice	0.0000	0.000
							2" Ice	0.0000	0.000
1 1/2" Rigid Conduit (1 1/4" EMT)	C	No	No	Inside Pole	94.0000 - 0.0000	2	No Ice	0.0000	0.001
							1/2" Ice	0.0000	0.001
							1" Ice	0.0000	0.001
							2" Ice	0.0000	0.001
***									
FLC 12-50J(1/2)	C	No	No	Inside Pole	60.0000 - 0.0000	1	No Ice	0.0000	0.000
							1/2" Ice	0.0000	0.000
							1" Ice	0.0000	0.000
							2" Ice	0.0000	0.000
*									
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	70.6600 - 0.0000	1	No Ice	0.2083	0.000
							1/2" Ice	0.3194	0.000
							1" Ice	0.4306	0.000
							2" Ice	0.6528	0.000
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	100.7500 - 70.6600	1	No Ice	0.1667	0.000
							1/2" Ice	0.2778	0.000
							1" Ice	0.3889	0.000
							2" Ice	0.6111	0.000
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	40.5830 - 0.0000	1	No Ice	0.2083	0.000
							1/2" Ice	0.3194	0.000
							1" Ice	0.4306	0.000
							2" Ice	0.6528	0.000
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	94.0830 - 54.0000	1	No Ice	0.1667	0.000
							1/2" Ice	0.2778	0.000
							1" Ice	0.3889	0.000
							2" Ice	0.6111	0.000
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	*Tower Elevation ft*	*Face*	A_R *ft²*	A_F *ft²*	C_AA_A *In Face ft²*	C_AA_A *Out Face ft²*	*Weight K*
L1	129.0000-124.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.166	0.010
L2	124.0000-119.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.830	0.048
L3	119.0000-115.5000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.581	0.036

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
L4	115.5000-115.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.083	0.008
L5	115.0000-110.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.830	0.077
L6	110.0000-105.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.830	0.077
L7	105.0000-100.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.955	0.096
L8	100.0000-99.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.250	0.014
L9	99.2500-99.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.083	0.005
L10	99.0000-94.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	1.677	0.096
L11	94.0000-92.0800	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.959	0.059
L12	92.0800-91.8300	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.125	0.008
L13	91.8300-86.8300	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.497	0.155
L14	86.8300-81.8300	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.497	0.155
L15	81.8300-73.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	4.035	0.250
L16	73.7500-73.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.375	0.023
L17	73.0000-71.5000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.749	0.046
L18	71.5000-71.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.125	0.008
L19	71.2500-67.9200	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	1.777	0.103
L20	67.9200-67.6700	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.135	0.008
L21	67.6700-66.3300	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.725	0.041
L22	66.3300-66.0800	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.135	0.008
L23	66.0800-61.0800	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.705	0.155
L24	61.0800-56.5000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.478	0.142
L25	56.5000-56.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.135	0.008
L26	56.2500-51.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.247	0.156

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
L27	51.2500-46.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	1.872	0.156
L28	46.2500-36.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	4.355	0.296
L29	36.7500-35.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.583	0.031
L30	35.7500-35.0800	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.390	0.021
L31	35.0800-34.8300	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L32	34.8300-31.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.086	0.111
L33	31.2500-31.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L34	31.0000-26.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.913	0.156
L35	26.0000-22.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.331	0.124
L36	22.0000-21.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L37	21.7500-20.5000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.728	0.039
L38	20.5000-20.2500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L39	20.2500-19.0800	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.682	0.036
L40	19.0800-18.8300	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L41	18.8300-18.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.484	0.026
L42	18.0000-17.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L43	17.7500-12.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.913	0.156
L44	12.7500-7.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.913	0.156
L45	7.7500-4.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	2.185	0.117
L46	4.0000-3.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L47	3.7500-3.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.437	0.023
L48	3.0000-2.7500	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.146	0.008
L49	2.7500-0.0000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	1.602	0.086

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	129.0000-124.0000	A	1.944	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.555	0.044
L2	124.0000-119.0000	A	1.937	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	2.767	0.220
L3	119.0000-115.5000	A	1.930	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.932	0.156
L4	115.5000-115.0000	A	1.926	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.276	0.025
L5	115.0000-110.0000	A	1.922	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	2.752	0.247
L6	110.0000-105.0000	A	1.913	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	2.743	0.246
L7	105.0000-100.0000	A	1.904	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	3.176	0.264
L8	100.0000-99.2500	A	1.899	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.851	0.040
L9	99.2500-99.0000	A	1.898	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.283	0.013
L10	99.0000-94.0000	A	1.893	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	5.707	0.263
L11	94.0000-92.0800	A	1.886	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	3.292	0.123
L12	92.0800-91.8300	A	1.883	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.428	0.016
L13	91.8300-86.8300	A	1.878	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	8.548	0.320
L14	86.8300-81.8300	A	1.867	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	8.513	0.318
L15	81.8300-73.7500	A	1.852	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	13.679	0.512
L16	73.7500-73.0000	A	1.841	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.270	0.048
L17	73.0000-71.5000	A	1.839	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	2.526	0.095
L18	71.5000-71.2500	A	1.836	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.421	0.016
L19	71.2500-67.9200	A	1.832	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	5.708	0.209
L20	67.9200-67.6700	A	1.827	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.430	0.016
L21	67.6700-66.3300	A	1.825	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	2.301	0.084
L22	66.3300-66.0800	A	1.823	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.429	0.016
L23	66.0800-61.0800	A	1.815	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	8.554	0.313
L24	61.0800-56.5000	A	1.801	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	7.794	0.285
L25	56.5000-56.2500	A	1.794	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.424	0.016
L26	56.2500-51.2500	A	1.785	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	6.907	0.310
L27	51.2500-46.2500	A	1.768	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	5.603	0.308
L28	46.2500-36.7500	A	1.739	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	12.812	0.579
L29	36.7500-35.7500	A	1.716	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.703	0.061
L30	35.7500-35.0800	A	1.712	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.130	0.040
L31	35.0800-34.8300	A	1.710	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.421	0.015
L32	34.8300-31.2500	A	1.700	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	6.008	0.215
L33	31.2500-31.0000	A	1.690	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.418	0.015
L34	31.0000-26.0000	A	1.675	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	8.311	0.297
L35	26.0000-22.0000	A	1.647	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	6.575	0.235
L36	22.0000-21.7500	A	1.632	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.409	0.015
L37	21.7500-20.5000	A	1.626	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	2.038	0.073
L38	20.5000-20.2500	A	1.620	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.407	0.015
L39	20.2500-19.0800	A	1.614	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.899	0.068
L40	19.0800-18.8300	A	1.608	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.405	0.014
L41	18.8300-18.0000	A	1.604	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.341	0.048
L42	18.0000-17.7500	A	1.599	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.403	0.014
L43	17.7500-12.7500	A	1.574	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	7.984	0.286
L44	12.7500-7.7500	A	1.512	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	7.786	0.279
L45	7.7500-4.0000	A	1.430	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	5.642	0.202
L46	4.0000-3.7500	A	1.372	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.367	0.013
L47	3.7500-3.0000	A	1.353	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	1.091	0.039
L48	3.0000-2.7500	A	1.332	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.360	0.013
L49	2.7500-0.0000	A	1.237	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	3.794	0.136

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	129.0000-124.0000	-0.2761	0.1594	-0.3662	0.2114
L2	124.0000-119.0000	-1.1906	0.6874	-1.5089	0.8712
L3	119.0000-115.5000	-1.1906	0.6874	-1.5068	0.8699
L4	115.5000-115.0000	-1.2016	0.6938	-1.5361	0.8869
L5	115.0000-110.0000	-0.7929	0.4578	-1.5480	0.8937
L6	110.0000-105.0000	-0.7974	0.4604	-1.5753	0.9095
L7	105.0000-100.0000	-0.9127	0.5269	-1.8124	1.0464
L8	100.0000-99.2500	-1.4811	0.8551	-2.8213	1.6289
L9	99.2500-99.0000	-1.4871	0.8586	-2.8333	1.6358
L10	99.0000-94.0000	-1.5038	0.8682	-2.8792	1.6623
L11	94.0000-92.0800	-2.0936	1.2088	-3.8199	2.2054
L12	92.0800-91.8300	-2.1039	1.2147	-3.8446	2.2197
L13	91.8300-86.8300	-2.1142	1.2206	-3.8857	2.2434
L14	86.8300-81.8300	-2.1332	1.2316	-3.9604	2.2865
L15	81.8300-73.7500	-2.1565	1.2450	-4.0505	2.3386
L16	73.7500-73.0000	-2.1670	1.2511	-4.0907	2.3618
L17	73.0000-71.5000	-2.1704	1.2531	-4.0953	2.3644
L18	71.5000-71.2500	-2.1746	1.2555	-4.1079	2.3717
L19	71.2500-67.9200	-2.3015	1.3287	-4.1841	2.4157
L20	67.9200-67.6700	-2.3368	1.3492	-4.2220	2.4376
L21	67.6700-66.3300	-2.3393	1.3506	-4.2310	2.4428
L22	66.3300-66.0800	-2.3457	1.3543	-4.2451	2.4509
L23	66.0800-61.0800	-2.3533	1.3587	-4.2731	2.4670
L24	61.0800-56.5000	-2.3680	1.3671	-4.3226	2.4957
L25	56.5000-56.2500	-2.3753	1.3714	-4.3463	2.5093
L26	56.2500-51.2500	-2.0358	1.1754	-3.7852	2.1854
L27	51.2500-46.2500	-1.7493	1.0100	-3.2842	1.8961
L28	46.2500-36.7500	-2.1052	1.2154	-3.8520	2.2239
L29	36.7500-35.7500	-2.5738	1.4860	-4.5656	2.6360
L30	35.7500-35.0800	-2.5761	1.4873	-4.5461	2.6247
L31	35.0800-34.8300	-2.5774	1.4881	-4.5486	2.6261
L32	34.8300-31.2500	-2.5823	1.4909	-4.5580	2.6316
L33	31.2500-31.0000	-2.5887	1.4946	-4.5685	2.6376
L34	31.0000-26.0000	-2.5950	1.4982	-4.5776	2.6429
L35	26.0000-22.0000	-2.6060	1.5046	-4.5884	2.6491
L36	22.0000-21.7500	-2.6134	1.5088	-4.5938	2.6522
L37	21.7500-20.5000	-2.6149	1.5097	-4.5937	2.6522
L38	20.5000-20.2500	-2.6167	1.5108	-4.5936	2.6521
L39	20.2500-19.0800	-2.6184	1.5117	-4.5932	2.6519
L40	19.0800-18.8300	-2.6190	1.5121	-4.5912	2.6507
L41	18.8300-18.0000	-2.6203	1.5128	-4.5904	2.6503
L42	18.0000-17.7500	-2.6240	1.5149	-4.5929	2.6517

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L43	17.7500-12.7500	-2.6294	1.5181	-4.5843	2.6467
L44	12.7500-7.7500	-2.6398	1.5241	-4.5486	2.6261
L45	7.7500-4.0000	-2.6489	1.5293	-4.4769	2.5847
L46	4.0000-3.7500	-2.6529	1.5316	-4.4145	2.5487
L47	3.7500-3.0000	-2.6539	1.5322	-4.3927	2.5361
L48	3.0000-2.7500	-2.6562	1.5336	-4.3690	2.5225
L49	2.7500-0.0000	-2.6587	1.5350	-4.2479	2.4525

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

Shielding Factor Ka

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

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
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	50.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.153 0.214 0.282 0.441
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000 0.000 1.000	20.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.153 0.214 0.282 0.441
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000 0.000 1.000	-10.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.153 0.214 0.282 0.441
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	-40.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.7474 7.2017 7.6475 8.5651	6.0700 6.8671 7.5828 9.0629	0.153 0.214 0.282 0.441
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	50.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.3292 6.7751 7.2137 8.1168	5.6424 6.4259 7.1313 8.5907	0.112 0.169 0.233 0.383
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.000 1.000	20.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.3292 6.7751 7.2137 8.1168	5.6424 6.4259 7.1313 8.5907	0.112 0.169 0.233 0.383
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.000 1.000	-10.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.3292 6.7751 7.2137 8.1168	5.6424 6.4259 7.1313 8.5907	0.112 0.169 0.233 0.383
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	-40.000	125.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.3292 6.7751 7.2137 8.1168	5.6424 6.4259 7.1313 8.5907	0.112 0.169 0.233 0.383
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.0000 0.000	50.000	125.0000	No Ice	20.4801 21.2306	11.0240 12.5496	0.161 0.297

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*
			1.000			1/2" Ice	21.9900	14.0992	0.444
						1" Ice	23.4441	16.4509	0.775
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.0000	20.000	125.0000	No Ice	20.4801	11.0240	0.161
			0.000			1/2" Ice	21.2306	12.5496	0.297
			1.000			1" Ice	21.9900	14.0992	0.444
						2" Ice	23.4441	16.4509	0.775
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.0000	-10.000	125.0000	No Ice	20.4801	11.0240	0.161
			0.000			1/2" Ice	21.2306	12.5496	0.297
			1.000			1" Ice	21.9900	14.0992	0.444
						2" Ice	23.4441	16.4509	0.775
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.0000	-40.000	125.0000	No Ice	20.4801	11.0240	0.161
			0.000			1/2" Ice	21.2306	12.5496	0.297
			1.000			1" Ice	21.9900	14.0992	0.444
						2" Ice	23.4441	16.4509	0.775
RADIO 4449 B12/B71	A	From Leg	4.0000	50.000	125.0000	No Ice	1.6500	1.1625	0.074
			0.000			1/2" Ice	1.8104	1.3012	0.090
			1.000			1" Ice	1.9781	1.4473	0.109
						2" Ice	2.3359	1.7618	0.155
RADIO 4449 B12/B71	B	From Leg	4.0000	20.000	125.0000	No Ice	1.6500	1.1625	0.074
			0.000			1/2" Ice	1.8104	1.3012	0.090
			1.000			1" Ice	1.9781	1.4473	0.109
						2" Ice	2.3359	1.7618	0.155
RADIO 4449 B12/B71	C	From Leg	4.0000	-10.000	125.0000	No Ice	1.6500	1.1625	0.074
			0.000			1/2" Ice	1.8104	1.3012	0.090
			1.000			1" Ice	1.9781	1.4473	0.109
						2" Ice	2.3359	1.7618	0.155
RADIO 4449 B12/B71	A	From Leg	4.0000	-40.000	125.0000	No Ice	1.6500	1.1625	0.074
			0.000			1/2" Ice	1.8104	1.3012	0.090
			1.000			1" Ice	1.9781	1.4473	0.109
						2" Ice	2.3359	1.7618	0.155
Platform Mount [LP 701-1]	C	None		0.000	125.0000	No Ice	59.1500	59.1500	2.750
						1/2" Ice	71.1200	71.1200	3.424
						1" Ice	83.0900	83.0900	4.099
						2" Ice	107.0300	107.0300	5.448
***									
(2) LNX-8513DS-VTM w/ Mount Pipe	A	From Leg	4.0000	0.000	116.0000	No Ice	8.4106	7.0817	0.065
			0.000			1/2" Ice	8.9745	8.2729	0.134
			1.000			1" Ice	9.5048	9.1847	0.211
						2" Ice	10.5853	11.0232	0.393
(2) LNX-8513DS-VTM w/ Mount Pipe	B	From Leg	4.0000	0.000	116.0000	No Ice	8.4106	7.0817	0.065
			0.000			1/2" Ice	8.9745	8.2729	0.134
			1.000			1" Ice	9.5048	9.1847	0.211
						2" Ice	10.5853	11.0232	0.393
(2) LNX-8513DS-VTM w/ Mount Pipe	C	From Leg	4.0000	0.000	116.0000	No Ice	8.4106	7.0817	0.065
			0.000			1/2" Ice	8.9745	8.2729	0.134
			1.000			1" Ice	9.5048	9.1847	0.211
						2" Ice	10.5853	11.0232	0.393
(2) SBNH-1D8585C w/ Mount Pipe	A	From Leg	4.0000	0.000	116.0000	No Ice	11.6828	9.8418	0.088
			0.000			1/2" Ice	12.4043	11.3657	0.178
			1.000			1" Ice	13.1351	12.9138	0.278
						2" Ice	14.5120	15.2672	0.511

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert ft ft ft*	*Azimuth Adjustment °*	*Placement ft*		*C_AA_A Front ft^2*	*C_AA_A Side ft^2*	*Weight K*
(2) SBNH-1D8585C w/ Mount Pipe	B	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	11.6828 12.4043 13.1351 14.5120	9.8418 11.3657 12.9138 15.2672	0.088 0.178 0.278 0.511
(2) SBNH-1D8585C w/ Mount Pipe	C	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	11.6828 12.4043 13.1351 14.5120	9.8418 11.3657 12.9138 15.2672	0.088 0.178 0.278 0.511
AWS4 (B66) 4X45 RRH	A	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.6600 2.8781 3.1037 3.5770	1.5861 1.7690 1.9588 2.3594	0.064 0.084 0.108 0.165
AWS4 (B66) 4X45 RRH	B	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.6600 2.8781 3.1037 3.5770	1.5861 1.7690 1.9588 2.3594	0.064 0.084 0.108 0.165
AWS4 (B66) 4X45 RRH	C	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.6600 2.8781 3.1037 3.5770	1.5861 1.7690 1.9588 2.3594	0.064 0.084 0.108 0.165
B13 RRH 4X30	A	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.0552 2.2405 2.4333 2.8411	1.3201 1.4754 1.6376 1.9966	0.056 0.073 0.093 0.142
B13 RRH 4X30	B	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.0552 2.2405 2.4333 2.8411	1.3201 1.4754 1.6376 1.9966	0.056 0.073 0.093 0.142
B13 RRH 4X30	C	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.0552 2.2405 2.4333 2.8411	1.3201 1.4754 1.6376 1.9966	0.056 0.073 0.093 0.142
PCS B25 RRH4X30	A	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.2000 2.3926 2.5926 3.0148	1.7417 1.9204 2.1065 2.5009	0.055 0.075 0.099 0.156
PCS B25 RRH4X30	B	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.2000 2.3926 2.5926 3.0148	1.7417 1.9204 2.1065 2.5009	0.055 0.075 0.099 0.156
PCS B25 RRH4X30	C	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.2000 2.3926 2.5926 3.0148	1.7417 1.9204 2.1065 2.5009	0.055 0.075 0.099 0.156
(2) DB-B1-6C-12AB-0Z	A	From Leg	4.0000 0.000 1.000	0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.3636 3.5972 3.8383 4.3426	2.1921 2.3950 2.6056 3.0491	0.032 0.061 0.093 0.168
Platform Mount [LP 602-1]	C	None		0.000	116.0000	No Ice 1/2" Ice 1" Ice 2" Ice	32.0300 38.7100 45.3900 58.7500	32.0300 38.7100 45.3900 58.7500	1.343 1.800 2.257 3.170

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*
***									
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.5799 7.0306 7.4733 8.3846	4.9591 5.7544 6.4723 7.9407	0.077 0.132 0.193 0.339
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.5799 7.0306 7.4733 8.3846	4.9591 5.7544 6.4723 7.9407	0.077 0.132 0.193 0.339
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.5799 7.0306 7.4733 8.3846	4.9591 5.7544 6.4723 7.9407	0.077 0.132 0.193 0.339
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	12.5086 13.1075 13.6715 14.8221	7.4125 8.5976 9.4965 11.3279	0.103 0.194 0.293 0.520
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	12.5086 13.1075 13.6715 14.8221	7.4125 8.5976 9.4965 11.3279	0.103 0.194 0.293 0.520
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	12.5086 13.1075 13.6715 14.8221	7.4125 8.5976 9.4965 11.3279	0.103 0.194 0.293 0.520
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.3218 2.5266 2.7388 3.1855	2.2381 2.4407 2.6507 3.0929	0.060 0.083 0.110 0.173
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.3218 2.5266 2.7388 3.1855	2.2381 2.4407 2.6507 3.0929	0.060 0.083 0.110 0.173
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.3218 2.5266 2.7388 3.1855	2.2381 2.4407 2.6507 3.0929	0.060 0.083 0.110 0.173
(2) RRH2X50-800	A	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.7008 1.8640 2.0345 2.3979	1.2822 1.4275 1.5803 1.9081	0.053 0.070 0.090 0.138
(2) RRH2X50-800	B	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.7008 1.8640 2.0345 2.3979	1.2822 1.4275 1.5803 1.9081	0.053 0.070 0.090 0.138
(2) RRH2X50-800	C	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	1.7008 1.8640 2.0345 2.3979	1.2822 1.4275 1.5803 1.9081	0.053 0.070 0.090 0.138
TD-RRH8X20-25	A	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570 5.0981	1.5345 1.7142 1.9008 2.2951	0.070 0.097 0.128 0.201

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert ft ft ft*	*Azimuth Adjustment °*	*Placement ft*		*C_AA_A Front ft^2*	*C_AA_A Side ft^2*	*Weight K*
						2" Ice			
TD-RRH8X20-25	B	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.0455 4.2975 4.5570 5.0981	1.5345 1.7142 1.9008 2.2951	0.070 0.097 0.128 0.201
TD-RRH8X20-25	C	From Leg	4.0000 0.000 -1.000	0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.0455 4.2975 4.5570 5.0981	1.5345 1.7142 1.9008 2.2951	0.070 0.097 0.128 0.201
Platform Mount [LP 1201-1]	C	None		0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	23.1000 26.8000 30.5000 37.9000	23.1000 26.8000 30.5000 37.9000	2.100 2.500 2.900 3.700
Miscellaneous [NA 510-1]	C	None		0.000	105.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.0000 8.5000 11.0000 16.0000	6.0000 8.5000 11.0000 16.0000	0.256 0.340 0.423 0.591
*** **********									
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.7460 6.1791 6.6067 7.4880	4.2543 5.0137 5.7109 7.1553	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.7460 6.1791 6.6067 7.4880	4.2543 5.0137 5.7109 7.1553	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	5.7460 6.1791 6.6067 7.4880	4.2543 5.0137 5.7109 7.1553	0.055 0.103 0.157 0.287
80010966 w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	17.6005 18.3314 19.0711 20.4862	9.6375 11.1547 12.6961 15.0321	0.147 0.263 0.390 0.678
80010966 w/ Mount Pipe	B	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	17.6005 18.3314 19.0711 20.4862	9.6375 11.1547 12.6961 15.0321	0.147 0.263 0.390 0.678
80010966 w/ Mount Pipe	C	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	17.6005 18.3314 19.0711 20.4862	9.6375 11.1547 12.6961 15.0321	0.147 0.263 0.390 0.678
HPA65R-BU8A w/ Mount Pipe	A	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	11.4708 12.1890 12.9164 14.2936	10.1819 11.7030 13.2481 15.5917	0.087 0.177 0.278 0.513
HPA65R-BU8A w/ Mount Pipe	B	From Leg	4.0000 0.000 1.000	0.000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	11.4708 12.1890 12.9164 14.2936	10.1819 11.7030 13.2481 15.5917	0.087 0.177 0.278 0.513
HPA65R-BU8A w/ Mount Pipe	C	From Leg	4.0000 0.000	0.000	94.0000	No Ice	11.4708 12.1890	10.1819 11.7030	0.087 0.177

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*
			1.000			1/2" Ice	12.9164	13.2481	0.278
						1" Ice	14.2936	15.5917	0.513
						2" Ice			
(2) DC6-48-60-18-8F	A	From Leg	4.0000	0.000	94.0000	No Ice	1.2117	1.2117	0.033
			0.000			1/2" Ice	1.8924	1.8924	0.055
			1.000			1" Ice	2.1051	2.1051	0.080
						2" Ice	2.5703	2.5703	0.138
DTMABP7819VG12A	A	From Leg	4.0000	0.000	94.0000	No Ice	0.9762	0.3387	0.019
			0.000			1/2" Ice	1.1002	0.4192	0.026
			-4.000			1" Ice	1.2316	0.5098	0.036
						2" Ice	1.5166	0.7143	0.060
DTMABP7819VG12A	B	From Leg	4.0000	0.000	94.0000	No Ice	0.9762	0.3387	0.019
			0.000			1/2" Ice	1.1002	0.4192	0.026
			-4.000			1" Ice	1.2316	0.5098	0.036
						2" Ice	1.5166	0.7143	0.060
DTMABP7819VG12A	C	From Leg	4.0000	0.000	94.0000	No Ice	0.9762	0.3387	0.019
			0.000			1/2" Ice	1.1002	0.4192	0.026
			-4.000			1" Ice	1.2316	0.5098	0.036
						2" Ice	1.5166	0.7143	0.060
RRUS 4449 B5/B12	A	From Leg	4.0000	0.000	94.0000	No Ice	1.9675	1.4081	0.071
			0.000			1/2" Ice	2.1439	1.5637	0.090
			1.000			1" Ice	2.3278	1.7267	0.111
						2" Ice	2.7177	2.0749	0.163
RRUS 4449 B5/B12	B	From Leg	4.0000	0.000	94.0000	No Ice	1.9675	1.4081	0.071
			0.000			1/2" Ice	2.1439	1.5637	0.090
			1.000			1" Ice	2.3278	1.7267	0.111
						2" Ice	2.7177	2.0749	0.163
RRUS 4449 B5/B12	C	From Leg	4.0000	0.000	94.0000	No Ice	1.9675	1.4081	0.071
			0.000			1/2" Ice	2.1439	1.5637	0.090
			1.000			1" Ice	2.3278	1.7267	0.111
						2" Ice	2.7177	2.0749	0.163
RRUS 8843 B2/B66A	A	From Leg	4.0000	0.000	94.0000	No Ice	1.6390	1.3534	0.072
			0.000			1/2" Ice	1.7988	1.5005	0.090
			1.000			1" Ice	1.9660	1.6549	0.110
						2" Ice	2.3227	1.9860	0.159
RRUS 8843 B2/B66A	B	From Leg	4.0000	0.000	94.0000	No Ice	1.6390	1.3534	0.072
			0.000			1/2" Ice	1.7988	1.5005	0.090
			1.000			1" Ice	1.9660	1.6549	0.110
						2" Ice	2.3227	1.9860	0.159
RRUS 8843 B2/B66A	C	From Leg	4.0000	0.000	94.0000	No Ice	1.6390	1.3534	0.072
			0.000			1/2" Ice	1.7988	1.5005	0.090
			1.000			1" Ice	1.9660	1.6549	0.110
						2" Ice	2.3227	1.9860	0.159
Platform Mount [LP 714-1]	C	None		0.000	94.0000	No Ice	37.4700	37.4700	1.600
						1/2" Ice	44.2300	44.2300	2.040
						1" Ice	50.9900	50.9900	2.480
						2" Ice	64.5100	64.5100	3.360
2.375" OD x 6' Mount Pipe	A	From Leg	4.0000	0.000	94.0000	No Ice	1.4250	1.4250	0.025
			0.000			1/2" Ice	1.9250	1.9250	0.036
			0.000			1" Ice	2.2939	2.2939	0.051
						2" Ice	3.0596	3.0596	0.093
2.375" OD x 6' Mount Pipe	B	From Leg	4.0000	0.000	94.0000	No Ice	1.4250	1.4250	0.025

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert ft ft ft*	*Azimuth Adjustment °*	*Placement ft*		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight K*
			0.000			1/2" Ice	1.9250	1.9250	0.036
			0.000			1" Ice	2.2939	2.2939	0.051
						2" Ice	3.0596	3.0596	0.093
2.375" OD x 6' Mount Pipe	C	From Leg	4.0000	0.000	94.0000	No Ice	1.4250	1.4250	0.025
			0.000			1/2" Ice	1.9250	1.9250	0.036
			0.000			1" Ice	2.2939	2.2939	0.051
						2" Ice	3.0596	3.0596	0.093
SitePro #1 PRK -1245LW	C	None		0.000	94.0000	No Ice	11.8400	11.8400	0.275
						1/2" Ice	16.9600	16.9600	0.296
						1" Ice	22.0800	22.0800	0.317
						2" Ice	32.3200	32.3200	0.360
Handrail Kit Pipe 2" STD	C	None		0.000	94.0000	No Ice	6.0000	6.0000	0.256
						1/2" Ice	8.5000	8.5000	0.340
						1" Ice	11.0000	11.0000	0.423
						2" Ice	16.0000	16.0000	0.591
(3) Crossover Plate Kit, SitePro #SCX1-K	A	From Leg	4.0000	0.000	94.0000	No Ice	0.0000	0.0000	0.000
			0.000			1/2" Ice	0.0000	0.0000	0.000
			0.000			1" Ice	0.0000	0.0000	0.000
						2" Ice	0.0000	0.0000	0.000
(3) Crossover Plate Kit, SitePro #SCX1-K	B	From Leg	4.0000	0.000	94.0000	No Ice	0.0000	0.0000	0.000
			0.000			1/2" Ice	0.0000	0.0000	0.000
			0.000			1" Ice	0.0000	0.0000	0.000
						2" Ice	0.0000	0.0000	0.000
(3) Crossover Plate Kit, SitePro #SCX1-K	C	From Leg	4.0000	0.000	94.0000	No Ice	0.0000	0.0000	0.000
			0.000			1/2" Ice	0.0000	0.0000	0.000
			0.000			1" Ice	0.0000	0.0000	0.000
						2" Ice	0.0000	0.0000	0.000
**********									

