CROWN CASTLE

1 Cityplace Dr, Suite 490

Creve Coeur, MO 63141

Phone: (314) 513-0147

www.crowncastle.com

February 17, 2022

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

RE: **Notice of Exempt Modification for AT&T**
Crown Site ID#881536; AT&T Site ID#CTL05107
120 Universal Drive, North Haven, Connecticut 06473
Latitude: 41° 20′ 40.01″/ Longitude: -72° 52′ 14.92″

Dear Ms. Bachman:

AT&T currently maintains (12) antennas at the 120 Foot mounts on the existing 120-foot Monopole Tower located at **120 Universal Drive, North Haven.** The property is owned by 120 Universal Drive Assoc. and Tower is owned by Crown Castle. AT&T now intends to replace six (9) antennas. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:

Tower:

REMOVE AND REPLACE
(1) CCI – OPA-65R-LCUU-H6 antenna (**REMOVE**), (6) Ericsson Air6449 N77D+Air6419 N77G Stacked antennas (REPLACE)
(3) Powerwave 7770 Antennas (**REMOVE**), (3) Quintel – QD8616-7 Antennas (**REPLACE**)
REMOVE
(3) Kathrien -800-10966 Antennas
(6) Powerwave – LGP21401 TMAS
(6) PX-070821 TRIPLEXERS
(6) 1-5/8" Coax
RELOCATE
(1) DC6-48-60-0-8F Pendant
(1) New Sabre C10857278C, Part #C10899055 Pipe mount per mount analysis by B+T Dated 9/15/2021
INSTALL
(6) Y- Cables
(1) 18 Pair Fiber Trunk

Ground:

REMOVE
(6) TPX-070821 Triplexers
(6) LGP-21901 Diplexers

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(1) 6630
(1) Retired GSM Cabinet
INSTALL
(3) VERTIV -48v Rectifiers in existing power plant
(1) 23' FIF Rack
(1) 6673 FrontHaul Gateway
(1) XMU

This facility was approved by the Town of North Haven Planning and Zoning Commission in Special Use Permit Application P2000-44 on November 13, 2000 with conditions which this exempt modification complies with.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Michael J. Freda, Town of North Haven First Selectman, Laura Magaraci, Zoning Enforcement Officer and 120 Universal Drive Assoc. as property owner.

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

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

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

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

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

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

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

Sincerely,

Ersilia Davis
Crown Castle, Agent for AT&T
edavis@nbcllc.com
(551)804-0667

CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

Phone: (314) 513-0147
www.crowncastle.com

cc:

Michael J. Freda, First Selectman, *Via Fedex*
Town of North Haven
18 Church St.
North Haven, CT 06473
(203) 239-5321

Laura Magaraci, Zoning Enforcement Officer *Via Fedex*
Town of North Haven
18 Church St.
North Haven, CT 06473
(203) 239-5321

120 Universal Drive Assoc. *Via Fedex*
120 Universal Drive
North Haven, CT 06473
(203) 785-8322

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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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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Exhibit A

Original Facility Approval

TOWN OF NORTH HAVEN

MEMORIAL TOWN HALL / 18 CHURCH STREET
NORTH HAVEN, CONNECTICUT 06473

REPLY TO:

PLANNING & ZONING COMMISSION

Tel. (203) 239-5321
Fax (203) 234-2130

November 20, 2000

Mr. Stephen Longobardi
Candid Communications of North Haven, II LLC
110 Washington Avenue
North Haven, CT 06473

Re: #P2000-44 Special Permit application, (as authorized by Section 3A.6.), of Candid Communications of North Haven, II LLC, relative to 120 Universal Drive South, (Map 11, Route 1). Plan Entitled: Candid Communications, LLC, Multi-User Wireless Communications Facility, North Haven Tower Site, Universal Drive, North Haven, Connecticut, Prepared By URS Greiner Woodward Clyde A-E-S, Dated 9-8-00, Rev. 11-1-00 Scale l" = 30'. IL-30 Zoning District.

Dear Mr. Longobardi:

Please be advised that during the deliberation session of the Planning & Zoning Commission meeting held on Monday, November 13, 2000, the Commission unanimously voted to approve the above referenced application subject to the following conditions:

1. Submit three (3) revised plans which include:
   a.) Revised plans must address/include all comments and conditions of this approval and the related Site Plan approval #P2000-45.
   b.) Live certification.

In accordance with the Connecticut State Statutes, Section 8-3d, the Special Permit is not effective until a certified copy of the Commission's decision has been recorded on the Land Records, at the owner's expense. Accordingly, you must record this certified decision letter at the Town Clerk's Office, 18 Church Street, North Haven, CT. Immediately after filing with the Town Clerk, please submit a copy of the decision letter, stamped as recorded, to the Land Use Office, for our permanent record.

Please note that one (1) set of revised drawings should be submitted for review after <u>all</u> outstanding issues (conditions of approval as set forth above), are adequately addressed. If there are any questions relative to the conditions of approval, please call the Town prior to submitting the revised plans. This will avoid costly and time consuming revisions and reviews, therefore expediting the process for you as the applicant.

This approval is subject to compliance with any and all Zoning Regulations of the Town of North Haven.

You may not proceed with this approval until you have received a signed plan from the Land Use Office.

Very truly yours,

Jeanne Pulleyn

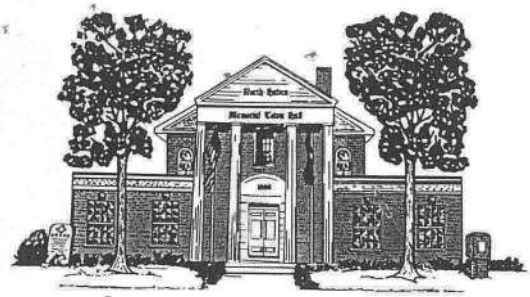
Jeanne Pulleyn, Secretary
Planning & Zoning Commission

JP/ts
cc: First Selectman
Engineering Dept.
Building Dept.
CERTIFIED MAIL R/R

RECEIVED AND FILED
TOWN CLERKS OFFICE
NORTH HAVEN, CONN.
MAR 20 2001 @ 1:15 PM

Elaine C. Paulmo

TOWN CLERK



TOWN OF NORTH HAVEN

MEMORIAL TOWN HALL / 18 CHURCH STREET
NORTH HAVEN, CONNECTICUT 06473

REPLY TO: PLANNING & ZONING COMMISSION

Tel. (203) 239-5321
Fax (203) 234-2130

November 20, 2000

Mr. Stephen Longobardi
Candid Communications of North Haven, II LLC
110 Washington Avenue
North Haven, CT 06473

Re: #P2000-45 Site Plan application of Candid Communications of North Haven, II LLC, relative to 120 Universal Drive South, (Map 11, Route 1). Plan Entitled: Candid Communications, LLC, Multi-User Wireless Communications Facility, North Haven Tower Site, Universal Drive, North Haven, Connecticut, Prepared By URS Greiner Woodward Clyde A-E-S, Dated 9-8-00, Rev. 11-1-00 Scale l" = 30'. IL-30 Zoning District.

Dear Mr. Longobardi:

Please be advised that during the deliberation session of the Planning & Zoning Commission meeting held on Monday, November 13, 2000, the Commission unanimously voted to approve the above referenced application subject to the following conditions:

1. Submit eight (8) revised plans which include:
   a.) The zoning table must reference the following:

Minimum lot area (sq ft)	30,000	(req'd column),	130,929 (existing column)
Minimum lot width (ft.)	100	(req'd column)	
Building height	12'	(proposed column)	
Minimum side yard setback	30'	(existing column),	52' (proposed column)
Minimum rear yard setback	27'	(existing column)	
Minimum side yard tower setback	90'	(proposed column)	

   b.) Plans must be numbered to indicate a submission set of 5 sheets (1 of 5 through 5 of 5).
   c.) The boundary/survey plan must be referenced in the sheet index on Sheet T-1.
   d.) Provide all the information required by Section 3A.6. (b) (1) (iii) and (xi).
   e.) Siltation control must be provided along the rear property line.
   f.) The remaining access drive off the rear of the existing building must be marked as a fire lane.

g.) The proposed parking area must be permanently marked with signage and curbing/islands so that the area does not remain open for use as spillover storage of vehicles, etc.
h.) Limits of green (lawn or non-impervious) areas need to be more clearly indicated. Note, said areas must be protected by curbing.
i.) The relocated scrap metal recycle dumpster must include respective enclosure and island protection with landscaping.
j.) Curbing and grass/landscaped areas along the rear property line must be provided in order to discourage continuance of unapproved outside storage activities.

2. The property owner and/or applicant must remove all outside storage (several trailer bodies, steel hoist, debris) located at the west side of the property as well as on the railroad property. All outside storage must be removed from the site. No building permit will be issued until the cleanup of this area occurs.

3. Proposed contours and/or spot elevations must be provided.

4. Parking spaces must be line striped.

5. Proposed fencing must be reviewed by the Zoning Enforcement Officer prior to installation to insure zoning compliance.

6. Soil and erosion controls must be inspected by the Zoning Enforcement Officer before work may commence.

7. The property owner must maintain (repair/replace when necessary) the siltation control until all development activity is completed and all disturbed areas are permanently stabilized.

8. Submit an as-built prior to bond release.

9. Submit a bond in the amount of $15,000.00 (forms are enclosed). Note, two separate bonds (for $10,000.00 and $5,000.00) are recommended, considering that the $5,000.00 amount covering the required site cleanup work can be released prior to issuance of a building permit, contingent on completion and acceptance of said cleanup.

Please note that one (1) set of revised drawings should be submitted for review after all outstanding issues (conditions of approval as set forth above), are adequately addressed. If there are any questions relative to the conditions of approval, please call the Town prior to submitting the revised plans. This will avoid costly and time consuming revisions and reviews, therefore expediting the process for you as the applicant.

This approval is subject to compliance with any and all Zoning Regulations of the Town of North Haven.

You may not proceed with this approval until you have received a signed plan from the Land Use Office.

Very truly yours,

Jeanne Pulleyn

Jeanne Pulleyn, Secretary
Planning & Zoning Commission

JP/ts
cc: First Selectman
Engineering Dept.
Building Dept.
CERTIFIED MAIL R/R
Enclosures

Exhibit B

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2019.

Information on the Property Records for the Municipality of North Haven was last updated on 2/16/2022.

Property Summary Information

Parcel Data And Values | Building | Outbuildings | Sales | Permits

Parcel Information

Location:	120 UNIVERSAL DR	Property Use:	Automotive	Primary Use:	Service Center
Unique ID:	027540	Map Block Lot:	011 001	Acres:	3.00
490 Acres:	0.00	Zone:	IL30	Volume / Page:	0799/0046
Developers Map / Lot:		Census:	0		

Value Information

	Appraised Value	Assessed Value
Land	480,000	335,990
Buildings	696,796	487,760

	Appraised Value	Assessed Value
Detached Outbuildings	327,936	229,560
Total	1,504,732	1,053,310

Owner's Information

Owner's Data
120 UNIVERSAL DRIVE ASSOCIATES LLC 844 DENTREE DR ORANGE, CT 06477

Back To Search (JavaScript:window.history.back(1);)

Print View (PrintPage.aspx?towncode=101&uniqueid=027540)

Exhibit C

Construction Drawings

AT&T

AT&T SITE NUMBER:	**CTL05107**
AT&T SITE NAME:	**NORTH HAVEN SOUTH**
AT&T FA CODE:	**10071172**
AT&T PACE NUMBER:	**MRCTB051577, MRCTB052072, MRCTB051629**
AT&T PROJECT:	**5G NR 1SR CBAND, BBU RECONFIGURATION WITH NEW IDS**
BUSINESS UNIT #:	**881536**
SITE ADDRESS:	**120 UNIVERSAL DRIVE NORTH HAVEN, CT 06473**
COUNTY:	**NEW HAVEN**
SITE TYPE:	**MONOPOLE**
TOWER HEIGHT:	**120'-0"**

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	NORTH HAVEN TOWER
SITE ADDRESS:	120 UNIVERSAL DRIVE NORTH HAVEN, CT 06473
COUNTY:	NEW HAVEN
MAP/PARCEL #:	002 001
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.344447°
LONGITUDE:	-72.870811°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	14'
CURRENT ZONING:	IL30
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	NEW YORK CENTRAL LINES LLC 500 WATER ST (J-910) JACKSONVILLE, FL 32202
TOWER OWNER:	CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	AT&T TOWER ASSET GROUP 575 MOROSGO DRIVE ATLANTA, GA 30324-3300
ELECTRIC PROVIDER:	UNITED ILLUMINATING CO.
TELCO PROVIDER:	T.B.D.

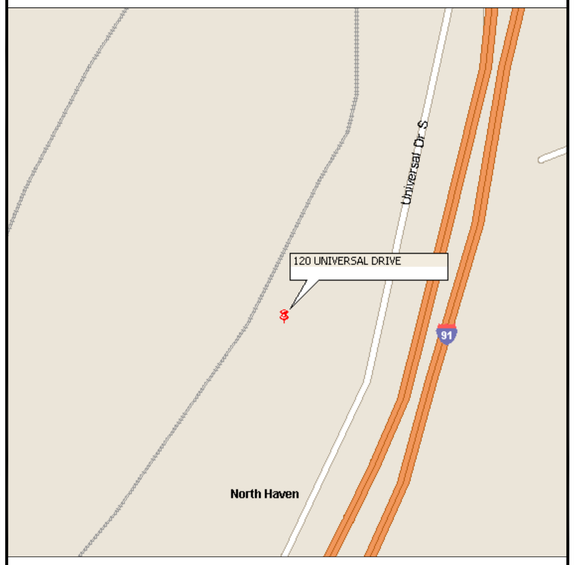
DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	EXISTING & FINAL EQUIPMENT PLANS
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	FINAL EQUIPMENT SCHEDULE
C-4	EQUIPMENT MOUNTING DETAILS
C-5	EQUIPMENT SPECS
G-1	GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS
ATTACHED	PLUMBING DIAGRAM
ATTACHED	MOUNT SPECS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS
BEFORE YOU DIG!

LOCATION MAP



NO SCALE

SITE PHOTO

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S BOULDER AVE, SUITE 300 TULSA, OK 74119 MARVIN PHILLIPS Marvin.Phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277 PAUL PEDICONE - PROJECT MANAGER POUL PEDICONE@CROWNCASTLE.COM BILL WOLFF - CONSTRUCTION MANAGER BILL WOLFF@CROWNCASTLE.COM

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (3) POWERWAVE - 7770 ANTENNAS
- REMOVE (3) CCI - OPA-65R-LCUU-H6 ANTENNAS
- REMOVE (3) KATHRIEN - 800-10966 ANTENNAS
- REMOVE (6) POWERWAVE - LGP 21401 TMAS
- REMOVE (6) PX-070821 TRIPLEXERS
- REMOVE (6) COAX CABLE (1-5/8")
- RELOCATE (3) ERICSSON - 4478 B14 RADIOS
- RELOCATE (1) DC6-48-60-0-8F PENDANT
- NEW SABRE C10857278C WITH PART# C10899055 PIPE MOUNT PER MOUNT ANALYSIS BY B+T GROUP DATED SEPTEMBER 15, 2021
- INSTALL (3) QUINTEL - QD8616-7 ANTENNAS
- INSTALL (6) ERICSSON - AIR6449 N77D+AIR6419 N77G STACKED ANTENNAS
- INSTALL (6) Y CABLES
- INSTALL (1) 18 PAIR FIBER TRUNK

GROUND SCOPE OF WORK:
- REMOVE (6) TPX-070821 TRIPLEXERS
- REMOVE (6) LGP 21901 DIPLEXERS
- REMOVE (1) 6630
- REMOVE (1) RETIRED GSM CABINET
- INSTALL (3) VERTIV -48V RECTIFIERS IN EXISTING POWER PLANT
- INSTALL (1) 23" FIF RACK
- INSTALL (1) 6673 FRONTHAUL GATEWAY
- INSTALL (1) XMU

NOTE:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. AT&T IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	N/A
DATED:	
MOUNT ANALYSIS:	B+T GROUP
DATED:	9/15/21
AC ELECTRICAL POWER DESIGN:	N/A
DATED:	
RFDS REVISION:	PRELIMINARY
DATED:	7/22/21
ORDER ID:	556515
REVISION:	0

575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

AT&T SITE NUMBER:
CTL05107

BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/5/21	HN	PRELIMINARY REVIEW	JTS
B	10/11/21	JTS	PRELIMINARY REVIEW	JTS
0	02/01/22	KT	CONSTRUCTION	KT

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: T-1

REVISION: 0

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: AT&T
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER......40 ksi
   #5 BARS AND LARGER......60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH......3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER......2"
   #5 BARS AND SMALLER......1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS......3/4"
   BEAMS AND COLUMNS......1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS 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 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).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY 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 PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "AT&T".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

AT&T
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ATLANTA, GA 30324-3300

CROWN CASTLE
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AT&T SITE NUMBER:
CTL05107

BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

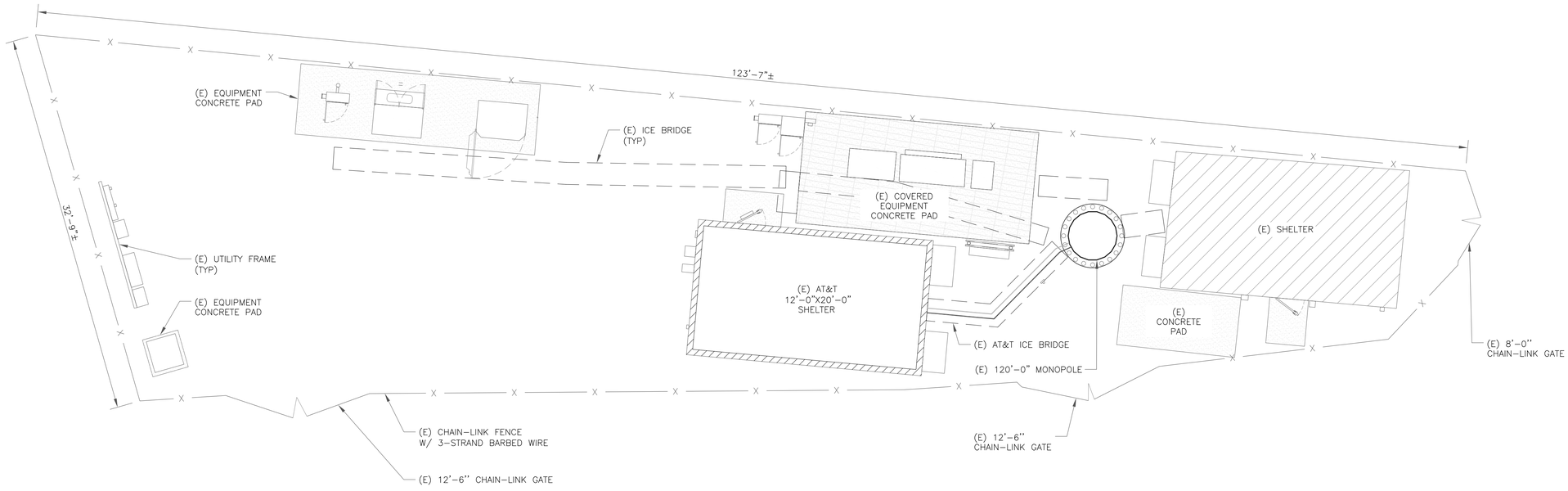
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/5/21	HN	PRELIMINARY REVIEW	JTS
B	10/11/21	JTS	PRELIMINARY REVIEW	JTS
0	02/01/22	KT	CONSTRUCTION	KT

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2
REVISION: 0



1 SITE PLAN

SCALE: 4' 2' 0 4'

3/16"=1'-0" (FULL SIZE)
3/32"=1'-0" (11x17)

N

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

AT&T SITE NUMBER:
CTL05107

BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/5/21	HN	PRELIMINARY REVIEW	JTS
B	10/11/21	JTS	PRELIMINARY REVIEW	JTS
0	02/01/22	KT	CONSTRUCTION	KT

STATE OF CONNECTICUT
JOSEPH T. STOUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
02/01/22

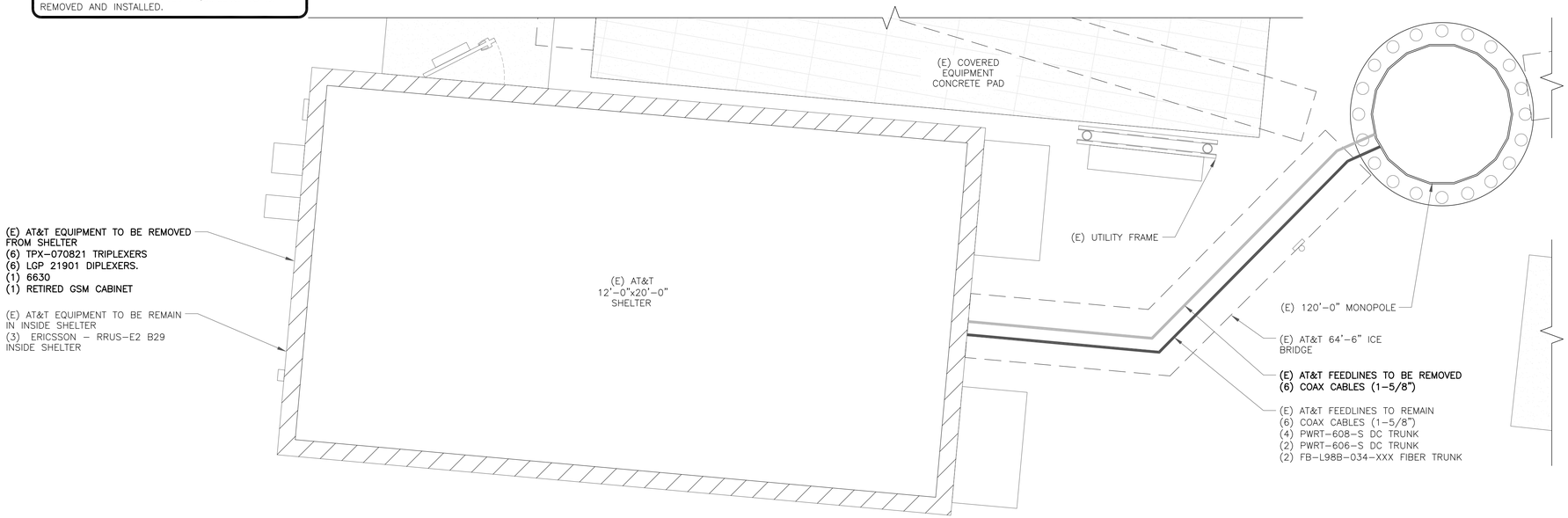
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: C-1.1

REVISION: 0

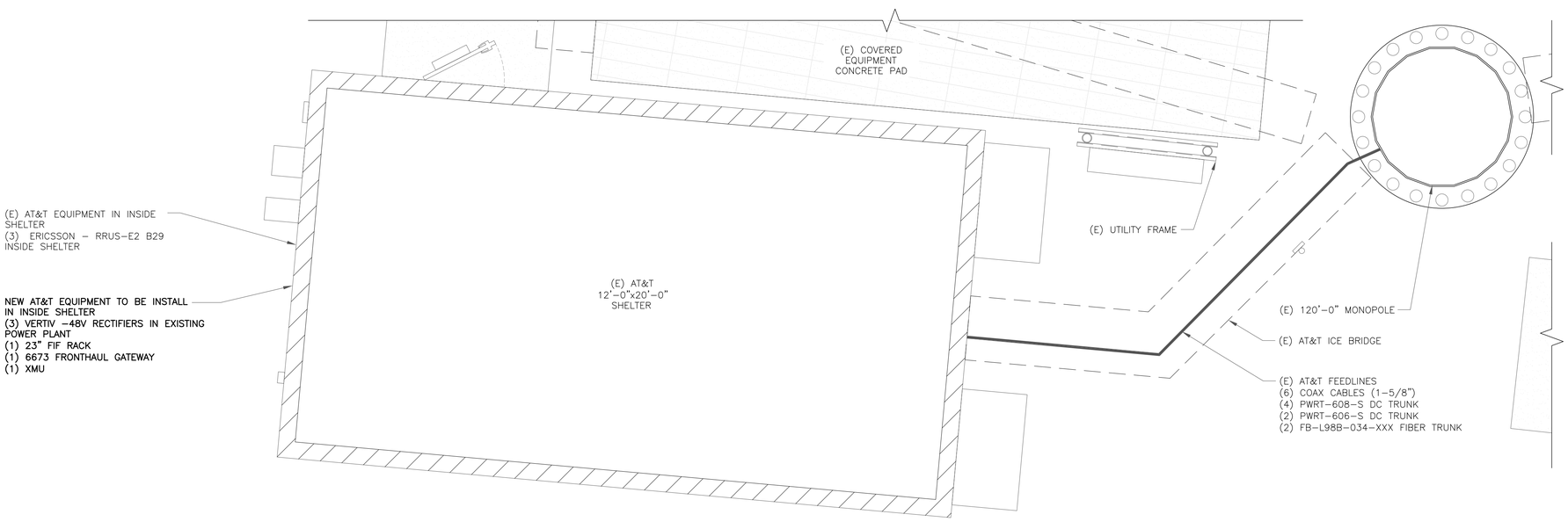
NOTE:

SHELTER INTERIOR INFORMATION NOT AVAILABLE AT TIME OF ISSUE. GENERAL CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL EQUIPMENT TO BE REMOVED AND INSTALLED.



1 EXISTING EQUIPMENT PLAN

SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)



2 FINAL EQUIPMENT PLAN

SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

GROUND SCOPE OF WORK:

- INSTALL (3) VERTIV -48V RECTIFIERS IN EXISTING POWER PLANT
- INSTALL (1) 23" FIF RACK
- INSTALL (1) 6673 FRONTHAUL GATEWAY
- INSTALL (1) XMU

NOTE:

THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. AT&T IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

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BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

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02/01/22

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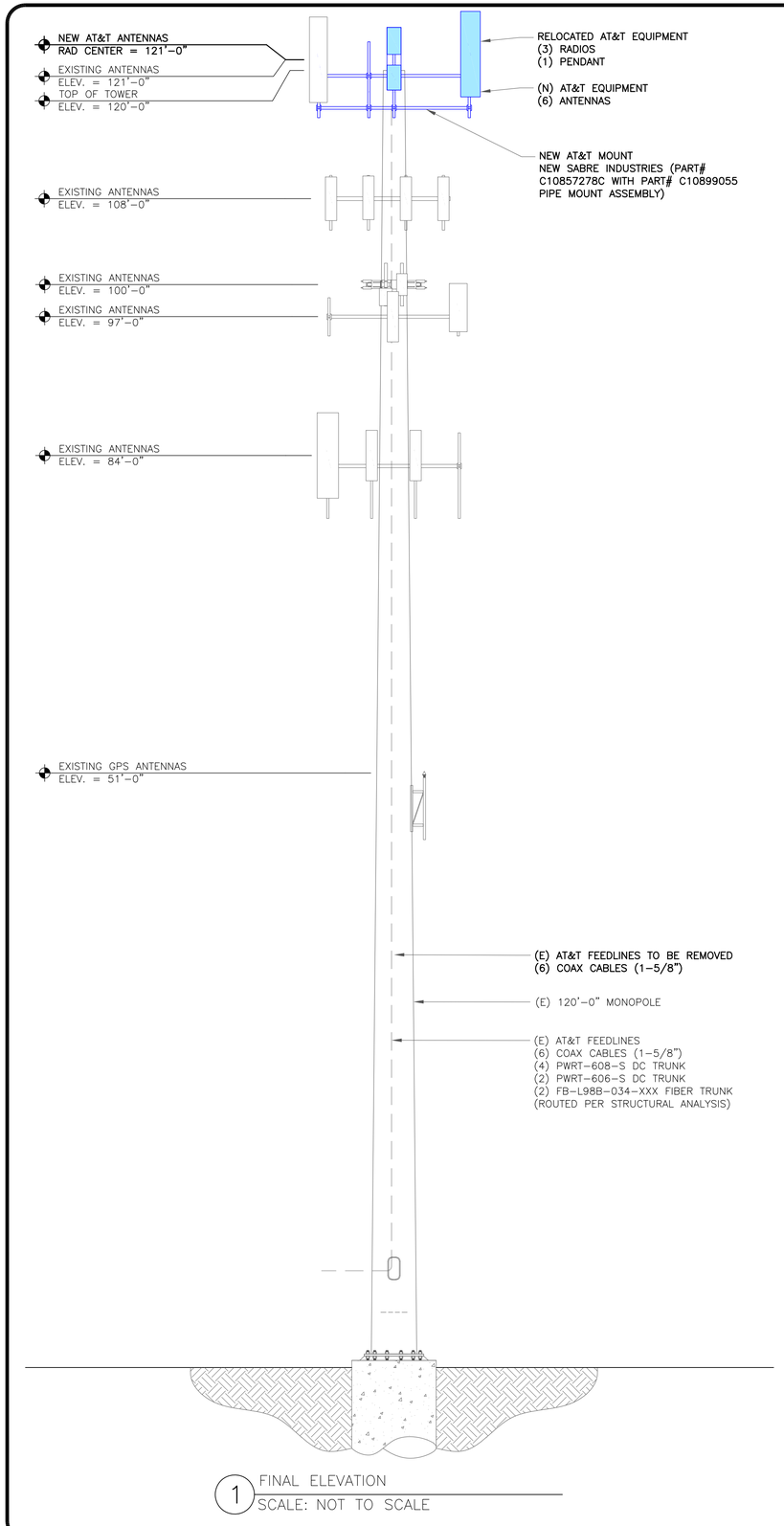
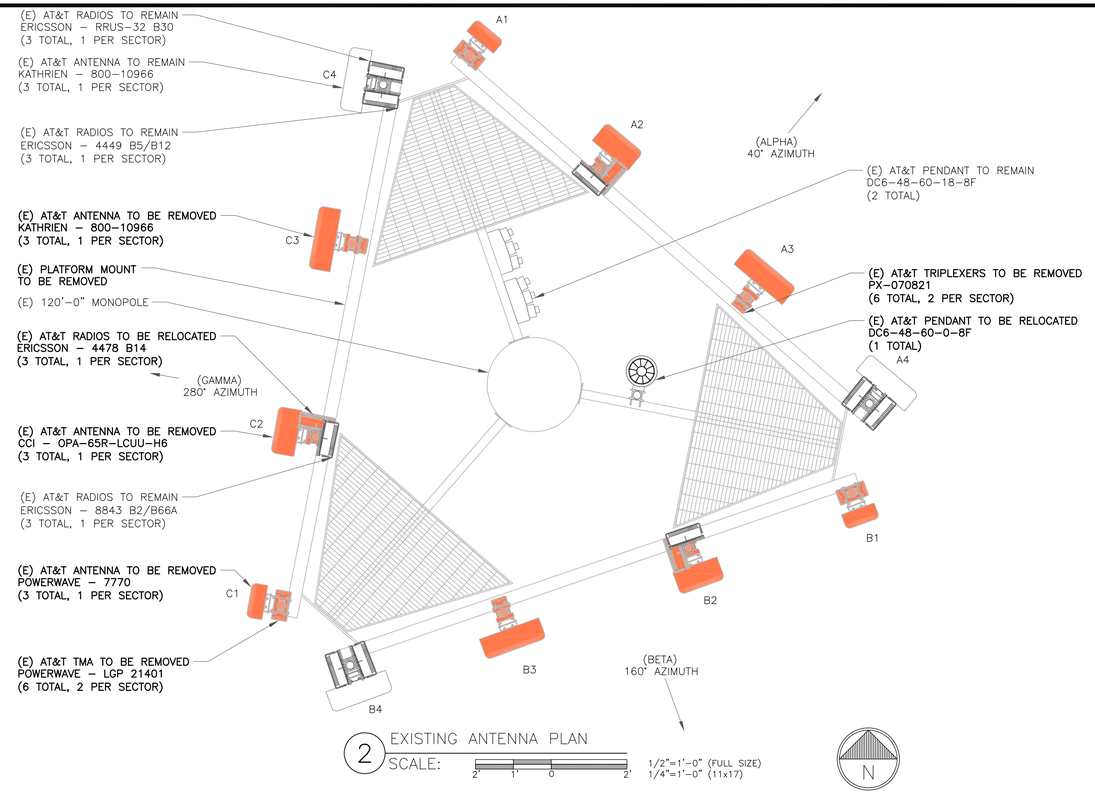
SHEET NUMBER: C-1.2

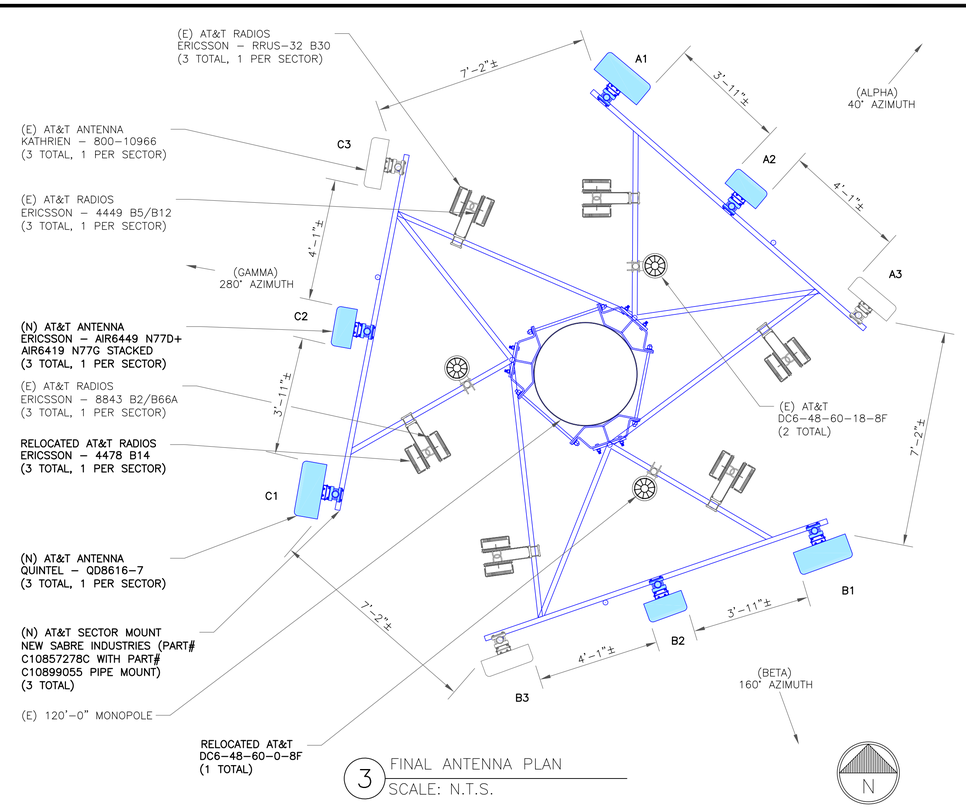
REVISION: 0



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: 2' 1' 0 2' — 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)



3 FINAL ANTENNA PLAN
SCALE: N.T.S.

"LOOK UP" - CROWN CASTLE USA INC.
SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

INSTALLER NOTES:

1. REFERENCE C-3 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-5 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.
4. 3'-0" MINIMUM DISTANCE REQUIRED BETWEEN LTE ANTENNAS ON SAME SECTOR.
5. 6'-0" MINIMUM DISTANCE REQUIRED BETWEEN 700BC & 700DE ANTENNAS ON SAME SECTOR.
6. 4'-0" MINIMUM DISTANCE REQUIRED BETWEEN LTE 700 ANTENNAS ON OPPOSING SECTORS.
7. ALL ANTENNA MEASUREMENT DISTANCES MUST BE EDGE TO EDGE (RELOCATE ANTENNAS AS NEEDED).
8. 8" MINIMUM DISTANCE REQUIRED BETWEEN ANTENNA & RADIO. SEE GENERIC EXAMPLE DETAIL ON SHEET C-4.

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AT&T SITE NUMBER:
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BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: C-2

REVISION: 0

FINAL ANTENNA AND FEEDLINE SCHEDULE

POS.	TECH	STATUS	AZIMUTH	ANTENNA TYPE	ANTENNA RAD CENTER	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	MAIN COAX SIZE	MAIN COAX LENGTH	COAX QTY	TMA QTY AND MODEL	SURGE PROTECTION	DC/FIBER CABLES	RRHs QTY & MODEL ON TOWER	LOCATION	DIPLEXER ON TOWER	DIPLEXER ON GROUND	RET CABLE
ALPHA SECTOR																		
A1	LTE 700/LTE 1900/LTE AWS/5G AWS/5G 1900	NEW	40°°	QUINTEL – QD8616–7	121'–0"	–	2°/2°/3°/3°/ 3°/3°/3°	1–5/8"	140'–0"	2	–			(1) ERICSSON – 4478 B14 (1) ERICSSON – 8843 B2/B66A (1) ERICSSON – RRUSE2 B 29	TOWER TOWER SHELTER	N	N	N
A2	5G CBAND	NEW	40°°	ERICSSON – AIR6449 N77D+AIR6419 N77G STACKED	121'–0"	–	–	–	–	–	–			–	–	–	–	–
A3	LTE 700/LTE WCS/5G 850	EXISTING	40°°	KATHRIEN – 800–10966	121'–0"	–	3°/3°/3°	–	–	–	–			(1) ERICSSON – 4449 B5/B12 (1) ERICSSON – RRUS–32 B30	TOWER TOWER	N	N	N
BETA SECTOR																		
B1	LTE 700/LTE 1900/LTE AWS/5G AWS/5G 1900	NEW	160°°	QUINTEL – QD8616–7	121'–0"	–	2°/2°/3°/3°/ 3°/3°/3°	1–5/8"	140'–0"	2	–			(1) ERICSSON – 4478 B14 (1) ERICSSON – 8843 B2/B66A (1) ERICSSON – RRUSE2 B 29	TOWER TOWER SHELTER	N	N	N
B2	5G CBAND	NEW	160°°	ERICSSON – AIR6449 N77D+AIR6419 N77G STACKED	121'–0"	–	–	–	–	–	–			–	–	–	–	–
B3	LTE 700/LTE WCS/5G 850	EXISTING	160°°	KATHRIEN – 800–10966	121'–0"	–	2°/2°/3°	–	–	–	–			(1) ERICSSON – 4449 B5/B12 (1) ERICSSON – RRUS–32 B30	TOWER TOWER	N	N	N
GAMMA SECTOR																		
C1	LTE 700/LTE 1900/LTE AWS/5G AWS/5G 1900	NEW	280°°	QUINTEL – QD8616–7	121'–0"	–	2°/2°/3°/3°/ 3°/3°/3°	1–5/8"	140'–0"	2	–			(1) ERICSSON – 4478 B14 (1) ERICSSON – 8843 B2/B66A (1) ERICSSON – RRUSE2 B 29	TOWER TOWER SHELTER	N	N	N
C2	5G CBAND	NEW	280°°	ERICSSON – AIR6449 N77D+AIR6419 N77G STACKED	121'–0"	–	–	–	–	–	–			–	–	–	–	–
C3	LTE 700/LTE WCS/5G 850	EXISTING	280°°	KATHRIEN – 800–10966	121'–0"	–	6°/6°/3°	–	–	–	–			(1) ERICSSON – 4449 B5/B12 (1) ERICSSON – RRUS–32 B30	TOWER TOWER	N	N	N

NOTE: BOLD DENOTES NEW EQUIPMENT

1 FINAL ANTENNA AND FEEDLINE SCHEDULE
SCALE: NOT TO SCALE

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BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

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STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
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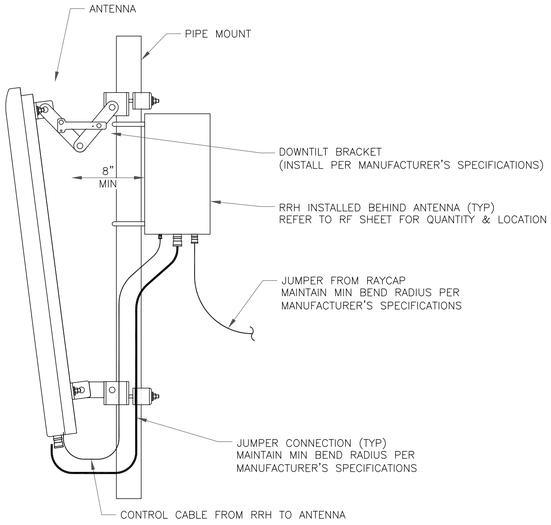
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: C-3
REVISION: 0



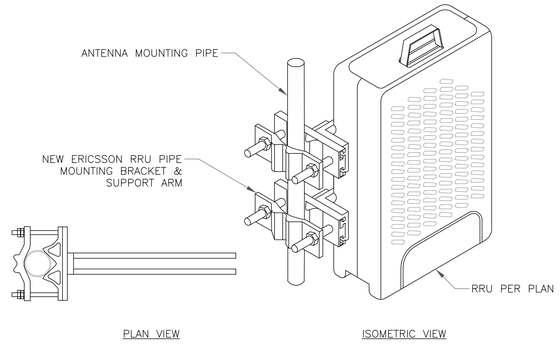
1 GENERIC ANTENNA MOUNTING ELEVATION
SCALE: NOT TO SCALE

ERICSSON RRU MOUNTING KIT:

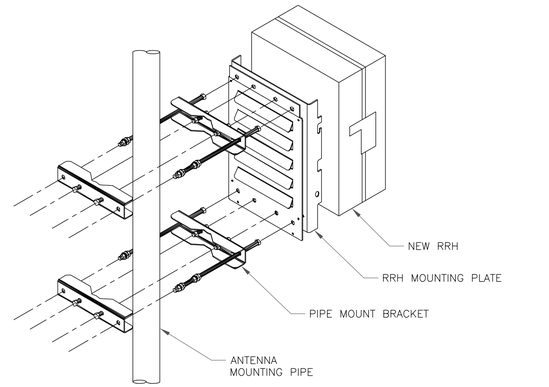
SXK 107 2839/1: SINGLE RRU SUPPORT KIT (PART # 5335) (OR ENGINEER APPROVED EQUIVALENT)
SXK 107 2839/2: EXPANSION KIT (PART # 5336) (OR ENGINEER APPROVED EQUIVALENT)

MOUNTING NOTES:

REFER TO PRODUCT SPECS FOR BOLT SIZE & PIPE
DIAMETER TOLERANCES. THE PART NO. SXK107-2839/2 IS REQUIRED FOR (2) RRUS.



