CROWN CASTLE

1 Cityplace Dr, Suite 490

Creve Coeur, MO 63141

Phone: (314) 513-0147

www.crowncastle.com

April 23, 2021

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

RE: **Notice of Exempt Modification for T-Mobile**
Crown Site ID# 881533; T-Mobile Site ID# CT11428A
75 Roberts Road, Groton, CT 06340
Latitude: 41° 21' 36.80" N / Longitude: -72° 2' 55.10" W

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 128-foot mount on the existing 145-foot Monopole Tower located at 75 Roberts Road. in Groton. The property is owned by Crown Castle and the Tower by Crown Castle. T-Mobile now intends to replace nine (9) existing 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:
(3) Ericsson - AIR21 B2P/B4A Antennas **(REMOVE) –** (3) Ericsson-AIR32 B66/B2A Antennas **(REPLACE)**

(3) Andrew - LNX-6515DS-A1M Antennas **(REMOVE) -** (3) RFS APXVAALL24_43-U-NA20 Antennas **(REPLACE)**

(3) Ericson-AIR21 B2A_B4P Antennas **(REMOVE) –** (3) Ericsson-AIR6449 B41 Antennas **(REPLACE)**

(3) Ericsson – RRUS11 B12 Radios **(REMOVE)** – (3) Ericsson 4449 B71+B85 Radios **(REPLACE)**

Install New:
(3) Ericsson 4415 B25 Radio
(3) HCS 6x24 Hybrid Cables (1 5/8")

Remove:
(3) TWIN STYLE 1B-AWS TMA
(1) 9x18 HCS Cable (1-5/8")
(12) COAX cables (1-5/8")

Ground:

Remove and Replace:
(1) 6131 Cabinet **(REMOVE)** – (1) B160 Battery Cabinet **(REPLACE)**
(1) 6131 Cabinet **(REMOVE)** – (1) 6160 Equipment Cabinet **(REPLACE)**

Upgrade:
(1) BTS Cabinet Breaker

The facility was approved by the Town of Groton Planning and Development Commission by way of a Site Plan Approval Letter on February 22nd, 2000.

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 Patrice Granatosky, Mayor of the Town of Groton and Deborah G. Jones, Assistant Director of Planning, Zoning, and Wetlands for the Town of Groton. A copy will also be sent to the 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, T-Mobile 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).

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

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

Sincerely,

Colin Robinson

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive Suite 303
Chelmsford, MA 01824
crobinson@nbcllc.com
(360) 561-3311

cc:

Patrice Granatosky, Mayor *(via email only to pgranatosky@groton-ct.gov)*
Town of Groton
134 Groton Long Point Road
Groton, CT 06340
860-449-8789

Deborah G. Jones, Assistant Director PZ&W *(via email only to djones@groton-ct.gov)*
Town of Groton
134 Groton Long Point Road
Groton, CT 06340
860-446-5970

Colin Robinson

From: Colin Robinson
Sent: Friday, April 23, 2021 10:44 AM
To: djones@groton-ct.gov
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 75 Roberts Rd Groton CT 881533
Attachments: CSC Exempt Modification Application 75 Roberts Rd Groton CT 881533 04232021.pdf

Good Morning Ms. Jones,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 75 Roberts Rd Groton CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Colin Robinson

From: Colin Robinson
Sent: Friday, April 23, 2021 10:44 AM
To: 'pgranatosky@groton-ct.gov'
Cc: Colin Robinson
Subject: CSC Exempt Modification Application 75 Roberts Rd Groton CT 881533
Attachments: CSC Exempt Modification Application 75 Roberts Rd Groton CT 881533 04232021.pdf

Good Morning Mayor Granatosky,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 75 Roberts Rd Groton CT.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

Colin

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive | Suite 303 | Chelmsford, MA | 01824
M 360.561.3311

Exhibit A

Original Facility Approval

TOWN OF GROTON

PLANNING AND DEVELOPMENT SERVICES
Planning Department

134 Groton Long Point Road
Groton, Connecticut 06340-4873

March 1, 2000

Gerald Longobardi
Candid Communications of Groton, LLC
110 Washington Avenue
North Haven, Connecticut 06473

Dear Mr. Longobardi:

The Town of Groton Planning Commission, at its meeting on February 22, 2000, approved with modifications your site plan entitled Candid Communications Telecommunications Tower and Facilities, Roberts Road (see attachment).

If your plan was approved with modifications, you should submit two paper check prints of the revised plan for final review to insure compliance with the Commission's approval. Following this review, two mylars and eight paper prints of the entire plan must be submitted for the Chairman's signature.

Please note that this plan, after being signed by the Chairman of the Commission, must be filed by you or your representative in the Land Records Office at Town Hall, **and until such filing has been done, no building permit can be issued and no construction shall commence.** Please note as per the Zoning Regulations, "any approved site plan for which construction has not commenced or which is not otherwise put into effect within a period of one year shall become null and void, unless an extension of time is applied for by the applicant and granted by the Planning Commission."

If a building permit is involved, "Post Site Plan Approval Requirements and Procedures" and "Contractor's Punch List for Site Work" have been enclosed to assist you in the construction phase of your project.

Please note that any modification to this plan subsequent to Planning Commission approval requires resubmission of an application for site plan modification approval in the same manner as the original application. Failure to submit requisite modification applications could result in delays in issuance of Certificates of Site Plan Compliance and Certificates of Occupancy.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Michael J. Murphy, AICP
Assistant Director of
Planning and Development

MJM:nb
Certified # Z 414 682 282

Exhibit B

Property Card

GROUND LEASE MODIFICATION AGREEMENT

THIS GROUND LEASE MODIFICATION AGREEMENT (the "Agreement") is by and between **Global Signal Acquisitions IV LLC**, a Delaware limited liability company, ("Landlord") and **Crown Atlantic Company LLC**, a Delaware limited liability company, ("Tenant") effective as of March 22, 2012 ("Effective Date").

Whereas, Landlord has acquired an easement ("*Easement*") along with a concomitant ground lease ("*Ground Lease*") relating to a certain tower site ("*Tower Site*") upon which Tenant has one or more communication towers and related improvements or assets; and

Whereas, Landlord and Tenant desire to extend the term of the Ground Lease; and

Whereas, Landlord and Tenant have agreed upon terms for the modification of the Ground Lease and they desire to memorialize such agreement in writing.

Now, Therefore, Landlord and Tenant, for good and valuable consideration, agree as follows:

Definitions

"Agreement" means this Ground Lease Modification Agreement.

"Ground Lease" means the lease dated November 12, 1999, for property located in Groton, Connecticut, a memorandum of which is recorded in New London County. The original landlord's interest in the lease was assigned to Landlord in the Easement which is dated March 19, 2012

"Tenant's Notice Address" means c/o Crown Castle USA Inc., E. Blake Hawk, General Counsel, Attn: Legal – Real Estate Dept., 2000 Corporate Drive, Canonsburg, PA 15317.

"Landlord's Notice Address" means c/o Crown Castle USA Inc., E. Blake Hawk, General Counsel, Attn: Legal – Real Estate Dept., 2000 Corporate Drive, Canonsburg, PA 15317.

Ground Lease Termination. Tenant has the right to terminate the Ground Lease with at least five (5) years' prior written notice to Landlord.

Rent. Effective as of the Effective Date, Tenant shall pay rent to Landlord in the monthly amount of [redacted] The monthly rent shall increase annually commencing on each January 1, to an amount equal to the monthly rent prior to such adjustment multiplied by the CPI indicator published on or about October 1 prior to such adjustment divided by the CPI indicator published on or about October 1 for the prior year. "CPI" means the Consumer Price Index published by the Bureau of Labor for all Urban Consumers, U.S. City Averages or a substantially similar index if such index is not published.

Notices. All notices hereunder shall be in writing and shall be given by (i) established national courier service which maintains delivery records, (ii) hand delivery, or (iii) certified or registered mail, postage prepaid, return receipt requested. Notices are effective upon receipt, or upon attempted delivery if delivery is refused or if delivery is impossible because of failure to provide reasonable means for accomplishing delivery. The notices shall be sent to Landlord at Landlord's Notice Address and to Tenant at Tenant's Notice Address.

Assignment, Sublease, Licensing and Encumbrance. Tenant has the right, without any requirement that it pay any additional consideration to Landlord and at its sole discretion, to assign all or any interest in the Ground Lease and to sublease or license the rights granted to it in the Ground Lease or modify or alter the Tower Site. If there is any conflict between the Ground Lease and this Agreement, this Agreement shall prevail.

IN WITNESS WHEREOF, Landlord and Tenant having read the foregoing and intending to be legally bound hereby, have executed this Agreement as of the day and year first written above.

LANDLORD:
Global Signal Acquisitions IV LLC,
a Delaware limited liability company

By: _____
Name Tracy Van Swol
Title Real Estate Transaction Manager

_____
Witness

_____
Witness

TENANT:
Crown Atlantic Company LLC,
a Delaware limited liability company

By: _____
Name Tracy Van Swol
Title Real Estate Transaction Manager

_____
Witness

_____
Witness

Site Name: Groton Tower
BUN: 881533]
694521.1 03/08/2012

By: (Initials) DL Date 4/17/12 Doc Type I

BUN: 881533 Lease/Lic 161432

Crown Castle International Corp. Consolidated Subsidiaries as Named Insureds

Entity Name **4/1/2017 Edition**

24/7 Chesapeake Holdings, LLC
24/7 Mid-Atlantic Network, LLC
24/7 Mid-Atlantic Network of Virginia, LLC
Access Fiber Group Holdings LLC
Access Fiber Group, Inc.
AirComm of Avon, L.L.C.
Atlantic Coast Communications LLC
CA - CLEC LLC
CCT2 Holdings LLC
CC Castle International LLC
CC Towers Holding LLC
CC TS LLC
CC FN Holdings LLC
CC Finance LLC
CC Holdings GS V LLC
CC Site Acquisitions II LLC
CC Sunesys Fiber Networks LLC
CC TM PA LLC
CC Towers Guarantor LLC
CCATT Holdings LLC
CCATT LCC
CCATT PR LLC
CCGS Holdings Corp.
CCPR VI Tower Newco LLC
CCS & E LLC
CCTM Holdings LLC
CCTM1 LLC
CCTM2 LLC
CCTMO LLC
ComSite Venture, Inc.
Chesapeake Fiber, LLC
Coastal Antennas LLC
Coverage Plus Antenna Systems LLC
Crown Atlantic Company LLC
Crown Mobile Systems, Inc.
Crown Castle AS LLC
Crown Castle Atlantic LLC
Crown Castle Augusta LLC
Crown Castle BP ATT LLC
Crown Castle CA Corp.
Crown Castle GS III Corp.
Crown Castle GT Company LLC
Crown Castle GT Corp.
Crown Castle GT Holding Sub LLC
Crown Castle International Corp.
Crown Castle International LLC
Crown Castle International Corp. de Puerto Rico
Crown Castle Investment II Corp.
Crown Castle Investment Corp.
Crown Castle MM Holding Corp.
Crown Castle MM Holding LLC
Crown Castle MU LLC
Crown Castle NG Atlantic LLC
Crown Castle NG Central LLC
Crown Castle NG East LLC
Crown Castle NG Networks LLC
Crown Castle NG West LLC
Crown Castle Operating Company
Crown Castle Orlando Corp.
Crown Castle PR LLC
Crown Castle PR Solutions LLC
Crown Castle PT Inc.
Crown Castle Puerto Rico Corp.
Crown Castle Services LLC
Crown Castle Solutions LLC
Crown Castle South LLC
Crown Castle TDC LLC
Crown Castle TLA LLC
Crown Castle Towers 05 LLC
Crown Castle Towers 06-2 LLC
Crown Castle Towers 09 LLC
Crown Castle Towers LLC
Crown Castle MUPA LLC
Crown Castle USA Inc.
Crown Communication LLC
Crown Communication New York, Inc.
DAS Development Corporation
Fibernet Direct Florida LLC
Fibernet Direct Holdings LLC
Fibernet Direct TEL LLC
Fibernet Direct Texas LLC
Global Signal Acquisitions II LLC
Global Signal Acquisitions III LLC
Global Signal Acquisitions IV LLC
Global Signal Acquisitions LLC
Global Signal GP LLC
Global Signal Holdings III LLC
Global Signal Holdings IV LLC
Global Signal Operating Partnership, L.P.
Global Signal Services LLC
GoldenState Towers, LLC
GS Savings Inc.
High Point Management Co. LLC
ICB Towers, LLC
InfraSource FI, LLC
InSITE Fiber of Virginia LLC
InSITE Solutions LLC
Interstate Tower Communications LLC

Crown Castle International Corp. Consolidated Subsidiaries as Named Insureds

Entity Name **4/1/2017 Edition**

Intracoastal City Towers LLC
LL Q1-16, LLC
Mobile Media California LLC
Mobile Media National LLC
Modeo LLC
Md7 Capitol One, LLC
MW Cell REIT 1 LLC
MW Cell TRS 1 LLC
NewPath Networks Holding LLC
NewPath Networks LLC
NY - CLEC LLC
OP 2 LLC
OP LLC
P3 CHB-1, LLC
PA - CLEC LLC
Pinnacle San Antonio L.L.C.
Pinnacle Towers Acquisition Holdings LLC
Pinnacle Towers Acquisition LLC
Pinnacle Towers Asset Holding LLC
Pinnacle Towers Canada, Inc.
Pinnacle Towers III LLC
Pinnacle Towers Limited
Pinnacle Towers LLC
Pinnacle Towers V Inc.
Pinnacle St. Louis LLC
PR Site Development Corporation
PR TDC Corporation
Princeton Ancillary Services II LLC
Princeton Ancillary Services III LLC
Radio Station WGLD LLC
RGP Tower Group, LLC
Shaffer & Associates, Inc.
Sierra Towers, Inc.
Sunesys, LLC
Sunesys Enterprise LLC
Sunesys of Massachusetts, LLC
Sunesys of Virginia, Inc.
Tower Development Corporation
Towers Finco LLC
Towers Finco II LLC
Towers Finco III LLC
Tower Systems LLC
Tower Technology Company of Jacksonville LLC
Tower Ventures III, LLC
TowerOne 2012, LLC
TowerOne Allentown 001, LLC
TowerOne Bethlehem 001, LLC
TowerOne Doylestown, LLC
TowerOne East Rockhill 001, LLC
TowerOne Marple, LLC
TowerOne Middleton 003, LLC
TowerOne Middletown 001, LLC
TowerOne Middletown 002, LLC
TowerOne North Coventry, LLC
TowerOne Partners, LLC
TowerOne Richland, LLC
TowerOne Upper Pottsgrove, LLC
TowerOne Upper Pottsgrove 002, LLC
TowerOne Warminster 001, LLC
TowerOne Warrington 002, LLC
TriStar Investors LLC
TVHT, LLC
WA - CLEC LLC
WCP Wireless Lease Subsidiary, LLC
WCP Wireless Site Funding LLC
WCP Wireless Site Holdco LLC
WCP Wireless Site Non-RE Funding LLC
WCP Wireless Site Non-RE Holdco LLC
WCP Wireless Site RE Funding LLC
WCP Wireless Site RE Holdco LLC
Wireless Funding, LLC
Wireless Realty Holdings II, LLC
Wireless Revenue Properties, LLC

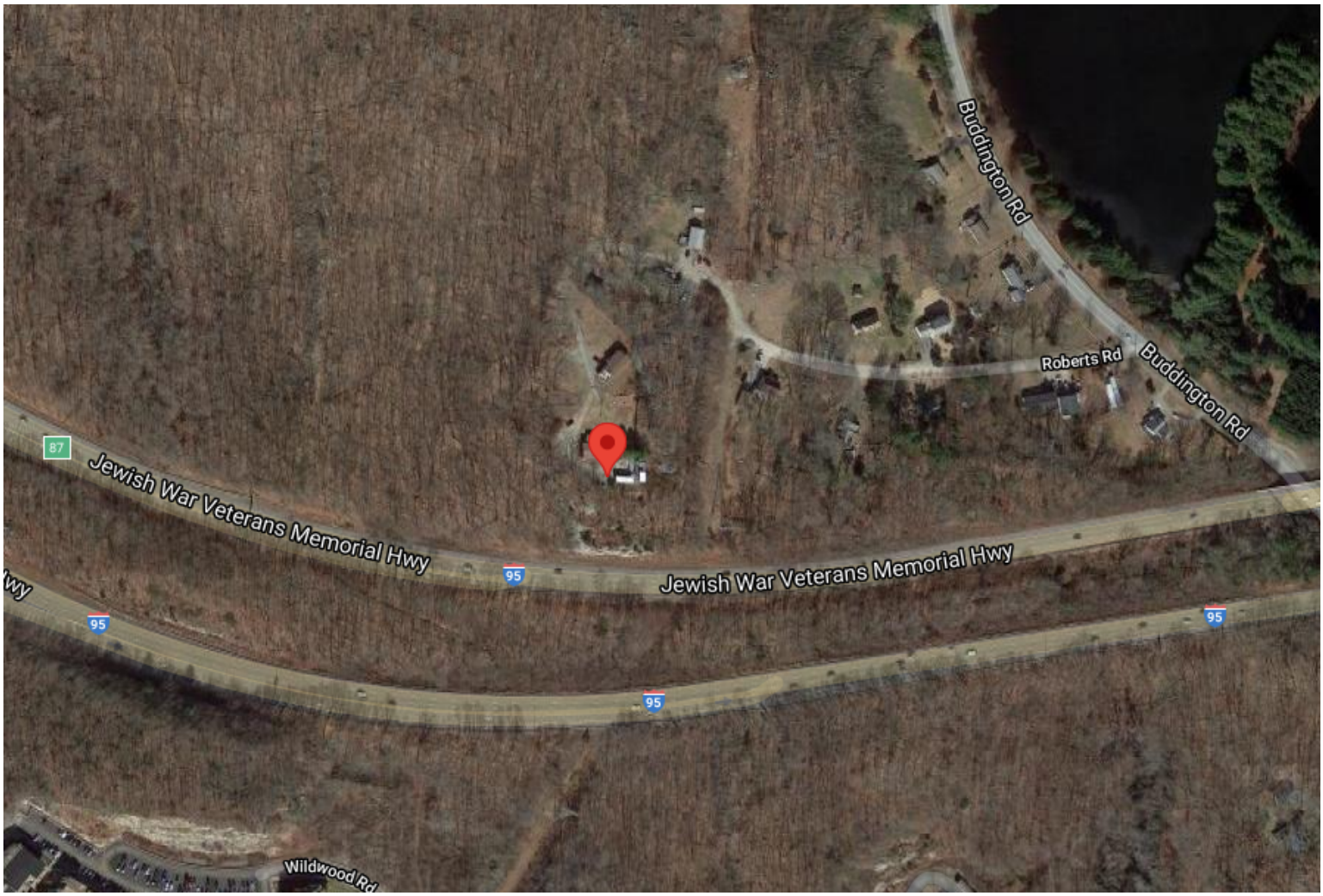

Buddington Rd
Roberts Rd
Buddington Rd
87
Jewish War Veterans Memorial Hwy
95
Jewish War Veterans Memorial Hwy
95
95
95
Wildwood Rd

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11428A
T-MOBILE SITE NAME: GROTON/I-95/BUDDINGTON RD
SITE TYPE: MONOPOLE
TOWER HEIGHT: 145'-0"

BUSINESS UNIT #: 881533
SITE ADDRESS: 75 ROBERTS ROAD GROTON, CT 06340
COUNTY: NEW LONDON
JURISDICTION: TOWNSHIP OF GROTON

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5A997DB 6160 (GSM only)

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	GROTON TOWER
SITE ADDRESS:	75 ROBERTS ROAD GROTON, CT 06340
COUNTY:	NEW LONDON
MAP/PARCEL #:	----
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 21' 36.80"
LONGITUDE:	-72° 2' 55.10"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	XXX.XX FT
CURRENT ZONING:	----
JURISDICTION:	TOWNSHIP OF GROTON
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	---- ---- CITY, STATE ZIP
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	BOZRAH LIGHT & POWER CO 860-889-7388
TELCO PROVIDER:	AT&T 1-800-288-2020
JOB NO.:	2438.6767

PROJECT TEAM

A&E FIRM:	CROWN CASTLE USA INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWNAE.APPROVAL@CROWNCASTLE.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
	---- - PROJECT MANAGER ----
	---- - CONSTRUCTION MANAGER ----

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. 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.

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 (9) ANTENNAS
- REMOVE (3) RRUs
- REMOVE (3) TMAS
- INSTALL (9) ANTENNAS
- INSTALL (6) RRUs
- REMOVE (1) HCS 9x18 HYBRID CABLES
- REMOVE (12) COAX CABLES
- INSTALL (3) 1-5/8" HYBRID CABLE

GROUND SCOPE OF WORK:
- UPGRADE BTS CABINET BREAKER
- REMOVE (1) RBS 6131 CABINET
- INSTALL (1) ENCLOSURE 6160 CABINET
- INSTALL (1) B160 BATTERY CABINET

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

LOCATION MAP

NO SCALE

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	2018 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2015 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: DATED:	BY OTHERS
MOUNT ANALYSIS: DATED:	B+T GROUP 02/15/21
AC ELECTRICAL POWER DESIGN: DATED:	BY OTHERS
RFDS REVISION: DATED:	---- 02/02/21
ORDER ID:	544400
REVISION:	0

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

APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/15/21	C.J.R.	PRELIMINARY	P.J.T.