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	*z ft*	K_Z	q_z *ksf*	A_G ft^2	*Face*	A_F ft^2	A_R ft^2	A_{leg} ft^2	*Leg %*	C_AA_A *In Face* ft^2	C_AA_A *Out Face* ft^2
L1 129.0000-124.0000	126.5000	1.33	0.047	6.667	A	0.000	6.667	6.667	100.00	0.000	0.000
					B	0.000	6.667		100.00	0.000	0.000
					C	0.000	6.667		100.00	0.000	0.166
L2 124.0000-119.0000	121.5000	1.319	0.046	6.667	A	0.000	6.667	6.667	100.00	0.000	0.000
					B	0.000	6.667		100.00	0.000	0.000
					C	0.000	6.667		100.00	0.000	0.830
L3 119.0000-115.5000	117.2500	1.309	0.046	4.667	A	0.000	4.667	4.667	100.00	0.000	0.000
					B	0.000	4.667		100.00	0.000	0.000
					C	0.000	4.667		100.00	0.000	0.581
L4 115.5000-115.0000	115.2455	1.304	0.046	0.704	A	0.000	0.704	0.704	100.00	0.000	0.000
					B	0.000	0.704		100.00	0.000	0.000
					C	0.000	0.704		100.00	0.000	0.083
L5 115.0000-110.0000	112.4739	1.297	0.046	7.899	A	0.000	7.899	7.899	100.00	0.000	0.000
					B	0.000	7.899		100.00	0.000	0.000
					C	0.000	7.899		100.00	0.000	0.830
L6 110.0000-105.0000	107.4755	1.285	0.045	8.395	A	0.000	8.395	8.395	100.00	0.000	0.000
					B	0.000	8.395		100.00	0.000	0.000
					C	0.000	8.395		100.00	0.000	0.830
L7 105.0000-100.0000	102.4768	1.272	0.045	8.891	A	0.000	8.891	8.891	100.00	0.000	0.000
					B	0.000	8.891		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	8.891		100.00	0.000	0.955
L8 100.0000-99.2500	99.6245	1.265	0.044	1.376	A	0.000	1.376	1.376	100.00	0.000	0.000
					B	0.000	1.376		100.00	0.000	0.000
					C	0.000	1.376		100.00	0.000	0.250
L9 99.2500-99.0000	99.1249	1.263	0.044	0.460	A	0.000	0.460	0.460	100.00	0.000	0.000
					B	0.000	0.460		100.00	0.000	0.000
					C	0.000	0.460		100.00	0.000	0.083
L10 99.0000-94.0000	96.4783	1.256	0.044	9.454	A	0.000	9.454	9.454	100.00	0.000	0.000
					B	0.000	9.454		100.00	0.000	0.000
					C	0.000	9.454		100.00	0.000	1.677
L11 94.0000-92.0800	93.0369	1.247	0.044	3.763	A	0.000	3.763	3.763	100.00	0.000	0.000
					B	0.000	3.763		100.00	0.000	0.000
					C	0.000	3.763		100.00	0.000	0.959
L12 92.0800-91.8300	91.9549	1.243	0.044	0.494	A	0.000	0.494	0.494	100.00	0.000	0.000
					B	0.000	0.494		100.00	0.000	0.000
					C	0.000	0.494		100.00	0.000	0.125
L13 91.8300-86.8300	89.3098	1.236	0.043	10.137	A	0.000	10.137	10.137	100.00	0.000	0.000
					B	0.000	10.137		100.00	0.000	0.000
					C	0.000	10.137		100.00	0.000	2.497
L14 86.8300-81.8300	84.3107	1.221	0.043	10.637	A	0.000	10.637	10.637	100.00	0.000	0.000
					B	0.000	10.637		100.00	0.000	0.000
					C	0.000	10.637		100.00	0.000	2.497
L15 81.8300-73.7500	77.7425	1.2	0.042	18.242	A	0.000	18.242	18.242	100.00	0.000	0.000
					B	0.000	18.242		100.00	0.000	0.000
					C	0.000	18.242		100.00	0.000	4.035
L16 73.7500-73.0000	73.3746	1.186	0.042	1.728	A	0.000	1.728	1.728	100.00	0.000	0.000
					B	0.000	1.728		100.00	0.000	0.000
					C	0.000	1.728		100.00	0.000	0.375
L17 73.0000-71.5000	72.2484	1.182	0.042	3.491	A	0.000	3.491	3.491	100.00	0.000	0.000
					B	0.000	3.491		100.00	0.000	0.000
					C	0.000	3.491		100.00	0.000	0.749
L18 71.5000-71.2500	71.3750	1.179	0.041	0.586	A	0.000	0.586	0.586	100.00	0.000	0.000
					B	0.000	0.586		100.00	0.000	0.000
					C	0.000	0.586		100.00	0.000	0.125
L19 71.2500-67.9200	69.5774	1.173	0.041	7.921	A	0.000	7.921	7.921	100.00	0.000	0.000
					B	0.000	7.921		100.00	0.000	0.000
					C	0.000	7.921		100.00	0.000	1.777
L20 67.9200-67.6700	67.7950	1.166	0.041	0.602	A	0.000	0.602	0.602	100.00	0.000	0.000
					B	0.000	0.602		100.00	0.000	0.000
					C	0.000	0.602		100.00	0.000	0.135
L21 67.6700-66.3300	66.9988	1.163	0.041	3.250	A	0.000	3.250	3.250	100.00	0.000	0.000
					B	0.000	3.250		100.00	0.000	0.000
					C	0.000	3.250		100.00	0.000	0.725
L22 66.3300-66.0800	66.2050	1.16	0.041	0.609	A	0.000	0.609	0.609	100.00	0.000	0.000
					B	0.000	0.609		100.00	0.000	0.000
					C	0.000	0.609		100.00	0.000	0.135
L23 66.0800-61.0800	63.5636	1.15	0.040	12.449	A	0.000	12.449	12.449	100.00	0.000	0.000
					B	0.000	12.449		100.00	0.000	0.000
					C	0.000	12.449		100.00	0.000	2.705
L24 61.0800-56.5000	58.7767	1.132	0.040	11.842	A	0.000	11.842	11.842	100.00	0.000	0.000
					B	0.000	11.842		100.00	0.000	0.000
					C	0.000	11.842		100.00	0.000	2.478
L25 56.5000-56.2500	56.3750	1.122	0.039	0.658	A	0.000	0.658	0.658	100.00	0.000	0.000
					B	0.000	0.658		100.00	0.000	0.000
					C	0.000	0.658		100.00	0.000	0.135
L26 56.2500-51.2500	53.7348	1.11	0.039	13.431	A	0.000	13.431	13.431	100.00	0.000	0.000
					B	0.000	13.431		100.00	0.000	0.000
					C	0.000	13.431		100.00	0.000	2.247
L27 51.2500-46.2500	48.7353	1.088	0.038	13.930	A	0.000	13.930	13.930	100.00	0.000	0.000
					B	0.000	13.930		100.00	0.000	0.000
					C	0.000	13.930		100.00	0.000	1.872
L28 46.2500-36.7500	41.4496	1.051	0.037	27.839	A	0.000	27.839	27.839	100.00	0.000	0.000
					B	0.000	27.839		100.00	0.000	0.000
					C	0.000	27.839		100.00	0.000	4.355
L29 36.7500-35.7500	36.2494	1.022	0.036	2.983	A	0.000	2.983	2.983	100.00	0.000	0.000
					B	0.000	2.983		100.00	0.000	0.000
					C	0.000	2.983		100.00	0.000	0.583

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L30 35.7500-35.0800	35.4148	1.017	0.036	2.010	A	0.000	2.010	2.010	100.00	0.000	0.000
					B	0.000	2.010		100.00	0.000	0.000
					C	0.000	2.010		100.00	0.000	0.390
L31 35.0800-34.8300	34.9550	1.014	0.036	0.752	A	0.000	0.752	0.752	100.00	0.000	0.000
					B	0.000	0.752		100.00	0.000	0.000
					C	0.000	0.752		100.00	0.000	0.146
L32 34.8300-31.2500	33.0331	1.002	0.035	10.909	A	0.000	10.909	10.909	100.00	0.000	0.000
					B	0.000	10.909		100.00	0.000	0.000
					C	0.000	10.909		100.00	0.000	2.086
L33 31.2500-31.0000	31.1250	0.99	0.035	0.771	A	0.000	0.771	0.771	100.00	0.000	0.000
					B	0.000	0.771		100.00	0.000	0.000
					C	0.000	0.771		100.00	0.000	0.146
L34 31.0000-26.0000	28.4869	0.972	0.034	15.681	A	0.000	15.681	15.681	100.00	0.000	0.000
					B	0.000	15.681		100.00	0.000	0.000
					C	0.000	15.681		100.00	0.000	2.913
L35 26.0000-22.0000	23.9919	0.937	0.033	12.904	A	0.000	12.904	12.904	100.00	0.000	0.000
					B	0.000	12.904		100.00	0.000	0.000
					C	0.000	12.904		100.00	0.000	2.331
L36 22.0000-21.7500	21.8750	0.919	0.032	0.816	A	0.000	0.816	0.816	100.00	0.000	0.000
					B	0.000	0.816		100.00	0.000	0.000
					C	0.000	0.816		100.00	0.000	0.146
L37 21.7500-20.5000	21.1242	0.912	0.032	4.100	A	0.000	4.100	4.100	100.00	0.000	0.000
					B	0.000	4.100		100.00	0.000	0.000
					C	0.000	4.100		100.00	0.000	0.728
L38 20.5000-20.2500	20.3750	0.905	0.032	0.824	A	0.000	0.824	0.824	100.00	0.000	0.000
					B	0.000	0.824		100.00	0.000	0.000
					C	0.000	0.824		100.00	0.000	0.146
L39 20.2500-19.0800	19.6643	0.899	0.032	3.872	A	0.000	3.872	3.872	100.00	0.000	0.000
					B	0.000	3.872		100.00	0.000	0.000
					C	0.000	3.872		100.00	0.000	0.682
L40 19.0800-18.8300	18.9550	0.892	0.031	0.831	A	0.000	0.831	0.831	100.00	0.000	0.000
					B	0.000	0.831		100.00	0.000	0.000
					C	0.000	0.831		100.00	0.000	0.146
L41 18.8300-18.0000	18.4147	0.886	0.031	2.768	A	0.000	2.768	2.768	100.00	0.000	0.000
					B	0.000	2.768		100.00	0.000	0.000
					C	0.000	2.768		100.00	0.000	0.484
L42 18.0000-17.7500	17.8750	0.881	0.031	0.836	A	0.000	0.836	0.836	100.00	0.000	0.000
					B	0.000	0.836		100.00	0.000	0.000
					C	0.000	0.836		100.00	0.000	0.146
L43 17.7500-12.7500	15.2379	0.852	0.030	16.977	A	0.000	16.977	16.977	100.00	0.000	0.000
					B	0.000	16.977		100.00	0.000	0.000
					C	0.000	16.977		100.00	0.000	2.913
L44 12.7500-7.7500	10.2383	0.85	0.030	17.477	A	0.000	17.477	17.477	100.00	0.000	0.000
					B	0.000	17.477		100.00	0.000	0.000
					C	0.000	17.477		100.00	0.000	2.913
L45 7.7500-4.0000	5.8686	0.85	0.030	13.434	A	0.000	13.434	13.434	100.00	0.000	0.000
					B	0.000	13.434		100.00	0.000	0.000
					C	0.000	13.434		100.00	0.000	2.185
L46 4.0000-3.7500	3.8750	0.85	0.030	0.906	A	0.000	0.906	0.906	100.00	0.000	0.000
					B	0.000	0.906		100.00	0.000	0.000
					C	0.000	0.906		100.00	0.000	0.146
L47 3.7500-3.0000	3.3747	0.85	0.030	2.724	A	0.000	2.724	2.724	100.00	0.000	0.000
					B	0.000	2.724		100.00	0.000	0.000
					C	0.000	2.724		100.00	0.000	0.437
L48 3.0000-2.7500	2.8750	0.85	0.030	0.910	A	0.000	0.910	0.910	100.00	0.000	0.000
					B	0.000	0.910		100.00	0.000	0.000
					C	0.000	0.910		100.00	0.000	0.146
L49 2.7500-0.0000	1.3716	0.85	0.030	10.093	A	0.000	10.093	10.093	100.00	0.000	0.000
					B	0.000	10.093		100.00	0.000	0.000
					C	0.000	10.093		100.00	0.000	1.602

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 129.0000-124.0000	126.5000	1.33	0.007	1.9445	8.287	A	0.000	8.287	8.287	100.00	0.000	0.000
						B	0.000	8.287		100.00	0.000	0.000
						C	0.000	8.287		100.00	0.000	0.555
L2 124.0000-119.0000	121.5000	1.319	0.007	1.9367	8.281	A	0.000	8.281	8.281	100.00	0.000	0.000
						B	0.000	8.281		100.00	0.000	0.000
						C	0.000	8.281		100.00	0.000	2.767
L3 119.0000-115.5000	117.2500	1.309	0.007	1.9298	5.792	A	0.000	5.792	5.792	100.00	0.000	0.000
						B	0.000	5.792		100.00	0.000	0.000
						C	0.000	5.792		100.00	0.000	1.932
L4 115.5000-115.0000	115.2455	1.304	0.007	1.9265	0.865	A	0.000	0.865	0.865	100.00	0.000	0.000
						B	0.000	0.865		100.00	0.000	0.000
						C	0.000	0.865		100.00	0.000	0.276
L5 115.0000-110.0000	112.4739	1.297	0.007	1.9218	9.500	A	0.000	9.500	9.500	100.00	0.000	0.000
						B	0.000	9.500		100.00	0.000	0.000
						C	0.000	9.500		100.00	0.000	2.752
L6 110.0000-105.0000	107.4755	1.285	0.007	1.9131	9.989	A	0.000	9.989	9.989	100.00	0.000	0.000
						B	0.000	9.989		100.00	0.000	0.000
						C	0.000	9.989		100.00	0.000	2.743
L7 105.0000-100.0000	102.4768	1.272	0.007	1.9040	10.478	A	0.000	10.478	10.478	100.00	0.000	0.000
						B	0.000	10.478		100.00	0.000	0.000
						C	0.000	10.478		100.00	0.000	3.176
L8 100.0000-99.2500	99.6245	1.265	0.007	1.8986	1.614	A	0.000	1.614	1.614	100.00	0.000	0.000
						B	0.000	1.614		100.00	0.000	0.000
						C	0.000	1.614		100.00	0.000	0.851
L9 99.2500-99.0000	99.1249	1.263	0.007	1.8976	0.539	A	0.000	0.539	0.539	100.00	0.000	0.000
						B	0.000	0.539		100.00	0.000	0.000
						C	0.000	0.539		100.00	0.000	0.283
L10 99.0000-94.0000	96.4783	1.256	0.007	1.8925	11.031	A	0.000	11.031	11.031	100.00	0.000	0.000
						B	0.000	11.031		100.00	0.000	0.000
						C	0.000	11.031		100.00	0.000	5.707
L11 94.0000-92.0800	93.0369	1.247	0.007	1.8857	4.366	A	0.000	4.366	4.366	100.00	0.000	0.000
						B	0.000	4.366		100.00	0.000	0.000
						C	0.000	4.366		100.00	0.000	3.292
L12 92.0800-91.8300	91.9549	1.243	0.007	1.8835	0.572	A	0.000	0.572	0.572	100.00	0.000	0.000
						B	0.000	0.572		100.00	0.000	0.000
						C	0.000	0.572		100.00	0.000	0.428
L13 91.8300-86.8300	89.3098	1.236	0.007	1.8780	11.702	A	0.000	11.702	11.702	100.00	0.000	0.000
						B	0.000	11.702		100.00	0.000	0.000
						C	0.000	11.702		100.00	0.000	8.548
L14 86.8300-81.8300	84.3107	1.221	0.007	1.8672	12.193	A	0.000	12.193	12.193	100.00	0.000	0.000
						B	0.000	12.193		100.00	0.000	0.000
						C	0.000	12.193		100.00	0.000	8.513
L15 81.8300-73.7500	77.7425	1.2	0.007	1.8521	20.736	A	0.000	20.736	20.736	100.00	0.000	0.000
						B	0.000	20.736		100.00	0.000	0.000
						C	0.000	20.736		100.00	0.000	13.679
L16 73.7500-73.0000	73.3746	1.186	0.007	1.8414	1.960	A	0.000	1.960	1.960	100.00	0.000	0.000
						B	0.000	1.960		100.00	0.000	0.000
						C	0.000	1.960		100.00	0.000	1.270
L17 73.0000-71.5000	72.2484	1.182	0.007	1.8386	3.951	A	0.000	3.951	3.951	100.00	0.000	0.000
						B	0.000	3.951		100.00	0.000	0.000
						C	0.000	3.951		100.00	0.000	2.526
L18 71.5000-71.2500	71.3750	1.179	0.007	1.8363	0.662	A	0.000	0.662	0.662	100.00	0.000	0.000
						B	0.000	0.662		100.00	0.000	0.000
						C	0.000	0.662		100.00	0.000	0.421
L19 71.2500-67.9200	69.5774	1.173	0.007	1.8317	8.937	A	0.000	8.937	8.937	100.00	0.000	0.000
						B	0.000	8.937		100.00	0.000	0.000
						C	0.000	8.937		100.00	0.000	5.708
L20 67.9200-67.6700	67.7950	1.166	0.007	1.8269	0.678	A	0.000	0.678	0.678	100.00	0.000	0.000
						B	0.000	0.678		100.00	0.000	0.000
						C	0.000	0.678		100.00	0.000	0.430
L21 67.6700-66.3300	66.9988	1.163	0.007	1.8248	3.658	A	0.000	3.658	3.658	100.00	0.000	0.000
						B	0.000	3.658		100.00	0.000	0.000
						C	0.000	3.658		100.00	0.000	2.301
L22 66.3300-66.0800	66.2050	1.16	0.007	1.8226	0.685	A	0.000	0.685	0.685	100.00	0.000	0.000
						B	0.000	0.685		100.00	0.000	0.000
						C	0.000	0.685		100.00	0.000	0.429
L23 66.0800-61.0800	63.5636	1.15	0.006	1.8152	13.962	A	0.000	13.962	13.962	100.00	0.000	0.000
						B	0.000	13.962		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	13.962		100.00	0.000	8.554
L24 61.0800-56.5000	58.7767	1.132	0.006	1.8010	13.217	A	0.000	13.217	13.217	100.00	0.000	0.000
						B	0.000	13.217		100.00	0.000	0.000
						C	0.000	13.217		100.00	0.000	7.794
L25 56.5000-56.2500	56.3750	1.122	0.006	1.7935	0.733	A	0.000	0.733	0.733	100.00	0.000	0.000
						B	0.000	0.733		100.00	0.000	0.000
						C	0.000	0.733		100.00	0.000	0.424
L26 56.2500-51.2500	53.7348	1.11	0.006	1.7849	14.918	A	0.000	14.918	14.918	100.00	0.000	0.000
						B	0.000	14.918		100.00	0.000	0.000
						C	0.000	14.918		100.00	0.000	6.907
L27 51.2500-46.2500	48.7353	1.088	0.006	1.7676	15.403	A	0.000	15.403	15.403	100.00	0.000	0.000
						B	0.000	15.403		100.00	0.000	0.000
						C	0.000	15.403		100.00	0.000	5.603
L28 46.2500-36.7500	41.4496	1.051	0.006	1.7392	30.592	A	0.000	30.592	30.592	100.00	0.000	0.000
						B	0.000	30.592		100.00	0.000	0.000
						C	0.000	30.592		100.00	0.000	12.812
L29 36.7500-35.7500	36.2494	1.022	0.006	1.7160	3.273	A	0.000	3.273	3.273	100.00	0.000	0.000
						B	0.000	3.273		100.00	0.000	0.000
						C	0.000	3.273		100.00	0.000	1.703
L30 35.7500-35.0800	35.4148	1.017	0.006	1.7120	2.201	A	0.000	2.201	2.201	100.00	0.000	0.000
						B	0.000	2.201		100.00	0.000	0.000
						C	0.000	2.201		100.00	0.000	1.130
L31 35.0800-34.8300	34.9550	1.014	0.006	1.7098	0.823	A	0.000	0.823	0.823	100.00	0.000	0.000
						B	0.000	0.823		100.00	0.000	0.000
						C	0.000	0.823		100.00	0.000	0.421
L32 34.8300-31.2500	33.0331	1.002	0.006	1.7002	11.923	A	0.000	11.923	11.923	100.00	0.000	0.000
						B	0.000	11.923		100.00	0.000	0.000
						C	0.000	11.923		100.00	0.000	6.008
L33 31.2500-31.0000	31.1250	0.99	0.006	1.6901	0.841	A	0.000	0.841	0.841	100.00	0.000	0.000
						B	0.000	0.841		100.00	0.000	0.000
						C	0.000	0.841		100.00	0.000	0.418
L34 31.0000-26.0000	28.4869	0.972	0.005	1.6752	17.077	A	0.000	17.077	17.077	100.00	0.000	0.000
						B	0.000	17.077		100.00	0.000	0.000
						C	0.000	17.077		100.00	0.000	8.311
L35 26.0000-22.0000	23.9919	0.937	0.005	1.6467	14.002	A	0.000	14.002	14.002	100.00	0.000	0.000
						B	0.000	14.002		100.00	0.000	0.000
						C	0.000	14.002		100.00	0.000	6.575
L36 22.0000-21.7500	21.8750	0.919	0.005	1.6315	0.884	A	0.000	0.884	0.884	100.00	0.000	0.000
						B	0.000	0.884		100.00	0.000	0.000
						C	0.000	0.884		100.00	0.000	0.409
L37 21.7500-20.5000	21.1242	0.912	0.005	1.6258	4.439	A	0.000	4.439	4.439	100.00	0.000	0.000
						B	0.000	4.439		100.00	0.000	0.000
						C	0.000	4.439		100.00	0.000	2.038
L38 20.5000-20.2500	20.3750	0.905	0.005	1.6200	0.891	A	0.000	0.891	0.891	100.00	0.000	0.000
						B	0.000	0.891		100.00	0.000	0.000
						C	0.000	0.891		100.00	0.000	0.407
L39 20.2500-19.0800	19.6643	0.899	0.005	1.6142	4.186	A	0.000	4.186	4.186	100.00	0.000	0.000
						B	0.000	4.186		100.00	0.000	0.000
						C	0.000	4.186		100.00	0.000	1.899
L40 19.0800-18.8300	18.9550	0.892	0.005	1.6083	0.898	A	0.000	0.898	0.898	100.00	0.000	0.000
						B	0.000	0.898		100.00	0.000	0.000
						C	0.000	0.898		100.00	0.000	0.405
L41 18.8300-18.0000	18.4147	0.886	0.005	1.6037	2.990	A	0.000	2.990	2.990	100.00	0.000	0.000
						B	0.000	2.990		100.00	0.000	0.000
						C	0.000	2.990		100.00	0.000	1.341
L42 18.0000-17.7500	17.8750	0.881	0.005	1.5989	0.902	A	0.000	0.902	0.902	100.00	0.000	0.000
						B	0.000	0.902		100.00	0.000	0.000
						C	0.000	0.902		100.00	0.000	0.403
L43 17.7500-12.7500	15.2379	0.852	0.005	1.5736	18.288	A	0.000	18.288	18.288	100.00	0.000	0.000
						B	0.000	18.288		100.00	0.000	0.000
						C	0.000	18.288		100.00	0.000	7.984
L44 12.7500-7.7500	10.2383	0.85	0.005	1.5122	18.737	A	0.000	18.737	18.737	100.00	0.000	0.000
						B	0.000	18.737		100.00	0.000	0.000
						C	0.000	18.737		100.00	0.000	7.786
L45 7.7500-4.0000	5.8686	0.85	0.005	1.4304	14.328	A	0.000	14.328	14.328	100.00	0.000	0.000
						B	0.000	14.328		100.00	0.000	0.000
						C	0.000	14.328		100.00	0.000	5.642

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L46 4.0000-3.7500	3.8750	0.85	0.005	1.3722	0.963	A	0.000	0.963	0.963	100.00	0.000	0.000
						B	0.000	0.963		100.00	0.000	0.000
						C	0.000	0.963		100.00	0.000	0.367
L47 3.7500-3.0000	3.3747	0.85	0.005	1.3534	2.893	A	0.000	2.893	2.893	100.00	0.000	0.000
						B	0.000	2.893		100.00	0.000	0.000
						C	0.000	2.893		100.00	0.000	1.091
L48 3.0000-2.7500	2.8750	0.85	0.005	1.3319	0.965	A	0.000	0.965	0.965	100.00	0.000	0.000
						B	0.000	0.965		100.00	0.000	0.000
						C	0.000	0.965		100.00	0.000	0.360
L49 2.7500-0.0000	1.3716	0.85	0.005	1.2369	10.660	A	0.000	10.660	10.660	100.00	0.000	0.000
						B	0.000	10.660		100.00	0.000	0.000
						C	0.000	10.660		100.00	0.000	3.794

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 129.0000-124.0000	126.5000	1.33	0.010	6.667	A	0.000	6.667	6.667	100.00	0.000	0.000
					B	0.000	6.667		100.00	0.000	0.000
					C	0.000	6.667		100.00	0.000	0.166
L2 124.0000-119.0000	121.5000	1.319	0.010	6.667	A	0.000	6.667	6.667	100.00	0.000	0.000
					B	0.000	6.667		100.00	0.000	0.000
					C	0.000	6.667		100.00	0.000	0.830
L3 119.0000-115.5000	117.2500	1.309	0.009	4.667	A	0.000	4.667	4.667	100.00	0.000	0.000
					B	0.000	4.667		100.00	0.000	0.000
					C	0.000	4.667		100.00	0.000	0.581
L4 115.5000-115.0000	115.2455	1.304	0.009	0.704	A	0.000	0.704	0.704	100.00	0.000	0.000
					B	0.000	0.704		100.00	0.000	0.000
					C	0.000	0.704		100.00	0.000	0.083
L5 115.0000-110.0000	112.4739	1.297	0.009	7.899	A	0.000	7.899	7.899	100.00	0.000	0.000
					B	0.000	7.899		100.00	0.000	0.000
					C	0.000	7.899		100.00	0.000	0.830
L6 110.0000-105.0000	107.4755	1.285	0.009	8.395	A	0.000	8.395	8.395	100.00	0.000	0.000
					B	0.000	8.395		100.00	0.000	0.000
					C	0.000	8.395		100.00	0.000	0.830
L7 105.0000-100.0000	102.4768	1.272	0.009	8.891	A	0.000	8.891	8.891	100.00	0.000	0.000
					B	0.000	8.891		100.00	0.000	0.000
					C	0.000	8.891		100.00	0.000	0.955
L8 100.0000-99.2500	99.6245	1.265	0.009	1.376	A	0.000	1.376	1.376	100.00	0.000	0.000
					B	0.000	1.376		100.00	0.000	0.000
					C	0.000	1.376		100.00	0.000	0.250
L9 99.2500-99.0000	99.1249	1.263	0.009	0.460	A	0.000	0.460	0.460	100.00	0.000	0.000
					B	0.000	0.460		100.00	0.000	0.000
					C	0.000	0.460		100.00	0.000	0.083
L10 99.0000-94.0000	96.4783	1.256	0.009	9.454	A	0.000	9.454	9.454	100.00	0.000	0.000
					B	0.000	9.454		100.00	0.000	0.000
					C	0.000	9.454		100.00	0.000	1.677
L11 94.0000-92.0800	93.0369	1.247	0.009	3.763	A	0.000	3.763	3.763	100.00	0.000	0.000
					B	0.000	3.763		100.00	0.000	0.000
					C	0.000	3.763		100.00	0.000	0.959
L12 92.0800-91.8300	91.9549	1.243	0.009	0.494	A	0.000	0.494	0.494	100.00	0.000	0.000
					B	0.000	0.494		100.00	0.000	0.000
					C	0.000	0.494		100.00	0.000	0.125
L13 91.8300-86.8300	89.3098	1.236	0.009	10.137	A	0.000	10.137	10.137	100.00	0.000	0.000
					B	0.000	10.137		100.00	0.000	0.000
					C	0.000	10.137		100.00	0.000	2.497
L14 86.8300-81.8300	84.3107	1.221	0.009	10.637	A	0.000	10.637	10.637	100.00	0.000	0.000
					B	0.000	10.637		100.00	0.000	0.000
					C	0.000	10.637		100.00	0.000	2.497
L15 81.8300-73.7500	77.7425	1.2	0.009	18.242	A	0.000	18.242	18.242	100.00	0.000	0.000
					B	0.000	18.242		100.00	0.000	0.000
					C	0.000	18.242		100.00	0.000	4.035

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L16 73.7500-73.0000	73.3746	1.186	0.009	1.728	A	0.000	1.728	1.728	100.00	0.000	0.000
					B	0.000	1.728		100.00	0.000	0.000
					C	0.000	1.728		100.00	0.000	0.375
L17 73.0000-71.5000	72.2484	1.182	0.009	3.491	A	0.000	3.491	3.491	100.00	0.000	0.000
					B	0.000	3.491		100.00	0.000	0.000
					C	0.000	3.491		100.00	0.000	0.749
L18 71.5000-71.2500	71.3750	1.179	0.009	0.586	A	0.000	0.586	0.586	100.00	0.000	0.000
					B	0.000	0.586		100.00	0.000	0.000
					C	0.000	0.586		100.00	0.000	0.125
L19 71.2500-67.9200	69.5774	1.173	0.008	7.921	A	0.000	7.921	7.921	100.00	0.000	0.000
					B	0.000	7.921		100.00	0.000	0.000
					C	0.000	7.921		100.00	0.000	1.777
L20 67.9200-67.6700	67.7950	1.166	0.008	0.602	A	0.000	0.602	0.602	100.00	0.000	0.000
					B	0.000	0.602		100.00	0.000	0.000
					C	0.000	0.602		100.00	0.000	0.135
L21 67.6700-66.3300	66.9988	1.163	0.008	3.250	A	0.000	3.250	3.250	100.00	0.000	0.000
					B	0.000	3.250		100.00	0.000	0.000
					C	0.000	3.250		100.00	0.000	0.725
L22 66.3300-66.0800	66.2050	1.16	0.008	0.609	A	0.000	0.609	0.609	100.00	0.000	0.000
					B	0.000	0.609		100.00	0.000	0.000
					C	0.000	0.609		100.00	0.000	0.135
L23 66.0800-61.0800	63.5636	1.15	0.008	12.449	A	0.000	12.449	12.449	100.00	0.000	0.000
					B	0.000	12.449		100.00	0.000	0.000
					C	0.000	12.449		100.00	0.000	2.705
L24 61.0800-56.5000	58.7767	1.132	0.008	11.842	A	0.000	11.842	11.842	100.00	0.000	0.000
					B	0.000	11.842		100.00	0.000	0.000
					C	0.000	11.842		100.00	0.000	2.478
L25 56.5000-56.2500	56.3750	1.122	0.008	0.658	A	0.000	0.658	0.658	100.00	0.000	0.000
					B	0.000	0.658		100.00	0.000	0.000
					C	0.000	0.658		100.00	0.000	0.135
L26 56.2500-51.2500	53.7348	1.11	0.008	13.431	A	0.000	13.431	13.431	100.00	0.000	0.000
					B	0.000	13.431		100.00	0.000	0.000
					C	0.000	13.431		100.00	0.000	2.247
L27 51.2500-46.2500	48.7353	1.088	0.008	13.930	A	0.000	13.930	13.930	100.00	0.000	0.000
					B	0.000	13.930		100.00	0.000	0.000
					C	0.000	13.930		100.00	0.000	1.872
L28 46.2500-36.7500	41.4496	1.051	0.008	27.839	A	0.000	27.839	27.839	100.00	0.000	0.000
					B	0.000	27.839		100.00	0.000	0.000
					C	0.000	27.839		100.00	0.000	4.355
L29 36.7500-35.7500	36.2494	1.022	0.007	2.983	A	0.000	2.983	2.983	100.00	0.000	0.000
					B	0.000	2.983		100.00	0.000	0.000
					C	0.000	2.983		100.00	0.000	0.583
L30 35.7500-35.0800	35.4148	1.017	0.007	2.010	A	0.000	2.010	2.010	100.00	0.000	0.000
					B	0.000	2.010		100.00	0.000	0.000
					C	0.000	2.010		100.00	0.000	0.390
L31 35.0800-34.8300	34.9550	1.014	0.007	0.752	A	0.000	0.752	0.752	100.00	0.000	0.000
					B	0.000	0.752		100.00	0.000	0.000
					C	0.000	0.752		100.00	0.000	0.146
L32 34.8300-31.2500	33.0331	1.002	0.007	10.909	A	0.000	10.909	10.909	100.00	0.000	0.000
					B	0.000	10.909		100.00	0.000	0.000
					C	0.000	10.909		100.00	0.000	2.086
L33 31.2500-31.0000	31.1250	0.99	0.007	0.771	A	0.000	0.771	0.771	100.00	0.000	0.000
					B	0.000	0.771		100.00	0.000	0.000
					C	0.000	0.771		100.00	0.000	0.146
L34 31.0000-26.0000	28.4869	0.972	0.007	15.681	A	0.000	15.681	15.681	100.00	0.000	0.000
					B	0.000	15.681		100.00	0.000	0.000
					C	0.000	15.681		100.00	0.000	2.913
L35 26.0000-22.0000	23.9919	0.937	0.007	12.904	A	0.000	12.904	12.904	100.00	0.000	0.000
					B	0.000	12.904		100.00	0.000	0.000
					C	0.000	12.904		100.00	0.000	2.331
L36 22.0000-21.7500	21.8750	0.919	0.007	0.816	A	0.000	0.816	0.816	100.00	0.000	0.000
					B	0.000	0.816		100.00	0.000	0.000
					C	0.000	0.816		100.00	0.000	0.146
L37 21.7500-20.5000	21.1242	0.912	0.007	4.100	A	0.000	4.100	4.100	100.00	0.000	0.000
					B	0.000	4.100		100.00	0.000	0.000
					C	0.000	4.100		100.00	0.000	0.728
L38 20.5000-20.2500	20.3750	0.905	0.007	0.824	A	0.000	0.824	0.824	100.00	0.000	0.000
					B	0.000	0.824		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.824		100.00	0.000	0.146
L39 20.2500-19.0800	19.6643	0.899	0.007	3.872	A	0.000	3.872	3.872	100.00	0.000	0.000
					B	0.000	3.872		100.00	0.000	0.000
					C	0.000	3.872		100.00	0.000	0.682
L40 19.0800-18.8300	18.9550	0.892	0.006	0.831	A	0.000	0.831	0.831	100.00	0.000	0.000
					B	0.000	0.831		100.00	0.000	0.000
					C	0.000	0.831		100.00	0.000	0.146
L41 18.8300-18.0000	18.4147	0.886	0.006	2.768	A	0.000	2.768	2.768	100.00	0.000	0.000
					B	0.000	2.768		100.00	0.000	0.000
					C	0.000	2.768		100.00	0.000	0.484
L42 18.0000-17.7500	17.8750	0.881	0.006	0.836	A	0.000	0.836	0.836	100.00	0.000	0.000
					B	0.000	0.836		100.00	0.000	0.000
					C	0.000	0.836		100.00	0.000	0.146
L43 17.7500-12.7500	15.2379	0.852	0.006	16.977	A	0.000	16.977	16.977	100.00	0.000	0.000
					B	0.000	16.977		100.00	0.000	0.000
					C	0.000	16.977		100.00	0.000	2.913
L44 12.7500-7.7500	10.2383	0.85	0.006	17.477	A	0.000	17.477	17.477	100.00	0.000	0.000
					B	0.000	17.477		100.00	0.000	0.000
					C	0.000	17.477		100.00	0.000	2.913
L45 7.7500-4.0000	5.8686	0.85	0.006	13.434	A	0.000	13.434	13.434	100.00	0.000	0.000
					B	0.000	13.434		100.00	0.000	0.000
					C	0.000	13.434		100.00	0.000	2.185
L46 4.0000-3.7500	3.8750	0.85	0.006	0.906	A	0.000	0.906	0.906	100.00	0.000	0.000
					B	0.000	0.906		100.00	0.000	0.000
					C	0.000	0.906		100.00	0.000	0.146
L47 3.7500-3.0000	3.3747	0.85	0.006	2.724	A	0.000	2.724	2.724	100.00	0.000	0.000
					B	0.000	2.724		100.00	0.000	0.000
					C	0.000	2.724		100.00	0.000	0.437
L48 3.0000-2.7500	2.8750	0.85	0.006	0.910	A	0.000	0.910	0.910	100.00	0.000	0.000
					B	0.000	0.910		100.00	0.000	0.000
					C	0.000	0.910		100.00	0.000	0.146
L49 2.7500-0.0000	1.3716	0.85	0.006	10.093	A	0.000	10.093	10.093	100.00	0.000	0.000
					B	0.000	10.093		100.00	0.000	0.000
					C	0.000	10.093		100.00	0.000	1.602