2 ERICSSON – SXK 107 2839
SCALE: NOT TO SCALE



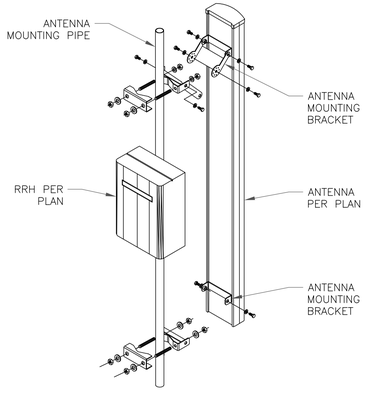
NOTE:

ANTENNA NOT SHOWN FOR CLARITY

3 SINGLE RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

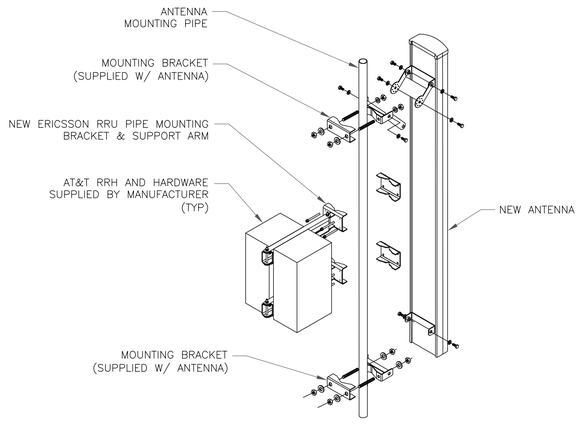
1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



4 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

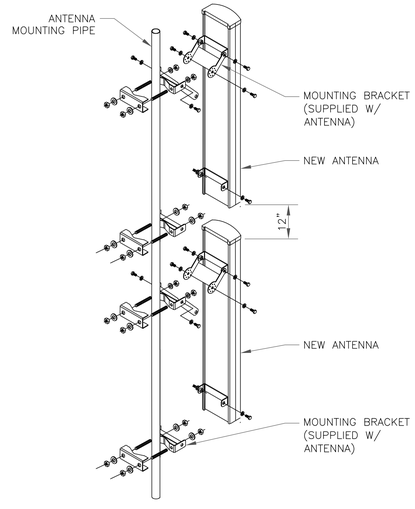
1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



5 ANTENNA WITH DUAL RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



6 AEQU ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

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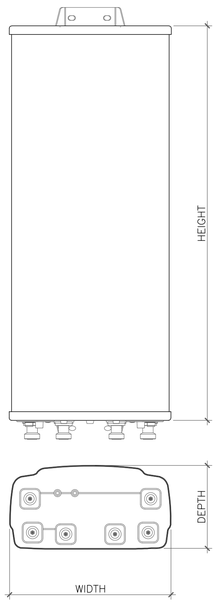
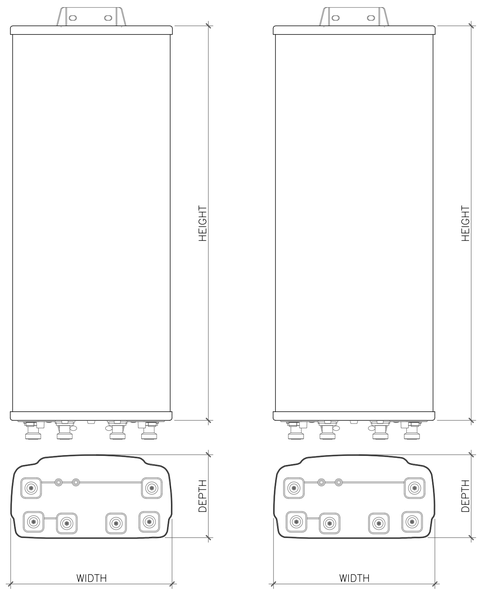
REVISION: 0



ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
QUINTEL – QD8616-7	96"	22"	9.6"	150 lbs

1 ANTENNA DETAIL
SCALE: NOT TO SCALE



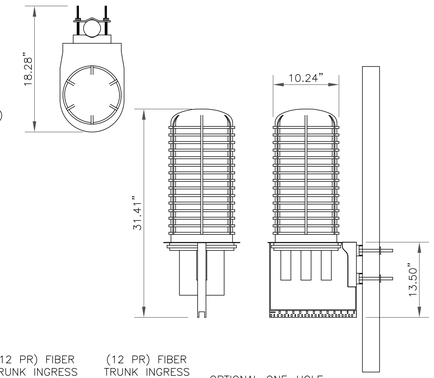
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
ERICSSON/AIR 6419 B77G	27.95"	15.75"	6.68"	66.20lbs
ERICSSON/AIR 6449 B77D	30.39"	15.87"	8.07"	81.60lbs

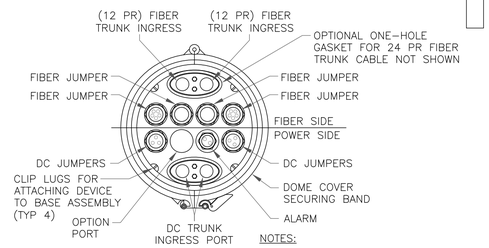
2 ANTENNA DETAIL
SCALE: NOT TO SCALE

RAYCAP
DC9-48-60-24-8C-EV

RAYCAP – DC9-48-60-24-8C-EV
SIZE: 10.24x31.40 IN.
WEIGHT: 26.2 LBS
NOMINAL OPERATING VOLTAGE: 48 VDC
VOLTAGE PROTECTION RATING: 330 V
WIND LOADING: 150 MPH SUSTAINED (105.7 LBS)
WIND LOADING: 195 MPH GUST (213.6 LBS)

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION





NOTES:
1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

3 SQUID MOUNTING DETAIL
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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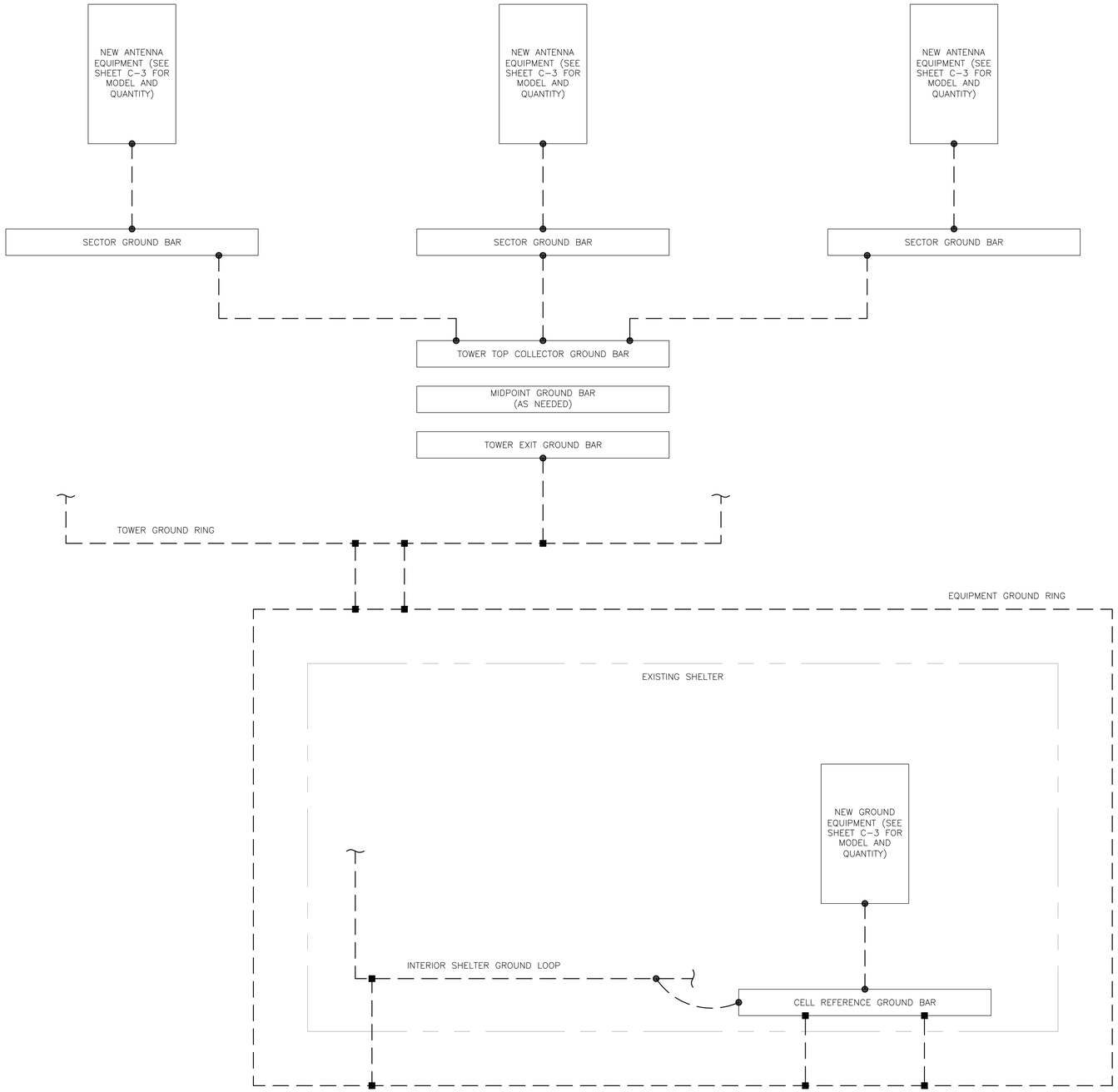

1 GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

- GROUND WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COPPER GROUND ROD
- GROUND ROD W/ TEST WELL

CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUITS (ATT-TP-76416 7.6.7).

HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH (2) #2 STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CELL SITE REFERENCE GROUND BAR MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) #2 STRANDED GREEN INSULATED COPPER CONDUCTORS.

EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE (ATT-TP-76416 7.6.7.2).

DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICES CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR PER TP76300 SECTION H 6 AND TP76416 FIGURE 7-11 REQUIREMENTS.

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

AT&T SITE NUMBER:
CTL05107

BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

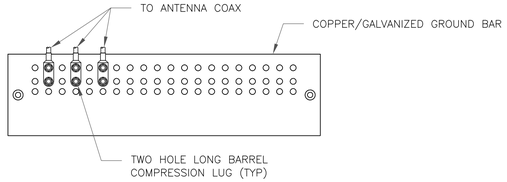
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/5/21	HN	PRELIMINARY REVIEW	JTS
B	10/11/21	JTS	PRELIMINARY REVIEW	JTS
0	02/01/22	KT	CONSTRUCTION	KT

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
02/01/22

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

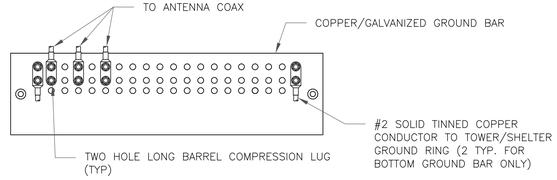
SHEET NUMBER: G-1
REVISION: 0



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

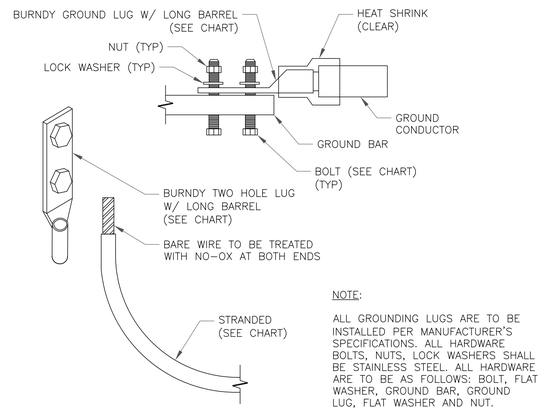


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

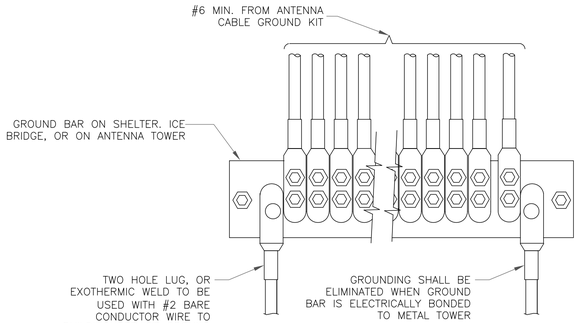
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



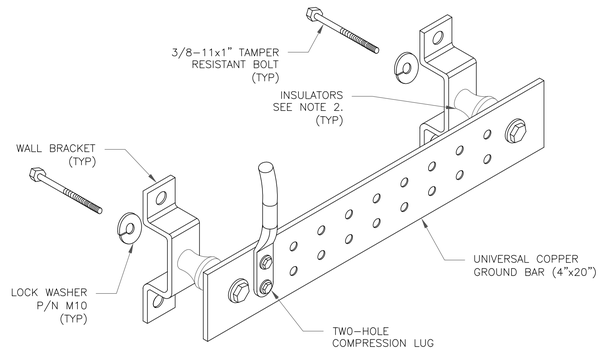
NOTE:

ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

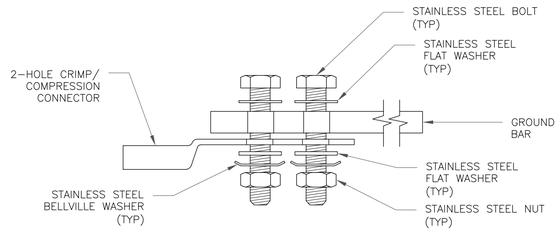


NOTES:

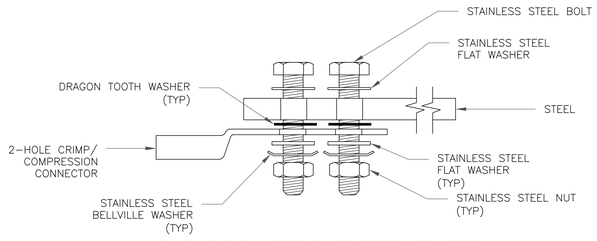
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.

2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

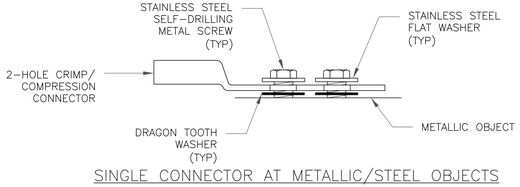
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

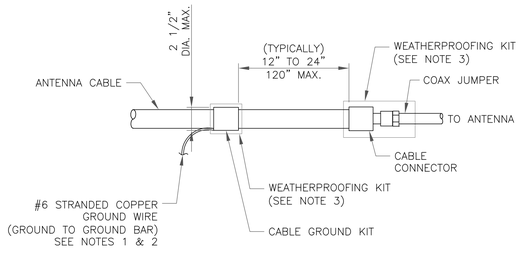


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

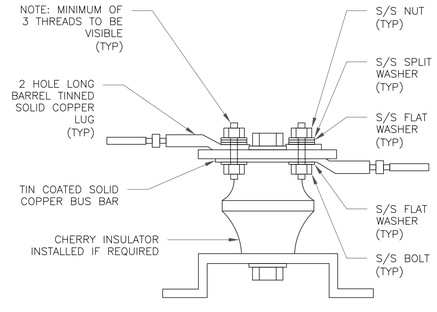
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

AT&T SITE NUMBER:
CTL05107

BU #: **881536**
NORTH HAVEN TOWER

120 UNIVERSAL DRIVE
NORTH HAVEN, CT 06473

EXISTING
120'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	10/5/21	HN	PRELIMINARY REVIEW	JTS
B	10/11/21	JTS	PRELIMINARY REVIEW	JTS
0	02/01/22	KT	CONSTRUCTION	KT

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: G-2
REVISION: 0

Diagram - Sector	A	Diagram File Name - CT5107_ABC_C-BAND dod_1.vsd					
Atoll Site Name -	CT5107	Location Name -	NORTH HAVEN SOUTH	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson"

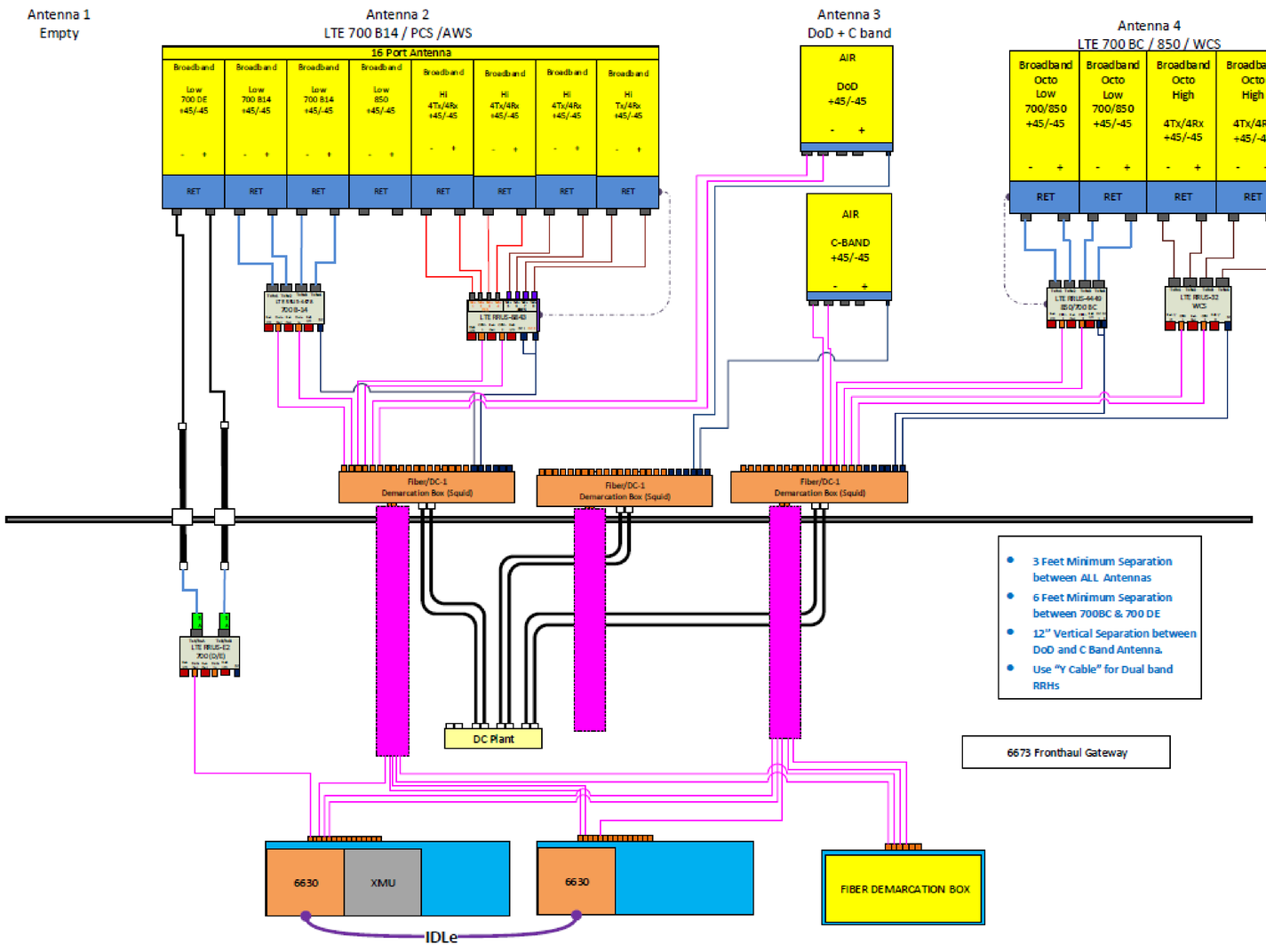


Diagram - Sector	B	Diagram File Name - CT5107_ABC_C-BAND dod_1.vsd					
Atoll Site Name -	CT5107	Location Name -	NORTH HAVEN SOUTH	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson"

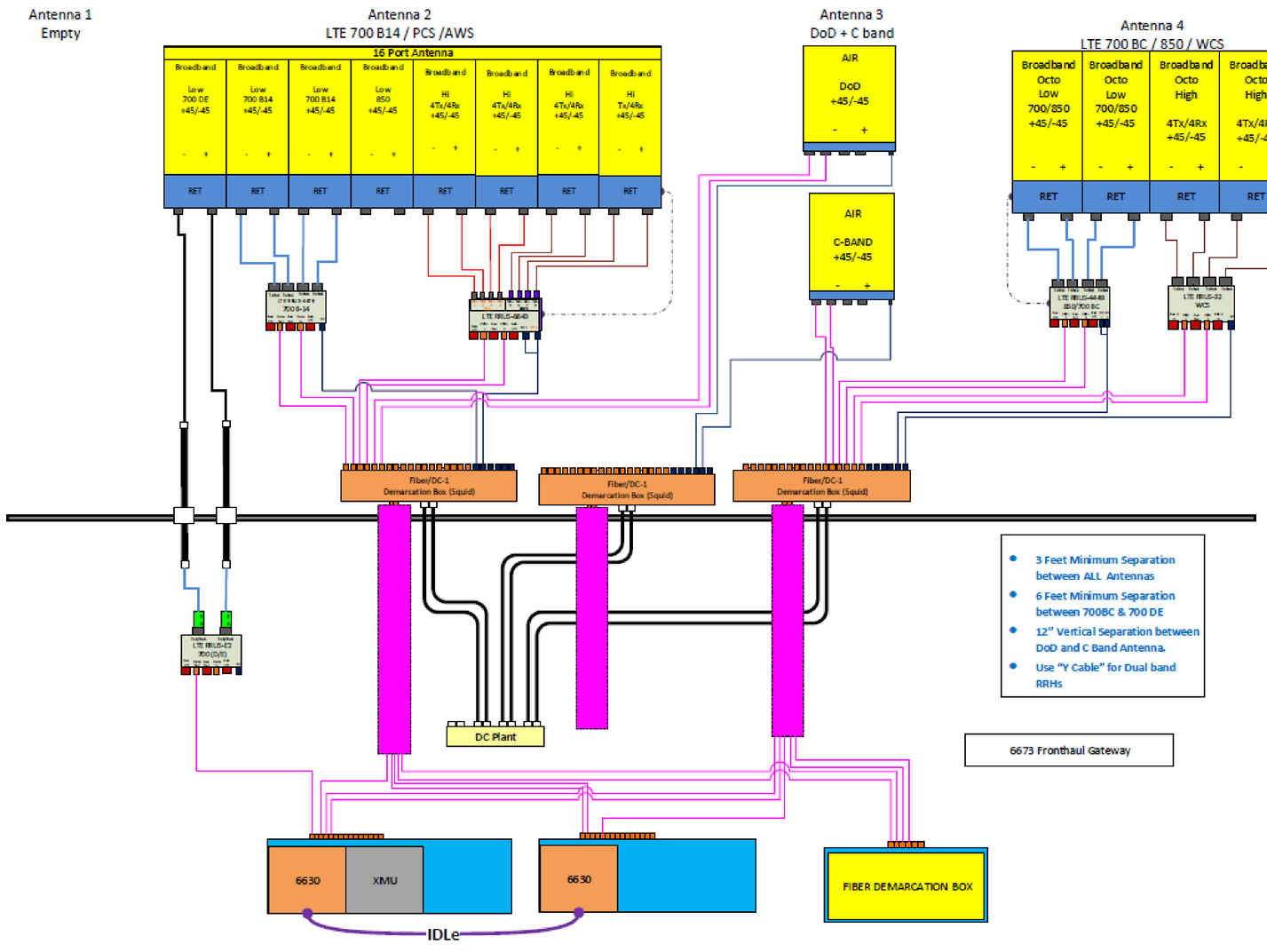
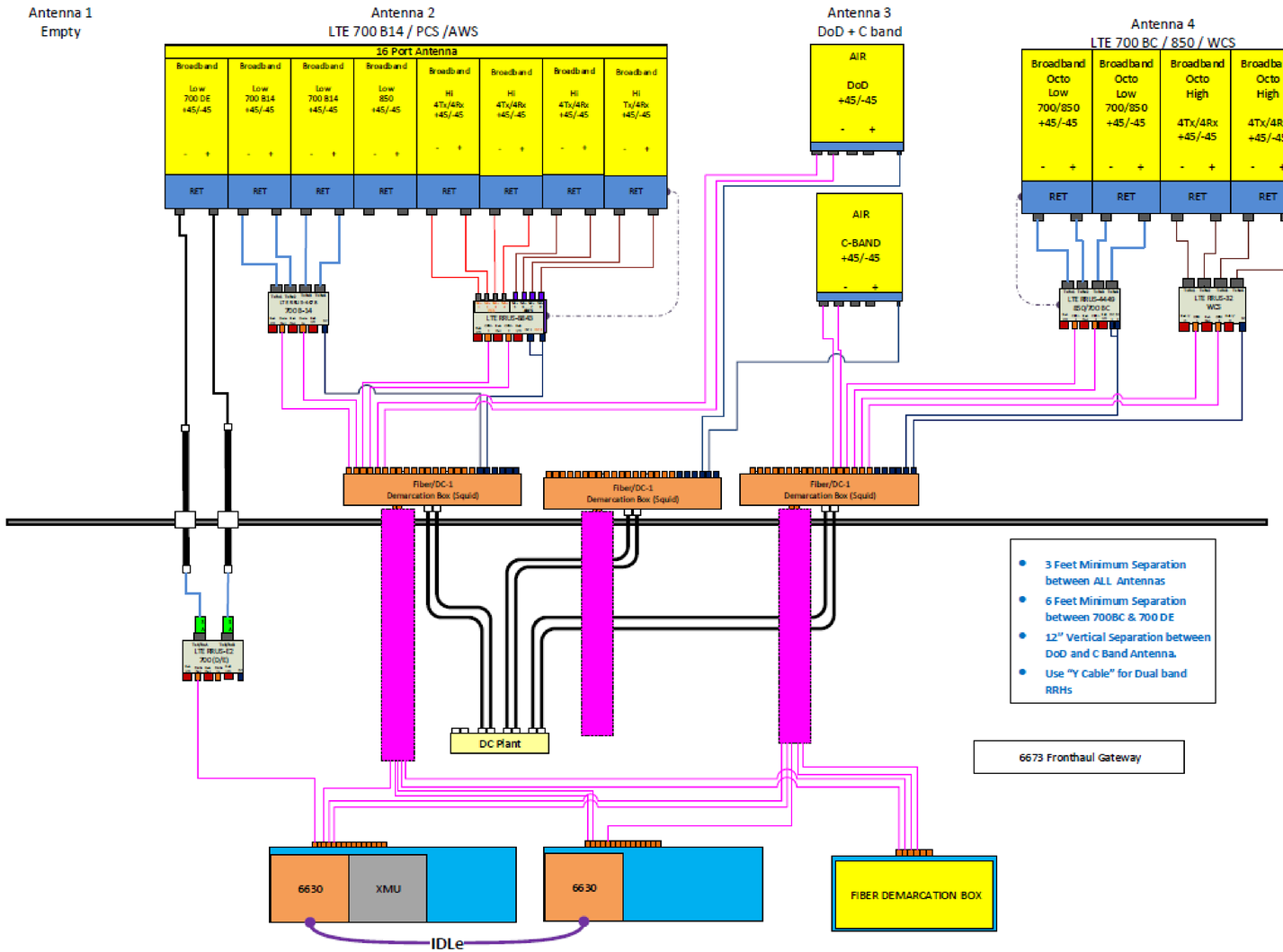


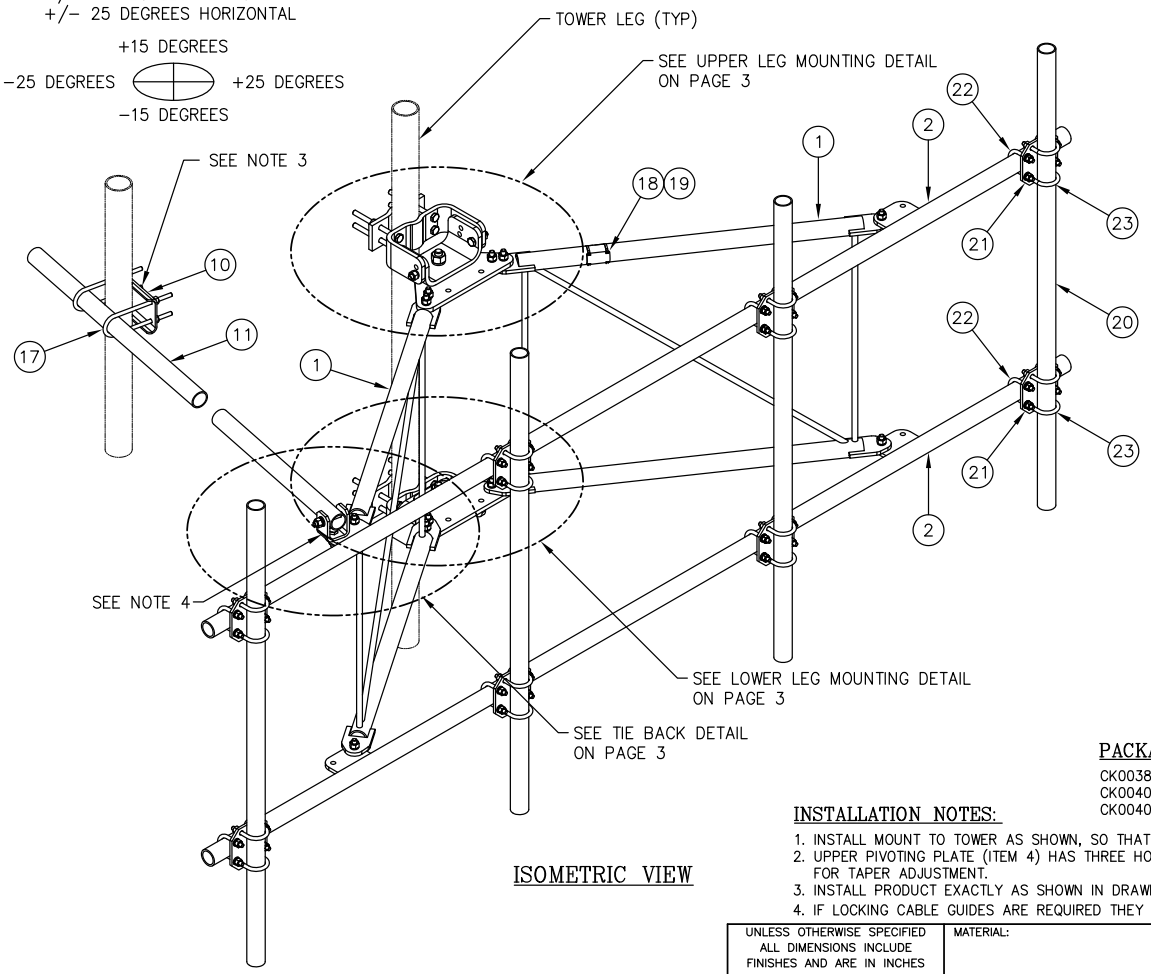
Diagram - Sector	C	Diagram File Name - CT5107_ABC_C-BAND dod_1.vsd					
Atoll Site Name -	CT5107	Location Name -	NORTH HAVEN SOUTH	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments: "Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson"							



TIEBACK ANGLE RANGE DETAIL

+/- 15 DEGREES VERTICAL
+/- 25 DEGREES HORIZONTAL

+15 DEGREES
−25 DEGREES +25 DEGREES
−15 DEGREES



ISOMETRIC VIEW

C10857278C 14' HD V-BOOM ASSEMBLY W/PIPES, CROSSOVER KITS & TIEBACKS

(1) C10857003C	14' HD V-BOOM ASSEMBLY W/TIEBACK	483#
(4) C10901329	PIPE, 2 7/8" O.D. X .203 X 10'-0	241#
(8) C10902012	CROSSOVER PLATE KIT	64#
	TOTAL WEIGHT	788#

C10857003C 14' HD V-BOOM ASSEMBLY W/TIEBACK

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	CW01222	WELDMENT, STANDOFF ARM	126
2.	2	CW01249	WELDMENT, FACE PIPE	168
3.	2	CS03109	PLATE, ROTATING	34
4.	1	CS03110	PLATE, PIVOTING (UPPER)	16
5.	1	CS03111	PLATE, LEG CLAMP (UPPER)	17
6.	1	CS03112	PLATE, PIVOTING (LOWER)	14
7.	1	CS03113	PLATE, LEG CLAMP (LOWER)	17
8.	2	CS03114	PLATE, LEG CLAMP (BACK)	14
9.	1	CS00098	PLATE, TIE BACK SWIVEL	3
10.	1	CS03285	PLATE, TIE BACK CLAMP	4
11.	1	CS03333	PIPE, TIE BACK	38
12.	2	C40026073	BOLT ASSEMBLY, 1 ø X 3 A325	4
13.	8	C40140004	BOLT ASSEMBLY, 5/8 ø X 8 A307	13
14.	1	C40026033	BOLT ASSEMBLY, 5/8 ø X 4 1/2 A325	1
15.	12	C40026025	BOLT ASSEMBLY, 5/8 ø X 2 1/2 A325	6
16.	5	C40026024	BOLT ASSEMBLY, 5/8 ø X 2 1/4 A325	3
17.	2	C40034183	U-BOLT ASSEMBLY, 1/2 ø X 2 9/16 C-C	3
18.	1	Z30992020	MOUNT CLASSIFICATION TAG C10857003C	1
19.	2	C40062103	STAINLESS STEEL SELF-LOCKING CABLE TIE	1
			TOTAL WEIGHT	483

ANTENNA MOUNTING PIPES

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
20.	4	C10901329	PIPE, 2 7/8' O.D. X .203 X 10'-0	241
			TOTAL WEIGHT	241

C10902012 CROSSOVER PLATE KIT

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
21.	1	CS03116	CROSSOVER PLATE	4
22.	2	C40034139	U-BOLT ASSEMBLY, 1/2 X X 2 15/16 C-C	2
23.	2	C40034140	U-BOLT ASSEMBLY, 1/2 X X 3 7/16 C-C	2
			TOTAL WEIGHT	8

PACKAGING NOTE

CK00386 INCLUDES ITEMS 1, 3, 4, 5, 6, 7, 12 & 15 (8 QTY)
CK00404-HDW INCLUDES ITEMS 8, 9, 10, 13, 14, 15 (4 QTY), 16, 17, 18 & 19
CK00404-STL INCLUDES ITEMS 2 & 11

INSTALLATION NOTES:

1. INSTALL MOUNT TO TOWER AS SHOWN, SO THAT WELDED STANDOFF DIAGONAL IS SLOPING DOWNWARD FROM TOWER END TO FACE PIPE END.
2. UPPER PIVOTING PLATE (ITEM 4) HAS THREE HOLES ON EACH SIDE AND UPPER LEG CLAMP PLATE (ITEM 5) HAS TWO HOLES ON EACH SIDE FOR TAPER ADJUSTMENT.
3. INSTALL PRODUCT EXACTLY AS SHOWN IN DRAWING, WITH ALL BOLTS FACING UPWARDS.
4. IF LOCKING CABLE GUIDES ARE REQUIRED THEY MUST BE PURCHASED SEPARATELY (SEE PAGE 4).

NOTES:

1. QUANTITIES SHOWN IN LISTS OF MATERIAL ARE FOR ONE (1) V-BOOM ONLY.
2. THIS V-BOOM WILL MOUNT TO THE FOLLOWING: 1 1/2"ø TO 5 9/16"ø ROUND LEG.
3. TIEBACK MUST BE CONNECTED TO A RIGID MEMBER THAT PROVIDES ADEQUATE SUPPORT WITHIN THE LIMITS NOTED ABOVE IN THE TIEBACK ANGLE RANGE DETAIL UNLESS APPROVED BY THE ENGINEER OF RECORD.
4. THE TIEBACK IS SHOWN IN THIS POSITION AS A DEFAULT. THIS TIEBACK CAN BE CONNECTED AT ANY (1) OF THE (4) POSITIONS ON THE TABS ON THE FACE PIPE.

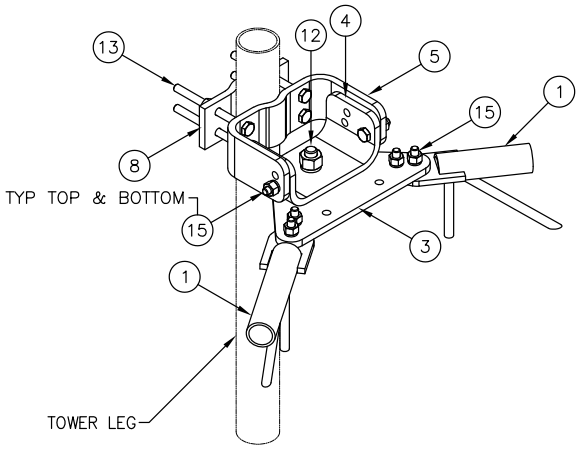
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES
TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"
MATERIAL:
TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

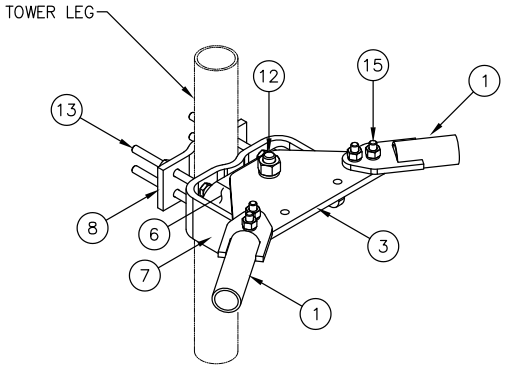
Sabre Industries™ Towers and Poles

14' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

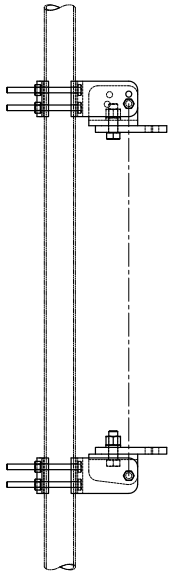
		SIZE	DRAWING NO.	REV
DATE	11/05/18	B	C10857278C	1
DRAWN BY	KLE			
CHECKED BY	EK		SCALE None	PAGE 1 OF 4



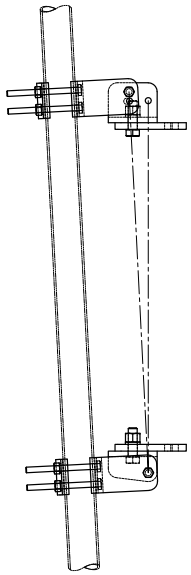
UPPER LEG MOUNTING DETAIL



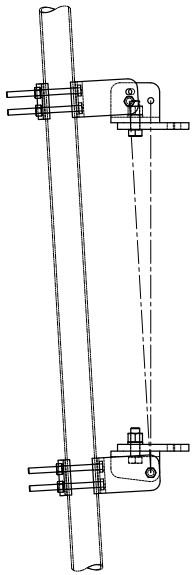
LOWER LEG MOUNTING DETAIL



STRAIGHT
TOWER SECTION

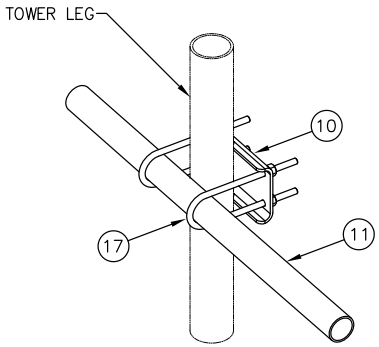


TAPERED
1'–9 IN 20' SLOPE

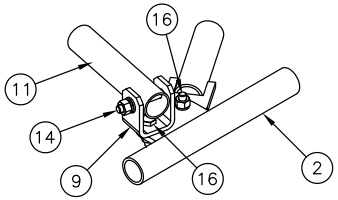


TAPERED
2' IN 20' SLOPE

--------PIVOTING OPTIONS--------



TIE BACK DETAIL
AT TOWER LEG



TIE BACK DETAIL
AT ANTENNA MOUNTING FRAME

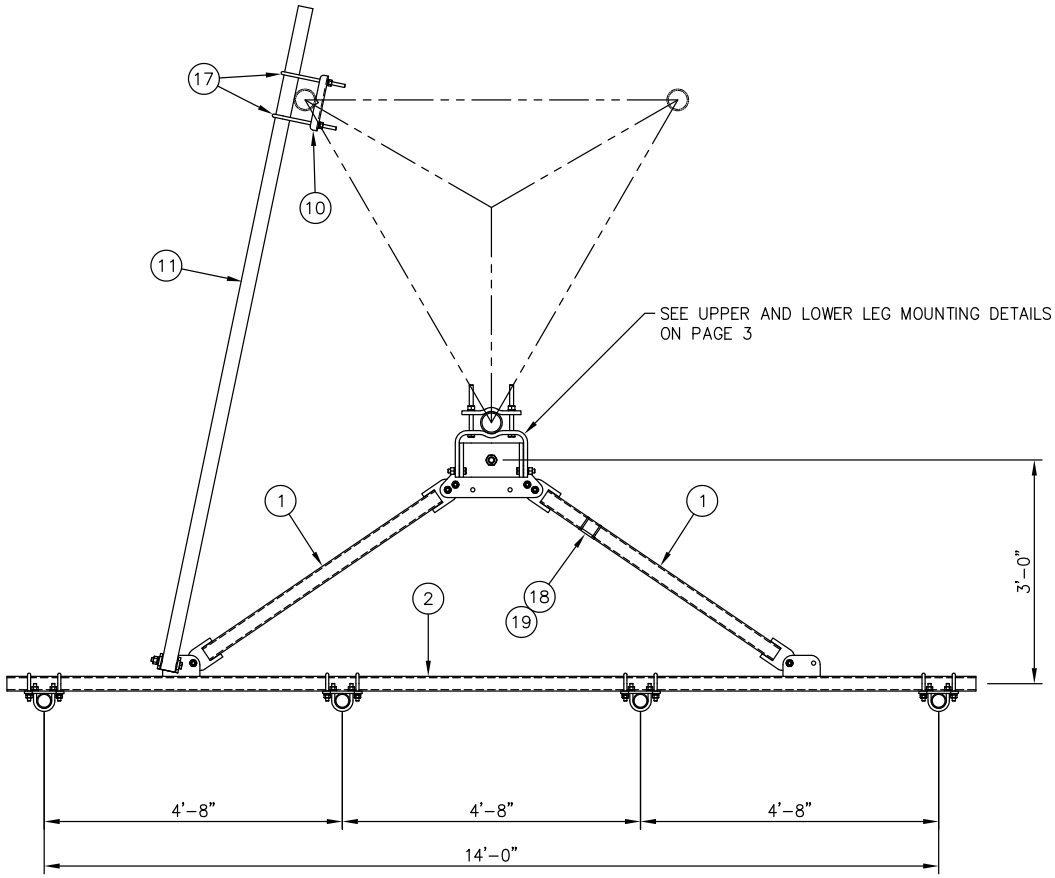
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"	MATERIAL: TOLERANCES DO NOT APPLY TO RAW MATERIAL

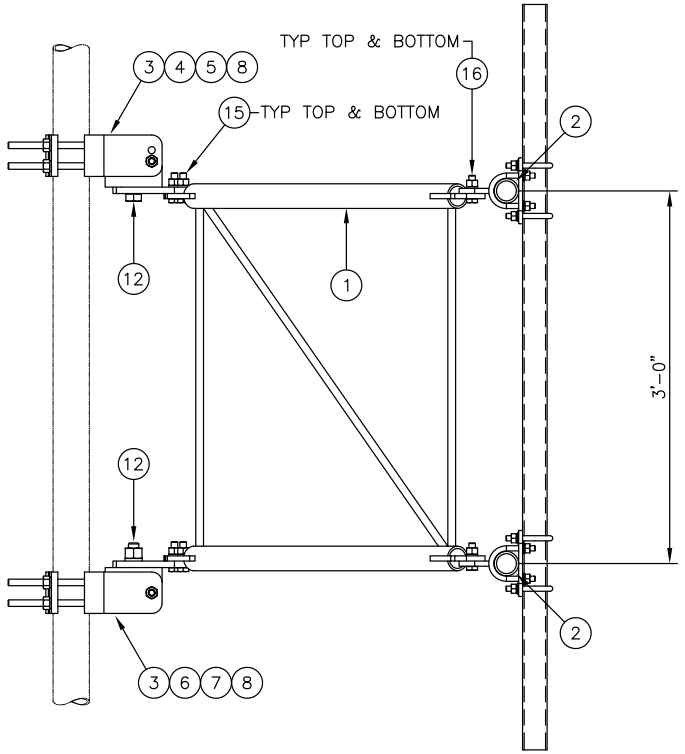
REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

Sabre Industries™
Towers and Poles

14' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

		SIZE	DRAWING NO.	REV
DATE	11/05/18	B	C10857278C	1
DRAWN BY	KLE			
CHECKED BY	EK		SCALE: None	PAGE: 3 OF 4





SIDE VIEW

MOUNTING OPTIONS

SHOWING MOUNTING PIPE PLACEMENTS

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES

TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"

MATERIAL:

TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

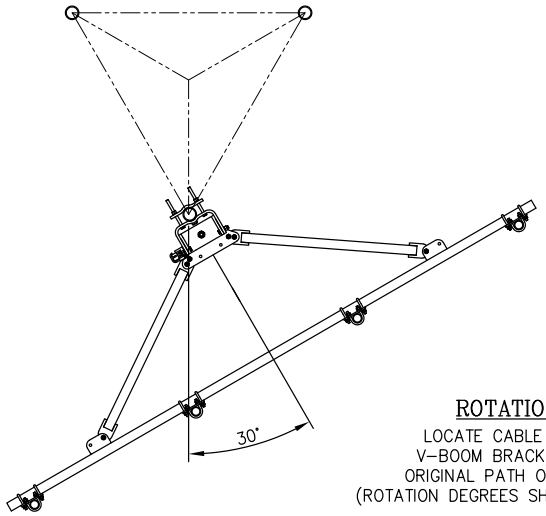
Sabre Industries™ Towers and Poles

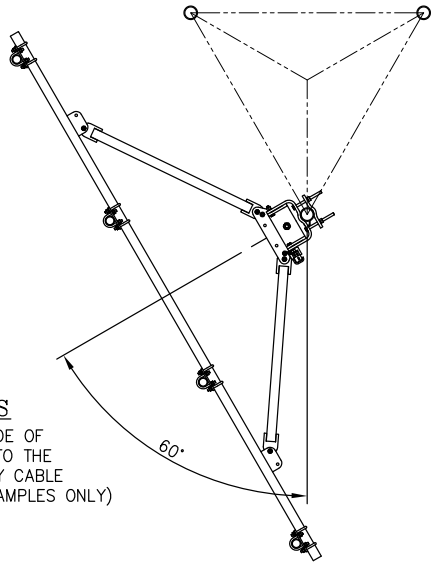
14' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

		SIZE	DRAWING NO.	REV
DATE	11/05/18	B	C10857278C	1
DRAWN BY	KLE			
CHECKED BY	EK		SCALE None	PAGE 2 OF 4

OPTIONAL LOCKING CABLE GUIDE

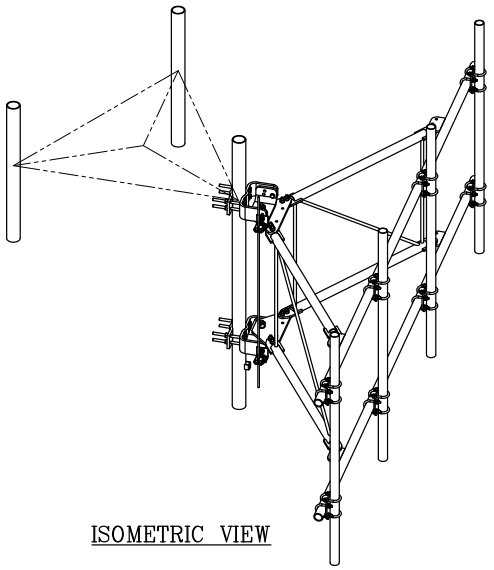
IF REQUIRED PLEASE ORDER PART NUMBER C30017022. THIS KIT WILL COME WITH (2) LOCKING CABLE GUIDES FOR TOP & BOTTOM V-BOOM BRACKETS.