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS A SIGNED AND SEALED DOCUMENT

STATE OF CONNECTICUT · JOHN B. BOSCO · No. 25605 · LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE — LIC. NO. 25605

SHEET NUMBER: T-1
REVISION: A

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: T–MOBILE
   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 F.3 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:

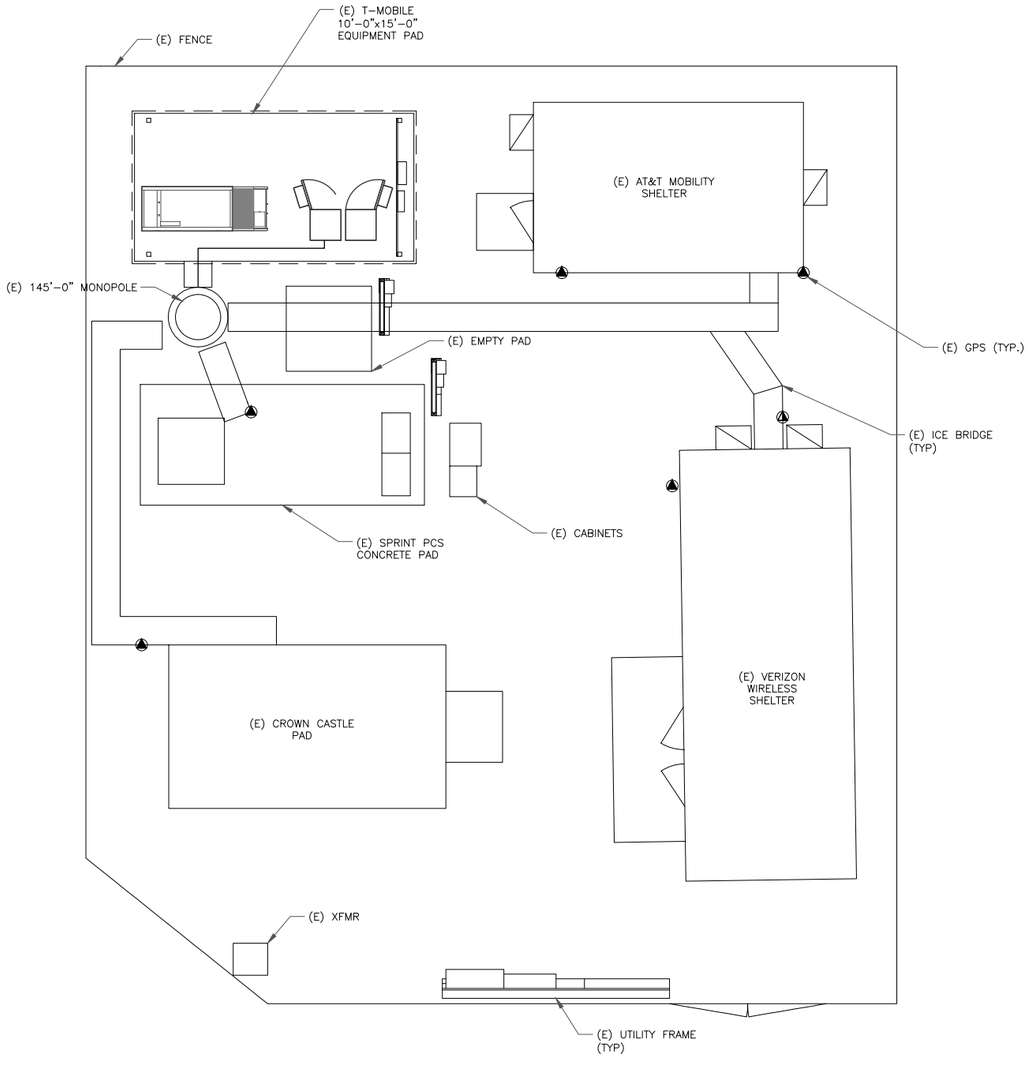
1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
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 "T–MOBILE".
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:

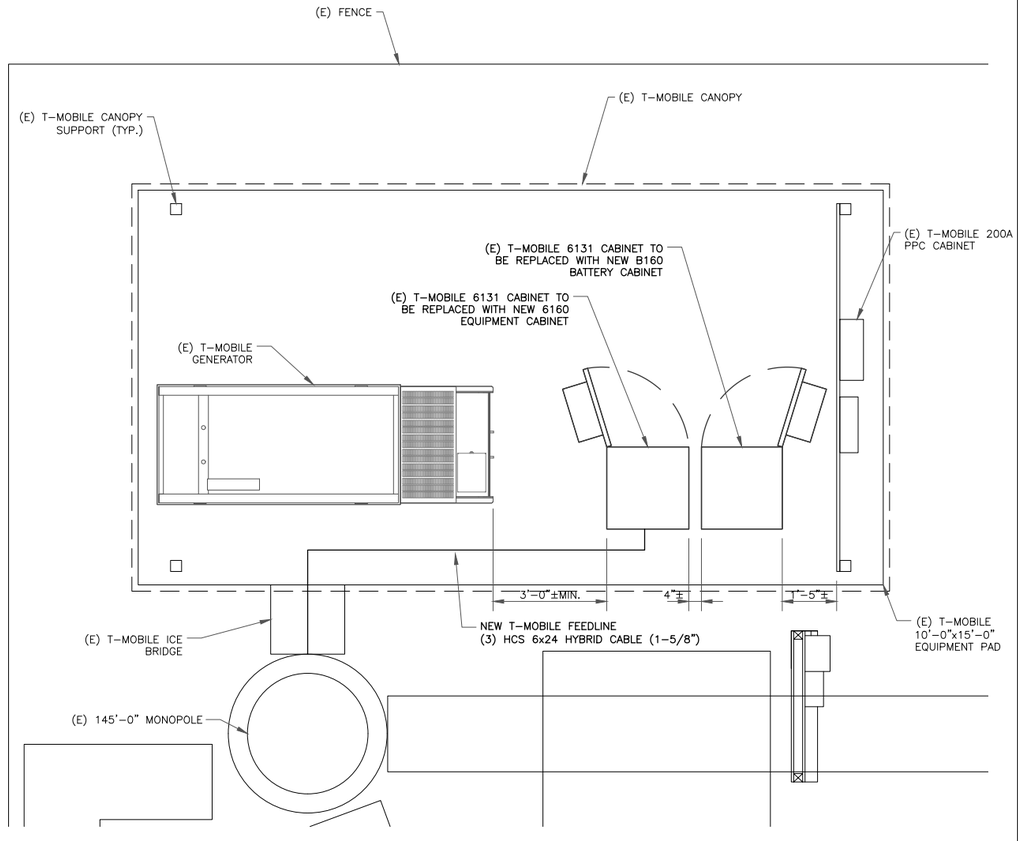
WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEA



1 SITE PLAN

SCALE: 2' 1' 0 2' 3/8"=1'-0" (FULL SIZE) 3/16"=1'-0" (11x17)

N



2 ENLARGED SITE PLAN

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

N

NOTES:

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

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA
FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/15/21	C.J.R.	PRELIMINARY	P.J.T.

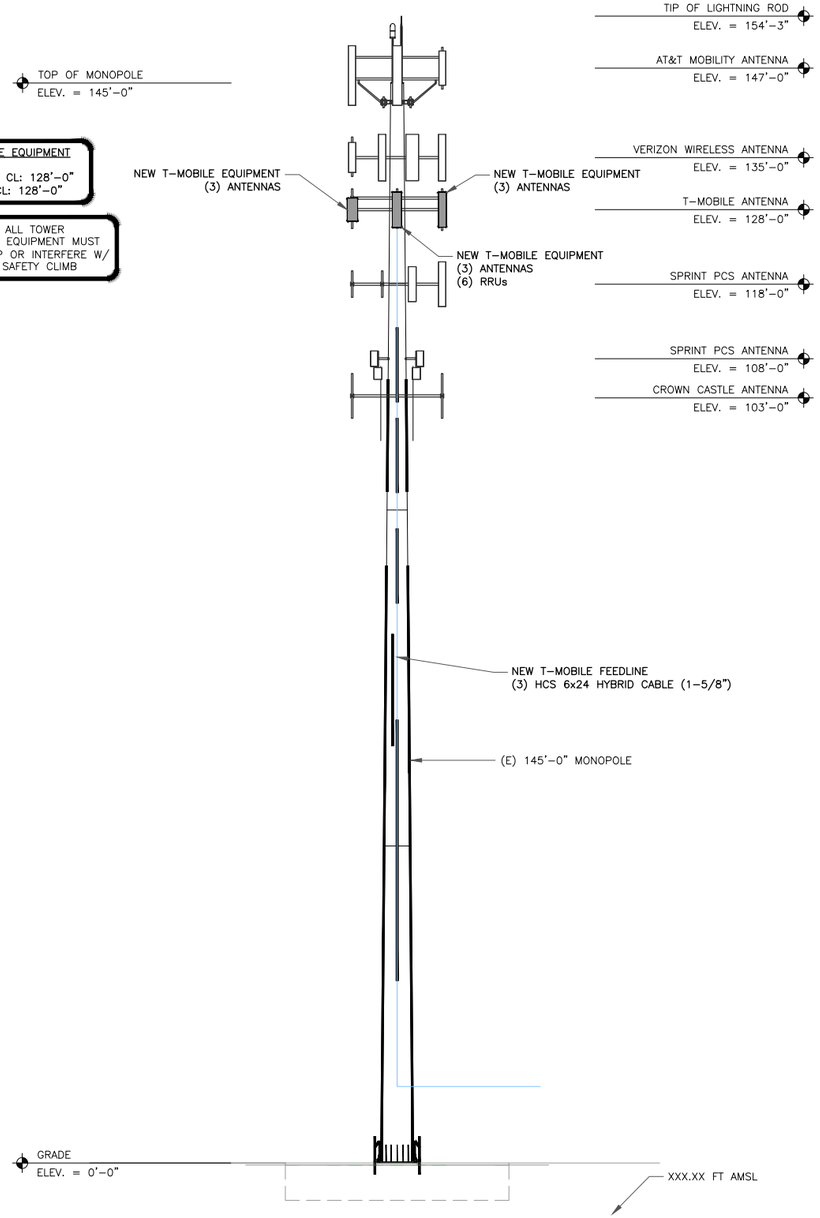
THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS A SIGNED AND SEALED DOCUMENT

STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

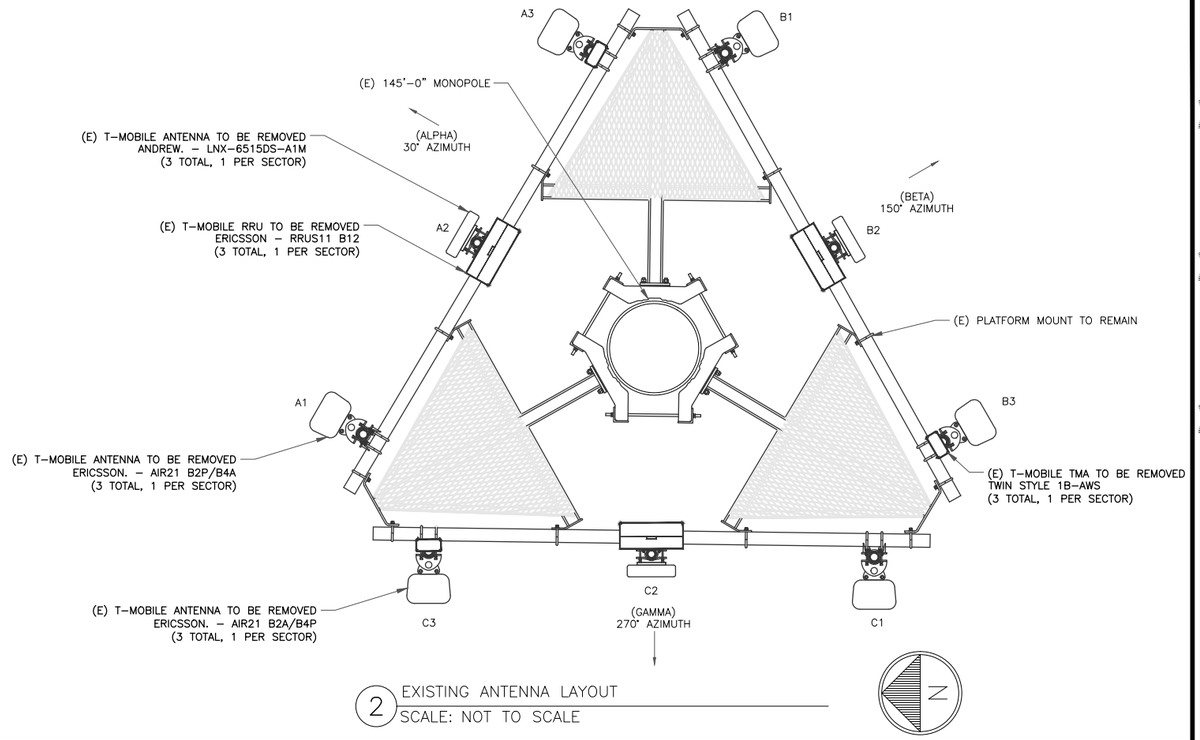
JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: C-1

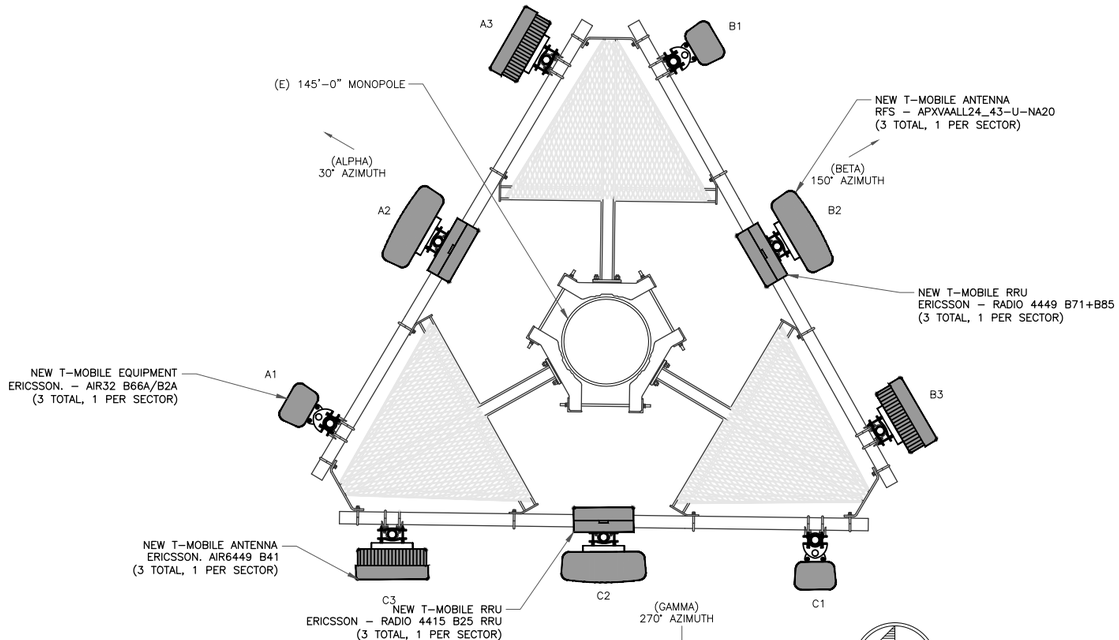
REVISION: A



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/15/21	C.J.R.	PRELIMINARY	P.J.T.

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS A SIGNED AND SEALED DOCUMENT

STATE OF CONNECTICUT JOHN B. BOSCO No. 25605 LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: C-2

REVISION: A

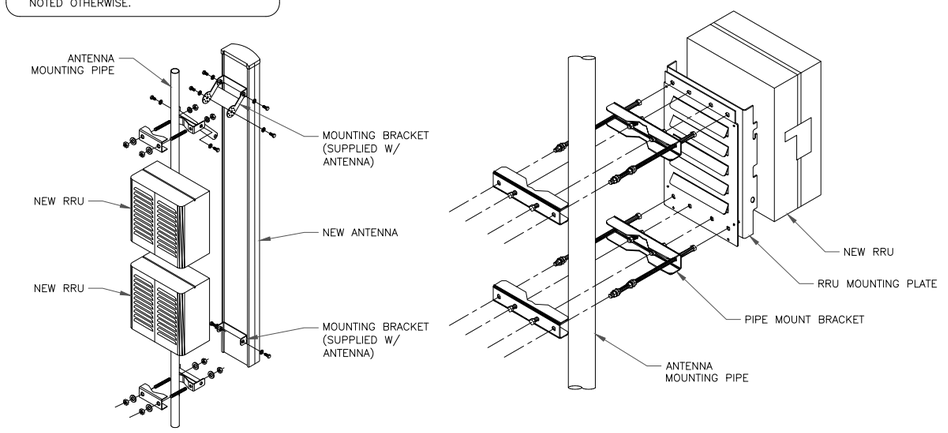
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	LTE 2100/1900 GSM 1900	128'-0"	30°	ERICSSON	AIR32 B66A/B2A	0°	–	–	(SHARED FIBER)
ALPHA	A2	LTE 600/700/1900 UMTS 1900 N 600	128'-0"	30°	RFS	APXVALL24_43-U-NA20	0°	–	(1) ERICSSON – RRUS 4449 B71/85 (1) ERICSSON – RRUS 4415 B25	(SHARED FIBER)
ALPHA	A3	LTE 2500/N 2500	128'-0"	30°	ERICSSON	AIR6449 B41	0°	–	–	(SHARED FIBER)
BETA	B1	LTE 2100/1900 GSM 1900	128'-0"	150°	ERICSSON	AIR32 B66A/B2A	0°	–	–	(1) 1-5/8" HCS 6X24 HYBRID
BETA	B2	LTE 600/700/1900 UMTS 1900 N 600	128'-0"	150°	RFS	APXVAALL24_43-U-NA20	0°	–	(1) ERICSSON – RRUS 4449 B71/85 (1) ERICSSON – RRUS 4415 B25	(1) 1-5/8" HCS 6X24 HYBRID
BETA	B3	LTE 2500/N 2500	128'-0"	150°	ERICSSON	AIR6449 B41	0°	–	–	(1) 1-5/8" HCS 6X24 HYBRID
GAMMA	C1	LTE 2100/1900 GSM 1900	128'-0"	270°	ERICSSON	AIR32 B66A/B2A	0°	–	–	(SHARED FIBER)
GAMMA	C2	LTE 600/700/1900 UMTS 1900 N 600	128'-0"	270°	RFS	APXVAALL24_43-U-NA20	0°	–	(1) ERICSSON – RRUS 4449 B71/85 (1) ERICSSON – RRUS 4415 B25	(SHARED FIBER)
GAMMA	C3	LTE 2500/N 2500	128'-0"	270°	ERICSSON	AIR6449 B41	0°	–	–	(SHARED FIBER)

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



2 ANTENNA WITH RRUs MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA FRENCH & PARRELLO ASSOCIATES
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t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

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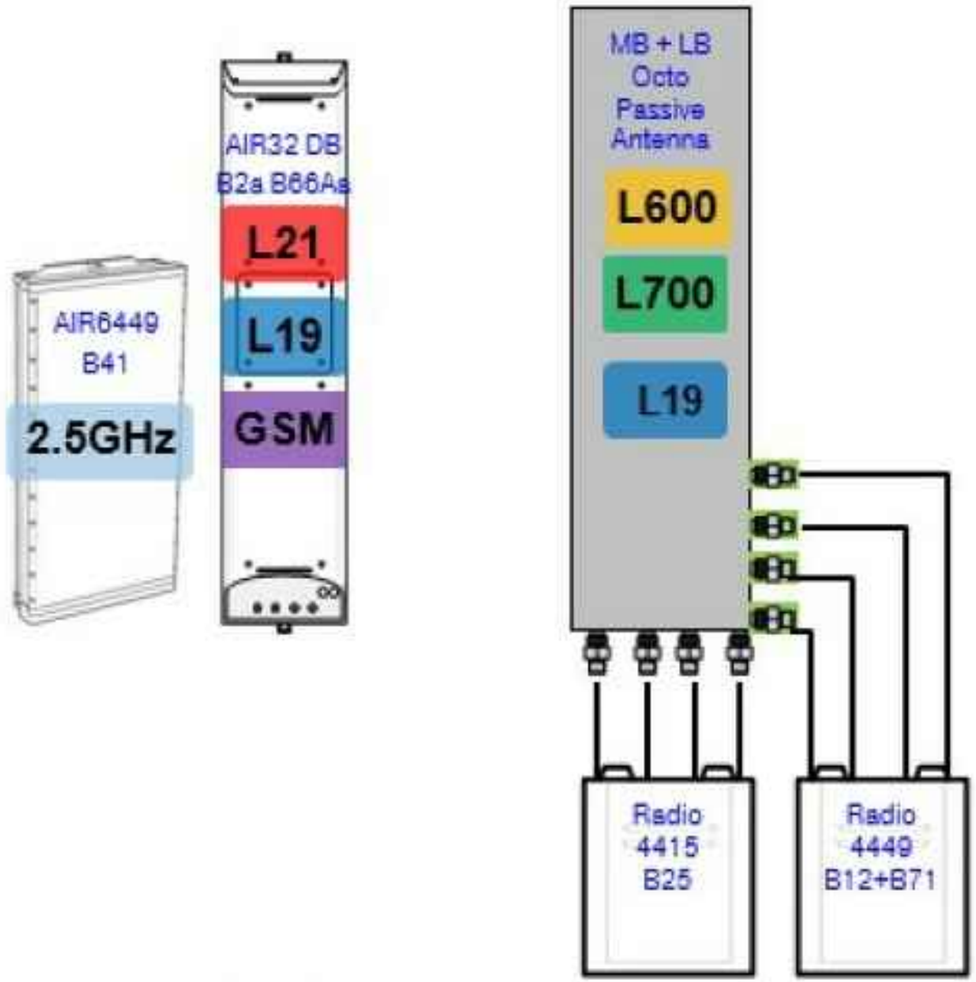
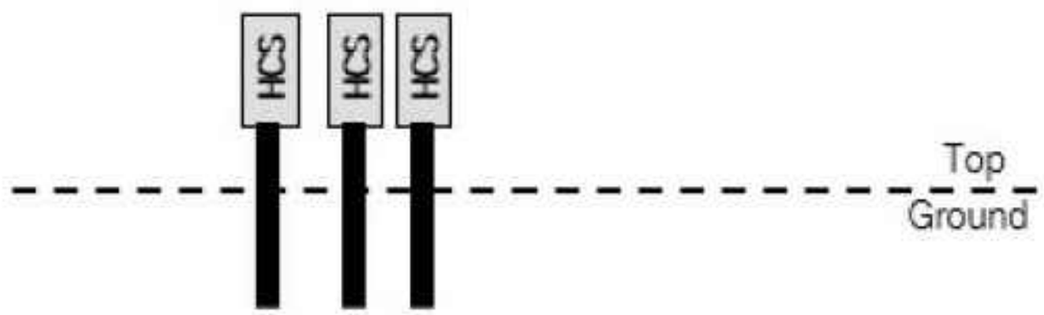
LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: C-3

REVISION: A





Notes:

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA
FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

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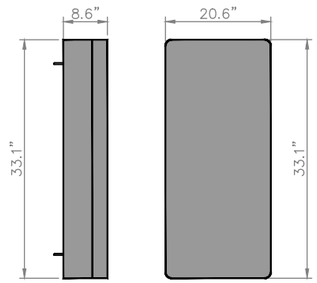
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

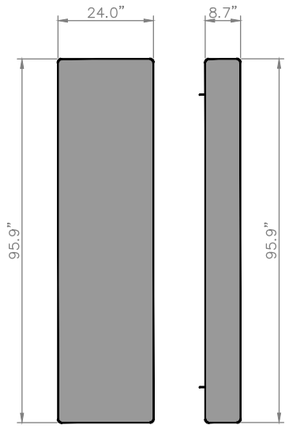
SHEET NUMBER: C-4

REVISION: A



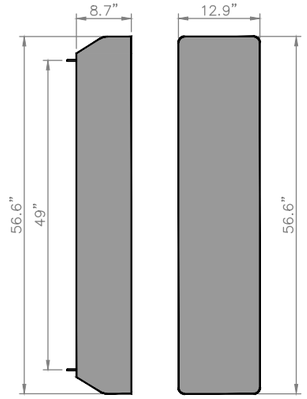
MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 33.1 IN.
WIDTH: 20.6 IN.
DEPTH: 8.6 IN.
WEIGHT: 104 LBS.

1 AIR6449 B41 ANTENNA DIAGRAM
SCALE: NOT TO SCALE



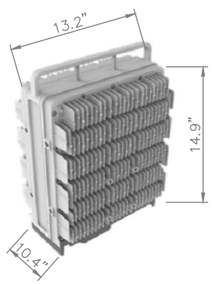
MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 95.9 IN.
WIDTH: 24.0 IN.
DEPTH: 8.5 IN.
WEIGHT: 122.8 LBS.