Load Combinations

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

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	129 - 124	Pole	Max Tension	39	0.000	0.000	-0.000
			Max. Compression	26	-13.819	0.030	8.501
			Max. Mx	20	-5.088	14.011	1.932
			Max. My	2	-5.077	0.045	16.809
			Max. Vy	20	-8.764	14.011	1.932
			Max. Vx	2	-8.770	0.045	16.809
			Max. Torque	20			-7.787
L2	124 - 119	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-14.636	0.179	8.607
			Max. Mx	20	-5.502	58.583	2.038
			Max. My	2	-5.492	0.076	61.358
			Max. Vy	20	-9.052	58.583	2.038
			Max. Vx	2	-9.057	0.076	61.358
			Max. Torque	20			-7.787
L3	119 - 115.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.816	0.284	10.261
			Max. Mx	20	-8.403	99.605	2.383
			Max. My	2	-8.376	0.098	102.860
			Max. Vy	20	-16.576	99.605	2.383
			Max. Vx	2	-16.679	0.098	102.860
			Max. Torque	20			-8.564
L4	115.5 - 115	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-25.904	0.300	10.280
			Max. Mx	20	-8.459	107.902	2.399
			Max. My	2	-8.432	0.102	111.202
			Max. Vy	20	-16.602	107.902	2.399
			Max. Vx	2	-16.705	0.102	111.202
			Max. Torque	20			-8.563
L5	115 - 110	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-26.672	0.479	10.431
			Max. Mx	20	-8.869	191.930	2.527
			Max. My	2	-8.845	0.140	195.678
			Max. Vy	20	-17.003	191.930	2.527
			Max. Vx	2	-17.104	0.140	195.678
			Max. Torque	20			-8.561
L6	110 - 105	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-27.468	0.664	10.525
			Max. Mx	20	-9.343	277.925	2.611
			Max. My	2	-9.322	0.182	282.111
			Max. Vy	20	-17.396	277.925	2.611
			Max. Vx	2	-17.496	0.182	282.111

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-8.538
L7	105 - 100	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.593	0.863	10.615
			Max. Mx	20	-13.822	386.257	2.681
			Max. My	2	-13.801	0.228	390.885
			Max. Vy	20	-22.413	386.257	2.681
			Max. Vx	2	-22.515	0.228	390.885
			Max. Torque	20			-8.512
L8	100 - 99.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.722	0.893	10.624
			Max. Mx	20	-13.922	403.083	2.687
			Max. My	2	-13.903	0.235	407.777
			Max. Vy	20	-22.467	403.083	2.687
			Max. Vx	2	-22.568	0.235	407.777
			Max. Torque	20			-8.482
L9	99.25 - 99	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.779	0.903	10.628
			Max. Mx	20	-13.978	408.702	2.689
			Max. My	2	-13.958	0.238	413.417
			Max. Vy	20	-22.481	408.702	2.689
			Max. Vx	2	-22.585	0.238	413.417
			Max. Torque	20			-8.476
L10	99 - 94	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-38.929	1.109	10.660
			Max. Mx	20	-14.763	522.343	2.737
			Max. My	2	-14.746	0.285	527.488
			Max. Vy	20	-22.971	522.343	2.737
			Max. Vx	2	-23.071	0.285	527.488
			Max. Torque	20			-8.474
L11	94 - 92.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.168	1.192	12.047
			Max. Mx	20	-18.898	583.875	3.117
			Max. My	2	-18.878	0.303	589.579
			Max. Vy	20	-30.295	583.875	3.117
			Max. Vx	2	-30.397	0.303	589.579
			Max. Torque	20			-8.901
L12	92.08 - 91.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.245	1.204	12.052
			Max. Mx	20	-18.992	591.449	3.118
			Max. My	2	-18.972	0.307	597.175
			Max. Vy	20	-30.301	591.449	3.118
			Max. Vx	2	-30.406	0.307	597.175
			Max. Torque	20			-8.900
L13	91.83 - 86.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.773	1.425	12.076
			Max. Mx	20	-20.154	744.370	3.167
			Max. My	2	-20.136	0.356	750.525
			Max. Vy	20	-30.863	744.370	3.167
			Max. Vx	2	-30.965	0.356	750.525
			Max. Torque	20			-8.896
L14	86.83 - 81.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.328	1.653	12.078
			Max. Mx	20	-21.366	900.050	3.201
			Max. My	2	-21.350	0.409	906.628
			Max. Vy	20	-31.413	900.050	3.201
			Max. Vx	2	-31.514	0.409	906.628
			Max. Torque	20			-8.833
L15	81.83 - 73.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-54.543	1.835	12.062
			Max. Mx	20	-22.316	1021.144	3.218
			Max. My	2	-22.301	0.452	1028.039
			Max. Vy	20	-31.830	1021.144	3.218
			Max. Vx	2	-31.931	0.452	1028.039
			Max. Torque	20			-8.767
L16	73.75 - 73	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-57.382	2.072	12.034
			Max. Mx	20	-24.460	1181.967	3.238
			Max. My	2	-24.446	0.508	1189.277
			Max. Vy	20	-32.488	1181.967	3.238
			Max. Vx	2	-32.589	0.508	1189.277
			Max. Torque	20			-8.658
L17	73 - 71.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-57.916	2.144	12.022
			Max. Mx	20	-24.876	1230.825	3.242
			Max. My	2	-24.863	0.525	1238.259
			Max. Vy	20	-32.664	1230.825	3.242
			Max. Vx	2	-32.765	0.525	1238.259
			Max. Torque	20			-8.648
L18	71.5 - 71.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.010	2.156	12.024
			Max. Mx	20	-24.976	1238.992	3.241
			Max. My	2	-24.963	0.530	1246.447
			Max. Vy	20	-32.675	1238.992	3.241
			Max. Vx	2	-32.781	0.530	1246.447
			Max. Torque	20			-8.628
L19	71.25 - 67.92	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.266	2.318	11.990
			Max. Mx	20	-25.978	1348.455	3.246
			Max. My	2	-25.965	0.567	1356.181
			Max. Vy	20	-33.066	1348.455	3.246
			Max. Vx	2	-33.166	0.567	1356.181
			Max. Torque	20			-8.624
L20	67.92 - 67.67	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.372	2.331	11.992
			Max. Mx	20	-26.081	1356.724	3.246
			Max. My	2	-26.069	0.572	1364.471
			Max. Vy	20	-33.083	1356.724	3.246
			Max. Vx	2	-33.189	0.572	1364.471
			Max. Torque	20			-8.575
L21	67.67 - 66.33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.943	2.396	11.973
			Max. Mx	20	-26.530	1401.176	3.248
			Max. My	2	-26.518	0.586	1409.031
			Max. Vy	20	-33.258	1401.176	3.248
			Max. Vx	2	-33.358	0.586	1409.031
			Max. Torque	20			-8.571
L22	66.33 - 66.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.071	2.410	11.975
			Max. Mx	20	-26.655	1409.493	3.248
			Max. My	2	-26.643	0.591	1417.369
			Max. Vy	20	-33.277	1409.493	3.248
			Max. Vx	2	-33.382	0.591	1417.369
			Max. Torque	20			-8.551
L23	66.08 - 61.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.635	2.659	11.909
			Max. Mx	20	-28.801	1577.498	3.249
			Max. My	2	-28.790	0.651	1585.775
			Max. Vy	20	-33.917	1577.498	3.249
			Max. Vx	2	-34.017	0.651	1585.775
			Max. Torque	20			-8.547
L24	61.08 - 56.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.015	2.894	11.842
			Max. Mx	20	-30.805	1734.150	3.244
			Max. My	2	-30.795	0.709	1742.791
			Max. Vy	20	-34.492	1734.150	3.244
			Max. Vx	2	-34.592	0.709	1742.791
			Max. Torque	20			-8.471
L25	56.5 - 56.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-65.147	2.908	11.843

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-30.929	1742.776	3.243
			Max. My	2	-30.919	0.714	1751.438
			Max. Vy	20	-34.512	1742.776	3.243
			Max. Vx	2	-34.618	0.714	1751.438
			Max. Torque	20			-8.400
L26	56.25 - 51.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.776	3.169	11.755
			Max. Mx	20	-33.137	1916.870	3.232
			Max. My	2	-33.128	0.780	1925.924
			Max. Vy	20	-35.118	1916.870	3.232
			Max. Vx	2	-35.217	0.780	1925.924
			Max. Torque	20			-8.396
L27	51.25 - 46.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-70.436	3.436	11.661
			Max. Mx	20	-35.388	2093.876	3.215
			Max. My	2	-35.380	0.850	2103.317
			Max. Vy	20	-35.687	2093.876	3.215
			Max. Vx	2	-35.786	0.850	2103.317
			Max. Torque	20			-8.330
L28	46.25 - 36.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-72.727	3.668	11.572
			Max. Mx	20	-37.326	2246.561	3.195
			Max. My	2	-37.319	0.911	2256.325
			Max. Vy	20	-36.168	2246.561	3.195
			Max. Vx	2	-36.267	0.911	2256.325
			Max. Torque	20			-8.275
L29	36.75 - 35.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.369	4.010	11.436
			Max. Mx	20	-41.970	2475.311	3.168
			Max. My	2	-41.963	1.002	2485.549
			Max. Vy	20	-37.011	2475.311	3.168
			Max. Vx	2	-37.110	1.002	2485.549
			Max. Torque	20			-8.145
L30	35.75 - 35.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.705	4.047	11.422
			Max. Mx	20	-42.260	2500.129	3.164
			Max. My	2	-42.254	1.012	2510.418
			Max. Vy	20	-37.076	2500.129	3.164
			Max. Vx	2	-37.175	1.012	2510.418
			Max. Torque	20			-8.128
L31	35.08 - 34.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.831	4.062	11.420
			Max. Mx	20	-42.373	2509.402	3.162
			Max. My	2	-42.367	1.016	2519.710
			Max. Vy	20	-37.095	2509.402	3.162
			Max. Vx	2	-37.200	1.016	2519.710
			Max. Torque	20			-8.116
L32	34.83 - 31.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.634	4.250	11.316
			Max. Mx	20	-43.883	2642.905	3.140
			Max. My	2	-43.878	1.069	2653.480
			Max. Vy	20	-37.488	2642.905	3.140
			Max. Vx	2	-37.586	1.069	2653.480
			Max. Torque	20			-8.112
L33	31.25 - 31	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.772	4.265	11.313
			Max. Mx	20	-44.018	2652.278	3.138
			Max. My	2	-44.012	1.073	2662.872
			Max. Vy	20	-37.496	2652.278	3.138
			Max. Vx	2	-37.601	1.073	2662.872
			Max. Torque	20			-8.051
L34	31 - 26	Pole	Max Tension	1	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-83.528	4.527	11.155
			Max. Mx	20	-46.366	2841.104	3.103
			Max. My	2	-46.362	1.148	2852.064
			Max. Vy	20	-38.030	2841.104	3.103
			Max. Vx	2	-38.128	1.148	2852.064
			Max. Torque	20			-8.046
L35	26 - 22	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.757	4.740	11.031
			Max. Mx	20	-48.281	2994.000	3.070
			Max. My	2	-48.278	1.211	3005.248
			Max. Vy	20	-38.427	2994.000	3.070
			Max. Vx	2	-38.525	1.211	3005.248
			Max. Torque	20			-7.961
L36	22 - 21.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.906	4.755	11.027
			Max. Mx	20	-48.422	3003.609	3.067
			Max. My	2	-48.419	1.215	3014.876
			Max. Vy	20	-38.437	3003.609	3.067
			Max. Vx	2	-38.540	1.215	3014.876
			Max. Torque	20			-7.894
L37	21.75 - 20.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.650	4.821	10.984
			Max. Mx	20	-49.050	3051.748	3.058
			Max. My	2	-49.046	1.234	3063.104
			Max. Vy	20	-38.582	3051.748	3.058
			Max. Vx	2	-38.679	1.234	3063.104
			Max. Torque	20			-7.890
L38	20.5 - 20.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-86.799	4.835	10.980
			Max. Mx	20	-49.193	3061.395	3.055
			Max. My	2	-49.190	1.238	3072.769
			Max. Vy	20	-38.589	3061.395	3.055
			Max. Vx	2	-38.690	1.238	3072.769
			Max. Torque	20			-7.869
L39	20.25 - 19.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.498	4.897	10.940
			Max. Mx	20	-49.783	3106.625	3.045
			Max. My	2	-49.780	1.257	3118.082
			Max. Vy	20	-38.722	3106.625	3.045
			Max. Vx	2	-38.818	1.257	3118.082
			Max. Torque	20			-7.865
L40	19.08 - 18.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.639	4.911	10.935
			Max. Mx	20	-49.917	3116.307	3.043
			Max. My	2	-49.914	1.261	3127.782
			Max. Vy	20	-38.729	3116.307	3.043
			Max. Vx	2	-38.830	1.261	3127.782
			Max. Torque	20			-7.846
L41	18.83 - 18	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-88.108	4.955	10.907
			Max. Mx	20	-50.311	3148.494	3.036
			Max. My	2	-50.308	1.274	3160.027
			Max. Vy	20	-38.819	3148.494	3.036
			Max. Vx	2	-38.916	1.274	3160.027
			Max. Torque	20			-7.842
L42	18 - 17.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-88.268	4.969	10.902
			Max. Mx	20	-50.460	3158.202	3.033
			Max. My	2	-50.457	1.278	3169.753
			Max. Vy	20	-38.832	3158.202	3.033
			Max. Vx	2	-38.933	1.278	3169.753
			Max. Torque	20			-7.828
L43	17.75 - 12.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-91.456	5.237	10.742
			Max. Mx	20	-53.230	3353.606	2.987
			Max. My	2	-53.228	1.360	3365.506

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-39.320	3353.606	2.987
			Max. Vx	2	-39.416	1.360	3365.506
			Max. Torque	20			-7.824
L44	12.75 - 7.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-94.661	5.504	10.587
			Max. Mx	20	-56.043	3551.371	2.936
			Max. My	2	-56.042	1.444	3563.614
			Max. Vy	20	-39.791	3551.371	2.936
			Max. Vx	2	-39.886	1.444	3563.614
			Max. Torque	20			-7.744
L45	7.75 - 4	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.071	5.698	10.474
			Max. Mx	20	-58.172	3701.244	2.895
			Max. My	2	-58.172	1.508	3713.739
			Max. Vy	20	-40.150	3701.244	2.895
			Max. Vx	2	-40.245	1.508	3713.739
			Max. Torque	20			-7.662
L46	4 - 3.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.230	5.711	10.467
			Max. Mx	20	-58.328	3711.283	2.892
			Max. My	2	-58.327	1.512	3723.795
			Max. Vy	20	-40.154	3711.283	2.892
			Max. Vx	2	-40.250	1.512	3723.795
			Max. Torque	18			-7.636
L47	3.75 - 3	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.706	5.748	10.445
			Max. Mx	20	-58.746	3741.435	2.884
			Max. My	2	-58.745	1.525	3753.997
			Max. Vy	20	-40.235	3741.435	2.884
			Max. Vx	2	-40.330	1.525	3753.997
			Max. Torque	18			-7.636
L48	3 - 2.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.867	5.760	10.438
			Max. Mx	20	-58.896	3751.498	2.881
			Max. My	2	-58.895	1.529	3764.076
			Max. Vy	20	-40.250	3751.498	2.881
			Max. Vx	2	-40.345	1.529	3764.076
			Max. Torque	18			-7.636
L49	2.75 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-99.611	5.887	10.363
			Max. Mx	20	-60.456	3862.587	2.850
			Max. My	2	-60.456	1.578	3875.347
			Max. Vy	20	-40.537	3862.587	2.850
			Max. Vx	2	-40.631	1.578	3875.347
			Max. Torque	18			-7.636

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	99.611	-0.000	-0.000
	Max. H_x	20	60.473	40.511	0.000
	Max. H_z	3	45.355	0.000	40.606
	Max. M_x	2	3875.347	0.000	40.605
	Max. M_z	8	3859.431	-40.511	0.000
	Max. Torsion	6	7.630	-35.084	20.303
	Min. Vert	3	45.355	0.000	40.606
	Min. H_x	8	60.473	-40.511	0.000
	Min. H_z	15	45.355	0.000	-40.606
	Min. M_x	14	-3869.507	0.000	-40.605
	Min. M_z	20	-3862.587	40.511	0.000
	Min. Torsion	18	-7.636	35.084	-20.303

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	50.395	0.000	0.001	-2.205	1.271	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	60.473	-0.000	-40.605	-3875.347	1.577	-2.221
0.9 Dead+1.0 Wind 0 deg - No Ice	45.355	-0.000	-40.606	-3838.654	1.172	-2.221
1.2 Dead+1.0 Wind 30 deg - No Ice	60.473	20.256	-35.166	-3356.596	-1928.945	-5.686
0.9 Dead+1.0 Wind 30 deg - No Ice	45.355	20.256	-35.166	-3324.694	-1911.433	-5.645
1.2 Dead+1.0 Wind 60 deg - No Ice	60.473	35.084	-20.303	-1939.132	-3342.179	-7.630
0.9 Dead+1.0 Wind 60 deg - No Ice	45.355	35.084	-20.303	-1920.393	-3311.557	-7.557
1.2 Dead+1.0 Wind 90 deg - No Ice	60.473	40.511	-0.000	-2.849	-3859.431	-7.531
0.9 Dead+1.0 Wind 90 deg - No Ice	45.355	40.511	-0.000	-2.083	-3824.016	-7.447
1.2 Dead+1.0 Wind 120 deg - No Ice	60.473	35.084	20.303	1933.399	-3342.116	-5.414
0.9 Dead+1.0 Wind 120 deg - No Ice	45.355	35.084	20.303	1916.201	-3311.512	-5.341
1.2 Dead+1.0 Wind 150 deg - No Ice	60.473	20.256	35.166	3350.791	-1928.882	-1.844
0.9 Dead+1.0 Wind 150 deg - No Ice	45.355	20.256	35.166	3320.450	-1911.388	-1.802
1.2 Dead+1.0 Wind 180 deg - No Ice	60.473	-0.000	40.605	3869.507	1.577	2.222
0.9 Dead+1.0 Wind 180 deg - No Ice	45.355	-0.000	40.606	3834.383	1.172	2.222
1.2 Dead+1.0 Wind 210 deg - No Ice	60.473	-20.256	35.166	3350.791	1932.037	5.692
0.9 Dead+1.0 Wind 210 deg - No Ice	45.355	-20.256	35.166	3320.450	1913.732	5.650
1.2 Dead+1.0 Wind 240 deg - No Ice	60.473	-35.084	20.303	1933.399	3345.272	7.636
0.9 Dead+1.0 Wind 240 deg - No Ice	45.355	-35.084	20.303	1916.201	3313.856	7.563
1.2 Dead+1.0 Wind 270 deg - No Ice	60.473	-40.511	-0.000	-2.849	3862.587	7.531
0.9 Dead+1.0 Wind 270 deg - No Ice	45.355	-40.511	-0.000	-2.083	3826.360	7.447
1.2 Dead+1.0 Wind 300 deg - No Ice	60.473	-35.084	-20.303	-1939.132	3345.334	5.409
0.9 Dead+1.0 Wind 300 deg - No Ice	45.355	-35.084	-20.303	-1920.393	3313.902	5.336
1.2 Dead+1.0 Wind 330 deg - No Ice	60.473	-20.256	-35.166	-3356.596	1932.100	1.839
0.9 Dead+1.0 Wind 330 deg - No Ice	45.355	-20.256	-35.166	-3324.694	1913.778	1.797
1.2 Dead+1.0 Ice+1.0 Temp	99.611	0.000	0.000	-10.363	5.887	0.002
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	99.611	0.000	-10.829	-1095.214	5.942	-1.192
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	99.611	5.406	-9.378	-949.885	-535.356	-1.865
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	99.611	9.364	-5.414	-552.843	-931.610	-2.038
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	99.611	10.812	0.000	-10.478	-1076.646	-1.665
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	99.611	9.364	5.414	531.884	-931.603	-0.845
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	99.611	5.406	9.378	928.918	-535.348	0.202
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	99.611	0.000	10.829	1074.242	5.943	1.196
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	99.611	-5.406	9.378	928.919	547.234	1.870

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	99.611	-9.364	5.414	531.885	943.490	2.043
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	99.611	-10.812	0.000	-10.477	1088.534	1.669
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	99.611	-9.364	-5.414	-552.844	943.497	0.848
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	99.611	-5.406	-9.378	-949.886	547.241	-0.199
Dead+Wind 0 deg - Service	50.394	0.000	-8.370	-796.744	1.312	-0.459
Dead+Wind 30 deg - Service	50.395	4.175	-7.249	-690.375	-394.698	-1.181
Dead+Wind 60 deg - Service	50.395	7.232	-4.185	-399.621	-684.617	-1.587
Dead+Wind 90 deg - Service	50.395	8.351	0.000	-2.417	-790.707	-1.568
Dead+Wind 120 deg - Service	50.395	7.232	4.185	394.773	-684.595	-1.128
Dead+Wind 150 deg - Service	50.395	4.176	7.249	685.555	-394.707	-0.386
Dead+Wind 180 deg - Service	50.394	0.000	8.370	791.906	1.312	0.459
Dead+Wind 210 deg - Service	50.395	-4.176	7.249	685.555	397.331	1.182
Dead+Wind 240 deg - Service	50.395	-7.232	4.185	394.774	687.220	1.588
Dead+Wind 270 deg - Service	50.395	-8.351	0.000	-2.417	793.331	1.568
Dead+Wind 300 deg - Service	50.395	-7.232	-4.185	-399.621	687.241	1.128
Dead+Wind 330 deg - Service	50.395	-4.175	-7.249	-690.375	397.323	0.386

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-50.395	0.000	-0.000	50.395	-0.001	0.003%
2	0.000	-60.473	-40.606	0.000	60.473	40.605	0.001%
3	0.000	-45.355	-40.606	0.000	45.355	40.606	0.001%
4	20.256	-60.473	-35.166	-20.256	60.473	35.166	0.000%
5	20.256	-45.355	-35.166	-20.256	45.355	35.166	0.000%
6	35.084	-60.473	-20.303	-35.084	60.473	20.303	0.000%
7	35.084	-45.355	-20.303	-35.084	45.355	20.303	0.000%
8	40.511	-60.473	0.000	-40.511	60.473	0.000	0.000%
9	40.511	-45.355	0.000	-40.511	45.355	0.000	0.000%
10	35.084	-60.473	20.303	-35.084	60.473	-20.303	0.000%
11	35.084	-45.355	20.303	-35.084	45.355	-20.303	0.000%
12	20.256	-60.473	35.166	-20.256	60.473	-35.166	0.000%
13	20.256	-45.355	35.166	-20.256	45.355	-35.166	0.000%
14	0.000	-60.473	40.606	0.000	60.473	-40.605	0.001%
15	0.000	-45.355	40.606	0.000	45.355	-40.606	0.001%
16	-20.256	-60.473	35.166	20.256	60.473	-35.166	0.000%
17	-20.256	-45.355	35.166	20.256	45.355	-35.166	0.000%
18	-35.084	-60.473	20.303	35.084	60.473	-20.303	0.000%
19	-35.084	-45.355	20.303	35.084	45.355	-20.303	0.000%
20	-40.511	-60.473	0.000	40.511	60.473	0.000	0.000%
21	-40.511	-45.355	0.000	40.511	45.355	0.000	0.000%
22	-35.084	-60.473	-20.303	35.084	60.473	20.303	0.000%
23	-35.084	-45.355	-20.303	35.084	45.355	20.303	0.000%
24	-20.256	-60.473	-35.166	20.256	60.473	35.166	0.000%
25	-20.256	-45.355	-35.166	20.256	45.355	35.166	0.000%
26	0.000	-99.611	0.000	-0.000	99.611	-0.000	0.000%
27	0.000	-99.611	-10.829	-0.000	99.611	10.829	0.000%
28	5.406	-99.611	-9.378	-5.406	99.611	9.378	0.000%
29	9.364	-99.611	-5.414	-9.364	99.611	5.414	0.000%
30	10.812	-99.611	0.000	-10.812	99.611	-0.000	0.000%
31	9.364	-99.611	5.414	-9.364	99.611	-5.414	0.000%
32	5.406	-99.611	9.378	-5.406	99.611	-9.378	0.000%
33	0.000	-99.611	10.829	-0.000	99.611	-10.829	0.000%
34	-5.406	-99.611	9.378	5.406	99.611	-9.378	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
35	-9.364	-99.611	5.414	9.364	99.611	-5.414	0.000%
36	-10.812	-99.611	0.000	10.812	99.611	-0.000	0.000%
37	-9.364	-99.611	-5.414	9.364	99.611	5.414	0.000%
38	-5.406	-99.611	-9.378	5.406	99.611	9.378	0.000%
39	0.000	-50.395	-8.371	-0.000	50.394	8.370	0.002%
40	4.176	-50.395	-7.249	-4.175	50.395	7.249	0.001%
41	7.232	-50.395	-4.185	-7.232	50.395	4.185	0.000%
42	8.351	-50.395	0.000	-8.351	50.395	-0.000	0.001%
43	7.232	-50.395	4.185	-7.232	50.395	-4.185	0.001%
44	4.176	-50.395	7.249	-4.176	50.395	-7.249	0.000%
45	0.000	-50.395	8.371	-0.000	50.394	-8.370	0.002%
46	-4.176	-50.395	7.249	4.176	50.395	-7.249	0.000%
47	-7.232	-50.395	4.185	7.232	50.395	-4.185	0.001%
48	-8.351	-50.395	0.000	8.351	50.395	-0.000	0.001%
49	-7.232	-50.395	-4.185	7.232	50.395	4.185	0.000%
50	-4.176	-50.395	-7.249	4.175	50.395	7.249	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00002075
2	Yes	15	0.00000001	0.00013464
3	Yes	15	0.00000001	0.00009990
4	Yes	19	0.00000001	0.00008837
5	Yes	19	0.00000001	0.00006093
6	Yes	19	0.00000001	0.00010527
7	Yes	19	0.00000001	0.00007300
8	Yes	18	0.00000001	0.00005855
9	Yes	17	0.00000001	0.00011637
10	Yes	19	0.00000001	0.00008603
11	Yes	19	0.00000001	0.00005948
12	Yes	19	0.00000001	0.00009796
13	Yes	19	0.00000001	0.00006788
14	Yes	15	0.00000001	0.00013402
15	Yes	15	0.00000001	0.00009956
16	Yes	19	0.00000001	0.00010035
17	Yes	19	0.00000001	0.00006958
18	Yes	19	0.00000001	0.00008546
19	Yes	19	0.00000001	0.00005906
20	Yes	18	0.00000001	0.00005859
21	Yes	17	0.00000001	0.00011643
22	Yes	19	0.00000001	0.00010403
23	Yes	19	0.00000001	0.00007207
24	Yes	19	0.00000001	0.00009010
25	Yes	19	0.00000001	0.00006212
26	Yes	13	0.00000001	0.00014819
27	Yes	18	0.00000001	0.00009126
28	Yes	18	0.00000001	0.00010543
29	Yes	18	0.00000001	0.00010788
30	Yes	18	0.00000001	0.00008887
31	Yes	18	0.00000001	0.00009959
32	Yes	18	0.00000001	0.00010026
33	Yes	18	0.00000001	0.00008545
34	Yes	18	0.00000001	0.00010243
35	Yes	18	0.00000001	0.00010075
36	Yes	18	0.00000001	0.00008994
37	Yes	18	0.00000001	0.00010835
38	Yes	18	0.00000001	0.00010691
39	Yes	13	0.00000001	0.00008289
40	Yes	14	0.00000001	0.00013921
41	Yes	15	0.00000001	0.00009831
42	Yes	14	0.00000001	0.00014746
43	Yes	14	0.00000001	0.00014299
44	Yes	15	0.00000001	0.00007440
45	Yes	13	0.00000001	0.00008111
46	Yes	15	0.00000001	0.00008190
47	Yes	14	0.00000001	0.00014869
48	Yes	14	0.00000001	0.00014798
49	Yes	15	0.00000001	0.00009415
50	Yes	14	0.00000001	0.00014029