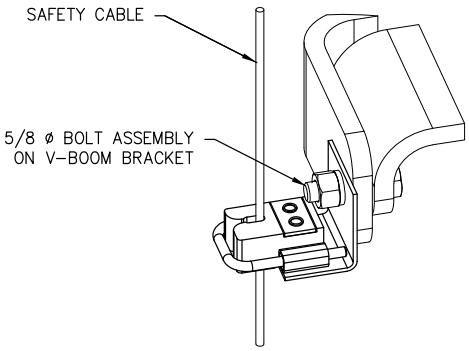


ROTATION OPTIONS

LOCATE CABLE GUIDE ON SIDE OF V-BOOM BRACKET CLOSEST TO THE ORIGINAL PATH OF THE SAFETY CABLE
(ROTATION DEGREES SHOWN ARE EXAMPLES ONLY)



ISOMETRIC VIEW



CABLE GUIDE DETAIL

NOTE

OTHER ADDITIONAL CABLE GUIDE SUPPORTS MAY BE REQUIRED ABOVE AND BELOW V-BOOM SO THAT CABLE ALIGNMENT IS WITHIN REQUIRED LIMITS.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES
TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"
MATERIAL: TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

Sabre Industries™ Towers and Poles

14' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

DATE	11/05/18
DRAWN BY	KLE
CHECKED BY	EK

SIZE	DRAWING NO.	REV
B	C10857278C	1

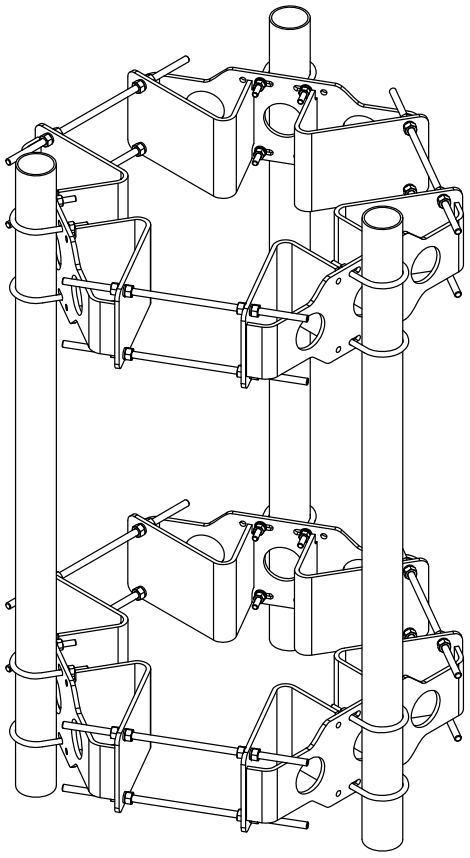
SCALE	PAGE
None	4 OF 4

NOTE:

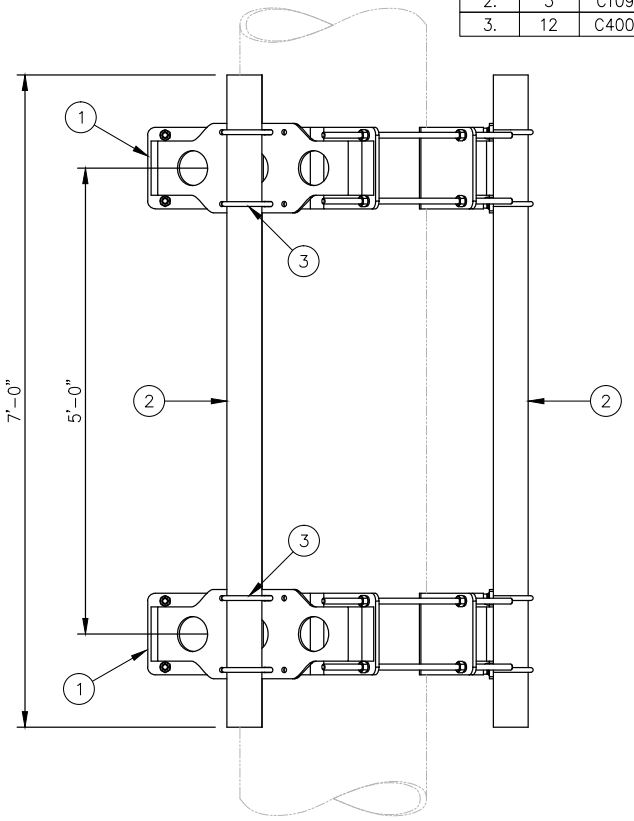
SEE DRAWING C10112378 FOR INSTALLATION OF TRI-COLLAR BRACKET ASSEMBLY

C10899055 4 1/2" O.D. PIPE MOUNT ASSEMBLY

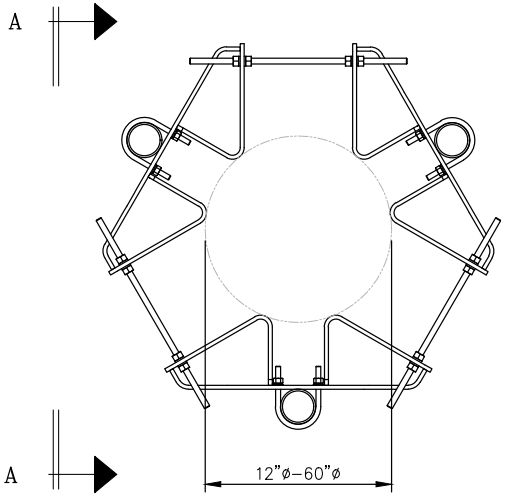
ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	C10112378	TRI-COLLAR BRACKET ASSEMBLY	732
2.	3	C10901407	PIPE, 4 1/2 O.D. X .237 X 7'-0	236
3.	12	C40034032	U-BOLT ASSEMBLY, 5/8 ø X 5 3/16 C-C	26
			TOTAL WEIGHT	994



ISOMETRIC VIEW



VIEW A-A



PLAN VIEW

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES

TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"

MATERIAL:

TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	02/03/17	WRF	KLE	COLLAR WAS C10112301

Sabre Industries™ Towers and Poles

4 1/2" O.D. PIPE MOUNT ASSEMBLY FOR MONOPOLES (FITS 12" TO 60" DIAMETER)

DATE	01/26/16
DRAWN BY	WRF
CHECKED BY	DLW

SIZE	DRAWING NO.	REV
B	C10899055	1

SCALE	PAGE
None	1 OF 1

Exhibit D

Structural Analysis Report

Date: **November 23, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Site Number:	CTL05107
	Site Name:	North Haven South
	FA Number:	10071172
Crown Castle Designation:	**BU Number:**	881536
	Site Name:	North Haven Tower
	JDE Job Number:	649415
	Work Order Number:	2016813
	Order Number:	556515 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	142902.009.01
Site Data:	**120 Universal Drive, North Haven, New Haven County, CT**	
	Latitude *41° 20' 40.01"*, Longitude *-72° 52' 14.92"*	
	120 Foot - Monopole Tower	

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

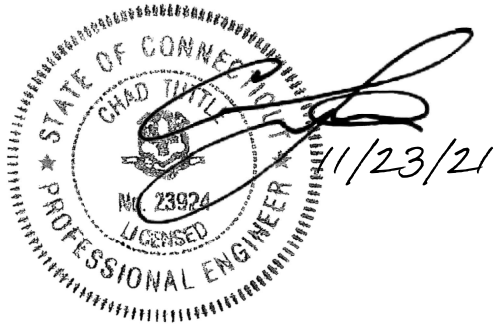
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 51.9%**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Daniel Hast

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/10/2022



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 120 ft Monopole tower designed by EEI in February of 2001.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 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)
118.0	121.0	3	Ericsson	AIR 6419 B77G	6 2 4 2	1-5/8 7/8 13/16 3/8
		3	Ericsson	AIR 6449 B77D		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Kathrein	80010966		
		3	Quintel Tech.	QD8616-7		
		1	Raycap	DC6-48-60-0-8F		
		2	Raycap	DC6-48-60-18-8F		
	118.0	3	Sabre Industries	C10857278C Sector Frames		
		1	Sabre Industries	C10899055 Pipe Mount Assembly		

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)
116.0	116.0	1	--	Side Arm Mount [SO 104-3]	--	--
108.0	108.0	3	Amphenol	BXA-80063-4BF-EDIN-X	7	1-5/8
		3	Commscope	CBC78T-DS-43-2X		
		6	Commscope	JAHH-65B-R3B		
		1	Raycap	RVZDC-6627-PF-48		
		3	Samsung	MT6407-77A		
		3	Samsung	RFV01U-D1A		
		3	Samsung	RFV01U-D2A		
		3	Commscope	BASMNT-SBS-2-2 Brackets		
		1	--	Platform Mount [LP 301-1_KCKR]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.0	100.0	3	Alcatel Lucent	TME-1900MHZ RRH (65MHZ)	--	--
		1	--	Pipe Mount [PM 601-3]		
		1	-	Side Arm Mount [SO 102-3]		
	99.0	3	Alcatel Lucent	TME-800MHZ RRH		
97.0	99.0	3	Alcatel Lucent	TD-RRH8X20-25	1 3	1-5/8 1-1/4
	98.0	3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER		
		2	Powerwave	P40-16-XLPP-RR-A		
		9	RFS Celwave	ACU-A20-N		
		1	RFS Celwave	APXVSPP18-C-A20		
		3	RFS Celwave	APXVTM14-C-120		
	97.0	1	--	Platform Mount [LP 601-1]		
83.0	85.0	3	Ericsson	RADIO 4449 B71/B85A	10 1 2	1-5/8 1-3/8 1-1/4
	84.0	3	Ericsson	AIR -32 B2A/B66AA		
		3	Ericsson	ERICSSON AIR 21 B2A B4P		
		3	RFS Celwave	APXVAARR24_43-U-NA20		
		3	RFS Celwave	ATMAA1412D-1A20		
	83.0	1	--	Platform Mount [LP 303-1_HR-1]		
51.0	52.0	1	Lucent	KS24019-L112A	1	1/2
	51.0	1	--	Side Arm Mount [SO 901-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	1405788	CCI Sites
Mount Analysis Report	9977346	CCI Sites
Foundation Drawing	1405795	CCI Sites
Geotech Report	1405753	CCI Sites
Antenna Configuration	Date: 10/12/2021	CCI Sites

3.1) Analysis Method

tnxTower (version 8.1.1.0), 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. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) The tower and structures were maintained in accordance with the - TIA-222 standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	120 - 84.71	Pole	TP32.56x24.09x0.375	1	-17.139	2272.662	23.7	Pass
L2	84.71 - 41.583	Pole	TP42.03x30.71x0.438	2	-32.332	3429.636	40.9	Pass
L3	41.583 - 0	Pole	TP51x39.771x0.5	3	-50.301	4922.820	44.6	Pass
							Summary	
						Pole (L3)	44.6	Pass
						Rating =	44.6	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	42.5	Pass
1,2	Base Plate	Base	51.9	Pass
1,2	Base Foundation (Structure)	Base	41.7	Pass
1,2	Base Foundation (Soil Interaction)	Base	23.2	Pass

Structure Rating (max from all components) =	**51.9%**

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

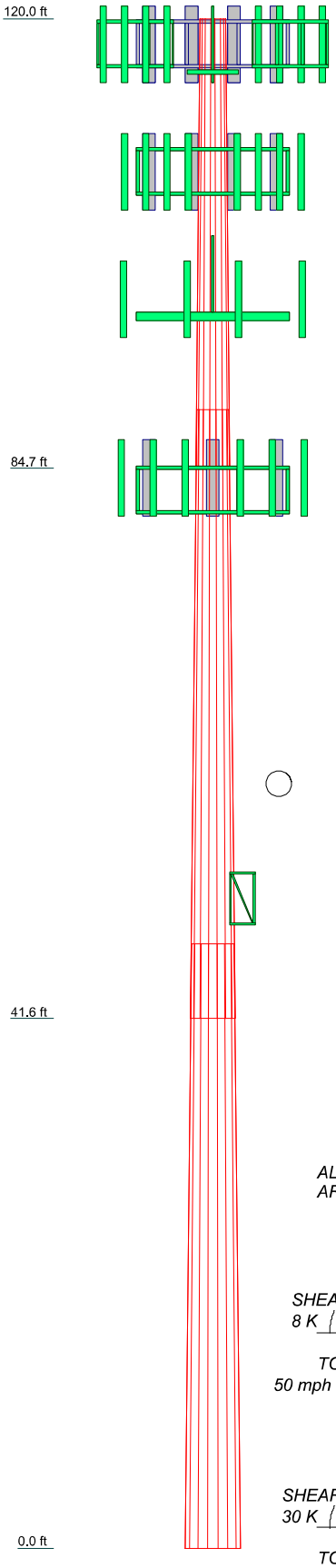
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	35.290	18	0.375	4.583	24.090	32.560		4.0
2	47.710	18	0.438	5.833	30.710	42.030	A572-65	8.1
3	47.416	18	0.500		39.771	51.000		11.5
								23.6



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 44.6%

B+T Group
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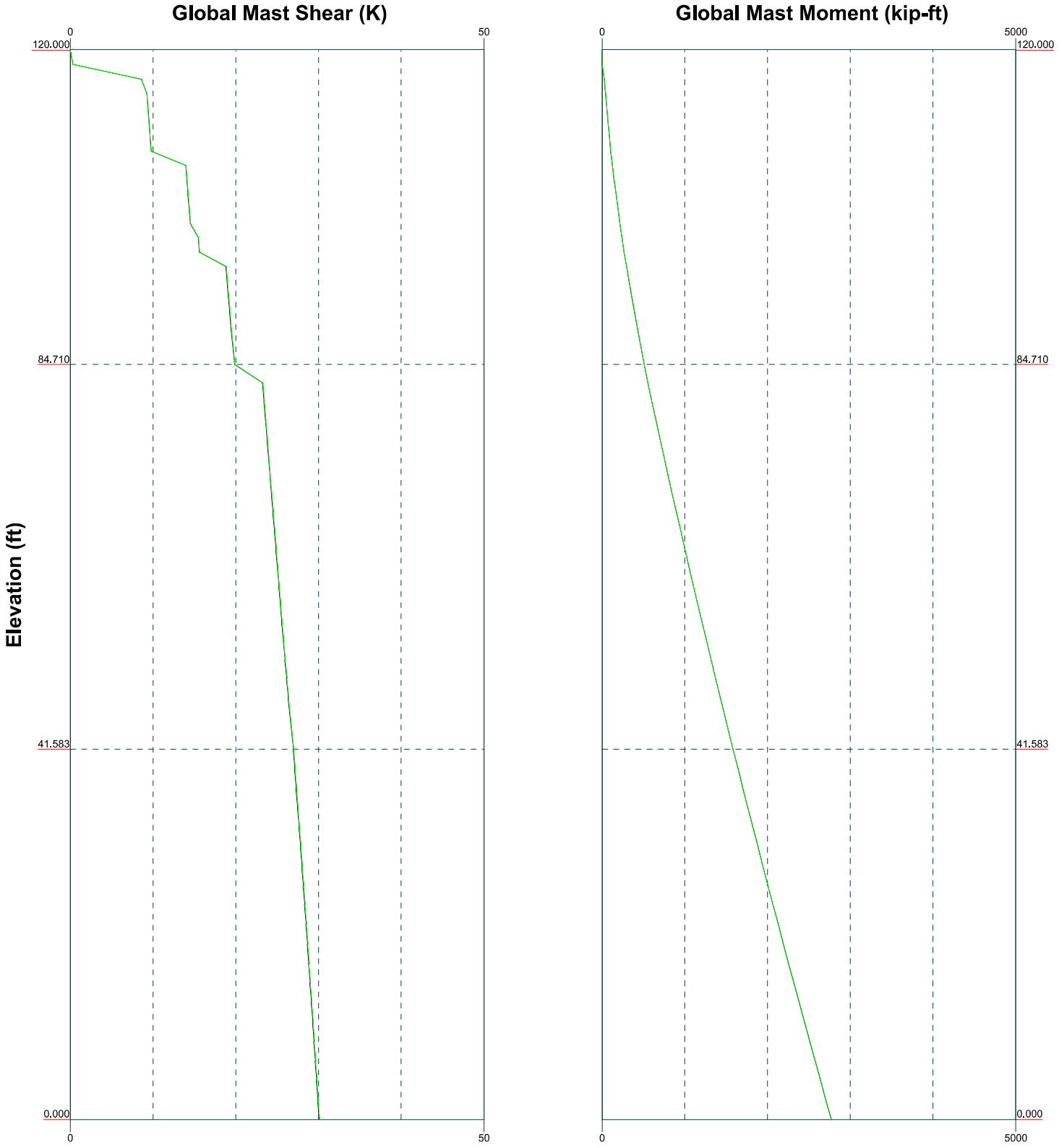
Phone: (918) 587-4630
FAX: (555) 295-0265

Job: 142902.009.01 - NORTH HAVEN TOWER, CT (BU# 88153			
Project:			
Client: Crown Castle	Drawn by: SACHIN	App'd:	
Code: TIA-222-H	Date: 11/19/21	Scale: NTS	
Path:		Dwg No. E-1	

TIA-222-H - 120 mph/50 mph 1.000 in Ice Exposure C

Maximum Values

Vx Vz Mx Mz



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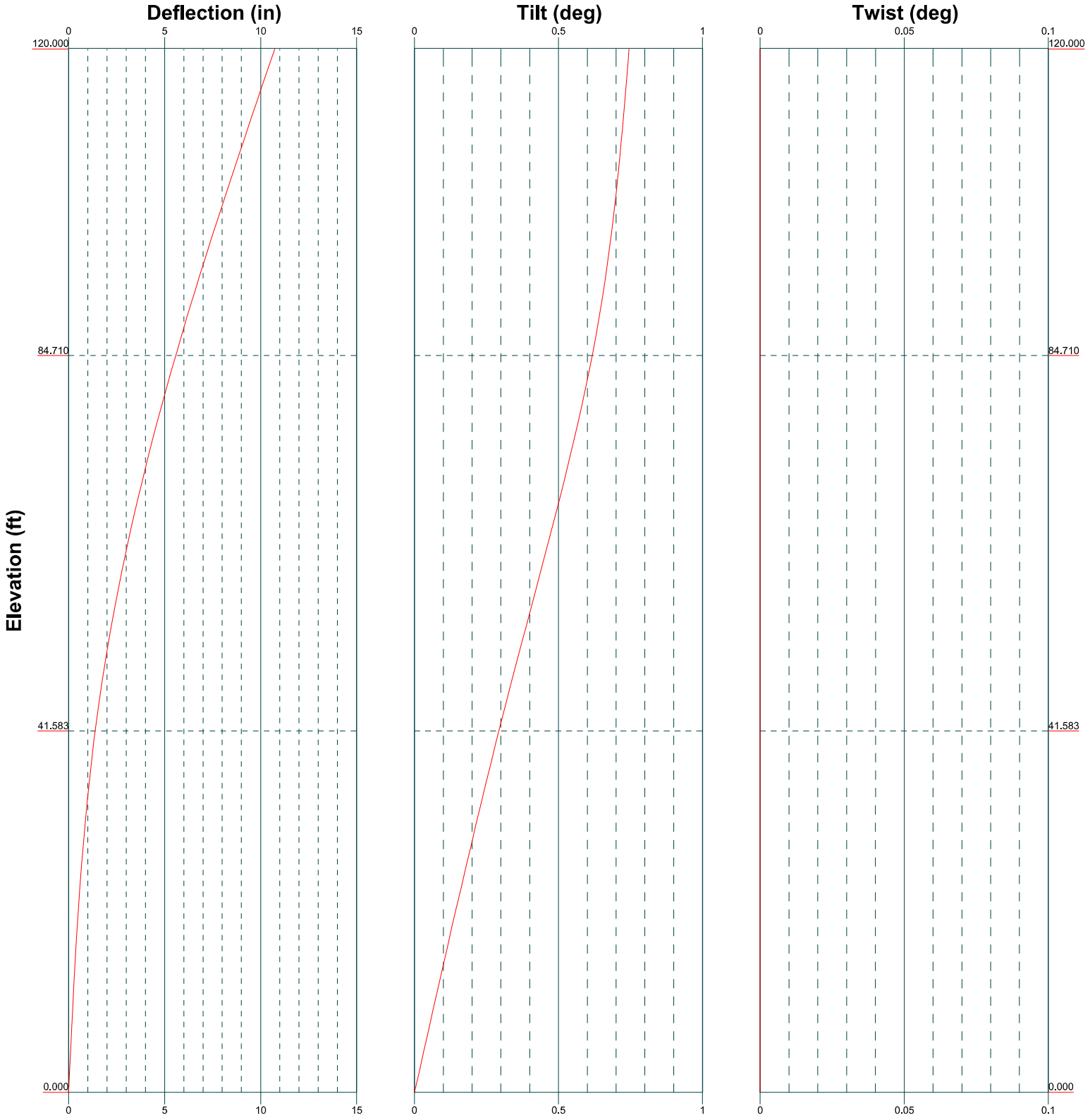
Project:			
Client: Crown Castle	Drawn by: SACHIN	App'd:	
Code: TIA-222-H	Date: 11/19/21	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



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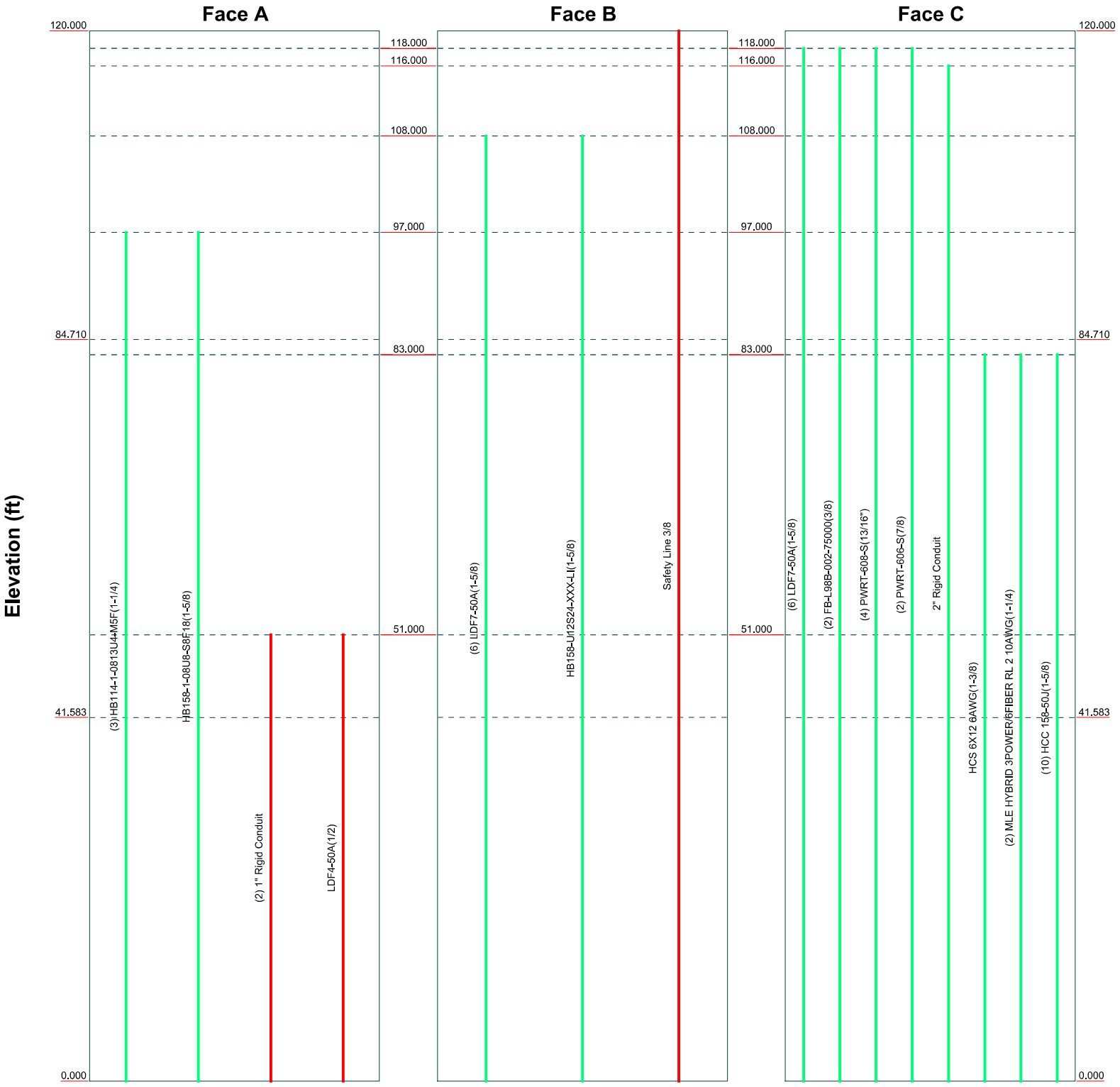
Project:			
Client: Crown Castle	Drawn by: SACHIN	App'd:	
Code: TIA-222-H	Date: 11/19/21	Scale: NTS	
Path:		Dwg No. E-5	

Feed Line Distribution Chart
0' - 120'

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



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Phone: (918) 587-4630
FAX: (555) 295-0265

Job: 142902.009.01 - NORTH HAVEN TOWER, CT (BU# 88153			
Project:			
Client: Crown Castle	Drawn by: SACHIN	App'd:	
Code: TIA-222-H	Date: 11/19/21	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Tower base elevation above sea level: 18.000 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
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	120.000-84.710	35.290	4.583	18	24.090	32.560	0.375	1.500	A572-65 (65 ksi)
L2	84.710-41.583	47.710	5.833	18	30.710	42.030	0.438	1.750	A572-65 (65 ksi)
L3	41.583-0.000	47.416		18	39.771	51.000	0.500	2.000	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	24.404	28.227	2005.603	8.419	12.238	163.887	4013.846	14.116	3.580	9.546
	33.004	38.308	5013.444	11.426	16.540	303.101	10033.485	19.158	5.071	13.521
L2	32.220	42.037	4867.080	10.747	15.601	311.978	9740.565	21.023	4.635	10.594
	42.611	57.756	12623.143	14.765	21.351	591.214	25262.896	28.884	6.627	15.148
L3	41.710	62.323	12143.143	13.941	20.204	601.036	24302.265	31.167	6.120	12.239
	51.710	80.144	25821.919	17.927	25.908	996.677	51677.815	40.079	8.096	16.192

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 120.000-84.710				1	1	1			
L2 84.710-41.583				1	1	1			
L3 41.583-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
* 1" Rigid Conduit	A	No	Surface Ar (CaAa)	51.000 - 0.000	2	2	0.150 0.200	1.000		0.001
LDF4-50A(1/2) *	A	No	Surface Ar (CaAa)	51.000 - 0.000	1	1	0.150 0.175	0.000		0.000
Safety Line 3/8 *	B	No	Surface Ar (CaAa)	120.000 - 0.000	1	1	0.350 0.350	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF7-50A(1-5/8)	C	No	No	Inside Pole	118.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
FB-L98B-002-75000 (3/8)	C	No	No	Inside Pole	118.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
PWRT-608-S(13/16")	C	No	No	Inside Pole	118.000 - 0.000	4	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
PWRT-606-S(7/8)	C	No	No	Inside Pole	118.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
*									
2" Rigid Conduit	C	No	No	Inside Pole	116.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
*									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	108.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
HB158-U12S24-XX X-LI(1-5/8)	B	No	No	Inside Pole	108.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
*									
HB114-1-0813U4-M 5F(1-1/4)	A	No	No	Inside Pole	97.000 - 0.000	3	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
HB158-1-08U8-S8F 18(1-5/8)	A	No	No	Inside Pole	97.000 - 0.000	1	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
*									
HCS 6X12 6AWG(1-3/8)	C	No	No	Inside Pole	83.000 - 0.000	1	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
MLE HYBRID 3POWER/6FIBER RL 2 10AWG(1-1/4)	C	No	No	Inside Pole	83.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
HCC 158-50J(1-5/8)	C	No	No	Inside Pole	83.000 - 0.000	10	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	120.000-84.710	A	0.000	0.000	0.000	0.000	0.065
		B	0.000	0.000	1.323	0.000	0.197
		C	0.000	0.000	0.000	0.000	0.397
L2	84.710-41.583	A	0.000	0.000	1.883	0.000	0.241

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
		B	0.000	0.000	1.617	0.000	0.360
		C	0.000	0.000	0.000	0.000	0.986
L3	41.583-0.000	A	0.000	0.000	8.317	0.000	0.277
		B	0.000	0.000	1.559	0.000	0.347
		C	0.000	0.000	0.000	0.000	0.970

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	120.000-84.710	A	0.951	0.000	0.000	0.000	0.000	0.065
		B		0.000	0.000	8.037	0.000	0.251
		C		0.000	0.000	0.000	0.000	0.397
L2	84.710-41.583	A	0.906	0.000	0.000	6.385	0.000	0.281
		B		0.000	0.000	9.822	0.000	0.426
		C		0.000	0.000	0.000	0.000	0.986
L3	41.583-0.000	A	0.812	0.000	0.000	27.351	0.000	0.439
		B		0.000	0.000	9.095	0.000	0.406
		C		0.000	0.000	0.000	0.000	0.970

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	120.000-84.710	0.295	0.063	0.972	0.207
L2	84.710-41.583	0.046	-0.240	0.502	-0.342
L3	41.583-0.000	-0.686	-1.129	-0.792	-1.788

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	27	Safety Line 3/8	84.71 - 120.00	1.0000	1.0000
L2	24	1" Rigid Conduit	41.58 - 51.00	1.0000	1.0000
L2	25	LDF4-50A(1/2)	41.58 - 51.00	1.0000	1.0000
L2	27	Safety Line 3/8	41.58 - 84.71	1.0000	1.0000
L3	24	1" Rigid Conduit	0.00 - 41.58	1.0000	1.0000
L3	25	LDF4-50A(1/2)	0.00 - 41.58	1.0000	1.0000
L3	27	Safety Line 3/8	0.00 - 41.58	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
80010966 w/ Mount Pipe	A	From Leg	4.000	0.000	118.000	No Ice	14.610	6.840	0.159
			0.000			1/2" Ice	15.470	7.630	0.267
			3.000			1" Ice	16.350	8.420	0.389
80010966 w/ Mount Pipe	B	From Leg	4.000	0.000	118.000	No Ice	14.610	6.840	0.159
			0.000			1/2" Ice	15.470	7.630	0.267
			3.000			1" Ice	16.350	8.420	0.389
80010966 w/ Mount Pipe	C	From Leg	4.000	0.000	118.000	No Ice	14.610	6.840	0.159
			0.000			1/2" Ice	15.470	7.630	0.267
			3.000			1" Ice	16.350	8.420	0.389
RRUS 8843 B2/B66A	A	From Leg	4.000	0.000	118.000	No Ice	1.639	1.353	0.072
			0.000			1/2" Ice	1.799	1.500	0.090
			3.000			1" Ice	1.966	1.655	0.110
RRUS 8843 B2/B66A	B	From Leg	4.000	0.000	118.000	No Ice	1.639	1.353	0.072
			0.000			1/2" Ice	1.799	1.500	0.090
			3.000			1" Ice	1.966	1.655	0.110
RRUS 8843 B2/B66A	C	From Leg	4.000	0.000	118.000	No Ice	1.639	1.353	0.072
			0.000			1/2" Ice	1.799	1.500	0.090
			3.000			1" Ice	1.966	1.655	0.110
RRUS 32 B30	A	From Leg	4.000	0.000	118.000	No Ice	2.692	1.573	0.060
			0.000			1/2" Ice	2.912	1.756	0.080
			3.000			1" Ice	3.138	1.945	0.104
RRUS 32 B30	B	From Leg	4.000	0.000	118.000	No Ice	2.692	1.573	0.060
			0.000			1/2" Ice	2.912	1.756	0.080
			3.000			1" Ice	3.138	1.945	0.104
RRUS 32 B30	C	From Leg	4.000	0.000	118.000	No Ice	2.692	1.573	0.060
			0.000			1/2" Ice	2.912	1.756	0.080
			3.000			1" Ice	3.138	1.945	0.104
RRUS 4478 B14	A	From Leg	4.000	0.000	118.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			3.000			1" Ice	2.190	1.342	0.094
RRUS 4478 B14	B	From Leg	4.000	0.000	118.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			3.000			1" Ice	2.190	1.342	0.094
RRUS 4478 B14	C	From Leg	4.000	0.000	118.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			3.000			1" Ice	2.190	1.342	0.094
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	118.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			3.000			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	118.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			3.000			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	118.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			3.000			1" Ice	2.328	1.727	0.111
DC6-48-60-0-8F	A	From Leg	4.000	0.000	118.000	No Ice	0.917	0.917	0.033
			0.000			1/2" Ice	1.458	1.458	0.051
			3.000			1" Ice	1.643	1.643	0.071
DC6-48-60-18-8F	A	From Leg	4.000	0.000	118.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			3.000			1" Ice	2.105	2.105	0.080

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
QD8616-7 w/ Mount Pipe	A	From Leg	4.000	0.000	118.000	No Ice	16.930	9.310	0.183
			0.000			1/2" Ice	17.870	10.170	0.308
			3.000			1" Ice	18.830	11.050	0.448
QD8616-7 w/ Mount Pipe	B	From Leg	4.000	0.000	118.000	No Ice	16.930	9.310	0.183
			0.000			1/2" Ice	17.870	10.170	0.308
			3.000			1" Ice	18.830	11.050	0.448
QD8616-7 w/ Mount Pipe	C	From Leg	4.000	0.000	118.000	No Ice	16.930	9.310	0.183
			0.000			1/2" Ice	17.870	10.170	0.308
			3.000			1" Ice	18.830	11.050	0.448
AIR 6419 B77G	A	From Leg	4.000	0.000	118.000	No Ice	4.640	1.870	0.066
			0.000			1/2" Ice	5.110	2.230	0.092
			3.000			1" Ice	5.590	2.620	0.120
AIR 6419 B77G	B	From Leg	4.000	0.000	118.000	No Ice	4.640	1.870	0.066
			0.000			1/2" Ice	5.110	2.230	0.092
			3.000			1" Ice	5.590	2.620	0.120
AIR 6419 B77G	C	From Leg	4.000	0.000	118.000	No Ice	4.640	1.870	0.066
			0.000			1/2" Ice	5.110	2.230	0.092
			3.000			1" Ice	5.590	2.620	0.120
AIR 6449 B77D	A	From Leg	4.000	0.000	118.000	No Ice	3.640	1.720	0.082
			0.000			1/2" Ice	4.000	2.020	0.111
			3.000			1" Ice	4.370	2.330	0.145
AIR 6449 B77D	B	From Leg	4.000	0.000	118.000	No Ice	3.640	1.720	0.082
			0.000			1/2" Ice	4.000	2.020	0.111
			3.000			1" Ice	4.370	2.330	0.145
AIR 6449 B77D	C	From Leg	4.000	0.000	118.000	No Ice	3.640	1.720	0.082
			0.000			1/2" Ice	4.000	2.020	0.111
			3.000			1" Ice	4.370	2.330	0.145
DC6-48-60-18-8F	A	From Leg	4.000	0.000	118.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			3.000			1" Ice	2.105	2.105	0.080
(2) 10' x 2.875" Mount Pipe	A	From Leg	4.000	0.000	118.000	No Ice	2.875	2.875	0.058
			0.000			1/2" Ice	3.907	3.907	0.079
			0.000			1" Ice	4.956	4.956	0.107
(2) 10' x 2.875" Mount Pipe	B	From Leg	4.000	0.000	118.000	No Ice	2.875	2.875	0.058
			0.000			1/2" Ice	3.907	3.907	0.079
			0.000			1" Ice	4.956	4.956	0.107
(2) 10' x 2.875" Mount Pipe	C	From Leg	4.000	0.000	118.000	No Ice	2.875	2.875	0.058
			0.000			1/2" Ice	3.907	3.907	0.079
			0.000			1" Ice	4.956	4.956	0.107
Sector Mount [SM 505-3]	C	None		0.000	118.000	No Ice	31.660	31.660	1.725
						1/2" Ice	44.640	44.640	2.356
						1" Ice	57.440	57.440	3.189
Pipe Mount [PM 601-3]	C	None		0.000	118.000	No Ice	3.170	3.170	0.195
						1/2" Ice	3.790	3.790	0.232
						1" Ice	4.420	4.420	0.279
Side Arm Mount [SO 102-3]	C	None		0.000	120.000	No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
Side Arm Mount [SO 102-3]	C	None		0.000	116.000	No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
*									
(2) 4' x 2" Pipe Mount	A	From Leg	1.000	0.000	116.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
(2) 4' x 2" Pipe Mount	B	From Leg	1.000	0.000	116.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	1.281	1.281	0.044
(2) 4' x 2" Pipe Mount	C	From Leg	1.000	0.000	116.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
4' x 2" Horizontal Face Mount Pipe	C	From Leg	1.000	0.000	116.000	No Ice	0.870	0.010	0.015
			0.000			1/2" Ice	1.110	0.050	0.022
			0.000			1" Ice	1.370	0.100	0.032
Side Arm Mount [SO 104-3]	C	None		0.000	116.000	No Ice	2.620	2.620	0.288
						1/2" Ice	3.300	3.300	0.408
						1" Ice	3.980	3.980	0.528
*									
BXA-80063-4BF-EDIN-X	A	From Leg	4.000	0.000	108.000	No Ice	4.391	2.376	0.013
			0.000			1/2" Ice	4.694	2.663	0.040
			0.000			1" Ice	5.004	2.955	0.072
BXA-80063-4BF-EDIN-X	B	From Leg	4.000	0.000	108.000	No Ice	4.391	2.376	0.013
			0.000			1/2" Ice	4.694	2.663	0.040
			0.000			1" Ice	5.004	2.955	0.072
BXA-80063-4BF-EDIN-X	C	From Leg	4.000	0.000	108.000	No Ice	4.391	2.376	0.013
			0.000			1/2" Ice	4.694	2.663	0.040
			0.000			1" Ice	5.004	2.955	0.072
(2) JAHH-65B-R3B	A	From Leg	4.000	0.000	108.000	No Ice	5.290	3.050	0.063
			0.000			1/2" Ice	5.750	3.480	0.121
			0.000			1" Ice	6.220	3.930	0.186
(2) JAHH-65B-R3B	B	From Leg	4.000	0.000	108.000	No Ice	5.290	3.050	0.063
			0.000			1/2" Ice	5.750	3.480	0.121
			0.000			1" Ice	6.220	3.930	0.186
(2) JAHH-65B-R3B	C	From Leg	4.000	0.000	108.000	No Ice	5.290	3.050	0.063
			0.000			1/2" Ice	5.750	3.480	0.121
			0.000			1" Ice	6.220	3.930	0.186
MT6407-77A	A	From Leg	4.000	0.000	108.000	No Ice	4.692	1.840	0.082
			0.000			1/2" Ice	4.980	2.063	0.111
			0.000			1" Ice	5.275	2.292	0.144
MT6407-77A	B	From Leg	4.000	0.000	108.000	No Ice	4.692	1.840	0.082
			0.000			1/2" Ice	4.980	2.063	0.111
			0.000			1" Ice	5.275	2.292	0.144
MT6407-77A	C	From Leg	4.000	0.000	108.000	No Ice	4.692	1.840	0.082
			0.000			1/2" Ice	4.980	2.063	0.111
			0.000			1" Ice	5.275	2.292	0.144
CBC78T-DS-43-2X	A	From Leg	4.000	0.000	108.000	No Ice	0.368	0.512	0.021
			0.000			1/2" Ice	0.446	0.605	0.027
			0.000			1" Ice	0.531	0.705	0.035
CBC78T-DS-43-2X	B	From Leg	4.000	0.000	108.000	No Ice	0.368	0.512	0.021
			0.000			1/2" Ice	0.446	0.605	0.027
			0.000			1" Ice	0.531	0.705	0.035
CBC78T-DS-43-2X	C	From Leg	4.000	0.000	108.000	No Ice	0.368	0.512	0.021
			0.000			1/2" Ice	0.446	0.605	0.027
			0.000			1" Ice	0.531	0.705	0.035
RFV01U-D2A	A	From Leg	4.000	0.000	108.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
RFV01U-D2A	B	From Leg	4.000	0.000	108.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
RFV01U-D2A	C	From Leg	4.000	0.000	108.000	No Ice	1.875	1.013	0.070
			0.000			1/2" Ice	2.045	1.145	0.087
			0.000			1" Ice	2.223	1.284	0.106
RFV01U-D1A	A	From Leg	4.000	0.000	108.000	No Ice	1.875	1.250	0.084

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert 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	2.045	1.393	0.103
			0.000			1" Ice	2.223	1.543	0.124
RFV01U-D1A	B	From Leg	4.000	0.000	108.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			0.000			1" Ice	2.223	1.543	0.124
RFV01U-D1A	C	From Leg	4.000	0.000	108.000	No Ice	1.875	1.250	0.084
			0.000			1/2" Ice	2.045	1.393	0.103
			0.000			1" Ice	2.223	1.543	0.124
RVZDC-6627-PF-48	A	From Leg	4.000	0.000	108.000	No Ice	3.792	2.514	0.032
			0.000			1/2" Ice	4.044	2.727	0.063
			0.000			1" Ice	4.303	2.947	0.099
Platform Mount [LP 301-1_KCKR]	C	None		0.000	108.000	No Ice	35.030	35.030	1.863
						1/2" Ice	44.460	44.460	2.516
						1" Ice	53.720	53.720	3.326
BSAMNT-SBS-2-2 Brackets	A	From Leg	4.000	0.000	108.000	No Ice	0.000	0.000	0.067
			0.000			1/2" Ice	0.000	0.000	0.088
			0.000			1" Ice	0.000	0.000	0.108
BSAMNT-SBS-2-2 Brackets	B	From Leg	4.000	0.000	108.000	No Ice	0.000	0.000	0.067
			0.000			1/2" Ice	0.000	0.000	0.088
			0.000			1" Ice	0.000	0.000	0.108
BSAMNT-SBS-2-2 Brackets	C	From Leg	4.000	0.000	108.000	No Ice	0.000	0.000	0.067
			0.000			1/2" Ice	0.000	0.000	0.088
			0.000			1" Ice	0.000	0.000	0.108
*									
TME-1900MHZ RRH (65MHZ)	A	From Leg	1.500	0.000	100.000	No Ice	2.313	2.375	0.060
			0.000			1/2" Ice	2.517	2.581	0.084
			0.000			1" Ice	2.728	2.794	0.111
TME-1900MHZ RRH (65MHZ)	B	From Leg	1.500	0.000	100.000	No Ice	2.313	2.375	0.060
			0.000			1/2" Ice	2.517	2.581	0.084
			0.000			1" Ice	2.728	2.794	0.111
TME-1900MHZ RRH (65MHZ)	C	From Leg	1.500	0.000	100.000	No Ice	2.313	2.375	0.060
			0.000			1/2" Ice	2.517	2.581	0.084
			0.000			1" Ice	2.728	2.794	0.111
TME-800MHZ RRH	A	From Leg	1.500	0.000	100.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			-1.000			1" Ice	2.512	2.127	0.098
TME-800MHZ RRH	B	From Leg	1.500	0.000	100.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			-1.000			1" Ice	2.512	2.127	0.098
TME-800MHZ RRH	C	From Leg	1.500	0.000	100.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			-1.000			1" Ice	2.512	2.127	0.098
Pipe Mount [PM 601-3]	C	None		0.000	100.000	No Ice	3.170	3.170	0.195
						1/2" Ice	3.790	3.790	0.232
						1" Ice	4.420	4.420	0.279
Side Arm Mount [SO 102-3]	C	None		0.000	100.000	No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
*									
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	97.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			1.000			1" Ice	4.880	3.610	0.185
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	97.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			1.000			1" Ice	4.880	3.610	0.185
P40-16-XLPP-RR-A w/ Mount Pipe	A	From Leg	4.000	0.000	97.000	No Ice	7.240	3.310	0.084
			0.000			1/2" Ice	7.730	3.730	0.147