2 APXVAALL24_43-U-NA20 ANTENNA DIAGRAM
SCALE: NOT TO SCALE



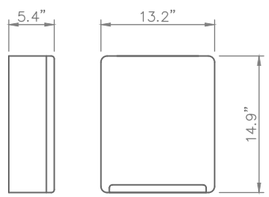
MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 56.6 IN.
WIDTH: 12.9 IN.
DEPTH: 8.7 IN.
WEIGHT: 132.2 LBS.

3 AIR32 B66A/B2A ANTENNA DIAGRAM
SCALE: NOT TO SCALE



MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 14.9 IN.
WIDTH: 13.2 IN.
DEPTH: 10.4 IN.
WEIGHT: 74 LBS.

4 ERRICSSON RADIO 4449 B71 B85A
SCALE: NOT TO SCALE



MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 14.9 IN.
WIDTH: 13.2 IN.
DEPTH: 5.4 IN.
WEIGHT: 46.3 LBS.

5 RRUS 4415 B25
SCALE: NOT TO SCALE

Technical Specifications

Dimensions	Height	63 in.
	Width	25.6 in.
	Depth	33.5 in.
Max. Weight		605 lbs

6 ENCLOSURE 6160 CABINET DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA
FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/15/21	C.J.R.	PRELIMINARY	P.J.T.

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STATE OF CONNECTICUT
JOHN P. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: C-5

REVISION: A

Technical Specifications

Dimensions		
	Height	63 in.
	Width	25.6 in.
	Depth	25.6 in.
Max. Weight		1,883 lbs

1 B160 BATTERY CABINET
SCALE: NOT TO SCALE

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA
FRENCH & PARRELLO ASSOCIATES
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BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

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STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: C-6

REVISION: A

JOB NAME: NJ08086A		TM (T-MOBILE PANEL) (EXISTING)						T-MOBILE LOCATION: PPC	
RATING: 240/120V, 1 PH, 3W, 200A									
CKT. NO.	CIRCUIT DESCRIPTION	POLE	BKR.	A	B	BKR.	POLE	CIRCUIT DESCRIPTION	CKT. NO.
1	BLOCK HEATER	1	20			20	1	LIGHTS	2
3	BATT CHARGER	1	20						4
5	6131	2	100			100	2	6160 / B160	6
7									8
9									10
11									12
13									14
15									16
17									18
19									20
21									22
23									24

NOTES

1. ALL BUSING TO BE COPPER
2. BOLT ON BREAKERS ONLY
3. CONTRACTOR IS RESPONSIBLE TO COORDINATE THE SHORT CIRCUIT RATING PRIOR TO PURCHASING ANY EQUIPMENT.
4. ALL WIRE SIZES ARE BASED ON 75 DEGREE WIRE.
5. SHORT CIRCUIT RATING: PANEL SHALL BE FULLY RATED TO INTERRUPT SYMMETRICAL SHORT CIRCUIT CURRENT AVAILA

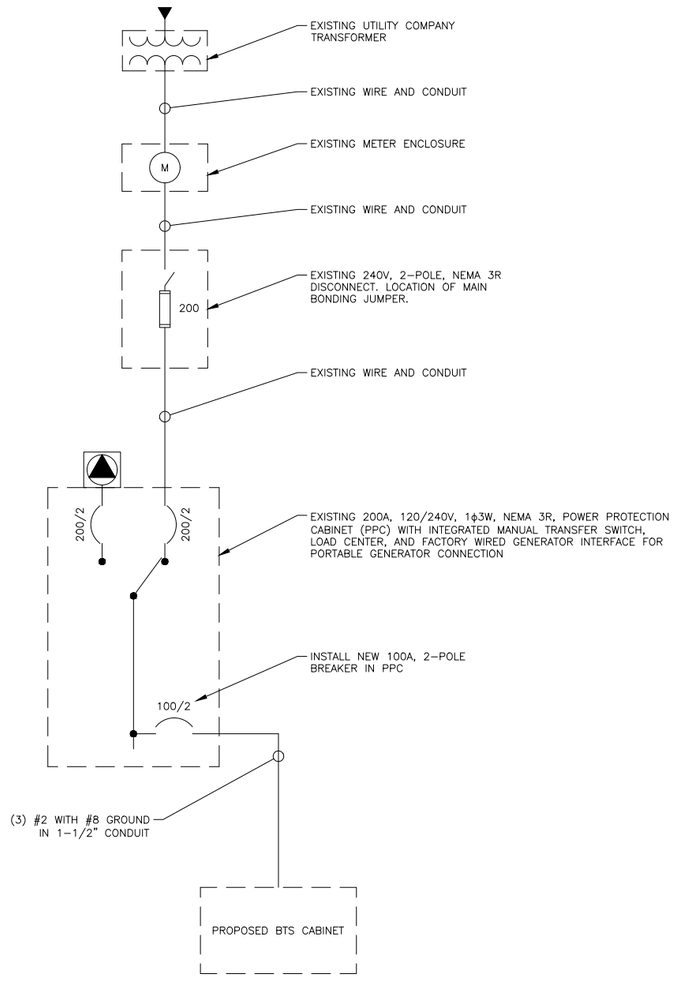
KEY NOTES:

1. PROVIDE NEW 2 POLE, 100AMP CIRCUIT BREAKER FOR BTS CABINET. CIRCUIT BREAKER OCCUPIES 4 SPACES. SEE ONE LINE DIAGRAM FOR ADDITIONAL INFORMATION.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

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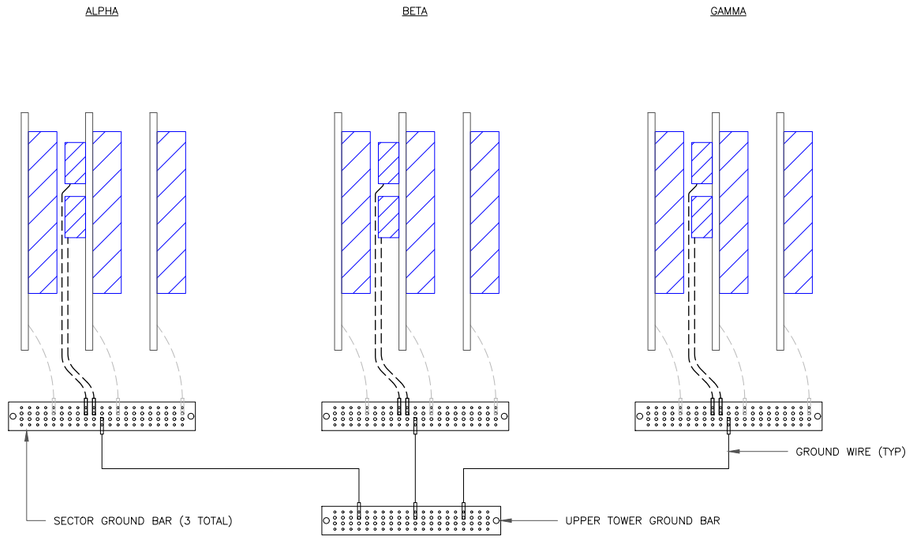
STATE OF CONNECTICUT JOHN B. BOSCO No. 25605 LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: E-1

REVISION: A



NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA
FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

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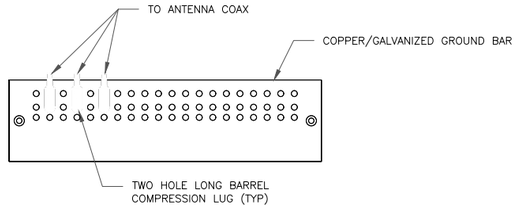
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: G-1

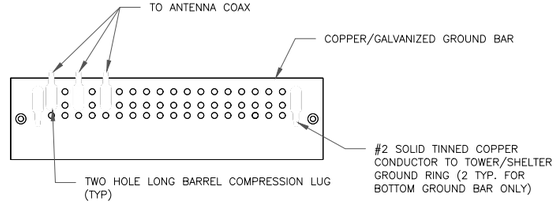
REVISION: A



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.

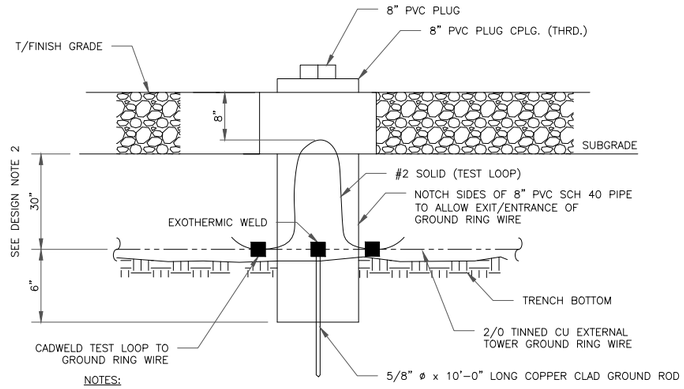
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

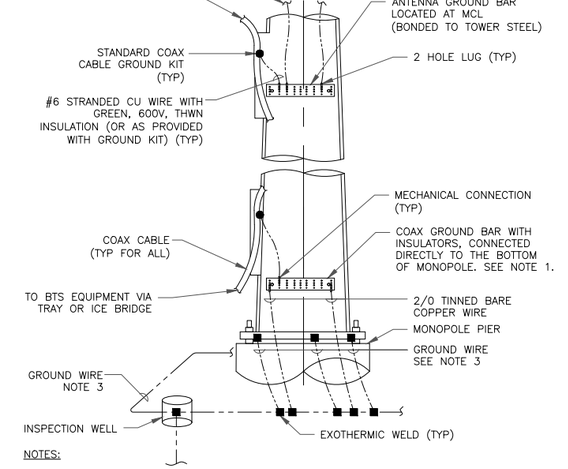
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

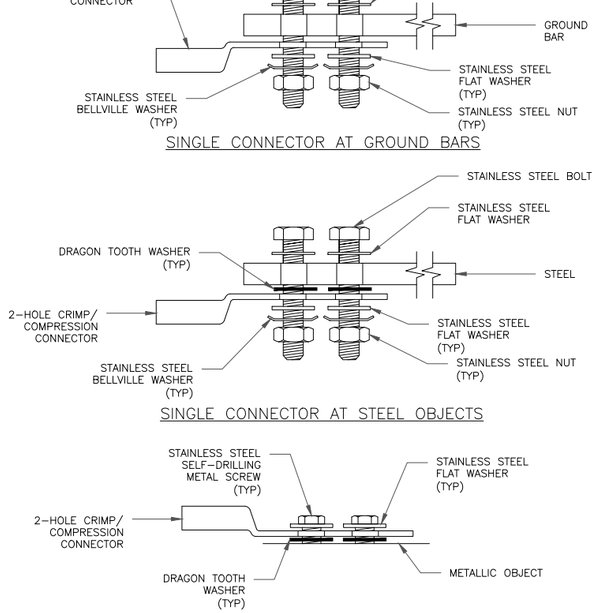
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



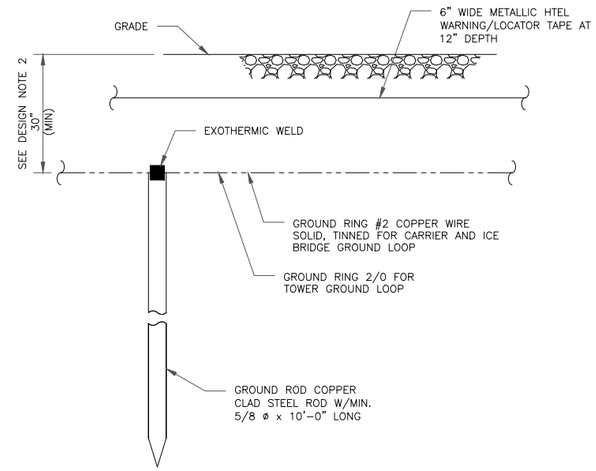
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
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GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

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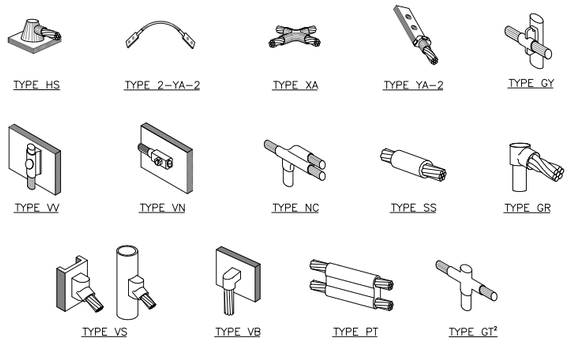
STATE OF CONNECTICUT * JOHN B. BOSCO * No. 25605 LICENSED PROFESSIONAL ENGINEER *

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: G-2

REVISION: A

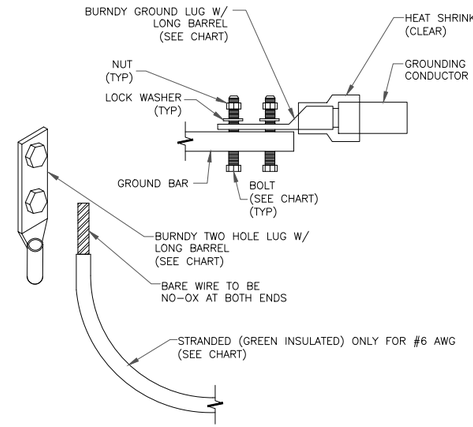


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

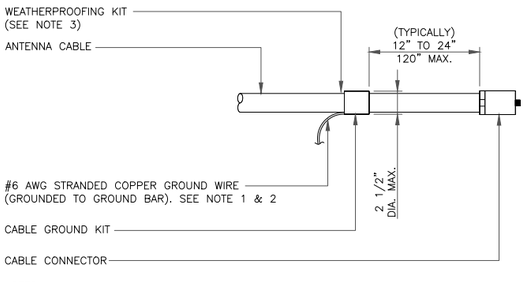
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. 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.

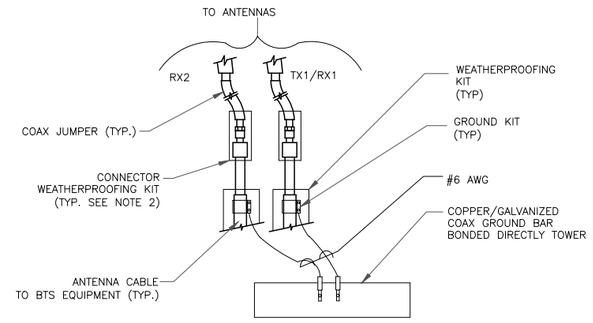
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

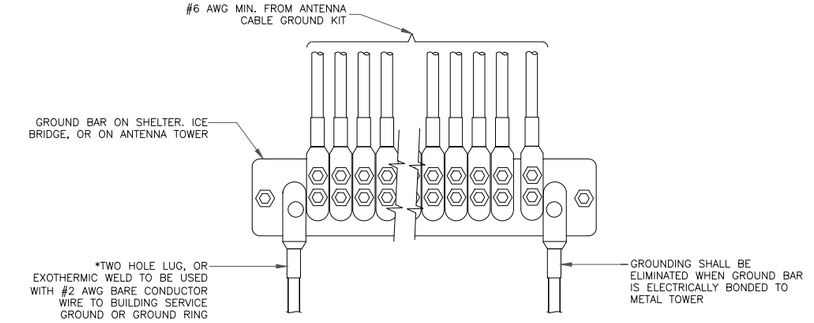
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



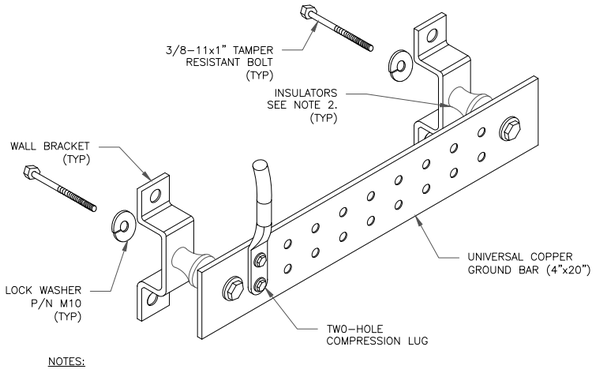
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



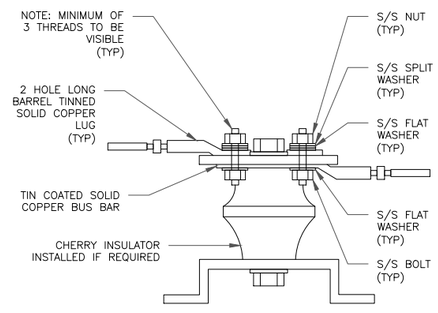
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



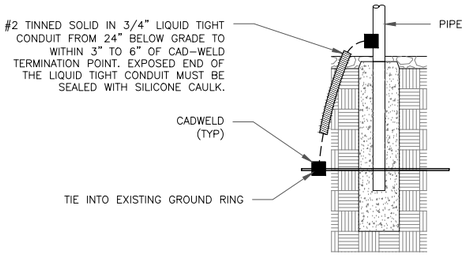
NOTES:

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.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

FPA FRENCH & PARRELLO ASSOCIATES
1600 Route 34, Suite 101 • Wall, New Jersey 07719
t: 732.312.9600 f: 732.312.9601

T-MOBILE SITE NUMBER:
CT11428A

BU #: **881533**
GROTON TOWER

75 ROBERTS ROAD
GROTON, CT 06340

EXISTING 145'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/15/21	C.J.R.	PRELIMINARY	P.J.T.

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS A SIGNED AND SEALED DOCUMENT

STATE OF CONNECTICUT * JOHN B. BOSCO * No. 25605 LICENSED PROFESSIONAL ENGINEER

JOHN BOSCO, PE LIC. NO. 25605

SHEET NUMBER: G-3

REVISION: A

Exhibit D

Structural Analysis Report

Date: **February 24, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CT11428A
Crown Castle Designation:	**BU Number:**	881533
	Site Name:	Groton Tower
	JDE Job Number:	634986
	Work Order Number:	1926924
	Order Number:	544400 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	92739.017.01
Site Data:	**75 Roberts Road, Groton, New London County, CT**	
	Latitude *41° 21' 36.8"*, Longitude *-72° 2' 55.1"*	
	144.5 Foot - Monopole	

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:

LC5: Proposed Equipment Configuration **Sufficient Capacity - 93.0%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Kishore Machani

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

Chad E. Tuttle, P.E.

tnxTower Report - version 8.0.7.5

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 144.5 ft Monopole designed by Engineered Endeavors, Inc. in January of 2001.

This monopole has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
128.0	128.0	3	Ericsson	AIR 32 B2A B66AA_T-MOBILE	3	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4415 B25_TMO		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
		1	--	Platform Mount [LP 601-1]		
		1	Site Pro 1	HRK-12		

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)
147.0	147.0	6	Ericsson	RRUS 11	12 6 2	1-5/8 3/4 3/8
		3	Ericsson	RRUS 32		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 4478 B5		
		6	Kaelus	DBCT108F1V92-1		
		6	Powerwave Tech.	7020.00		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		
		1	--	Platform Mount [LP 602-1]		
	146.0	1	Andrew	SBNH-1D6565C		
		3	Kathrein	840370799		
		2	Kmw Comm.	AM-X-CD-17-65-00T-RET		
		1	Raycap	DC6-48-60-0-8F		
		2	Raycap	DC6-48-60-18-8F		
135.0	135.0	3	Alcatel Lucent	B66A RRH4X45	6	1-5/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	Alcatel Lucent	RRH2X60-700	2	1-1/4
		3	Alcatel Lucent	RRH2X60-PCS		
		3	Amphenol	QUAD656C0000X		
		3	Andrew	LNX-6512DS-VTM		
		6	Commscope	HBXX-6517DS-A2M		
		2	RFS Celwave	DB-T1-6Z-8AB-0Z		
		1	--	Platform Mount [LP 601-1]		
118.0	118.0	3	Alcatel Lucent	TD-RRH8X20-25	3 1	1-1/4 5/8
		3	RFS Celwave	APXVSPP18-C-A20		
		3	RFS Celwave	APXVTM14-C-120		
		1	--	Platform Mount [LP 601-1]		
108.0	108.0	3	Alcatel Lucent	TME-PCS 1900MHz 4x45W-65MHz	--	--
		1	--	Side Arm Mount [SO 102-3]		
	106.0	3	Alcatel Lucent	TME-800MHz 2X50W RRH W/FILTER		
103.0	103.0	1	--	Platform Mount [LP 601-1]	--	--

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	1405782	CCI Sites
Mount Analysis Report	9628252	CCI Sites
Tower Modification Drawing	2048224	CCI Sites
Post Modification Inspection	2304223	CCI Sites
Tower Modification Drawing	2353860	CCI Sites
Post Modification Inspection	2435103	CCI Sites
Tower Modification Drawing	4491288	CCI Sites
Post Modification Inspection	5246681	CCI Sites
Tower Modification Drawing	5795331	CCI Sites
Post Modification Inspection	6017666	CCI Sites
Tower Modification Drawing	5944786	CCI Sites
Post Modification Inspection	6089847	CCI Sites
Tower Modification Drawing	6708152	CCI Sites
Post Modification Inspection	7137178	CCI Sites
Tower Modification Drawing	7042669	CCI Sites
Post Modification Inspection	7262385	CCI Sites
Foundation Drawing	1405796	CCI Sites
Geotech Report	1406209	CCI Sites
Crown CAD Package	Date: 02/12/2021	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.7.5), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