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	129 - 124	17.693	39	1.435	0.034
L2	124 - 119	16.190	39	1.433	0.033
L3	119 - 115.5	14.700	39	1.408	0.028
L4	115.5 - 115	13.679	39	1.377	0.025
L5	115 - 110	13.535	39	1.372	0.024
L6	110 - 105	12.141	39	1.285	0.018
L7	105 - 100	10.852	39	1.174	0.013
L8	100 - 99.25	9.689	39	1.044	0.009
L9	99.25 - 99	9.527	39	1.023	0.009
L10	99 - 94	9.473	39	1.019	0.009
L11	94 - 92.08	8.445	39	0.943	0.007
L12	92.08 - 91.83	8.073	39	0.912	0.006

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L13	91.83 - 86.83	8.025	39	0.909	0.006
L14	86.83 - 81.83	7.105	39	0.847	0.005
L15	81.83 - 73.75	6.255	39	0.778	0.004
L16	78 - 73	5.653	39	0.723	0.004
L17	73 - 71.5	4.914	39	0.683	0.003
L18	71.5 - 71.25	4.703	39	0.662	0.003
L19	71.25 - 67.92	4.668	39	0.659	0.003
L20	67.92 - 67.67	4.224	39	0.616	0.003
L21	67.67 - 66.33	4.191	39	0.614	0.003
L22	66.33 - 66.08	4.021	39	0.599	0.003
L23	66.08 - 61.08	3.990	39	0.597	0.003
L24	61.08 - 56.5	3.390	39	0.549	0.002
L25	56.5 - 56.25	2.885	39	0.504	0.002
L26	56.25 - 51.25	2.859	39	0.502	0.002
L27	51.25 - 46.25	2.359	39	0.452	0.002
L28	46.25 - 36.75	1.912	39	0.403	0.001
L29	42 - 35.75	1.572	39	0.361	0.001
L30	35.75 - 35.08	1.121	39	0.323	0.001
L31	35.08 - 34.83	1.076	39	0.315	0.001
L32	34.83 - 31.25	1.060	39	0.313	0.001
L33	31.25 - 31	0.840	39	0.273	0.001
L34	31 - 26	0.826	39	0.271	0.001
L35	26 - 22	0.569	39	0.220	0.001
L36	22 - 21.75	0.402	39	0.180	0.001
L37	21.75 - 20.5	0.392	39	0.177	0.001
L38	20.5 - 20.25	0.347	39	0.166	0.000
L39	20.25 - 19.08	0.339	39	0.164	0.000
L40	19.08 - 18.83	0.300	39	0.154	0.000
L41	18.83 - 18	0.292	39	0.152	0.000
L42	18 - 17.75	0.266	39	0.144	0.000
L43	17.75 - 12.75	0.259	39	0.142	0.000
L44	12.75 - 7.75	0.132	39	0.101	0.000
L45	7.75 - 4	0.048	39	0.060	0.000
L46	4 - 3.75	0.012	39	0.030	0.000
L47	3.75 - 3	0.011	39	0.028	0.000
L48	3 - 2.75	0.007	39	0.022	0.000
L49	2.75 - 0	0.006	39	0.020	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.0000	AIR 32 B2A/B66AA w/ Mount Pipe	39	16.490	1.435	0.034	23091
116.0000	(2) LNX-8513DS-VTM w/ Mount Pipe	39	13.823	1.381	0.025	5102
105.0000	APXVTM14-ALU-I20 w/ Mount Pipe	39	10.852	1.174	0.013	2380
94.0000	7770.00 w/ Mount Pipe	39	8.445	0.943	0.007	3805

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	129 - 124	85.398	2	6.856	0.166
L2	124 - 119	78.236	2	6.849	0.161
L3	119 - 115.5	71.122	2	6.751	0.136
L4	115.5 - 115	66.232	2	6.612	0.118
L5	115 - 110	65.542	2	6.592	0.116
L6	110 - 105	58.850	2	6.191	0.088
L7	105 - 100	52.643	2	5.669	0.065
L8	100 - 99.25	47.029	2	5.052	0.045
L9	99.25 - 99	46.244	2	4.953	0.043

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L10	99 - 94	45.985	2	4.936	0.042
L11	94 - 92.08	41.011	2	4.569	0.034
L12	92.08 - 91.83	39.205	2	4.421	0.031
L13	91.83 - 86.83	38.974	2	4.407	0.031
L14	86.83 - 81.83	34.518	2	4.107	0.026
L15	81.83 - 73.75	30.391	2	3.777	0.021
L16	78 - 73	27.470	2	3.510	0.018
L17	73 - 71.5	23.887	2	3.316	0.016
L18	71.5 - 71.25	22.861	2	3.218	0.015
L19	71.25 - 67.92	22.693	2	3.203	0.015
L20	67.92 - 67.67	20.532	2	2.995	0.013
L21	67.67 - 66.33	20.376	2	2.982	0.013
L22	66.33 - 66.08	19.549	2	2.913	0.013
L23	66.08 - 61.08	19.397	2	2.902	0.013
L24	61.08 - 56.5	16.482	2	2.667	0.011
L25	56.5 - 56.25	14.029	2	2.450	0.010
L26	56.25 - 51.25	13.901	2	2.438	0.010
L27	51.25 - 46.25	11.473	2	2.200	0.008
L28	46.25 - 36.75	9.296	2	1.960	0.007
L29	42 - 35.75	7.644	2	1.755	0.006
L30	35.75 - 35.08	5.452	2	1.569	0.005
L31	35.08 - 34.83	5.235	2	1.534	0.005
L32	34.83 - 31.25	5.155	2	1.520	0.005
L33	31.25 - 31	4.086	2	1.330	0.004
L34	31 - 26	4.017	2	1.318	0.004
L35	26 - 22	2.767	2	1.070	0.003
L36	22 - 21.75	1.954	2	0.873	0.003
L37	21.75 - 20.5	1.908	2	0.863	0.002
L38	20.5 - 20.25	1.690	2	0.809	0.002
L39	20.25 - 19.08	1.647	2	0.798	0.002
L40	19.08 - 18.83	1.458	2	0.748	0.002
L41	18.83 - 18	1.419	2	0.737	0.002
L42	18 - 17.75	1.294	2	0.700	0.002
L43	17.75 - 12.75	1.258	2	0.690	0.002
L44	12.75 - 7.75	0.640	2	0.490	0.001
L45	7.75 - 4	0.232	2	0.291	0.001
L46	4 - 3.75	0.060	2	0.146	0.000
L47	3.75 - 3	0.053	2	0.136	0.000
L48	3 - 2.75	0.034	2	0.108	0.000
L49	2.75 - 0	0.028	2	0.099	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.0000	AIR 32 B2A/B66AA w/ Mount Pipe	2	79.667	6.855	0.163	6424
116.0000	(2) LNX-8513DS-VTM w/ Mount Pipe	2	66.924	6.631	0.121	1171
105.0000	APXVTM14-ALU-I20 w/ Mount Pipe	2	52.643	5.669	0.065	514
94.0000	7770.00 w/ Mount Pipe	2	41.011	4.569	0.034	804

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	129 - 124 (1)	TP16x16x0.375	5.0000	0.0000	0.0	18.4078	-5.079

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L2	124 - 119 (2)	TP16x16x0.375	5.0000	0.0000	0.0	18.4078	-5.494
L3	119 - 115.5 (3)	TP16x16x0.375	3.5000	0.0000	0.0	18.4078	-8.381
L4	115.5 - 115 (4)	TP17.81x16x0.375	0.5000	0.0000	0.0	18.4078	-8.392
L5	115 - 110 (5)	TP18.9603x17.81x0.2188	5.0000	0.0000	0.0	13.2041	-8.849
L6	110 - 105 (6)	TP20.1106x18.9603x0.2188	5.0000	0.0000	0.0	14.0145	-9.322
L7	105 - 100 (7)	TP21.2609x20.1106x0.2188	5.0000	0.0000	0.0	14.8249	-13.801
L8	100 - 99.25 (8)	TP21.4335x21.2609x0.2188	0.7500	0.0000	0.0	14.9465	-13.903
L9	99.25 - 99 (9)	TP21.491x21.4335x0.4563	0.2500	0.0000	0.0	30.9059	-13.958
L10	99 - 94 (10)	TP22.6413x21.491x0.4376	5.0000	0.0000	0.0	31.2831	-14.746
L11	94 - 92.08 (11)	TP23.083x22.6413x0.4313	1.9200	0.0000	0.0	31.4583	-18.878
L12	92.08 - 91.83 (12)	TP23.1405x23.083x0.6563	0.2500	0.0000	0.0	47.5156	-18.972
L13	91.83 - 86.83 (13)	TP24.2908x23.1405x0.6313	5.0000	0.0000	0.0	48.0947	-20.136
L14	86.83 - 81.83 (14)	TP25.4411x24.2908x0.6063	5.0000	0.0000	0.0	48.4847	-21.350
L15	81.83 - 73.75 (15)	TP27.3x25.4411x0.5938	8.0800	0.0000	0.0	49.1937	-22.301
L16	73.75 - 73 (16)	TP27.0332x25.8846x0.6875	5.0000	0.0000	0.0	58.3227	-24.446
L17	73 - 71.5 (17)	TP27.3777x27.0332x0.675	1.5000	0.0000	0.0	58.0384	-24.863
L18	71.5 - 71.25 (18)	TP27.4352x27.3777x0.7375	0.2500	0.0000	0.0	63.4003	-24.963
L19	71.25 - 67.92 (19)	TP28.2001x27.4352x0.725	3.3300	0.0000	0.0	64.1406	-25.965
L20	67.92 - 67.67 (20)	TP28.2575x28.2001x0.8875	0.2500	0.0000	0.0	78.2166	-26.069
L21	67.67 - 66.33 (21)	TP28.5653x28.2575x0.875	1.3400	0.0000	0.0	78.0174	-26.518
L22	66.33 - 66.08 (22)	TP28.6227x28.5653x1.0375	0.2500	0.0000	0.0	92.1554	-26.643
L23	66.08 - 61.08 (23)	TP29.7713x28.6227x0.9875	5.0000	0.0000	0.0	91.5252	-28.790
L24	61.08 - 56.5 (24)	TP30.8233x29.7713x0.9625	4.5800	0.0000	0.0	92.5461	-30.795
L25	56.5 - 56.25 (25)	TP30.8807x30.8233x0.9625	0.2500	0.0000	0.0	92.7241	-30.919
L26	56.25 - 51.25 (26)	TP32.0293x30.8807x0.9375	5.0000	0.0000	0.0	93.8583	-33.128
L27	51.25 - 46.25 (27)	TP33.1778x32.0293x0.9125	5.0000	0.0000	0.0	94.8035	-35.380
L28	46.25 - 36.75 (28)	TP35.36x33.1778x0.8875	9.5000	0.0000	0.0	95.0675	-37.319
L29	36.75 - 35.75 (29)	TP34.9682x33.529x0.8125	6.2500	0.0000	0.0	89.3598	-41.963
L30	35.75 - 35.08 (30)	TP35.1225x34.9682x0.8125	0.6700	0.0000	0.0	89.7634	-42.254
L31	35.08 - 34.83 (31)	TP35.18x35.1225x0.8125	0.2500	0.0000	0.0	89.9140	-42.367
L32	34.83 - 31.25 (32)	TP36.0043x35.18x0.8	3.5800	0.0000	0.0	90.6864	-43.878
L33	31.25 - 31 (33)	TP36.0619x36.0043x0.8625	0.2500	0.0000	0.0	97.7576	-44.012
L34	31 - 26 (34)	TP37.2132x36.0619x0.8375	5.0000	0.0000	0.0	98.0962	-46.362
L35	26 - 22 (35)	TP38.1343x37.2132x0.825	4.0000	0.0000	0.0	99.1121	-48.278
L36	22 - 21.75 (36)	TP38.1918x38.1343x0.9375	0.2500	0.0000	0.0	112.4620	-48.419

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L37	21.75 - 20.5 (37)	TP38.4797x38.1918x0.925	1.2500	0.0000	0.0	111.8570	-49.046
L38	20.5 - 20.25 (38)	TP38.5372x38.4797x0.925	0.2500	0.0000	0.0	112.0280	-49.190
L39	20.25 - 19.08 (39)	TP38.8066x38.5372x0.925	1.1700	0.0000	0.0	112.8300	-49.780
L40	19.08 - 18.83 (40)	TP38.8642x38.8066x0.875	0.2500	0.0000	0.0	107.0350	-49.914
L41	18.83 - 18 (41)	TP39.0553x38.8642x0.875	0.8300	0.0000	0.0	107.5730	-50.309
L42	18 - 17.75 (42)	TP39.1129x39.0553x1	0.2500	0.0000	0.0	122.7230	-50.457
L43	17.75 - 12.75 (43)	TP40.2642x39.1129x0.975	5.0000	0.0000	0.0	121.1800	-51.578
L44	12.75 - 7.75 (44)	TP41.4155x40.2642x0.95	5.0000	0.0000	0.0	120.2620	-53.256
L45	7.75 - 4 (45)	TP42.279x41.4155x0.95	3.7500	0.0000	0.0	123.7840	-56.072
L46	4 - 3.75 (46)	TP42.3365x42.279x0.95	0.2500	0.0000	0.0	126.4250	-58.192
L47	3.75 - 3 (47)	TP42.5092x42.3365x0.95	0.7500	0.0000	0.0	126.6010	-58.340
L48	3 - 2.75 (48)	TP42.5668x42.5092x1.025	0.2500	0.0000	0.0	136.9190	-58.758
L49	2.75 - 0 (49)	TP43.2x42.5668x1	2.7500	0.0000	0.0	133.8450	-58.916

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L1	129 - 124 (1)	TP16x16x0.375	16.464	0.000
L2	124 - 119 (2)	TP16x16x0.375	61.009	0.000
L3	119 - 115.5 (3)	TP16x16x0.375	102.438	0.000
L4	115.5 - 115 (4)	TP17.81x16x0.375	102.438	0.000
L5	115 - 110 (5)	TP18.9603x17.81x0.2188	195.144	0.000
L6	110 - 105 (6)	TP20.1106x18.9603x0.2188	282.112	0.000
L7	105 - 100 (7)	TP21.2609x20.1106x0.2188	390.885	0.000
L8	100 - 99.25 (8)	TP21.4335x21.2609x0.2188	407.777	0.000
L9	99.25 - 99 (9)	TP21.491x21.4335x0.4563	413.418	0.000
L10	99 - 94 (10)	TP22.6413x21.491x0.4376	527.488	0.000
L11	94 - 92.08 (11)	TP23.083x22.6413x0.4313	589.579	0.000
L12	92.08 - 91.83 (12)	TP23.1405x23.083x0.6563	597.175	0.000
L13	91.83 - 86.83 (13)	TP24.2908x23.1405x0.6313	750.525	0.000
L14	86.83 - 81.83 (14)	TP25.4411x24.2908x0.6063	906.625	0.000
L15	81.83 - 73.75 (15)	TP27.3x25.4411x0.5938	1028.042	0.000
L16	73.75 - 73 (16)	TP27.0332x25.8846x0.6875	1189.275	0.000
L17	73 - 71.5 (17)	TP27.3777x27.0332x0.675	1238.258	0.000
L18	71.5 - 71.25 (18)	TP27.4352x27.3777x0.7375	1246.450	0.000
L19	71.25 - 67.92 (19)	TP28.2001x27.4352x0.725	1356.183	0.000
L20	67.92 - 67.67 (20)	TP28.2575x28.2001x0.8875	1364.475	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L21	67.67 - 66.33 (21)	TP28.5653x28.2575x0.875	1409.033	0.000
L22	66.33 - 66.08 (22)	TP28.6227x28.5653x1.0375	1417.367	0.000
L23	66.08 - 61.08 (23)	TP29.7713x28.6227x0.9875	1585.775	0.000
L24	61.08 - 56.5 (24)	TP30.8233x29.7713x0.9625	1742.792	0.000
L25	56.5 - 56.25 (25)	TP30.8807x30.8233x0.9625	1751.442	0.000
L26	56.25 - 51.25 (26)	TP32.0293x30.8807x0.9375	1925.925	0.000
L27	51.25 - 46.25 (27)	TP33.1778x32.0293x0.9125	2103.317	0.000
L28	46.25 - 36.75 (28)	TP35.36x33.1778x0.8875	2256.325	0.000
L29	36.75 - 35.75 (29)	TP34.9682x33.529x0.8125	2485.550	0.000
L30	35.75 - 35.08 (30)	TP35.1225x34.9682x0.8125	2510.417	0.000
L31	35.08 - 34.83 (31)	TP35.18x35.1225x0.8125	2519.708	0.000
L32	34.83 - 31.25 (32)	TP36.0043x35.18x0.8	2653.483	0.000
L33	31.25 - 31 (33)	TP36.0619x36.0043x0.8625	2662.875	0.000
L34	31 - 26 (34)	TP37.2132x36.0619x0.8375	2852.067	0.000
L35	26 - 22 (35)	TP38.1343x37.2132x0.825	3005.250	0.000
L36	22 - 21.75 (36)	TP38.1918x38.1343x0.9375	3014.875	0.000
L37	21.75 - 20.5 (37)	TP38.4797x38.1918x0.925	3063.108	0.000
L38	20.5 - 20.25 (38)	TP38.5372x38.4797x0.925	3072.767	0.000
L39	20.25 - 19.08 (39)	TP38.8066x38.5372x0.925	3118.083	0.000
L40	19.08 - 18.83 (40)	TP38.8642x38.8066x0.875	3127.783	0.000
L41	18.83 - 18 (41)	TP39.0553x38.8642x0.875	3160.025	0.000
L42	18 - 17.75 (42)	TP39.1129x39.0553x1	3169.750	0.000
L43	17.75 - 12.75 (43)	TP40.2642x39.1129x0.975	3247.767	0.000
L44	12.75 - 7.75 (44)	TP41.4155x40.2642x0.95	3365.508	0.000
L45	7.75 - 4 (45)	TP42.279x41.4155x0.95	3563.617	0.000
L46	4 - 3.75 (46)	TP42.3365x42.279x0.95	3713.742	0.000
L47	3.75 - 3 (47)	TP42.5092x42.3365x0.95	3723.792	0.000
L48	3 - 2.75 (48)	TP42.5668x42.5092x1.025	3754.000	0.000
L49	2.75 - 0 (49)	TP43.2x42.5668x1	3764.075	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	129 - 124 (1)	TP16x16x0.375	8.769	4.170
L2	124 - 119 (2)	TP16x16x0.375	9.057	4.146
L3	119 - 115.5 (3)	TP16x16x0.375	16.654	4.520
L4	115.5 - 115 (4)	TP17.81x16x0.375	16.682	4.519
L5	115 - 110 (5)	TP18.9603x17.81x0.2188	17.080	4.488

Section No.	*Elevation ft*	*Size*	*Actual V_u K*	*Actual T_u kip-ft*
L6	110 - 105 (6)	TP20.1106x18.9603x0.2188	17.496	0.225
L7	105 - 100 (7)	TP21.2609x20.1106x0.2188	22.515	0.191
L8	100 - 99.25 (8)	TP21.4335x21.2609x0.2188	22.568	0.184
L9	99.25 - 99 (9)	TP21.491x21.4335x0.4563	22.585	0.174
L10	99 - 94 (10)	TP22.6413x21.491x0.4376	23.071	0.120
L11	94 - 92.08 (11)	TP23.083x22.6413x0.4313	30.397	0.107
L12	92.08 - 91.83 (12)	TP23.1405x23.083x0.6563	30.406	0.069
L13	91.83 - 86.83 (13)	TP24.2908x23.1405x0.6313	30.965	0.038
L14	86.83 - 81.83 (14)	TP25.4411x24.2908x0.6063	31.514	0.143
L15	81.83 - 73.75 (15)	TP27.3x25.4411x0.5938	31.931	0.225
L16	73.75 - 73 (16)	TP27.0332x25.8846x0.6875	32.589	0.337
L17	73 - 71.5 (17)	TP27.3777x27.0332x0.675	32.765	0.370
L18	71.5 - 71.25 (18)	TP27.4352x27.3777x0.7375	32.781	0.376
L19	71.25 - 67.92 (19)	TP28.2001x27.4352x0.725	33.166	0.456
L20	67.92 - 67.67 (20)	TP28.2575x28.2001x0.8875	33.189	0.462
L21	67.67 - 66.33 (21)	TP28.5653x28.2575x0.875	33.358	0.496
L22	66.33 - 66.08 (22)	TP28.6227x28.5653x1.0375	33.382	0.502
L23	66.08 - 61.08 (23)	TP29.7713x28.6227x0.9875	34.017	0.628
L24	61.08 - 56.5 (24)	TP30.8233x29.7713x0.9625	34.592	0.746
L25	56.5 - 56.25 (25)	TP30.8807x30.8233x0.9625	34.618	0.752
L26	56.25 - 51.25 (26)	TP32.0293x30.8807x0.9375	35.217	0.861
L27	51.25 - 46.25 (27)	TP33.1778x32.0293x0.9125	35.786	0.953
L28	46.25 - 36.75 (28)	TP35.36x33.1778x0.8875	36.267	1.049
L29	36.75 - 35.75 (29)	TP34.9682x33.529x0.8125	37.110	1.201
L30	35.75 - 35.08 (30)	TP35.1225x34.9682x0.8125	37.175	1.220
L31	35.08 - 34.83 (31)	TP35.18x35.1225x0.8125	37.200	1.228
L32	34.83 - 31.25 (32)	TP36.0043x35.18x0.8	37.586	1.331
L33	31.25 - 31 (33)	TP36.0619x36.0043x0.8625	37.601	1.338
L34	31 - 26 (34)	TP37.2132x36.0619x0.8375	38.128	1.482
L35	26 - 22 (35)	TP38.1343x37.2132x0.825	38.525	1.597
L36	22 - 21.75 (36)	TP38.1918x38.1343x0.9375	38.539	1.604
L37	21.75 - 20.5 (37)	TP38.4797x38.1918x0.925	38.679	1.640
L38	20.5 - 20.25 (38)	TP38.5372x38.4797x0.925	38.691	1.647
L39	20.25 - 19.08 (39)	TP38.8066x38.5372x0.925	38.818	1.680

Section No.	*Elevation ft*	*Size*	*Actual V_u K*	*Actual T_u kip-ft*
L40	19.08 - 18.83 (40)	TP38.8642x38.8066x0.875	38.830	1.687
L41	18.83 - 18 (41)	TP39.0553x38.8642x0.875	38.916	1.710
L42	18 - 17.75 (42)	TP39.1129x39.0553x1	38.934	1.717
L43	17.75 - 12.75 (43)	TP40.2642x39.1129x0.975	39.226	1.799
L44	12.75 - 7.75 (44)	TP41.4155x40.2642x0.95	39.510	1.882
L45	7.75 - 4 (45)	TP42.279x41.4155x0.95	40.009	2.031
L46	4 - 3.75 (46)	TP42.3365x42.279x0.95	40.250	2.110
L47	3.75 - 3 (47)	TP42.5092x42.3365x0.95	40.330	2.132
L48	3 - 2.75 (48)	TP42.5668x42.5092x1.025	40.345	2.140
L49	2.75 - 0 (49)	TP43.2x42.5668x1	40.498	2.180

CCIpole

per TIA-222- H

Site BU: 806365

Work Order: _____

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	129	13.5	0	0	16	16	0.375		A53-B-35
2	115.5	0.5	0	0	16.00	17.81	0.375		A53-B-35
3	115	41.25	4.25	12	17.81	27.3	0.2188	Auto	A572-65
4	78	41.25	5.25	12	25.88	35.36	0.3125	Auto	A572-65
5	42	42	0	12	33.53	43.2	0.375	Auto	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	3	18	plate	CCI-AFP-060100	3		o				o				o		
2	41.5	56.5	plate	CCI-AFP-060100	3		o				o				o		
3	0	3	plate	FP 1.25 x 5.25_1	3		c				c				c		
4	4	20.5	plate	CCI-AFP-065125	2			o								o	
5	4	22	plate	CCI-AFP-065125	1								o				
6	20.5	40.5	plate	CCI-AFP-065125	2			o								o	
7	19.08	40.5	plate	CCI-AFP-065125	1							o					
8	56.5	71.5	plate	CCI-AFP-060100	3				o				o				o
9	71.5	92.08	plate	CCI-AFP-045100	3				o				o				o
10	0	4	plate	FP 1.25 x 6_1	3			c				c				c	
11	0	35.08	plate	CI-085125; (1) (1.1875)	2					o				o			
12	0	31.25	plate	CI-085125; (1) (1.1875)	1												o
13	35.08	66.33	plate	CCI-SFP-085125	2					o				o			
14	40.5	67.92	plate	CCI-SFP-065125	3			o				o				o	
15	67.92	99.25	plate	CCI-SFP-045100	3			o				o				o	
16																	

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	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
2	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
3	1.25	5.25	6.5625	2.625	n/a	n/a	0.000	6.563	0.0000	A572-65
4	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
5	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
6	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
7	6.5	1.25	8.125	0.625	42.000	42.000	19.000	6.563	1.1875	A572-65
8	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	24.000	24.000	20.000	3.250	1.1875	A572-65
10	1.25	6	7.5	3	n/a	n/a	0.000	7.500	0.0000	A572-65
11	8.5	1.25	10.625	0.625	n/a	n/a	17.000	9.063	1.1875	A572-65
12	8.5	1.25	10.625	0.625	n/a	n/a	17.000	9.063	1.1875	A572-65
13	8.5	1.25	10.625	0.625	45.000	45.000	17.000	9.063	1.1875	A572-65
14	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
15	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	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	129 - 124	5		0	16.000	16.000	0.375	A53-B-35	1.000
2	124 - 119	5		0	16.000	16.000	0.375	A53-B-35	1.000
3	119 - 115.5	3.5	0	0	16.000	16.000	0.375	A53-B-35	1.000
4	115.5 - 115	0.5	0	0	16.000	17.810	0.375	A53-B-35	1.000
5	115 - 110	5		12	17.810	18.960	0.2188	A572-65	1.000
6	110 - 105	5		12	18.960	20.111	0.2188	A572-65	1.000
7	105 - 100	5		12	20.111	21.261	0.2188	A572-65	1.000
8	100 - 99.25	0.75		12	21.261	21.433	0.2188	A572-65	1.000
9	99.25 - 99	0.25		12	21.433	21.491	0.4563	A572-65	0.922
10	99 - 94	5		12	21.491	22.641	0.43755	A572-65	0.937
11	94 - 92.08	1.92		12	22.641	23.083	0.4313	A572-65	0.942
12	92.08 - 91.83	0.25		12	23.083	23.141	0.6563	A572-65	0.909
13	91.83 - 86.83	5		12	23.141	24.291	0.6313	A572-65	0.915
14	86.83 - 81.83	5		12	24.291	25.441	0.6063	A572-65	0.924
15	81.83 - 78	8.08	4.25	12	25.441	27.300	0.5938	A572-65	0.923
16	78 - 73	5		12	25.885	27.033	0.6875	A572-65	0.925
17	73 - 71.5	1.5		12	27.033	27.378	0.675	A572-65	0.935
18	71.5 - 71.25	0.25		12	27.378	27.435	0.7375	A572-65	0.928
19	71.25 - 67.92	3.33		12	27.435	28.200	0.725	A572-65	0.929
20	67.92 - 67.67	0.25		12	28.200	28.258	0.8875	A572-65	0.902
21	67.67 - 66.33	1.34		12	28.258	28.565	0.875	A572-65	0.908
22	66.33 - 66.08	0.25		12	28.565	28.623	1.0375	A572-65	1.001
23	66.08 - 61.08	5		12	28.623	29.771	0.9875	A572-65	1.020
24	61.08 - 56.5	4.58		12	29.771	30.823	0.9625	A572-65	1.020
25	56.5 - 56.25	0.25		12	30.823	30.881	0.9625	A572-65	1.019
26	56.25 - 51.25	5		12	30.881	32.029	0.9375	A572-65	1.019
27	51.25 - 46.25	5		12	32.029	33.178	0.9125	A572-65	1.021
28	46.25 - 42	9.5	5.25	12	33.178	35.360	0.8875	A572-65	1.028
29	42 - 35.75	6.25		12	33.529	34.968	0.8125	A572-65	0.979
30	35.75 - 35.08	0.67		12	34.968	35.122	0.8125	A572-65	0.976
31	35.08 - 34.83	0.25		12	35.122	35.180	0.8125	A572-65	0.976
32	34.83 - 31.25	3.58		12	35.180	36.004	0.8	A572-65	0.978
33	31.25 - 31	0.25		12	36.004	36.062	0.8625	A572-65	1.017
34	31 - 26	5		12	36.062	37.213	0.8375	A572-65	1.028
35	26 - 22	4		12	37.213	38.134	0.825	A572-65	1.028
36	22 - 21.75	0.25		12	38.134	38.192	0.9375	A572-65	0.979
37	21.75 - 20.5	1.25		12	38.192	38.480	0.925	A572-65	0.988
38	20.5 - 20.25	0.25		12	38.480	38.537	0.925	A572-65	0.987
39	20.25 - 19.08	1.17		12	38.537	38.807	0.925	A572-65	0.983
40	19.08 - 18.83	0.25		12	38.807	38.864	0.875	A572-65	0.960
41	18.83 - 18	0.83		12	38.864	39.055	0.875	A572-65	0.958
42	18 - 17.75	0.25		12	39.055	39.113	1	A572-65	0.987
43	17.75 - 12.75	5		12	39.113	40.264	0.975	A572-65	0.993
44	12.75 - 7.75	5		12	40.264	41.415	0.95	A572-65	1.001
45	7.75 - 4	3.75		12	41.415	42.279	0.95	A572-65	0.988
46	4 - 3.75	0.25		12	42.279	42.337	0.95	A572-65	0.973
47	3.75 - 3	0.75		12	42.337	42.509	0.95	A572-65	0.970
48	3 - 2.75	0.25		12	42.509	42.567	1.025	A572-65	0.913
49	2.75 - 0	2.75		12	42.567	43.200	1	A572-65	0.926

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	129 - 124	5.08	16.81	8.77
2	124 - 119	5.49	61.36	9.06
3	119 - 115.5	8.38	102.86	16.68
4	115.5 - 115	8.43	111.20	16.70
5	115 - 110	8.84	195.68	17.10
6	110 - 105	9.32	282.11	17.50
7	105 - 100	13.80	390.89	22.51
8	100 - 99.25	13.90	407.78	22.57
9	99.25 - 99	13.96	413.42	22.58
10	99 - 94	19.14	531.46	29.84
11	94 - 92.08	18.88	589.58	30.40
12	92.08 - 91.83	18.97	597.17	30.41
13	91.83 - 86.83	20.14	750.52	30.96
14	86.83 - 81.83	21.35	906.63	31.51
15	81.83 - 78	22.30	1028.04	31.93
16	78 - 73	24.45	1189.28	32.59
17	73 - 71.5	24.86	1238.26	32.76
18	71.5 - 71.25	24.96	1246.45	32.78
19	71.25 - 67.92	25.97	1356.18	33.17
20	67.92 - 67.67	26.07	1364.47	33.19
21	67.67 - 66.33	26.52	1409.03	33.36
22	66.33 - 66.08	26.64	1417.37	33.38
23	66.08 - 61.08	28.79	1585.78	34.02
24	61.08 - 56.5	30.79	1742.79	34.59
25	56.5 - 56.25	30.92	1751.44	34.62
26	56.25 - 51.25	33.13	1925.92	35.22
27	51.25 - 46.25	35.38	2103.32	35.79
28	46.25 - 42	37.32	2256.33	36.27
29	42 - 35.75	41.96	2485.55	37.11
30	35.75 - 35.08	42.25	2510.42	37.18
31	35.08 - 34.83	42.37	2519.71	37.20
32	34.83 - 31.25	43.88	2653.48	37.59
33	31.25 - 31	44.01	2662.87	37.60
34	31 - 26	46.36	2852.06	38.13
35	26 - 22	48.28	3005.25	38.52
36	22 - 21.75	48.42	3014.88	38.54
37	21.75 - 20.5	49.05	3063.10	38.68
38	20.5 - 20.25	49.19	3072.77	38.69
39	20.25 - 19.08	49.78	3118.08	38.82
40	19.08 - 18.83	49.91	3127.78	38.83
41	18.83 - 18	50.31	3160.03	38.92
42	18 - 17.75	50.46	3169.75	38.93
43	17.75 - 12.75	53.23	3365.51	39.42
44	12.75 - 7.75	56.04	3563.61	39.89
45	7.75 - 4	58.17	3713.74	40.24
46	4 - 3.75	58.33	3723.80	40.25
47	3.75 - 3	58.75	3754.00	40.33
48	3 - 2.75	58.90	3764.08	40.35
49	2.75 - 0	60.46	3875.35	40.63