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1.000			1" Ice	8.240	4.160	0.219
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	4.600 5.050 5.500	4.010 4.450 4.890	0.095 0.160 0.235
P40-16-XLPP-RR-A w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	7.240 7.730 8.240	3.310 3.730 4.160	0.084 0.147 0.219
(3) ACU-A20-N	A	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
(3) ACU-A20-N	B	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
(3) ACU-A20-N	C	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
800 EXTERNAL NOTCH FILTER	A	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	4.000 0.000 1.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	0.660 0.763 0.873	0.321 0.398 0.483	0.011 0.017 0.024
TD-RRH8X20-25	A	From Leg	4.000 0.000 2.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8X20-25	B	From Leg	4.000 0.000 2.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
TD-RRH8X20-25	C	From Leg	4.000 0.000 2.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	4.045 4.298 4.557	1.535 1.714 1.901	0.070 0.097 0.128
7'x2" Antenna Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	1.663 2.391 2.825	1.663 2.391 2.825	0.026 0.039 0.056
7'x2" Antenna Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	1.663 2.391 2.825	1.663 2.391 2.825	0.026 0.039 0.056
7'x2" Antenna Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	1.663 2.391 2.825	1.663 2.391 2.825	0.026 0.039 0.056
Platform Mount [LP 601-1]	C	None		0.000	97.000	No Ice 1/2" Ice 1" Ice	28.500 31.690 34.870	28.500 31.690 34.870	1.122 1.676 2.282
Climbing Ladder (Flat)	B	From Leg	3.000 0.000 -3.000	0.000	97.000	No Ice 1/2" Ice 1" Ice	5.844 10.300 14.756	5.844 10.300 14.756	0.048 0.071 0.094
*									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	83.000	No Ice 1/2" Ice 1" Ice	3.140 3.450 3.770	2.590 2.880 3.190	0.112 0.164 0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	83.000	No Ice 1/2" Ice 1" Ice	3.140 3.450 3.770	2.590 2.880 3.190	0.112 0.164 0.225
ERICSSON AIR 21 B2A	C	From Leg	4.000	0.000	83.000	No Ice	3.140	2.590	0.112

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
B4P w/ Mount Pipe			0.000			1/2" Ice	3.450	2.880	0.164
			1.000			1" Ice	3.770	3.190	0.225
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000	0.000	83.000	No Ice	3.760	3.150	0.194
			0.000			1/2" Ice	4.120	3.490	0.252
			1.000			1" Ice	4.480	3.840	0.320
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000	0.000	83.000	No Ice	3.760	3.150	0.194
			0.000			1/2" Ice	4.120	3.490	0.252
			1.000			1" Ice	4.480	3.840	0.320
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000	0.000	83.000	No Ice	3.760	3.150	0.194
			0.000			1/2" Ice	4.120	3.490	0.252
			1.000			1" Ice	4.480	3.840	0.320
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000	0.000	83.000	No Ice	14.690	6.870	0.186
			0.000			1/2" Ice	15.460	7.550	0.315
			1.000			1" Ice	16.230	8.250	0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000	0.000	83.000	No Ice	14.690	6.870	0.186
			0.000			1/2" Ice	15.460	7.550	0.315
			1.000			1" Ice	16.230	8.250	0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000	0.000	83.000	No Ice	14.690	6.870	0.186
			0.000			1/2" Ice	15.460	7.550	0.315
			1.000			1" Ice	16.230	8.250	0.458
RADIO 4449 B71/B85A	A	From Leg	4.000	0.000	83.000	No Ice	1.644	1.310	0.075
			0.000			1/2" Ice	1.804	1.455	0.092
			2.000			1" Ice	1.972	1.608	0.112
RADIO 4449 B71/B85A	B	From Leg	4.000	0.000	83.000	No Ice	1.644	1.310	0.075
			0.000			1/2" Ice	1.804	1.455	0.092
			2.000			1" Ice	1.972	1.608	0.112
RADIO 4449 B71/B85A	C	From Leg	4.000	0.000	83.000	No Ice	1.644	1.310	0.075
			0.000			1/2" Ice	1.804	1.455	0.092
			2.000			1" Ice	1.972	1.608	0.112
ATMAA1412D-1A20	A	From Leg	4.000	0.000	83.000	No Ice	0.407	1.000	0.013
			0.000			1/2" Ice	0.497	1.126	0.021
			1.000			1" Ice	0.593	1.259	0.030
ATMAA1412D-1A20	B	From Leg	4.000	0.000	83.000	No Ice	0.407	1.000	0.013
			0.000			1/2" Ice	0.497	1.126	0.021
			1.000			1" Ice	0.593	1.259	0.030
ATMAA1412D-1A20	C	From Leg	4.000	0.000	83.000	No Ice	0.407	1.000	0.013
			0.000			1/2" Ice	0.497	1.126	0.021
			1.000			1" Ice	0.593	1.259	0.030
8' x 2" Mount Pipe	A	From Leg	4.000	0.000	83.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
8' x 2" Mount Pipe	B	From Leg	4.000	0.000	83.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
8' x 2" Mount Pipe	C	From Leg	4.000	0.000	83.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
Platform Mount [LP 303-1_HR-1]	C	None		0.000	83.000	No Ice	17.090	17.090	1.495
						1/2" Ice	21.470	21.470	1.881
						1" Ice	25.720	25.720	2.346
*									
KS24019-L112A	B	From Leg	2.000	0.000	51.000	No Ice	0.141	0.141	0.005
			0.000			1/2" Ice	0.198	0.198	0.007
			1.000			1" Ice	0.262	0.262	0.009
2' x 2" Pipe Mount	B	From Leg	2.000	0.000	51.000	No Ice	0.023	0.023	0.007
			0.000			1/2" Ice	0.049	0.049	0.008
			0.000			1" Ice	0.085	0.085	0.009

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 901-1]	B	From Leg	1.000 0.000 0.000	0.000	51.000	No Ice 1/2" Ice 1" Ice	0.330 0.460 0.620	0.620 0.780 0.970	0.105 0.113 0.123
*									

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
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

Comb. No.	Description
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	120 - 84.71	Pole	Max Tension	27	0.000	0.000	-0.001
			Max. Compression	26	-29.064	-0.447	0.475
			Max. Mx	8	-17.147	-417.797	1.029
			Max. My	2	-17.143	-1.114	418.319
			Max. Vy	8	19.390	-417.797	1.029
			Max. Vx	2	-19.439	-1.114	418.319
			Max. Torque	9			1.286
L2	84.71 - 41.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.518	-0.864	0.349
			Max. Mx	8	-32.337	-1425.348	3.815
			Max. My	14	-32.334	3.255	-1427.517
			Max. Vy	8	26.357	-1425.348	3.815
			Max. Vx	14	26.412	3.255	-1427.517
			Max. Torque	15			1.170
L3	41.583 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.542	-0.596	0.655
			Max. Mx	8	-50.302	-2768.143	7.402
			Max. My	2	-50.302	-7.854	2773.017
			Max. Vy	8	30.096	-2768.143	7.402
			Max. Vx	2	-30.150	-7.854	2773.017
			Max. Torque	15			1.169

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	28	68.542	-3.864	6.686
	Max. H_x	20	50.319	30.067	-0.073
	Max. H_z	2	50.319	-0.073	30.120
	Max. M_x	2	2773.017	-0.073	30.120
	Max. M_z	8	2768.143	-30.067	0.073
	Max. Torsion	15	1.169	0.073	-30.120
	Min. Vert	23	37.739	26.002	14.997
	Min. H_x	8	50.319	-30.067	0.073
	Min. H_z	14	50.319	0.073	-30.120
	Min. M_x	14	-2772.917	0.073	-30.120
	Min. M_z	20	-2767.133	30.067	-0.073
	Min. Torsion	3	-1.168	-0.073	30.120

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	41.933	0.000	0.000	-0.038	-0.403	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	50.319	0.073	-30.120	-2773.017	-7.854	1.168
0.9 Dead+1.0 Wind 0 deg - No Ice	37.739	0.073	-30.120	-2751.521	-7.667	1.168
1.2 Dead+1.0 Wind 30 deg - No Ice	50.319	15.096	-26.121	-2405.187	-1390.685	0.982
0.9 Dead+1.0 Wind 30 deg - No Ice	37.739	15.096	-26.121	-2386.537	-1379.784	0.982
1.2 Dead+1.0 Wind 60 deg - No Ice	50.319	26.075	-15.123	-1392.903	-2401.021	0.534
0.9 Dead+1.0 Wind 60 deg - No Ice	37.739	26.075	-15.123	-1382.097	-2382.291	0.533
1.2 Dead+1.0 Wind 90 deg - No Ice	50.319	30.067	-0.073	-7.402	-2768.143	-0.058
0.9 Dead+1.0 Wind 90 deg - No Ice	37.739	30.067	-0.073	-7.331	-2746.570	-0.059
1.2 Dead+1.0 Wind 120 deg - No Ice	50.319	26.002	14.997	1380.075	-2393.680	-0.634
0.9 Dead+1.0 Wind 120 deg - No Ice	37.739	26.002	14.997	1369.395	-2375.007	-0.635
1.2 Dead+1.0 Wind 150 deg - No Ice	50.319	14.970	26.049	2397.746	-1377.957	-1.041
0.9 Dead+1.0 Wind 150 deg - No Ice	37.739	14.970	26.049	2379.180	-1367.154	-1.042
1.2 Dead+1.0 Wind 180 deg - No Ice	50.319	-0.073	30.120	2772.917	6.851	-1.168
0.9 Dead+1.0 Wind 180 deg - No Ice	37.739	-0.073	30.120	2751.448	6.924	-1.169
1.2 Dead+1.0 Wind 210 deg - No Ice	50.319	-15.096	26.121	2405.084	1389.681	-0.982
0.9 Dead+1.0 Wind 210 deg - No Ice	37.739	-15.096	26.121	2386.462	1379.039	-0.982
1.2 Dead+1.0 Wind 240 deg - No Ice	50.319	-26.075	15.123	1392.800	2400.013	-0.534
0.9 Dead+1.0 Wind 240 deg - No Ice	37.739	-26.075	15.123	1382.022	2381.544	-0.533
1.2 Dead+1.0 Wind 270 deg - No Ice	50.319	-30.067	0.073	7.302	2767.133	0.058
0.9 Dead+1.0 Wind 270 deg - No Ice	37.739	-30.067	0.073	7.259	2745.822	0.059
1.2 Dead+1.0 Wind 300 deg - No Ice	50.319	-26.002	-14.997	-1380.172	2392.673	0.634
0.9 Dead+1.0 Wind 300 deg - No Ice	37.739	-26.002	-14.997	-1369.465	2374.260	0.635
1.2 Dead+1.0 Wind 330 deg - No Ice	50.319	-14.970	-26.049	-2397.843	1376.953	1.040
0.9 Dead+1.0 Wind 330 deg - No Ice	37.739	-14.970	-26.049	-2379.251	1366.410	1.041
1.2 Dead+1.0 Ice+1.0 Temp	68.542	0.000	0.000	-0.655	-0.596	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	68.542	0.014	-7.712	-699.675	-2.130	0.456
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	68.542	3.864	-6.686	-606.772	-350.985	0.418
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	68.542	6.678	-3.868	-351.474	-605.968	0.267

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	68.542	7.703	-0.014	-2.188	-698.757	0.045
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	68.542	6.664	3.844	347.495	-604.488	-0.189
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	68.542	3.839	6.671	603.877	-348.421	-0.372
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	68.542	-0.014	7.712	698.261	0.831	-0.456
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	68.542	-3.864	6.686	605.357	349.685	-0.418
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	68.542	-6.678	3.868	350.058	604.667	-0.267
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	68.542	-7.703	0.014	0.773	697.456	-0.045
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	68.542	-6.664	-3.844	-348.909	603.187	0.189
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	68.542	-3.839	-6.671	-605.291	347.121	0.372
Dead+Wind 0 deg - Service	41.933	0.017	-7.096	-650.407	-2.141	0.276
Dead+Wind 30 deg - Service	41.933	3.557	-6.154	-564.136	-326.468	0.222
Dead+Wind 60 deg - Service	41.933	6.143	-3.563	-326.716	-563.430	0.108
Dead+Wind 90 deg - Service	41.933	7.084	-0.017	-1.764	-649.534	-0.035
Dead+Wind 120 deg - Service	41.933	6.126	3.533	323.649	-561.707	-0.168
Dead+Wind 150 deg - Service	41.933	3.527	6.137	562.330	-323.484	-0.256
Dead+Wind 180 deg - Service	41.933	-0.017	7.096	650.324	1.305	-0.276
Dead+Wind 210 deg - Service	41.933	-3.557	6.154	564.053	325.631	-0.222
Dead+Wind 240 deg - Service	41.933	-6.143	3.563	326.633	562.593	-0.108
Dead+Wind 270 deg - Service	41.933	-7.084	0.017	1.681	648.697	0.035
Dead+Wind 300 deg - Service	41.933	-6.126	-3.533	-323.732	560.871	0.168
Dead+Wind 330 deg - Service	41.933	-3.527	-6.137	-562.413	322.647	0.256

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	-41.933	0.000	0.000	41.933	0.000	0.000%
2	0.073	-50.319	-30.120	-0.073	50.319	30.120	0.000%
3	0.073	-37.739	-30.120	-0.073	37.739	30.120	0.000%
4	15.096	-50.319	-26.121	-15.096	50.319	26.121	0.000%
5	15.096	-37.739	-26.121	-15.096	37.739	26.121	0.000%
6	26.075	-50.319	-15.123	-26.075	50.319	15.123	0.000%
7	26.075	-37.739	-15.123	-26.075	37.739	15.123	0.000%
8	30.067	-50.319	-0.073	-30.067	50.319	0.073	0.000%
9	30.067	-37.739	-0.073	-30.067	37.739	0.073	0.000%
10	26.002	-50.319	14.997	-26.002	50.319	-14.997	0.000%
11	26.002	-37.739	14.997	-26.002	37.739	-14.997	0.000%
12	14.970	-50.319	26.049	-14.970	50.319	-26.049	0.000%
13	14.970	-37.739	26.049	-14.970	37.739	-26.049	0.000%
14	-0.073	-50.319	30.120	0.073	50.319	-30.120	0.000%
15	-0.073	-37.739	30.120	0.073	37.739	-30.120	0.000%
16	-15.096	-50.319	26.121	15.096	50.319	-26.121	0.000%
17	-15.096	-37.739	26.121	15.096	37.739	-26.121	0.000%
18	-26.075	-50.319	15.123	26.075	50.319	-15.123	0.000%
19	-26.075	-37.739	15.123	26.075	37.739	-15.123	0.000%
20	-30.067	-50.319	0.073	30.067	50.319	-0.073	0.000%
21	-30.067	-37.739	0.073	30.067	37.739	-0.073	0.000%
22	-26.002	-50.319	-14.997	26.002	50.319	14.997	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
23	-26.002	-37.739	-14.997	26.002	37.739	14.997	0.000%
24	-14.970	-50.319	-26.049	14.970	50.319	26.049	0.000%
25	-14.970	-37.739	-26.049	14.970	37.739	26.049	0.000%
26	0.000	-68.542	0.000	0.000	68.542	0.000	0.000%
27	0.014	-68.542	-7.712	-0.014	68.542	7.712	0.000%
28	3.864	-68.542	-6.686	-3.864	68.542	6.686	0.000%
29	6.678	-68.542	-3.868	-6.678	68.542	3.868	0.000%
30	7.703	-68.542	-0.014	-7.703	68.542	0.014	0.000%
31	6.664	-68.542	3.844	-6.664	68.542	-3.844	0.000%
32	3.839	-68.542	6.671	-3.839	68.542	-6.671	0.000%
33	-0.014	-68.542	7.712	0.014	68.542	-7.712	0.000%
34	-3.864	-68.542	6.686	3.864	68.542	-6.686	0.000%
35	-6.678	-68.542	3.868	6.678	68.542	-3.868	0.000%
36	-7.703	-68.542	0.014	7.703	68.542	-0.014	0.000%
37	-6.664	-68.542	-3.844	6.664	68.542	3.844	0.000%
38	-3.839	-68.542	-6.671	3.839	68.542	6.671	0.000%
39	0.017	-41.933	-7.096	-0.017	41.933	7.096	0.000%
40	3.557	-41.933	-6.154	-3.557	41.933	6.154	0.000%
41	6.143	-41.933	-3.563	-6.143	41.933	3.563	0.000%
42	7.084	-41.933	-0.017	-7.084	41.933	0.017	0.000%
43	6.126	-41.933	3.533	-6.126	41.933	-3.533	0.000%
44	3.527	-41.933	6.137	-3.527	41.933	-6.137	0.000%
45	-0.017	-41.933	7.096	0.017	41.933	-7.096	0.000%
46	-3.557	-41.933	6.154	3.557	41.933	-6.154	0.000%
47	-6.143	-41.933	3.563	6.143	41.933	-3.563	0.000%
48	-7.084	-41.933	0.017	7.084	41.933	-0.017	0.000%
49	-6.126	-41.933	-3.533	6.126	41.933	3.533	0.000%
50	-3.527	-41.933	-6.137	3.527	41.933	6.137	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00027362
3	Yes	4	0.00000001	0.00017730
4	Yes	5	0.00000001	0.00015327
5	Yes	5	0.00000001	0.00007203
6	Yes	5	0.00000001	0.00014848
7	Yes	5	0.00000001	0.00006966
8	Yes	4	0.00000001	0.00011997
9	Yes	4	0.00000001	0.00007305
10	Yes	5	0.00000001	0.00014446
11	Yes	5	0.00000001	0.00006781
12	Yes	5	0.00000001	0.00015248
13	Yes	5	0.00000001	0.00007179
14	Yes	4	0.00000001	0.00022390
15	Yes	4	0.00000001	0.00014457
16	Yes	5	0.00000001	0.00014627
17	Yes	5	0.00000001	0.00006859
18	Yes	5	0.00000001	0.00015074
19	Yes	5	0.00000001	0.00007082
20	Yes	4	0.00000001	0.00008955
21	Yes	4	0.00000001	0.00005107
22	Yes	5	0.00000001	0.00015097
23	Yes	5	0.00000001	0.00007107

24	Yes	5	0.00000001	0.00014326
25	Yes	5	0.00000001	0.00006722
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00085471
28	Yes	4	0.00000001	0.00096673
29	Yes	4	0.00000001	0.00096126
30	Yes	4	0.00000001	0.00085222
31	Yes	4	0.00000001	0.00095299
32	Yes	4	0.00000001	0.00095837
33	Yes	4	0.00000001	0.00085135
34	Yes	4	0.00000001	0.00095445
35	Yes	4	0.00000001	0.00095777
36	Yes	4	0.00000001	0.00084909
37	Yes	4	0.00000001	0.00095649
38	Yes	4	0.00000001	0.00095317
39	Yes	4	0.00000001	0.00001905
40	Yes	4	0.00000001	0.00007158
41	Yes	4	0.00000001	0.00006560
42	Yes	4	0.00000001	0.00001371
43	Yes	4	0.00000001	0.00006147
44	Yes	4	0.00000001	0.00007325
45	Yes	4	0.00000001	0.00001849
46	Yes	4	0.00000001	0.00006268
47	Yes	4	0.00000001	0.00006758
48	Yes	4	0.00000001	0.00001343
49	Yes	4	0.00000001	0.00007114
50	Yes	4	0.00000001	0.00006044

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	120 - 84.71	10.727	40	0.743	0.001
L2	89.293 - 41.583	6.177	40	0.641	0.001
L3	47.416 - 0	1.752	40	0.339	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	°	°	*ft*
120.000	Side Arm Mount [SO 102-3]	40	10.727	0.743	0.001	63075
118.000	80010966 w/ Mount Pipe	40	10.419	0.738	0.001	63075
116.000	Side Arm Mount [SO 102-3]	40	10.111	0.733	0.001	63075
108.000	BXA-80063-4BF-EDIN-X	40	8.888	0.712	0.001	26281
100.000	TME-1900MHZ RRH (65MHZ)	40	7.695	0.686	0.001	15769
97.000	APXVTM14-C-120 w/ Mount Pipe	40	7.259	0.675	0.001	13712
83.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	5.344	0.605	0.001	9240
51.000	KS24019-L112A	40	2.012	0.367	0.000	6123

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	120 - 84.71	45.728	4	3.164	0.005
L2	89.293 - 41.583	26.343	4	2.733	0.003
L3	47.416 - 0	7.470	4	1.445	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.000	Side Arm Mount [SO 102-3]	4	45.728	3.164	0.005	14929
118.000	80010966 w/ Mount Pipe	4	44.415	3.144	0.005	14929
116.000	Side Arm Mount [SO 102-3]	4	43.103	3.123	0.005	14929
108.000	BXA-80063-4BF-EDIN-X	4	37.894	3.034	0.004	6220
100.000	TME-1900MHZ RRH (65MHZ)	4	32.810	2.927	0.004	3731
97.000	APXVTM14-C-120 w/ Mount Pipe	4	30.952	2.880	0.003	3244
83.000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	22.792	2.583	0.003	2181
51.000	KS24019-L112A	4	8.582	1.566	0.001	1437

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	120 - 84.71 (1)	TP32.56x24.09x0.375	35.290	0.000	0.0	36.999	-17.139	2164.440	0.008
L2	84.71 - 41.583 (2)	TP42.03x30.71x0.438	47.710	0.000	0.0	55.835	-32.332	3266.320	0.010
L3	41.583 - 0 (3)	TP51x39.771x0.5	47.416	0.000	0.0	80.144	-50.301	4688.400	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	120 - 84.71 (1)	TP32.56x24.09x0.375	419.038	1749.783	0.239	0.000	1749.783	0.000
L2	84.71 - 41.583 (2)	TP42.03x30.71x0.438	1430.400	3419.583	0.418	0.000	3419.583	0.000
L3	41.583 - 0 (3)	TP51x39.771x0.5	2778.300	6078.800	0.457	0.000	6078.800	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	120 - 84.71 (1)	TP32.56x24.09x0.375	19.487	649.332	0.030	0.896	1767.658	0.001
L2	84.71 - 41.583 (2)	TP42.03x30.71x0.438	26.463	979.897	0.027	0.983	3450.475	0.000
L3	41.583 - 0 (3)	TP51x39.771x0.5	30.200	1406.520	0.021	0.982	6220.375	0.000

Pole Interaction Design Data

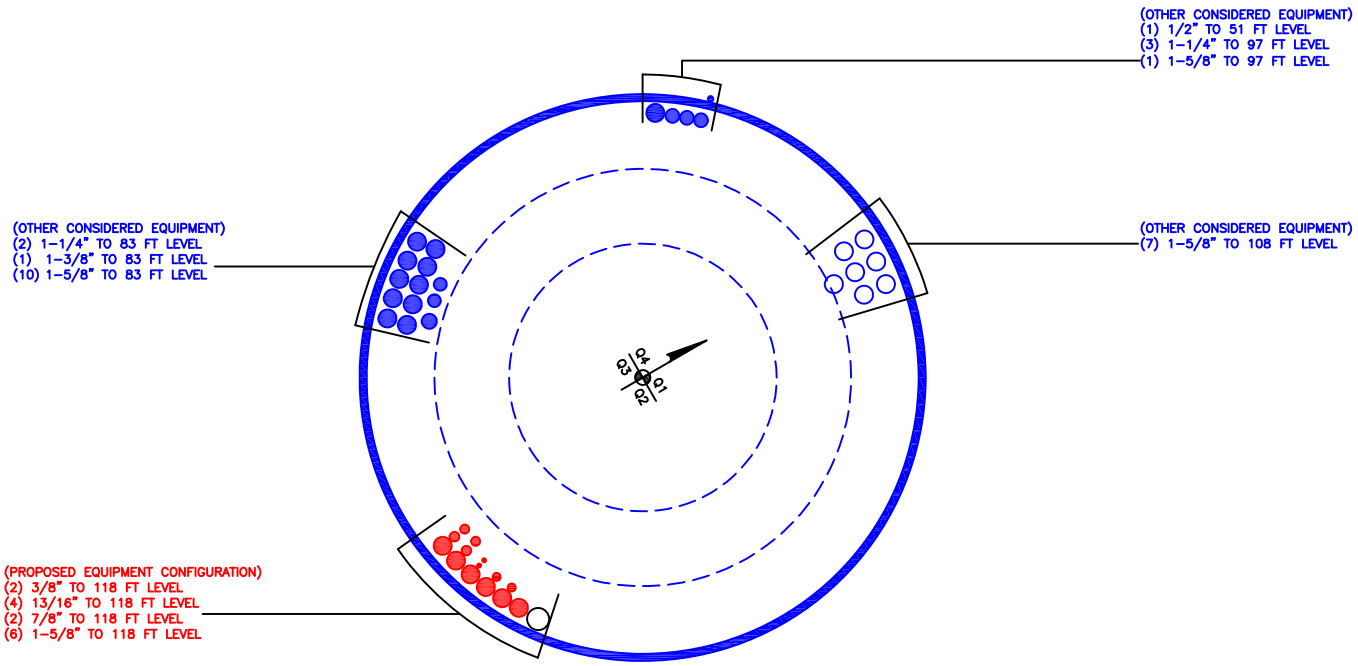
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 84.71 (1)	0.008	0.239	0.000	0.030	0.001	0.248 ✔	1.050	4.8.2 ✔
L2	84.71 - 41.583 (2)	0.010	0.418	0.000	0.027	0.000	0.429 ✔	1.050	4.8.2 ✔
L3	41.583 - 0 (3)	0.011	0.457	0.000	0.021	0.000	0.468 ✔	1.050	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	120 - 84.71	Pole	TP32.56x24.09x0.375	1	-17.139	2272.662	23.7	Pass
L2	84.71 - 41.583	Pole	TP42.03x30.71x0.438	2	-32.332	3429.636	40.9	Pass
L3	41.583 - 0	Pole	TP51x39.771x0.5	3	-50.301	4922.820	44.6	Pass
							Summary	
						Pole (L3)	44.6	Pass
						RATING =	**44.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 881536

APPENDIX C

ADDITIONAL CALCULATIONS

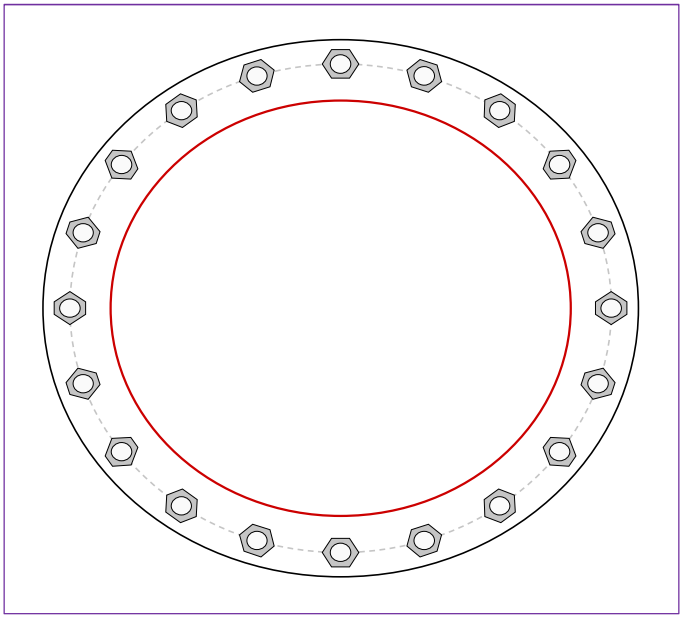
Monopole Base Plate Connection

Site Info	
BU #	881536
Site Name	ORTH HAVEN TOWER,
Order #	556515 Rev# 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	3

Applied Loads	
Moment (kip-ft)	2778.30
Axial Force (kips)	50.30
Shear Force (kips)	30.20

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(20) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 60" BC

Base Plate Data

66" OD x 2.25" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

51" x 0.5" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 113.58	ϕPn_c = 268.39	**Stress Rating**
Vu = 1.51	ϕVn = 120.77	**42.5%**
Mu = 2.94	ϕMn = 128.14	**Pass**

Base Plate Summary

Max Stress (ksi):	29.42	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**51.9%**	**Pass**

Drilled Pier Foundation

BU # :	881536
Site Name:	NORTH HAVEN TOWER, C
Order Number:	556515, Rev.1
TIA-222 Revison:	H
Tower Type:	Monopole

Report File:

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	**Comp.**	**Uplift**
Moment (kip-ft)	2778	
Axial Force (kips)	50	
Shear Force (kips)	30	

Material Properties			Rebar 2, Fy Override (ksi)	Rebar 3, Fy Override (ksi)
Concrete Strength, f'c:	4	ksi		
Rebar Strength, Fy:	60	ksi		
Tie Yield Strength, Fyt:	60	ksi		

Pier Design Data		
Depth	39	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 39' below grade		
Pier Diameter	7.5	ft
Rebar Quantity	25	
Rebar Size	11	
Rebar Cage Diameter	79	in
Tie Size	5	
Tie Spacing	12	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results

Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	8.18	-
Soil Safety Factor	5.46	-
Max Moment (kip-ft)	2977.98	-
Rating*	*23.2%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	565.51	-
End Bearing (kips)	530.14	-
Weight of Concrete (kips)	212.23	-
Total Capacity (kips)	1095.65	-
Axial (kips)	262.23	-
Rating*	*22.8%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	8.40	-
Critical Moment (kip-ft)	2977.70	-
Critical Moment Capacity	6807.31	-
Rating*	*41.7%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	22.18	-
Critical Shear (kip)	235.60	-
Critical Shear Capacity	736.70	-
Rating*	*30.5%*	-

Structural Foundation Rating*	**41.7%**
Soil Interaction Rating*	**23.2%**

*Rating per TIA-222-H Section 15.5

Soil Profile

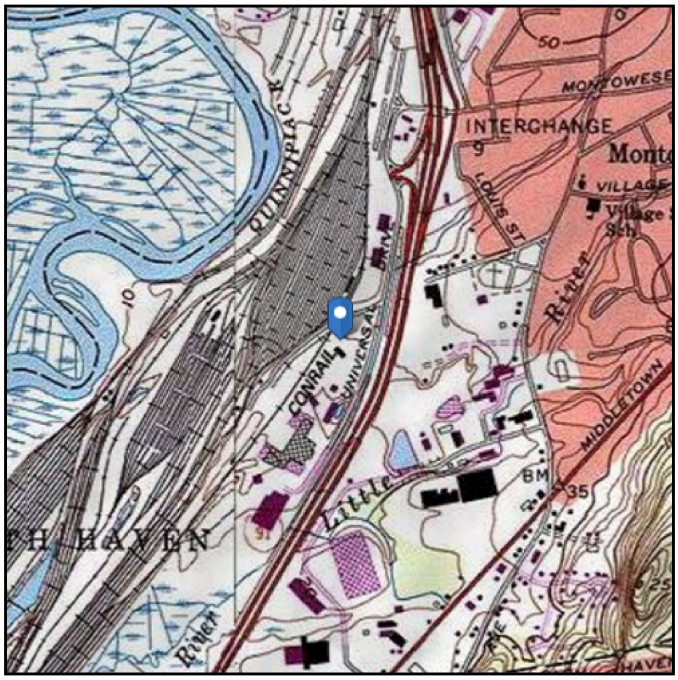
Groundwater Depth	7	# of Layers	8

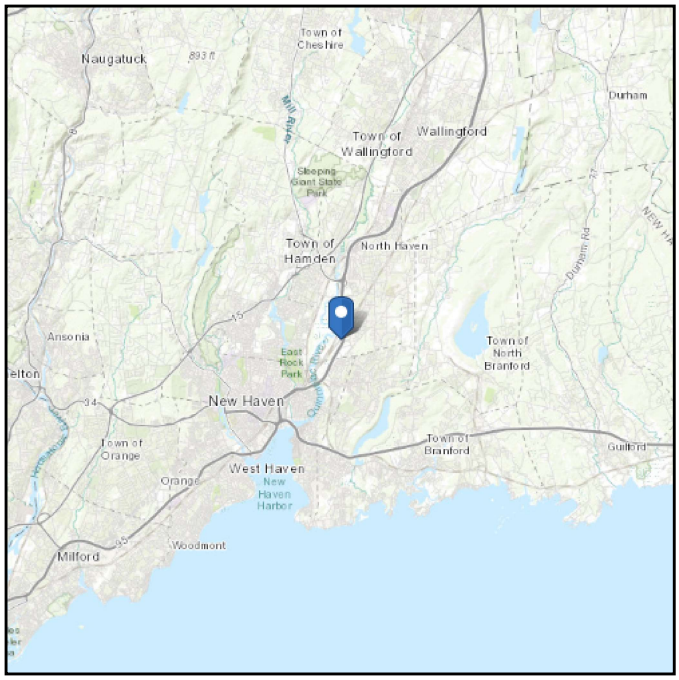
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.75	3.75	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.75	5	1.25	120	150	0	32	0.000	0.000	0.00	0.00			Cohesionless
3	5	7	2	120	150	0	32	0.000	0.000	1.40	1.40			Cohesionless
4	7	20	13	60	87.6	0	32	0.000	0.000	1.40	1.40			Cohesionless
5	20	25	5	60	87.6	0	30	1.014	1.014				10	Cohesionless
6	25	28	3	60	87.6	0	29	0.647	0.647				6	Cohesionless
7	28	35	7	60	87.6	0.75	0	0.41	0.41					Cohesive
8	35	39	4	60	87.6	0.5	0	0.28	0.28			16		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	18.13 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.344447
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-72.870811





Wind

Results:

Wind Speed:	120 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	99 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Thu Nov 18 2021

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 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

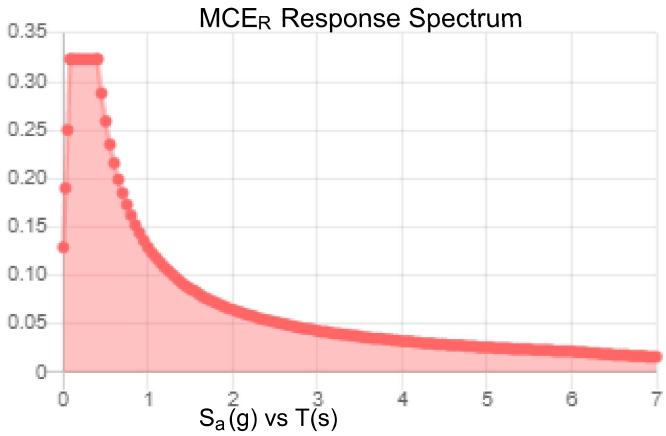
Seismic

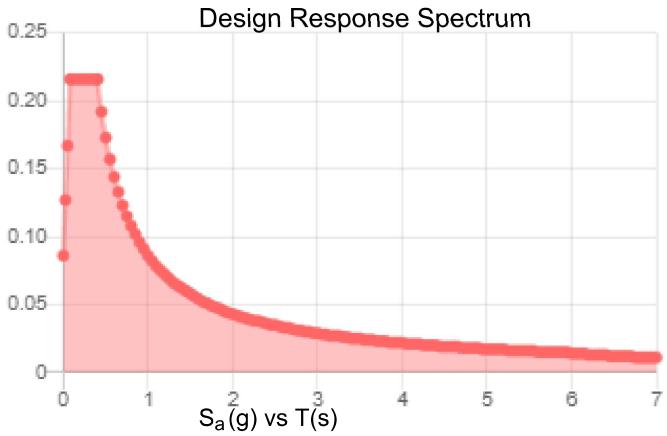
Site Soil Class: D - Default (see Section 11.4.3)

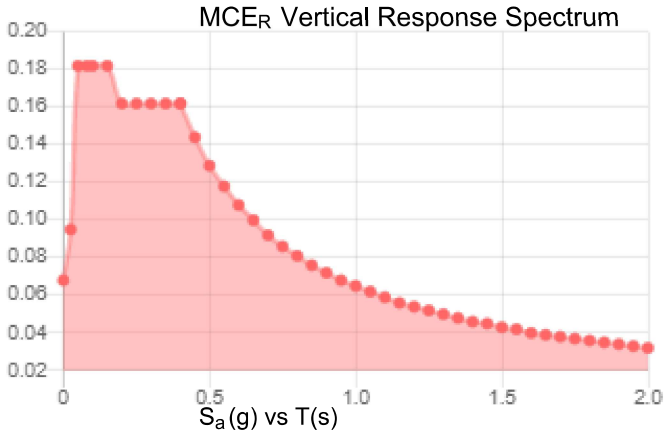
Results:

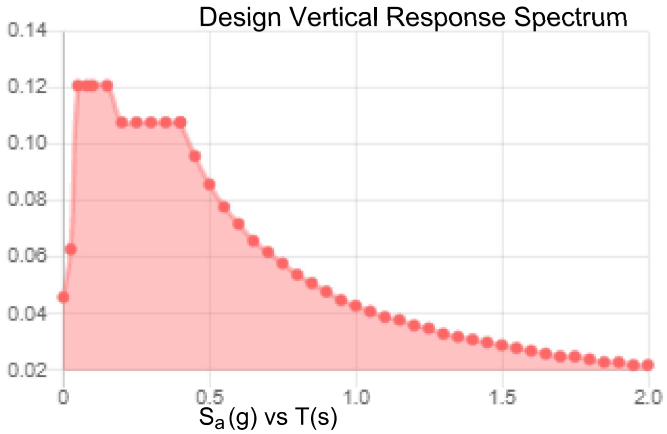
S_S :	0.202	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA_M :	0.178
S_{MS} :	0.323	F_{PGA} :	1.574
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.216	C_v :	0.704

Seismic Design Category B









Data Accessed: Thu Nov 18 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Nov 18 2021

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 500-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.

Exhibit E

Mount Analysis

Date: September 15, 2021

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**AT&T Mobility Equipment Change-Out**	
	Carrier Site Number:	CTL05107
	Carrier Site Name:	North Haven South
	Carrier FA Number:	10071172
Crown Castle Designation:	**BU Number:**	881536
	Site Name:	North Haven Tower
	JDE Job Number:	649415
	Order Number:	556515, Rev. 0
Engineering Firm Designation:	**B+T Group Report Designation:**	142902.006.01
Site Data:	**120 Universal Drive, North Haven, CT, New Haven County, 06473** **Latitude 41° 20' 40.01" Longitude -72° 52' 14.92"**	
Structure Information:	**Tower Height & Type:**	**120 ft. Monopole**
	Mount Elevation:	**118 ft.**
	Mount Type:	**14.5 ft. Sector Mount**

B+T Group is pleased to submit this **"Mount Replacement Analysis 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:

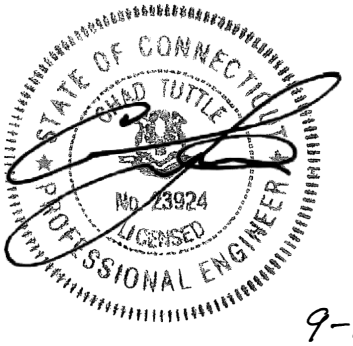
Sector Mount (typical) **Sufficient**

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

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 120 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Suman Rana, P.E.

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2022



Chad E. Tuttle, P.E.

9-15-21

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 - Sector 14.5' Sector Mount, designed by Sabre Industries (Part# C10857278C with Part# C10899055 Pipe Mount Assembly).

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.202
Seismic S_1:	0.054
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb.
Man Live Load at Mount Pipes:	500 lb.

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Qty.	Manufacturer	Model / Type	Mount / Modification Details
118	121	3	Ericsson	AIR 6419 B77G	14.5 ft. Sector Mount
		3	Ericsson	AIR 6449 B77D	
		3	Kathrein	80010966	
		3	Quintel Technology	QD8616-7	
		3	Ericsson	RRUS 32 B30	
		3	Ericsson	RRUS 4449 B5/B12	
		3	Ericsson	RRUS 4478 B14	
		3	Ericsson	RRUS 8843 B2/B66A	
		1	Raycap	DC6-48-60-0-8F	
		2	Raycap	DC6-48-60-18-8F	

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	Date: 08/27/2021	Crown Castle
RFDS		Date: 07/22/2021	
Previous MA	Infinigy	Date: 12/27/2018	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), 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 "Software Input Calculations".

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision D). In addition, this analysis is in accordance with *AT&T's Mount Technical Directive – R15.0*.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
5. 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.
6. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
7. 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.
8. 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 (Sector Mount)

Notes	Component	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1,2	Main Horizontals	118	99	56.3	Pass
	Supporting Horizontals	118	63	11.4	Pass
	Verticals	118	57	43.7	Pass
	Diagonals	118	3	13.7	Pass
	Connection Plate	118	49	30.0	Pass
	Mount Pipes	118	7	36.3	Pass
	Tieback	118	71	16.7	Pass
	Connection Pipe	118	137	30.2	Pass
3	Connection Bolts	118	-	26.44	Pass

Structure Rating (max from all components) =	56.3%

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

4.1) Recommendations

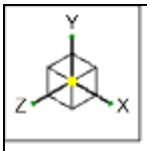
The proposed mount has sufficient capacity to support the proposed loading configuration. In order for the results of this analysis to be considered valid, the mount listed below shall be installed.

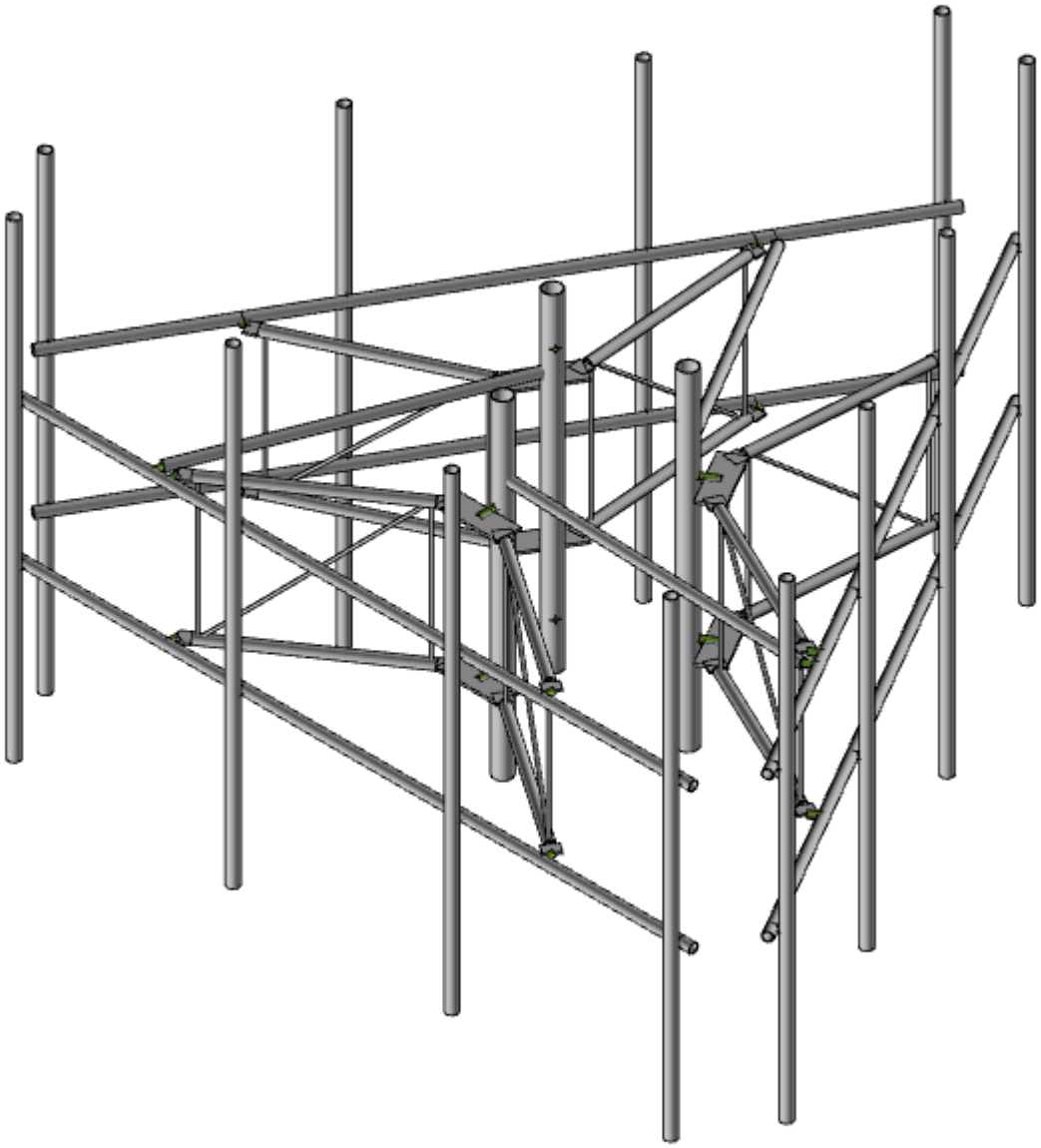
1. Mount replacement, Sabre Industries (Part# C10857278C with Part# C10899055 Pipe Mount Assembly).