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	144.5 - 139.5	Pole	TP22.092x21x0.1875	1	-3.684	--	18.2	Pass
L2	139.5 - 134.5	Pole	TP23.184x22.092x0.1875	2	-6.369	--	30.0	Pass
L3	134.5 - 129.5	Pole	TP24.276x23.184x0.1875	3	-7.075	--	47.3	Pass
L4	129.5 - 124.5	Pole	TP25.368x24.276x0.1875	4	-10.669	--	67.3	Pass
L5	124.5 - 121.41	Pole	TP26.882x25.368x0.1875	5	-11.080	--	79.2	Pass
L6	121.41 - 116.41	Pole	TP26.737x25.668x0.25	6	-14.008	--	68.8	Pass
L7	116.41 - 112.58	Pole	TP27.555x26.737x0.25	7	-14.664	--	78.7	Pass
L8	112.58 - 112.33	Pole	TP27.608x27.555x0.25	8	-14.736	--	79.3	Pass
L9	112.33 - 107.33	Pole	TP28.677x27.608x0.25	9	-16.081	--	90.9	Pass
L10	107.33 - 106.92	Pole	TP28.765x28.677x0.25	10	-16.178	--	91.8	Pass
L11	106.92 - 106.67	Pole + Reinf.	TP28.818x28.765x0.5375	11	-16.249	--	76.9	Pass
L12	106.67 - 103.5	Pole + Reinf.	TP29.496x28.818x0.525	12	-17.031	--	83.1	Pass
L13	103.5 - 103.25	Pole + Reinf.	TP29.549x29.496x0.525	13	-17.108	--	83.6	Pass
L14	103.25 - 98.5	Pole + Reinf.	TP30.564x29.549x0.5125	14	-19.802	--	93.0	Pass
L15	98.5 - 98.25	Pole + Reinf.	TP30.618x30.564x0.675	15	-19.899	--	71.8	Pass
L16	98.25 - 97.58	Pole + Reinf.	TP30.761x30.618x0.675	16	-20.100	--	72.8	Pass
L17	97.58 - 97.33	Pole + Reinf.	TP30.815x30.761x0.5625	17	-20.176	--	82.8	Pass
L18	97.33 - 92.33	Pole + Reinf.	TP31.883x30.815x0.55	18	-21.572	--	90.7	Pass
L19	92.33 - 91.74	Pole + Reinf.	TP32.997x31.883x0.55	19	-21.749	--	91.6	Pass
L20	91.74 - 86.12	Pole	TP32.72x31.509x0.375	20	-23.968	--	84.1	Pass
L21	86.12 - 83	Pole	TP33.392x32.72x0.375	21	-24.769	--	86.5	Pass
L22	83 - 82.75	Pole	TP33.446x33.392x0.375	22	-24.859	--	86.7	Pass
L23	82.75 - 77.75	Pole	TP34.523x33.446x0.375	23	-26.155	--	90.1	Pass
L24	77.75 - 77.25	Pole	TP34.631x34.523x0.375	24	-26.305	--	90.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L25	77.25 - 77	Pole + Reinf.	TP34.685x34.631x0.825	25	-26.419	--	67.2	Pass
L26	77 - 76.75	Pole + Reinf.	TP34.738x34.685x0.6375	26	-26.504	--	85.6	Pass
L27	76.75 - 71.75	Pole + Reinf.	TP35.816x34.738x0.625	27	-28.214	--	89.4	Pass
L28	71.75 - 69	Pole + Reinf.	TP36.408x35.816x0.625	28	-29.171	--	91.4	Pass
L29	69 - 68.75	Pole + Reinf.	TP36.462x36.408x0.8	29	-29.299	--	72.6	Pass
L30	68.75 - 63.75	Pole + Reinf.	TP37.539x36.462x0.7875	30	-31.384	--	75.5	Pass
L31	63.75 - 60	Pole + Reinf.	TP38.347x37.539x0.775	31	-32.977	--	77.6	Pass
L32	60 - 59.75	Pole + Reinf.	TP38.401x38.347x0.775	32	-33.101	--	77.7	Pass
L33	59.75 - 58.5	Pole + Reinf.	TP38.67x38.401x0.775	33	-33.622	--	78.4	Pass
L34	58.5 - 58.25	Pole + Reinf.	TP38.724x38.67x0.775	34	-33.746	--	78.5	Pass
L35	58.25 - 58	Pole + Reinf.	TP38.778x38.724x0.775	35	-33.854	--	78.7	Pass
L36	58 - 57.75	Pole + Reinf.	TP38.832x38.778x0.6125	36	-33.956	--	89.6	Pass
L37	57.75 - 56.75	Pole + Reinf.	TP39.047x38.832x0.6125	37	-34.351	--	90.2	Pass
L38	56.75 - 56.5	Pole + Reinf.	TP39.101x39.047x0.7375	38	-34.477	--	81.9	Pass
L39	56.5 - 51.5	Pole + Reinf.	TP40.178x39.101x0.725	39	-36.663	--	84.3	Pass
L40	51.5 - 47.82	Pole + Reinf.	TP42.216x40.178x0.7125	40	-38.301	--	85.9	Pass
L41	47.82 - 41.04	Pole + Reinf.	TP41.678x40.221x0.7875	41	-43.635	--	83.5	Pass
L42	41.04 - 36.04	Pole + Reinf.	TP42.753x41.678x0.7875	42	-46.069	--	85.1	Pass
L43	36.04 - 31.25	Pole + Reinf.	TP43.783x42.753x0.7625	43	-48.433	--	86.6	Pass
L44	31.25 - 31	Pole + Reinf.	TP43.836x43.783x0.65	44	-48.572	--	85.2	Pass
L45	31 - 27.75	Pole + Reinf.	TP44.535x43.836x0.65	45	-50.159	--	82.8	Pass
L46	27.75 - 27.5	Pole + Reinf.	TP44.589x44.535x0.65	46	-50.300	--	82.9	Pass
L47	27.5 - 27.25	Pole + Reinf.	TP44.642x44.589x0.65	47	-50.425	--	82.9	Pass
L48	27.25 - 27	Pole + Reinf.	TP44.696x44.642x0.725	48	-50.549	--	84.5	Pass
L49	27 - 22	Pole + Reinf.	TP45.771x44.696x0.7125	49	-53.013	--	85.7	Pass
L50	22 - 17	Pole + Reinf.	TP46.846x45.771x0.7125	50	-55.523	--	86.8	Pass
L51	17 - 12	Pole + Reinf.	TP47.921x46.846x0.7125	51	-58.064	--	87.9	Pass
L52	12 - 7	Pole + Reinf.	TP48.995x47.921x0.7125	52	-60.636	--	88.8	Pass
L53	7 - 2	Pole + Reinf.	TP50.07x48.995x0.7	53	-63.242	--	89.6	Pass
L54	2 - 0	Pole + Reinf.	TP50.5x50.07x0.7	54	-64.295	--	89.9	Pass
							Summary	
						Pole (L10)	91.8	Pass
						Reinforcement	93.0	Pass
						Rating =	93.0	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	78.9	Pass
1,2	Base Plate	Base	81.9	Pass
1,2	Base Foundation (Structure)	Base	28.7	Pass
1,2	Base Foundation (Soil Interaction)	Base	60.0	Pass
1,2	Concrete Breakout	Base	90.7	Pass

Structure Rating (max from all components) =	93.0%

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.

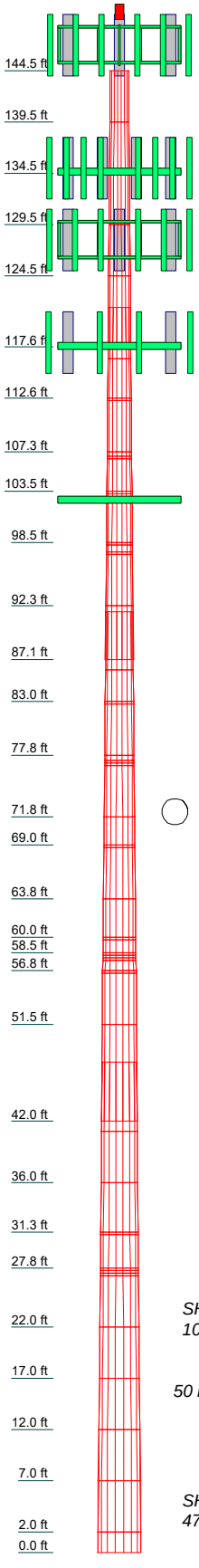
4.1) Recommendations

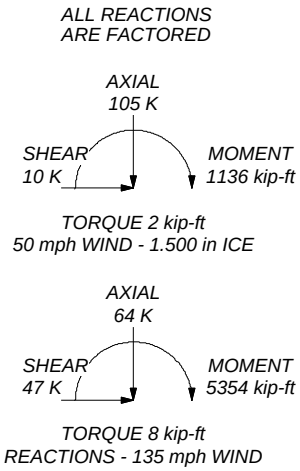
The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	2.000
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.188	0.188	0.188	0.188	0.188	0.250	0.250	0.250	0.250	0.250	0.250	0.500	0.500	0.500	0.500	0.500	0.500	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.625	0.625	0.625	0.787	0.787	0.787	0.787	0.787	0.787	0.787	0.787	0.725	0.713	0.787	0.787	0.762	0.762	0.762	0.762	0.762	0.762	0.713	0.713	0.713	0.713	0.700	0.700
Socket Length (ft)					3.841														4.625																					5.776																			
Top Dia (in)	21.000	22.092	23.184	24.276	25.368	26.882	27.976	29.069	30.163	31.257	32.350	33.444	34.538	35.631	36.725	37.819	38.913	30.883	31.883	32.997	34.111	35.225	36.339	37.453	38.567	39.681	34.734	35.835	36.936	36.462	37.539	38.647	39.755	40.863	41.971	43.079	44.187	39.109	40.178	41.221	42.301	41.674	42.753	43.833	44.912	45.992	47.071	45.771	46.846	47.921	48.995	48.995	50.070
Bot Dia (in)	22.092	23.184	24.276	25.368	26.882	27.976	29.069	30.163	31.257	32.350	33.444	34.538	35.631	36.725	37.819	38.913	30.883	31.883	32.997	34.111	35.225	36.339	37.453	38.567	39.681	40.835	35.935	36.936	37.947	37.539	38.647	39.755	40.863	41.971	43.079	44.187	45.295	40.178	42.215	41.678	42.758	42.753	43.833	44.912	45.992	47.071	48.150	46.846	47.921	48.995	50.070	50.070	51.144
Grade	A572-65																																																											
Weight (K)	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.7	0.1	0.9	0.9	0.7	0.9	0.7	0.4	0.0	0.7	0.1	1.1	0.6	1.5	0.0	1.1	0.0	0.1	1.5	0.0	3.0	2.3	1.7	1.7	1.1	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.7





MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 135 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 93%

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

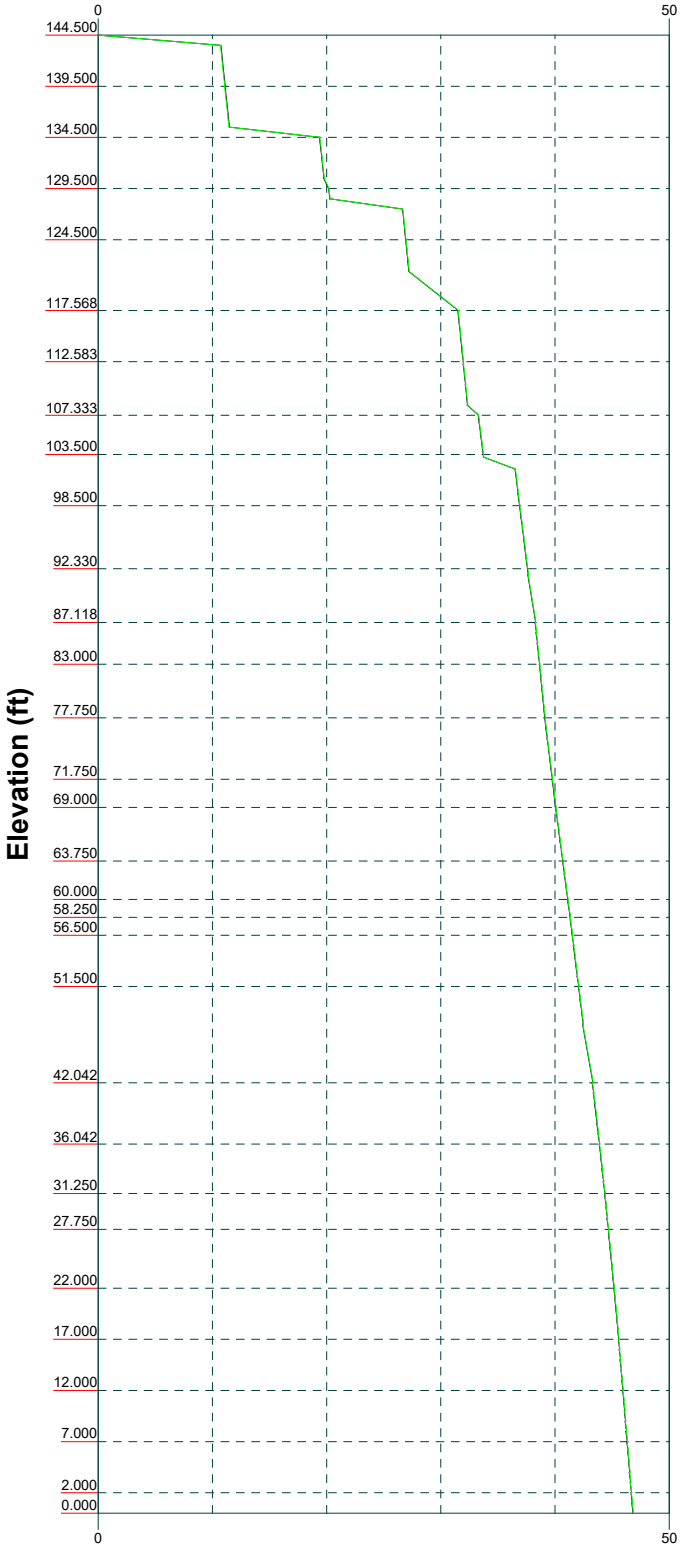
Job: 92739.017.01 - GROTON TOWER, CT (BU# 881533			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 02/18/21	Scale: NTS	
Path: E:\Jobs\Pending\92739_881533_Groton Tower\---Jaydev---Raghu\92739_017_01_CCIpole\92739_017_01_GROTON TOWER_CT_Modified.eri		Dwg No. E-1	

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

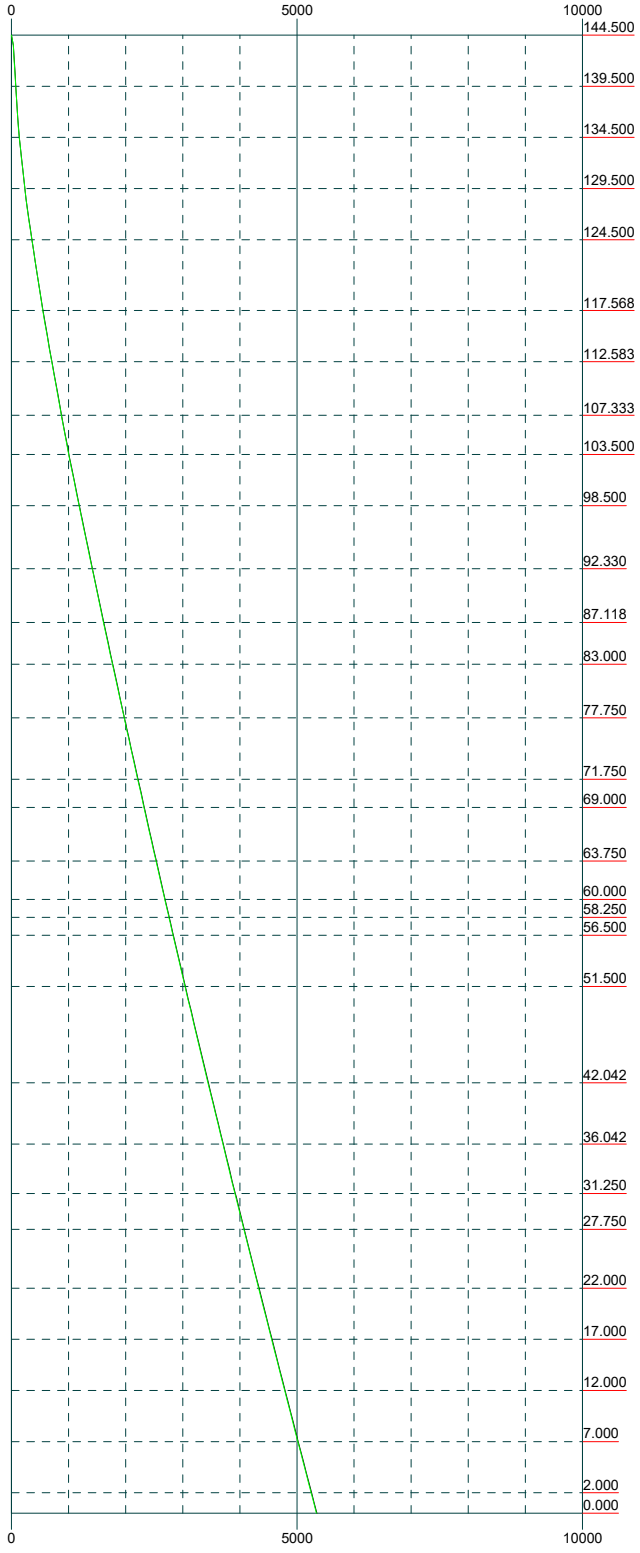
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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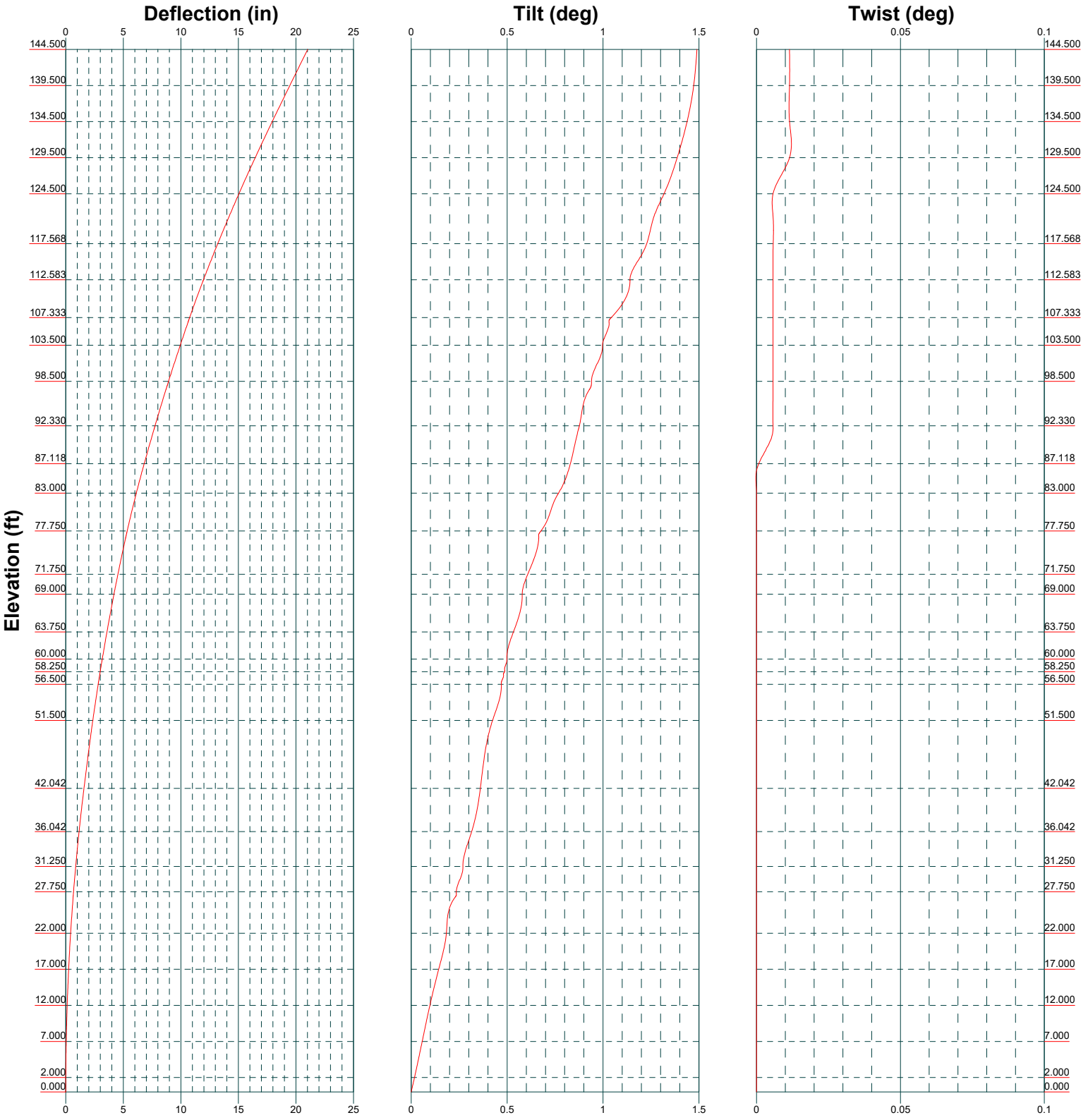
Job: 92739.017.01 - GROTON TOWER, CT (BU# 881533			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 02/18/21	Scale: NTS	
Path: E:\Jobs\Pending\92739_881533_Groton Tower\---Jaydev---Raghu\92739_017_01_CC\pole\92739_017_01_GROTON TOWER_CT_Modified.eri		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



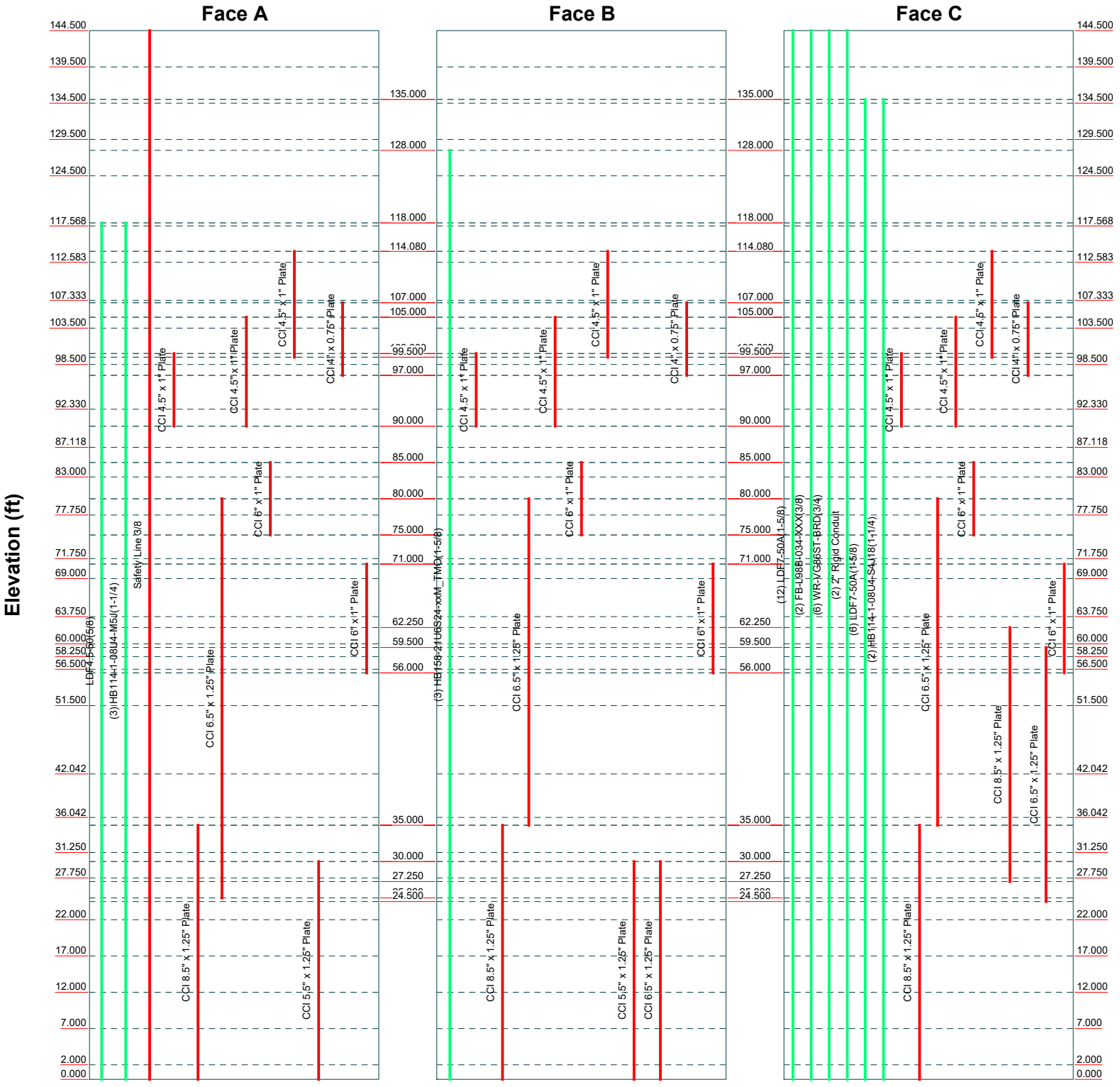
B+T GRP

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

Job: ***92739.017.01 - GROTON TOWER, CT (BU# 881533***			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu	App'd:	
Code: TIA-222-H	Date: 02/18/21	Scale: NTS	
Path: E:\Jobs\Pending\92739_881533_Groton Tower\----Jaydev----Raghu\92739_017_01_CC\pole\92739_017_01_GROTON TOWER_CT_Modified.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 144'6"