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
129 - 124	Pole	TP16x16x0.375	Pole	7.6%	Pass
124 - 119	Pole	TP16x16x0.375	Pole	25.3%	Pass
119 - 115.5	Pole	TP16x16x0.375	Pole	42.4%	Pass
115.5 - 115	Pole	TP17.81x16x0.375	Pole	36.9%	Pass
115 - 110	Pole	TP18.96x17.81x0.2188	Pole	51.8%	Pass
110 - 105	Pole	TP20.111x18.96x0.2188	Pole	67.3%	Pass
105 - 100	Pole	TP21.261x20.111x0.2188	Pole	85.1%	Pass
100 - 99.25	Pole	TP21.433x21.261x0.2188	Pole	87.6%	Pass
99.25 - 99	Pole + Reinf.	TP21.491x21.433x0.4563	Reinf. 15 Tension Rupture	71.6%	Pass
99 - 94	Pole + Reinf.	TP22.641x21.491x0.4376	Reinf. 15 Tension Rupture	85.3%	Pass
94 - 92.08	Pole + Reinf.	TP23.083x22.641x0.4313	Reinf. 15 Tension Rupture	91.8%	Pass
92.08 - 91.83	Pole + Reinf.	TP23.141x23.083x0.6563	Reinf. 9 Tension Rupture	62.7%	Pass
91.83 - 86.83	Pole + Reinf.	TP24.291x23.141x0.6313	Reinf. 9 Tension Rupture	73.7%	Pass
86.83 - 81.83	Pole + Reinf.	TP25.441x24.291x0.6063	Reinf. 9 Tension Rupture	83.5%	Pass
81.83 - 78	Pole + Reinf.	TP27.3x25.441x0.5938	Reinf. 9 Tension Rupture	90.3%	Pass
78 - 73	Pole + Reinf.	TP27.033x25.885x0.6875	Reinf. 9 Tension Rupture	86.5%	Pass
73 - 71.5	Pole + Reinf.	TP27.378x27.033x0.675	Reinf. 9 Tension Rupture	88.4%	Pass
71.5 - 71.25	Pole + Reinf.	TP27.435x27.378x0.7375	Reinf. 15 Tension Rupture	81.4%	Pass
71.25 - 67.92	Pole + Reinf.	TP28.2x27.435x0.725	Reinf. 15 Tension Rupture	85.2%	Pass
67.92 - 67.67	Pole + Reinf.	TP28.258x28.2x0.8875	Reinf. 8 Tension Rupture	65.0%	Pass
67.67 - 66.33	Pole + Reinf.	TP28.565x28.258x0.875	Reinf. 8 Tension Rupture	66.2%	Pass
66.33 - 66.08	Pole + Reinf.	TP28.623x28.565x1.0375	Reinf. 8 Tension Rupture	61.9%	Pass
66.08 - 61.08	Pole + Reinf.	TP29.771x28.623x0.9875	Reinf. 8 Tension Rupture	65.8%	Pass
61.08 - 56.5	Pole + Reinf.	TP30.823x29.771x0.9625	Reinf. 8 Tension Rupture	69.0%	Pass
56.5 - 56.25	Pole + Reinf.	TP30.881x30.823x0.9625	Reinf. 2 Tension Rupture	69.2%	Pass
56.25 - 51.25	Pole + Reinf.	TP32.029x30.881x0.9375	Reinf. 2 Tension Rupture	72.4%	Pass
51.25 - 46.25	Pole + Reinf.	TP33.178x32.029x0.9125	Reinf. 2 Tension Rupture	75.4%	Pass
46.25 - 42	Pole + Reinf.	TP35.36x33.178x0.8875	Reinf. 2 Tension Rupture	77.7%	Pass
42 - 35.75	Pole + Reinf.	TP34.968x33.529x0.8125	Reinf. 6 Tension Rupture	82.4%	Pass
35.75 - 35.08	Pole + Reinf.	TP35.122x34.968x0.8125	Reinf. 6 Tension Rupture	82.7%	Pass
35.08 - 34.83	Pole + Reinf.	TP35.18x35.122x0.8125	Reinf. 6 Tension Rupture	82.8%	Pass
34.83 - 31.25	Pole + Reinf.	TP36.004x35.18x0.8	Reinf. 6 Tension Rupture	84.1%	Pass
31.25 - 31	Pole + Reinf.	TP36.062x36.004x0.8625	Reinf. 6 Tension Rupture	79.1%	Pass
31 - 26	Pole + Reinf.	TP37.213x36.062x0.8375	Reinf. 6 Tension Rupture	80.9%	Pass
26 - 22	Pole + Reinf.	TP38.134x37.213x0.825	Reinf. 6 Tension Rupture	82.3%	Pass
22 - 21.75	Pole + Reinf.	TP38.192x38.134x0.9375	Reinf. 6 Tension Rupture	77.9%	Pass
21.75 - 20.5	Pole + Reinf.	TP38.48x38.192x0.925	Reinf. 6 Tension Rupture	78.3%	Pass
20.5 - 20.25	Pole + Reinf.	TP38.537x38.48x0.925	Reinf. 4 Tension Rupture	78.4%	Pass
20.25 - 19.08	Pole + Reinf.	TP38.807x38.537x0.925	Reinf. 4 Tension Rupture	78.8%	Pass
19.08 - 18.83	Pole + Reinf.	TP38.864x38.807x0.875	Reinf. 4 Tension Rupture	79.2%	Pass
18.83 - 18	Pole + Reinf.	TP39.055x38.864x0.875	Reinf. 4 Tension Rupture	79.4%	Pass
18 - 17.75	Pole + Reinf.	TP39.113x39.055x1	Reinf. 1 Tension Rupture	70.5%	Pass
17.75 - 12.75	Pole + Reinf.	TP40.264x39.113x0.975	Reinf. 1 Tension Rupture	71.9%	Pass
12.75 - 7.75	Pole + Reinf.	TP41.415x40.264x0.95	Reinf. 1 Tension Rupture	73.2%	Pass
7.75 - 4	Pole + Reinf.	TP42.279x41.415x0.95	Reinf. 1 Tension Rupture	74.1%	Pass
4 - 3.75	Pole + Reinf.	TP42.337x42.279x0.95	Reinf. 1 Tension Rupture	73.0%	Pass
3.75 - 3	Pole + Reinf.	TP42.509x42.337x0.95	Reinf. 1 Tension Rupture	73.2%	Pass
3 - 2.75	Pole + Reinf.	TP42.567x42.509x1.025	Reinf. 3 Tension Yield	63.3%	Pass
2.75 - 0	Pole + Reinf.	TP43.2x42.567x1	Reinf. 3 Tension Yield	63.9%	Pass
				Summary	
			Pole	87.6%	Pass
			Reinforcement	91.8%	Pass
			Overall	91.8%	Pass

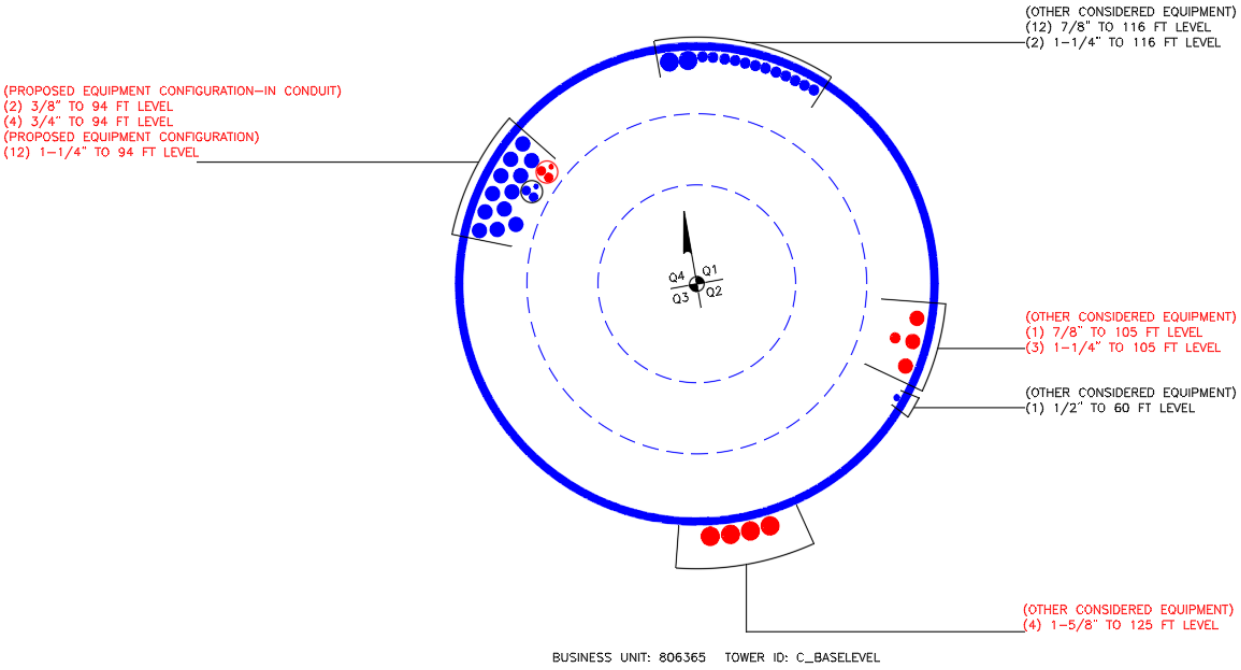
Additional Calculations

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
129 - 124	562	n/a	562	18.41	n/a	18.41	7.6%															
124 - 119	562	n/a	562	18.41	n/a	18.41	25.3%															
119 - 115.5	562	n/a	562	18.41	n/a	18.41	42.4%															
115.5 - 115	781	n/a	781	20.54	n/a	20.54	36.9%															
115 - 110	593	n/a	593	13.19	n/a	13.19	51.8%															
110 - 105	709	n/a	709	13.99	n/a	13.99	67.3%															
105 - 100	839	n/a	839	14.80	n/a	14.80	85.1%															
100 - 99.25	860	n/a	860	14.93	n/a	14.93	87.6%															
99.25 - 99	867	866	1732	14.97	13.50	28.47	42.9%															71.7%
99 - 94	1015	955	1970	15.77	13.50	29.27	52.3%															85.3%
94 - 92.08	1076	991	2067	16.09	13.50	29.59	56.7%															91.8%
92.08 - 91.83	1084	1991	3075	16.13	27.00	43.13	38.8%									62.7%						62.7%
91.83 - 86.83	1256	2183	3439	16.94	27.00	43.94	46.5%									73.7%						73.7%
86.83 - 81.83	1445	2383	3828	17.74	27.00	44.74	53.9%									83.5%						83.5%
81.83 - 78	1602	2543	4145	18.36	27.00	45.36	59.3%									90.3%						90.3%
78 - 73	2454	2676	5130	26.85	27.00	53.85	50.0%									86.5%						86.5%
73 - 71.5	2550	2742	5292	27.20	27.00	54.20	51.3%									88.4%						88.4%
71.5 - 71.25	2566	3223	5790	27.25	31.50	58.75	47.3%								74.4%							81.4%
71.25 - 67.92	2789	3397	6186	28.02	31.50	59.52	49.9%								77.7%							85.2%
67.92 - 67.67	2807	4651	7458	28.08	42.38	70.45	41.8%								65.0%						64.3%	
67.67 - 66.33	2900	4748	7648	28.39	42.38	70.76	42.7%								66.2%						65.4%	
66.33 - 66.08	2993	6001	8994	28.45	63.63	92.07	41.8%								61.9%					42.7%	53.1%	
66.08 - 61.08	3370	6462	9832	29.60	63.63	93.23	45.0%								65.8%					45.5%	56.4%	
61.08 - 56.5	3741	6900	10641	30.66	63.63	94.28	47.8%								69.0%					47.9%	59.3%	
56.5 - 56.25	3762	6924	10687	30.72	63.63	94.34	48.0%		69.2%											48.1%	59.4%	
56.25 - 51.25	4200	7420	11620	31.87	63.63	95.49	51.0%		72.4%											50.5%	62.2%	
51.25 - 46.25	4670	7934	12604	33.02	63.63	96.65	53.9%		75.4%											52.7%	64.8%	
46.25 - 42	5096	8384	13480	34.00	63.63	97.63	56.3%		77.7%											54.5%	66.9%	
42 - 35.75	6508	6926	13434	41.71	45.63	87.34	59.5%						82.4%	79.5%						65.5%		
35.75 - 35.08	6595	6985	13580	41.90	45.63	87.52	59.7%						82.7%	79.8%						65.7%		
35.08 - 34.83	6627	7007	13634	41.97	45.63	87.59	59.9%						82.8%	79.9%				68.4%				
34.83 - 31.25	7106	7325	14432	42.96	45.63	88.59	61.4%						84.1%	81.3%				69.8%				
31.25 - 31	7052	8414	15466	43.03	56.25	99.28	55.4%						79.1%	73.4%				70.6%	66.6%			
31 - 26	7756	8932	16688	44.42	56.25	100.67	57.4%						80.9%	75.1%				72.3%	68.3%			
26 - 22	8351	9358	17709	45.53	56.25	101.78	58.9%						82.3%	76.4%				73.5%	69.5%			
22 - 21.75	8577	11589	20166	45.60	64.38	109.97	54.7%					63.1%	77.9%	63.8%				68.1%	68.4%			
21.75 - 20.5	8773	11757	20530	45.95	64.38	110.32	55.1%					63.4%	78.3%	64.1%				68.4%	68.7%			
20.5 - 20.25	8812	11791	20603	46.01	64.38	110.39	55.2%				78.4%	63.5%		64.2%				68.5%	68.8%			
20.25 - 19.08	8999	11951	20949	46.34	64.38	110.71	55.6%				78.8%	63.8%		64.5%				68.8%	69.1%			
19.08 - 18.83	8897	11055	19952	46.41	56.25	102.66	57.2%				79.2%	76.8%						74.9%	74.1%			
18.83 - 18	9029	11160	20189	46.64	56.25	102.89	57.4%				79.4%	77.0%						75.1%	74.3%			
18 - 17.75	9004	13818	22822	46.71	74.25	120.96	48.2%	70.5%			66.7%	64.9%						63.5%	62.8%			
17.75 - 12.75	9830	14608	24438	48.10	74.25	122.35	49.8%	71.9%			68.1%	66.2%						64.8%	64.1%			
12.75 - 7.75	10705	15421	26126	49.49	74.25	123.74	51.3%	73.2%			69.3%	67.5%						66.0%	65.3%			
7.75 - 4	11394	16045	27439	50.53	74.25	124.78	52.5%	74.1%			70.2%	68.3%						66.8%	66.2%			
4 - 3.75	11427	16365	27792	50.60	72.38	122.97	51.8%	73.0%									64.1%	63.9%	61.1%			
3.75 - 3	11568	16489	28057	50.80	72.38	123.18	52.0%	73.2%									64.3%	64.1%	61.3%			
3 - 2.75	11623	18367	29990	50.87	74.06	124.94	50.8%			63.3%							61.0%	60.8%	58.4%			
2.75 - 0	12154	18863	31017	51.64	74.06	125.70	51.6%			63.9%							61.5%	61.4%	59.0%			

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

APPENDIX B

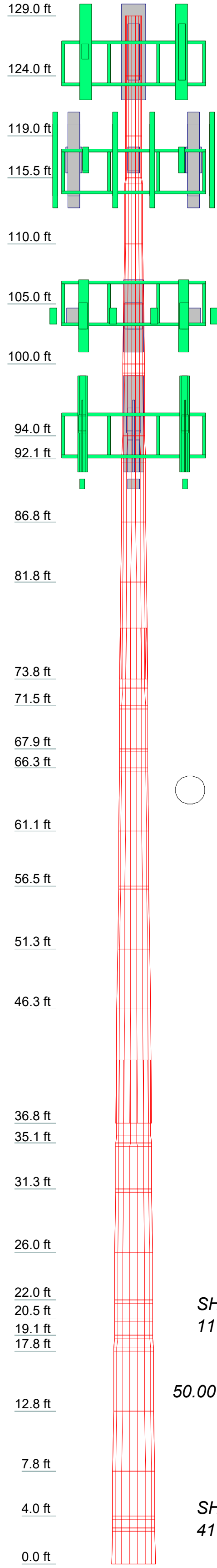
BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(12) 7/8" TO 116 FT LEVEL
(2) 1-1/4" TO 116 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION-IN CONDUIT)
(2) 3/8" TO 94 FT LEVEL
(4) 3/4" TO 94 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(12) 1-1/4" TO 94 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 105 FT LEVEL
(3) 1-1/4" TO 105 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 60 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(4) 1-5/8" TO 125 FT LEVEL
BUSINESS UNIT: 806365 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	0	0.3750		16.0000	16.0000	A53-B-35	0.3
2	5.0000	0	0.3750		16.0000	16.0000		0.3
3–4	[illegible]	0	[illegible]		[illegible]	[illegible]		0.2 / 0.0
5	5.0000	12	0.2188		17.8[illegible]	18.9603		0.2
6	5.0000	12	0.2188		18.9603	20.1106		0.2
7	5.0000	12	0.2188		20.1106	21.2609		0.2
8–9	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
10	5.0000	12	0.4375		21.49[illegible]	22.64[illegible]		0.5
11–12	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		0.2 / 0.0
13	5.0000	12	0.6313		23.14[illegible]	24.29[illegible]		0.7
14	5.0000	12	0.6063		24.2908	25.4411		0.7
15	[illegible]0800	12	0.5938	4.2500	25.4411	27.3000		1.3
16–22	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
23	5.0000	12	0.9875		28.62[illegible]	29.77[illegible]		1.6
24	[illegible]5800	12	[illegible]9625		[illegible]7713	[illegible]8233	A572-65	1.4
25	[illegible]	12	[illegible]		[illegible]	[illegible]		0.1
26	5.0000	12	0.9375		30.8[illegible]	32.0293		1.6
27	5.0000	12	0.9125		32.0293	33.1778		1.6
28	[illegible]5000	12	0.8875	5.2500	33.1778	35.3600		3.2
29–33	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
34	5.0000	12	0.8375		36.06[illegible]	37.21[illegible]		1.7
35	[illegible]0000	12	[illegible]8250		[illegible]2132	[illegible]8343		1.4
36–42	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]
43	5.0000	12	0.9750		39.1[illegible]	40.26[illegible]		2.1
44	5.0000	12	0.9500		40.2642	41.4155		2.1
45	[illegible]7500	12	[illegible]9500		[illegible]4155	[illegible]2790		1.6
46–49	2.7[illegible]	12	1.00[illegible]		42.[illegible]	43.[illegible]		1.2000
								32.2



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125.00 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.70 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H Annex S

ALL REACTIONS ARE FACTORED

AXIAL 100 K
SHEAR 11 K
MOMENT 1096 kip-ft
TORQUE 2 kip-ft
50.00 mph WIND - 1.7000 in ICE

AXIAL 60 K
SHEAR 41 K
MOMENT 3875 kip-ft
TORQUE 8 kip-ft
REACTIONS - 125.00 mph WIND

Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job: ***115-Ft Monopole / HRT 303 943203***			
Project: ***PJF# 37519-0549.001.7805 / BU# 806365***			
Client: Crown Castle	Drawn by: jacuna	App'd:	
Code: TIA-222-H	Date: 02/12/19	Scale: NTS	
Path:		Dwg No. E-1	

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

Job Number:	**37519-0549.001.7805**	**Page:**	1
Site Number:	806365	**Date:**	**2/13/2019**
Site Name:	HRT 303 943203	**Version:**	2.6
By:	**JAB**	**Effective:**	12/10/2015

Tube Bypas Analysis

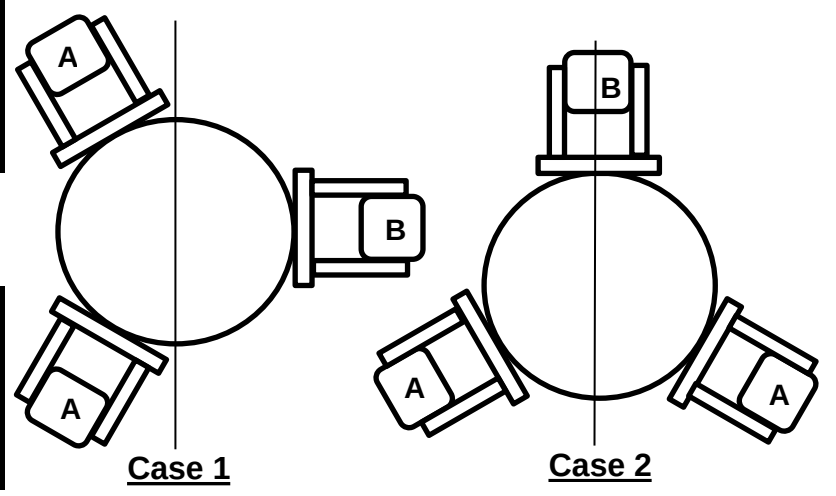
Revision= **LRFD** Passing= **100%** Design/Analysis = **Analysis** @ **115** ft - **0** in elevation

TNX Tower Output @ Connection:			
Moment	=	**111.20**	k-ft
Axial	=	**8.43**	kips
Shear	=	**16.70**	kips
Design Capacity	=		
Extension Geometry:			
Diameter	=	**16.00**	in
Thickness	=	**3/8**	in
Height	=	**14**	ft
Steel Grade	=	**A53 Gr. B**	
Extension Offset	=		in
Gap Height	=		in
Pole Offset	=		in
Pole Geometry:			
Diameter	=	**17.81**	in
Thickness	=	**3/16**	in
Steel Grade	=	**A572 Gr. 65**	
Flange/Mount Diam.	=		in
Tube Bypass Information:			
Number of Legs	=	**3**	
Unbraced Length	=	**48**	in
Tube Circle	=	**34.31**	in
K	=	**2.10**	

Type	**HSS 6x6x5/8**	
	Extension	**Pole**
Blind Bolt	**EXISTING AJAX**	**EXISTING AJAX**
Method	**Case 2**	**Case 2**
Bolt Qty.	**9**	**9**
Spacing (in)	**3**	**3**
End Dist. (in)	**3**	**3**

New Port Information		
Elevation #1=	**50**	ft
Elevation #2=		ft
Elevation #3=		ft
Elevation #4=		ft

Analysis Reactions		
Moment k-ft	Axial kips	Shear kips
111.20	8.43	16.70



Load Distribution	
Moment of Inertia, I in^2	Axial / Leg kips
441.44	2.810

Member Forces						
Case	d	Tension (kips)	Comp. (kips)	Mx (k-in)	My (k-in)	M (k-in)
1a	8.58	23.12	28.74	231.40	133.60	267.20
1b	17.16	49.05	54.67	0.00	267.20	267.20
2a	14.86	42.10	47.72	133.60	231.40	267.20
2b	0.00	2.81	2.81	267.20	0.00	267.20

Compression Strength							
Case	$4.71*\sqrt{(E/F_y)}$	KL/r	F_e ksi	F_{cr} ksi	øcPnc kips	P_{rc} kips	Capacity
1a	118.26	46.45	132.65	39.79	418.94	28.74	6.5%
1b	118.26	46.45	132.65	39.79	418.94	54.67	12.4%
2a	118.26	46.45	132.65	39.79	418.94	47.72	10.8%
2b	118.26	46.45	132.65	39.79	418.94	2.81	0.6%

Flexural Strength						
Case	ø	I_3 in^4	∑I in^4	M k-in	øbMn k-in	Capacity
1a	60.00	55.10	165.30	267.20	960.48	26.5%
1b	0.00	55.10	165.30	267.20	960.48	26.5%
2a	30.00	55.10	165.30	267.20	960.48	26.5%
2b	90.00	55.10	165.30	267.20	960.48	26.5%

Tensile Strength					
Case	P_{n1} kips	P_{n2} kips	øtPnt kips	P_{rt} kips	Capacity
1a	538.20	597.04	447.78	23.12	4.9%
1b	538.20	597.04	447.78	49.05	10.4%
2a	538.20	597.04	447.78	42.10	9.0%
2b	538.20	597.04	447.78	2.81	0.6%

Combined Strength			
Case	Flexure + Tension (H1)		
	Prt / Pnt	Mr / Mn	Capacity
1a	0.025	0.265	27.6%
1b	0.052	0.265	30.2%
2a	0.045	0.265	29.5%
2b	0.003	0.265	25.5%
Case	Flexure + Compression (H1)		
	Prc / Pnc	Mr / Mn	Capacity
1a	0.033	0.265	28.3%
1b	0.062	0.265	31.2%
2a	0.054	0.265	30.4%
2b	0.003	0.265	25.5%

Bolt Check									
Case	Location	Tube Comp. kips	e in	Shear on Bolt kips	Bearing Capacity kips	Shear Capacity kips	Tension on Bolt kips	Tension Capacity kips	Limit Capacity
1a	Ext	28.74	9.155	3.24	45.32	37.00	4.64	30.00	3.0%
	Pole	28.74	8.25	6.51	30.21	37.00	6.49	30.00	8.9%
1b	Ext	54.67	9.155	6.07	45.32	37.00	8.96	30.00	11.1%
	Pole	54.67	8.25	6.07	30.21	37.00	12.59	30.00	20.6%
2a	Ext	47.72	9.155	5.31	45.32	37.00	7.82	30.00	8.4%
	Pole	47.72	8.25	6.23	30.21	37.00	10.95	30.00	16.8%
2b	Ext	2.81	9.155	0.69	45.32	37.00	0.43	30.00	0.1%
	Pole	2.81	8.25	6.56	30.21	37.00	0.39	30.00	4.5%

*TIA-222 H Annex S - All equations based on AISC 13th Edition

PAUL J. FORD
& COMPANY
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Phone 614.221.6679 www.pauljford.com

v4.5.3 - Effective 11-27-18

Date: 2/12/2019
PJF Project: 37519-0549.001.7805
Client Ref. # BU 806365
Site Name: HRT 303 943203
Description: 129' Monopole
Owner: CCI
Engineer: JAB

Asymmetric Anchor Rod Analysis

Moment =	3875	k-ft	TIA Ref.	H	η =	0.50	for Base Plates, Rev. G Sect. 4.9.9
Axial =	60.0	kips (+Comp, -Tension)	ASIF =	N/A	Threads =	N-Included	for Flange Plates, Rev. G & H
Shear =	41.0	kips	Max Ratio =	100.0%	lar =	0.25	in, for Base Plates, Rev. H Sect 4.9.9 (Max of Original Items)
Anchor Qty =	15		Location =	Base Plate	Grout =	0.00	psi, for Base Plates, Rev. H Sect 4.9.9 (Note)

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Type	Area Override, in^2	Area, in^2	Max Net Comp, kips	Max Net Tension, kips	Tension Override, kips	Comp Override, kips	Tension Cap, kips	Comp Cap, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	51.23	Original	0.00	3.98	225.10	215.10	0.00	0.00	243.75	243.75	88.2%
2	2.250	#18J A615 Gr 75	75	100	30.0	51.23	Original	0.00	3.98	222.95	212.95	0.00	0.00	243.75	243.75	87.3%
3	2.250	#18J A615 Gr 75	75	100	60.0	51.23	Original	0.00	3.98	222.12	212.12	0.00	0.00	243.75	243.75	87.0%
4	2.250	#18J A615 Gr 75	75	100	90.0	51.23	Original	0.00	3.98	223.87	213.87	0.00	0.00	243.75	243.75	87.7%
5	2.250	#18J A615 Gr 75	75	100	120.0	51.23	Original	0.00	3.98	226.68	216.68	0.00	0.00	243.75	243.75	88.8%
6	2.250	#18J A615 Gr 75	75	100	150.0	51.23	Original	0.00	3.98	227.75	217.75	0.00	0.00	243.75	243.75	89.2%
7	2.250	#18J A615 Gr 75	75	100	180.0	51.23	Original	0.00	3.98	225.81	215.81	0.00	0.00	243.75	243.75	88.4%
8	2.250	#18J A615 Gr 75	75	100	210.0	51.23	Original	0.00	3.98	222.35	212.35	0.00	0.00	243.75	243.75	87.1%
9	2.250	#18J A615 Gr 75	75	100	240.0	51.23	Original	0.00	3.98	220.36	210.36	0.00	0.00	243.75	243.75	86.3%
10	2.250	#18J A615 Gr 75	75	100	270.0	51.23	Original	0.00	3.98	221.45	211.45	0.00	0.00	243.75	243.75	86.7%
11	2.250	#18J A615 Gr 75	75	100	300.0	51.23	Original	0.00	3.98	224.25	214.25	0.00	0.00	243.75	243.75	87.8%
12	2.250	#18J A615 Gr 75	75	100	330.0	51.23	Original	0.00	3.98	225.95	215.95	0.00	0.00	243.75	243.75	88.5%
13	2.250	A193 Gr B7	105	125	73.0	63.22	Post-Installed	0.00	3.98	268.00	268.00	0.00	0.00	304.47	341.01	74.8%
14	2.250	A193 Gr B7	105	125	197.0	63.22	Post-Installed	0.00	3.98	269.80	269.80	0.00	0.00	304.47	341.01	75.4%
15	2.250	A193 Gr B7	105	125	313.0	63.22	Post-Installed	0.00	3.98	271.81	271.81	0.00	0.00	304.47	341.01	75.9%
									59.69							

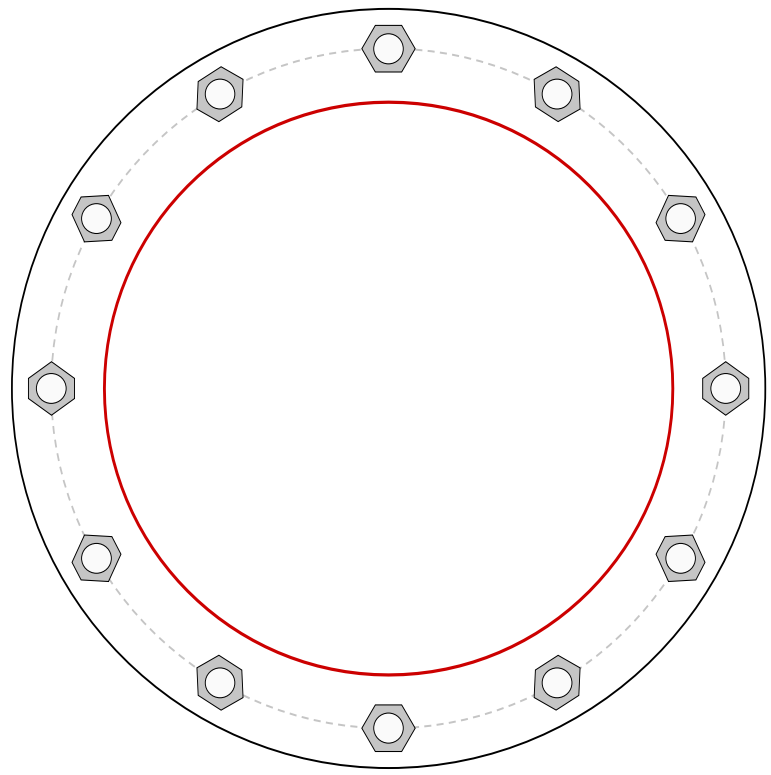
Monopole Base Plate Connection

Site Info	
BU #	806365
Site Name	HRT 303 943203
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.25

Applied Loads	
Moment (kip-ft)	2852.84
Axial Force (kips)	60.00
Shear Force (kips)	41.00

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 51.23" BC

Base Plate Data

57.23" OD x 2.625" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

43.2" x 0.375" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 227.57
Vu = 3.42
Mu = n/a

Reactions adjusted to account for additional anchor rods.