Beyond the mount replacement, no structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS





Envelope Only Solution

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VP		Sep 15, 2021
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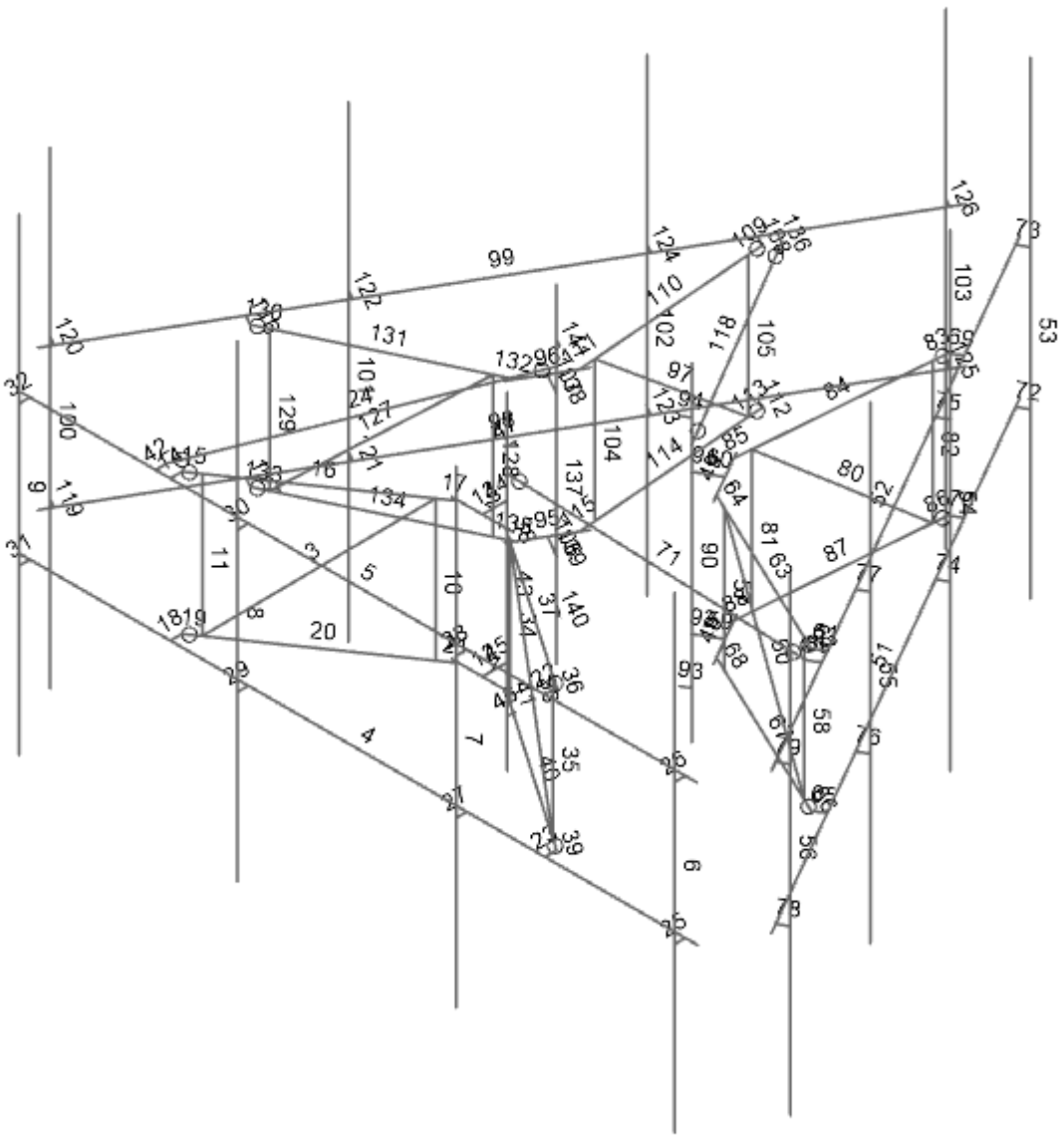

Envelope Only Solution

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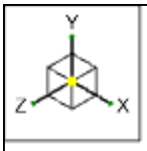

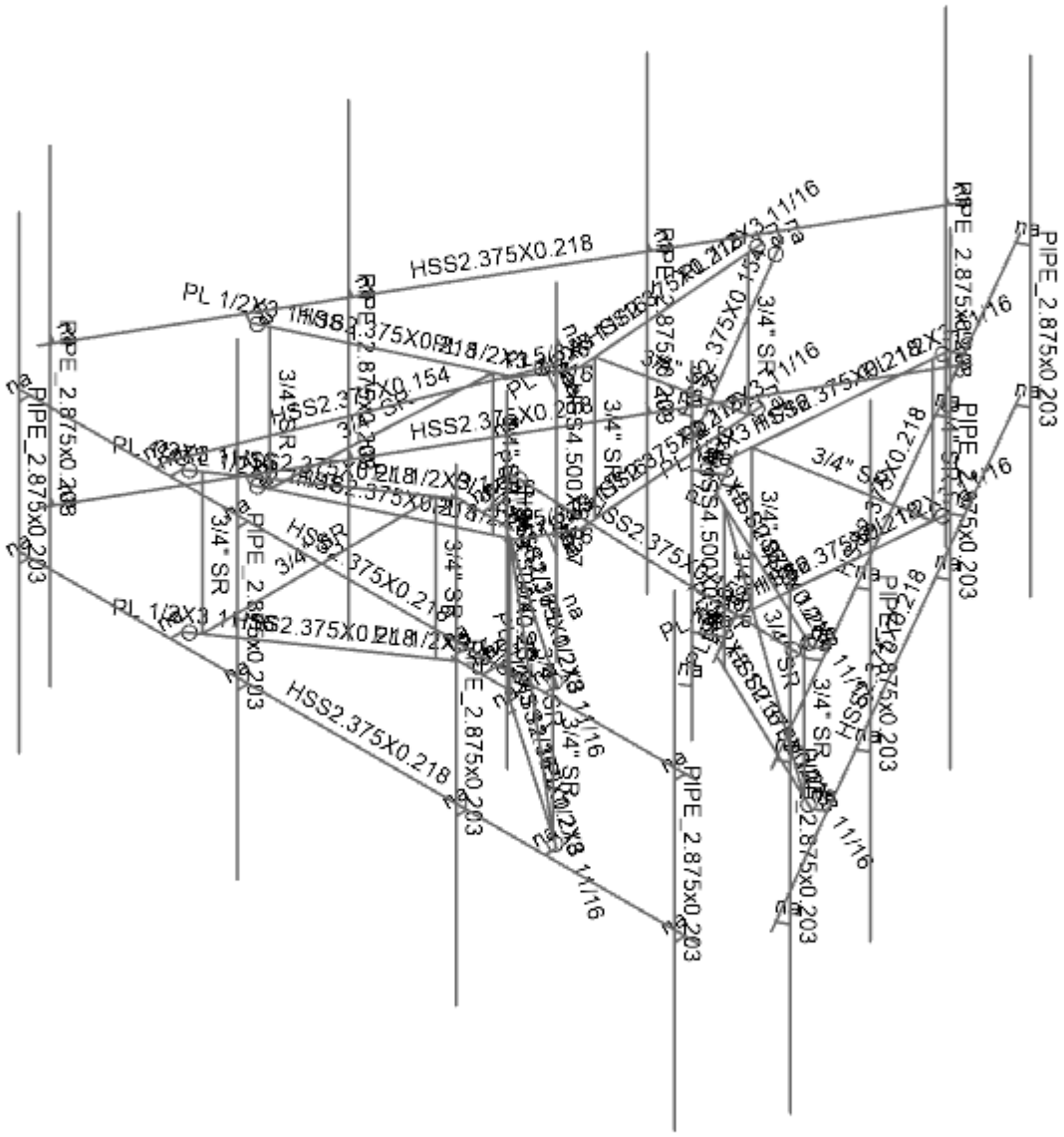

Envelope Only Solution

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VP		Sep 15, 2021
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APPENDIX B

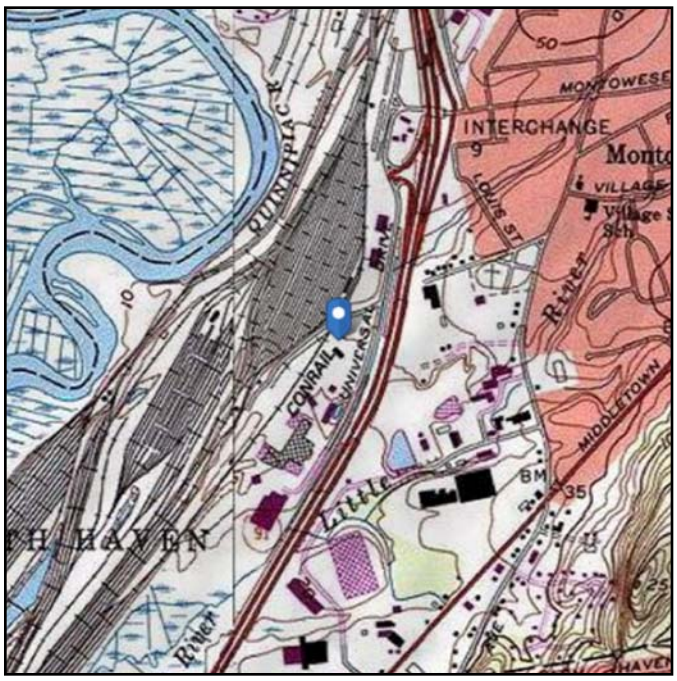
SOFTWARE INPUT CALCULATIONS

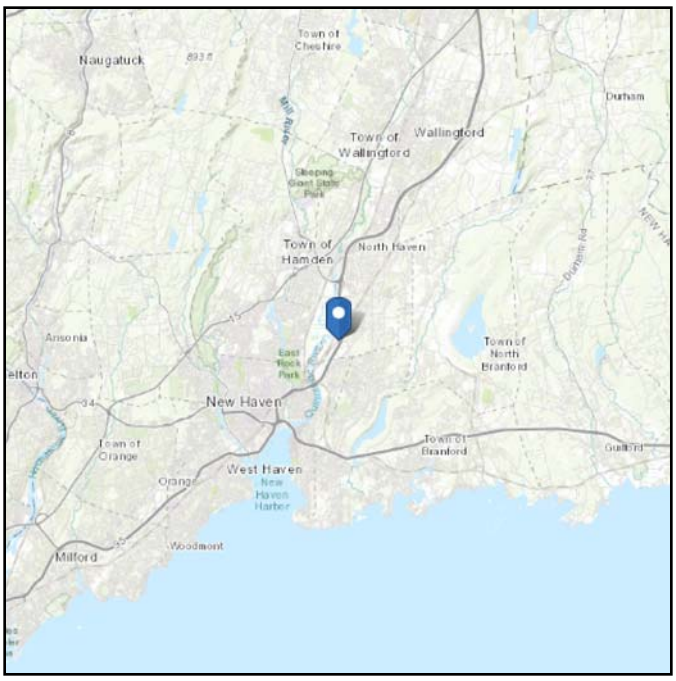
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 18.13 ft (NAVD 88)
Latitude: 41.344447
Longitude: -72.870811





Wind

Results:

Wind Speed:	120 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Sep 01 2021

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 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

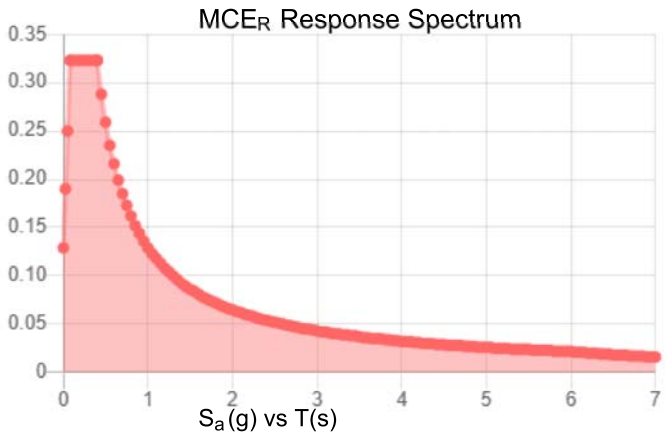
Seismic

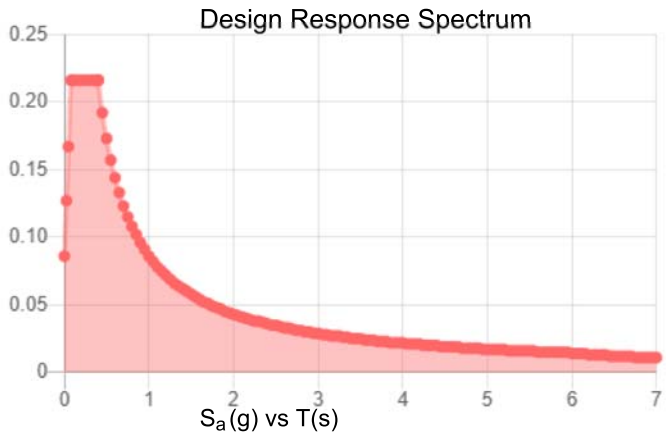
Site Soil Class: D - Default (see Section 11.4.3)

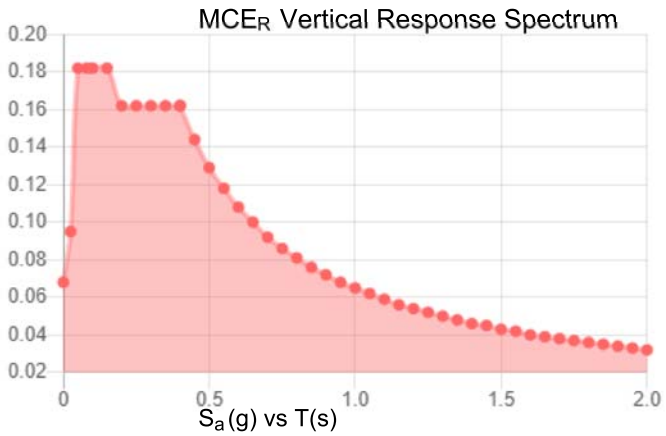
Results:

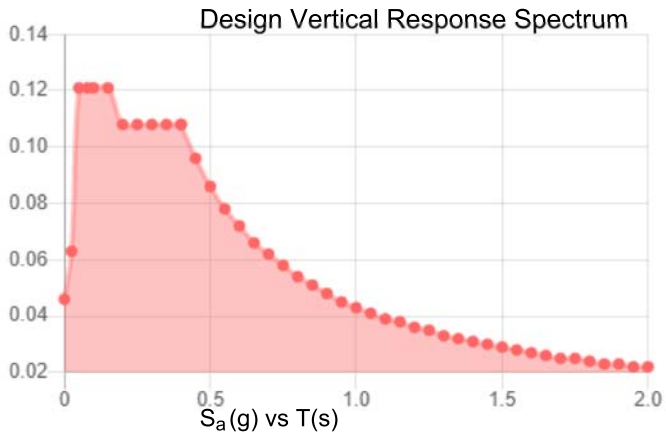
S_S :	0.202	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA_M :	0.178
S_{MS} :	0.323	F_{PGA} :	1.574
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.216	C_v :	0.704

Seismic Design Category B









Data Accessed: Wed Sep 01 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Sep 01 2021

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 500-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.

PROJECT	**142902.006.01 - North Haven**	**KSC**
SUBJECT	**Sector Mount Analysis**	
DATE	**09-15-21**	PAGE OF

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

Tower Type		:	Monopole		
Ground Elevation	z_s	:	18	ft	[ASCE7 Hazard Tool]
Tower Height		:	120.00	ft	
Mount Elevation		:	118.00	ft	
Antenna Elevation		:	121.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	C		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	120	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.00	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.20		
	S_1	:	0.05		
	S_{DS}	:	0.22		
	S_{D1}	:	0.09		

Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.32		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	1.00		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.14	in	[Sec. 2.6.10]

Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.108		[Sec. 2.7.7.1]
Amplification	A_s	:	2.933333		[Sec. 16.7]

	q_z	:	45.86	psf

PROJECT	**142902.006.01 - North Haven**		**KSC**
SUBJECT	**Sector Mount Analysis**		
DATE	**09-15-21**	PAGE	OF

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

Manufacturer	Model	Qty	Aspect Ratio	C_a flat / round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
UINTEL TECHNOLOG	QD8616-7	0.5	4.36	1.28	7.33	3.20	8.28	4.05	0.39	0.17	0.07	0.03
UINTEL TECHNOLOG	QD8616-7	0.5	4.36	1.28	7.33	3.20	8.28	4.05	0.39	0.17	0.07	0.03
ERICSSON	RRUS 4478 B14	1	1.23	1.20	1.54	0.88	2.04	1.30	0.08	0.04	0.01	0.01
ERICSSON	RRUS 8843 B2/B66A	1	1.13	1.20	1.37	1.13	1.84	1.57	0.07	0.06	0.01	0.01
ERICSSON	AIR 6449 B77D	0.5	1.91	1.20	1.82	0.86	2.19	1.17	0.08	0.04	0.02	0.01
ERICSSON	AIR 6449 B77D	0.5	1.91	1.20	1.82	0.86	2.19	1.17	0.08	0.04	0.02	0.01
ERICSSON	AIR 6419 B77G	0.5	1.77	1.20	1.53	0.65	1.89	0.94	0.08	0.03	0.01	0.01
ERICSSON	AIR 6419 B77G	0.5	1.77	1.20	1.53	0.65	1.89	0.94	0.08	0.03	0.01	0.01
KATHREIN	80010966	0.5	4.80	1.30	7.29	2.52	8.17	3.30	0.34	0.12	0.07	0.03
KATHREIN	80010966	0.5	4.80	1.30	7.29	2.52	8.17	3.30	0.34	0.12	0.07	0.03
ERICSSON	RRUS 4449 B5/B12	1	1.36	1.20	1.64	1.17	2.17	1.64	0.08	0.06	0.01	0.01
ERICSSON	RRUS 32 B30	1	2.26	1.20	2.28	1.32	2.93	1.90	0.11	0.07	0.02	0.01
UINTEL TECHNOLOG	QD8616-7	0.5	4.36	1.28	7.33	3.20	8.28	4.05	0.39	0.17	0.07	0.03
UINTEL TECHNOLOG	QD8616-7	0.5	4.36	1.28	7.33	3.20	8.28	4.05	0.39	0.17	0.07	0.03
ERICSSON	RRUS 4478 B14	1	1.23	1.20	1.54	0.88	2.04	1.30	0.08	0.04	0.01	0.01
ERICSSON	RRUS 8843 B2/B66A	1	1.13	1.20	1.37	1.13	1.84	1.57	0.07	0.06	0.01	0.01
ERICSSON	AIR 6449 B77D	0.5	1.91	1.20	1.82	0.86	2.19	1.17	0.08	0.04	0.02	0.01
ERICSSON	AIR 6449 B77D	0.5	1.91	1.20	1.82	0.86	2.19	1.17	0.08	0.04	0.02	0.01
ERICSSON	AIR 6419 B77G	0.5	1.77	1.20	1.53	0.65	1.89	0.94	0.08	0.03	0.01	0.01
ERICSSON	AIR 6419 B77G	0.5	1.77	1.20	1.53	0.65	1.89	0.94	0.08	0.03	0.01	0.01
KATHREIN	80010966	0.5	4.80	1.30	7.29	2.52	8.17	3.30	0.34	0.12	0.07	0.03
KATHREIN	80010966	0.5	4.80	1.30	7.29	2.52	8.17	3.30	0.34	0.12	0.07	0.03
ERICSSON	RRUS 4449 B5/B12	1	1.36	1.20	1.64	1.17	2.17	1.64	0.08	0.06	0.01	0.01
ERICSSON	RRUS 32 B30	1	2.26	1.20	2.28	1.32	2.93	1.90	0.11	0.07	0.02	0.01

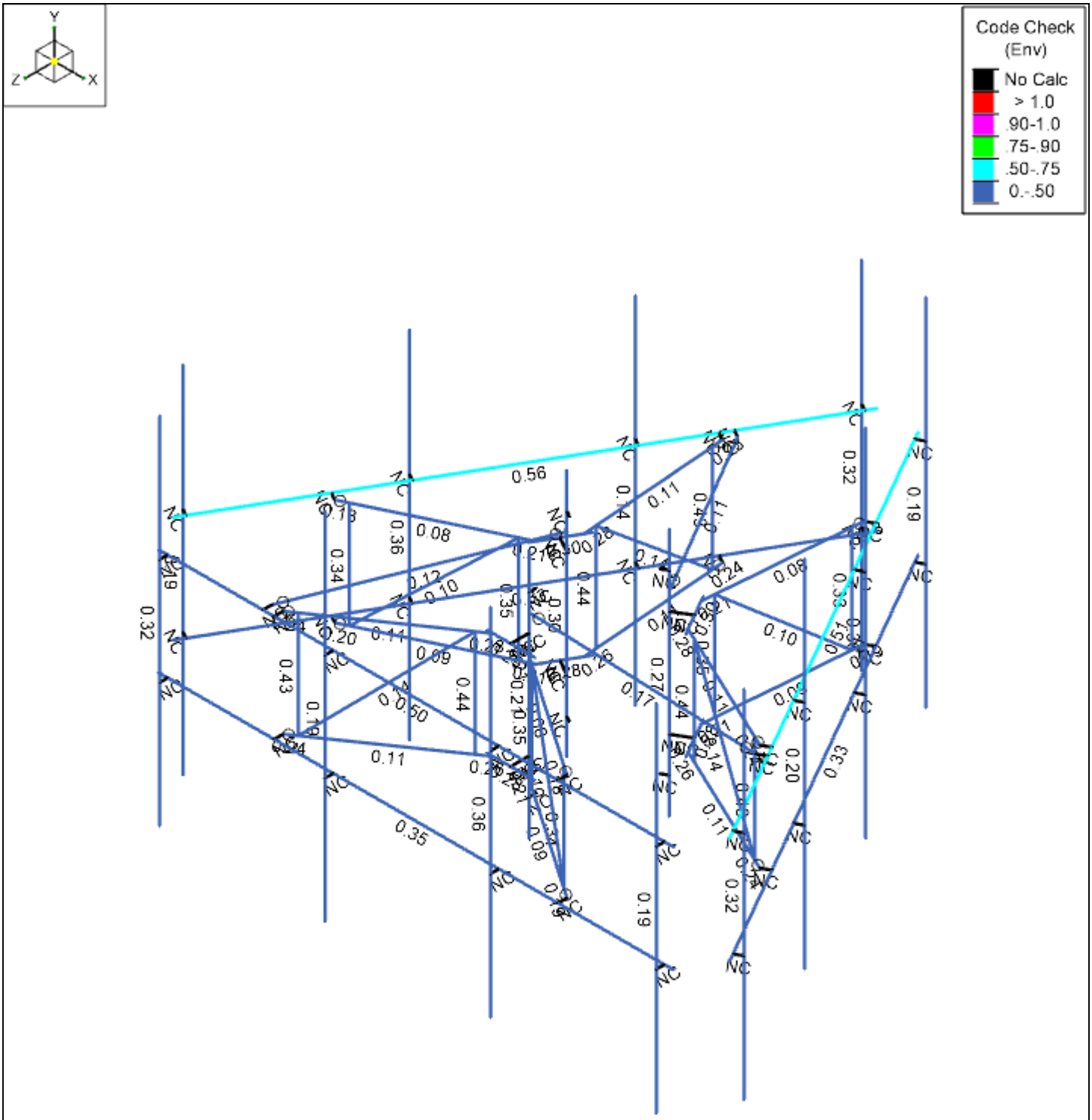
PROJECT	142902.006.01 - North Haven	KSC
SUBJECT	Sector Mount Analysis	
DATE	09-15-21	PAGE 3 OF

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

Manufacturer	Model	Qty	Aspect Ratio	C_a flat / round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
UINTEL TECHNOLOG	QD8616-7	0.5	4.36	1.28	7.33	3.20	8.28	4.05	0.39	0.17	0.07	0.03
UINTEL TECHNOLOG	QD8616-7	0.5	4.36	1.28	7.33	3.20	8.28	4.05	0.39	0.17	0.07	0.03
ERICSSON	RRUS 4478 B14	1	1.23	1.20	1.54	0.88	2.04	1.30	0.08	0.04	0.01	0.01
ERICSSON	RRUS 8843 B2/B66A	1	1.13	1.20	1.37	1.13	1.84	1.57	0.07	0.06	0.01	0.01
ERICSSON	AIR 6449 B77D	0.5	1.91	1.20	1.82	0.86	2.19	1.17	0.08	0.04	0.02	0.01
ERICSSON	AIR 6449 B77D	0.5	1.91	1.20	1.82	0.86	2.19	1.17	0.08	0.04	0.02	0.01
ERICSSON	AIR 6419 B77G	0.5	1.77	1.20	1.53	0.65	1.89	0.94	0.08	0.03	0.01	0.01
ERICSSON	AIR 6419 B77G	0.5	1.77	1.20	1.53	0.65	1.89	0.94	0.08	0.03	0.01	0.01
KATHREIN	80010966	0.5	4.80	1.30	7.29	2.52	8.17	3.30	0.34	0.12	0.07	0.03
KATHREIN	80010966	0.5	4.80	1.30	7.29	2.52	8.17	3.30	0.34	0.12	0.07	0.03
ERICSSON	RRUS 4449 B5/B12	1	1.36	1.20	1.64	1.17	2.17	1.64	0.08	0.06	0.01	0.01
ERICSSON	RRUS 32 B30	1	2.26	1.20	2.28	1.32	2.93	1.90	0.11	0.07	0.02	0.01
RAYCAP	DC6-48-60-0-8F	1	2.18	1.20	1.83	1.83	2.42	2.42	0.09	0.09	0.02	0.02
RAYCAP	DC6-48-60-18-8F	1	2.18	1.20	1.83	1.83	2.42	2.42	0.09	0.09	0.02	0.02
RAYCAP	DC6-48-60-18-8F	1	2.18	1.20	1.83	1.83	2.42	2.42	0.09	0.09	0.02	0.02

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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VP		Sep 15, 2021
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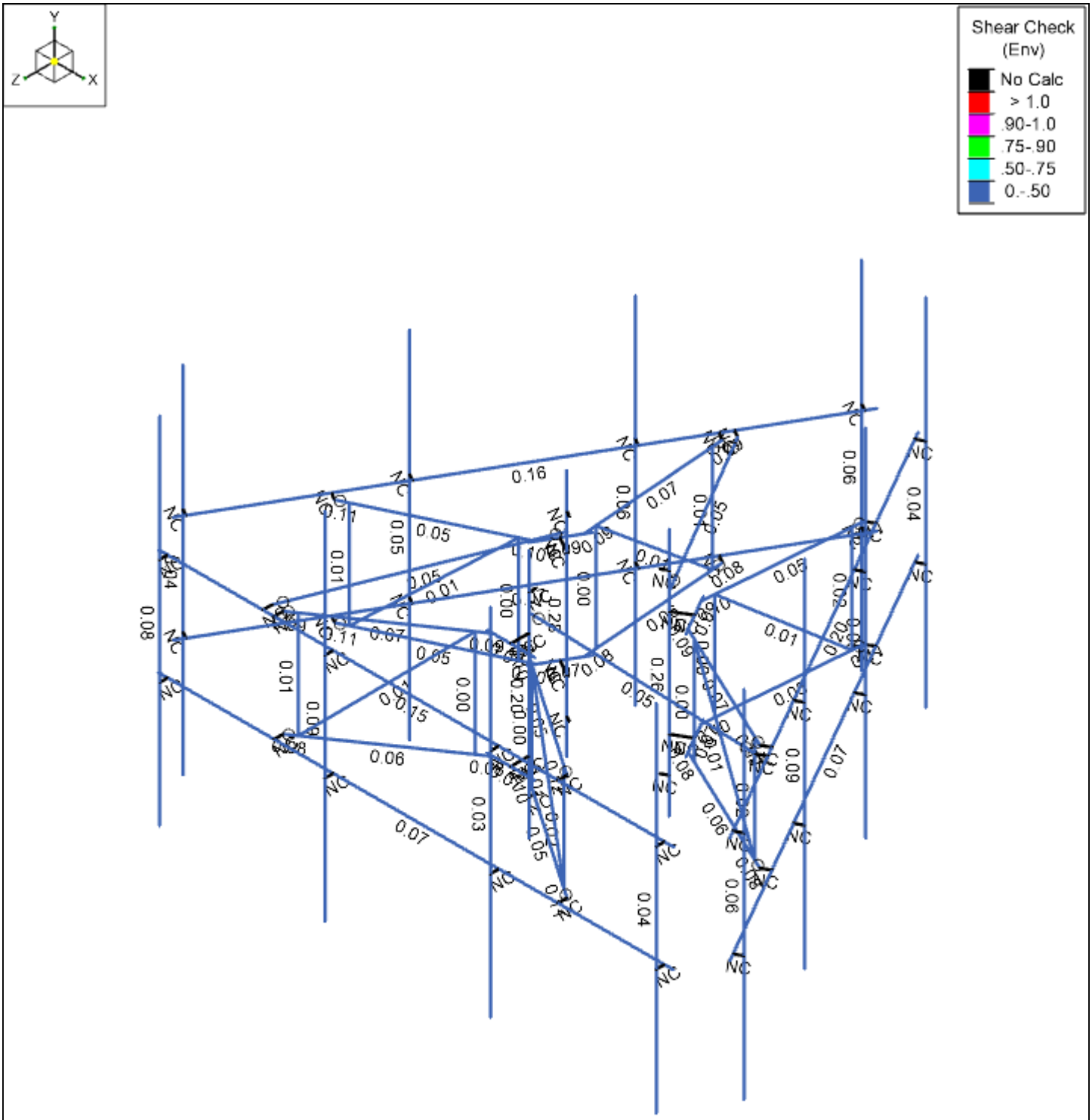


Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	881536 - North Haven Tower	SK-5
VP		Sep 15, 2021
142902.006.01		142902_006_01_North Haven To…

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	-7.25	-4	4.857173	
2	2	7.25	-4	4.857173	
3	3	-7.25	-1	4.857173	
4	4	7.25	-1	4.857173	
5	5	-0.666667	-1	2.190503	
6	6	-0.5	-1	2.190503	
7	7	-7	2.5	5.087173	
8	8	-7	-7.5	5.087174	
9	9	-2.33333	2.5	5.087173	
10	10	-2.33333	-7.5	5.087173	
11	11	2.33333	2.5	5.087173	
12	12	2.33333	-7.5	5.087174	
13	13	7	2.5	5.087173	
14	14	7	-7.5	5.087173	
15	15	0.666667	-4	2.190503	
16	16	-0.666667	-4	2.190503	
17	17	-0.5	-4	2.190503	
18	18	0.666667	-1	2.190503	
19	19	0	-1	2.190503	
20	20	-7	-4	4.857173	
21	21	-2.33333	-4	4.857173	
22	22	2.33333	-4	4.857173	
23	23	7	-4	4.857173	
24	24	-7	-1	4.857173	
25	25	-2.33333	-1	4.857173	
26	26	2.33333	-1	4.857173	
27	27	7	-1	4.857173	
28	28	0	-4	2.190503	
29	29	0	-1	1.85717	
30	30	0	-4	1.85717	
31	31	-4	-1	4.607173	
32	32	-4	-1	4.857173	
33	33	-4	-4	4.607173	
34	34	-4	-4	4.857173	
35	35	4	-1	4.607173	
36	36	4	-1	4.857173	
37	37	4	-4	4.607173	
38	38	4	-4	4.857173	
39	39	-7	-4	5.087173	
40	40	-2.33333	-4	5.087173	
41	41	2.33333	-4	5.087173	
42	42	7	-4	5.087173	
43	43	-7	-1	5.087173	
44	44	-2.33333	-1	5.087173	
45	45	2.33333	-1	5.087173	
46	46	7	-1	5.087173	
47	47	-3.812998	-1	4.478051	
48	48	-3.812998	-4	4.478051	
49	49	-3.744423	-1	4.430701	
50	50	-3.744423	-4	4.430701	
51	51	-0.79571	-1	2.394684	
52	52	-0.79571	-4	2.394684	
53	53	-0.727135	-1	2.347335	
54	54	-0.727135	-4	2.347335	
55	55	0.5	-1	2.190503	
56	56	0.5	-4	2.190503	
57	57	3.812998	-1	4.478051	
58	58	3.812998	-4	4.478051	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
59	59	3.744423	-1	4.430701	
60	60	3.744423	-4	4.430701	
61	61	0.79571	-1	2.394684	
62	62	0.79571	-4	2.394684	
63	63	0.727135	-1	2.347335	
64	64	0.727135	-4	2.347335	
65	65	-4.3125	-1	4.607173	
66	66	-4.3125	-1	4.857173	
67	67	0	-1	1.66967	
68	68	0	-4	1.66967	
69	69	0	0	1.66967	
70	70	0	1	1.66967	
71	71	0	-5	1.66967	
72	72	0	-6	1.66967	
73	73	0	0	1.48217	
74	74	0	-5	1.48217	
75	75	0	0	0.000003	
76	76	0	-0.5	1.66967	
77	77	1.445977	-0.5	-0.834835	
78	78	-1.445977	-0.5	-0.834835	
79	79	7.831435	-4	3.850098	
80	80	0.581435	-4	-8.707271	
81	81	7.831435	-1	3.850098	
82	82	0.581435	-1	-8.707271	
83	83	2.230365	-1	-0.517901	
84	84	2.147032	-1	-0.662239	
85	85	7.905621	2.5	3.518591	
86	86	7.905622	-7.5	3.518591	
87	87	5.572286	2.5	-0.522864	
88	88	5.572286	-7.5	-0.522864	
89	89	3.238956	2.5	-4.56431	
90	90	3.238957	-7.5	-4.56431	
91	91	0.905621	2.5	-8.605764	
92	92	0.905621	-7.5	-8.605764	
93	93	1.563698	-4	-1.672602	
94	94	2.230365	-4	-0.517901	
95	95	2.147032	-4	-0.662239	
96	96	1.563698	-1	-1.672602	
97	97	1.897032	-1	-1.095252	
98	98	7.706435	-4	3.633591	
99	99	5.3731	-4	-0.407864	
100	100	3.03977	-4	-4.44931	
101	101	0.706435	-4	-8.490764	
102	102	7.706435	-1	3.633591	
103	103	5.3731	-1	-0.407864	
104	104	3.03977	-1	-4.44931	
105	105	0.706435	-1	-8.490764	
106	106	1.897032	-4	-1.095252	
107	107	1.608356	-1	-0.928585	
108	108	1.608356	-4	-0.928585	
109	109	5.989929	-1	1.160515	
110	110	6.206435	-1	1.035515	
111	111	5.989929	-4	1.160515	
112	112	6.206435	-4	1.035515	
113	113	1.989929	-1	-5.767688	
114	114	2.206435	-1	-5.892688	
115	115	1.989929	-4	-5.767688	
116	116	2.206435	-4	-5.892688	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
117	117	7.905621	-4	3.518591	
118	118	5.572286	-4	-0.522864	
119	119	3.238956	-4	-4.56431	
120	120	0.905621	-4	-8.605764	
121	121	7.905621	-1	3.518591	
122	122	5.572286	-1	-0.522864	
123	123	3.238956	-1	-4.56431	
124	124	0.905621	-1	-8.605764	
125	125	5.784604	-1	1.063127	
126	126	5.784604	-4	1.063127	
127	127	5.709311	-1	1.027415	
128	128	5.709311	-4	1.027415	
129	129	2.471712	-1	-0.508237	
130	130	2.471712	-4	-0.508237	
131	131	2.396419	-1	-0.54395	
132	132	2.396419	-4	-0.54395	
133	133	1.647032	-1	-1.528264	
134	134	1.647032	-4	-1.528264	
135	135	1.971607	-1	-5.541178	
136	136	1.971607	-4	-5.541178	
137	137	1.964889	-1	-5.458116	
138	138	1.964889	-4	-5.458116	
139	139	1.676002	-1	-1.886447	
140	140	1.676002	-4	-1.886447	
141	141	1.669284	-1	-1.803385	
142	142	1.669284	-4	-1.803385	
143	143	6.146179	-1	1.431148	
144	144	6.362685	-1	1.306148	
145	145	1.445977	-1	-0.834835	
146	146	1.445977	-4	-0.834835	
147	147	1.445977	0	-0.834835	
148	148	1.445977	1	-0.834835	
149	149	1.445977	-5	-0.834835	
150	150	1.445977	-6	-0.834835	
151	151	1.283597	0	-0.741085	
152	152	1.283597	-5	-0.741085	
153	153	-0.581435	-4	-8.707271	
154	154	-7.831435	-4	3.850098	
155	155	-0.581435	-1	-8.707271	
156	156	-7.831435	-1	3.850098	
157	157	-1.563698	-1	-1.672602	
158	158	-1.647032	-1	-1.528264	
159	159	-0.905621	2.5	-8.605764	
160	160	-0.905622	-7.5	-8.605765	
161	161	-3.238956	2.5	-4.56431	
162	162	-3.238956	-7.5	-4.56431	
163	163	-5.572286	2.5	-0.522864	
164	164	-5.572287	-7.5	-0.522864	
165	165	-7.905621	2.5	3.518591	
166	166	-7.905621	-7.5	3.518591	
167	167	-2.230365	-4	-0.517901	
168	168	-1.563698	-4	-1.672602	
169	169	-1.647032	-4	-1.528264	
170	170	-2.230365	-1	-0.517901	
171	171	-1.897032	-1	-1.095252	
172	172	-0.706435	-4	-8.490764	
173	173	-3.03977	-4	-4.44931	
174	174	-5.3731	-4	-0.407864	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
175	175	-7.706435	-4	3.633591	
176	176	-0.706435	-1	-8.490764	
177	177	-3.03977	-1	-4.44931	
178	178	-5.3731	-1	-0.407864	
179	179	-7.706435	-1	3.633591	
180	180	-1.897032	-4	-1.095252	
181	181	-1.608356	-1	-0.928585	
182	182	-1.608356	-4	-0.928585	
183	183	-1.989929	-1	-5.767688	
184	184	-2.206435	-1	-5.892688	
185	185	-1.989929	-4	-5.767688	
186	186	-2.206435	-4	-5.892688	
187	187	-5.989929	-1	1.160515	
188	188	-6.206435	-1	1.035515	
189	189	-5.989929	-4	1.160515	
190	190	-6.206435	-4	1.035515	
191	191	-0.905621	-4	-8.605764	
192	192	-3.238956	-4	-4.56431	
193	193	-5.572286	-4	-0.522864	
194	194	-7.905621	-4	3.518591	
195	195	-0.905621	-1	-8.605764	
196	196	-3.238956	-1	-4.56431	
197	197	-5.572286	-1	-0.522864	
198	198	-7.905621	-1	3.518591	
199	199	-1.971607	-1	-5.541178	
200	200	-1.971607	-4	-5.541178	
201	201	-1.964889	-1	-5.458116	
202	202	-1.964889	-4	-5.458116	
203	203	-1.676002	-1	-1.886447	
204	204	-1.676002	-4	-1.886447	
205	205	-1.669284	-1	-1.803385	
206	206	-1.669284	-4	-1.803385	
207	207	-2.147032	-1	-0.662239	
208	208	-2.147032	-4	-0.662239	
209	209	-5.784604	-1	1.063127	
210	210	-5.784604	-4	1.063127	
211	211	-5.709311	-1	1.027415	
212	212	-5.709311	-4	1.027415	
213	213	-2.471712	-1	-0.508237	
214	214	-2.471712	-4	-0.508237	
215	215	-2.396419	-1	-0.54395	
216	216	-2.396419	-4	-0.54395	
217	217	-1.833679	-1	-6.038321	
218	218	-2.050185	-1	-6.163321	
219	219	-1.445977	-1	-0.834835	
220	220	-1.445977	-4	-0.834835	
221	221	-1.445977	0	-0.834835	
222	222	-1.445977	1	-0.834835	
223	223	-1.445977	-5	-0.834835	
224	224	-1.445977	-6	-0.834835	
225	225	-1.283597	0	-0.741085	
226	226	-1.283597	-5	-0.741085	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	19						
2	28						
3	29						

Node Boundary Conditions (Continued)

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
4	30						
5	67						
6	68						
7	69						
8	70						
9	71						
10	72						
11	73	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
12	74	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
13	75						
14	97						
15	106						
16	107						
17	108						
18	145						
19	146						
20	147						
21	148						
22	149						
23	150						
24	151	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
25	152	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
26	171						
27	180						
28	181						
29	182						
30	219						
31	220						
32	221						
33	222						
34	223						
35	224						
36	225	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
37	226	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{-5}°F^{-1}]	Density [k/ft^3]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	A53 Gr.B 50	29000	11154	0.3	0.65	0.49	50	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^2]	Iyy [in^4]	Izz [in^4]	J [in^4]
1	Main Horizontals	HSS2.375X0.218	Beam	Pipe	A53 Gr.B 50	Typical	1.39	0.824	0.824	1.65
2	Supporting Horizontals	HSS2.375X0.218	Beam	Pipe	A53 Gr.B 50	Typical	1.39	0.824	0.824	1.65
3	Verticals	3/4" SR	Column	BAR	A572 Gr.50	Typical	0.442	0.016	0.016	0.031
4	Diagonals	3/4" SR	HBrace	BAR	A572 Gr.50	Typical	0.442	0.016	0.016	0.031
5	Connection Plate	PL5/8x6	Beam	RECT	A572 Gr.50	Typical	3.75	0.122	11.25	0.456
6	Plates	PL 1/2X3 11/16	Beam	RECT	A572 Gr.50	Typical	1.844	0.038	2.089	0.141
7	Mount-Pipe	PIPE_2.875x0.203	Column	Pipe	A53 Gr.B	Typical	1.704	1.53	1.53	3.059
8	Tieback	HSS2.375X0.154	Beam	Pipe	A53 Gr.B 50	Typical	1	0.627	0.627	1.25
9	Connection Pipe	HSS4.500X0.237	Column	HSS Pipe	A500 Gr.B RND	Typical	2.96	6.79	6.79	13.6