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



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Job: **92739.017.01 - GROTON TOWER, CT (BU# 881533**			
Project:			
Client: Crown Castle	Drawn by: JD Prabhu		App'd:
Code: TIA-222-H	Date: 02/18/21		Scale: NTS
Path: E:\Jobs\Pending\92739_881533_Groton Tower\----Jaydev----Raghu\92739_017_01_CCIpole\92739_017_01_GROTON TOWER_CT_Modified.eri			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 London County, Connecticut.
Tower base elevation above sea level: 128.000 ft.
Basic wind speed of 135 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 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
TOWER RATING: 93%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	144.500-139.500	5.000	0.000	18	21.000	22.092	0.188	0.750	A572-65 (65 ksi)
L2	139.500-134.500	5.000	0.000	18	22.092	23.184	0.188	0.750	A572-65 (65 ksi)
L3	134.500-129.500	5.000	0.000	18	23.184	24.276	0.188	0.750	A572-65 (65 ksi)
L4	129.500-124.500	5.000	0.000	18	24.276	25.368	0.188	0.750	A572-65 (65 ksi)
L5	124.500-117.568	6.932	3.841	18	25.368	26.882	0.188	0.750	A572-65 (65 ksi)
L6	117.568-116.409	5.000	0.000	18	25.668	26.737	0.250	1.000	A572-65 (65 ksi)
L7	116.409-112.583	3.826	0.000	18	26.737	27.555	0.250	1.000	A572-65 (65 ksi)
L8	112.583-112.333	0.250	0.000	18	27.555	27.608	0.250	1.000	A572-65 (65 ksi)
L9	112.333-107.333	5.000	0.000	18	27.608	28.677	0.250	1.000	A572-65 (65 ksi)
L10	107.333-106.920	0.413	0.000	18	28.677	28.765	0.250	1.000	A572-65 (65 ksi)
L11	106.920-106.670	0.250	0.000	18	28.765	28.818	0.537	2.150	A572-65 (65 ksi)
L12	106.670-103.500	3.170	0.000	18	28.818	29.496	0.525	2.100	A572-65 (65 ksi)
L13	103.500-103.250	0.250	0.000	18	29.496	29.549	0.525	2.100	A572-65 (65 ksi)
L14	103.250-98.500	4.750	0.000	18	29.549	30.564	0.512	2.050	A572-65 (65 ksi)
L15	98.500-98.250	0.250	0.000	18	30.564	30.618	0.675	2.700	A572-65 (65 ksi)
L16	98.250-97.580	0.670	0.000	18	30.618	30.761	0.675	2.700	A572-65 (65 ksi)
L17	97.580-97.330	0.250	0.000	18	30.761	30.815	0.563	2.250	A572-65 (65 ksi)
L18	97.330-92.330	5.000	0.000	18	30.815	31.883	0.550	2.200	A572-65 (65 ksi)
L19	92.330-87.118	5.212	4.625	18	31.883	32.997	0.550	2.200	A572-65 (65 ksi)
L20	87.118-86.118	5.625	0.000	18	31.509	32.720	0.375	1.500	A572-65 (65 ksi)
L21	86.118-83.000	3.118	0.000	18	32.720	33.392	0.375	1.500	A572-65 (65 ksi)
L22	83.000-82.750	0.250	0.000	18	33.392	33.446	0.375	1.500	A572-65 (65 ksi)
L23	82.750-77.750	5.000	0.000	18	33.446	34.523	0.375	1.500	A572-65 (65 ksi)
L24	77.750-77.250	0.500	0.000	18	34.523	34.631	0.375	1.500	A572-65 (65 ksi)
L25	77.250-77.000	0.250	0.000	18	34.631	34.685	0.825	3.300	A572-65 (65 ksi)
L26	77.000-76.750	0.250	0.000	18	34.685	34.738	0.637	2.550	A572-65 (65 ksi)
L27	76.750-71.750	5.000	0.000	18	34.738	35.816	0.625	2.500	A572-65 (65 ksi)
L28	71.750-69.000	2.750	0.000	18	35.816	36.408	0.625	2.500	A572-65 (65 ksi)
L29	69.000-68.750	0.250	0.000	18	36.408	36.462	0.800	3.200	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L30	68.750-63.750	5.000	0.000	18	36.462	37.539	0.787	3.150	A572-65 (65 ksi)
L31	63.750-60.000	3.750	0.000	18	37.539	38.347	0.775	3.100	A572-65 (65 ksi)
L32	60.000-59.750	0.250	0.000	18	38.347	38.401	0.775	3.100	A572-65 (65 ksi)
L33	59.750-58.500	1.250	0.000	18	38.401	38.670	0.775	3.100	A572-65 (65 ksi)
L34	58.500-58.250	0.250	0.000	18	38.670	38.724	0.775	3.100	A572-65 (65 ksi)
L35	58.250-58.000	0.250	0.000	18	38.724	38.778	0.775	3.100	A572-65 (65 ksi)
L36	58.000-57.750	0.250	0.000	18	38.778	38.832	0.613	2.450	A572-65 (65 ksi)
L37	57.750-56.750	1.000	0.000	18	38.832	39.047	0.613	2.450	A572-65 (65 ksi)
L38	56.750-56.500	0.250	0.000	18	39.047	39.101	0.738	2.950	A572-65 (65 ksi)
L39	56.500-51.500	5.000	0.000	18	39.101	40.178	0.725	2.900	A572-65 (65 ksi)
L40	51.500-42.042	9.458	5.776	18	40.178	42.215	0.713	2.850	A572-65 (65 ksi)
L41	42.042-41.042	6.776	0.000	18	40.221	41.678	0.787	3.150	A572-65 (65 ksi)
L42	41.042-36.042	5.000	0.000	18	41.678	42.753	0.787	3.150	A572-65 (65 ksi)
L43	36.042-31.250	4.792	0.000	18	42.753	43.783	0.762	3.050	A572-65 (65 ksi)
L44	31.250-31.000	0.250	0.000	18	43.783	43.836	0.650	2.600	A572-65 (65 ksi)
L45	31.000-27.750	3.250	0.000	18	43.836	44.535	0.650	2.600	A572-65 (65 ksi)
L46	27.750-27.500	0.250	0.000	18	44.535	44.589	0.650	2.600	A572-65 (65 ksi)
L47	27.500-27.250	0.250	0.000	18	44.589	44.642	0.650	2.600	A572-65 (65 ksi)
L48	27.250-27.000	0.250	0.000	18	44.642	44.696	0.725	2.900	A572-65 (65 ksi)
L49	27.000-22.000	5.000	0.000	18	44.696	45.771	0.713	2.850	A572-65 (65 ksi)
L50	22.000-17.000	5.000	0.000	18	45.771	46.846	0.713	2.850	A572-65 (65 ksi)
L51	17.000-12.000	5.000	0.000	18	46.846	47.921	0.713	2.850	A572-65 (65 ksi)
L52	12.000-7.000	5.000	0.000	18	47.921	48.995	0.713	2.850	A572-65 (65 ksi)
L53	7.000-2.000	5.000	0.000	18	48.995	50.070	0.700	2.800	A572-65 (65 ksi)
L54	2.000-0.000	2.000		18	50.070	50.500	0.700	2.800	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	21.295	12.386	677.826	7.388	10.668	63.538	1356.544	6.194	3.366	17.952

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
	22.404	13.036	790.221	7.776	11.223	70.412	1581.483	6.519	3.558	18.977
L2	22.404	13.036	790.221	7.776	11.223	70.412	1581.483	6.519	3.558	18.977
	23.513	13.686	914.401	8.164	11.778	77.640	1830.006	6.844	3.750	20.002
L3	23.513	13.686	914.401	8.164	11.778	77.640	1830.006	6.844	3.750	20.002
	24.622	14.336	1050.954	8.551	12.332	85.220	2103.290	7.169	3.943	21.027
L4	24.622	14.336	1050.954	8.551	12.332	85.220	2103.290	7.169	3.943	21.027
	25.731	14.986	1200.465	8.939	12.887	93.153	2402.511	7.494	4.135	22.052
L5	25.731	14.986	1200.465	8.939	12.887	93.153	2402.511	7.494	4.135	22.052
	27.268	15.887	1430.295	9.477	13.656	104.736	2862.472	7.945	4.401	23.474
L6	26.859	20.169	1646.369	9.024	13.040	126.260	3294.904	10.087	4.078	16.311
	27.111	21.017	1862.865	9.403	13.582	137.153	3728.181	10.511	4.266	17.063
L7	27.111	21.017	1862.865	9.403	13.582	137.153	3728.181	10.511	4.266	17.063
	27.941	21.666	2040.766	9.693	13.998	145.792	4084.218	10.835	4.410	17.638
L8	27.941	21.666	2040.766	9.693	13.998	145.792	4084.218	10.835	4.410	17.638
	27.995	21.709	2052.770	9.712	14.025	146.366	4108.241	10.856	4.419	17.676
L9	27.995	21.709	2052.770	9.712	14.025	146.366	4108.241	10.856	4.419	17.676
	29.080	22.557	2302.832	10.091	14.568	158.077	4608.695	11.280	4.607	18.428
L10	29.080	22.557	2302.832	10.091	14.568	158.077	4608.695	11.280	4.607	18.428
	29.170	22.627	2324.350	10.123	14.613	159.065	4651.759	11.315	4.623	18.491
L11	29.126	48.157	4847.716	10.021	14.613	331.749	9701.811	24.083	4.117	7.659
	29.180	48.248	4875.296	10.040	14.640	333.018	9757.007	24.129	4.126	7.676
L12	29.182	47.147	4768.234	10.044	14.640	325.705	9542.743	23.578	4.148	7.901
	29.870	48.276	5119.035	10.285	14.984	341.636	10244.805	24.142	4.267	8.128
L13	29.870	48.276	5119.035	10.285	14.984	341.636	10244.805	24.142	4.267	8.128
	29.924	48.365	5147.410	10.304	15.011	342.908	10301.593	24.187	4.277	8.146
L14	29.926	47.233	5031.348	10.308	15.011	335.176	10069.315	23.621	4.299	8.388
	30.957	48.885	5577.727	10.668	15.527	359.233	11162.794	24.447	4.477	8.736
L15	30.932	64.037	7227.748	10.611	15.527	465.503	14465.006	32.024	4.191	6.209
	30.986	64.151	7266.578	10.630	15.554	467.187	14542.718	32.082	4.201	6.223
L16	30.986	64.151	7266.578	10.630	15.554	467.187	14542.718	32.082	4.201	6.223
	31.132	64.458	7371.329	10.681	15.627	471.716	14752.357	32.235	4.226	6.261
L17	31.149	53.916	6211.940	10.721	15.627	397.523	12432.055	26.963	4.424	7.865
	31.203	54.011	6244.971	10.739	15.654	398.943	12498.160	27.011	4.433	7.882
L18	31.205	52.833	6113.766	10.744	15.654	390.562	12235.577	26.421	4.455	8.101
	32.290	54.698	6784.514	11.123	16.197	418.884	13577.956	27.354	4.643	8.443
L19	32.290	54.698	6784.514	11.123	16.197	418.884	13577.956	27.354	4.643	8.443
	33.421	56.643	7534.158	11.519	16.763	449.464	15078.230	28.327	4.839	8.799
L20	32.949	37.057	4538.007	11.052	16.006	283.512	9081.986	18.532	4.886	13.028
	33.167	38.499	5088.777	11.483	16.622	306.148	10184.250	19.253	5.099	13.597
L21	33.167	38.499	5088.777	11.483	16.622	306.148	10184.250	19.253	5.099	13.597
	33.849	39.299	5412.411	11.721	16.963	319.068	10831.944	19.653	5.217	13.912
L22	33.849	39.299	5412.411	11.721	16.963	319.068	10831.944	19.653	5.217	13.912
	33.904	39.363	5438.940	11.740	16.991	320.116	10885.037	19.685	5.226	13.937
L23	33.904	39.363	5438.940	11.740	16.991	320.116	10885.037	19.685	5.226	13.937
	34.998	40.645	5987.880	12.123	17.538	341.429	11983.639	20.326	5.416	14.443
L24	34.998	40.645	5987.880	12.123	17.538	341.429	11983.639	20.326	5.416	14.443
	35.107	40.773	6044.721	12.161	17.592	343.598	12097.396	20.390	5.435	14.493
L25	35.038	88.522	12781.159	12.001	17.592	726.515	25579.137	44.269	4.643	5.628
	35.092	88.663	12842.342	12.020	17.620	728.859	25701.583	44.340	4.652	5.639
L26	35.121	68.892	10089.401	12.087	17.620	572.618	20192.078	34.452	4.982	7.816
	35.176	69.001	10137.356	12.106	17.647	574.447	20288.050	34.507	4.992	7.831
L27	35.178	67.673	9949.517	12.110	17.647	563.803	19912.126	33.843	5.014	8.022
	36.272	69.809	10922.052	12.493	18.194	600.300	21858.476	34.911	5.204	8.326
L28	36.272	69.809	10922.052	12.493	18.194	600.300	21858.476	34.911	5.204	8.326
	36.873	70.985	11482.996	12.703	18.495	620.861	22981.101	35.499	5.308	8.492
L29	36.846	90.416	14483.639	12.641	18.495	783.100	28986.335	45.217	5.000	6.25
	36.901	90.553	14549.457	12.660	18.523	785.496	29118.058	45.285	5.009	6.262
L30	36.903	89.169	14337.187	12.664	18.523	774.036	28693.239	44.593	5.031	6.389
	37.997	91.861	15675.454	13.047	19.070	822.004	31371.535	45.939	5.221	6.63
L31	37.999	90.434	15442.384	13.051	19.070	809.782	30905.087	45.226	5.243	6.765
	38.819	92.421	16482.901	13.338	19.480	846.136	32987.491	46.219	5.385	6.948
L32	38.819	92.421	16482.901	13.338	19.480	846.136	32987.491	46.219	5.385	6.948

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
	38.874	92.554	16553.884	13.357	19.508	848.588	33129.550	46.286	5.395	6.961
L33	38.874	92.554	16553.884	13.357	19.508	848.588	33129.550	46.286	5.395	6.961
	39.147	93.216	16911.855	13.453	19.644	860.902	33845.963	46.617	5.442	7.022
L34	39.147	93.216	16911.855	13.453	19.644	860.902	33845.963	46.617	5.442	7.022
	39.202	93.348	16984.063	13.472	19.672	863.375	33990.474	46.683	5.451	7.034
L35	39.202	93.348	16984.063	13.472	19.672	863.375	33990.474	46.683	5.451	7.034
	39.256	93.481	17056.476	13.491	19.699	865.852	34135.396	46.749	5.461	7.046
L36	39.281	74.196	13653.782	13.549	19.699	693.118	27325.531	37.105	5.747	9.383
	39.336	74.301	13711.666	13.568	19.726	695.091	27441.374	37.157	5.756	9.398
L37	39.336	74.301	13711.666	13.568	19.726	695.091	27441.374	37.157	5.756	9.398
	39.555	74.720	13944.837	13.644	19.836	703.011	27908.023	37.367	5.794	9.46
L38	39.536	89.676	16627.429	13.600	19.836	838.251	33276.738	44.846	5.574	7.558
	39.590	89.802	16697.654	13.619	19.863	840.632	33417.279	44.909	5.584	7.571
L39	39.592	88.309	16430.693	13.623	19.863	827.192	32883.006	44.163	5.606	7.732
	40.686	90.787	17853.412	14.006	20.410	874.721	35730.317	45.402	5.795	7.994
L40	40.688	89.250	17562.277	14.010	20.410	860.457	35147.663	44.634	5.817	8.165
	42.757	93.858	20425.266	14.734	21.445	952.428	40877.407	46.938	6.176	8.668
L41	41.981	98.566	19364.112	13.999	20.432	947.717	38753.704	49.292	5.693	7.229
	42.199	102.206	21590.086	14.516	21.172	1019.733	43208.582	51.113	5.949	7.555
L42	42.199	102.206	21590.086	14.516	21.172	1019.733	43208.582	51.113	5.949	7.555
	43.291	104.893	23337.694	14.898	21.718	1074.564	46706.096	52.456	6.138	7.795
L43	43.294	101.623	22637.224	14.906	21.718	1042.311	45304.234	50.821	6.182	8.108
	44.340	104.116	24344.325	15.272	22.242	1094.543	48720.684	52.068	6.364	8.346
L44	44.358	88.987	20915.773	15.312	22.242	940.392	41859.068	44.502	6.562	10.095
	44.412	89.098	20994.048	15.331	22.269	942.754	42015.721	44.557	6.571	10.11
L45	44.412	89.098	20994.048	15.331	22.269	942.754	42015.721	44.557	6.571	10.11
	45.122	90.539	22029.462	15.579	22.624	973.732	44087.911	45.278	6.694	10.299
L46	45.122	90.539	22029.462	15.579	22.624	973.732	44087.911	45.278	6.694	10.299
	45.176	90.650	22110.490	15.598	22.651	976.136	44250.073	45.334	6.704	10.313
L47	45.176	90.650	22110.490	15.598	22.651	976.136	44250.073	45.334	6.704	10.313
	45.231	90.761	22191.716	15.617	22.678	978.542	44412.632	45.389	6.713	10.328
L48	45.219	101.061	24625.918	15.591	22.678	1085.878	49284.240	50.540	6.581	9.077
	45.274	101.184	24716.429	15.610	22.706	1088.559	49465.381	50.602	6.591	9.09
L49	45.276	99.468	24311.005	15.614	22.706	1070.703	48653.999	49.743	6.613	9.281
	46.367	101.899	26137.107	15.996	23.252	1124.098	52308.605	50.959	6.802	9.546
L50	46.367	101.899	26137.107	15.996	23.252	1124.098	52308.605	50.959	6.802	9.546
	47.458	104.329	28052.436	16.377	23.798	1178.791	56141.785	52.174	6.991	9.812
L51	47.458	104.329	28052.436	16.377	23.798	1178.791	56141.785	52.174	6.991	9.812
	48.550	106.760	30059.123	16.759	24.344	1234.784	60157.798	53.390	7.180	10.077
L52	48.550	106.760	30059.123	16.759	24.344	1234.784	60157.798	53.390	7.180	10.077
	49.641	109.190	32159.294	17.140	24.890	1292.077	64360.904	54.606	7.369	10.343
L53	49.643	107.302	31619.641	17.145	24.890	1270.395	63280.888	53.661	7.391	10.559
	50.735	109.690	33778.008	17.526	25.436	1327.981	67600.462	54.856	7.580	10.829
L54	50.735	109.690	33778.008	17.526	25.436	1327.981	67600.462	54.856	7.580	10.829
	51.171	110.646	34668.132	17.679	25.654	1351.373	69381.881	55.333	7.656	10.937

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 144.500-139.500				1	1	1			
L2 139.500-134.500				1	1	1			
L3 134.500-129.500				1	1	1			
L4				1	1	1			

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
129.500-124.500									
L5				1	1	1			
124.500-117.568									
L6				1	1	1			
117.568-116.409									
L7				1	1	1			
116.409-112.583									
L8				1	1	1			
112.583-112.333									
L9				1	1	1			
112.333-107.333									
L10				1	1	1			
107.333-106.920									
L11				1	1	0.936203			
106.920-106.670									
L12				1	1	0.946801			
106.670-103.500									
L13				1	1	0.945935			
103.500-103.250									
L14				1	1	0.952348			
103.250-98.500									
L15				1	1	0.936822			
98.500-98.250									
L16				1	1	0.934126			
98.250-97.580									
L17				1	1	0.94895			
97.580-97.330									
L18				1	1	0.952532			
97.330-92.330									
L19				1	1	0.950546			
92.330-87.118									
L20				1	1	1			
87.118-86.118									
L21				1	1	1			
86.118-83.000									
L22				1	1	1			
83.000-82.750									
L23				1	1	1			
82.750-77.750									
L24				1	1	1			
77.750-77.250									
L25				1	1	0.938536			
77.250-77.000									
L26				1	1	0.946033			
77.000-76.750									
L27				1	1	0.95344			
76.750-71.750									
L28				1	1	0.947589			

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
71.750-69.000									
L29				1	1	0.942313			
69.000-68.750									
L30				1	1	0.942845			
68.750-63.750									
L31				1	1	0.947538			
63.750-60.000									
L32				1	1	0.946874			
60.000-59.750									
L33				1	1	0.943584			
59.750-58.500									
L34				1	1	0.942932			
58.500-58.250									
L35				1	1	0.942281			
58.250-58.000									
L36				1	1	1.08713			
58.000-57.750									
L37				1	1	1.08446			
57.750-56.750									
L38				1	1	0.99352			
56.750-56.500									
L39				1	1	0.996859			
56.500-51.500									
L40				1	1	1.00442			
51.500-42.042									
L41				1	1	0.982267			
42.042-41.042									
L42				1	1	0.971338			
41.042-36.042									
L43				1	1	0.992321			
36.042-31.250									
L44				1	1	1.12535			
31.250-31.000									
L45				1	1	1.11815			
31.000-27.750									
L46				1	1	1.11761			
27.750-27.500									
L47				1	1	1.11706			
27.500-27.250									
L48				1	1	1.00273			
27.250-27.000									
L49				1	1	1.01034			
27.000-22.000									
L50				1	1	1.00111			
22.000-17.000									
L51				1	1	0.992299			
17.000-12.000									
L52				1	1	0.983878			
12.000-7.000									
L53				1	1	0.992999			
7.000-2.000									
L54				1	1	0.989822			
2.000-0.000									