Base Plate Summary

Max Stress (ksi):	29.14	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**51.4%**	**Pass**

Pier and Pad Foundation

BU # :	806365
Site Name:	HRT 303 943203
App. Number:	

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	60	kips
Base Shear, Vu_comp:	41	kips
Moment, M_u:	3875	ft-kips
Tower Height, **H**:	129	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	0.67	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	22	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	10.3	ft
Pad Width, **W**:	28	ft
Pad Thickness, **T**:	5.1	ft
Pad Rebar Size (Bottom), **Sp**:	11	
Pad Rebar Quantity (Bottom), **mp**:	24	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	135	pcf
Ultimate Gross Bearing, Qult:	20.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	36	degrees
SPT Blow Count, N_{blows}:	60	
Base Friction, μ:	0.35	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	99	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	736.95	41.00	**5.3%**	**Pass**
Bearing Pressure (ksf)	15.00	2.66	**16.9%**	**Pass**
*Overturning (kip*ft)*	15457.57	4333.31	**28.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	4569.17	4115.67	**85.8%**	**Pass**
Pier Compression (kip)	18370.97	100.66	**0.5%**	**Pass**
*Pad Flexure (kip*ft)*	9228.34	1505.44	**15.5%**	**Pass**
Pad Shear - 1-way (kips)	1548.24	167.21	**10.3%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.017	**9.7%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	14411.53	2469.40	**16.3%**	**Pass**

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

Soil Rating*:	**28.0%**
Structural Rating*:	**85.8%**

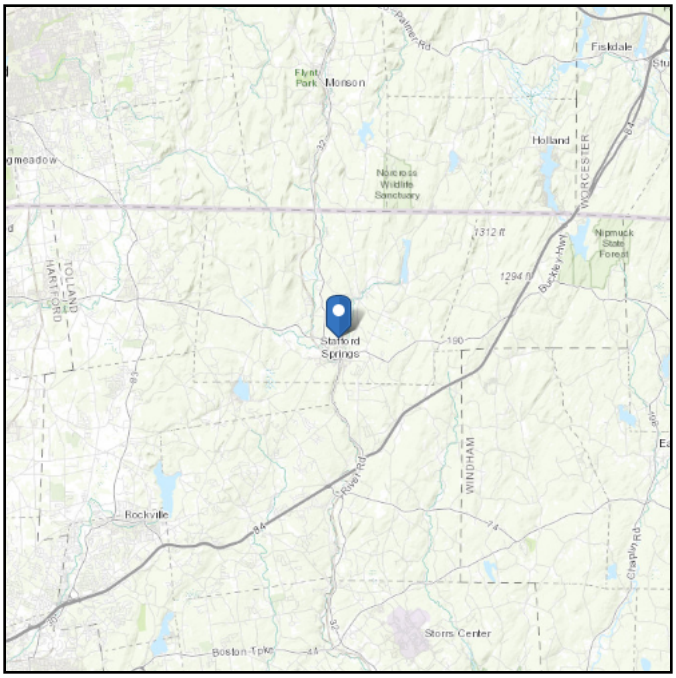
Version 3.1.0

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 754.15 ft (NAVD 88)
Latitude: 41.964222
Longitude: -72.304944



Wind

Results:

Wind Speed:	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	94 Vmph
100-year MRI	101 Vmph

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

Date Accessed: Fri Feb 08 2019

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

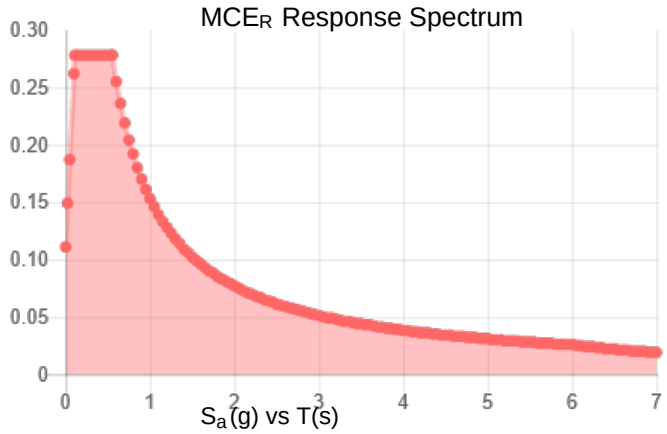
Seismic

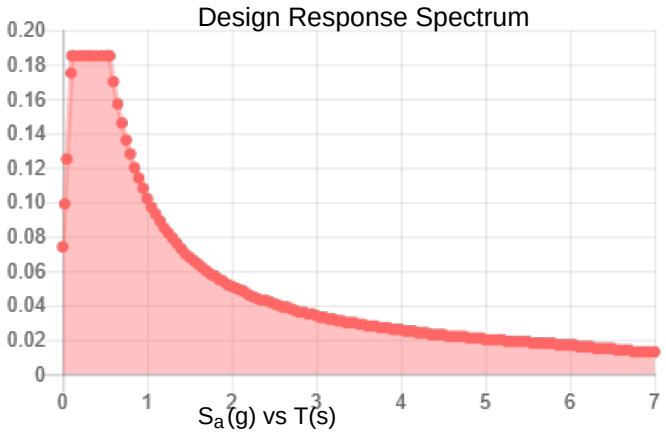
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.174	S_{DS} :	0.185
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.085
S_{MS} :	0.278	PGA_M :	0.137
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Feb 08 2019

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Feb 08 2019

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

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

Date: January 30, 2019

Charles McGuirt
Crown Castle
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(704) 405-6607

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Tulsa, OK 74119
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btwo@btgrp.com

Subject:	**Mount Modification Report**	
Carrier Designation:	**AT&T Mobility Equipment Change-Out**	
	Carrier Site Number:	10035263
	Carrier Site Name:	CTL01049
Crown Castle Designation:	**Crown Castle BU Number:**	806365
	Crown Castle Site Name:	HRT 303 943203
	Crown Castle JDE Job Number:	548510
	Crown Castle Order Number:	471524 rev. 0
Engineering Firm Designation:	**B+T Group Report Designation:**	131593.003.01
Site Data:	**Brendon & Quinn Streets, Stafford, CT, Tolland, 06076.**	
	Latitude 41° 57' 51.20" Longitude -72° 18' 17.80"	
Structure Information:	**Tower Height & Type:**	**129 ft. Monopole**
	Mount Elevation:	**94 ft.**
	Mount Type:	**15.5 ft. Platform Mount**

Dear Mr. McGuirt,

B+T Group is pleased to submit this **"Mount Modification Report"** to determine the structural integrity of AT&T Mobility's antenna mounting system with the proposed appurtenance and equipment addition on the above-mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

Platform Mount **Sufficient**

***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 124 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *B+T Group* 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.

Mount structural analysis prepared by: Joseph Variamparampil

Respectfully submitted by: B&T Engineering, Inc.

COA: PEC.0001564 Expires: 02/10/2020

Scott S. Vance, P.E.

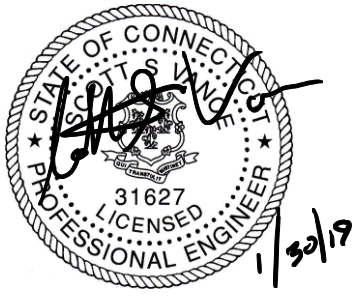


TABLE OF CONTENTS

1) INTRODUCTION

This is a 15.5 ft. Platform Mount, Mapped by B+T Group.

2) ANALYSIS CRITERIA

Building Code: 2015 IBC
TIA-222 Revision: TIA-222-H
Risk Category: II
Ultimate Wind Speed: 124 mph
Exposure Category: C
Ice Thickness: 2 in
Wind Speed with Ice: 50 mph
Live Loading Wind Speed: 30 mph
Man Live Load at Mid/End-Points: 250 lb.
Man Live Load at Mount Pipes: 250 lb.

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
94	95	3	CCI	HPA65R-BU8A	15.5 ft. Platform Mount
		3	Kathrein	80010966	
		3	Powerwave	7770.00	
		3	Ericsson	RRUS 4449 B5/B12	
		3	Ericsson	RRUS 8843 B2/B66A	
		2	Raycap	DC6-48-60-18-8F	
94	90	3	Communication Components Inc.	DTMABP7819VG12A	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	-	Crown Castle
Mount Mapping	By B+T Group	Date: 01/14/2019	On File
Mount Analysis Report	By B+T Group	Date: 01/22/2019	On File

3.1) Analysis Method

RISA-3D (Version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed by B+T Group, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C). In addition, this analysis is in accordance with OTHER SOW.

3.2) Assumptions

1. The mount was properly fabricated and installed in accordance with its original design and manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
6. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
10. The following material grades were assumed (Unless Noted Otherwise):
    (a) Connection Bolts : ASTM A325
    (b) Steel Pipe : ASTM A53 (GR. 35)
    (c) HSS (Round) : ASTM 500 (GR. B-42)
    (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
    (e) Channel : ASTM A36 (GR. 36)
    (f) Steel Solid Rod : ASTM A36 (GR. 36)
    (g) Steel Plate : ASTM A36 (GR. 36)
    (h) Steel Angle : ASTM A36 (GR. 36)
    (i) UNISTRUT : ASTM A570 (GR. 33)

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

Notes	Component	Critical Member	Centerline (ft.)	% Capacity	Pass / Fail
1,2	Main Horizontals	M1	94	37.2	Pass
	Support Angles	M18	94	59.9	Pass
	Support Tube	M26	94	20.6	Pass
	Connection Plates	M20	94	17.8	Pass
	Mount Pipes	M45	94	72.0	Pass
3	Handrail Pipes	M45A	94	47.4	Pass
	Handrail Connection Angles	M62	94	50.1	Pass
	Kicker Angles	M60	94	19.5	Pass

Structure Rating (max from all components) =	72.0%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical
3) Proposed Modification Members

4.1) RECOMMENDATIONS

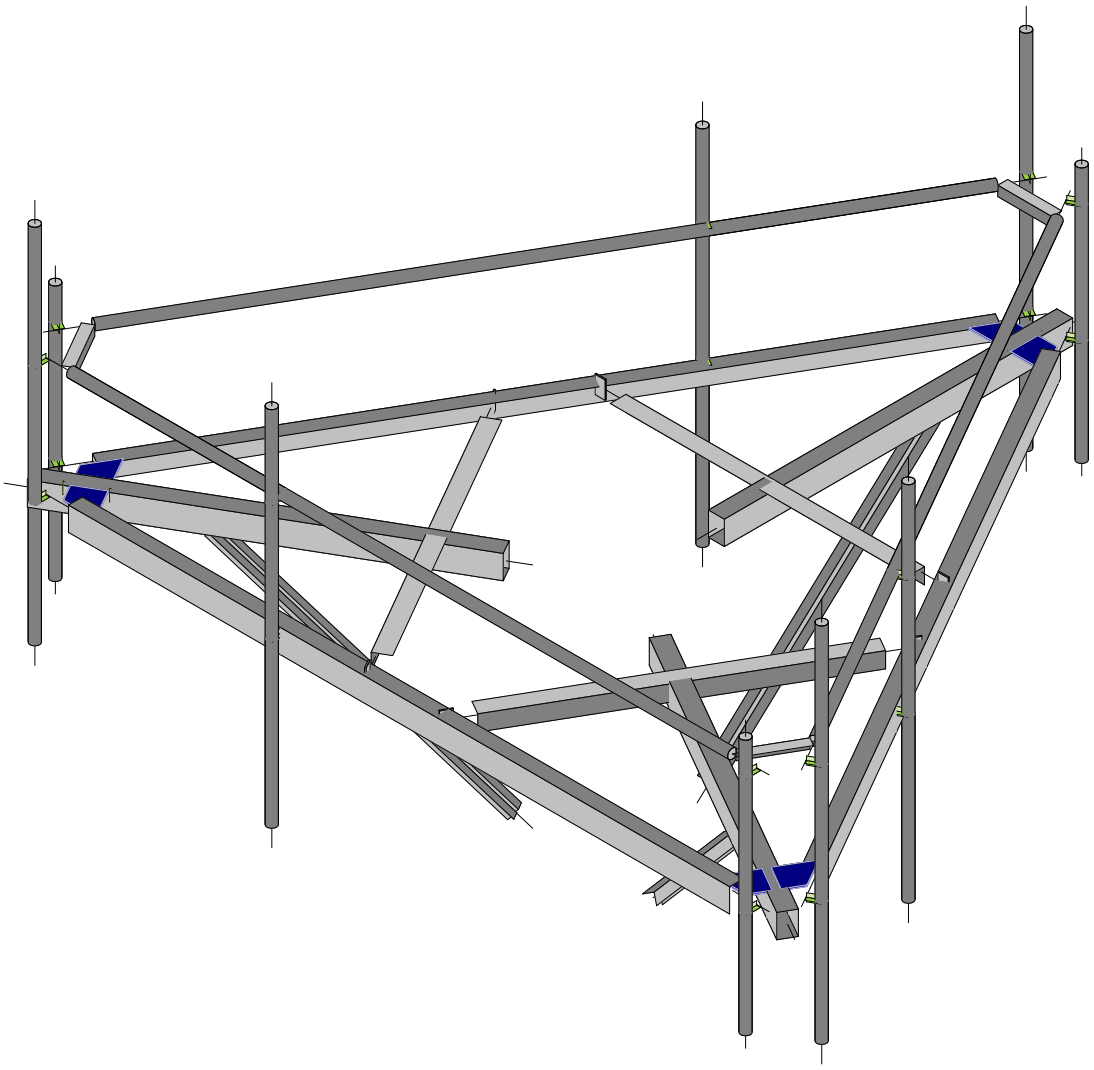
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Kicker support, SitePro1 and #PRK-1245LW
2. Handrail Pipes and connection angles

Engineering detail drawings have been provided in Appendix C – Mount Modification Design Drawings.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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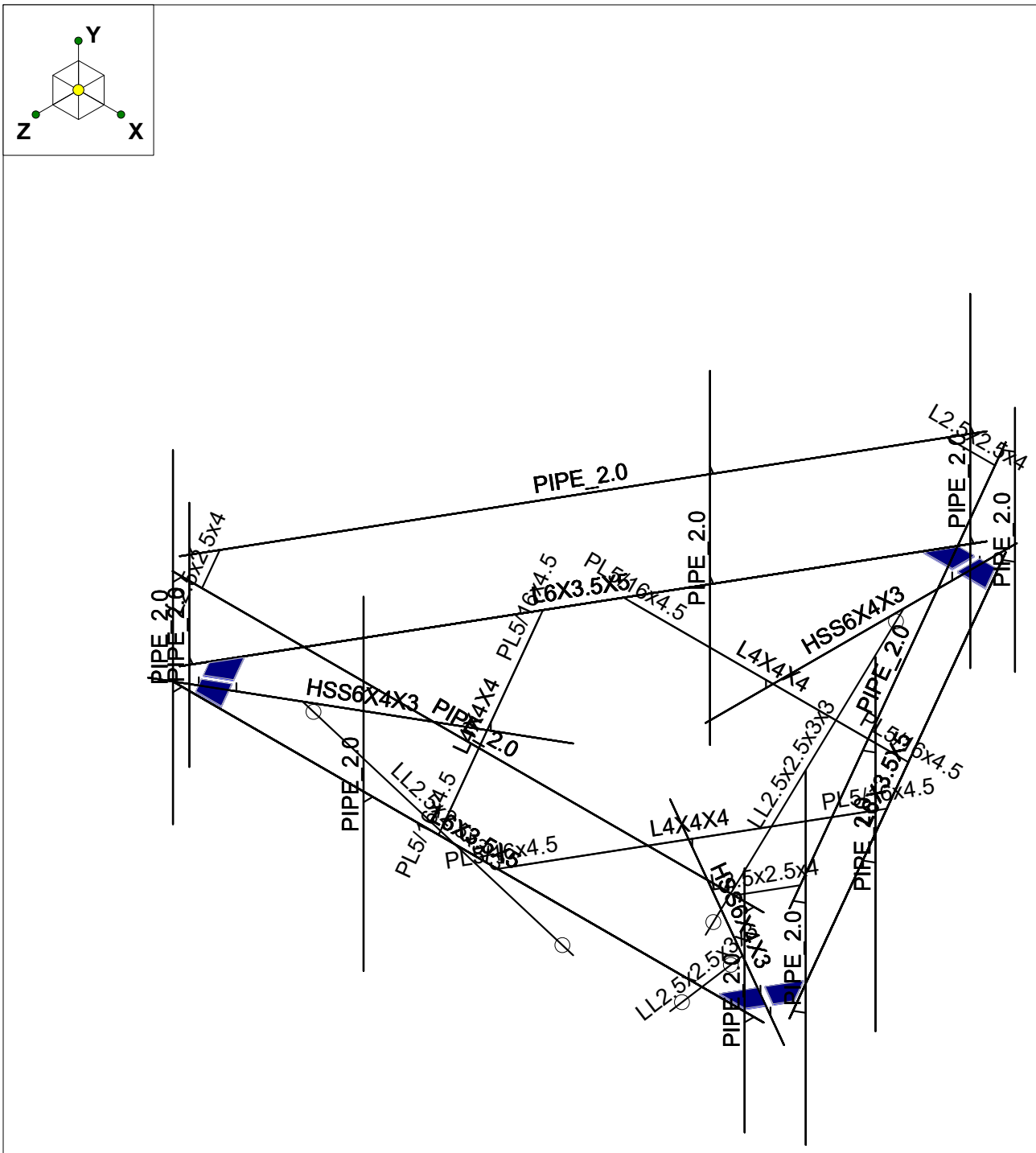

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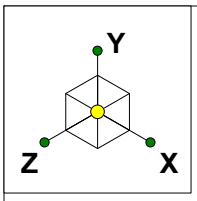

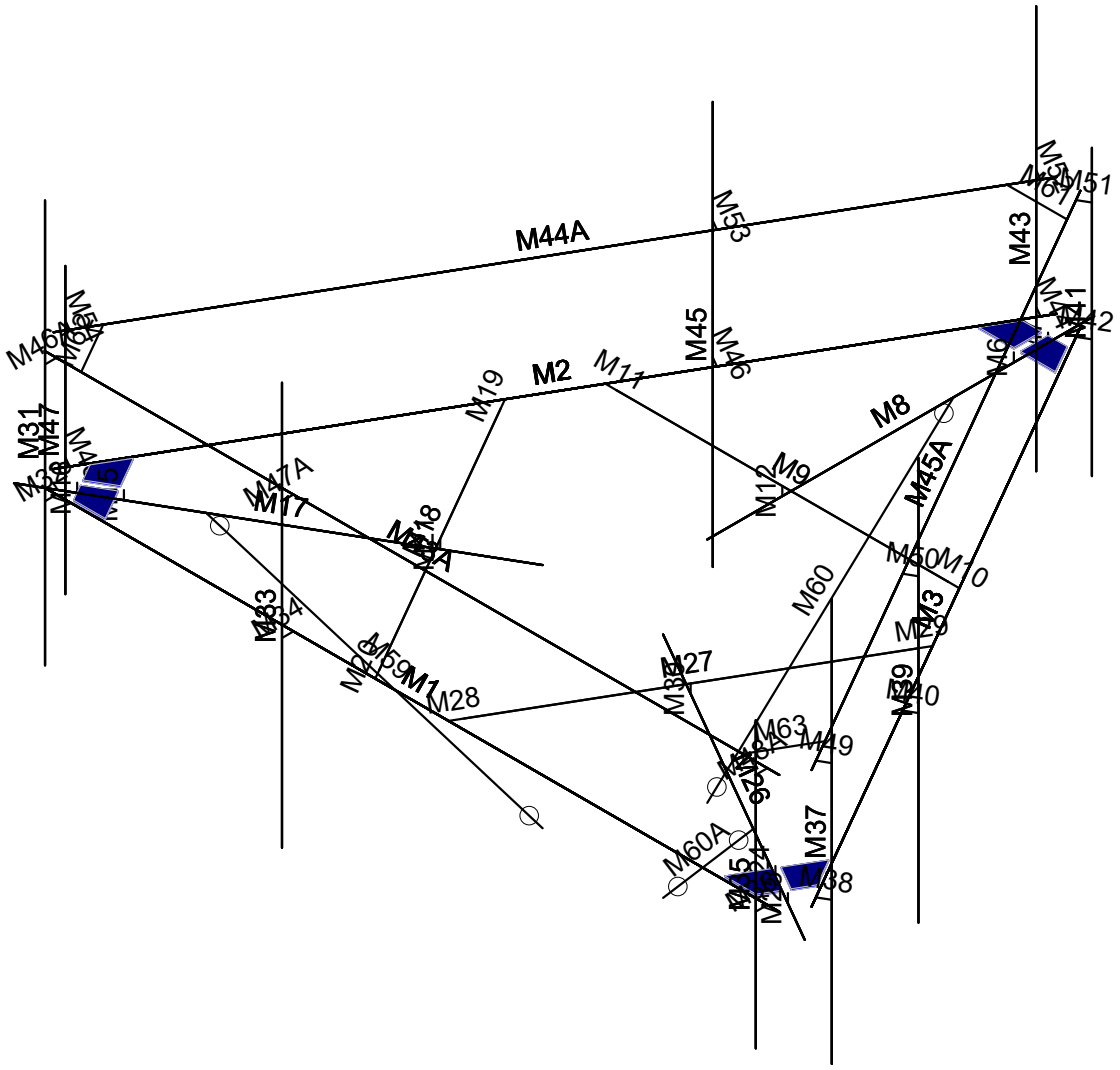

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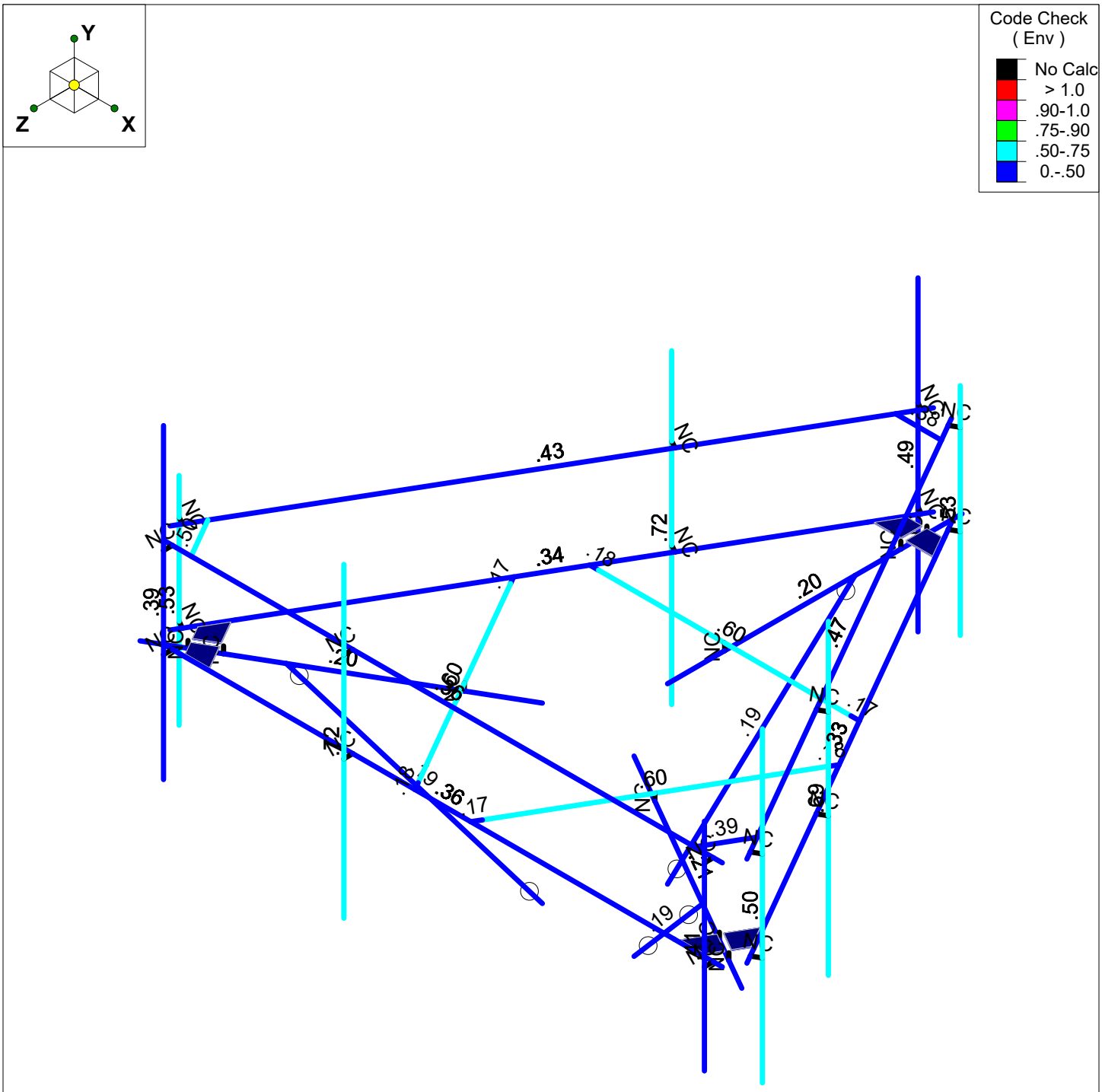

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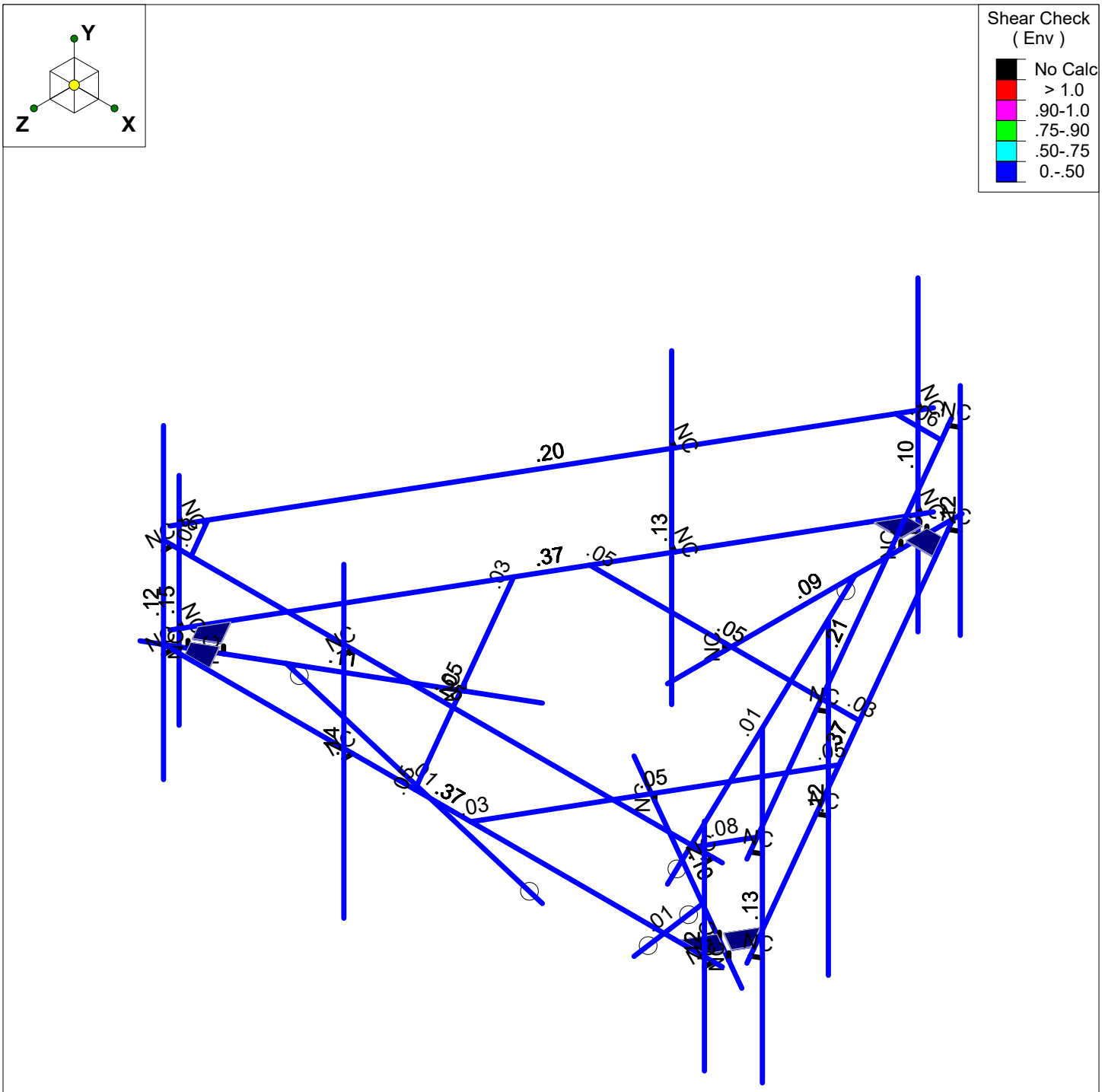

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APPENDIX B

SOFTWARE INPUT CALCULATIONS AND SOFTWARE ANALYSIS OUTPUT

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MF-H1	L6X3.5X5	Beam	Single Angle	A36 Gr.36	Typical	2.89	2.84	10.9	.099
2	F1-SA1	L4X4X4	Beam	Single Angle	A36 Gr.36	Typical	1.93	3	3	.044
3	F1-C1	PL5/16x4.5	Beam	RECT	A36 Gr.36	Typical	1.406	.011	2.373	.044
4	F1-S1	HSS6X4X3	Beam	Tube	A500 Gr.B Rect	Typical	3.28	8.76	16.4	18.2
5	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	New Handrail Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Reinforcement Angles	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
8	Kicker Angle	LL2.5x2.5x3x3	Beam	Double Angle (3/...	A36 Gr.36	Typical	1.8	2.46	1.07	.023