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	16	15	90	Connection Plate	Beam	RECT	A572 Gr.50	Typical
2	2	5	18	90	Connection Plate	Beam	RECT	A572 Gr.50	Typical
3	3	50	51		Diagonals	HBrace	BAR	A572 Gr.50	Typical
4	4	1	2		Main Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
5	5	3	4		Main Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
6	6	13	14		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
7	7	11	12		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
8	8	9	10		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
9	9	7	8		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
10	10	51	52		Verticals	Column	BAR	A572 Gr.50	Typical
11	11	49	50		Verticals	Column	BAR	A572 Gr.50	Typical
12	12	30	28		RIGID	None	None	RIGID	Typical
13	13	29	19		RIGID	None	None	RIGID	Typical
14	14	31	32		RIGID	None	None	RIGID	Typical
15	15	31	47	90	Plates	Beam	RECT	A572 Gr.50	Typical
16	16	47	53		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
17	17	53	6	90	Plates	Beam	RECT	A572 Gr.50	Typical
18	18	33	34		RIGID	None	None	RIGID	Typical
19	19	33	48	90	Plates	Beam	RECT	A572 Gr.50	Typical
20	20	48	54		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
21	21	54	17	90	Plates	Beam	RECT	A572 Gr.50	Typical
22	22	35	36		RIGID	None	None	RIGID	Typical
23	23	37	38		RIGID	None	None	RIGID	Typical
24	24	65	78		Tieback	Beam	Pipe	A53 Gr.B 50	Typical
25	25	42	23		RIGID	None	None	RIGID	Typical
26	26	46	27		RIGID	None	None	RIGID	Typical
27	27	41	22		RIGID	None	None	RIGID	Typical
28	28	45	26		RIGID	None	None	RIGID	Typical
29	29	40	21		RIGID	None	None	RIGID	Typical
30	30	44	25		RIGID	None	None	RIGID	Typical
31	31	39	20		RIGID	None	None	RIGID	Typical
32	32	43	24		RIGID	None	None	RIGID	Typical
33	33	60	61		Diagonals	HBrace	BAR	A572 Gr.50	Typical
34	34	61	62		Verticals	Column	BAR	A572 Gr.50	Typical
35	35	59	60		Verticals	Column	BAR	A572 Gr.50	Typical
36	36	35	57	90	Plates	Beam	RECT	A572 Gr.50	Typical
37	37	57	63		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
38	38	63	55	90	Plates	Beam	RECT	A572 Gr.50	Typical
39	39	37	58	90	Plates	Beam	RECT	A572 Gr.50	Typical
40	40	58	64		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
41	41	64	56	90	Plates	Beam	RECT	A572 Gr.50	Typical
42	42	65	66		RIGID	None	None	RIGID	Typical
43	43	70	72		Connection Pipe	Column	HSS Pipe	A500 Gr.B RND	Typical
44	44	29	67		RIGID	None	None	RIGID	Typical
45	45	30	68		RIGID	None	None	RIGID	Typical
46	46	71	74		RIGID	None	None	RIGID	Typical
47	47	69	73		RIGID	None	None	RIGID	Typical
48	48	94	93	90	Connection Plate	Beam	RECT	A572 Gr.50	Typical
49	49	83	96	90	Connection Plate	Beam	RECT	A572 Gr.50	Typical
50	50	128	129		Diagonals	HBrace	BAR	A572 Gr.50	Typical
51	51	79	80		Main Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
52	52	81	82		Main Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
53	53	91	92		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
54	54	89	90		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
55	55	87	88		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
56	56	85	86		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
57	57	129	130		Verticals	Column	BAR	A572 Gr.50	Typical
58	58	127	128		Verticals	Column	BAR	A572 Gr.50	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
59	59	108	106		RIGID	None	None	RIGID	Typical
60	60	107	97		RIGID	None	None	RIGID	Typical
61	61	109	110		RIGID	None	None	RIGID	Typical
62	62	109	125	90	Plates	Beam	RECT	A572 Gr.50	Typical
63	63	125	131		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
64	64	131	84	90	Plates	Beam	RECT	A572 Gr.50	Typical
65	65	111	112		RIGID	None	None	RIGID	Typical
66	66	111	126	90	Plates	Beam	RECT	A572 Gr.50	Typical
67	67	126	132		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
68	68	132	95	90	Plates	Beam	RECT	A572 Gr.50	Typical
69	69	113	114		RIGID	None	None	RIGID	Typical
70	70	115	116		RIGID	None	None	RIGID	Typical
71	71	143	76		Tieback	Beam	Pipe	A53 Gr.B 50	Typical
72	72	120	101		RIGID	None	None	RIGID	Typical
73	73	124	105		RIGID	None	None	RIGID	Typical
74	74	119	100		RIGID	None	None	RIGID	Typical
75	75	123	104		RIGID	None	None	RIGID	Typical
76	76	118	99		RIGID	None	None	RIGID	Typical
77	77	122	103		RIGID	None	None	RIGID	Typical
78	78	117	98		RIGID	None	None	RIGID	Typical
79	79	121	102		RIGID	None	None	RIGID	Typical
80	80	138	139		Diagonals	HBrace	BAR	A572 Gr.50	Typical
81	81	139	140		Verticals	Column	BAR	A572 Gr.50	Typical
82	82	137	138		Verticals	Column	BAR	A572 Gr.50	Typical
83	83	113	135	90	Plates	Beam	RECT	A572 Gr.50	Typical
84	84	135	141		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
85	85	141	133	90	Plates	Beam	RECT	A572 Gr.50	Typical
86	86	115	136	90	Plates	Beam	RECT	A572 Gr.50	Typical
87	87	136	142		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
88	88	142	134	90	Plates	Beam	RECT	A572 Gr.50	Typical
89	89	143	144		RIGID	None	None	RIGID	Typical
90	90	148	150		Connection Pipe	Column	HSS Pipe	A500 Gr.B RND	Typical
91	91	107	145		RIGID	None	None	RIGID	Typical
92	92	108	146		RIGID	None	None	RIGID	Typical
93	93	149	152		RIGID	None	None	RIGID	Typical
94	94	147	151		RIGID	None	None	RIGID	Typical
95	95	168	167	90	Connection Plate	Beam	RECT	A572 Gr.50	Typical
96	96	157	170	90	Connection Plate	Beam	RECT	A572 Gr.50	Typical
97	97	202	203		Diagonals	HBrace	BAR	A572 Gr.50	Typical
98	98	153	154		Main Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
99	99	155	156		Main Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
100	100	165	166		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
101	101	163	164		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
102	102	161	162		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
103	103	159	160		Mount-Pipe	Column	Pipe	A53 Gr.B	Typical
104	104	203	204		Verticals	Column	BAR	A572 Gr.50	Typical
105	105	201	202		Verticals	Column	BAR	A572 Gr.50	Typical
106	106	182	180		RIGID	None	None	RIGID	Typical
107	107	181	171		RIGID	None	None	RIGID	Typical
108	108	183	184		RIGID	None	None	RIGID	Typical
109	109	183	199	90	Plates	Beam	RECT	A572 Gr.50	Typical
110	110	199	205		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
111	111	205	158	90	Plates	Beam	RECT	A572 Gr.50	Typical
112	112	185	186		RIGID	None	None	RIGID	Typical
113	113	185	200	90	Plates	Beam	RECT	A572 Gr.50	Typical
114	114	200	206		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
115	115	206	169	90	Plates	Beam	RECT	A572 Gr.50	Typical
116	116	187	188		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
117	117	189	190		RIGID	None	None	RIGID	Typical
118	118	217	77		Tieback	Beam	Pipe	A53 Gr.B 50	Typical
119	119	194	175		RIGID	None	None	RIGID	Typical
120	120	198	179		RIGID	None	None	RIGID	Typical
121	121	193	174		RIGID	None	None	RIGID	Typical
122	122	197	178		RIGID	None	None	RIGID	Typical
123	123	192	173		RIGID	None	None	RIGID	Typical
124	124	196	177		RIGID	None	None	RIGID	Typical
125	125	191	172		RIGID	None	None	RIGID	Typical
126	126	195	176		RIGID	None	None	RIGID	Typical
127	127	212	213		Diagonals	HBrace	BAR	A572 Gr.50	Typical
128	128	213	214		Verticals	Column	BAR	A572 Gr.50	Typical
129	129	211	212		Verticals	Column	BAR	A572 Gr.50	Typical
130	130	187	209	90	Plates	Beam	RECT	A572 Gr.50	Typical
131	131	209	215		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
132	132	215	207	90	Plates	Beam	RECT	A572 Gr.50	Typical
133	133	189	210	90	Plates	Beam	RECT	A572 Gr.50	Typical
134	134	210	216		Supporting Horizontals	Beam	Pipe	A53 Gr.B 50	Typical
135	135	216	208	90	Plates	Beam	RECT	A572 Gr.50	Typical
136	136	217	218		RIGID	None	None	RIGID	Typical
137	137	222	224		Connection Pipe	Column	HSS Pipe	A500 Gr.B RND	Typical
138	138	181	219		RIGID	None	None	RIGID	Typical
139	139	182	220		RIGID	None	None	RIGID	Typical
140	140	223	226		RIGID	None	None	RIGID	Typical
141	141	221	225		RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	1			Yes		None
2	2			Yes		None
3	3			Yes	** NA **	None
4	4			Yes		None
5	5			Yes		None
6	6			Yes	** NA **	None
7	7			Yes	** NA **	None
8	8			Yes	** NA **	None
9	9			Yes	** NA **	None
10	10			Yes	** NA **	None
11	11			Yes	** NA **	None
12	12			Yes	** NA **	None
13	13			Yes	** NA **	None
14	14			Yes	** NA **	None
15	15	BenPIN		Yes	Default	None
16	16			Yes		None
17	17			Yes		None
18	18			Yes	** NA **	None
19	19	BenPIN		Yes		None
20	20			Yes		None
21	21			Yes		None
22	22			Yes	** NA **	None
23	23			Yes	** NA **	None
24	24	BenPIN	BenPIN	Yes	Default	None
25	25			Yes	** NA **	None
26	26			Yes	** NA **	None
27	27			Yes	** NA **	None
28	28			Yes	** NA **	None
29	29			Yes	** NA **	None
30	30			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
31	31			Yes	** NA **	None
32	32			Yes	** NA **	None
33	33			Yes	** NA **	None
34	34			Yes	** NA **	None
35	35			Yes	** NA **	None
36	36	BenPIN		Yes		None
37	37			Yes		None
38	38			Yes		None
39	39	BenPIN		Yes		None
40	40			Yes		None
41	41			Yes		None
42	42			Yes	** NA **	None
43	43			Yes	** NA **	None
44	44			Yes	** NA **	None
45	45			Yes	** NA **	None
46	46			Yes	** NA **	None
47	47			Yes	** NA **	None
48	48			Yes		None
49	49			Yes		None
50	50			Yes	** NA **	None
51	51			Yes		None
52	52			Yes		None
53	53			Yes	** NA **	None
54	54			Yes	** NA **	None
55	55			Yes	** NA **	None
56	56			Yes	** NA **	None
57	57			Yes	** NA **	None
58	58			Yes	** NA **	None
59	59			Yes	** NA **	None
60	60			Yes	** NA **	None
61	61			Yes	** NA **	None
62	62	BenPIN		Yes	Default	None
63	63			Yes		None
64	64			Yes		None
65	65			Yes	** NA **	None
66	66	BenPIN		Yes		None
67	67			Yes		None
68	68			Yes		None
69	69			Yes	** NA **	None
70	70			Yes	** NA **	None
71	71	BenPIN	BenPIN	Yes	Default	None
72	72			Yes	** NA **	None
73	73			Yes	** NA **	None
74	74			Yes	** NA **	None
75	75			Yes	** NA **	None
76	76			Yes	** NA **	None
77	77			Yes	** NA **	None
78	78			Yes	** NA **	None
79	79			Yes	** NA **	None
80	80			Yes	** NA **	None
81	81			Yes	** NA **	None
82	82			Yes	** NA **	None
83	83	BenPIN		Yes		None
84	84			Yes		None
85	85			Yes		None
86	86	BenPIN		Yes		None
87	87			Yes		None
88	88			Yes		None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
89	89			Yes	** NA **	None
90	90			Yes	** NA **	None
91	91			Yes	** NA **	None
92	92			Yes	** NA **	None
93	93			Yes	** NA **	None
94	94			Yes	** NA **	None
95	95			Yes		None
96	96			Yes		None
97	97			Yes	** NA **	None
98	98			Yes		None
99	99			Yes		None
100	100			Yes	** NA **	None
101	101			Yes	** NA **	None
102	102			Yes	** NA **	None
103	103			Yes	** NA **	None
104	104			Yes	** NA **	None
105	105			Yes	** NA **	None
106	106			Yes	** NA **	None
107	107			Yes	** NA **	None
108	108			Yes	** NA **	None
109	109	BenPIN		Yes	Default	None
110	110			Yes		None
111	111			Yes		None
112	112			Yes	** NA **	None
113	113	BenPIN		Yes		None
114	114			Yes		None
115	115			Yes		None
116	116			Yes	** NA **	None
117	117			Yes	** NA **	None
118	118	BenPIN	BenPIN	Yes	Default	None
119	119			Yes	** NA **	None
120	120			Yes	** NA **	None
121	121			Yes	** NA **	None
122	122			Yes	** NA **	None
123	123			Yes	** NA **	None
124	124			Yes	** NA **	None
125	125			Yes	** NA **	None
126	126			Yes	** NA **	None
127	127			Yes	** NA **	None
128	128			Yes	** NA **	None
129	129			Yes	** NA **	None
130	130	BenPIN		Yes		None
131	131			Yes		None
132	132			Yes		None
133	133	BenPIN		Yes		None
134	134			Yes		None
135	135			Yes		None
136	136			Yes	** NA **	None
137	137			Yes	** NA **	None
138	138			Yes	** NA **	None
139	139			Yes	** NA **	None
140	140			Yes	** NA **	None
141	141			Yes	** NA **	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	1	Connection Plate	1.333	Lbyy	Lateral
2	2	Connection Plate	1.333	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
3	3	Diagonals	4.673	Lbyy	Lateral
4	4	Main Horizontals	14.5	Lbyy	Lateral
5	5	Main Horizontals	14.5	Lbyy	Lateral
6	6	Mount-Pipe	10	Lbyy	Lateral
7	7	Mount-Pipe	10	Lbyy	Lateral
8	8	Mount-Pipe	10	Lbyy	Lateral
9	9	Mount-Pipe	10	Lbyy	Lateral
10	10	Verticals	3	Lbyy	Lateral
11	11	Verticals	3	Lbyy	Lateral
12	15	Plates	0.227	Lbyy	Lateral
13	16	Supporting Horizontals	3.75	Lbyy	Lateral
14	17	Plates	0.276	Lbyy	Lateral
15	19	Plates	0.227	Lbyy	Lateral
16	20	Supporting Horizontals	3.75	Lbyy	Lateral
17	21	Plates	0.276	Lbyy	Lateral
18	24	Tieback	6.171	Lbyy	Lateral
19	33	Diagonals	4.673	Lbyy	Lateral
20	34	Verticals	3	Lbyy	Lateral
21	35	Verticals	3	Lbyy	Lateral
22	36	Plates	0.227	Lbyy	Lateral
23	37	Supporting Horizontals	3.75	Lbyy	Lateral
24	38	Plates	0.276	Lbyy	Lateral
25	39	Plates	0.227	Lbyy	Lateral
26	40	Supporting Horizontals	3.75	Lbyy	Lateral
27	41	Plates	0.276	Lbyy	Lateral
28	43	Connection Pipe	7	Lbyy	Lateral
29	48	Connection Plate	1.333	Lbyy	Lateral
30	49	Connection Plate	1.333	Lbyy	Lateral
31	50	Diagonals	4.673	Lbyy	Lateral
32	51	Main Horizontals	14.5	Lbyy	Lateral
33	52	Main Horizontals	14.5	Lbyy	Lateral
34	53	Mount-Pipe	10	Lbyy	Lateral
35	54	Mount-Pipe	10	Lbyy	Lateral
36	55	Mount-Pipe	10	Lbyy	Lateral
37	56	Mount-Pipe	10	Lbyy	Lateral
38	57	Verticals	3	Lbyy	Lateral
39	58	Verticals	3	Lbyy	Lateral
40	62	Plates	0.227	Lbyy	Lateral
41	63	Supporting Horizontals	3.75	Lbyy	Lateral
42	64	Plates	0.276	Lbyy	Lateral
43	66	Plates	0.227	Lbyy	Lateral
44	67	Supporting Horizontals	3.75	Lbyy	Lateral
45	68	Plates	0.276	Lbyy	Lateral
46	71	Tieback	6.171	Lbyy	Lateral
47	80	Diagonals	4.673	Lbyy	Lateral
48	81	Verticals	3	Lbyy	Lateral
49	82	Verticals	3	Lbyy	Lateral
50	83	Plates	0.227	Lbyy	Lateral
51	84	Supporting Horizontals	3.75	Lbyy	Lateral
52	85	Plates	0.276	Lbyy	Lateral
53	86	Plates	0.227	Lbyy	Lateral
54	87	Supporting Horizontals	3.75	Lbyy	Lateral
55	88	Plates	0.276	Lbyy	Lateral
56	90	Connection Pipe	7	Lbyy	Lateral
57	95	Connection Plate	1.333	Lbyy	Lateral
58	96	Connection Plate	1.333	Lbyy	Lateral
59	97	Diagonals	4.673	Lbyy	Lateral
60	98	Main Horizontals	14.5	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
61	99	Main Horizontals	14.5	Lbyy	Lateral
62	100	Mount-Pipe	10	Lbyy	Lateral
63	101	Mount-Pipe	10	Lbyy	Lateral
64	102	Mount-Pipe	10	Lbyy	Lateral
65	103	Mount-Pipe	10	Lbyy	Lateral
66	104	Verticals	3	Lbyy	Lateral
67	105	Verticals	3	Lbyy	Lateral
68	109	Plates	0.227	Lbyy	Lateral
69	110	Supporting Horizontals	3.75	Lbyy	Lateral
70	111	Plates	0.276	Lbyy	Lateral
71	113	Plates	0.227	Lbyy	Lateral
72	114	Supporting Horizontals	3.75	Lbyy	Lateral
73	115	Plates	0.276	Lbyy	Lateral
74	118	Tieback	6.171	Lbyy	Lateral
75	127	Diagonals	4.673	Lbyy	Lateral
76	128	Verticals	3	Lbyy	Lateral
77	129	Verticals	3	Lbyy	Lateral
78	130	Plates	0.227	Lbyy	Lateral
79	131	Supporting Horizontals	3.75	Lbyy	Lateral
80	132	Plates	0.276	Lbyy	Lateral
81	133	Plates	0.227	Lbyy	Lateral
82	134	Supporting Horizontals	3.75	Lbyy	Lateral
83	135	Plates	0.276	Lbyy	Lateral
84	137	Connection Pipe	7	Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Y	-0.075	%5
2	7	Y	-0.075	%85
3	7	Y	-0.06	%15
4	7	Y	-0.072	%50
5	7	Y	0	0
6	8	Y	-0.041	%5
7	8	Y	-0.041	%30
8	8	Y	-0.033	%50
9	8	Y	-0.033	%75
10	8	Y	0	0
11	9	Y	-0.063	%5
12	9	Y	-0.063	%85
13	9	Y	-0.071	%15
14	9	Y	-0.053	%50
15	9	Y	0	0
16	101	Y	-0.075	%5
17	101	Y	-0.075	%85
18	101	Y	-0.06	%15
19	101	Y	-0.072	%50
20	101	Y	0	0
21	102	Y	-0.041	%5
22	102	Y	-0.041	%30
23	102	Y	-0.033	%50
24	102	Y	-0.033	%75
25	102	Y	0	0
26	103	Y	-0.063	%5
27	103	Y	-0.063	%85
28	103	Y	-0.071	%15
29	103	Y	-0.053	%50
30	103	Y	0	0
31	54	Y	-0.075	%5

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
32	54	Y	-0.075	%85
33	54	Y	-0.06	%15
34	54	Y	-0.072	%50
35	54	Y	0	0
36	55	Y	-0.041	%5
37	55	Y	-0.041	%30
38	55	Y	-0.033	%50
39	55	Y	-0.033	%75
40	55	Y	0	0
41	56	Y	-0.063	%5
42	56	Y	-0.063	%85
43	56	Y	-0.071	%15
44	56	Y	-0.053	%50
45	56	Y	0	0
46	37	Y	-0.033	%50
47	37	Y	0	0
48	37	Y	0	0
49	37	Y	0	0
50	37	Y	0	0
51	131	Y	-0.019	%50
52	131	Y	0	0
53	131	Y	0	0
54	131	Y	0	0
55	131	Y	0	0
56	84	Y	-0.019	%50
57	84	Y	0	0
58	84	Y	0	0
59	84	Y	0	0
60	84	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Z	-0.39	%5
2	7	Z	-0.39	%85
3	7	Z	-0.077	%15
4	7	Z	-0.068	%50
5	7	Z	0	0
6	8	Z	-0.084	%5
7	8	Z	-0.084	%30
8	8	Z	-0.076	%50
9	8	Z	-0.076	%75
10	8	Z	0	0
11	9	Z	-0.336	%5
12	9	Z	-0.336	%85
13	9	Z	-0.082	%15
14	9	Z	-0.113	%50
15	9	Z	0	0
16	101	Z	-0.39	%5
17	101	Z	-0.39	%85
18	101	Z	-0.077	%15
19	101	Z	-0.068	%50
20	101	Z	0	0
21	102	Z	-0.084	%5
22	102	Z	-0.084	%30
23	102	Z	-0.076	%50
24	102	Z	-0.076	%75
25	102	Z	0	0
26	103	Z	-0.336	%5

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
27	103	Z	-0.336	%85
28	103	Z	-0.082	%15
29	103	Z	-0.113	%50
30	103	Z	0	0
31	54	Z	-0.39	%5
32	54	Z	-0.39	%85
33	54	Z	-0.077	%15
34	54	Z	-0.068	%50
35	54	Z	0	0
36	55	Z	-0.084	%5
37	55	Z	-0.084	%30
38	55	Z	-0.076	%50
39	55	Z	-0.076	%75
40	55	Z	0	0
41	56	Z	-0.336	%5
42	56	Z	-0.336	%85
43	56	Z	-0.082	%15
44	56	Z	-0.113	%50
45	56	Z	0	0
46	37	Z	-0.091	%50
47	37	Z	0	0
48	37	Z	0	0
49	37	Z	0	0
50	37	Z	0	0
51	131	Z	-0.091	%50
52	131	Z	0	0
53	131	Z	0	0
54	131	Z	0	0
55	131	Z	0	0
56	84	Z	-0.091	%50
57	84	Z	0	0
58	84	Z	0	0
59	84	Z	0	0
60	84	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	X	-0.17	%5
2	7	X	-0.17	%85
3	7	X	-0.044	%15
4	7	X	-0.056	%50
5	7	X	0	0
6	8	X	-0.04	%5
7	8	X	-0.04	%30
8	8	X	-0.032	%50
9	8	X	-0.032	%75
10	8	X	0	0
11	9	X	-0.116	%5
12	9	X	-0.116	%85
13	9	X	-0.058	%15
14	9	X	-0.066	%50
15	9	X	0	0
16	101	X	-0.17	%5
17	101	X	-0.17	%85
18	101	X	-0.044	%15
19	101	X	-0.056	%50
20	101	X	0	0
21	102	X	-0.04	%5

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
22	102	X	-0.04	%30
23	102	X	-0.032	%50
24	102	X	-0.032	%75
25	102	X	0	0
26	103	X	-0.116	%5
27	103	X	-0.116	%85
28	103	X	-0.058	%15
29	103	X	-0.066	%50
30	103	X	0	0
31	54	X	-0.17	%5
32	54	X	-0.17	%85
33	54	X	-0.044	%15
34	54	X	-0.056	%50
35	54	X	0	0
36	55	X	-0.04	%5
37	55	X	-0.04	%30
38	55	X	-0.032	%50
39	55	X	-0.032	%75
40	55	X	0	0
41	56	X	-0.116	%5
42	56	X	-0.116	%85
43	56	X	-0.058	%15
44	56	X	-0.066	%50
45	56	X	0	0
46	37	X	-0.091	%50
47	37	X	0	0
48	37	X	0	0
49	37	X	0	0
50	37	X	0	0
51	131	X	-0.091	%50
52	131	X	0	0
53	131	X	0	0
54	131	X	0	0
55	131	X	0	0
56	84	X	-0.091	%50
57	84	X	0	0
58	84	X	0	0
59	84	X	0	0
60	84	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Z	-0.068	%5
2	7	Z	-0.068	%85
3	7	Z	-0.013	%15
4	7	Z	-0.012	%50
5	7	Z	0	0
6	8	Z	-0.018	%5
7	8	Z	-0.018	%30
8	8	Z	-0.013	%50
9	8	Z	-0.013	%75
10	8	Z	0	0
11	9	Z	-0.065	%5
12	9	Z	-0.065	%85
13	9	Z	-0.014	%15
14	9	Z	-0.02	%50
15	9	Z	0	0
16	101	Z	-0.068	%5

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
17	101	Z	-0.068	%85
18	101	Z	-0.013	%15
19	101	Z	-0.012	%50
20	101	Z	0	0
21	102	Z	-0.018	%5
22	102	Z	-0.018	%30
23	102	Z	-0.013	%50
24	102	Z	-0.013	%75
25	102	Z	0	0
26	103	Z	-0.065	%5
27	103	Z	-0.065	%85
28	103	Z	-0.014	%15
29	103	Z	-0.02	%50
30	103	Z	0	0
31	54	Z	-0.068	%5
32	54	Z	-0.068	%85
33	54	Z	-0.013	%15
34	54	Z	-0.012	%50
35	54	Z	0	0
36	55	Z	-0.018	%5
37	55	Z	-0.018	%30
38	55	Z	-0.013	%50
39	55	Z	-0.013	%75
40	55	Z	0	0
41	56	Z	-0.065	%5
42	56	Z	-0.065	%85
43	56	Z	-0.014	%15
44	56	Z	-0.02	%50
45	56	Z	0	0
46	37	Z	-0.016	%50
47	37	Z	0	0
48	37	Z	0	0
49	37	Z	0	0
50	37	Z	0	0
51	131	Z	-0.016	%50
52	131	Z	0	0
53	131	Z	0	0
54	131	Z	0	0
55	131	Z	0	0
56	84	Z	-0.016	%50
57	84	Z	0	0
58	84	Z	0	0
59	84	Z	0	0
60	84	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	X	-0.03	%5
2	7	X	-0.03	%85
3	7	X	-0.008	%15
4	7	X	-0.01	%50
5	7	X	0	0
6	8	X	-0.009	%5
7	8	X	-0.009	%30
8	8	X	-0.006	%50
9	8	X	-0.006	%75
10	8	X	0	0
11	9	X	-0.026	%5

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
12	9	X	-0.026	%85
13	9	X	-0.01	%15
14	9	X	-0.011	%50
15	9	X	0	0
16	101	X	-0.03	%5
17	101	X	-0.03	%85
18	101	X	-0.008	%15
19	101	X	-0.01	%50
20	101	X	0	0
21	102	X	-0.009	%5
22	102	X	-0.009	%30
23	102	X	-0.006	%50
24	102	X	-0.006	%75
25	102	X	0	0
26	103	X	-0.026	%5
27	103	X	-0.026	%85
28	103	X	-0.01	%15
29	103	X	-0.011	%50
30	103	X	0	0
31	54	X	-0.03	%5
32	54	X	-0.03	%85
33	54	X	-0.008	%15
34	54	X	-0.01	%50
35	54	X	0	0
36	55	X	-0.009	%5
37	55	X	-0.009	%30
38	55	X	-0.006	%50
39	55	X	-0.006	%75
40	55	X	0	0
41	56	X	-0.026	%5
42	56	X	-0.026	%85
43	56	X	-0.01	%15
44	56	X	-0.011	%50
45	56	X	0	0
46	37	X	-0.016	%50
47	37	X	0	0
48	37	X	0	0
49	37	X	0	0
50	37	X	0	0
51	131	X	-0.016	%50
52	131	X	0	0
53	131	X	0	0
54	131	X	0	0
55	131	X	0	0
56	84	X	-0.016	%50
57	84	X	0	0
58	84	X	0	0
59	84	X	0	0
60	84	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Z	-0.024	%5
2	7	Z	-0.024	%85
3	7	Z	-0.005	%15
4	7	Z	-0.004	%50
5	7	Z	0	0
6	8	Z	-0.005	%5

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	8	Z	-0.005	%30
8	8	Z	-0.005	%50
9	8	Z	-0.005	%75
10	8	Z	0	0
11	9	Z	-0.021	%5
12	9	Z	-0.021	%85
13	9	Z	-0.005	%15
14	9	Z	-0.007	%50
15	9	Z	0	0
16	101	Z	-0.024	%5
17	101	Z	-0.024	%85
18	101	Z	-0.005	%15
19	101	Z	-0.004	%50
20	101	Z	0	0
21	102	Z	-0.005	%5
22	102	Z	-0.005	%30
23	102	Z	-0.005	%50
24	102	Z	-0.005	%75
25	102	Z	0	0
26	103	Z	-0.021	%5
27	103	Z	-0.021	%85
28	103	Z	-0.005	%15
29	103	Z	-0.007	%50
30	103	Z	0	0
31	54	Z	-0.024	%5
32	54	Z	-0.024	%85
33	54	Z	-0.005	%15
34	54	Z	-0.004	%50
35	54	Z	0	0
36	55	Z	-0.005	%5
37	55	Z	-0.005	%30
38	55	Z	-0.005	%50
39	55	Z	-0.005	%75
40	55	Z	0	0
41	56	Z	-0.021	%5
42	56	Z	-0.021	%85
43	56	Z	-0.005	%15
44	56	Z	-0.007	%50
45	56	Z	0	0
46	37	Z	-0.006	%50
47	37	Z	0	0
48	37	Z	0	0
49	37	Z	0	0
50	37	Z	0	0
51	131	Z	-0.006	%50
52	131	Z	0	0
53	131	Z	0	0
54	131	Z	0	0
55	131	Z	0	0
56	84	Z	-0.006	%50
57	84	Z	0	0
58	84	Z	0	0
59	84	Z	0	0
60	84	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	X	-0.011	%5
2	7	X	-0.011	%85
3	7	X	-0.003	%15
4	7	X	-0.004	%50
5	7	X	0	0
6	8	X	-0.003	%5
7	8	X	-0.003	%30
8	8	X	-0.002	%50
9	8	X	-0.002	%75
10	8	X	0	0
11	9	X	-0.007	%5
12	9	X	-0.007	%85
13	9	X	-0.004	%15
14	9	X	-0.004	%50
15	9	X	0	0
16	101	X	-0.011	%5
17	101	X	-0.011	%85
18	101	X	-0.003	%15
19	101	X	-0.004	%50
20	101	X	0	0
21	102	X	-0.003	%5
22	102	X	-0.003	%30
23	102	X	-0.002	%50
24	102	X	-0.002	%75
25	102	X	0	0
26	103	X	-0.007	%5
27	103	X	-0.007	%85
28	103	X	-0.004	%15
29	103	X	-0.004	%50
30	103	X	0	0
31	54	X	-0.011	%5
32	54	X	-0.011	%85
33	54	X	-0.003	%15
34	54	X	-0.004	%50
35	54	X	0	0
36	55	X	-0.003	%5
37	55	X	-0.003	%30
38	55	X	-0.002	%50
39	55	X	-0.002	%75
40	55	X	0	0
41	56	X	-0.007	%5
42	56	X	-0.007	%85
43	56	X	-0.004	%15
44	56	X	-0.004	%50
45	56	X	0	0
46	37	X	-0.006	%50
47	37	X	0	0
48	37	X	0	0
49	37	X	0	0
50	37	X	0	0
51	131	X	-0.006	%50
52	131	X	0	0
53	131	X	0	0
54	131	X	0	0
55	131	X	0	0
56	84	X	-0.006	%50
57	84	X	0	0
58	84	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
59	84	X	0	0
60	84	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Y	-0.14	%5
2	7	Y	-0.14	%85
3	7	Y	-0.032	%15
4	7	Y	-0.032	%50
5	7	Y	0	0
6	8	Y	-0.072	%5
7	8	Y	-0.072	%30
8	8	Y	-0.03	%50
9	8	Y	-0.03	%75
10	8	Y	0	0
11	9	Y	-0.159	%5
12	9	Y	-0.159	%85
13	9	Y	-0.036	%15
14	9	Y	-0.048	%50
15	9	Y	0	0
16	101	Y	-0.14	%5
17	101	Y	-0.14	%85
18	101	Y	-0.032	%15
19	101	Y	-0.032	%50
20	101	Y	0	0
21	102	Y	-0.072	%5
22	102	Y	-0.072	%30
23	102	Y	-0.03	%50
24	102	Y	-0.03	%75
25	102	Y	0	0
26	103	Y	-0.159	%5
27	103	Y	-0.159	%85
28	103	Y	-0.036	%15
29	103	Y	-0.048	%50
30	103	Y	0	0
31	54	Y	-0.14	%5
32	54	Y	-0.14	%85
33	54	Y	-0.032	%15
34	54	Y	-0.032	%50
35	54	Y	0	0
36	55	Y	-0.072	%5
37	55	Y	-0.072	%30
38	55	Y	-0.03	%50
39	55	Y	-0.03	%75
40	55	Y	0	0
41	56	Y	-0.159	%5
42	56	Y	-0.159	%85
43	56	Y	-0.036	%15
44	56	Y	-0.048	%50
45	56	Y	0	0
46	37	Y	-0.046	%50
47	37	Y	0	0
48	37	Y	0	0
49	37	Y	0	0
50	37	Y	0	0
51	131	Y	-0.046	%50
52	131	Y	0	0
53	131	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
54	131	Y	0	0
55	131	Y	0	0
56	84	Y	-0.046	%50
57	84	Y	0	0
58	84	Y	0	0
59	84	Y	0	0
60	84	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Z	-0.048	%5
2	7	Z	-0.048	%85
3	7	Z	-0.019	%15
4	7	Z	-0.023	%50
5	7	Z	0	0
6	8	Z	-0.026	%5
7	8	Z	-0.026	%30
8	8	Z	-0.021	%50
9	8	Z	-0.021	%75
10	8	Z	0	0
11	9	Z	-0.04	%5
12	9	Z	-0.04	%85
13	9	Z	-0.023	%15
14	9	Z	-0.017	%50
15	9	Z	0	0
16	101	Z	-0.048	%5
17	101	Z	-0.048	%85
18	101	Z	-0.019	%15
19	101	Z	-0.023	%50
20	101	Z	0	0
21	102	Z	-0.026	%5
22	102	Z	-0.026	%30
23	102	Z	-0.021	%50
24	102	Z	-0.021	%75
25	102	Z	0	0
26	103	Z	-0.04	%5
27	103	Z	-0.04	%85
28	103	Z	-0.023	%15
29	103	Z	-0.017	%50
30	103	Z	0	0
31	54	Z	-0.048	%5
32	54	Z	-0.048	%85
33	54	Z	-0.019	%15
34	54	Z	-0.023	%50
35	54	Z	0	0
36	55	Z	-0.026	%5
37	55	Z	-0.026	%30
38	55	Z	-0.021	%50
39	55	Z	-0.021	%75
40	55	Z	0	0
41	56	Z	-0.04	%5
42	56	Z	-0.04	%85
43	56	Z	-0.023	%15
44	56	Z	-0.017	%50
45	56	Z	0	0
46	37	Z	-0.01	%50
47	37	Z	0	0
48	37	Z	0	0

Member Point Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
49	37	Z	0	0
50	37	Z	0	0
51	131	Z	-0.006	%50
52	131	Z	0	0
53	131	Z	0	0
54	131	Z	0	0
55	131	Z	0	0
56	84	Z	-0.006	%50
57	84	Z	0	0
58	84	Z	0	0
59	84	Z	0	0
60	84	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	X	-0.048	%5
2	7	X	-0.048	%85
3	7	X	-0.019	%15
4	7	X	-0.023	%50
5	7	X	0	0
6	8	X	-0.026	%5
7	8	X	-0.026	%30
8	8	X	-0.021	%50
9	8	X	-0.021	%75
10	8	X	0	0
11	9	X	-0.04	%5
12	9	X	-0.04	%85
13	9	X	-0.023	%15
14	9	X	-0.017	%50
15	9	X	0	0
16	101	X	-0.048	%5
17	101	X	-0.048	%85
18	101	X	-0.019	%15
19	101	X	-0.023	%50
20	101	X	0	0
21	102	X	-0.026	%5
22	102	X	-0.026	%30
23	102	X	-0.021	%50
24	102	X	-0.021	%75
25	102	X	0	0
26	103	X	-0.04	%5
27	103	X	-0.04	%85
28	103	X	-0.023	%15
29	103	X	-0.017	%50
30	103	X	0	0
31	54	X	-0.048	%5
32	54	X	-0.048	%85
33	54	X	-0.019	%15
34	54	X	-0.023	%50
35	54	X	0	0
36	55	X	-0.026	%5
37	55	X	-0.026	%30
38	55	X	-0.021	%50
39	55	X	-0.021	%75
40	55	X	0	0
41	56	X	-0.04	%5
42	56	X	-0.04	%85
43	56	X	-0.023	%15

Member Point Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
44	56	X	-0.017	%50
45	56	X	0	0
46	37	X	-0.01	%50
47	37	X	0	0
48	37	X	0	0
49	37	X	0	0
50	37	X	0	0
51	131	X	-0.006	%50
52	131	X	0	0
53	131	X	0	0
54	131	X	0	0
55	131	X	0	0
56	84	X	-0.006	%50
57	84	X	0	0
58	84	X	0	0
59	84	X	0	0
60	84	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	5	Y	-0.25	%95

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	4	Y	-0.25	%95

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	99	Y	-0.25	%95

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	98	Y	-0.25	%95

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	52	Y	-0.25	%95

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	51	Y	-0.25	%95

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	16	Y	-0.25	%5

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	20	Y	-0.25	%5

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	37	Y	-0.25	%5

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	40	Y	-0.25	%5

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	131	Y	-0.25	%5

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Y	-0.25	%5

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	110	Y	-0.25	%5

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	114	Y	-0.25	%5

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	63	Y	-0.25	%5

Member Point Loads (BLC 30 : Maint LL 16)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	67	Y	-0.25	%5

Member Point Loads (BLC 31 : Maint LL 17)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	84	Y	-0.25	%5

Member Point Loads (BLC 32 : Maint LL 18)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	87	Y	-0.25	%5