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
*										
Safety Line 3/8	A	No	Surface Ar (CaAa)	144.500 - 0.000	1	1	0.490 0.500	0.375		0.000
*										
CCI 4.5" x 1" Plate	A	No	Surface Af (CaAa)	100.000 - 90.000	1	1	0.100 0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate	B	No	Surface Af (CaAa)	100.000 - 90.000	1	1	0.100 0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate	C	No	Surface Af (CaAa)	100.000 - 90.000	1	1	0.100 0.100	4.500	11.000	0.000
*										
CCI 8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	35.000 - 0.000	1	1	0.100 0.100	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	35.000 - 0.000	1	1	-0.250 -0.250	8.500	19.500	0.000
CCI 8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	35.000 - 0.000	1	1	-0.250 -0.250	8.500	19.500	0.000
*										
CCI 6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	80.000 - 25.000	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	80.000 - 35.000	1	1	-0.250 -0.250	6.500	15.500	0.000
CCI 6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	80.000 - 35.000	1	1	-0.250 -0.250	6.500	15.500	0.000
*										
CCI 4.5" x 1" Plate	A	No	Surface Af (CaAa)	105.000 - 90.000	1	1	-0.100 -0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate	B	No	Surface Af (CaAa)	105.000 - 90.000	1	1	-0.100 -0.100	4.500	11.000	0.000
CCI 4.5" x 1" Plate	C	No	Surface Af (CaAa)	105.000 - 90.000	1	1	-0.100 -0.100	4.500	11.000	0.000
*										
CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	85.000 - 75.000	1	1	0.100 0.100	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af (CaAa)	85.000 - 75.000	1	1	0.100 0.100	6.000	14.000	0.000
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	85.000 - 75.000	1	1	0.100 0.100	6.000	14.000	0.000
*										
CCI 4.5" x 1" Plate	A	No	Surface Af (CaAa)	114.080 - 99.500	1	1	0.450 0.450	4.500	11.000	0.000
CCI 4.5" x 1" Plate	B	No	Surface Af (CaAa)	114.080 - 99.500	1	1	0.450 0.450	4.500	11.000	0.000
CCI 4.5" x 1" Plate	C	No	Surface Af (CaAa)	114.080 - 99.500	1	1	0.450 0.450	4.500	11.000	0.000
*										
CCI 5.5" x 1.25" Plate	A	No	Surface Af (CaAa)	30.000 - 0.000	1	1	-0.450 -0.450	5.500	13.500	0.000
CCI 5.5" x 1.25" Plate	B	No	Surface Af (CaAa)	30.000 - 0.000	1	1	0.450 0.450	5.500	13.500	0.000
CCI 6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	30.000 - 0.000	1	1	-0.150 -0.150	6.500	15.500	0.000
*										
CCI 8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	62.250 - 27.250	1	1	0.250 0.250	8.500	19.500	0.000
*										
CCI 4" x 0.75" Plate	A	No	Surface Af (CaAa)	107.000 - 97.000	1	1	-0.250 -0.250	4.000	9.500	0.000
CCI 4" x 0.75" Plate	B	No	Surface Af	107.000 -	1	1	-0.250	4.000	9.500	0.000

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
			(CaAa)	97.000			-0.250			
CCI 4" x 0.75" Plate	C	No	Surface Af	107.000 -	1	1	-0.250	4.000	9.500	0.000
			(CaAa)	97.000			-0.250			
*										
CCI 6.5" x 1.25" Plate	C	No	Surface Af	59.500 -	1	1	0.000	6.500	15.500	0.000
			(CaAa)	24.500			0.000			
*										
CCI 6" x 1" Plate	A	No	Surface Af	71.000 -	1	1	0.000	6.000	14.000	0.000
			(CaAa)	56.000			0.000			
CCI 6" x 1" Plate	B	No	Surface Af	71.000 -	1	1	0.000	6.000	14.000	0.000
			(CaAa)	56.000			0.000			
CCI 6" x 1" Plate	C	No	Surface Af	71.000 -	1	1	0.000	6.000	14.000	0.000
			(CaAa)	56.000			0.000			
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF7-50A(1-5/8)	C	No	No	Inside Pole	144.500 - 0.000	12	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	144.500 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	144.500 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
2" Rigid Conduit	C	No	No	Inside Pole	144.500 - 0.000	2	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
*									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	135.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
HB114-1-08U4-S4J18(1-1/4)	C	No	No	Inside Pole	135.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
HB158-21U6S24-xxM_TMO(1-5/8)	B	No	No	Inside Pole	128.000 - 0.000	3	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
*									
LDF4.5-50(5/8)	A	No	No	Inside Pole	118.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
HB114-1-08U4-M5J	A	No	No	Inside Pole	118.000 - 0.000	3	No Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
(1-1/4)							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" 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	144.500-139.500	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.095
L2	139.500-134.500	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.099
L3	134.500-129.500	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.133
L4	129.500-124.500	A	0.000	0.000	0.188	0.000	0.001
		B	0.000	0.000	0.000	0.000	0.026
		C	0.000	0.000	0.000	0.000	0.133
L5	124.500-117.568	A	0.000	0.000	0.260	0.000	0.003
		B	0.000	0.000	0.000	0.000	0.052
		C	0.000	0.000	0.000	0.000	0.184
L6	117.568-116.409	A	0.000	0.000	0.043	0.000	0.004
		B	0.000	0.000	0.000	0.000	0.009
		C	0.000	0.000	0.000	0.000	0.031
L7	116.409-112.583	A	0.000	0.000	1.266	0.000	0.014
		B	0.000	0.000	1.123	0.000	0.029
		C	0.000	0.000	1.123	0.000	0.102
L8	112.583-112.333	A	0.000	0.000	0.197	0.000	0.001
		B	0.000	0.000	0.188	0.000	0.002
		C	0.000	0.000	0.188	0.000	0.007
L9	112.333-107.333	A	0.000	0.000	3.938	0.000	0.018
		B	0.000	0.000	3.750	0.000	0.037
		C	0.000	0.000	3.750	0.000	0.133
L10	107.333-106.920	A	0.000	0.000	0.379	0.000	0.001
		B	0.000	0.000	0.363	0.000	0.003
		C	0.000	0.000	0.363	0.000	0.011
L11	106.920-106.670	A	0.000	0.000	0.364	0.000	0.001
		B	0.000	0.000	0.354	0.000	0.002
		C	0.000	0.000	0.354	0.000	0.007
L12	106.670-103.500	A	0.000	0.000	5.735	0.000	0.011
		B	0.000	0.000	5.616	0.000	0.024
		C	0.000	0.000	5.616	0.000	0.084
L13	103.500-103.250	A	0.000	0.000	0.551	0.000	0.001
		B	0.000	0.000	0.542	0.000	0.002
		C	0.000	0.000	0.542	0.000	0.007
L14	103.250-98.500	A	0.000	0.000	10.845	0.000	0.017
		B	0.000	0.000	10.667	0.000	0.036
		C	0.000	0.000	10.667	0.000	0.126
L15	98.500-98.250	A	0.000	0.000	0.551	0.000	0.001
		B	0.000	0.000	0.542	0.000	0.002

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.542	0.000	0.007
L16	98.250-97.580	A	0.000	0.000	1.477	0.000	0.002
		B	0.000	0.000	1.452	0.000	0.005
		C	0.000	0.000	1.452	0.000	0.018
L17	97.580-97.330	A	0.000	0.000	0.551	0.000	0.001
		B	0.000	0.000	0.542	0.000	0.002
		C	0.000	0.000	0.542	0.000	0.007
L18	97.330-92.330	A	0.000	0.000	7.907	0.000	0.018
		B	0.000	0.000	7.720	0.000	0.037
		C	0.000	0.000	7.720	0.000	0.133
L19	92.330-87.118	A	0.000	0.000	3.690	0.000	0.019
		B	0.000	0.000	3.495	0.000	0.039
		C	0.000	0.000	3.495	0.000	0.139
L20	87.118-86.118	A	0.000	0.000	0.037	0.000	0.004
		B	0.000	0.000	0.000	0.000	0.007
		C	0.000	0.000	0.000	0.000	0.027
L21	86.118-83.000	A	0.000	0.000	1.941	0.000	0.011
		B	0.000	0.000	1.824	0.000	0.023
		C	0.000	0.000	1.824	0.000	0.083
L22	83.000-82.750	A	0.000	0.000	0.237	0.000	0.001
		B	0.000	0.000	0.228	0.000	0.002
		C	0.000	0.000	0.228	0.000	0.007
L23	82.750-77.750	A	0.000	0.000	7.186	0.000	0.018
		B	0.000	0.000	6.998	0.000	0.037
		C	0.000	0.000	6.998	0.000	0.133
L24	77.750-77.250	A	0.000	0.000	1.016	0.000	0.002
		B	0.000	0.000	0.998	0.000	0.004
		C	0.000	0.000	0.998	0.000	0.013
L25	77.250-77.000	A	0.000	0.000	0.508	0.000	0.001
		B	0.000	0.000	0.499	0.000	0.002
		C	0.000	0.000	0.499	0.000	0.007
L26	77.000-76.750	A	0.000	0.000	0.508	0.000	0.001
		B	0.000	0.000	0.499	0.000	0.002
		C	0.000	0.000	0.499	0.000	0.007
L27	76.750-71.750	A	0.000	0.000	7.200	0.000	0.018
		B	0.000	0.000	7.013	0.000	0.037
		C	0.000	0.000	7.013	0.000	0.133
L28	71.750-69.000	A	0.000	0.000	5.082	0.000	0.010
		B	0.000	0.000	4.979	0.000	0.021
		C	0.000	0.000	4.979	0.000	0.073
L29	69.000-68.750	A	0.000	0.000	0.530	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.002
		C	0.000	0.000	0.521	0.000	0.007
L30	68.750-63.750	A	0.000	0.000	10.604	0.000	0.018
		B	0.000	0.000	10.417	0.000	0.037
		C	0.000	0.000	10.417	0.000	0.133
L31	63.750-60.000	A	0.000	0.000	7.953	0.000	0.014
		B	0.000	0.000	7.813	0.000	0.028
		C	0.000	0.000	11.000	0.000	0.100
L32	60.000-59.750	A	0.000	0.000	0.530	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.002
		C	0.000	0.000	0.875	0.000	0.007
L33	59.750-58.500	A	0.000	0.000	2.651	0.000	0.005
		B	0.000	0.000	2.604	0.000	0.009
		C	0.000	0.000	5.458	0.000	0.033
L34	58.500-58.250	A	0.000	0.000	0.530	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.002
		C	0.000	0.000	1.146	0.000	0.007
L35	58.250-58.000	A	0.000	0.000	0.530	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.002
		C	0.000	0.000	1.146	0.000	0.007

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
L36	58.000-57.750	A	0.000	0.000	0.530	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.002
		C	0.000	0.000	1.146	0.000	0.007
L37	57.750-56.750	A	0.000	0.000	2.121	0.000	0.004
		B	0.000	0.000	2.083	0.000	0.007
		C	0.000	0.000	4.583	0.000	0.027
L38	56.750-56.500	A	0.000	0.000	0.530	0.000	0.001
		B	0.000	0.000	0.521	0.000	0.002
		C	0.000	0.000	1.146	0.000	0.007
L39	56.500-51.500	A	0.000	0.000	6.104	0.000	0.018
		B	0.000	0.000	5.917	0.000	0.037
		C	0.000	0.000	18.417	0.000	0.133
L40	51.500-42.042	A	0.000	0.000	10.601	0.000	0.034
		B	0.000	0.000	10.246	0.000	0.071
		C	0.000	0.000	33.892	0.000	0.251
L41	42.042-41.042	A	0.000	0.000	1.121	0.000	0.004
		B	0.000	0.000	1.083	0.000	0.007
		C	0.000	0.000	3.583	0.000	0.027
L42	41.042-36.042	A	0.000	0.000	5.604	0.000	0.018
		B	0.000	0.000	5.417	0.000	0.037
		C	0.000	0.000	17.917	0.000	0.133
L43	36.042-31.250	A	0.000	0.000	10.683	0.000	0.017
		B	0.000	0.000	6.441	0.000	0.036
		C	0.000	0.000	18.421	0.000	0.127
L44	31.250-31.000	A	0.000	0.000	0.634	0.000	0.001
		B	0.000	0.000	0.354	0.000	0.002
		C	0.000	0.000	0.979	0.000	0.007
L45	31.000-27.750	A	0.000	0.000	10.309	0.000	0.012
		B	0.000	0.000	9.104	0.000	0.024
		C	0.000	0.000	12.729	0.000	0.086
L46	27.750-27.500	A	0.000	0.000	0.864	0.000	0.001
		B	0.000	0.000	0.854	0.000	0.002
		C	0.000	0.000	0.979	0.000	0.007
L47	27.500-27.250	A	0.000	0.000	0.864	0.000	0.001
		B	0.000	0.000	0.854	0.000	0.002
		C	0.000	0.000	0.979	0.000	0.007
L48	27.250-27.000	A	0.000	0.000	0.864	0.000	0.001
		B	0.000	0.000	0.854	0.000	0.002
		C	0.000	0.000	0.625	0.000	0.007
L49	27.000-22.000	A	0.000	0.000	14.021	0.000	0.018
		B	0.000	0.000	17.083	0.000	0.037
		C	0.000	0.000	9.792	0.000	0.133
L50	22.000-17.000	A	0.000	0.000	11.854	0.000	0.018
		B	0.000	0.000	17.083	0.000	0.037
		C	0.000	0.000	7.083	0.000	0.133
L51	17.000-12.000	A	0.000	0.000	11.854	0.000	0.018
		B	0.000	0.000	17.083	0.000	0.037
		C	0.000	0.000	7.083	0.000	0.133
L52	12.000-7.000	A	0.000	0.000	11.854	0.000	0.018
		B	0.000	0.000	17.083	0.000	0.037
		C	0.000	0.000	7.083	0.000	0.133
L53	7.000-2.000	A	0.000	0.000	11.854	0.000	0.018
		B	0.000	0.000	17.083	0.000	0.037
		C	0.000	0.000	7.083	0.000	0.133
L54	2.000-0.000	A	0.000	0.000	4.742	0.000	0.007
		B	0.000	0.000	6.833	0.000	0.015
		C	0.000	0.000	2.833	0.000	0.053

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	144.500-139.500	A	1.475	0.000	0.000	1.663	0.000	0.018
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.095
L2	139.500-134.500	A	1.470	0.000	0.000	1.658	0.000	0.018
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.099
L3	134.500-129.500	A	1.465	0.000	0.000	1.652	0.000	0.018
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.133
L4	129.500-124.500	A	1.459	0.000	0.000	1.646	0.000	0.017
		B		0.000	0.000	0.000	0.000	0.026
		C		0.000	0.000	0.000	0.000	0.133
L5	124.500-117.568	A	1.452	0.000	0.000	2.273	0.000	0.025
		B		0.000	0.000	0.000	0.000	0.052
		C		0.000	0.000	0.000	0.000	0.184
L6	117.568-116.409	A	1.447	0.000	0.000	0.380	0.000	0.008
		B		0.000	0.000	0.000	0.000	0.009
		C		0.000	0.000	0.000	0.000	0.031
L7	116.409-112.583	A	1.444	0.000	0.000	2.793	0.000	0.040
		B		0.000	0.000	1.545	0.000	0.043
		C		0.000	0.000	1.545	0.000	0.116
L8	112.583-112.333	A	1.441	0.000	0.000	0.339	0.000	0.004
		B		0.000	0.000	0.258	0.000	0.004
		C		0.000	0.000	0.258	0.000	0.009
L9	112.333-107.333	A	1.438	0.000	0.000	6.780	0.000	0.080
		B		0.000	0.000	5.155	0.000	0.083
		C		0.000	0.000	5.155	0.000	0.179
L10	107.333-106.920	A	1.434	0.000	0.000	0.629	0.000	0.007
		B		0.000	0.000	0.495	0.000	0.008
		C		0.000	0.000	0.495	0.000	0.015
L11	106.920-106.670	A	1.434	0.000	0.000	0.554	0.000	0.006
		B		0.000	0.000	0.473	0.000	0.006
		C		0.000	0.000	0.473	0.000	0.011
L12	106.670-103.500	A	1.432	0.000	0.000	8.578	0.000	0.090
		B		0.000	0.000	7.551	0.000	0.093
		C		0.000	0.000	7.551	0.000	0.153
L13	103.500-103.250	A	1.429	0.000	0.000	0.812	0.000	0.008
		B		0.000	0.000	0.731	0.000	0.009
		C		0.000	0.000	0.731	0.000	0.013
L14	103.250-98.500	A	1.426	0.000	0.000	15.761	0.000	0.162
		B		0.000	0.000	14.228	0.000	0.166
		C		0.000	0.000	14.228	0.000	0.256
L15	98.500-98.250	A	1.422	0.000	0.000	0.782	0.000	0.008
		B		0.000	0.000	0.701	0.000	0.008
		C		0.000	0.000	0.701	0.000	0.013
L16	98.250-97.580	A	1.421	0.000	0.000	2.095	0.000	0.022
		B		0.000	0.000	1.879	0.000	0.023
		C		0.000	0.000	1.879	0.000	0.035
L17	97.580-97.330	A	1.421	0.000	0.000	0.782	0.000	0.008
		B		0.000	0.000	0.701	0.000	0.008
		C		0.000	0.000	0.701	0.000	0.013
L18	97.330-92.330	A	1.417	0.000	0.000	11.598	0.000	0.126
		B		0.000	0.000	9.993	0.000	0.130
		C		0.000	0.000	9.993	0.000	0.226
L19	92.330-87.118	A	1.409	0.000	0.000	6.184	0.000	0.077
		B		0.000	0.000	4.520	0.000	0.081
		C		0.000	0.000	4.520	0.000	0.180
L20	87.118-86.118	A	1.404	0.000	0.000	0.319	0.000	0.007

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.007
		C		0.000	0.000	0.000	0.000	0.027
L21	86.118-83.000	A	1.401	0.000	0.000	3.112	0.000	0.042
		B		0.000	0.000	2.122	0.000	0.044
		C		0.000	0.000	2.122	0.000	0.104
L22	83.000-82.750	A	1.398	0.000	0.000	0.344	0.000	0.004
		B		0.000	0.000	0.265	0.000	0.004
		C		0.000	0.000	0.265	0.000	0.009
L23	82.750-77.750	A	1.393	0.000	0.000	9.947	0.000	0.111
		B		0.000	0.000	8.366	0.000	0.115
		C		0.000	0.000	8.366	0.000	0.210
L24	77.750-77.250	A	1.389	0.000	0.000	1.368	0.000	0.014
		B		0.000	0.000	1.210	0.000	0.015
		C		0.000	0.000	1.210	0.000	0.024
L25	77.250-77.000	A	1.388	0.000	0.000	0.684	0.000	0.007
		B		0.000	0.000	0.605	0.000	0.007
		C		0.000	0.000	0.605	0.000	0.012
L26	77.000-76.750	A	1.388	0.000	0.000	0.684	0.000	0.007
		B		0.000	0.000	0.605	0.000	0.007
		C		0.000	0.000	0.605	0.000	0.012
L27	76.750-71.750	A	1.383	0.000	0.000	10.223	0.000	0.107
		B		0.000	0.000	8.653	0.000	0.111
		C		0.000	0.000	8.653	0.000	0.207
L28	71.750-69.000	A	1.375	0.000	0.000	7.034	0.000	0.069
		B		0.000	0.000	6.174	0.000	0.072
		C		0.000	0.000	6.174	0.000	0.124
L29	69.000-68.750	A	1.372	0.000	0.000	0.722	0.000	0.007
		B		0.000	0.000	0.644	0.000	0.007
		C		0.000	0.000	0.644	0.000	0.012
L30	68.750-63.750	A	1.367	0.000	0.000	14.430	0.000	0.139
		B		0.000	0.000	12.876	0.000	0.143
		C		0.000	0.000	12.876	0.000	0.239
L31	63.750-60.000	A	1.358	0.000	0.000	10.805	0.000	0.103
		B		0.000	0.000	9.646	0.000	0.107
		C		0.000	0.000	13.445	0.000	0.208
L32	60.000-59.750	A	1.353	0.000	0.000	0.720	0.000	0.007
		B		0.000	0.000	0.643	0.000	0.007
		C		0.000	0.000	1.065	0.000	0.015
L33	59.750-58.500	A	1.352	0.000	0.000	3.598	0.000	0.034
		B		0.000	0.000	3.213	0.000	0.035
		C		0.000	0.000	6.676	0.000	0.086
L34	58.500-58.250	A	1.350	0.000	0.000	0.719	0.000	0.007
		B		0.000	0.000	0.643	0.000	0.007
		C		0.000	0.000	1.402	0.000	0.018
L35	58.250-58.000	A	1.349	0.000	0.000	0.719	0.000	0.007
		B		0.000	0.000	0.642	0.000	0.007
		C		0.000	0.000	1.402	0.000	0.018
L36	58.000-57.750	A	1.349	0.000	0.000	0.719	0.000	0.007
		B		0.000	0.000	0.642	0.000	0.007
		C		0.000	0.000	1.402	0.000	0.018
L37	57.750-56.750	A	1.347	0.000	0.000	2.876	0.000	0.027
		B		0.000	0.000	2.569	0.000	0.028
		C		0.000	0.000	5.608	0.000	0.071
L38	56.750-56.500	A	1.346	0.000	0.000	0.719	0.000	0.007
		B		0.000	0.000	0.642	0.000	0.007
		C		0.000	0.000	1.402	0.000	0.018
L39	56.500-51.500	A	1.339	0.000	0.000	8.891	0.000	0.091
		B		0.000	0.000	7.364	0.000	0.096
		C		0.000	0.000	22.543	0.000	0.309
L40	51.500-42.042	A	1.320	0.000	0.000	15.596	0.000	0.160
		B		0.000	0.000	12.744	0.000	0.170

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	41.384	0.000	0.569
L41	42.042-41.042	A	1.305	0.000	0.000	1.649	0.000	0.017
		B		0.000	0.000	1.347	0.000	0.018
		C		0.000	0.000	4.375	0.000	0.060
L42	41.042-36.042	A	1.295	0.000	0.000	8.194	0.000	0.083
		B		0.000	0.000	6.712	0.000	0.089
		C		0.000	0.000	21.801	0.000	0.297
L43	36.042-31.250	A	1.277	0.000	0.000	14.090	0.000	0.123
		B		0.000	0.000	7.665	0.000	0.092
		C		0.000	0.000	22.093	0.000	0.290
L44	31.250-31.000	A	1.268	0.000	0.000	0.825	0.000	0.007
		B		0.000	0.000	0.418	0.000	0.005
		C		0.000	0.000	1.169	0.000	0.015
L45	31.000-27.750	A	1.260	0.000	0.000	13.334	0.000	0.111
		B		0.000	0.000	11.058	0.000	0.106
		C		0.000	0.000	15.187	0.000	0.196
L46	27.750-27.500	A	1.253	0.000	0.000	1.114	0.000	0.009
		B		0.000	0.000	1.042	0.000	0.010
		C		0.000	0.000	1.167	0.000	0.015
L47	27.500-27.250	A	1.251	0.000	0.000	1.114	0.000	0.009
		B		0.000	0.000	1.042	0.000	0.010
		C		0.000	0.000	1.167	0.000	0.015
L48	27.250-27.000	A	1.250	0.000	0.000	1.114	0.000	0.009
		B		0.000	0.000	1.042	0.000	0.009
		C		0.000	0.000	0.750	0.000	0.012
L49	27.000-22.000	A	1.238	0.000	0.000	18.228	0.000	0.152
		B		0.000	0.000	20.796	0.000	0.188
		C		0.000	0.000	11.648	0.000	0.215
L50	22.000-17.000	A	1.210	0.000	0.000	15.483	0.000	0.129
		B		0.000	0.000	20.712	0.000	0.184
		C		0.000	0.000	8.293	0.000	0.190
L51	17.000-12.000	A	1.174	0.000	0.000	15.377	0.000	0.125
		B		0.000	0.000	20.606	0.000	0.179
		C		0.000	0.000	8.258	0.000	0.188
L52	12.000-7.000	A	1.126	0.000	0.000	15.231	0.000	0.119
		B		0.000	0.000	20.460	0.000	0.172
		C		0.000	0.000	8.209	0.000	0.185
L53	7.000-2.000	A	1.044	0.000	0.000	14.988	0.000	0.110
		B		0.000	0.000	20.217	0.000	0.160
		C		0.000	0.000	8.128	0.000	0.181
L54	2.000-0.000	A	0.899	0.000	0.000	5.820	0.000	0.038
		B		0.000	0.000	7.912	0.000	0.056
		C		0.000	0.000	3.193	0.000	0.069