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	MF-H1	15.5			Lbyy						Lateral
2	M2	MF-H1	15.5			Lbyy						Lateral
3	M3	MF-H1	15.5			Lbyy						Lateral
4	M8	F1-S1	8.167			Lbyy						Lateral
5	M9	F1-SA1	7			Lbyy						Lateral
6	M10	F1-C1	.238			Lbyy						Lateral
7	M11	F1-C1	.238			Lbyy						Lateral
8	M17	F1-S1	8.167			Lbyy						Lateral
9	M18	F1-SA1	7			Lbyy						Lateral
10	M19	F1-C1	.238			Lbyy						Lateral
11	M20	F1-C1	.238			Lbyy						Lateral
12	M26	F1-S1	8.167			Lbyy						Lateral
13	M27	F1-SA1	7			Lbyy						Lateral
14	M28	F1-C1	.238			Lbyy						Lateral
15	M29	F1-C1	.238			Lbyy						Lateral
16	M31	MF-P1	8.5			Lbyy						Lateral
17	M33	MF-P1	8.5			Lbyy						Lateral
18	M35	MF-P1	6			Lbyy						Lateral
19	M37	MF-P1	8.5			Lbyy						Lateral
20	M39	MF-P1	8.5			Lbyy						Lateral
21	M41	MF-P1	6			Lbyy						Lateral
22	M43	MF-P1	8.5			Lbyy						Lateral
23	M45	MF-P1	8.5			Lbyy						Lateral
24	M47	MF-P1	6			Lbyy						Lateral
25	M43A	New Handr...	15.5			Lbyy						Lateral
26	M44A	New Handr...	15.5			Lbyy						Lateral
27	M45A	New Handr...	15.5			Lbyy						Lateral
28	M60	Kicker Angle	7.084			Lbyy						Lateral
29	M61	Reinforcem...	1.27			Lbyy						Lateral
30	M62	Reinforcem...	1.27			Lbyy						Lateral
31	M63	Reinforcem...	1.27			Lbyy						Lateral
32	M59	Kicker Angle	7.084			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Functi...
33	M60A	Kicker Angle	7.084			Lbyy						Lateral

Joint Loads and Enforced Displacements (BLC 9 : Live Load a)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N58	L	Y	-.25
2	N70	L	Y	-.25
3	N82	L	Y	-.25

Joint Loads and Enforced Displacements (BLC 10 : Live Load b)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N62	L	Y	-.25
2	N74	L	Y	-.25
3	N86	L	Y	-.25

Joint Loads and Enforced Displacements (BLC 11 : Live Load c)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N66	L	Y	-.25
2	N78	L	Y	-.25
3	N90	L	Y	-.25

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	Y	-.018	%5
2	M35	Y	-.018	%80
3	M35	Y	-.071	%35
4	M35	Y	0	0
5	M35	Y	0	0
6	M33	Y	-.057	%10
7	M33	Y	-.057	%90
8	M33	Y	0	0
9	M33	Y	0	0
10	M33	Y	0	0
11	M31	Y	-.027	%10
12	M31	Y	-.027	%90
13	M31	Y	-.019	%80
14	M31	Y	-.072	%45
15	M31	Y	0	0
16	M47	Y	-.018	%5
17	M47	Y	-.018	%80
18	M47	Y	-.071	%35
19	M47	Y	0	0
20	M47	Y	0	0
21	M45	Y	-.057	%10
22	M45	Y	-.057	%90
23	M45	Y	0	0
24	M45	Y	0	0
25	M45	Y	0	0
26	M43	Y	-.027	%10
27	M43	Y	-.027	%90
28	M43	Y	-.019	%80
29	M43	Y	-.072	%45
30	M43	Y	0	0
31	M41	Y	-.018	%5

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
32	M41	Y	-.018	%80
33	M41	Y	-.071	%35
34	M41	Y	0	0
35	M41	Y	0	0
36	M39	Y	-.057	%10
37	M39	Y	-.057	%90
38	M39	Y	0	0
39	M39	Y	0	0
40	M39	Y	0	0
41	M37	Y	-.027	%10
42	M37	Y	-.027	%90
43	M37	Y	-.019	%80
44	M37	Y	-.072	%45
45	M37	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	Z	-.129	%5
2	M35	Z	-.129	%80
3	M35	Z	-.092	%35
4	M35	Z	0	0
5	M35	Z	0	0
6	M33	Z	-.406	%10
7	M33	Z	-.406	%90
8	M33	Z	0	0
9	M33	Z	0	0
10	M33	Z	0	0
11	M31	Z	-.263	%10
12	M31	Z	-.263	%90
13	M31	Z	-.046	%80
14	M31	Z	-.077	%45
15	M31	Z	0	0
16	M47	Z	-.129	%5
17	M47	Z	-.129	%80
18	M47	Z	-.092	%35
19	M47	Z	0	0
20	M47	Z	0	0
21	M45	Z	-.406	%10
22	M45	Z	-.406	%90
23	M45	Z	0	0
24	M45	Z	0	0
25	M45	Z	0	0
26	M43	Z	-.263	%10
27	M43	Z	-.263	%90
28	M43	Z	-.046	%80
29	M43	Z	-.077	%45
30	M43	Z	0	0
31	M41	Z	-.129	%5
32	M41	Z	-.129	%80
33	M41	Z	-.092	%35
34	M41	Z	0	0
35	M41	Z	0	0
36	M39	Z	-.406	%10
37	M39	Z	-.406	%90
38	M39	Z	0	0
39	M39	Z	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
40	M39	Z	0	0
41	M37	Z	-.263	%10
42	M37	Z	-.263	%90
43	M37	Z	-.046	%80
44	M37	Z	-.077	%45
45	M37	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	X	-.069	%5
2	M35	X	-.069	%80
3	M35	X	-.066	%35
4	M35	X	0	0
5	M35	X	0	0
6	M33	X	-.176	%10
7	M33	X	-.176	%90
8	M33	X	0	0
9	M33	X	0	0
10	M33	X	0	0
11	M31	X	-.188	%10
12	M31	X	-.188	%90
13	M31	X	-.016	%80
14	M31	X	-.063	%45
15	M31	X	0	0
16	M47	X	-.069	%5
17	M47	X	-.069	%80
18	M47	X	-.066	%35
19	M47	X	0	0
20	M47	X	0	0
21	M45	X	-.176	%10
22	M45	X	-.176	%90
23	M45	X	0	0
24	M45	X	0	0
25	M45	X	0	0
26	M43	X	-.188	%10
27	M43	X	-.188	%90
28	M43	X	-.016	%80
29	M43	X	-.063	%45
30	M43	X	0	0
31	M41	X	-.069	%5
32	M41	X	-.069	%80
33	M41	X	-.066	%35
34	M41	X	0	0
35	M41	X	0	0
36	M39	X	-.176	%10
37	M39	X	-.176	%90
38	M39	X	0	0
39	M39	X	0	0
40	M39	X	0	0
41	M37	X	-.188	%10
42	M37	X	-.188	%90
43	M37	X	-.016	%80
44	M37	X	-.063	%45
45	M37	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	Z	-.021	%5
2	M35	Z	-.021	%80
3	M35	Z	-.015	%35
4	M35	Z	0	0
5	M35	Z	0	0
6	M33	Z	-.065	%10
7	M33	Z	-.065	%90
8	M33	Z	0	0
9	M33	Z	0	0
10	M33	Z	0	0
11	M31	Z	-.042	%10
12	M31	Z	-.042	%90
13	M31	Z	-.007	%80
14	M31	Z	-.013	%45
15	M31	Z	0	0
16	M47	Z	-.021	%5
17	M47	Z	-.021	%80
18	M47	Z	-.015	%35
19	M47	Z	0	0
20	M47	Z	0	0
21	M45	Z	-.065	%10
22	M45	Z	-.065	%90
23	M45	Z	0	0
24	M45	Z	0	0
25	M45	Z	0	0
26	M43	Z	-.042	%10
27	M43	Z	-.042	%90
28	M43	Z	-.007	%80
29	M43	Z	-.013	%45
30	M43	Z	0	0
31	M41	Z	-.021	%5
32	M41	Z	-.021	%80
33	M41	Z	-.015	%35
34	M41	Z	0	0
35	M41	Z	0	0
36	M39	Z	-.065	%10
37	M39	Z	-.065	%90
38	M39	Z	0	0
39	M39	Z	0	0
40	M39	Z	0	0
41	M37	Z	-.042	%10
42	M37	Z	-.042	%90
43	M37	Z	-.007	%80
44	M37	Z	-.013	%45
45	M37	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	X	-.011	%5
2	M35	X	-.011	%80
3	M35	X	-.011	%35
4	M35	X	0	0
5	M35	X	0	0
6	M33	X	-.029	%10
7	M33	X	-.029	%90
8	M33	X	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
9	M33	X	0	0
10	M33	X	0	0
11	M31	X	-.031	%10
12	M31	X	-.031	%90
13	M31	X	-.003	%80
14	M31	X	-.01	%45
15	M31	X	0	0
16	M47	X	-.011	%5
17	M47	X	-.011	%80
18	M47	X	-.011	%35
19	M47	X	0	0
20	M47	X	0	0
21	M45	X	-.029	%10
22	M45	X	-.029	%90
23	M45	X	0	0
24	M45	X	0	0
25	M45	X	0	0
26	M43	X	-.031	%10
27	M43	X	-.031	%90
28	M43	X	-.003	%80
29	M43	X	-.01	%45
30	M43	X	0	0
31	M41	X	-.011	%5
32	M41	X	-.011	%80
33	M41	X	-.011	%35
34	M41	X	0	0
35	M41	X	0	0
36	M39	X	-.029	%10
37	M39	X	-.029	%90
38	M39	X	0	0
39	M39	X	0	0
40	M39	X	0	0
41	M37	X	-.031	%10
42	M37	X	-.031	%90
43	M37	X	-.003	%80
44	M37	X	-.01	%45
45	M37	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	Z	-.007	%5
2	M35	Z	-.007	%80
3	M35	Z	-.005	%35
4	M35	Z	0	0
5	M35	Z	0	0
6	M33	Z	-.023	%10
7	M33	Z	-.023	%90
8	M33	Z	0	0
9	M33	Z	0	0
10	M33	Z	0	0
11	M31	Z	-.015	%10
12	M31	Z	-.015	%90
13	M31	Z	-.003	%80
14	M31	Z	-.004	%45
15	M31	Z	0	0
16	M47	Z	-.007	%5

Member Point Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
17	M47	Z	-.007	%80
18	M47	Z	-.005	%35
19	M47	Z	0	0
20	M47	Z	0	0
21	M45	Z	-.023	%10
22	M45	Z	-.023	%90
23	M45	Z	0	0
24	M45	Z	0	0
25	M45	Z	0	0
26	M43	Z	-.015	%10
27	M43	Z	-.015	%90
28	M43	Z	-.003	%80
29	M43	Z	-.004	%45
30	M43	Z	0	0
31	M41	Z	-.007	%5
32	M41	Z	-.007	%80
33	M41	Z	-.005	%35
34	M41	Z	0	0
35	M41	Z	0	0
36	M39	Z	-.023	%10
37	M39	Z	-.023	%90
38	M39	Z	0	0
39	M39	Z	0	0
40	M39	Z	0	0
41	M37	Z	-.015	%10
42	M37	Z	-.015	%90
43	M37	Z	-.003	%80
44	M37	Z	-.004	%45
45	M37	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	X	-.004	%5
2	M35	X	-.004	%80
3	M35	X	-.004	%35
4	M35	X	0	0
5	M35	X	0	0
6	M33	X	-.01	%10
7	M33	X	-.01	%90
8	M33	X	0	0
9	M33	X	0	0
10	M33	X	0	0
11	M31	X	-.011	%10
12	M31	X	-.011	%90
13	M31	X	-.0009	%80
14	M31	X	-.004	%45
15	M31	X	0	0
16	M47	X	-.004	%5
17	M47	X	-.004	%80
18	M47	X	-.004	%35
19	M47	X	0	0
20	M47	X	0	0
21	M45	X	-.01	%10
22	M45	X	-.01	%90
23	M45	X	0	0
24	M45	X	0	0

Member Point Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
25	M45	X	0	0
26	M43	X	-.011	%10
27	M43	X	-.011	%90
28	M43	X	-.0009	%80
29	M43	X	-.004	%45
30	M43	X	0	0
31	M41	X	-.004	%5
32	M41	X	-.004	%80
33	M41	X	-.004	%35
34	M41	X	0	0
35	M41	X	0	0
36	M39	X	-.01	%10
37	M39	X	-.01	%90
38	M39	X	0	0
39	M39	X	0	0
40	M39	X	0	0
41	M37	X	-.011	%10
42	M37	X	-.011	%90
43	M37	X	-.0009	%80
44	M37	X	-.004	%45
45	M37	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M35	Y	-.089	%5
2	M35	Y	-.089	%80
3	M35	Y	-.075	%35
4	M35	Y	0	0
5	M35	Y	0	0
6	M33	Y	-.254	%10
7	M33	Y	-.254	%90
8	M33	Y	0	0
9	M33	Y	0	0
10	M33	Y	0	0
11	M31	Y	-.176	%10
12	M31	Y	-.176	%90
13	M31	Y	-.033	%80
14	M31	Y	-.065	%45
15	M31	Y	0	0
16	M47	Y	-.089	%5
17	M47	Y	-.089	%80
18	M47	Y	-.075	%35
19	M47	Y	0	0
20	M47	Y	0	0
21	M45	Y	-.254	%10
22	M45	Y	-.254	%90
23	M45	Y	0	0
24	M45	Y	0	0
25	M45	Y	0	0
26	M43	Y	-.176	%10
27	M43	Y	-.176	%90
28	M43	Y	-.033	%80
29	M43	Y	-.065	%45
30	M43	Y	0	0
31	M41	Y	-.089	%5
32	M41	Y	-.089	%80

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
33	M41	Y	-.075	%35
34	M41	Y	0	0
35	M41	Y	0	0
36	M39	Y	-.254	%10
37	M39	Y	-.254	%90
38	M39	Y	0	0
39	M39	Y	0	0
40	M39	Y	0	0
41	M37	Y	-.176	%10
42	M37	Y	-.176	%90
43	M37	Y	-.033	%80
44	M37	Y	-.065	%45
45	M37	Y	0	0

Member Point Loads (BLC 13 : Maint LL 1)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.25	%5

Member Point Loads (BLC 14 : Maint LL 2)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M1	Y	-.25	%95

Member Point Loads (BLC 15 : Maint LL 3)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.25	%95

Member Point Loads (BLC 16 : Maint LL 4)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.25	%5

Member Point Loads (BLC 17 : Maint LL 5)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.25	%5

Member Point Loads (BLC 18 : Maint LL 6)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.25	%95

Member Point Loads (BLC 19 : Maint LL 7)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Y	-.25	%95

Member Point Loads (BLC 20 : Maint LL 8)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M26	Y	-.25	%95

Member Point Loads (BLC 21 : Maint LL 9)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M8	Y	-.25	%95

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.047	-.047	0	0
2	M2	Z	-.047	-.047	0	0
3	M3	Z	-.047	-.047	0	0
4	M8	Z	-.04	-.04	0	0
5	M9	Z	-.029	-.029	0	0
6	M10	Z	-.021	-.021	0	0
7	M11	Z	-.021	-.021	0	0
8	M17	Z	-.04	-.04	0	0
9	M18	Z	-.029	-.029	0	0
10	M19	Z	-.021	-.021	0	0
11	M20	Z	-.021	-.021	0	0
12	M26	Z	-.04	-.04	0	0
13	M27	Z	-.029	-.029	0	0
14	M28	Z	-.021	-.021	0	0
15	M29	Z	-.021	-.021	0	0
16	M31	Z	-.011	-.011	0	0
17	M33	Z	-.011	-.011	0	0
18	M35	Z	-.011	-.011	0	0
19	M37	Z	-.011	-.011	0	0
20	M39	Z	-.011	-.011	0	0
21	M41	Z	-.011	-.011	0	0
22	M43	Z	-.011	-.011	0	0
23	M45	Z	-.011	-.011	0	0
24	M47	Z	-.011	-.011	0	0
25	M43A	Z	-.011	-.011	0	0
26	M44A	Z	-.011	-.011	0	0
27	M45A	Z	-.011	-.011	0	0
28	M60	Z	-.034	-.034	0	0
29	M61	Z	-.013	-.013	0	0
30	M62	Z	-.013	-.013	0	0
31	M63	Z	-.013	-.013	0	0
32	M59	Z	-.034	-.034	0	0
33	M60A	Z	-.034	-.034	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.047	-.047	0	0
2	M2	X	-.047	-.047	0	0
3	M3	X	-.047	-.047	0	0
4	M8	X	-.04	-.04	0	0
5	M9	X	-.029	-.029	0	0
6	M10	X	-.021	-.021	0	0
7	M11	X	-.021	-.021	0	0
8	M17	X	-.04	-.04	0	0
9	M18	X	-.029	-.029	0	0
10	M19	X	-.021	-.021	0	0
11	M20	X	-.021	-.021	0	0
12	M26	X	-.04	-.04	0	0
13	M27	X	-.029	-.029	0	0
14	M28	X	-.021	-.021	0	0
15	M29	X	-.021	-.021	0	0
16	M31	X	-.011	-.011	0	0
17	M33	X	-.011	-.011	0	0
18	M35	X	-.011	-.011	0	0
19	M37	X	-.011	-.011	0	0

Member Distributed Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
20	M39	X	-.011	-.011	0	0
21	M41	X	-.011	-.011	0	0
22	M43	X	-.011	-.011	0	0
23	M45	X	-.011	-.011	0	0
24	M47	X	-.011	-.011	0	0
25	M43A	X	-.011	-.011	0	0
26	M44A	X	-.011	-.011	0	0
27	M45A	X	-.011	-.011	0	0
28	M60	X	-.034	-.034	0	0
29	M61	X	-.013	-.013	0	0
30	M62	X	-.013	-.013	0	0
31	M63	X	-.013	-.013	0	0
32	M59	X	-.034	-.034	0	0
33	M60A	X	-.034	-.034	0	0

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.014	-.014	0	0
2	M2	Z	-.014	-.014	0	0
3	M3	Z	-.014	-.014	0	0
4	M8	Z	-.012	-.012	0	0
5	M9	Z	-.011	-.011	0	0
6	M10	Z	-.017	-.017	0	0
7	M11	Z	-.017	-.017	0	0
8	M17	Z	-.012	-.012	0	0
9	M18	Z	-.011	-.011	0	0
10	M19	Z	-.017	-.017	0	0
11	M20	Z	-.017	-.017	0	0
12	M26	Z	-.012	-.012	0	0
13	M27	Z	-.011	-.011	0	0
14	M28	Z	-.017	-.017	0	0
15	M29	Z	-.017	-.017	0	0
16	M31	Z	-.003	-.003	0	0
17	M33	Z	-.003	-.003	0	0
18	M35	Z	-.003	-.003	0	0
19	M37	Z	-.003	-.003	0	0
20	M39	Z	-.003	-.003	0	0
21	M41	Z	-.003	-.003	0	0
22	M43	Z	-.003	-.003	0	0
23	M45	Z	-.003	-.003	0	0
24	M47	Z	-.003	-.003	0	0
25	M43A	Z	-.003	-.003	0	0
26	M44A	Z	-.003	-.003	0	0
27	M45A	Z	-.003	-.003	0	0
28	M60	Z	-.011	-.011	0	0
29	M61	Z	-.008	-.008	0	0
30	M62	Z	-.008	-.008	0	0
31	M63	Z	-.008	-.008	0	0
32	M59	Z	-.011	-.011	0	0
33	M60A	Z	-.011	-.011	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.014	-.014	0	0
2	M2	X	-.014	-.014	0	0
3	M3	X	-.014	-.014	0	0

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
4	M8	X	-.012	-.012	0	0
5	M9	X	-.011	-.011	0	0
6	M10	X	-.017	-.017	0	0
7	M11	X	-.017	-.017	0	0
8	M17	X	-.012	-.012	0	0
9	M18	X	-.011	-.011	0	0
10	M19	X	-.017	-.017	0	0
11	M20	X	-.017	-.017	0	0
12	M26	X	-.012	-.012	0	0
13	M27	X	-.011	-.011	0	0
14	M28	X	-.017	-.017	0	0
15	M29	X	-.017	-.017	0	0
16	M31	X	-.003	-.003	0	0
17	M33	X	-.003	-.003	0	0
18	M35	X	-.003	-.003	0	0
19	M37	X	-.003	-.003	0	0
20	M39	X	-.003	-.003	0	0
21	M41	X	-.003	-.003	0	0
22	M43	X	-.003	-.003	0	0
23	M45	X	-.003	-.003	0	0
24	M47	X	-.003	-.003	0	0
25	M43A	X	-.003	-.003	0	0
26	M44A	X	-.003	-.003	0	0
27	M45A	X	-.003	-.003	0	0
28	M60	X	-.011	-.011	0	0
29	M61	X	-.008	-.008	0	0
30	M62	X	-.008	-.008	0	0
31	M63	X	-.008	-.008	0	0
32	M59	X	-.011	-.011	0	0
33	M60A	X	-.011	-.011	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.003	-.003	0	0
2	M2	Z	-.003	-.003	0	0
3	M3	Z	-.003	-.003	0	0
4	M8	Z	-.002	-.002	0	0
5	M9	Z	-.002	-.002	0	0
6	M10	Z	-.001	-.001	0	0
7	M11	Z	-.001	-.001	0	0
8	M17	Z	-.002	-.002	0	0
9	M18	Z	-.002	-.002	0	0
10	M19	Z	-.001	-.001	0	0
11	M20	Z	-.001	-.001	0	0
12	M26	Z	-.002	-.002	0	0
13	M27	Z	-.002	-.002	0	0
14	M28	Z	-.001	-.001	0	0
15	M29	Z	-.001	-.001	0	0
16	M31	Z	-.0003	-.0003	0	0
17	M33	Z	-.0003	-.0003	0	0
18	M35	Z	-.0003	-.0003	0	0
19	M37	Z	-.0003	-.0003	0	0
20	M39	Z	-.0003	-.0003	0	0
21	M41	Z	-.0003	-.0003	0	0
22	M43	Z	-.0003	-.0003	0	0
23	M45	Z	-.0003	-.0003	0	0

Member Distributed Loads (BLC 6 : 0 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
24	M47	Z	-.0003	-.0003	0	0
25	M43A	Z	-.0003	-.0003	0	0
26	M44A	Z	-.0003	-.0003	0	0
27	M45A	Z	-.0003	-.0003	0	0
28	M60	Z	-.002	-.002	0	0
29	M61	Z	-.0008	-.0008	0	0
30	M62	Z	-.0008	-.0008	0	0
31	M63	Z	-.0008	-.0008	0	0
32	M59	Z	-.002	-.002	0	0
33	M60A	Z	-.002	-.002	0	0

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	X	-.003	-.003	0	0
2	M2	X	-.003	-.003	0	0
3	M3	X	-.003	-.003	0	0
4	M8	X	-.002	-.002	0	0
5	M9	X	-.002	-.002	0	0
6	M10	X	-.001	-.001	0	0
7	M11	X	-.001	-.001	0	0
8	M17	X	-.002	-.002	0	0
9	M18	X	-.002	-.002	0	0
10	M19	X	-.001	-.001	0	0
11	M20	X	-.001	-.001	0	0
12	M26	X	-.002	-.002	0	0
13	M27	X	-.002	-.002	0	0
14	M28	X	-.001	-.001	0	0
15	M29	X	-.001	-.001	0	0
16	M31	X	-.0003	-.0003	0	0
17	M33	X	-.0003	-.0003	0	0
18	M35	X	-.0003	-.0003	0	0
19	M37	X	-.0003	-.0003	0	0
20	M39	X	-.0003	-.0003	0	0
21	M41	X	-.0003	-.0003	0	0
22	M43	X	-.0003	-.0003	0	0
23	M45	X	-.0003	-.0003	0	0
24	M47	X	-.0003	-.0003	0	0
25	M43A	X	-.0003	-.0003	0	0
26	M44A	X	-.0003	-.0003	0	0
27	M45A	X	-.0003	-.0003	0	0
28	M60	X	-.002	-.002	0	0
29	M61	X	-.0008	-.0008	0	0
30	M62	X	-.0008	-.0008	0	0
31	M63	X	-.0008	-.0008	0	0
32	M59	X	-.002	-.002	0	0
33	M60A	X	-.002	-.002	0	0

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.025	-.025	0	0
2	M2	Y	-.025	-.025	0	0
3	M3	Y	-.025	-.025	0	0
4	M8	Y	-.026	-.026	0	0
5	M9	Y	-.021	-.021	0	0
6	M10	Y	-.018	-.018	0	0
7	M11	Y	-.018	-.018	0	0

Member Distributed Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
8	M17	Y	-.026	-.026	0	0
9	M18	Y	-.021	-.021	0	0
10	M19	Y	-.018	-.018	0	0
11	M20	Y	-.018	-.018	0	0
12	M26	Y	-.026	-.026	0	0
13	M27	Y	-.021	-.021	0	0
14	M28	Y	-.018	-.018	0	0
15	M29	Y	-.018	-.018	0	0
16	M31	Y	-.012	-.012	0	0
17	M33	Y	-.012	-.012	0	0
18	M35	Y	-.012	-.012	0	0
19	M37	Y	-.012	-.012	0	0
20	M39	Y	-.012	-.012	0	0
21	M41	Y	-.012	-.012	0	0
22	M43	Y	-.012	-.012	0	0
23	M45	Y	-.012	-.012	0	0
24	M47	Y	-.012	-.012	0	0
25	M43A	Y	-.012	-.012	0	0
26	M44A	Y	-.012	-.012	0	0
27	M45A	Y	-.012	-.012	0	0
28	M60	Y	-.02	-.02	0	0
29	M61	Y	-.016	-.016	0	0
30	M62	Y	-.016	-.016	0	0
31	M63	Y	-.016	-.016	0	0
32	M59	Y	-.02	-.02	0	0
33	M60A	Y	-.02	-.02	0	0

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.001	-.013	0	1.55
2	M1	Y	-.013	-.019	1.55	3.1
3	M1	Y	-.019	-.014	3.1	4.65
4	M1	Y	-.014	-.006	4.65	6.2
5	M1	Y	-.006	-.0006896	6.2	7.75
6	M2	Y	-.0005455	-.006	7.75	9.3
7	M2	Y	-.006	-.014	9.3	10.85
8	M2	Y	-.014	-.017	10.85	12.4
9	M2	Y	-.017	-.011	12.4	13.95
10	M2	Y	-.011	-.003	13.95	15.5
11	M18	Y	-.004	-.009	0	1.4
12	M18	Y	-.009	-.016	1.4	2.8
13	M18	Y	-.016	-.018	2.8	4.2
14	M18	Y	-.018	-.011	4.2	5.6
15	M18	Y	-.011	-.0007605	5.6	7
16	M19	Y	-.0008766	-.0008766	.027	.21
17	M20	Y	-.0009936	-.0009936	0	.21
18	M1	Y	-.0006891	-.006	7.75	9.3
19	M1	Y	-.006	-.014	9.3	10.85
20	M1	Y	-.014	-.019	10.85	12.4
21	M1	Y	-.019	-.013	12.4	13.95
22	M1	Y	-.013	-.001	13.95	15.5
23	M3	Y	-.003	-.011	0	1.55
24	M3	Y	-.011	-.017	1.55	3.1
25	M3	Y	-.017	-.015	3.1	4.65
26	M3	Y	-.015	-.006	4.65	6.2
27	M3	Y	-.006	-.0005458	6.2	7.75

Member Distributed Loads (BLC 28 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
28	M27	Y	-.001	-.01	0	1.4
29	M27	Y	-.01	-.017	1.4	2.8
30	M27	Y	-.017	-.016	2.8	4.2
31	M27	Y	-.016	-.009	4.2	5.6
32	M27	Y	-.009	-.003	5.6	7
33	M28	Y	-.0009936	-.0009936	0	.21
34	M29	Y	-.0009105	-.0009105	.027	.209
35	M2	Y	-.003	-.011	0	1.55
36	M2	Y	-.011	-.017	1.55	3.1
37	M2	Y	-.017	-.014	3.1	4.65
38	M2	Y	-.014	-.006	4.65	6.2
39	M2	Y	-.006	-.0005455	6.2	7.75
40	M3	Y	-.0007015	-.006	7.75	9.3
41	M3	Y	-.006	-.014	9.3	10.85
42	M3	Y	-.014	-.019	10.85	12.4
43	M3	Y	-.019	-.013	12.4	13.95
44	M3	Y	-.013	-.001	13.95	15.5
45	M9	Y	-.0007633	-.011	0	1.4
46	M9	Y	-.011	-.018	1.4	2.8
47	M9	Y	-.018	-.016	2.8	4.2
48	M9	Y	-.016	-.009	4.2	5.6
49	M9	Y	-.009	-.003	5.6	7
50	M10	Y	-.0008933	-.0008933	.024	.211
51	M11	Y	-.0008766	-.0008766	.027	.21

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.002	-.015	0	1.55
2	M1	Y	-.015	-.021	1.55	3.1
3	M1	Y	-.021	-.015	3.1	4.65
4	M1	Y	-.015	-.006	4.65	6.2
5	M1	Y	-.006	-.0007586	6.2	7.75
6	M2	Y	-.0006001	-.007	7.75	9.3
7	M2	Y	-.007	-.016	9.3	10.85
8	M2	Y	-.016	-.018	10.85	12.4
9	M2	Y	-.018	-.012	12.4	13.95
10	M2	Y	-.012	-.003	13.95	15.5
11	M18	Y	-.004	-.01	0	1.4
12	M18	Y	-.01	-.017	1.4	2.8
13	M18	Y	-.017	-.02	2.8	4.2
14	M18	Y	-.02	-.012	4.2	5.6
15	M18	Y	-.012	-.0008365	5.6	7
16	M19	Y	-.0009642	-.0009642	.027	.21
17	M20	Y	-.001	-.001	0	.21
18	M1	Y	-.000758	-.006	7.75	9.3
19	M1	Y	-.006	-.015	9.3	10.85
20	M1	Y	-.015	-.021	10.85	12.4
21	M1	Y	-.021	-.015	12.4	13.95
22	M1	Y	-.015	-.002	13.95	15.5
23	M3	Y	-.003	-.012	0	1.55
24	M3	Y	-.012	-.019	1.55	3.1
25	M3	Y	-.019	-.017	3.1	4.65
26	M3	Y	-.017	-.007	4.65	6.2
27	M3	Y	-.007	-.0006004	6.2	7.75
28	M27	Y	-.001	-.011	0	1.4
29	M27	Y	-.011	-.019	1.4	2.8

Member Distributed Loads (BLC 29 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/..	Start Location[ft,%]	End Location[ft,%]
30	M27	Y	-.019	-.017	2.8	4.2
31	M27	Y	-.017	-.01	4.2	5.6
32	M27	Y	-.01	-.004	5.6	7
33	M28	Y	-.001	-.001	0	.21
34	M29	Y	-.001	-.001	.027	.209
35	M2	Y	-.003	-.012	0	1.55
36	M2	Y	-.012	-.018	1.55	3.1
37	M2	Y	-.018	-.016	3.1	4.65
38	M2	Y	-.016	-.007	4.65	6.2
39	M2	Y	-.007	-.0006001	6.2	7.75
40	M3	Y	-.0007717	-.006	7.75	9.3
41	M3	Y	-.006	-.015	9.3	10.85
42	M3	Y	-.015	-.021	10.85	12.4
43	M3	Y	-.021	-.015	12.4	13.95
44	M3	Y	-.015	-.002	13.95	15.5
45	M9	Y	-.0008396	-.012	0	1.4
46	M9	Y	-.012	-.02	1.4	2.8
47	M9	Y	-.02	-.017	2.8	4.2
48	M9	Y	-.017	-.01	4.2	5.6
49	M9	Y	-.01	-.004	5.6	7
50	M10	Y	-.0009826	-.0009826	.024	.211
51	M11	Y	-.0009642	-.0009642	.027	.21