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.004	-0.004	0	%100
2	2	Z	-0.004	-0.004	0	%100
3	3	Z	-0.003	-0.003	0	%100
4	4	Z	-0.01	-0.01	0	%100
5	5	Z	-0.01	-0.01	0	%100
6	6	Z	-0.012	-0.012	0	%100
7	7	Z	-0.012	-0.012	0	%100
8	8	Z	-0.012	-0.012	0	%100
9	9	Z	-0.012	-0.012	0	%100
10	10	Z	-0.003	-0.003	0	%100
11	11	Z	-0.003	-0.003	0	%100
12	15	Z	-0.002	-0.002	0	%100
13	16	Z	-0.009	-0.009	0	%100
14	17	Z	-0.002	-0.002	0	%100
15	19	Z	-0.002	-0.002	0	%100
16	20	Z	-0.009	-0.009	0	%100
17	21	Z	-0.002	-0.002	0	%100
18	24	Z	-0.01	-0.01	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
19	33	Z	-0.003	-0.003	0	%100
20	34	Z	-0.003	-0.003	0	%100
21	35	Z	-0.003	-0.003	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.009	-0.009	0	%100
24	38	Z	-0.002	-0.002	0	%100
25	39	Z	-0.002	-0.002	0	%100
26	40	Z	-0.009	-0.009	0	%100
27	41	Z	-0.002	-0.002	0	%100
28	43	Z	-0.009	-0.009	0	%100
29	48	Z	-0.004	-0.004	0	%100
30	49	Z	-0.004	-0.004	0	%100
31	50	Z	-0.003	-0.003	0	%100
32	51	Z	-0.01	-0.01	0	%100
33	52	Z	-0.01	-0.01	0	%100
34	53	Z	-0.012	-0.012	0	%100
35	54	Z	-0.012	-0.012	0	%100
36	55	Z	-0.012	-0.012	0	%100
37	56	Z	-0.012	-0.012	0	%100
38	57	Z	-0.003	-0.003	0	%100
39	58	Z	-0.003	-0.003	0	%100
40	62	Z	-0.002	-0.002	0	%100
41	63	Z	-0.009	-0.009	0	%100
42	64	Z	-0.002	-0.002	0	%100
43	66	Z	-0.002	-0.002	0	%100
44	67	Z	-0.009	-0.009	0	%100
45	68	Z	-0.002	-0.002	0	%100
46	71	Z	-0.01	-0.01	0	%100
47	80	Z	-0.003	-0.003	0	%100
48	81	Z	-0.003	-0.003	0	%100
49	82	Z	-0.003	-0.003	0	%100
50	83	Z	-0.002	-0.002	0	%100
51	84	Z	-0.009	-0.009	0	%100
52	85	Z	-0.002	-0.002	0	%100
53	86	Z	-0.002	-0.002	0	%100
54	87	Z	-0.009	-0.009	0	%100
55	88	Z	-0.002	-0.002	0	%100
56	90	Z	-0.009	-0.009	0	%100
57	95	Z	-0.004	-0.004	0	%100
58	96	Z	-0.004	-0.004	0	%100
59	97	Z	-0.003	-0.003	0	%100
60	98	Z	-0.01	-0.01	0	%100
61	99	Z	-0.01	-0.01	0	%100
62	100	Z	-0.012	-0.012	0	%100
63	101	Z	-0.012	-0.012	0	%100
64	102	Z	-0.012	-0.012	0	%100
65	103	Z	-0.012	-0.012	0	%100
66	104	Z	-0.003	-0.003	0	%100
67	105	Z	-0.003	-0.003	0	%100
68	109	Z	-0.002	-0.002	0	%100
69	110	Z	-0.009	-0.009	0	%100
70	111	Z	-0.002	-0.002	0	%100
71	113	Z	-0.002	-0.002	0	%100
72	114	Z	-0.009	-0.009	0	%100
73	115	Z	-0.002	-0.002	0	%100
74	118	Z	-0.01	-0.01	0	%100
75	127	Z	-0.003	-0.003	0	%100
76	128	Z	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
77	129	Z	-0.003	-0.003	0	%100
78	130	Z	-0.002	-0.002	0	%100
79	131	Z	-0.009	-0.009	0	%100
80	132	Z	-0.002	-0.002	0	%100
81	133	Z	-0.002	-0.002	0	%100
82	134	Z	-0.009	-0.009	0	%100
83	135	Z	-0.002	-0.002	0	%100
84	137	Z	-0.009	-0.009	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.004	-0.004	0	%100
2	2	X	-0.004	-0.004	0	%100
3	3	X	-0.003	-0.003	0	%100
4	4	X	-0.01	-0.01	0	%100
5	5	X	-0.01	-0.01	0	%100
6	6	X	-0.012	-0.012	0	%100
7	7	X	-0.012	-0.012	0	%100
8	8	X	-0.012	-0.012	0	%100
9	9	X	-0.012	-0.012	0	%100
10	10	X	-0.003	-0.003	0	%100
11	11	X	-0.003	-0.003	0	%100
12	15	X	-0.002	-0.002	0	%100
13	16	X	-0.009	-0.009	0	%100
14	17	X	-0.002	-0.002	0	%100
15	19	X	-0.002	-0.002	0	%100
16	20	X	-0.009	-0.009	0	%100
17	21	X	-0.002	-0.002	0	%100
18	24	X	-0.01	-0.01	0	%100
19	33	X	-0.003	-0.003	0	%100
20	34	X	-0.003	-0.003	0	%100
21	35	X	-0.003	-0.003	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.009	-0.009	0	%100
24	38	X	-0.002	-0.002	0	%100
25	39	X	-0.002	-0.002	0	%100
26	40	X	-0.009	-0.009	0	%100
27	41	X	-0.002	-0.002	0	%100
28	43	X	-0.009	-0.009	0	%100
29	48	X	-0.004	-0.004	0	%100
30	49	X	-0.004	-0.004	0	%100
31	50	X	-0.003	-0.003	0	%100
32	51	X	-0.01	-0.01	0	%100
33	52	X	-0.01	-0.01	0	%100
34	53	X	-0.012	-0.012	0	%100
35	54	X	-0.012	-0.012	0	%100
36	55	X	-0.012	-0.012	0	%100
37	56	X	-0.012	-0.012	0	%100
38	57	X	-0.003	-0.003	0	%100
39	58	X	-0.003	-0.003	0	%100
40	62	X	-0.002	-0.002	0	%100
41	63	X	-0.009	-0.009	0	%100
42	64	X	-0.002	-0.002	0	%100
43	66	X	-0.002	-0.002	0	%100
44	67	X	-0.009	-0.009	0	%100
45	68	X	-0.002	-0.002	0	%100
46	71	X	-0.01	-0.01	0	%100
47	80	X	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
48	81	X	-0.003	-0.003	0	%100
49	82	X	-0.003	-0.003	0	%100
50	83	X	-0.002	-0.002	0	%100
51	84	X	-0.009	-0.009	0	%100
52	85	X	-0.002	-0.002	0	%100
53	86	X	-0.002	-0.002	0	%100
54	87	X	-0.009	-0.009	0	%100
55	88	X	-0.002	-0.002	0	%100
56	90	X	-0.009	-0.009	0	%100
57	95	X	-0.004	-0.004	0	%100
58	96	X	-0.004	-0.004	0	%100
59	97	X	-0.003	-0.003	0	%100
60	98	X	-0.01	-0.01	0	%100
61	99	X	-0.01	-0.01	0	%100
62	100	X	-0.012	-0.012	0	%100
63	101	X	-0.012	-0.012	0	%100
64	102	X	-0.012	-0.012	0	%100
65	103	X	-0.012	-0.012	0	%100
66	104	X	-0.003	-0.003	0	%100
67	105	X	-0.003	-0.003	0	%100
68	109	X	-0.002	-0.002	0	%100
69	110	X	-0.009	-0.009	0	%100
70	111	X	-0.002	-0.002	0	%100
71	113	X	-0.002	-0.002	0	%100
72	114	X	-0.009	-0.009	0	%100
73	115	X	-0.002	-0.002	0	%100
74	118	X	-0.01	-0.01	0	%100
75	127	X	-0.003	-0.003	0	%100
76	128	X	-0.003	-0.003	0	%100
77	129	X	-0.003	-0.003	0	%100
78	130	X	-0.002	-0.002	0	%100
79	131	X	-0.009	-0.009	0	%100
80	132	X	-0.002	-0.002	0	%100
81	133	X	-0.002	-0.002	0	%100
82	134	X	-0.009	-0.009	0	%100
83	135	X	-0.002	-0.002	0	%100
84	137	X	-0.009	-0.009	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.004	-0.004	0	%100
2	2	Z	-0.004	-0.004	0	%100
3	3	Z	-0.002	-0.002	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.002	-0.002	0	%100
10	10	Z	-0.002	-0.002	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	15	Z	-0.004	-0.004	0	%100
13	16	Z	-0.002	-0.002	0	%100
14	17	Z	-0.004	-0.004	0	%100
15	19	Z	-0.004	-0.004	0	%100
16	20	Z	-0.002	-0.002	0	%100
17	21	Z	-0.004	-0.004	0	%100
18	24	Z	-0.002	-0.002	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
19	33	Z	-0.002	-0.002	0	%100
20	34	Z	-0.002	-0.002	0	%100
21	35	Z	-0.002	-0.002	0	%100
22	36	Z	-0.004	-0.004	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.004	-0.004	0	%100
25	39	Z	-0.004	-0.004	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	41	Z	-0.004	-0.004	0	%100
28	43	Z	-0.003	-0.003	0	%100
29	48	Z	-0.004	-0.004	0	%100
30	49	Z	-0.004	-0.004	0	%100
31	50	Z	-0.002	-0.002	0	%100
32	51	Z	-0.002	-0.002	0	%100
33	52	Z	-0.002	-0.002	0	%100
34	53	Z	-0.002	-0.002	0	%100
35	54	Z	-0.002	-0.002	0	%100
36	55	Z	-0.002	-0.002	0	%100
37	56	Z	-0.002	-0.002	0	%100
38	57	Z	-0.002	-0.002	0	%100
39	58	Z	-0.002	-0.002	0	%100
40	62	Z	-0.004	-0.004	0	%100
41	63	Z	-0.002	-0.002	0	%100
42	64	Z	-0.004	-0.004	0	%100
43	66	Z	-0.004	-0.004	0	%100
44	67	Z	-0.002	-0.002	0	%100
45	68	Z	-0.004	-0.004	0	%100
46	71	Z	-0.002	-0.002	0	%100
47	80	Z	-0.002	-0.002	0	%100
48	81	Z	-0.002	-0.002	0	%100
49	82	Z	-0.002	-0.002	0	%100
50	83	Z	-0.004	-0.004	0	%100
51	84	Z	-0.002	-0.002	0	%100
52	85	Z	-0.004	-0.004	0	%100
53	86	Z	-0.004	-0.004	0	%100
54	87	Z	-0.002	-0.002	0	%100
55	88	Z	-0.004	-0.004	0	%100
56	90	Z	-0.003	-0.003	0	%100
57	95	Z	-0.004	-0.004	0	%100
58	96	Z	-0.004	-0.004	0	%100
59	97	Z	-0.002	-0.002	0	%100
60	98	Z	-0.002	-0.002	0	%100
61	99	Z	-0.002	-0.002	0	%100
62	100	Z	-0.002	-0.002	0	%100
63	101	Z	-0.002	-0.002	0	%100
64	102	Z	-0.002	-0.002	0	%100
65	103	Z	-0.002	-0.002	0	%100
66	104	Z	-0.002	-0.002	0	%100
67	105	Z	-0.002	-0.002	0	%100
68	109	Z	-0.004	-0.004	0	%100
69	110	Z	-0.002	-0.002	0	%100
70	111	Z	-0.004	-0.004	0	%100
71	113	Z	-0.004	-0.004	0	%100
72	114	Z	-0.002	-0.002	0	%100
73	115	Z	-0.004	-0.004	0	%100
74	118	Z	-0.002	-0.002	0	%100
75	127	Z	-0.002	-0.002	0	%100
76	128	Z	-0.002	-0.002	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
77	129	Z	-0.002	-0.002	0	%100
78	130	Z	-0.004	-0.004	0	%100
79	131	Z	-0.002	-0.002	0	%100
80	132	Z	-0.004	-0.004	0	%100
81	133	Z	-0.004	-0.004	0	%100
82	134	Z	-0.002	-0.002	0	%100
83	135	Z	-0.004	-0.004	0	%100
84	137	Z	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.004	-0.004	0	%100
2	2	X	-0.004	-0.004	0	%100
3	3	X	-0.002	-0.002	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.002	-0.002	0	%100
10	10	X	-0.002	-0.002	0	%100
11	11	X	-0.002	-0.002	0	%100
12	15	X	-0.004	-0.004	0	%100
13	16	X	-0.002	-0.002	0	%100
14	17	X	-0.004	-0.004	0	%100
15	19	X	-0.004	-0.004	0	%100
16	20	X	-0.002	-0.002	0	%100
17	21	X	-0.004	-0.004	0	%100
18	24	X	-0.002	-0.002	0	%100
19	33	X	-0.002	-0.002	0	%100
20	34	X	-0.002	-0.002	0	%100
21	35	X	-0.002	-0.002	0	%100
22	36	X	-0.004	-0.004	0	%100
23	37	X	-0.002	-0.002	0	%100
24	38	X	-0.004	-0.004	0	%100
25	39	X	-0.004	-0.004	0	%100
26	40	X	-0.002	-0.002	0	%100
27	41	X	-0.004	-0.004	0	%100
28	43	X	-0.003	-0.003	0	%100
29	48	X	-0.004	-0.004	0	%100
30	49	X	-0.004	-0.004	0	%100
31	50	X	-0.002	-0.002	0	%100
32	51	X	-0.002	-0.002	0	%100
33	52	X	-0.002	-0.002	0	%100
34	53	X	-0.002	-0.002	0	%100
35	54	X	-0.002	-0.002	0	%100
36	55	X	-0.002	-0.002	0	%100
37	56	X	-0.002	-0.002	0	%100
38	57	X	-0.002	-0.002	0	%100
39	58	X	-0.002	-0.002	0	%100
40	62	X	-0.004	-0.004	0	%100
41	63	X	-0.002	-0.002	0	%100
42	64	X	-0.004	-0.004	0	%100
43	66	X	-0.004	-0.004	0	%100
44	67	X	-0.002	-0.002	0	%100
45	68	X	-0.004	-0.004	0	%100
46	71	X	-0.002	-0.002	0	%100
47	80	X	-0.002	-0.002	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
48	81	X	-0.002	-0.002	0	%100
49	82	X	-0.002	-0.002	0	%100
50	83	X	-0.004	-0.004	0	%100
51	84	X	-0.002	-0.002	0	%100
52	85	X	-0.004	-0.004	0	%100
53	86	X	-0.004	-0.004	0	%100
54	87	X	-0.002	-0.002	0	%100
55	88	X	-0.004	-0.004	0	%100
56	90	X	-0.003	-0.003	0	%100
57	95	X	-0.004	-0.004	0	%100
58	96	X	-0.004	-0.004	0	%100
59	97	X	-0.002	-0.002	0	%100
60	98	X	-0.002	-0.002	0	%100
61	99	X	-0.002	-0.002	0	%100
62	100	X	-0.002	-0.002	0	%100
63	101	X	-0.002	-0.002	0	%100
64	102	X	-0.002	-0.002	0	%100
65	103	X	-0.002	-0.002	0	%100
66	104	X	-0.002	-0.002	0	%100
67	105	X	-0.002	-0.002	0	%100
68	109	X	-0.004	-0.004	0	%100
69	110	X	-0.002	-0.002	0	%100
70	111	X	-0.004	-0.004	0	%100
71	113	X	-0.004	-0.004	0	%100
72	114	X	-0.002	-0.002	0	%100
73	115	X	-0.004	-0.004	0	%100
74	118	X	-0.002	-0.002	0	%100
75	127	X	-0.002	-0.002	0	%100
76	128	X	-0.002	-0.002	0	%100
77	129	X	-0.002	-0.002	0	%100
78	130	X	-0.004	-0.004	0	%100
79	131	X	-0.002	-0.002	0	%100
80	132	X	-0.004	-0.004	0	%100
81	133	X	-0.004	-0.004	0	%100
82	134	X	-0.002	-0.002	0	%100
83	135	X	-0.004	-0.004	0	%100
84	137	X	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.0003	-0.0003	0	%100
2	2	Z	-0.0003	-0.0003	0	%100
3	3	Z	-1e-04	-1e-04	0	%100
4	4	Z	-0.0003	-0.0003	0	%100
5	5	Z	-0.0003	-0.0003	0	%100
6	6	Z	-0.0004	-0.0004	0	%100
7	7	Z	-0.0004	-0.0004	0	%100
8	8	Z	-0.0004	-0.0004	0	%100
9	9	Z	-0.0004	-0.0004	0	%100
10	10	Z	-1e-04	-1e-04	0	%100
11	11	Z	-1e-04	-1e-04	0	%100
12	15	Z	-1e-04	-1e-04	0	%100
13	16	Z	-0.0003	-0.0003	0	%100
14	17	Z	-1e-04	-1e-04	0	%100
15	19	Z	-1e-04	-1e-04	0	%100
16	20	Z	-0.0003	-0.0003	0	%100
17	21	Z	-1e-04	-1e-04	0	%100
18	24	Z	-0.0003	-0.0003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
19	33	Z	-1e-04	-1e-04	0	%100
20	34	Z	-1e-04	-1e-04	0	%100
21	35	Z	-1e-04	-1e-04	0	%100
22	36	Z	-1e-04	-1e-04	0	%100
23	37	Z	-0.0003	-0.0003	0	%100
24	38	Z	-1e-04	-1e-04	0	%100
25	39	Z	-1e-04	-1e-04	0	%100
26	40	Z	-0.0003	-0.0003	0	%100
27	41	Z	-1e-04	-1e-04	0	%100
28	43	Z	-0.0006	-0.0006	0	%100
29	48	Z	-0.0003	-0.0003	0	%100
30	49	Z	-0.0003	-0.0003	0	%100
31	50	Z	-1e-04	-1e-04	0	%100
32	51	Z	-0.0003	-0.0003	0	%100
33	52	Z	-0.0003	-0.0003	0	%100
34	53	Z	-0.0004	-0.0004	0	%100
35	54	Z	-0.0004	-0.0004	0	%100
36	55	Z	-0.0004	-0.0004	0	%100
37	56	Z	-0.0004	-0.0004	0	%100
38	57	Z	-1e-04	-1e-04	0	%100
39	58	Z	-1e-04	-1e-04	0	%100
40	62	Z	-1e-04	-1e-04	0	%100
41	63	Z	-0.0003	-0.0003	0	%100
42	64	Z	-1e-04	-1e-04	0	%100
43	66	Z	-1e-04	-1e-04	0	%100
44	67	Z	-0.0003	-0.0003	0	%100
45	68	Z	-1e-04	-1e-04	0	%100
46	71	Z	-0.0003	-0.0003	0	%100
47	80	Z	-1e-04	-1e-04	0	%100
48	81	Z	-1e-04	-1e-04	0	%100
49	82	Z	-1e-04	-1e-04	0	%100
50	83	Z	-1e-04	-1e-04	0	%100
51	84	Z	-0.0003	-0.0003	0	%100
52	85	Z	-1e-04	-1e-04	0	%100
53	86	Z	-1e-04	-1e-04	0	%100
54	87	Z	-0.0003	-0.0003	0	%100
55	88	Z	-1e-04	-1e-04	0	%100
56	90	Z	-0.0006	-0.0006	0	%100
57	95	Z	-0.0003	-0.0003	0	%100
58	96	Z	-0.0003	-0.0003	0	%100
59	97	Z	-1e-04	-1e-04	0	%100
60	98	Z	-0.0003	-0.0003	0	%100
61	99	Z	-0.0003	-0.0003	0	%100
62	100	Z	-0.0004	-0.0004	0	%100
63	101	Z	-0.0004	-0.0004	0	%100
64	102	Z	-0.0004	-0.0004	0	%100
65	103	Z	-0.0004	-0.0004	0	%100
66	104	Z	-1e-04	-1e-04	0	%100
67	105	Z	-1e-04	-1e-04	0	%100
68	109	Z	-1e-04	-1e-04	0	%100
69	110	Z	-0.0003	-0.0003	0	%100
70	111	Z	-1e-04	-1e-04	0	%100
71	113	Z	-1e-04	-1e-04	0	%100
72	114	Z	-0.0003	-0.0003	0	%100
73	115	Z	-1e-04	-1e-04	0	%100
74	118	Z	-0.0003	-0.0003	0	%100
75	127	Z	-1e-04	-1e-04	0	%100
76	128	Z	-1e-04	-1e-04	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
77	129	Z	-1e-04	-1e-04	0	%100
78	130	Z	-1e-04	-1e-04	0	%100
79	131	Z	-0.0003	-0.0003	0	%100
80	132	Z	-1e-04	-1e-04	0	%100
81	133	Z	-1e-04	-1e-04	0	%100
82	134	Z	-0.0003	-0.0003	0	%100
83	135	Z	-1e-04	-1e-04	0	%100
84	137	Z	-0.0006	-0.0006	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.0003	-0.0003	0	%100
2	2	X	-0.0003	-0.0003	0	%100
3	3	X	-1e-04	-1e-04	0	%100
4	4	X	-0.0003	-0.0003	0	%100
5	5	X	-0.0003	-0.0003	0	%100
6	6	X	-0.0004	-0.0004	0	%100
7	7	X	-0.0004	-0.0004	0	%100
8	8	X	-0.0004	-0.0004	0	%100
9	9	X	-0.0004	-0.0004	0	%100
10	10	X	-1e-04	-1e-04	0	%100
11	11	X	-1e-04	-1e-04	0	%100
12	15	X	-1e-04	-1e-04	0	%100
13	16	X	-0.0003	-0.0003	0	%100
14	17	X	-1e-04	-1e-04	0	%100
15	19	X	-1e-04	-1e-04	0	%100
16	20	X	-0.0003	-0.0003	0	%100
17	21	X	-1e-04	-1e-04	0	%100
18	24	X	-0.0003	-0.0003	0	%100
19	33	X	-1e-04	-1e-04	0	%100
20	34	X	-1e-04	-1e-04	0	%100
21	35	X	-1e-04	-1e-04	0	%100
22	36	X	-1e-04	-1e-04	0	%100
23	37	X	-0.0003	-0.0003	0	%100
24	38	X	-1e-04	-1e-04	0	%100
25	39	X	-1e-04	-1e-04	0	%100
26	40	X	-0.0003	-0.0003	0	%100
27	41	X	-1e-04	-1e-04	0	%100
28	43	X	-0.0006	-0.0006	0	%100
29	48	X	-0.0003	-0.0003	0	%100
30	49	X	-0.0003	-0.0003	0	%100
31	50	X	-1e-04	-1e-04	0	%100
32	51	X	-0.0003	-0.0003	0	%100
33	52	X	-0.0003	-0.0003	0	%100
34	53	X	-0.0004	-0.0004	0	%100
35	54	X	-0.0004	-0.0004	0	%100
36	55	X	-0.0004	-0.0004	0	%100
37	56	X	-0.0004	-0.0004	0	%100
38	57	X	-1e-04	-1e-04	0	%100
39	58	X	-1e-04	-1e-04	0	%100
40	62	X	-1e-04	-1e-04	0	%100
41	63	X	-0.0003	-0.0003	0	%100
42	64	X	-1e-04	-1e-04	0	%100
43	66	X	-1e-04	-1e-04	0	%100
44	67	X	-0.0003	-0.0003	0	%100
45	68	X	-1e-04	-1e-04	0	%100
46	71	X	-0.0003	-0.0003	0	%100
47	80	X	-1e-04	-1e-04	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
48	81	X	-1e-04	-1e-04	0	%100
49	82	X	-1e-04	-1e-04	0	%100
50	83	X	-1e-04	-1e-04	0	%100
51	84	X	-0.0003	-0.0003	0	%100
52	85	X	-1e-04	-1e-04	0	%100
53	86	X	-1e-04	-1e-04	0	%100
54	87	X	-0.0003	-0.0003	0	%100
55	88	X	-1e-04	-1e-04	0	%100
56	90	X	-0.0006	-0.0006	0	%100
57	95	X	-0.0003	-0.0003	0	%100
58	96	X	-0.0003	-0.0003	0	%100
59	97	X	-1e-04	-1e-04	0	%100
60	98	X	-0.0003	-0.0003	0	%100
61	99	X	-0.0003	-0.0003	0	%100
62	100	X	-0.0004	-0.0004	0	%100
63	101	X	-0.0004	-0.0004	0	%100
64	102	X	-0.0004	-0.0004	0	%100
65	103	X	-0.0004	-0.0004	0	%100
66	104	X	-1e-04	-1e-04	0	%100
67	105	X	-1e-04	-1e-04	0	%100
68	109	X	-1e-04	-1e-04	0	%100
69	110	X	-0.0003	-0.0003	0	%100
70	111	X	-1e-04	-1e-04	0	%100
71	113	X	-1e-04	-1e-04	0	%100
72	114	X	-0.0003	-0.0003	0	%100
73	115	X	-1e-04	-1e-04	0	%100
74	118	X	-0.0003	-0.0003	0	%100
75	127	X	-1e-04	-1e-04	0	%100
76	128	X	-1e-04	-1e-04	0	%100
77	129	X	-1e-04	-1e-04	0	%100
78	130	X	-1e-04	-1e-04	0	%100
79	131	X	-0.0003	-0.0003	0	%100
80	132	X	-1e-04	-1e-04	0	%100
81	133	X	-1e-04	-1e-04	0	%100
82	134	X	-0.0003	-0.0003	0	%100
83	135	X	-1e-04	-1e-04	0	%100
84	137	X	-0.0006	-0.0006	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.01	-0.01	0	%100
2	2	Y	-0.01	-0.01	0	%100
3	3	Y	-0.003	-0.003	0	%100
4	4	Y	-0.005	-0.005	0	%100
5	5	Y	-0.005	-0.005	0	%100
6	6	Y	-0.006	-0.006	0	%100
7	7	Y	-0.006	-0.006	0	%100
8	8	Y	-0.006	-0.006	0	%100
9	9	Y	-0.006	-0.006	0	%100
10	10	Y	-0.003	-0.003	0	%100
11	11	Y	-0.003	-0.003	0	%100
12	15	Y	-0.007	-0.007	0	%100
13	16	Y	-0.005	-0.005	0	%100
14	17	Y	-0.007	-0.007	0	%100
15	19	Y	-0.007	-0.007	0	%100
16	20	Y	-0.005	-0.005	0	%100
17	21	Y	-0.007	-0.007	0	%100
18	24	Y	-0.005	-0.005	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
19	33	Y	-0.003	-0.003	0	%100
20	34	Y	-0.003	-0.003	0	%100
21	35	Y	-0.003	-0.003	0	%100
22	36	Y	-0.007	-0.007	0	%100
23	37	Y	-0.005	-0.005	0	%100
24	38	Y	-0.007	-0.007	0	%100
25	39	Y	-0.007	-0.007	0	%100
26	40	Y	-0.005	-0.005	0	%100
27	41	Y	-0.007	-0.007	0	%100
28	43	Y	-0.008	-0.008	0	%100
29	48	Y	-0.01	-0.01	0	%100
30	49	Y	-0.01	-0.01	0	%100
31	50	Y	-0.003	-0.003	0	%100
32	51	Y	-0.005	-0.005	0	%100
33	52	Y	-0.005	-0.005	0	%100
34	53	Y	-0.006	-0.006	0	%100
35	54	Y	-0.006	-0.006	0	%100
36	55	Y	-0.006	-0.006	0	%100
37	56	Y	-0.006	-0.006	0	%100
38	57	Y	-0.003	-0.003	0	%100
39	58	Y	-0.003	-0.003	0	%100
40	62	Y	-0.007	-0.007	0	%100
41	63	Y	-0.005	-0.005	0	%100
42	64	Y	-0.007	-0.007	0	%100
43	66	Y	-0.007	-0.007	0	%100
44	67	Y	-0.005	-0.005	0	%100
45	68	Y	-0.007	-0.007	0	%100
46	71	Y	-0.005	-0.005	0	%100
47	80	Y	-0.003	-0.003	0	%100
48	81	Y	-0.003	-0.003	0	%100
49	82	Y	-0.003	-0.003	0	%100
50	83	Y	-0.007	-0.007	0	%100
51	84	Y	-0.005	-0.005	0	%100
52	85	Y	-0.007	-0.007	0	%100
53	86	Y	-0.007	-0.007	0	%100
54	87	Y	-0.005	-0.005	0	%100
55	88	Y	-0.007	-0.007	0	%100
56	90	Y	-0.008	-0.008	0	%100
57	95	Y	-0.01	-0.01	0	%100
58	96	Y	-0.01	-0.01	0	%100
59	97	Y	-0.003	-0.003	0	%100
60	98	Y	-0.005	-0.005	0	%100
61	99	Y	-0.005	-0.005	0	%100
62	100	Y	-0.006	-0.006	0	%100
63	101	Y	-0.006	-0.006	0	%100
64	102	Y	-0.006	-0.006	0	%100
65	103	Y	-0.006	-0.006	0	%100
66	104	Y	-0.003	-0.003	0	%100
67	105	Y	-0.003	-0.003	0	%100
68	109	Y	-0.007	-0.007	0	%100
69	110	Y	-0.005	-0.005	0	%100
70	111	Y	-0.007	-0.007	0	%100
71	113	Y	-0.007	-0.007	0	%100
72	114	Y	-0.005	-0.005	0	%100
73	115	Y	-0.007	-0.007	0	%100
74	118	Y	-0.005	-0.005	0	%100
75	127	Y	-0.003	-0.003	0	%100
76	128	Y	-0.003	-0.003	0	%100

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

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
77	129	Y	-0.003	-0.003	0	%100
78	130	Y	-0.007	-0.007	0	%100
79	131	Y	-0.005	-0.005	0	%100
80	132	Y	-0.007	-0.007	0	%100
81	133	Y	-0.007	-0.007	0	%100
82	134	Y	-0.005	-0.005	0	%100
83	135	Y	-0.007	-0.007	0	%100
84	137	Y	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.004	-0.004	0	%100
2	2	Z	-0.004	-0.004	0	%100
3	3	Z	-0.0007	-0.0007	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.002	-0.002	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.002	-0.002	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.002	-0.002	0	%100
10	10	Z	-0.0007	-0.0007	0	%100
11	11	Z	-0.0007	-0.0007	0	%100
12	15	Z	-0.002	-0.002	0	%100
13	16	Z	-0.002	-0.002	0	%100
14	17	Z	-0.002	-0.002	0	%100
15	19	Z	-0.002	-0.002	0	%100
16	20	Z	-0.002	-0.002	0	%100
17	21	Z	-0.002	-0.002	0	%100
18	24	Z	-0.001	-0.001	0	%100
19	33	Z	-0.0007	-0.0007	0	%100
20	34	Z	-0.0007	-0.0007	0	%100
21	35	Z	-0.0007	-0.0007	0	%100
22	36	Z	-0.002	-0.002	0	%100
23	37	Z	-0.002	-0.002	0	%100
24	38	Z	-0.002	-0.002	0	%100
25	39	Z	-0.002	-0.002	0	%100
26	40	Z	-0.002	-0.002	0	%100
27	41	Z	-0.002	-0.002	0	%100
28	43	Z	-0.002	-0.002	0	%100
29	48	Z	-0.004	-0.004	0	%100
30	49	Z	-0.004	-0.004	0	%100
31	50	Z	-0.0007	-0.0007	0	%100
32	51	Z	-0.002	-0.002	0	%100
33	52	Z	-0.002	-0.002	0	%100
34	53	Z	-0.002	-0.002	0	%100
35	54	Z	-0.002	-0.002	0	%100
36	55	Z	-0.002	-0.002	0	%100
37	56	Z	-0.002	-0.002	0	%100
38	57	Z	-0.0007	-0.0007	0	%100
39	58	Z	-0.0007	-0.0007	0	%100
40	62	Z	-0.002	-0.002	0	%100
41	63	Z	-0.002	-0.002	0	%100
42	64	Z	-0.002	-0.002	0	%100
43	66	Z	-0.002	-0.002	0	%100
44	67	Z	-0.002	-0.002	0	%100
45	68	Z	-0.002	-0.002	0	%100
46	71	Z	-0.001	-0.001	0	%100
47	80	Z	-0.0007	-0.0007	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
48	81	Z	-0.0007	-0.0007	0	%100
49	82	Z	-0.0007	-0.0007	0	%100
50	83	Z	-0.002	-0.002	0	%100
51	84	Z	-0.002	-0.002	0	%100
52	85	Z	-0.002	-0.002	0	%100
53	86	Z	-0.002	-0.002	0	%100
54	87	Z	-0.002	-0.002	0	%100
55	88	Z	-0.002	-0.002	0	%100
56	90	Z	-0.002	-0.002	0	%100
57	95	Z	-0.004	-0.004	0	%100
58	96	Z	-0.004	-0.004	0	%100
59	97	Z	-0.0007	-0.0007	0	%100
60	98	Z	-0.002	-0.002	0	%100
61	99	Z	-0.002	-0.002	0	%100
62	100	Z	-0.002	-0.002	0	%100
63	101	Z	-0.002	-0.002	0	%100
64	102	Z	-0.002	-0.002	0	%100
65	103	Z	-0.002	-0.002	0	%100
66	104	Z	-0.0007	-0.0007	0	%100
67	105	Z	-0.0007	-0.0007	0	%100
68	109	Z	-0.002	-0.002	0	%100
69	110	Z	-0.002	-0.002	0	%100
70	111	Z	-0.002	-0.002	0	%100
71	113	Z	-0.002	-0.002	0	%100
72	114	Z	-0.002	-0.002	0	%100
73	115	Z	-0.002	-0.002	0	%100
74	118	Z	-0.001	-0.001	0	%100
75	127	Z	-0.0007	-0.0007	0	%100
76	128	Z	-0.0007	-0.0007	0	%100
77	129	Z	-0.0007	-0.0007	0	%100
78	130	Z	-0.002	-0.002	0	%100
79	131	Z	-0.002	-0.002	0	%100
80	132	Z	-0.002	-0.002	0	%100
81	133	Z	-0.002	-0.002	0	%100
82	134	Z	-0.002	-0.002	0	%100
83	135	Z	-0.002	-0.002	0	%100
84	137	Z	-0.002	-0.002	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.004	-0.004	0	%100
2	2	X	-0.004	-0.004	0	%100
3	3	X	-0.0007	-0.0007	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.002	-0.002	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.002	-0.002	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.002	-0.002	0	%100
10	10	X	-0.0007	-0.0007	0	%100
11	11	X	-0.0007	-0.0007	0	%100
12	15	X	-0.002	-0.002	0	%100
13	16	X	-0.002	-0.002	0	%100
14	17	X	-0.002	-0.002	0	%100
15	19	X	-0.002	-0.002	0	%100
16	20	X	-0.002	-0.002	0	%100
17	21	X	-0.002	-0.002	0	%100
18	24	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
19	33	X	-0.0007	-0.0007	0	%100
20	34	X	-0.0007	-0.0007	0	%100
21	35	X	-0.0007	-0.0007	0	%100
22	36	X	-0.002	-0.002	0	%100
23	37	X	-0.002	-0.002	0	%100
24	38	X	-0.002	-0.002	0	%100
25	39	X	-0.002	-0.002	0	%100
26	40	X	-0.002	-0.002	0	%100
27	41	X	-0.002	-0.002	0	%100
28	43	X	-0.002	-0.002	0	%100
29	48	X	-0.004	-0.004	0	%100
30	49	X	-0.004	-0.004	0	%100
31	50	X	-0.0007	-0.0007	0	%100
32	51	X	-0.002	-0.002	0	%100
33	52	X	-0.002	-0.002	0	%100
34	53	X	-0.002	-0.002	0	%100
35	54	X	-0.002	-0.002	0	%100
36	55	X	-0.002	-0.002	0	%100
37	56	X	-0.002	-0.002	0	%100
38	57	X	-0.0007	-0.0007	0	%100
39	58	X	-0.0007	-0.0007	0	%100
40	62	X	-0.002	-0.002	0	%100
41	63	X	-0.002	-0.002	0	%100
42	64	X	-0.002	-0.002	0	%100
43	66	X	-0.002	-0.002	0	%100
44	67	X	-0.002	-0.002	0	%100
45	68	X	-0.002	-0.002	0	%100
46	71	X	-0.001	-0.001	0	%100
47	80	X	-0.0007	-0.0007	0	%100
48	81	X	-0.0007	-0.0007	0	%100
49	82	X	-0.0007	-0.0007	0	%100
50	83	X	-0.002	-0.002	0	%100
51	84	X	-0.002	-0.002	0	%100
52	85	X	-0.002	-0.002	0	%100
53	86	X	-0.002	-0.002	0	%100
54	87	X	-0.002	-0.002	0	%100
55	88	X	-0.002	-0.002	0	%100
56	90	X	-0.002	-0.002	0	%100
57	95	X	-0.004	-0.004	0	%100
58	96	X	-0.004	-0.004	0	%100
59	97	X	-0.0007	-0.0007	0	%100
60	98	X	-0.002	-0.002	0	%100
61	99	X	-0.002	-0.002	0	%100
62	100	X	-0.002	-0.002	0	%100
63	101	X	-0.002	-0.002	0	%100
64	102	X	-0.002	-0.002	0	%100
65	103	X	-0.002	-0.002	0	%100
66	104	X	-0.0007	-0.0007	0	%100
67	105	X	-0.0007	-0.0007	0	%100
68	109	X	-0.002	-0.002	0	%100
69	110	X	-0.002	-0.002	0	%100
70	111	X	-0.002	-0.002	0	%100
71	113	X	-0.002	-0.002	0	%100
72	114	X	-0.002	-0.002	0	%100
73	115	X	-0.002	-0.002	0	%100
74	118	X	-0.001	-0.001	0	%100
75	127	X	-0.0007	-0.0007	0	%100
76	128	X	-0.0007	-0.0007	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
77	129	X	-0.0007	-0.0007	0	%100
78	130	X	-0.002	-0.002	0	%100
79	131	X	-0.002	-0.002	0	%100
80	132	X	-0.002	-0.002	0	%100
81	133	X	-0.002	-0.002	0	%100
82	134	X	-0.002	-0.002	0	%100
83	135	X	-0.002	-0.002	0	%100
84	137	X	-0.002	-0.002	0	%100

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	20	L	Y	-0.5
2	98	L	Y	-0.5
3	172	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	21	L	Y	-0.5
2	99	L	Y	-0.5
3	173	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	22	L	Y	-0.5
2	100	L	Y	-0.5
3	174	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 14 : Live Load d)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	23	L	Y	-0.5
2	101	L	Y	-0.5
3	175	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	Dead	DL	-1		60	
2	0 Wind - No Ice	WLZ			60	84
3	90 Wind - No Ice	WLX			60	84
4	0 Wind - Ice	WLZ			60	84
5	90 Wind - Ice	WLX			60	84
6	0 Wind - Service	WLZ			60	84
7	90 Wind - Service	WLX			60	84
8	Ice	OL1			60	84
9	0 Seismic	ELZ			60	84
10	90 Seismic	ELX			60	84
11	Live Load a	LL		3		
12	Live Load b	LL		3		
13	Live Load c	LL		3		
14	Live Load d	LL		3		
15	Maint LL 1	LL			1	
16	Maint LL 2	LL			1	
17	Maint LL 3	LL			1	
18	Maint LL 4	LL			1	
19	Maint LL 5	LL			1	
20	Maint LL 6	LL			1	
21	Maint LL 7	LL			1	

Basic Load Cases (Continued)

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
22	Maint LL 8	LL			1	
23	Maint LL 9	LL			1	
24	Maint LL 10	LL			1	
25	Maint LL 11	LL			1	
26	Maint LL 12	LL			1	
27	Maint LL 13	LL			1	
28	Maint LL 14	LL			1	
29	Maint LL 15	LL			1	
30	Maint LL 16	LL			1	
31	Maint LL 17	LL			1	
32	Maint LL 18	LL			1	
33	Maint LL 19	LL				
34	Maint LL 20	LL				
35	Maint LL 21	LL				
36	Maint LL 22	LL				
37	Maint LL 23	LL				
38	Maint LL 24	LL				

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
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	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
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	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
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	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
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	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
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	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	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	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	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	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5
101	1.2 D + 1.5 LL Maint (16)	Yes	Y	1	1.2					30	1.5
102	1.2 D + 1.5 LL Maint (17)	Yes	Y	1	1.2					31	1.5
103	1.2 D + 1.5 LL Maint (18)	Yes	Y	1	1.2					32	1.5
104	1.2 D + 1.5 LL Maint (19)	Yes	Y	1	1.2					33	1.5
105	1.2 D + 1.5 LL Maint (20)	Yes	Y	1	1.2					34	1.5
106	1.2 D + 1.5 LL Maint (21)	Yes	Y	1	1.2					35	1.5
107	1.2 D + 1.5 LL Maint (22)	Yes	Y	1	1.2					36	1.5
108	1.2 D + 1.5 LL Maint (23)	Yes	Y	1	1.2					37	1.5
109	1.2 D + 1.5 LL Maint (24)	Yes	Y	1	1.2					38	1.5

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	73	max	3.918	7	1.732	15	0.738	12	1.655	6	1.366	6	2.014	6
2		min	-3.122	13	0.44	9	-3.018	6	-0.923	12	-1.023	12	-1.586	12
3	74	max	0.936	78	1.606	15	2.593	14	1.179	13	0.547	5	0.957	48
4		min	-1.767	48	0.634	9	0.044	8	-0.349	7	-0.829	11	-0.501	78
5	151	max	2.607	3	1.719	20	1.786	76	1.12	9	1.637	9	2.257	3
6		min	-4.969	9	0.462	2	-1.277	10	-1.096	3	-1.284	3	-3.094	9
7	152	max	2.746	17	1.597	19	0.694	2	0.705	2	0.82	9	0.341	10
8		min	0.386	11	0.619	2	-1.689	80	-0.767	80	-1.108	3	-1.297	4
9	225	max	1.972	83	1.698	23	6.501	2	3.047	8	1.961	2	0.745	74
10		min	0.325	6	0.587	5	-4.639	8	-3.795	2	-1.608	8	-0.09	8
11	226	max	-0.1	5	1.587	23	0.221	2	0.787	2	0.792	13	0.818	82
12		min	-1.983	83	0.676	5	-2.449	44	-1.608	8	-1.081	7	-0.207	4
13	Totals:	max	6.408	5	9.686	18	9.923	2						
14		min	-6.408	11	4.747	12	-9.923	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	PL5/8x6	0.276	0.667	25	0.07	0.667	y	14	94.955	168.75	2.197	21.094	1.539	H1-1b
2	2	PL5/8x6	0.291	0.667	17	0.075	0.667	y	17	94.955	168.75	2.197	21.094	1.552	H1-1b
3	3	3/4" SR	0.137	0	23	0.007	0		12	1.116	19.88	0.249	0.249	2.486	H1-1b
4	4	HSS2.375X0.218	0.354	3.172	2	0.074	3.172		44	6.148	62.55	3.6	3.6	2.896	H1-1b
5	5	HSS2.375X0.218	0.505	3.021	9	0.146	3.021		3	6.148	62.55	3.6	3.6	2.746	H1-1a
6	6	PIPE_2.875x0.203	0.194	3.542	82	0.041	3.542		82	23.615	53.678	3.812	3.812	3	H1-1b
7	7	PIPE_2.875x0.203	0.363	3.438	8	0.035	3.542		6	23.615	53.678	3.812	3.812	3	H1-1b
8	8	PIPE_2.875x0.203	0.19	3.542	9	0.089	3.542		9	23.615	53.678	3.812	3.812	3	H1-1b
9	9	PIPE_2.875x0.203	0.324	3.438	8	0.079	3.542		8	23.615	53.678	3.812	3.812	3	H1-1b
10	10	3/4" SR	0.436	3	23	0.004	3		45	2.707	19.88	0.249	0.249	2.286	H1-1a
11	11	3/4" SR	0.434	3	14	0.014	0		10	2.707	19.88	0.249	0.249	2.256	H1-1a
12	15	PL 1/2X3 11/16	0.24	0.227	15	0.091	0	y	8	80.831	82.969	0.864	6.374	1.73	H1-1b
13	16	HSS2.375X0.218	0.111	3.672	17	0.068	3.75		18	48.725	62.55	3.6	3.6	2.145	H1-1b
14	17	PL 1/2X3 11/16	0.276	0	17	0.087	0.006	y	55	79.835	82.969	0.864	6.374	1.047	H1-1b
15	19	PL 1/2X3 11/16	0.242	0.227	20	0.082	0.227	y	51	80.831	82.969	0.864	6.374	1.533	H1-1b
16	20	HSS2.375X0.218	0.107	3.672	24	0.062	3.75		14	48.725	62.55	3.6	3.6	2.144	H1-1b
17	21	PL 1/2X3 11/16	0.255	0	23	0.08	0.276	y	51	79.835	82.969	0.864	6.374	1.046	H1-1b
18	24	HSS2.375X0.154	0.117	6.171	4	0.046	6.171		38	23.74	45	2.674	2.674	1.136	H1-1b*
19	33	3/4" SR	0.096	0	77	0.009	0		4	1.116	19.88	0.249	0.249	2.322	H1-1b
20	34	3/4" SR	0.354	3	76	0.004	0		8	2.707	19.88	0.249	0.249	2.256	H1-1a
21	35	3/4" SR	0.339	3	85	0.015	0		10	2.707	19.88	0.249	0.249	2.255	H1-1a
22	36	PL 1/2X3 11/16	0.182	0.227	85	0.121	0	y	8	80.831	82.969	0.864	6.374	1.666	H1-1b
23	37	HSS2.375X0.218	0.08	3.672	79	0.053	3.75		68	48.725	62.55	3.6	3.6	1.965	H1-1b
24	38	PL 1/2X3 11/16	0.205	0	78	0.104	0.276	y	21	79.835	82.969	0.864	6.374	1.016	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
25	39	PL 1/2X3 11/16	0.193	0.227	78	0.107	0.227	y	62	80.831	82.969	0.864	6.374	1.667	H1-1b
26	40	HSS2.375X0.218	0.086	3.672	76	0.052	0.078		66	48.725	62.55	3.6	3.6	2.194	H1-1b
27	41	PL 1/2X3 11/16	0.209	0	76	0.096	0.276	y	14	79.835	82.969	0.864	6.374	1.036	H1-1b
28	43	HSS4.500X0.237	0.209	1.021	6	0.2	1.021		6	92.627	111.888	12.695	12.695	3	H1-1b
29	48	PL5/8x6	0.275	0.667	18	0.069	0.667	y	19	94.955	168.75	2.197	21.094	1.542	H1-1b
30	49	PL5/8x6	0.3	0.667	21	0.093	0.667	y	9	94.955	168.75	2.197	21.094	1.561	H1-1b
31	50	3/4" SR	0.136	0	15	0.006	0		4	1.116	19.88	0.249	0.249	2.487	H1-1b
32	51	HSS2.375X0.218	0.331	0.302	45	0.073	3.172		38	6.148	62.55	3.6	3.6	2.813	H1-1b
33	52	HSS2.375X0.218	0.514	3.021	2	0.196	3.021		8	6.148	62.55	3.6	3.6	2.942	H1-1a
34	53	PIPE_2.875x0.203	0.194	3.542	74	0.042	3.542		74	23.615	53.678	3.812	3.812	3	H1-1b
35	54	PIPE_2.875x0.203	0.363	3.438	8	0.045	3.542		9	23.615	53.678	3.812	3.812	3	H1-1b
36	55	PIPE_2.875x0.203	0.202	3.542	2	0.091	3.542		2	23.615	53.678	3.812	3.812	2.521	H1-1b
37	56	PIPE_2.875x0.203	0.324	3.542	8	0.061	3.542		7	23.615	53.678	3.812	3.812	2.847	H1-1b
38	57	3/4" SR	0.437	3	15	0.004	3		2	2.707	19.88	0.249	0.249	2.273	H1-1a
39	58	3/4" SR	0.426	3	18	0.019	0		2	2.707	19.88	0.249	0.249	2.343	H1-1a
40	62	PL 1/2X3 11/16	0.237	0.227	20	0.087	0.002	y	60	80.831	82.969	0.864	6.374	1.695	H1-1b
41	63	HSS2.375X0.218	0.114	3.672	21	0.069	3.75		21	48.725	62.55	3.6	3.6	2.146	H1-1b
42	64	PL 1/2X3 11/16	0.279	0	21	0.086	0.276	y	58	79.835	82.969	0.864	6.374	1.048	H1-1b
43	66	PL 1/2X3 11/16	0.239	0.227	46	0.083	0.227	y	56	80.831	82.969	0.864	6.374	1.667	H1-1b
44	67	HSS2.375X0.218	0.107	3.672	16	0.061	3.75		19	48.725	62.55	3.6	3.6	2.145	H1-1b
45	68	PL 1/2X3 11/16	0.258	0	15	0.08	0.276	y	56	79.835	82.969	0.864	6.374	1.042	H1-1b
46	71	HSS2.375X0.154	0.167	6.171	8	0.046	6.171		41	23.74	45	2.674	2.674	1.136	H1-1b*
47	80	3/4" SR	0.096	0	81	0.012	0		8	1.116	19.88	0.249	0.249	2.351	H1-1b
48	81	3/4" SR	0.35	3	80	0.004	0		49	2.707	19.88	0.249	0.249	2.27	H1-1a
49	82	3/4" SR	0.333	3	76	0.019	0		2	2.707	19.88	0.249	0.249	2.228	H1-1a
50	83	PL 1/2X3 11/16	0.18	0.227	76	0.113	0.227	y	73	80.831	82.969	0.864	6.374	1.666	H1-1b
51	84	HSS2.375X0.218	0.08	3.672	82	0.052	3.75		73	48.725	62.55	3.6	3.6	2.05	H1-1b
52	85	PL 1/2X3 11/16	0.206	0	82	0.103	0	y	14	79.835	82.969	0.864	6.374	1.016	H1-1b
53	86	PL 1/2X3 11/16	0.194	0.227	81	0.107	0.227	y	66	80.831	82.969	0.864	6.374	1.667	H1-1b
54	87	HSS2.375X0.218	0.089	3.672	9	0.052	0.078		69	48.725	62.55	3.6	3.6	2.381	H1-1b
55	88	PL 1/2X3 11/16	0.208	0	80	0.096	0.276	y	21	79.835	82.969	0.864	6.374	1.035	H1-1b
56	90	HSS4.500X0.237	0.266	1.021	9	0.259	1.531		9	92.627	111.888	12.695	12.695	3	H1-1b
57	95	PL5/8x6	0.276	0.667	21	0.069	0.667	y	22	94.955	168.75	2.197	21.094	1.533	H1-1b
58	96	PL5/8x6	0.297	0.667	25	0.095	0.667	y	2	94.955	168.75	2.197	21.094	1.556	H1-1b
59	97	3/4" SR	0.136	0	19	0.008	0		8	1.116	19.88	0.249	0.249	2.485	H1-1b
60	98	HSS2.375X0.218	0.332	0.302	38	0.073	3.172		39	6.148	62.55	3.6	3.6	2.807	H1-1b
61	99	HSS2.375X0.218	0.563	3.172	8	0.155	3.172		7	6.148	62.55	3.6	3.6	3	H1-1a
62	100	PIPE_2.875x0.203	0.194	3.542	79	0.041	3.542		79	23.615	53.678	3.812	3.812	3	H1-1b
63	101	PIPE_2.875x0.203	0.363	3.438	2	0.049	3.542		2	23.615	53.678	3.812	3.812	2.333	H1-1b
64	102	PIPE_2.875x0.203	0.14	3.542	7	0.059	3.542		5	23.615	53.678	3.812	3.812	3	H1-1b
65	103	PIPE_2.875x0.203	0.324	3.438	2	0.059	3.542		3	23.615	53.678	3.812	3.812	3	H1-1b
66	104	3/4" SR	0.437	3	19	0.004	3		42	2.707	19.88	0.249	0.249	2.28	H1-1a
67	105	3/4" SR	0.429	3	21	0.014	3		7	2.707	19.88	0.249	0.249	2.9	H1-1a
68	109	PL 1/2X3 11/16	0.234	0.227	23	0.088	0.007	y	51	80.831	82.969	0.864	6.374	1.706	H1-1b
69	110	HSS2.375X0.218	0.113	3.672	25	0.069	3.75		14	48.725	62.55	3.6	3.6	2.143	H1-1b
70	111	PL 1/2X3 11/16	0.279	0	25	0.088	0.276	y	2	79.835	82.969	0.864	6.374	1.046	H1-1b
71	113	PL 1/2X3 11/16	0.243	0.227	15	0.081	0.227	y	60	80.831	82.969	0.864	6.374	1.653	H1-1b
72	114	HSS2.375X0.218	0.108	3.672	20	0.061	3.75		21	48.725	62.55	3.6	3.6	2.141	H1-1b
73	115	PL 1/2X3 11/16	0.257	0	19	0.079	0.276	y	60	79.835	82.969	0.864	6.374	1.042	H1-1b
74	118	HSS2.375X0.154	0.112	0	13	0.046	6.171		45	23.74	45	2.674	2.674	1.136	H1-1b*
75	127	3/4" SR	0.096	0	85	0.009	0		13	1.116	19.88	0.249	0.249	2.353	H1-1b
76	128	3/4" SR	0.349	3	85	0.004	0		40	2.707	19.88	0.249	0.249	2.236	H1-1a
77	129	3/4" SR	0.337	3	80	0.014	0		7	2.707	19.88	0.249	0.249	2.266	H1-1a
78	130	PL 1/2X3 11/16	0.183	0.227	80	0.112	0.227	y	64	80.831	82.969	0.864	6.374	1.666	H1-1b
79	131	HSS2.375X0.218	0.08	3.672	75	0.052	3.75		64	48.725	62.55	3.6	3.6	2.049	H1-1b
80	132	PL 1/2X3 11/16	0.205	0	74	0.102	0.276	y	64	79.835	82.969	0.864	6.374	1.017	H1-1b
81	133	PL 1/2X3 11/16	0.196	0.227	74	0.107	0.227	y	70	80.831	82.969	0.864	6.374	1.667	H1-1b
82	134	HSS2.375X0.218	0.086	3.672	85	0.052	0.078		62	48.725	62.55	3.6	3.6	2.246	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
83	135	PL 1/2X3 11/16	0.207	0	85	0.095	0.276	y	14	79.835	82.969	0.864	6.374	1.036	H1-1b
84	137	HSS4.500X0.237	0.302	1.021	2	0.282	1.021		2	92.627	111.888	12.695	12.695	2.316	H1-1b