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	144.500-139.500	-0.003	-0.301	-0.014	-1.296
L2	139.500-134.500	-0.003	-0.301	-0.014	-1.306
L3	134.500-129.500	-0.003	-0.301	-0.014	-1.314
L4	129.500-124.500	-0.003	-0.301	-0.014	-1.322
L5	124.500-117.568	-0.003	-0.301	-0.014	-1.329
L6	117.568-116.409	-0.003	-0.301	-0.014	-1.334
L7	116.409-112.583	-0.002	-0.199	-0.010	-0.980
L8	112.583-112.333	-0.001	-0.131	-0.007	-0.700

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L9	112.333-107.333	-0.001	-0.133	-0.007	-0.707
L10	107.333-106.920	-0.001	-0.123	-0.007	-0.663
L11	106.920-106.670	-0.001	-0.090	-0.005	-0.514
L12	106.670-103.500	-0.001	-0.077	-0.005	-0.446
L13	103.500-103.250	-0.001	-0.067	-0.004	-0.391
L14	103.250-98.500	-0.001	-0.066	-0.004	-0.388
L15	98.500-98.250	-0.001	-0.069	-0.004	-0.411
L16	98.250-97.580	-0.001	-0.069	-0.004	-0.412
L17	97.580-97.330	-0.001	-0.069	-0.004	-0.413
L18	97.330-92.330	-0.001	-0.090	-0.005	-0.521
L19	92.330-87.118	-0.002	-0.152	-0.008	-0.807
L20	87.118-86.118	-0.003	-0.302	-0.014	-1.348
L21	86.118-83.000	-0.002	-0.164	-0.009	-0.886
L22	83.000-82.750	-0.001	-0.131	-0.008	-0.748
L23	82.750-77.750	-0.001	-0.102	-0.006	-0.600
L24	77.750-77.250	-0.001	-0.080	-0.005	-0.485
L25	77.250-77.000	-0.001	-0.081	-0.005	-0.486
L26	77.000-76.750	-0.001	-0.081	-0.005	-0.486
L27	76.750-71.750	-0.001	-0.104	-0.006	-0.598
L28	71.750-69.000	-0.001	-0.089	-0.005	-0.519
L29	69.000-68.750	-0.001	-0.081	-0.005	-0.478
L30	68.750-63.750	-0.001	-0.082	-0.005	-0.482
L31	63.750-60.000	-1.624	1.026	-1.398	0.495
L32	60.000-59.750	-2.564	1.667	-2.221	1.074
L33	59.750-58.500	-2.368	3.116	-2.067	2.440
L34	58.500-58.250	-2.330	3.452	-2.036	2.758
L35	58.250-58.000	-2.332	3.455	-2.038	2.760
L36	58.000-57.750	-2.334	3.458	-2.040	2.763
L37	57.750-56.750	-2.341	3.467	-2.045	2.770
L38	56.750-56.500	-2.347	3.477	-2.050	2.777
L39	56.500-51.500	-3.124	4.627	-2.636	3.571
L40	51.500-42.042	-3.324	4.919	-2.786	3.774
L41	42.042-41.042	-3.345	4.949	-2.802	3.796
L42	41.042-36.042	-3.380	4.999	-2.829	3.836
L43	36.042-31.250	-3.807	1.982	-3.367	1.451
L44	31.250-31.000	-3.922	1.309	-3.507	0.897
L45	31.000-27.750	-2.702	2.600	-2.433	2.228
L46	27.750-27.500	-2.286	3.062	-2.060	2.709
L47	27.500-27.250	-2.288	3.065	-2.062	2.711
L48	27.250-27.000	-0.086	1.756	-0.124	1.536
L49	27.000-22.000	1.288	0.137	1.110	0.056
L50	22.000-17.000	2.454	-1.614	2.129	-1.509
L51	17.000-12.000	2.493	-1.640	2.159	-1.527
L52	12.000-7.000	2.531	-1.665	2.187	-1.543
L53	7.000-2.000	2.569	-1.689	2.213	-1.555
L54	2.000-0.000	2.595	-1.706	2.226	-1.551

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	17	Safety Line 3/8	139.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			144.50		
L2	17	Safety Line 3/8	134.50 - 139.50	1.0000	1.0000
L3	17	Safety Line 3/8	129.50 - 134.50	1.0000	1.0000
L4	17	Safety Line 3/8	124.50 - 129.50	1.0000	1.0000
L5	17	Safety Line 3/8	117.57 - 124.50	1.0000	1.0000
L6	17	Safety Line 3/8	116.41 - 117.57	1.0000	1.0000
L7	17	Safety Line 3/8	112.58 - 116.41	1.0000	1.0000
L7	39	CCI 4.5" x 1" Plate	112.58 - 114.08	1.0000	1.0000
L7	40	CCI 4.5" x 1" Plate	112.58 - 114.08	1.0000	1.0000
L7	41	CCI 4.5" x 1" Plate	112.58 - 114.08	1.0000	1.0000
L8	17	Safety Line 3/8	112.33 - 112.58	1.0000	1.0000
L8	39	CCI 4.5" x 1" Plate	112.33 - 112.58	1.0000	1.0000
L8	40	CCI 4.5" x 1" Plate	112.33 - 112.58	1.0000	1.0000
L8	41	CCI 4.5" x 1" Plate	112.33 - 112.58	1.0000	1.0000
L9	17	Safety Line 3/8	107.33 - 112.33	1.0000	1.0000
L9	39	CCI 4.5" x 1" Plate	107.33 - 112.33	1.0000	1.0000
L9	40	CCI 4.5" x 1" Plate	107.33 - 112.33	1.0000	1.0000
L9	41	CCI 4.5" x 1" Plate	107.33 - 112.33	1.0000	1.0000
L10	17	Safety Line 3/8	106.92 - 107.33	1.0000	1.0000
L10	39	CCI 4.5" x 1" Plate	106.92 - 107.33	1.0000	1.0000
L10	40	CCI 4.5" x 1" Plate	106.92 - 107.33	1.0000	1.0000
L10	41	CCI 4.5" x 1" Plate	106.92 - 107.33	1.0000	1.0000
L10	49	CCI 4" x 0.75" Plate	106.92 - 107.00	1.0000	1.0000
L10	50	CCI 4" x 0.75" Plate	106.92 - 107.00	1.0000	1.0000
L10	51	CCI 4" x 0.75" Plate	106.92 - 107.00	1.0000	1.0000
L11	17	Safety Line 3/8	106.67 - 106.92	1.0000	1.0000
L11	39	CCI 4.5" x 1" Plate	106.67 - 106.92	1.0000	1.0000
L11	40	CCI 4.5" x 1" Plate	106.67 - 106.92	1.0000	1.0000
L11	41	CCI 4.5" x 1" Plate	106.67 - 106.92	1.0000	1.0000
L11	49	CCI 4" x 0.75" Plate	106.67 - 106.92	1.0000	1.0000
L11	50	CCI 4" x 0.75" Plate	106.67 - 106.92	1.0000	1.0000
L11	51	CCI 4" x 0.75" Plate	106.67 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			106.92		
L12	17	Safety Line 3/8	103.50 - 106.67	1.0000	1.0000
L12	31	CCI 4.5" x 1" Plate	103.50 - 105.00	1.0000	1.0000
L12	32	CCI 4.5" x 1" Plate	103.50 - 105.00	1.0000	1.0000
L12	33	CCI 4.5" x 1" Plate	103.50 - 105.00	1.0000	1.0000
L12	39	CCI 4.5" x 1" Plate	103.50 - 106.67	1.0000	1.0000
L12	40	CCI 4.5" x 1" Plate	103.50 - 106.67	1.0000	1.0000
L12	41	CCI 4.5" x 1" Plate	103.50 - 106.67	1.0000	1.0000
L12	49	CCI 4" x 0.75" Plate	103.50 - 106.67	1.0000	1.0000
L12	50	CCI 4" x 0.75" Plate	103.50 - 106.67	1.0000	1.0000
L12	51	CCI 4" x 0.75" Plate	103.50 - 106.67	1.0000	1.0000
L13	17	Safety Line 3/8	103.25 - 103.50	1.0000	1.0000
L13	31	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	32	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	33	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	39	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	40	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	41	CCI 4.5" x 1" Plate	103.25 - 103.50	1.0000	1.0000
L13	49	CCI 4" x 0.75" Plate	103.25 - 103.50	1.0000	1.0000
L13	50	CCI 4" x 0.75" Plate	103.25 - 103.50	1.0000	1.0000
L13	51	CCI 4" x 0.75" Plate	103.25 - 103.50	1.0000	1.0000
L14	17	Safety Line 3/8	98.50 - 103.25	1.0000	1.0000
L14	19	CCI 4.5" x 1" Plate	98.50 - 100.00	1.0000	1.0000
L14	20	CCI 4.5" x 1" Plate	98.50 - 100.00	1.0000	1.0000
L14	21	CCI 4.5" x 1" Plate	98.50 - 100.00	1.0000	1.0000
L14	31	CCI 4.5" x 1" Plate	98.50 - 103.25	1.0000	1.0000
L14	32	CCI 4.5" x 1" Plate	98.50 - 103.25	1.0000	1.0000
L14	33	CCI 4.5" x 1" Plate	98.50 - 103.25	1.0000	1.0000
L14	39	CCI 4.5" x 1" Plate	99.50 - 103.25	1.0000	1.0000
L14	40	CCI 4.5" x 1" Plate	99.50 - 103.25	1.0000	1.0000
L14	41	CCI 4.5" x 1" Plate	99.50 - 103.25	1.0000	1.0000
L14	49	CCI 4" x 0.75" Plate	98.50 - 103.25	1.0000	1.0000
L14	50	CCI 4" x 0.75" Plate	98.50 - 103.25	1.0000	1.0000
L14	51	CCI 4" x 0.75" Plate	98.50 - 103.25	1.0000	1.0000
L15	17	Safety Line 3/8	98.25 - 98.50	1.0000	1.0000
L15	19	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	20	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	21	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	31	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	32	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	33	CCI 4.5" x 1" Plate	98.25 - 98.50	1.0000	1.0000
L15	49	CCI 4" x 0.75" Plate	98.25 - 98.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	50	CCI 4" x 0.75" Plate	98.25 - 98.50	1.0000	1.0000
L15	51	CCI 4" x 0.75" Plate	98.25 - 98.50	1.0000	1.0000
L16	17	Safety Line 3/8	97.58 - 98.25	1.0000	1.0000
L16	19	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	20	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	21	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	31	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	32	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	33	CCI 4.5" x 1" Plate	97.58 - 98.25	1.0000	1.0000
L16	49	CCI 4" x 0.75" Plate	97.58 - 98.25	1.0000	1.0000
L16	50	CCI 4" x 0.75" Plate	97.58 - 98.25	1.0000	1.0000
L16	51	CCI 4" x 0.75" Plate	97.58 - 98.25	1.0000	1.0000
L17	17	Safety Line 3/8	97.33 - 97.58	1.0000	1.0000
L17	19	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	20	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	21	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	31	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	32	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	33	CCI 4.5" x 1" Plate	97.33 - 97.58	1.0000	1.0000
L17	49	CCI 4" x 0.75" Plate	97.33 - 97.58	1.0000	1.0000
L17	50	CCI 4" x 0.75" Plate	97.33 - 97.58	1.0000	1.0000
L17	51	CCI 4" x 0.75" Plate	97.33 - 97.58	1.0000	1.0000
L18	17	Safety Line 3/8	92.33 - 97.33	1.0000	1.0000
L18	19	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	20	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	21	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	31	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	32	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	33	CCI 4.5" x 1" Plate	92.33 - 97.33	1.0000	1.0000
L18	49	CCI 4" x 0.75" Plate	97.00 - 97.33	1.0000	1.0000
L18	50	CCI 4" x 0.75" Plate	97.00 - 97.33	1.0000	1.0000
L18	51	CCI 4" x 0.75" Plate	97.00 - 97.33	1.0000	1.0000
L19	17	Safety Line 3/8	87.12 - 92.33	1.0000	1.0000
L19	19	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	20	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	21	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	31	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	32	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L19	33	CCI 4.5" x 1" Plate	90.00 - 92.33	1.0000	1.0000
L20	17	Safety Line 3/8	86.12 - 87.12	1.0000	1.0000
L21	17	Safety Line 3/8	83.00 - 86.12	1.0000	1.0000
L21	35	CCI 6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L21	36	CCI 6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L21	37	CCI 6" x 1" Plate	83.00 - 85.00	1.0000	1.0000
L22	17	Safety Line 3/8	82.75 - 83.00	1.0000	1.0000
L22	35	CCI 6" x 1" Plate	82.75 - 83.00	1.0000	1.0000
L22	36	CCI 6" x 1" Plate	82.75 - 83.00	1.0000	1.0000
L22	37	CCI 6" x 1" Plate	82.75 - 83.00	1.0000	1.0000
L23	17	Safety Line 3/8	77.75 - 82.75	1.0000	1.0000
L23	27	CCI 6.5" x 1.25" Plate	77.75 - 80.00	1.0000	1.0000
L23	28	CCI 6.5" x 1.25" Plate	77.75 - 80.00	1.0000	1.0000
L23	29	CCI 6.5" x 1.25" Plate	77.75 - 80.00	1.0000	1.0000
L23	35	CCI 6" x 1" Plate	77.75 - 82.75	1.0000	1.0000
L23	36	CCI 6" x 1" Plate	77.75 - 82.75	1.0000	1.0000
L23	37	CCI 6" x 1" Plate	77.75 - 82.75	1.0000	1.0000
L24	17	Safety Line 3/8	77.25 - 77.75	1.0000	1.0000
L24	27	CCI 6.5" x 1.25" Plate	77.25 - 77.75	1.0000	1.0000
L24	28	CCI 6.5" x 1.25" Plate	77.25 - 77.75	1.0000	1.0000
L24	29	CCI 6.5" x 1.25" Plate	77.25 - 77.75	1.0000	1.0000
L24	35	CCI 6" x 1" Plate	77.25 - 77.75	1.0000	1.0000
L24	36	CCI 6" x 1" Plate	77.25 - 77.75	1.0000	1.0000
L24	37	CCI 6" x 1" Plate	77.25 - 77.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	17	Safety Line 3/8	77.00 - 77.25	1.0000	1.0000
L25	27	CCI 6.5" x 1.25" Plate	77.00 - 77.25	1.0000	1.0000
L25	28	CCI 6.5" x 1.25" Plate	77.00 - 77.25	1.0000	1.0000
L25	29	CCI 6.5" x 1.25" Plate	77.00 - 77.25	1.0000	1.0000
L25	35	CCI 6" x 1" Plate	77.00 - 77.25	1.0000	1.0000
L25	36	CCI 6" x 1" Plate	77.00 - 77.25	1.0000	1.0000
L25	37	CCI 6" x 1" Plate	77.00 - 77.25	1.0000	1.0000
L26	17	Safety Line 3/8	76.75 - 77.00	1.0000	1.0000
L26	27	CCI 6.5" x 1.25" Plate	76.75 - 77.00	1.0000	1.0000
L26	28	CCI 6.5" x 1.25" Plate	76.75 - 77.00	1.0000	1.0000
L26	29	CCI 6.5" x 1.25" Plate	76.75 - 77.00	1.0000	1.0000
L26	35	CCI 6" x 1" Plate	76.75 - 77.00	1.0000	1.0000
L26	36	CCI 6" x 1" Plate	76.75 - 77.00	1.0000	1.0000
L26	37	CCI 6" x 1" Plate	76.75 - 77.00	1.0000	1.0000
L27	17	Safety Line 3/8	71.75 - 76.75	1.0000	1.0000
L27	27	CCI 6.5" x 1.25" Plate	71.75 - 76.75	1.0000	1.0000
L27	28	CCI 6.5" x 1.25" Plate	71.75 - 76.75	1.0000	1.0000
L27	29	CCI 6.5" x 1.25" Plate	71.75 - 76.75	1.0000	1.0000
L27	35	CCI 6" x 1" Plate	75.00 - 76.75	1.0000	1.0000
L27	36	CCI 6" x 1" Plate	75.00 - 76.75	1.0000	1.0000
L27	37	CCI 6" x 1" Plate	75.00 - 76.75	1.0000	1.0000
L28	17	Safety Line 3/8	69.00 - 71.75	1.0000	1.0000
L28	27	CCI 6.5" x 1.25" Plate	69.00 - 71.75	1.0000	1.0000
L28	28	CCI 6.5" x 1.25" Plate	69.00 - 71.75	1.0000	1.0000
L28	29	CCI 6.5" x 1.25" Plate	69.00 - 71.75	1.0000	1.0000
L28	55	CCI 6" x 1" Plate	69.00 - 71.00	1.0000	1.0000
L28	56	CCI 6" x 1" Plate	69.00 - 71.00	1.0000	1.0000
L28	57	CCI 6" x 1" Plate	69.00 - 71.00	1.0000	1.0000
L29	17	Safety Line 3/8	68.75 - 69.00	1.0000	1.0000
L29	27	CCI 6.5" x 1.25" Plate	68.75 - 69.00	1.0000	1.0000
L29	28	CCI 6.5" x 1.25" Plate	68.75 - 69.00	1.0000	1.0000
L29	29	CCI 6.5" x 1.25" Plate	68.75 - 69.00	1.0000	1.0000
L29	55	CCI 6" x 1" Plate	68.75 - 69.00	1.0000	1.0000
L29	56	CCI 6" x 1" Plate	68.75 - 69.00	1.0000	1.0000
L29	57	CCI 6" x 1" Plate	68.75 - 69.00	1.0000	1.0000
L30	17	Safety Line 3/8	63.75 - 68.75	1.0000	1.0000
L30	27	CCI 6.5" x 1.25" Plate	63.75 - 68.75	1.0000	1.0000
L30	28	CCI 6.5" x 1.25" Plate	63.75 - 68.75	1.0000	1.0000
L30	29	CCI 6.5" x 1.25" Plate	63.75 - 68.75	1.0000	1.0000
L30	55	CCI 6" x 1" Plate	63.75 - 68.75	1.0000	1.0000
L30	56	CCI 6" x 1" Plate	63.75 - 68.75	1.0000	1.0000
L30	57	CCI 6" x 1" Plate	63.75 - 68.75	1.0000	1.0000
L31	17	Safety Line 3/8	60.00 - 63.75	1.0000	1.0000
L31	27	CCI 6.5" x 1.25" Plate	60.00 - 63.75	1.0000	1.0000
L31	28	CCI 6.5" x 1.25" Plate	60.00 - 63.75	1.0000	1.0000
L31	29	CCI 6.5" x 1.25" Plate	60.00 - 63.75	1.0000	1.0000
L31	47	CCI 8.5" x 1.25" Plate	60.00 - 62.25	1.0000	1.0000
L31	55	CCI 6" x 1" Plate	60.00 - 63.75	1.0000	1.0000
L31	56	CCI 6" x 1" Plate	60.00 - 63.75	1.0000	1.0000
L31	57	CCI 6" x 1" Plate	60.00 - 63.75	1.0000	1.0000
L32	17	Safety Line 3/8	59.75 - 60.00	1.0000	1.0000
L32	27	CCI 6.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	28	CCI 6.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	29	CCI 6.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	47	CCI 8.5" x 1.25" Plate	59.75 - 60.00	1.0000	1.0000
L32	55	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L32	56	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L32	57	CCI 6" x 1" Plate	59.75 - 60.00	1.0000	1.0000
L33	17	Safety Line 3/8	58.50 - 59.75	1.0000	1.0000
L33	27	CCI 6.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	28	CCI 6.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	29	CCI 6.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L33	47	CCI 8.5" x 1.25" Plate	58.50 - 59.75	1.0000	1.0000
L33	53	CCI 6.5" x 1.25" Plate	58.50 - 59.50	1.0000	1.0000
L33	55	CCI 6" x 1" Plate	58.50 - 59.75	1.0000	1.0000
L33	56	CCI 6" x 1" Plate	58.50 - 59.75	1.0000	1.0000
L33	57	CCI 6" x 1" Plate	58.50 - 59.75	1.0000	1.0000
L34	17	Safety Line 3/8	58.25 - 58.50	1.0000	1.0000
L34	27	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	28	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	29	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	47	CCI 8.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	53	CCI 6.5" x 1.25" Plate	58.25 - 58.50	1.0000	1.0000
L34	55	CCI 6" x 1" Plate	58.25 - 58.50	1.0000	1.0000
L34	56	CCI 6" x 1" Plate	58.25 - 58.50	1.0000	1.0000
L34	57	CCI 6" x 1" Plate	58.25 - 58.50	1.0000	1.0000
L35	17	Safety Line 3/8	58.00 - 58.25	1.0000	1.0000
L35	27	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	28	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	29	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	47	CCI 8.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	53	CCI 6.5" x 1.25" Plate	58.00 - 58.25	1.0000	1.0000
L35	55	CCI 6" x 1" Plate	58.00 - 58.25	1.0000	1.0000
L35	56	CCI 6" x 1" Plate	58.00 - 58.25	1.0000	1.0000
L35	57	CCI 6" x 1" Plate	58.00 - 58.25	1.0000	1.0000
L36	17	Safety Line 3/8	57.75 - 58.00	1.0000	1.0000
L36	27	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	28	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	29	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	47	CCI 8.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	53	CCI 6.5" x 1.25" Plate	57.75 - 58.00	1.0000	1.0000
L36	55	CCI 6" x 1" Plate	57.75 - 58.00	1.0000	1.0000
L36	56	CCI 6" x 1" Plate	57.75 - 58.00	1.0000	1.0000
L36	57	CCI 6" x 1" Plate	57.75 - 58.00	1.0000	1.0000
L37	17	Safety Line 3/8	56.75 - 57.75	1.0000	1.0000
L37	27	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	28	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	29	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	47	CCI 8.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	53	CCI 6.5" x 1.25" Plate	56.75 - 57.75	1.0000	1.0000
L37	55	CCI 6" x 1" Plate	56.75 - 57.75	1.0000	1.0000
L37	56	CCI 6" x 1" Plate	56.75 - 57.75	1.0000	1.0000
L37	57	CCI 6" x 1" Plate	56.75 - 57.75	1.0000	1.0000
L38	17	Safety Line 3/8	56.50 - 56.75	1.0000	1.0000
L38	27	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	28	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	29	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	47	CCI 8.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	53	CCI 6.5" x 1.25" Plate	56.50 - 56.75	1.0000	1.0000
L38	55	CCI 6" x 1" Plate	56.50 - 56.75	1.0000	1.0000
L38	56	CCI 6" x 1" Plate	56.50 - 56.75	1.0000	1.0000
L38	57	CCI 6" x 1" Plate	56.50 - 56.75	1.0000	1.0000
L39	17	Safety Line 3/8	51.50 - 56.50	1.0000	1.0000
L39	27	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	28	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	29	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	47	CCI 8.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	53	CCI 6.5" x 1.25" Plate	51.50 - 56.50	1.0000	1.0000
L39	55	CCI 6" x 1" Plate	56.00 - 56.50	1.0000	1.0000
L39	56	CCI 6" x 1" Plate	56.00 - 56.50	1.0000	1.0000
L39	57	CCI 6" x 1" Plate	56.00 - 56.50	1.0000	1.0000
L40	17	Safety Line 3/8	42.04 - 51.50	1.0000	1.0000
L40	27	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	28	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L40	29	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	47	CCI 8.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L40	53	CCI 6.5" x 1.25" Plate	42.04 - 51.50	1.0000	1.0000
L41	17	Safety Line 3/8	41.04 - 42.04	1.0000	1.0000
L41	27	CCI 6.5" x 1.25" Plate	41.04 - 42.04	1.0000	1.0000
L41	28	CCI 6.5" x 1.25" Plate	41.04 - 42.04	1.0000	1.0000
L41	29	CCI 6.5" x 1.25" Plate	41.04 - 42.04	1.0000	1.0000
L41	47	CCI 8.5" x 1.25" Plate	41.04 - 42.04	1.0000	1.0000
L41	53	CCI 6.5" x 1.25" Plate	41.04 - 42.04	1.0000	1.0000
L42	17	Safety Line 3/8	36.04 - 41.04	1.0000	1.0000
L42	27	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	28	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	29	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	47	CCI 8.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L42	53	CCI 6.5" x 1.25" Plate	36.04 - 41.04	1.0000	1.0000
L43	17	Safety Line 3/8	31.25 - 36.04	1.0000	1.0000
L43	23	CCI 8.5" x 1.25" Plate	31.25 - 35.00	1.0000	1.0000
L43	24	CCI 8.5" x 1.25" Plate	31.25 - 35.00	1.0000	1.0000
L43	25	CCI 8.5" x 1.25" Plate	31.25 - 35.00	1.0000	1.0000
L43	27	CCI 6.5" x 1.25" Plate	31.25 - 36.04	1.0000	1.0000
L43	28	CCI 6.5" x 1.25" Plate	35.00 - 36.04	1.0000	1.0000
L43	29	CCI 6.5" x 1.25" Plate	35.00 - 36.04	1.0000	1.0000
L43	47	CCI 8.5" x 1.25" Plate	31.25 - 36.04	1.0000	1.0000
L43	53	CCI 6.5" x 1.25" Plate	31.25 - 36.04	1.0000	1.0000
L44	17	Safety Line 3/8	31.00 - 31.25	1.0000	1.0000
L44	23	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	24	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	25	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	27	CCI 6.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	47	CCI 8.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L44	53	CCI 6.5" x 1.25" Plate	31.00 - 31.25	1.0000	1.0000
L45	17	Safety Line 3/8	27.75 - 31.00	1.0000	1.0000
L45	23	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	24	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	25	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	27	CCI 6.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	43	CCI 5.5" x 1.25" Plate	27.75 - 30.00	1.0000	1.0000
L45	44	CCI 5.5" x 1.25" Plate	27.75 - 30.00	1.0000	1.0000
L45	45	CCI 6.5" x 1.25" Plate	27.75 - 30.00	1.0000	1.0000
L45	47	CCI 8.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L45	53	CCI 6.5" x 1.25" Plate	27.75 - 31.00	1.0000	1.0000
L46	17	Safety Line 3/8	27.50 - 27.75	1.0000	1.0000
L46	23	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	24	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	25	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	27	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	43	CCI 5.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	44	CCI 5.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	45	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	47	CCI 8.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L46	53	CCI 6.5" x 1.25" Plate	27.50 - 27.75	1.0000	1.0000
L47	17	Safety Line 3/8	27.25 - 27.50	1.0000	1.0000
L47	23	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	24	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	25	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	27	CCI 6.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	43	CCI 5.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	44	CCI 5.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	45	CCI 6.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	47	CCI 8.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L47	53	CCI 6.5" x 1.25" Plate	27.25 - 27.50	1.0000	1.0000
L48	17	Safety Line 3/8	27.00 - 27.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L48	23	CCI 8.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	24	CCI 8.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	25	CCI 8.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	27	CCI 6.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	43	CCI 5.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	44	CCI 5.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	45	CCI 6.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L48	53	CCI 6.5" x 1.25" Plate	27.00 - 27.25	1.0000	1.0000
L49	17	Safety Line 3/8	22.00 - 27.00	1.0000	1.0000
L49	23	CCI 8.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	24	CCI 8.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	25	CCI 8.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	27	CCI 6.5" x 1.25" Plate	25.00 - 27.00	1.0000	1.0000
L49	43	CCI 5.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	44	CCI 5.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	45	CCI 6.5" x 1.25" Plate	22.00 - 27.00	1.0000	1.0000
L49	53	CCI 6.5" x 1.25" Plate	24.50 - 27.00	1.0000	1.0000
L50	17	Safety Line 3/8	17.00 - 22.00	1.0000	1.0000
L50	23	CCI 8.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	24	CCI 8.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	25	CCI 8.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	43	CCI 5.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	44	CCI 5.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L50	45	CCI 6.5" x 1.25" Plate	17.00 - 22.00	1.0000	1.0000
L51	17	Safety Line 3/8	12.00 - 17.00	1.0000	1.0000
L51	23	CCI 8.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	24	CCI 8.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	25	CCI 8.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	43	CCI 5.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	44	CCI 5.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L51	45	CCI 6.5" x 1.25" Plate	12.00 - 17.00	1.0000	1.0000
L52	17	Safety Line 3/8	7.00 - 12.00	1.0000	1.0000
L52	23	CCI 8.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	24	CCI 8.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	25	CCI 8.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	43	CCI 5.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	44	CCI 5.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L52	45	CCI 6.5" x 1.25" Plate	7.00 - 12.00	1.0000	1.0000
L53	17	Safety Line 3/8	2.00 - 7.00	1.0000	1.0000
L53	23	CCI 8.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	24	CCI 8.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	25	CCI 8.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	43	CCI 5.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	44	CCI 5.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L53	45	CCI 6.5" x 1.25" Plate	2.00 - 7.00	1.0000	1.0000
L54	17	Safety Line 3/8	0.00 - 2.00	1.0000	1.0000
L54	23	CCI 8.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	24	CCI 8.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	25	CCI 8.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	43	CCI 5.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	44	CCI 5.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000
L54	45	CCI 6.5" x 1.25" Plate	0.00 - 2.00	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L7	39	CCI 4.5" x 1" Plate	112.58 - 114.08	Auto	0.0263
L7	40	CCI 4.5" x 1" Plate	112.58 - 114.08	Auto	0.0263
L7	41	CCI 4.5" x 1" Plate	112.58 - 114.08	Auto	0.0263
L8	39	CCI 4.5" x 1" Plate	112.33 - 112.58	Auto	0.0190
L8	40	CCI 4.5" x 1" Plate	112.33 - 112.58	Auto	0.0190
L8	41	CCI 4.5" x 1" Plate	112.33 - 112.58	Auto	0.0190
L9	39	CCI 4.5" x 1" Plate	107.33 - 112.33	Auto	0.0039
L9	40	CCI 4.5" x 1" Plate	107.33 - 112.33	Auto	0.0039
L9	41	CCI 4.5" x 1" Plate	107.33 - 112.33	Auto	0.0039
L10	39	CCI 4.5" x 1" Plate	106.92 - 107.33	Auto	0.0000
L10	40	CCI 4.5" x 1" Plate	106.92 - 107.33	Auto	0.0000
L10	41	CCI 4.5" x 1" Plate	106.92 - 107.33	Auto	0.0000
L10	49	CCI 4" x 0.75" Plate	106.92 - 107.00	Auto	0.0000
L10	50	CCI 4" x 0.75" Plate	106.92 - 107.00	Auto	0.0000
L10	51	CCI 4" x 0.75" Plate	106.92 - 107.00	Auto	0.0000
L11	39	CCI 4.5" x 1" Plate	106.67 - 106.92	Auto	0.0841
L11	40	CCI 4.5" x 1" Plate	106.67 - 106.92	Auto	0.0841
L11	41	CCI 4.5" x 1" Plate	106.67 - 106.92	Auto	0.0841
L11	49	CCI 4" x 0.75" Plate	106.67 - 106.92	Auto	0.0000
L11	50	CCI 4" x 0.75" Plate	106.67 - 106.92	Auto	0.0000
L11	51	CCI 4" x 0.75" Plate	106.67 - 106.92	Auto	0.0000
L12	31	CCI 4.5" x 1" Plate	103.50 - 105.00	Auto	0.0580
L12	32	CCI 4.5" x 1" Plate	103.50 - 105.00	Auto	0.0580
L12	33	CCI 4.5" x 1" Plate	103.50 - 105.00	Auto	0.0580
L12	39	CCI 4.5" x 1" Plate	103.50 - 106.67	Auto	0.0650
L12	40	CCI 4.5" x 1" Plate	103.50 - 106.67	Auto	0.0650
L12	41	CCI 4.5" x 1" Plate	103.50 - 106.67	Auto	0.0650
L12	49	CCI 4" x 0.75" Plate	103.50 - 106.67	Auto	0.0000
L12	50	CCI 4" x 0.75" Plate	103.50 - 106.67	Auto	0.0000
L12	51	CCI 4" x 0.75" Plate	103.50 - 106.67	Auto	0.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L13	31	CCI 4.5" x 1" Plate	103.25 - 103.50	Auto	0.0507
L13	32	CCI 4.5" x 1" Plate	103.25 - 103.50	Auto	0.0507
L13	33	CCI 4.5" x 1" Plate	103.25 - 103.50	Auto	0.0507
L13	39	CCI 4.5" x 1" Plate	103.25 - 103.50	Auto	0.0507
L13	40	CCI 4.5" x 1" Plate	103.25 - 103.50	Auto	0.0507
L13	41	CCI 4.5" x 1" Plate	103.25 - 103.50	Auto	0.0507
L13	49	CCI 4" x 0.75" Plate	103.25 - 103.50	Auto	0.0000
L13	50	CCI 4" x 0.75" Plate	103.25 - 103.50	Auto	0.0000
L13	51	CCI 4" x 0.75" Plate	103.25 - 103.50	Auto	0.0000
L14	19	CCI 4.5" x 1" Plate	98.50 - 100.00	Auto	0.0113
L14	20	CCI 4.5" x 1" Plate	98.50 - 100.00	Auto	0.0113
L14	21	CCI 4.5" x 1" Plate	98.50 - 100.00	Auto	0.0113
L14	31	CCI 4.5" x 1" Plate	98.50 - 103.25	Auto	0.0249
L14	32	CCI 4.5" x 1" Plate	98.50 - 103.25	Auto	0.0249
L14	33	CCI 4.5" x 1" Plate	98.50 - 103.25	Auto	0.0249
L14	39	CCI 4.5" x 1" Plate	99.50 - 103.25	Auto	0.0291
L14	40	CCI 4.5" x 1" Plate	99.50 - 103.25	Auto	0.0291
L14	41	CCI 4.5" x 1" Plate	99.50 - 103.25	Auto	0.0291
L14	49	CCI 4" x 0.75" Plate	98.50 - 103.25	Auto	0.0000
L14	50	CCI 4" x 0.75" Plate	98.50 - 103.25	Auto	0.0000
L14	51	CCI 4" x 0.75" Plate	98.50 - 103.25	Auto	0.0000
L15	19	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0675
L15	20	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0675
L15	21	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0675
L15	31	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0675
L15	32	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0675
L15	33	CCI 4.5" x 1" Plate	98.25 - 98.50	Auto	0.0675
L15	49	CCI 4" x 0.75" Plate	98.25 - 98.50	Auto	0.0000
L15	50	CCI 4" x 0.75" Plate	98.25 - 98.50	Auto	0.0000
L15	51	CCI 4" x 0.75" Plate	98.25 - 98.50	Auto	0.0000
L16	19	CCI 4.5" x 1" Plate	97.58 - 98.25	Auto	0.0637
L16	20	CCI 4.5" x 1" Plate	97.58 - 98.25	Auto	0.0637
L16	21	CCI 4.5" x 1" Plate	97.58 - 98.25	Auto	0.0637
L16	31	CCI 4.5" x 1" Plate	97.58 - 98.25	Auto	0.0637
L16	32	CCI 4.5" x 1" Plate	97.58 - 98.25	Auto	0.0637
L16	33	CCI 4.5" x 1" Plate	97.58 - 98.25	Auto	0.0637
L16	49	CCI 4" x 0.75" Plate	97.58 - 98.25	Auto	0.0000
L16	50	CCI 4" x 0.75" Plate	97.58 - 98.25	Auto	0.0000
L16	51	CCI 4" x 0.75" Plate	97.58 - 98.25	Auto	0.0000
L17	19	CCI 4.5" x 1" Plate	97.33 - 97.58	Auto	0.0159
L17	20	CCI 4.5" x 1" Plate	97.33 - 97.58	Auto	0.0159
L17	21	CCI 4.5" x 1" Plate	97.33 - 97.58	Auto	0.0159
L17	31	CCI 4.5" x 1" Plate	97.33 - 97.58	Auto	0.0159
L17	32	CCI 4.5" x 1" Plate	97.33 - 97.58	Auto	0.0159
L17	33	CCI 4.5" x 1" Plate	97.33 - 97.58	Auto	0.0159
L17	49	CCI 4" x 0.75" Plate	97.33 - 97.58	Auto	0.0000
L17	50	CCI 4" x 0.75" Plate	97.33 - 97.58	Auto	0.0000
L17	51	CCI 4" x 0.75" Plate	97.33 - 97.58	Auto	0.0000
L18	19	CCI 4.5" x 1" Plate	92.33 - 97.33	Auto	0.0012
L18	20	CCI 4.5" x 1" Plate	92.33 - 97.33	Auto	0.0012
L18	21	CCI 4.5" x 1" Plate	92.33 - 97.33	Auto	0.0012
L18	31	CCI 4.5" x 1" Plate	92.33 - 97.33	Auto	0.0012