Member Area Loads (BLC 1 : Dead)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N27	N26	N37	N35	Y	Two Way	-.01
2	N51	N53	N42	N43	Y	Two Way	-.01
3	N10	N11	N19	N21	Y	Two Way	-.01

Member Area Loads (BLC 8 : Ice)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	N27	N26	N37	N35	Y	Two Way	-.011
2	N51	N53	N42	N43	Y	Two Way	-.011
3	N10	N11	N19	N21	Y	Two Way	-.011

Load Combinations

	Description	Solve	PD...	SRSS	BLC	Factor	BLC	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...
1	1.4 Dead	Yes	Y		1	1.4																						
2	1.2 D + 1.0 - 0 W	Yes	Y		1	1.2	2	1																				
3	1.2 D + 1.0 - 30 W	Yes	Y		1	1.2	2	.8...	3	.5																		
4	1.2 D + 1.0 - 60 W	Yes	Y		1	1.2	3	.8...	2	.5																		
5	1.2 D + 1.0 - 90 W	Yes	Y		1	1.2	3	1																				
6	1.2 D + 1.0 - 120 W	Yes	Y		1	1.2	3	.8...	2	-.5																		
7	1.2 D + 1.0 - 150 W	Yes	Y		1	1.2	2	-....	3	.5																		
8	1.2 D + 1.0 - 180 W	Yes	Y		1	1.2	2	-1																				
9	1.2 D + 1.0 - 210 W	Yes	Y		1	1.2	2	-....	3	-.5																		
10	1.2 D + 1.0 - 240 W	Yes	Y		1	1.2	3	-....	2	-.5																		
11	1.2 D + 1.0 - 270 W	Yes	Y		1	1.2	3	-1																				
12	1.2 D + 1.0 - 300 W	Yes	Y		1	1.2	3	-....	2	.5																		
13	1.2 D + 1.0 - 330 W	Yes	Y		1	1.2	2	.8...	3	-.5																		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y		1	1.2	4	1			8	1																
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y		1	1.2	4	.8...	5	.5	8	1																
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y		1	1.2	5	.8...	4	.5	8	1																

Load Combinations (Continued)

	Description	Solve	PD...	SRSS	BLC	Factor	BLC	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y		1	1.2	5	1				8	1													
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y		1	1.2	5	.8...	4	-.5		8	1													
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y		1	1.2	4	-....	5	.5		8	1													
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y		1	1.2	4	-1				8	1													
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y		1	1.2	4	-....	5	-.5		8	1													
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y		1	1.2	5	-....	4	-.5		8	1													
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y		1	1.2	5	-1				8	1													
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y		1	1.2	5	-....	4	.5		8	1													
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y		1	1.2	4	.8...	5	-.5		8	1													
26	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y		1	1.2	6	1				9	1.5													
27	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y		1	1.2	6	.8...	7	.5		9	1.5													
28	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y		1	1.2	7	.8...	6	.5		9	1.5													
29	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y		1	1.2	7	1				9	1.5													
30	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y		1	1.2	7	.8...	6	-.5		9	1.5													
31	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y		1	1.2	6	-....	7	.5		9	1.5													
32	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y		1	1.2	6	-1				9	1.5													
33	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y		1	1.2	6	-....	7	-.5		9	1.5													
34	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y		1	1.2	7	-....	6	-.5		9	1.5													
35	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y		1	1.2	7	-1				9	1.5													
36	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y		1	1.2	7	-....	6	.5		9	1.5													
37	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y		1	1.2	6	.8...	7	-.5		9	1.5													
38	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y		1	1.2	6	1				10	1.5													
39	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y		1	1.2	6	.8...	7	.5		10	1.5													
40	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y		1	1.2	7	.8...	6	.5		10	1.5													
41	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y		1	1.2	7	1				10	1.5													
42	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y		1	1.2	7	.8...	6	-.5		10	1.5													
43	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y		1	1.2	6	-....	7	.5		10	1.5													
44	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y		1	1.2	6	-1				10	1.5													
45	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y		1	1.2	6	-....	7	-.5		10	1.5													
46	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y		1	1.2	7	-....	6	-.5		10	1.5													
47	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y		1	1.2	7	-1				10	1.5													
48	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y		1	1.2	7	-....	6	.5		10	1.5													
49	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y		1	1.2	6	.8...	7	-.5		10	1.5													
50	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y		1	1.2	6	1				11	1.5													
51	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y		1	1.2	6	.8...	7	.5		11	1.5													
52	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y		1	1.2	7	.8...	6	.5		11	1.5													
53	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y		1	1.2	7	1				11	1.5													
54	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y		1	1.2	7	.8...	6	-.5		11	1.5													
55	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y		1	1.2	6	-....	7	.5		11	1.5													
56	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y		1	1.2	6	-1				11	1.5													
57	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y		1	1.2	6	-....	7	-.5		11	1.5													
58	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y		1	1.2	7	-....	6	-.5		11	1.5													
59	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y		1	1.2	7	-1				11	1.5													
60	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y		1	1.2	7	-....	6	.5		11	1.5													
61	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y		1	1.2	6	.8...	7	-.5		11	1.5													
62	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y		1	1.2	6	1				12	1.5													
63	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y		1	1.2	6	.8...	7	.5		12	1.5													
64	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y		1	1.2	7	.8...	6	.5		12	1.5													
65	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y		1	1.2	7	1				12	1.5													
66	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y		1	1.2	7	.8...	6	-.5		12	1.5													
67	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y		1	1.2	6	-....	7	.5		12	1.5													
68	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y		1	1.2	6	-1				12	1.5													
69	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y		1	1.2	6	-....	7	-.5		12	1.5													
70	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y		1	1.2	7	-....	6	-.5		12	1.5													
71	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y		1	1.2	7	-1				12	1.5													
72	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y		1	1.2	7	-....	6	.5		12	1.5													
73	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y		1	1.2	6	.8...	7	-.5		12	1.5													

Load Combinations (Continued)

	Description	Solve	PD...	SRSS	BLC	Factor	BLC	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...	...	F...
74	1.2 D + 1.5 LL Maint (1)	Yes	Y		1	1.2						13	1.5													
75	1.2 D + 1.5 LL Maint (2)	Yes	Y		1	1.2						14	1.5													
76	1.2 D + 1.5 LL Maint (3)	Yes	Y		1	1.2						15	1.5													
77	1.2 D + 1.5 LL Maint (4)	Yes	Y		1	1.2						16	1.5													
78	1.2 D + 1.5 LL Maint (5)	Yes	Y		1	1.2						17	1.5													
79	1.2 D + 1.5 LL Maint (6)	Yes	Y		1	1.2						18	1.5													
80	1.2 D + 1.5 LL Maint (7)	Yes	Y		1	1.2						19	1.5													
81	1.2 D + 1.5 LL Maint (8)	Yes	Y		1	1.2						20	1.5													
82	1.2 D + 1.5 LL Maint (9)	Yes	Y		1	1.2						21	1.5													
83	1.2 D + 1.5 LL Maint (10)	Yes	Y		1	1.2						22	1.5													
84	1.2 D + 1.5 LL Maint (11)	Yes	Y		1	1.2						23	1.5													
85	1.2 D + 1.5 LL Maint (12)	Yes	Y		1	1.2						24	1.5													
86	1.2 D + 1.5 LL Maint (13)	Yes	Y		1	1.2						25	1.5													
87	1.2 D + 1.5 LL Maint (14)	Yes	Y		1	1.2						26	1.5													
88	1.2 D + 1.5 LL Maint (15)	Yes	Y		1	1.2						27	1.5													

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	DL		-1			45		3	
2	0 Wind - No Ice	WLZ					45	33		
3	90 Wind - No Ice	WLX					45	33		
4	0 Wind - Ice	WLZ					45	33		
5	90 Wind - Ice	WLX					45	33		
6	0 Wind - Service	WLZ					45	33		
7	90 Wind - Service	WLX					45	33		
8	Ice	OL1					45	33	3	
9	Live Load a	LL				3				
10	Live Load b	LL				3				
11	Live Load c	LL				3				
12	Live Load d	LL								
13	Maint LL 1	LL					1			
14	Maint LL 2	LL					1			
15	Maint LL 3	LL					1			
16	Maint LL 4	LL					1			
17	Maint LL 5	LL					1			
18	Maint LL 6	LL					1			
19	Maint LL 7	LL					1			
20	Maint LL 8	LL					1			
21	Maint LL 9	LL					1			
28	BLC 1 Transient Area Loads	None						51		
29	BLC 8 Transient Area Loads	None						51		

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N32	max	4.374	6	.381	12	4.082	13	.634	3	2.339	2	.582	8
2		min	-4.522	12	-.21	6	-3.974	7	-.686	9	-2.372	8	-.54	2
3	N16	max	1.565	4	.442	8	6.358	2	.481	8	1.935	10	.54	11
4		min	-1.586	10	-.269	2	-6.543	8	-.485	2	-1.969	4	-.606	5
5	N48	max	4.772	4	.376	4	2.632	3	.618	13	1.881	7	.564	2
6		min	-4.6	10	-.209	10	-2.561	9	-.548	7	-1.921	13	-.544	8
7	N128	max	.118	5	4.14	14	-.516	8	0	88	0	4	0	10
8		min	-.118	11	.394	8	-4.331	14	0	1	0	10	0	4
9	N126	max	-.583	12	4.116	18	2.158	17	0	2	0	8	0	8
10		min	-3.73	19	.539	12	.336	12	0	8	0	2	0	2

Envelope Joint Reactions (Continued)

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
11	N128A	max	3.734	21	4.119	22	2.158	23	0	13	0	13	0	13
12		min	.595	4	.552	4	.344	4	0	7	0	7	0	7
13	Totals:	max	8.859	5	12.515	21	11.264	2						
14		min	-8.859	11	3.961	3	-11.264	8						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	She...	Loc...	...	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
1	M1	L6X3.5X5	.359	6.943	8	.372	.484	y	20	11.102	93.636	3.396	8.098	...	H2-1
2	M2	L6X3.5X5	.341	5.328	21	.367	.484	y	15	11.102	93.636	3.396	9.899	...	H2-1
3	M3	L6X3.5X5	.335	5.328	17	.367	.484	y	24	11.102	93.636	3.396	9.91	...	H2-1
4	M8	HSS6X4...	.204	5.274	24	.087	0	z	4	106.6...	135.7...	16.231	22.77	...	H1-1b
5	M9	L4X4X4	.595	3.5	23	.047	3.5	z	16	34.117	62.532	3.138	5.833	...	H2-1
6	M10	PL5/16x...	.168	.238	22	.035	0	y	14	43.214	45.563	.297	4.271	...	H1-1b
7	M11	PL5/16x...	.177	0	20	.045	0	y	16	43.214	45.563	.297	4.271	...	H1-1b
8	M17	HSS6X4...	.204	5.274	16	.111	0	z	8	106.6...	135.7...	16.231	22.77	...	H1-1b
9	M18	L4X4X4	.599	3.5	15	.047	3.5	z	18	34.117	62.532	3.138	5.835	...	H2-1
10	M19	PL5/16x...	.169	.238	14	.034	0	y	18	43.214	45.563	.297	4.271	...	H1-1b
11	M20	PL5/16x...	.178	0	25	.046	0	y	20	43.214	45.563	.297	4.271	...	H1-1b
12	M26	HSS6X4...	.206	5.274	20	.095	0	z	13	106.6...	135.7...	16.231	22.77	...	H1-1b
13	M27	L4X4X4	.598	3.5	19	.047	3.5	z	25	34.117	62.532	3.138	5.833	...	H2-1
14	M28	PL5/16x...	.168	.238	19	.035	0	y	22	43.214	45.563	.297	4.271	...	H1-1b
15	M29	PL5/16x...	.175	0	16	.046	0	y	25	43.214	45.563	.297	4.271	...	H1-1b
16	M31	PIPE_2.0	.389	5.49	4	.123	5.49		3	13.511	32.13	1.872	1.872	...	H1-1b
17	M33	PIPE_2.0	.717	4.604	2	.136	4.6...		2	13.511	32.13	1.872	1.872	...	H1-1b
18	M35	PIPE_2.0	.415	3.5	11	.123	3.5		12	20.867	32.13	1.872	1.872	...	H1-1b
19	M37	PIPE_2.0	.502	5.49	8	.131	5.49		7	13.511	32.13	1.872	1.872	...	H1-1b
20	M39	PIPE_2.0	.686	4.693	2	.121	4.6...		7	13.511	32.13	1.872	1.872	...	H1-1b
21	M41	PIPE_2.0	.528	3.5	3	.123	3.5		4	20.867	32.13	1.872	1.872	...	H1-1b
22	M43	PIPE_2.0	.490	5.49	13	.101	5.49		11	13.511	32.13	1.872	1.872	...	H1-1b
23	M45	PIPE_2.0	.720	4.604	8	.127	4.6...		9	13.511	32.13	1.872	1.872	...	H1-1b
24	M47	PIPE_2.0	.533	3.5	7	.146	3.5		8	20.867	32.13	1.872	1.872	...	H1-1b
25	M43A	PIPE_2.0	.356	.646	4	.252	.646		2	4.094	32.13	1.872	1.872	...	H1-1b
26	M44A	PIPE_2.0	.431	.323	13	.203	.646		10	4.094	32.13	1.872	1.872	...	H1-1b
27	M45A	PIPE_2.0	.474	.646	8	.213	.646		7	4.094	32.13	1.872	1.872	...	H1-1b
28	M60	LL2.5x2....	.195	0	14	.008	7.0...	z	5	30.751	58.32	3.954	2.509	1	H1-1...
29	M61	L2.5x2.5...	.378	1.27	10	.057	1.27	z	5	36.58	38.556	1.114	2.537	...	H2-1
30	M62	L2.5x2.5...	.501	1.27	2	.079	1.27	z	9	36.58	38.556	1.114	2.537	...	H2-1
31	M63	L2.5x2.5...	.388	1.27	7	.078	1.27	z	13	36.58	38.556	1.114	2.537	...	H2-1
32	M59	LL2.5x2....	.194	0	18	.008	0	z	9	30.751	58.32	3.954	2.509	1	H1-1...
33	M60A	LL2.5x2....	.194	0	22	.008	0	z	13	30.751	58.32	3.954	2.509	1	H1-1...

APPENDIX C

MOUNT MODIFICATION DESIGN DRAWINGS (MDD)

MI CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
N/A	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	ASSEMBLY DRAWINGS	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE, PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	A VISUAL OBSERVATION BY CWI OF A PORTION OF WELDING ON THE PROPOSED STRUCTURAL MEMBERS IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DRAWINGS AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION (PERFORMED BY CONTRACTOR)
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED AS SPECIFIED IN THE MODIFICATION DRAWINGS.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
		POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
ADDITIONAL TESTING AND INSPECTIONS:		
NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT AND N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT		

MODIFICATION INSPECTION NOTES:

GENERAL

THE 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.

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 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 B+T GROUP.

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 ONSITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

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

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
- 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.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A 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 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, CARRIER 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 FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CARRIER 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 INSPECTOR FAILS THE MI ("FAILED MI"), THE GC SHALL WORK WITH CARRIER 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 CARRIER'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION
- THE ADDITIONAL COST INCURRED IN THE SECOND SUPERVISION PROCESS WOULD BE BORNE BY THE GENERAL CONTRACTOR.

MI VERIFICATION INSPECTIONS

CARRIER RESERVES THE RIGHT TO CONDUCT A 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.

VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT 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 AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - PHOTOS OF MODIFIED SECTIONS INDIVIDUALLY INDICATING ELEVATION
  - FINAL INFIELD CONDITION

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

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AT&T

CROWN CASTLE

HRT 303 943203

BRENDON & QUINN STREETS
STAFFORD, CT 06076
TOLLAND

EXISTING PLATFORM
AT 94'-00"

PROJECT NO:	131593.003.01
CHECKED BY:	JV

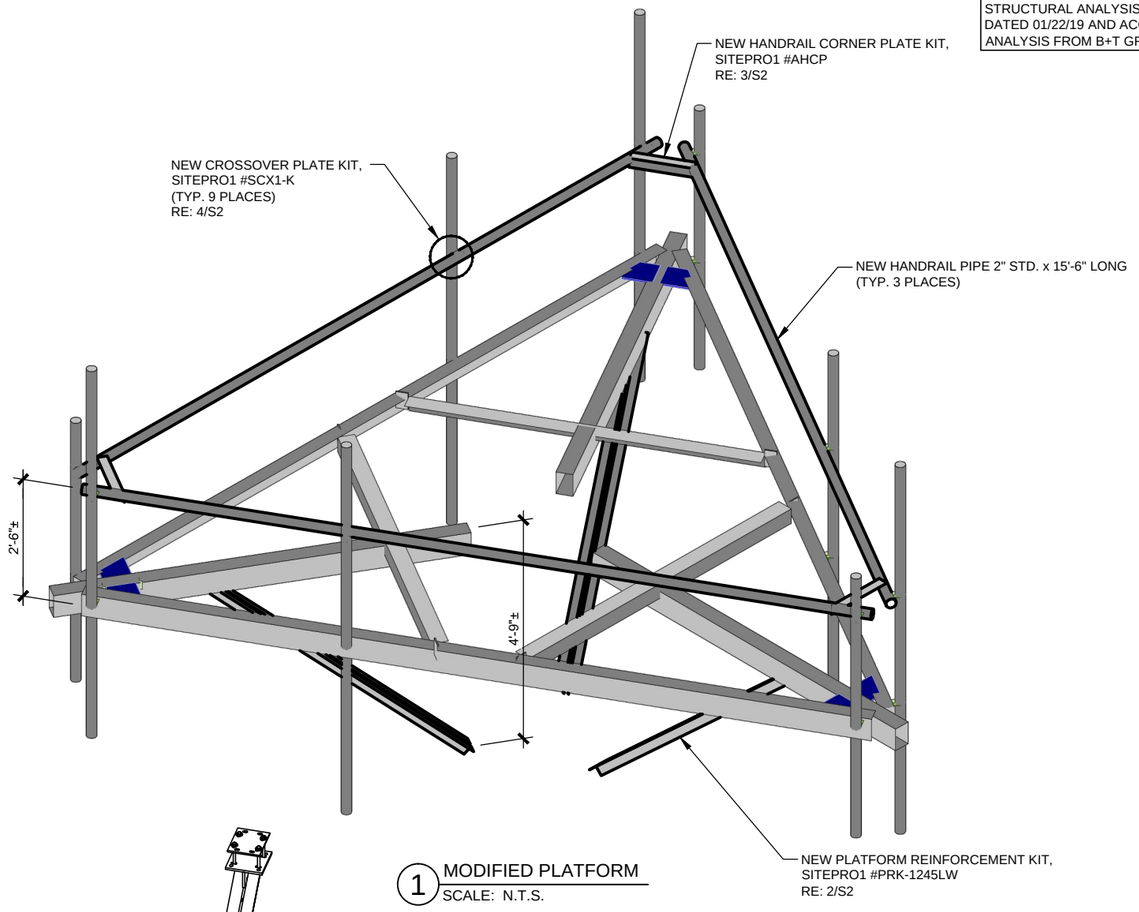
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	01/30/19	PMS	CONSTRUCTION

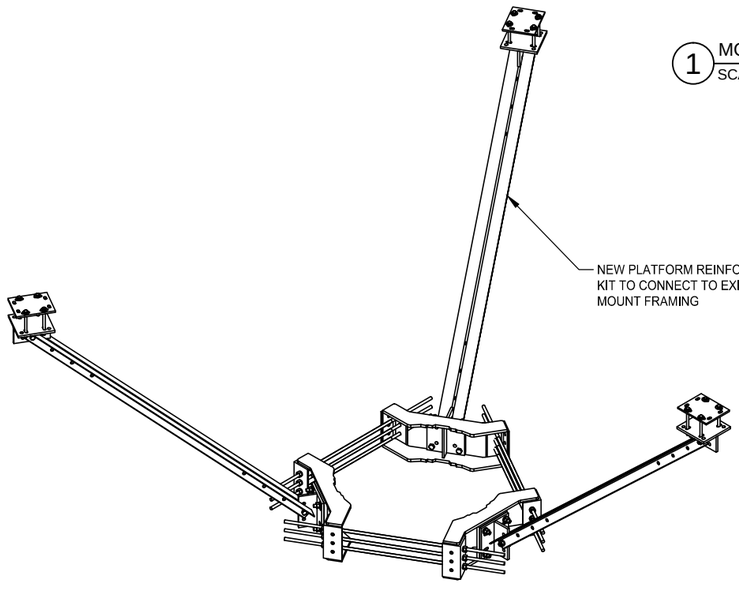
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

SHEET NUMBER:	REVISION:
S1	0

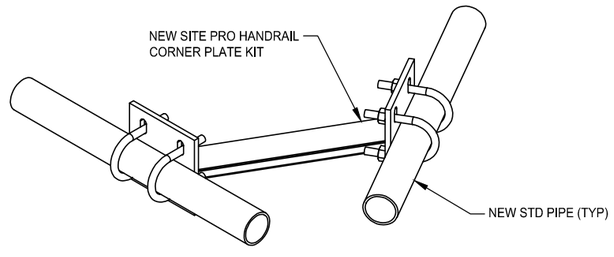
MODIFICATIONS BASED ON THE FAILING STRUCTURAL ANALYSIS FROM B+T GROUP DATED 01/22/19 AND ACCOMPANIED BY ANALYSIS FROM B+T GROUP DATED 01/30/19



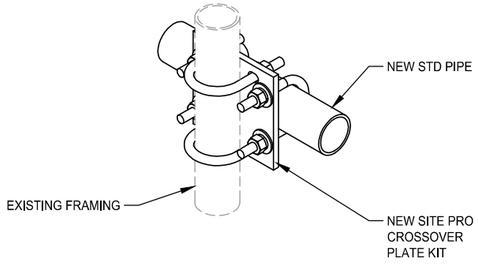
1 MODIFIED PLATFORM
SCALE: N.T.S.



2 SITE PRO1 PRK-1245LW PLATFORM REINFORCEMENT KIT
SCALE: N.T.S.



3 SITE PRO1 AHCP HANDRAIL CORNER PLATE KIT
SCALE: N.T.S.



4 SITE PRO1 SCX1-K CROSSOVER PLATE KIT
SCALE: N.T.S.

GENERAL NOTES

1.1 CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO THE MOBILIZING ON THE SITE FOR INSTALLATION OF THE MOUNT MODIFICATION AND SHALL NOTIFY THE ENGINEER OF RECORD IF THE FIELD CONDITIONS VARY FROM WHAT IS SHOWN ON THE DRAWINGS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD PRIOR TO MOBILIZING AT THE SITE IF THE MOUNT REINFORCEMENT SHOWN WILL NEED TO BE REVISED TO SATISFY FIELD CONDITIONS

1.2 CONTRACTOR SHALL RELOCATE NON-ANTENNA EQUIPMENT ALONG THE EXISTING PIPE MOUNT THAT IT IS MOUNTED TO, TO ALLOW FOR INSTALLATION OF MOUNT REINFORCEMENT. ENGINEER OF RECORD WILL BE NOTIFIED IF NON-ANTENNA EQUIPMENT NEEDS TO BE RELOCATED TO ANY OTHER EXISTING MEMBERS TO ALLOW FOR INSTALLATION OF MOUNT MODIFICATION.

1.3 MODIFICATION SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES.

1.4 ALL WORK SHALL COMPLY WITH THE TIA-222-H STANDARD, TIA-1019-A STANDARD, AS WELL AS ANY OTHER GOVERNING BUILDING CODES.

1.5 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE.

1.6 A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT) SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES.

1.7 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.

1.8 ALL FIELD CONNECTIONS SHALL BE MADE WITH A325N BOLTS, U.N.O.

1.9 IN LIEU OF TEMPORARY BRACING, CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3-SEC) PER TIA-1019.

1.10 ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CCUSA POLICY "CUTTING AND WELDING PLAN" (DOC #ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT.

1.11 DIMENSIONS WITH "±" MUST BE WITHIN 3" OF THE INDICATED DIMENSION.

FABRICATION

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

2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
STEEL PIPE, U.N.O.	35ksi	A53 GR.B

2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.

2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE E80 SERIES.

2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 5 DAYS PRIOR TO FABRICATION.

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AT&T

CROWN CASTLE

HRT 303 943203

BRENDON & QUINN STREETS
STAFFORD, CT 06076
TOLLAND

EXISTING PLATFORM
AT 94'-00"

PROJECT NO:	131593.003.01
CHECKED BY:	JV

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	01/30/19	PMS	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20

STATE OF CONNECTICUT
SCOTT S. VANSE
31627
LICENSED
PROFESSIONAL ENGINEER
1/30/19

SHEET NUMBER:	REVISION:
S2	0

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on Behalf of AT&T Mobility, LLC

Site: HRT 303 943203
Crown Castle Site ID: 806365
App ID: 471524
BRENDON & QUINN STREETS
STAFFORD, CT
1/15/2019

Report Status:

AT&T Mobility, LLC Is Compliant

Prepared By:

Sitesafe, LLC

8618 Westwood Center Drive, Suite 315 Vienna, VA 22182 Voice 703-276-1100
Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
AT&T Mobility, LLC
STAFFORD, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, LLC in Vienna, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by AT&T Mobility, LLC (See attached Site Summary and Carrier documents), and that AT&T Mobility, LLC's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "HRT 303 943203" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of AT&T Mobility, LLC's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 0.224% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 7.117% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

AT&T Mobility, LLC
HRT 303 943203
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.224 %
AT&T Mobility, LLC (Proposed)	1.262 %
AT&T Mobility, LLC (Proposed)	0.923 %
AT&T Mobility, LLC (Proposed)	1.123 %
Sprint	0.555 %
T-Mobile	0.21 %
T-Mobile	0.137 %
Verizon Wireless	0.656 %
Verizon Wireless	1.146 %
Verizon Wireless	0.879 %
Composite Site MPE:	7.117 %

AT&T Mobility, LLC
HRT 303 943203
Carrier Summary

Frequency:	869	MHz
Maximum Permissible Exposure (MPE):	579.33	µW/cm^2
Maximum power density at ground level:	1.30005	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.2244	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Powerwave	7770	95	30	547	0.616157	0.106356	0.949911	0.163966
Powerwave	7770	95	140	547	0.616157	0.106356	0.949911	0.163966
Powerwave	7770	95	270	547	0.616157	0.106356	0.949911	0.163966

AT&T Mobility, LLC (Proposed)
HRT 303 943203
Carrier Summary

Frequency:	2110	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	12.61819	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	1.26182	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA65R-BU8A	95	30	5372	11.802766	1.180277	12.527508	1.252751
CCI Antennas	HPA65R-BU8A	95	140	5372	11.802772	1.180277	12.527508	1.252751
CCI Antennas	HPA65R-BU8A	95	270	5372	11.802772	1.180277	12.527508	1.252751

AT&T Mobility, LLC (Proposed)
HRT 303 943203
Carrier Summary

Frequency:	1930	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	9.23451	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.92345	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	800-10966	95	30	6168	3.509923	0.350992	7.507112	0.750711
Kathrein-Scala	800-10966	95	140	6168	3.501212	0.350121	7.507111	0.750711
Kathrein-Scala	800-10966	95	270	6168	3.509923	0.350992	7.507111	0.750711

AT&T Mobility, LLC (Proposed)
HRT 303 943203
Carrier Summary

Frequency:	734	MHz
Maximum Permissible Exposure (MPE):	489.33	µW/cm^2
Maximum power density at ground level:	5.49738	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	1.12344	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	800-10966	95	30	3623	2.564228	0.524025	4.24094	0.866677
Kathrein-Scala	800-10966	95	140	3623	2.564228	0.524025	4.24094	0.866677
Kathrein-Scala	800-10966	95	270	3623	2.564228	0.524025	4.24094	0.866677

Sprint
HRT 303 943203
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	5.55016	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.55502	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	DB980H90T2EM	104	350	1423	1.349216	0.134922	2.482708	0.248271
ANDREW	DB980H90T2EM	104	350	1423	1.349216	0.134922	2.482708	0.248271
ANDREW	DB980H90T2EM	104	110	1423	1.349216	0.134922	2.482708	0.248271
ANDREW	DB980H90T2EM	104	110	1423	1.349216	0.134922	2.482708	0.248271
ANDREW	DB980H90T2EM	104	230	1423	1.341042	0.134104	2.482708	0.248271
ANDREW	DB980H90T2EM	104	230	1423	1.341042	0.134104	2.482708	0.248271

T-Mobile
HRT 303 943203
Carrier Summary

Frequency:	700	MHz
Maximum Permissible Exposure (MPE):	466.67	µW/cm^2
Maximum power density at ground level:	0.98166	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.21036	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	LNX-6515DS-T4M	126	60	1854	0.975939	0.20913	0.975939	0.20913
ANDREW	LNX-6515DS-T4M	126	180	1854	0.975939	0.20913	0.975939	0.20913
ANDREW	LNX-6515DS-T4M	126	300	1854	0.975939	0.20913	0.975939	0.20913

T-Mobile
HRT 303 943203
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.37366	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.13737	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
EMS	RR90-17-00VDPL2	126	60	1214	0.54242	0.054242	1.130406	0.113041
EMS	RR90-17-00VDPL2	126	180	1214	0.54242	0.054242	1.130406	0.113041
EMS	RR90-17-00VDPL2	126	300	1214	0.54242	0.054242	1.130406	0.113041

Verizon Wireless
HRT 303 943203
Carrier Summary

Frequency:	751	MHz
Maximum Permissible Exposure (MPE):	500.67	µW/cm^2
Maximum power density at ground level:	3.28409	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.65594	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	LNX-8513DS-VTM	117	0	1808	1.856926	0.370891	3.031663	0.605525
ANDREW	LNX-8513DS-VTM	117	120	1808	1.875639	0.374628	3.031663	0.605525
ANDREW	LNX-8513DS-VTM	117	240	1808	1.856926	0.370891	3.031663	0.605525

Verizon Wireless
HRT 303 943203
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	11.46054	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	1.14605	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNH-1D8585C	117	0	3624	1.658078	0.165808	3.131613	0.313161
ANDREW	SBNH-1D8585C	117	0	3624	1.658078	0.165808	3.131613	0.313161
ANDREW	SBNH-1D8585C	117	120	3624	1.658078	0.165808	3.131612	0.313161
ANDREW	SBNH-1D8585C	117	120	3624	1.658078	0.165808	3.131612	0.313161
ANDREW	SBNH-1D8585C	117	240	3624	1.650037	0.165004	3.131613	0.313161
ANDREW	SBNH-1D8585C	117	240	3624	1.650037	0.165004	3.131613	0.313161

Verizon Wireless
HRT 303 943203
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	4.98233	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.87923	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	LNX-8514DS-VTM	117	0	4028	1.943297	0.342935	4.548402	0.802659
ANDREW	LNX-8514DS-VTM	117	120	4028	1.943297	0.342935	4.548402	0.802659
ANDREW	LNX-8514DS-VTM	117	240	4028	1.964211	0.346625	4.548402	0.802659