APPENDIX D

ADDITIONAL CALCUATIONS

PROJECT	**142902.006.01 - North Haven Tower, SR**				
SUBJECT	**Sector Mount Analysis**				
DATE	**09/15/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	0.738	k
Vertical Shear	:	1.732	k
Horizontal Shear	:	3.918	k
Torsion	:	2.014	k.ft
Moment from Horizontal Forces	:	1.366	k.ft
Moment from Vertical Forces	:	1.655	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	4.28	k
Force from Horz. Moment	:	2.47	k
Force from Vert. Moment	:	3.00	k
Shear Load / Bolt	:	1.07	k
Tension Load / Bolt	:	0.18	k
Resultant from Moments / Bolt	:	1.94	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**10.27%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**11.36%**		**OKAY**
Unity Check, Combined	:	**21.63%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**3.09%**		**OKAY**

PROJECT	**142902.006.01 - North Haven Tower, SR**				
SUBJECT	**Sector Mount Analysis**				
DATE	**09/15/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Connecting Member Parameters

Plate Yield Strength, F_y	:	36.00	ksi	[AISC Table 2-5]
Plate Tensile Strength, F_u	:	58.00	ksi	[AISC Table 2-5]
Plate Height	:	9.00	in	
Plate Width	:	9.00	in	
Plate Thickness	:	0.50	in	
Edge Distance	:	1.06	in	
Gross Tension Area, A_{gt}	:	4.50	in^2	
Gross Shear Area, A_{gv}	:	0.75	in^2	
Net Area for tension, A_{nv}	:	4.16	in^2	
Net Area for shear, A_{nt}	:	3.00	in^2	

Plate Check

Available Tensile Yield	:	145.80	k	[Eq. J4-1]
Available Tensile Rupture	:	180.80	k	[Eq. J4-2]
Unity Check, Plate Tension	:	**1.46%**		**OKAY**
Available Shear Yield	:	16.20	k	[Eq. J4-3]
Available Shear Rupture	:	104.40	k	[Eq. J4-4]
Unity Check, Plate Shear	:	**26.44%**		**OKAY**
Available Block Shear, ΦRn	:	77.40	k	[Eq. J4-5]
Unity Check, Block Shear	:	**5.53%**		**OKAY**

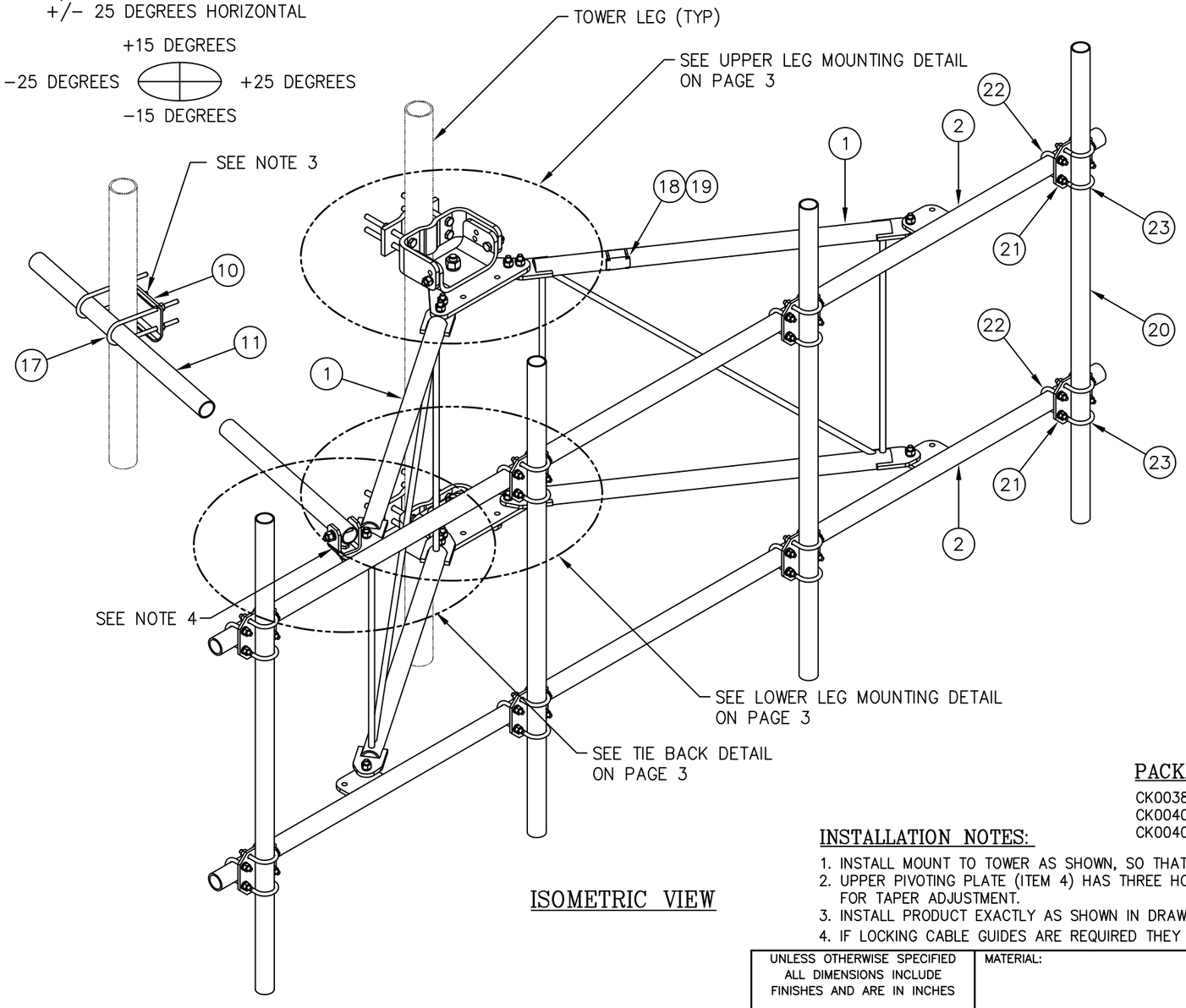
APPENDIX E

SUPPLEMENTAL DRAWINGS

TIEBACK ANGLE RANGE DETAIL

+/− 15 DEGREES VERTICAL
+/− 25 DEGREES HORIZONTAL

+15 DEGREES
−25 DEGREES +25 DEGREES
−15 DEGREES



ISOMETRIC VIEW

C10857278C 14' HD V−BOOM ASSEMBLY W/PIPES, CROSSOVER KITS & TIEBACKS

(1) C10857003C	14' HD V−BOOM ASSEMBLY W/TIEBACK	483#
(4) C10901329	PIPE, 2 7/8" O.D. X .203 X 10'−0	241#
(8) C10902012	CROSSOVER PLATE KIT	64#
	TOTAL WEIGHT	788#

C10857003C 14' HD V−BOOM ASSEMBLY W/TIEBACK

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	CW01222	WELDMENT, STANDOFF ARM	126
2.	2	CW01249	WELDMENT, FACE PIPE	168
3.	2	CS03109	PLATE, ROTATING	34
4.	1	CS03110	PLATE, PIVOTING (UPPER)	16
5.	1	CS03111	PLATE, LEG CLAMP (UPPER)	17
6.	1	CS03112	PLATE, PIVOTING (LOWER)	14
7.	1	CS03113	PLATE, LEG CLAMP (LOWER)	17
8.	2	CS03114	PLATE, LEG CLAMP (BACK)	14
9.	1	CS00098	PLATE, TIE BACK SWIVEL	3
10.	1	CS03285	PLATE, TIE BACK CLAMP	4
11.	1	CS03333	PIPE, TIE BACK	38
12.	2	C40026073	BOLT ASSEMBLY, 1 ø X 3 A325	4
13.	8	C40140004	BOLT ASSEMBLY, 5/8 ø X 8 A307	13
14.	1	C40026033	BOLT ASSEMBLY, 5/8 ø X 4 1/2 A325	1
15.	12	C40026025	BOLT ASSEMBLY, 5/8 ø X 2 1/2 A325	6
16.	5	C40026024	BOLT ASSEMBLY, 5/8 ø X 2 1/4 A325	3
17.	2	C40034183	U−BOLT ASSEMBLY, 1/2 ø X 2 9/16 C−C	3
18.	1	Z30992020	MOUNT CLASSIFICATION TAG C10857003C	1
19.	2	C40062103	STAINLESS STEEL SELF−LOCKING CABLE TIE	1
			TOTAL WEIGHT	483

ANTENNA MOUNTING PIPES

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
20.	4	C10901329	PIPE, 2 7/8' O.D. X .203 X 10'−0	241
			TOTAL WEIGHT	241

C10902012 CROSSOVER PLATE KIT

ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
21.	1	CS03116	CROSSOVER PLATE	4
22.	2	C40034139	U−BOLT ASSEMBLY, 1/2 X X 2 15/16 C−C	2
23.	2	C40034140	U−BOLT ASSEMBLY, 1/2 X X 3 7/16 C−C	2
			TOTAL WEIGHT	8

PACKAGING NOTE

CK00386 INCLUDES ITEMS 1, 3, 4, 5, 6, 7, 12 & 15 (8 QTY)
CK00404−HDW INCLUDES ITEMS 8, 9, 10, 13, 14, 15 (4 QTY), 16, 17, 18 & 19
CK00404−STL INCLUDES ITEMS 2 & 11

INSTALLATION NOTES:

1. INSTALL MOUNT TO TOWER AS SHOWN, SO THAT WELDED STANDOFF DIAGONAL IS SLOPING DOWNWARD FROM TOWER END TO FACE PIPE END.
2. UPPER PIVOTING PLATE (ITEM 4) HAS THREE HOLES ON EACH SIDE AND UPPER LEG CLAMP PLATE (ITEM 5) HAS TWO HOLES ON EACH SIDE FOR TAPER ADJUSTMENT.
3. INSTALL PRODUCT EXACTLY AS SHOWN IN DRAWING, WITH ALL BOLTS FACING UPWARDS.
4. IF LOCKING CABLE GUIDES ARE REQUIRED THEY MUST BE PURCHASED SEPARATELY (SEE PAGE 4).

NOTES:

1. QUANTITIES SHOWN IN LISTS OF MATERIAL ARE FOR ONE (1) V−BOOM ONLY.
2. THIS V−BOOM WILL MOUNT TO THE FOLLOWING:1 1/2"ø TO 5 9/16"ø ROUND LEG.
3. TIEBACK MUST BE CONNECTED TO A RIGID MEMBER THAT PROVIDES ADEQUATE SUPPORT WITHIN THE LIMITS NOTED ABOVE IN THE TIEBACK ANGLE RANGE DETAIL UNLESS APPROVED BY THE ENGINEER OF RECORD.
4. THE TIEBACK IS SHOWN IN THIS POSITION AS A DEFAULT. THIS TIEBACK CAN BE CONNECTED AT ANY (1) OF THE (4) POSITIONS ON THE TABS ON THE FACE PIPE.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES
TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"

MATERIAL:
TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

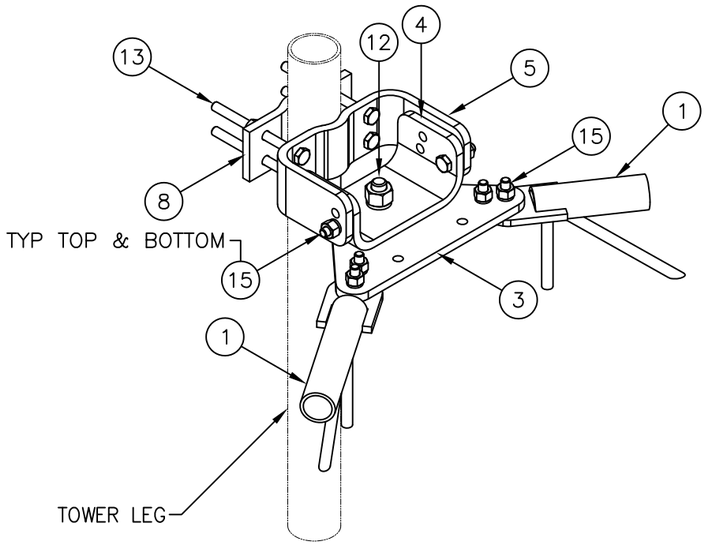
Sabre Industries™ Towers and Poles

14' HD V−BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

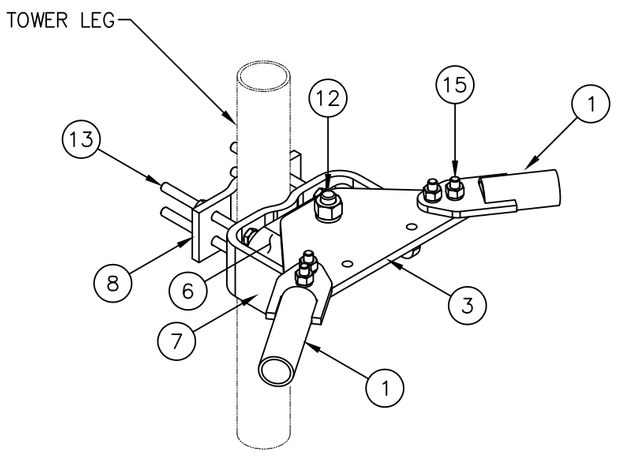
DATE	11/05/18
DRAWN BY	KLE
CHECKED BY	EK

SIZE	DRAWING NO.	REV
B	C10857278C	1

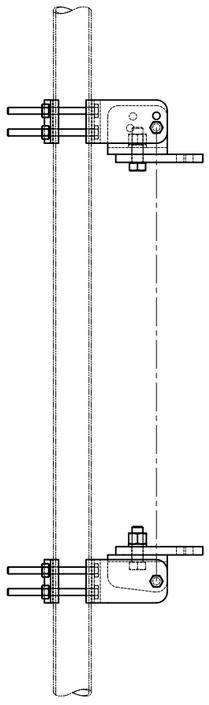
SCALE	PAGE
None	1 OF 4



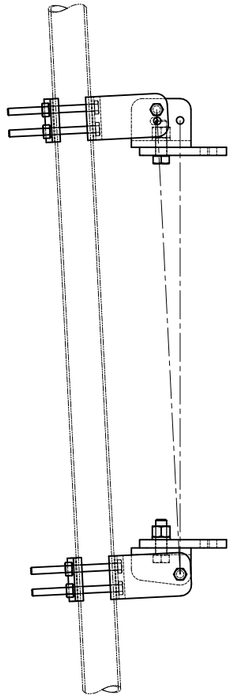
UPPER LEG MOUNTING DETAIL



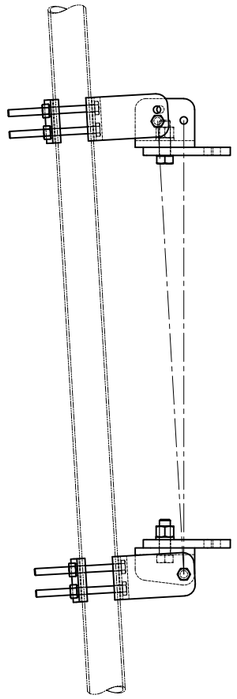
LOWER LEG MOUNTING DETAIL



STRAIGHT
TOWER SECTION

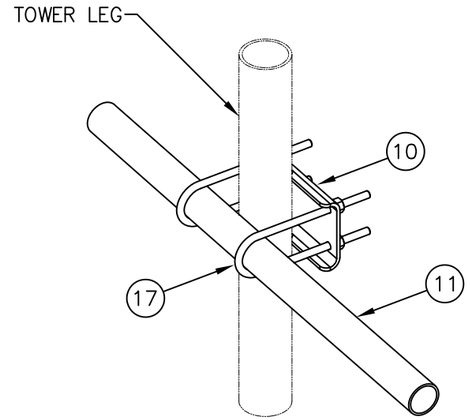


TAPERED
1'–9 IN 20' SLOPE

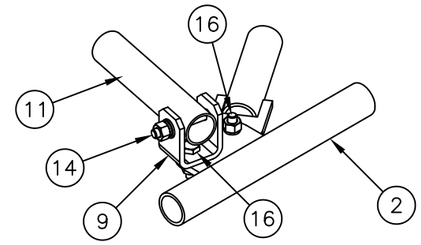


TAPERED
2' IN 20' SLOPE

--------PIVOTING OPTIONS--------



TIE BACK DETAIL
AT TOWER LEG



TIE BACK DETAIL
AT ANTENNA MOUNTING FRAME

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS INCLUDE
FINISHES AND ARE IN INCHES

TOLERANCES: FRACTIONS ± 1/16"
ANGLES ± 1/2 DEG.
DECIMALS ± .010"

MATERIAL:

TOLERANCES DO NOT APPLY
TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

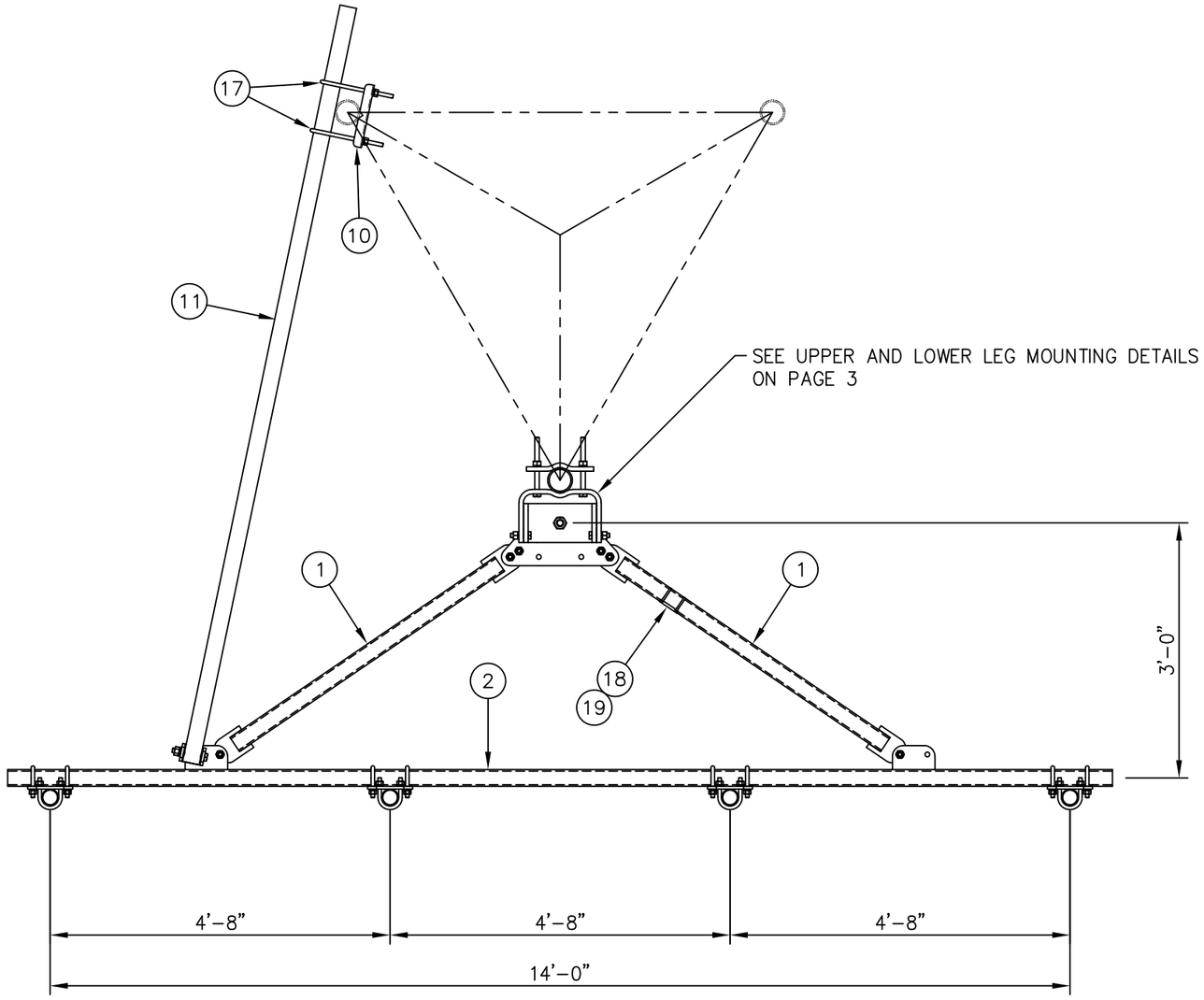
Sabre Industries™
Towers and Poles

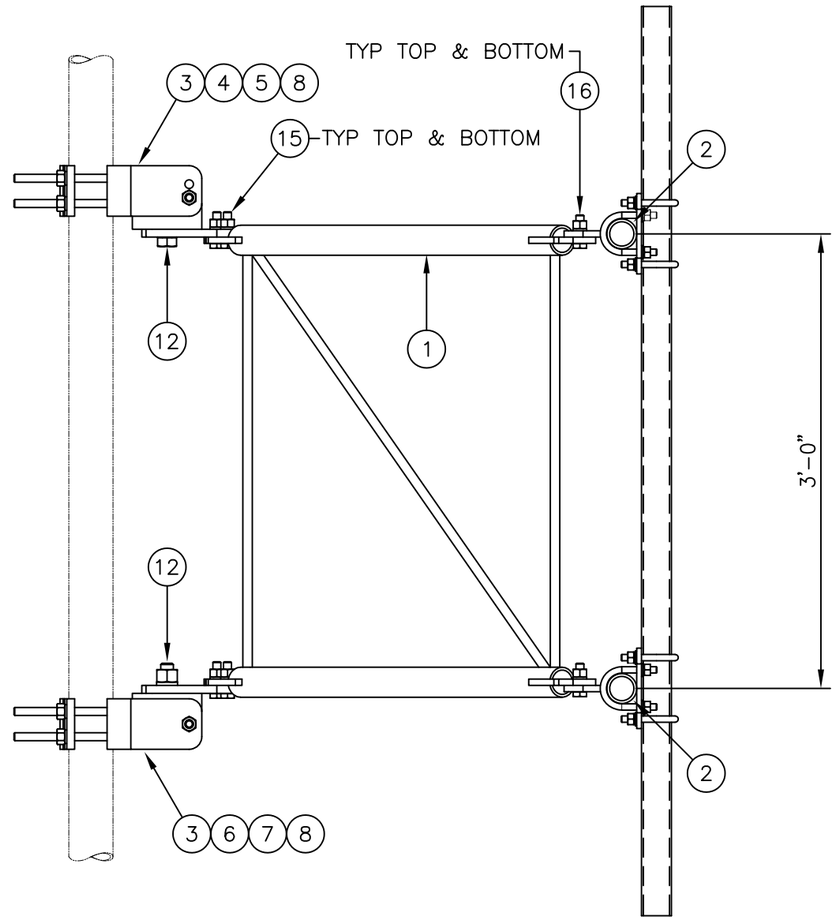
14' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

DATE	11/05/18
DRAWN BY	KLE
CHECKED BY	EK

SIZE	DRAWING NO.	REV
B	C10857278C	1

SCALE	PAGE
None	3 OF 4





SIDE VIEW

MOUNTING OPTIONS

SHOWING MOUNTING PIPE PLACEMENTS

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES

TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"

MATERIAL:

TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES, ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

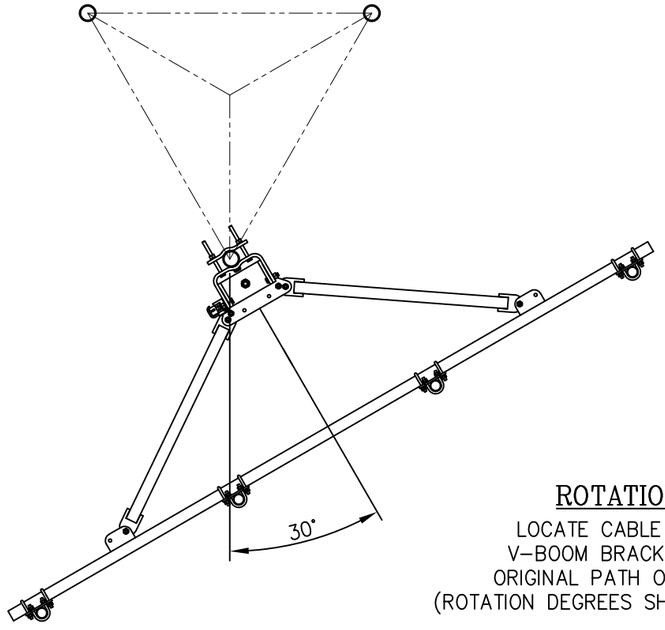
Sabre Industries™ Towers and Poles

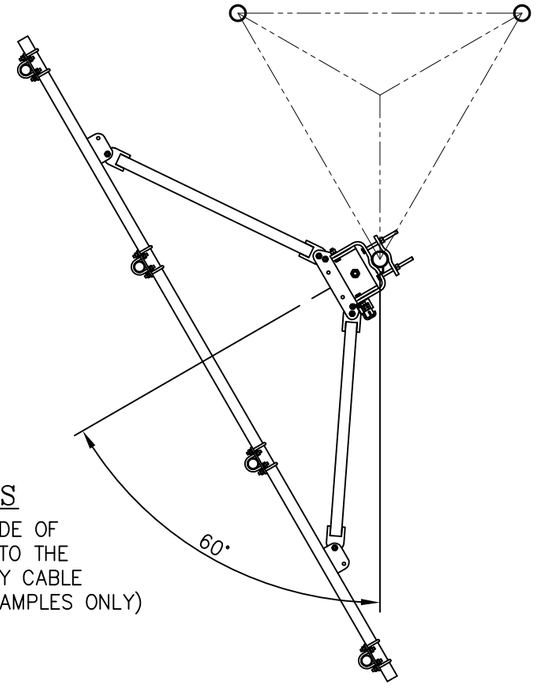
14' HD V-BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

		SIZE	DRAWING NO.	REV
DATE	11/05/18	B	C10857278C	1
DRAWN BY	KLE			
CHECKED BY	EK	SCALE None	PAGE 2 OF 4	

OPTIONAL LOCKING CABLE GUIDE

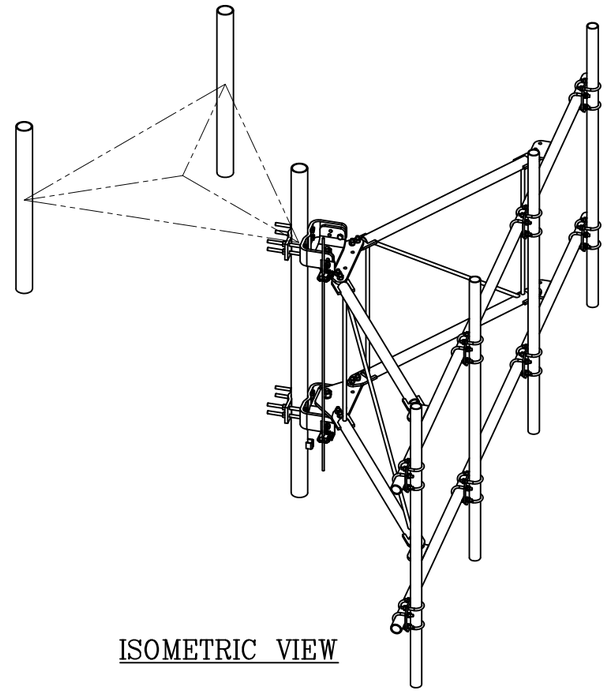
IF REQUIRED PLEASE ORDER PART NUMBER C30017022. THIS KIT WILL COME WITH (2) LOCKING CABLE GUIDES FOR TOP & BOTTOM V–BOOM BRACKETS.



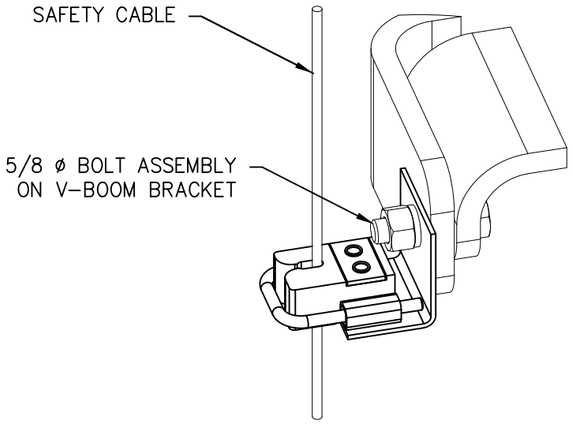


ROTATION OPTIONS

LOCATE CABLE GUIDE ON SIDE OF V–BOOM BRACKET CLOSEST TO THE ORIGINAL PATH OF THE SAFETY CABLE (ROTATION DEGREES SHOWN ARE EXAMPLES ONLY)



ISOMETRIC VIEW



CABLE GUIDE DETAIL

NOTE

OTHER ADDITIONAL CABLE GUIDE SUPPORTS MAY BE REQUIRED ABOVE AND BELOW V–BOOM SO THAT CABLE ALIGNMENT IS WITHIN REQUIRED LIMITS.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES

TOLERANCES: FRACTIONS ± 1/16" ANGLES ± 1/2 DEG. DECIMALS ± .010"

MATERIAL:

TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	04/29/20	WRF	EK	ADDED NOTE 4 TO GENERAL NOTES,
				ADDED NOTE 4 TO INSTALLATION NOTES AND ADDED PAGE 4

Sabre Industries™ Towers and Poles

14' HD V–BOOM ASSEMBLY W/TIEBACK (3' STANDOFF) W/ANTENNA MOUNTING PIPES & CROSSOVER KITS

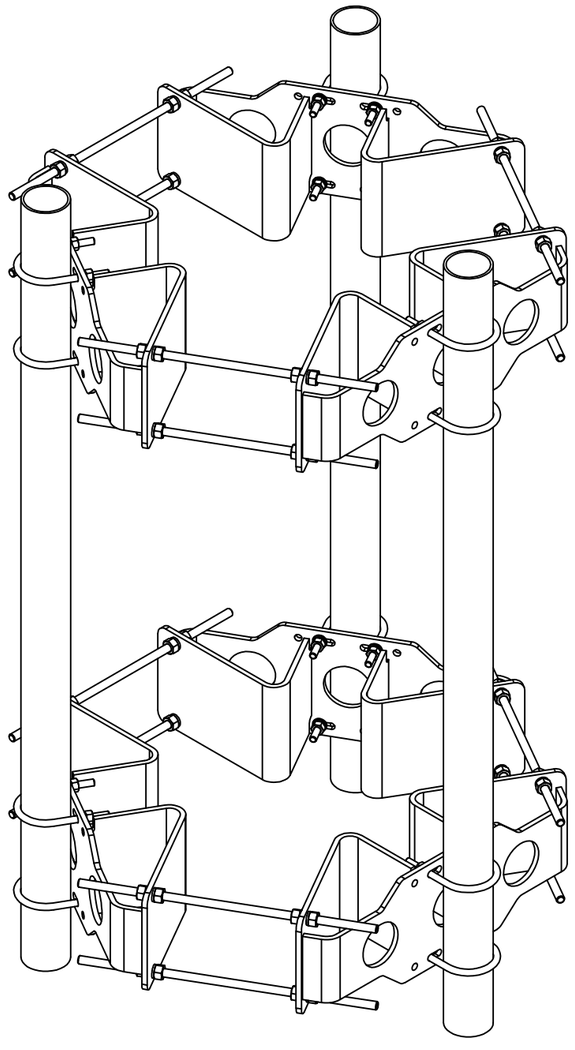
		SIZE	DRAWING NO.	REV
DATE	11/05/18	B	C10857278C	1
DRAWN BY	KLE			
CHECKED BY	EK		SCALE None	PAGE 4 OF 4

NOTE:

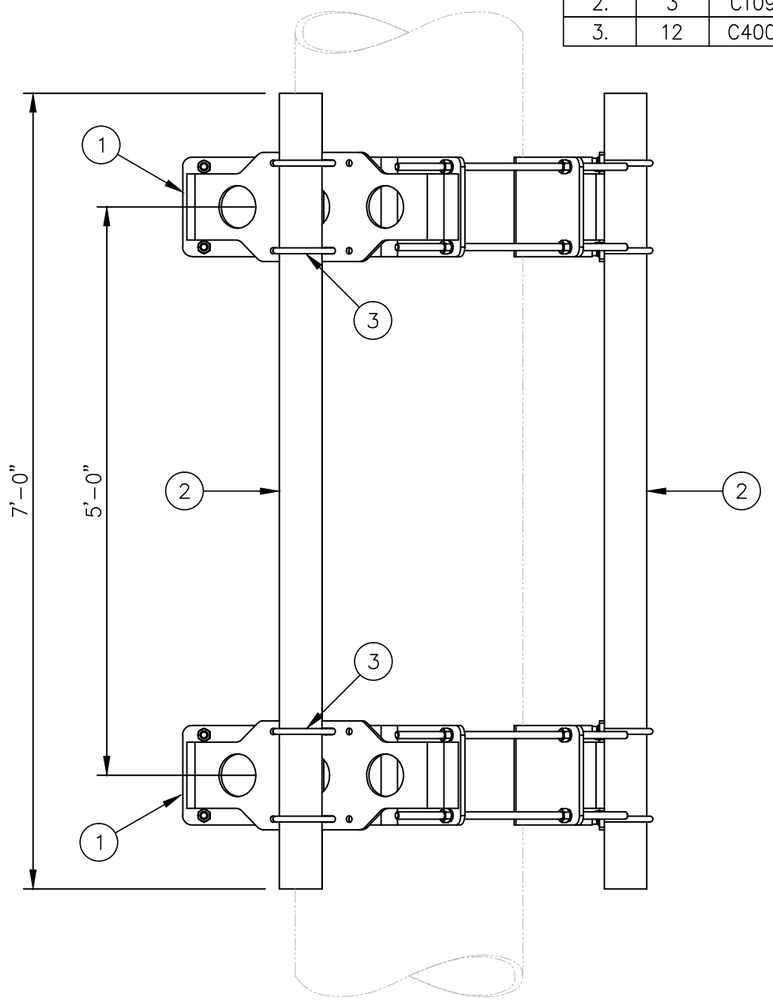
SEE DRAWING C10112378 FOR INSTALLATION OF TRI-COLLAR BRACKET ASSEMBLY

C10899055 4 1/2" O.D. PIPE MOUNT ASSEMBLY

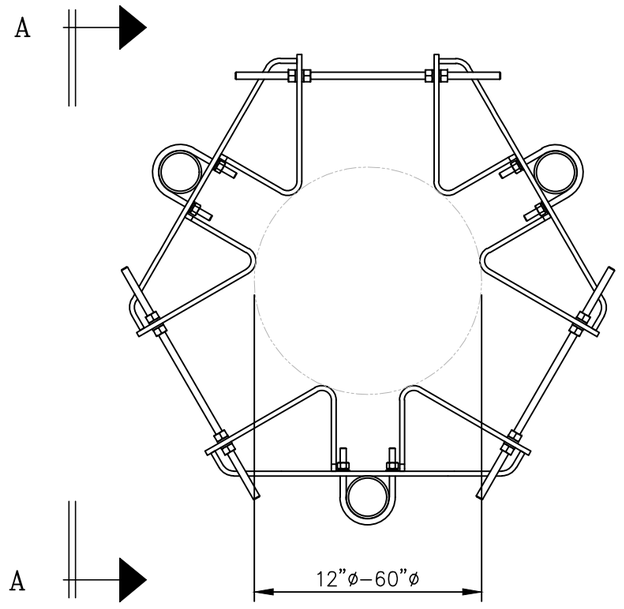
ITEM	QTY.	PART NO.	DESCRIPTION	WEIGHT
1.	2	C10112378	TRI-COLLAR BRACKET ASSEMBLY	732
2.	3	C10901407	PIPE, 4 1/2 O.D. X .237 X 7'-0	236
3.	12	C40034032	U-BOLT ASSEMBLY, 5/8 ø X 5 3/16 C-C	26
			TOTAL WEIGHT	994



ISOMETRIC VIEW



VIEW A-A



PLAN VIEW

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS INCLUDE FINISHES AND ARE IN INCHES

TOLERANCES: FRACTIONS ± 1/16"
ANGLES ± 1/2 DEG.
DECIMALS ± .010"

MATERIAL:

TOLERANCES DO NOT APPLY TO RAW MATERIAL

REV	DATE	DRW	CHK	DESCRIPTION
1	02/03/17	WRF	KLE	COLLAR WAS C10112301

Sabre Industries™ Towers and Poles

4 1/2" O.D. PIPE MOUNT ASSEMBLY FOR MONOPOLES (FITS 12" TO 60" DIAMETER)

DATE	01/26/16
DRAWN BY	WRF
CHECKED BY	DLW

SIZE	DRAWING NO.	REV
B	C10899055	1

SCALE	PAGE
None	1 OF 1

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CTL05107 - 881536

North Haven South
120 Universal Drive
North Haven, Connecticut 06473

January 26, 2022

EBI Project Number: 6222000342

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**57.74%**

January 26, 2022

AT&T

Emissions Analysis for Site: CTL05107 - 881536 - North Haven South

EBI Consulting was directed to analyze the proposed AT&T facility located at **120 Universal Drive** in **North Haven, Connecticut** for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at 120 Universal Drive in North Haven, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

1) 4 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

2) 2 LTE DE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 4 LTE FN channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

4) 4 5G channels (850 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 4 LTE / 5G channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

6) 4 LTE / 5G channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

7) 4 LTE channels (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 25 Watts per Channel.

8) 2 C-Band Channels (3700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 144.58 Watts per Channel.

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

10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

11) The antennas used in this modeling are the Quintel QD8616-7 for the 700 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 3700 MHz channel(s), the Ericsson AIR 6449 for the 3700 MHz channel(s), the Kathrein 800-10966 for the 700 MHz / 850 MHz / 2300 MHz channel(s) in Sector A, the Quintel QD8616-7 for the 700 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 3700 MHz channel(s), the Ericsson AIR 6449 for the 3700 MHz channel(s), the Kathrein 800-10966 for the 700 MHz / 850 MHz / 2300 MHz channel(s) in Sector B, the Quintel QD8616-7 for the 700 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 3700 MHz channel(s), the Ericsson AIR 6449 for the 3700 MHz channel(s), the Kathrein 800-10966 for the 700 MHz / 850 MHz / 2300 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antenna mounting height centerline of the proposed antennas is 121 feet above ground level (AGL).

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

14) All calculations were done with respect to uncontrolled / general population threshold limits.

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Quintel QD8616-7	Make / Model:	Quintel QD8616-7	Make / Model:	Quintel QD8616-7
Frequency Bands:	700 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	700 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	700 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.85 dBd / 12.85 dBd / 14.75 dBd / 14.95 dBd	Gain:	12.85 dBd / 12.85 dBd / 14.75 dBd / 14.95 dBd	Gain:	12.85 dBd / 12.85 dBd / 14.75 dBd / 14.95 dBd
Height (AGL):	121 feet	Height (AGL):	121 feet	Height (AGL):	121 feet
Channel Count:	14	Channel Count:	14	Channel Count:	14
Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts
ERP (W):	14,404.40	ERP (W):	14,404.40	ERP (W):	14,404.40
Antenna A1 MPE %:	**5.35%**	Antenna B1 MPE %:	**5.35%**	Antenna C1 MPE %:	**5.35%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz
Gain:	23.45 dBd	Gain:	23.45 dBd	Gain:	23.45 dBd
Height (AGL):	121 feet	Height (AGL):	121 feet	Height (AGL):	121 feet
Channel Count:	1	Channel Count:	1	Channel Count:	1
Total TX Power (W):	144.58000000000001 Watts	Total TX Power (W):	144.58000000000001 Watts	Total TX Power (W):	144.58000000000001 Watts
ERP (W):	31,996.92	ERP (W):	31,996.92	ERP (W):	31,996.92
Antenna A2 MPE %:	**8.70%**	Antenna B2 MPE %:	**8.70%**	Antenna C2 MPE %:	**8.70%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz
Gain:	23.45 dBd	Gain:	23.45 dBd	Gain:	23.45 dBd
Height (AGL):	121 feet	Height (AGL):	121 feet	Height (AGL):	121 feet
Channel Count:	1	Channel Count:	1	Channel Count:	1
Total TX Power (W):	144.58000000000001 Watts	Total TX Power (W):	144.58000000000001 Watts	Total TX Power (W):	144.58000000000001 Watts
ERP (W):	31,996.92	ERP (W):	31,996.92	ERP (W):	31,996.92
Antenna A3 MPE %:	**8.70%**	Antenna B3 MPE %:	**8.70%**	Antenna C3 MPE %:	**8.70%**
Antenna #:	**4**	Antenna #:	**4**	Antenna #:	**4**
Make / Model:	Kathrein 800-10966	Make / Model:	Kathrein 800-10966	Make / Model:	Kathrein 800-10966
Frequency Bands:	700 MHz / 850 MHz / 2300 MHz	Frequency Bands:	700 MHz / 850 MHz / 2300 MHz	Frequency Bands:	700 MHz / 850 MHz / 2300 MHz
Gain:	13.45 dBd / 14.15 dBd / 15.85 dBd	Gain:	13.45 dBd / 14.15 dBd / 15.85 dBd	Gain:	13.45 dBd / 14.15 dBd / 15.85 dBd
Height (AGL):	121 feet	Height (AGL):	121 feet	Height (AGL):	121 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	420 Watts	Total TX Power (W):	420 Watts	Total TX Power (W):	420 Watts
ERP (W):	11,547.12	ERP (W):	11,547.12	ERP (W):	11,547.12
Antenna A4 MPE %:	**5.10%**	Antenna B4 MPE %:	**5.10%**	Antenna C4 MPE %:	**5.10%**

• An adjusted power reduction factor of 0.32 was applied to the AIR 6449 antennas per guidance from AT&T.

• Specifications were not available for the Ericsson AIR 6419 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6419 due to its similarity.

Site Composite MPE %	
Carrier	**MPE %**
AT&T (Max at Sector A):	27.85%
Sprint	0.9%
Nextel	0.7%
T-Mobile	28.29%
Site Total MPE % :	57.74%

AT&T MPE % Per Sector	
AT&T Sector A Total:	27.85%
AT&T Sector B Total:	27.85%
AT&T Sector C Total:	27.85%
Site Total MPE % :	57.74%

AT&T Maximum MPE Power Values (Sector A)

AT&T Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
AT&T 700 MHz LTE FN	4	771.01	121.0	8.38	700 MHz LTE FN	467	1.80%
AT&T 700 MHz LTE DE	2	771.01	121.0	4.19	700 MHz LTE DE	467	0.90%
AT&T 1900 MHz LTE/5G	4	1194.15	121.0	12.98	1900 MHz LTE/5G	1000	1.30%
AT&T 2100 MHz LTE/5G	4	1250.43	121.0	13.60	2100 MHz LTE/5G	1000	1.36%
AT&T 3700 MHz C-Band	1	31996.92	121.0	86.98	3700 MHz C-Band	1000	8.70%
AT&T 3700 MHz C-Band	1	31996.92	121.0	86.98	3700 MHz C-Band	1000	8.70%
AT&T 700 MHz LTE	4	885.24	121.0	9.63	700 MHz LTE	467	2.06%
AT&T 850 MHz 5G	4	1040.06	121.0	11.31	850 MHz 5G	567	1.99%
AT&T 2300 MHz LTE	4	961.48	121.0	10.45	2300 MHz LTE	1000	1.05%
						Total:	**27.85%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	27.85%
Sector B:	27.85%
Sector C:	27.85%
AT&T Maximum MPE % (Sector A):	27.85%
Site Total:	57.74%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **57.74%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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.