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L18	32	CCI 4.5" x 1" Plate	92.33 - 97.33	Auto	0.0012
L18	33	CCI 4.5" x 1" Plate	92.33 - 97.33	Auto	0.0012
L18	49	CCI 4" x 0.75" Plate	97.00 - 97.33	Auto	0.0000
L18	50	CCI 4" x 0.75" Plate	97.00 - 97.33	Auto	0.0000
L18	51	CCI 4" x 0.75" Plate	97.00 - 97.33	Auto	0.0000
L19	19	CCI 4.5" x 1" Plate	90.00 - 92.33	Auto	0.0000
L19	20	CCI 4.5" x 1" Plate	90.00 - 92.33	Auto	0.0000
L19	21	CCI 4.5" x 1" Plate	90.00 - 92.33	Auto	0.0000
L19	31	CCI 4.5" x 1" Plate	90.00 - 92.33	Auto	0.0000
L19	32	CCI 4.5" x 1" Plate	90.00 - 92.33	Auto	0.0000
L19	33	CCI 4.5" x 1" Plate	90.00 - 92.33	Auto	0.0000
L21	35	CCI 6" x 1" Plate	83.00 - 85.00	Auto	0.1368
L21	36	CCI 6" x 1" Plate	83.00 - 85.00	Auto	0.1368
L21	37	CCI 6" x 1" Plate	83.00 - 85.00	Auto	0.1368
L22	35	CCI 6" x 1" Plate	82.75 - 83.00	Auto	0.1297
L22	36	CCI 6" x 1" Plate	82.75 - 83.00	Auto	0.1297
L22	37	CCI 6" x 1" Plate	82.75 - 83.00	Auto	0.1297
L23	27	CCI 6.5" x 1.25" Plate	77.75 - 80.00	Auto	0.1733
L23	28	CCI 6.5" x 1.25" Plate	77.75 - 80.00	Auto	0.1733
L23	29	CCI 6.5" x 1.25" Plate	77.75 - 80.00	Auto	0.1733
L23	35	CCI 6" x 1" Plate	77.75 - 82.75	Auto	0.1131
L23	36	CCI 6" x 1" Plate	77.75 - 82.75	Auto	0.1131
L23	37	CCI 6" x 1" Plate	77.75 - 82.75	Auto	0.1131
L24	27	CCI 6.5" x 1.25" Plate	77.25 - 77.75	Auto	0.1653
L24	28	CCI 6.5" x 1.25" Plate	77.25 - 77.75	Auto	0.1653
L24	29	CCI 6.5" x 1.25" Plate	77.25 - 77.75	Auto	0.1653
L24	35	CCI 6" x 1" Plate	77.25 - 77.75	Auto	0.0957
L24	36	CCI 6" x 1" Plate	77.25 - 77.75	Auto	0.0957
L24	37	CCI 6" x 1" Plate	77.25 - 77.75	Auto	0.0957
L25	27	CCI 6.5" x 1.25" Plate	77.00 - 77.25	Auto	0.2850
L25	28	CCI 6.5" x 1.25" Plate	77.00 - 77.25	Auto	0.2850
L25	29	CCI 6.5" x 1.25" Plate	77.00 - 77.25	Auto	0.2850
L25	35	CCI 6" x 1" Plate	77.00 - 77.25	Auto	0.2254
L25	36	CCI 6" x 1" Plate	77.00 - 77.25	Auto	0.2254
L25	37	CCI 6" x 1" Plate	77.00 - 77.25	Auto	0.2254
L26	27	CCI 6.5" x 1.25" Plate	76.75 - 77.00	Auto	0.2327
L26	28	CCI 6.5" x 1.25" Plate	76.75 - 77.00	Auto	0.2327
L26	29	CCI 6.5" x 1.25" Plate	76.75 - 77.00	Auto	0.2327
L26	35	CCI 6" x 1" Plate	76.75 - 77.00	Auto	0.1688
L26	36	CCI 6" x 1" Plate	76.75 - 77.00	Auto	0.1688
L26	37	CCI 6" x 1" Plate	76.75 - 77.00	Auto	0.1688
L27	27	CCI 6.5" x 1.25" Plate	71.75 - 76.75	Auto	0.2140
L27	28	CCI 6.5" x 1.25" Plate	71.75 - 76.75	Auto	0.2140
L27	29	CCI 6.5" x 1.25" Plate	71.75 - 76.75	Auto	0.2140
L27	35	CCI 6" x 1" Plate	75.00 - 76.75	Auto	0.1588
L27	36	CCI 6" x 1" Plate	75.00 - 76.75	Auto	0.1588
L27	37	CCI 6" x 1" Plate	75.00 - 76.75	Auto	0.1588
L28	27	CCI 6.5" x 1.25" Plate	69.00 - 71.75	Auto	0.1914
L28	28	CCI 6.5" x 1.25" Plate	69.00 - 71.75	Auto	0.1914
L28	29	CCI 6.5" x 1.25" Plate	69.00 - 71.75	Auto	0.1914
L28	55	CCI 6" x 1" Plate	69.00 - 71.00	Auto	0.1217
L28	56	CCI 6" x 1" Plate	69.00 - 71.00	Auto	0.1217
L28	57	CCI 6" x 1" Plate	69.00 - 71.00	Auto	0.1217
L29	27	CCI 6.5" x 1.25" Plate	68.75 - 69.00	Auto	0.2301
L29	28	CCI 6.5" x 1.25" Plate	68.75 - 69.00	Auto	0.2301
L29	29	CCI 6.5" x 1.25" Plate	68.75 - 69.00	Auto	0.2301
L29	55	CCI 6" x 1" Plate	68.75 - 69.00	Auto	0.1659
L29	56	CCI 6" x 1" Plate	68.75 - 69.00	Auto	0.1659
L29	57	CCI 6" x 1" Plate	68.75 - 69.00	Auto	0.1659
L30	27	CCI 6.5" x 1.25" Plate	63.75 - 68.75	Auto	0.2114
L30	28	CCI 6.5" x 1.25" Plate	63.75 - 68.75	Auto	0.2114

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L30	29	CCI 6.5" x 1.25" Plate	63.75 - 68.75	Auto	0.2114
L30	55	CCI 6" x 1" Plate	63.75 - 68.75	Auto	0.1457
L30	56	CCI 6" x 1" Plate	63.75 - 68.75	Auto	0.1457
L30	57	CCI 6" x 1" Plate	63.75 - 68.75	Auto	0.1457
L31	27	CCI 6.5" x 1.25" Plate	60.00 - 63.75	Auto	0.1825
L31	28	CCI 6.5" x 1.25" Plate	60.00 - 63.75	Auto	0.1825
L31	29	CCI 6.5" x 1.25" Plate	60.00 - 63.75	Auto	0.1825
L31	47	CCI 8.5" x 1.25" Plate	60.00 - 62.25	Auto	0.3715
L31	55	CCI 6" x 1" Plate	60.00 - 63.75	Auto	0.1143
L31	56	CCI 6" x 1" Plate	60.00 - 63.75	Auto	0.1143
L31	57	CCI 6" x 1" Plate	60.00 - 63.75	Auto	0.1143
L32	27	CCI 6.5" x 1.25" Plate	59.75 - 60.00	Auto	0.1708
L32	28	CCI 6.5" x 1.25" Plate	59.75 - 60.00	Auto	0.1708
L32	29	CCI 6.5" x 1.25" Plate	59.75 - 60.00	Auto	0.1708
L32	47	CCI 8.5" x 1.25" Plate	59.75 - 60.00	Auto	0.3659
L32	55	CCI 6" x 1" Plate	59.75 - 60.00	Auto	0.1017
L32	56	CCI 6" x 1" Plate	59.75 - 60.00	Auto	0.1017
L32	57	CCI 6" x 1" Plate	59.75 - 60.00	Auto	0.1017
L33	27	CCI 6.5" x 1.25" Plate	58.50 - 59.75	Auto	0.1664
L33	28	CCI 6.5" x 1.25" Plate	58.50 - 59.75	Auto	0.1664
L33	29	CCI 6.5" x 1.25" Plate	58.50 - 59.75	Auto	0.1664
L33	47	CCI 8.5" x 1.25" Plate	58.50 - 59.75	Auto	0.3626
L33	53	CCI 6.5" x 1.25" Plate	58.50 - 59.50	Auto	0.1657
L33	55	CCI 6" x 1" Plate	58.50 - 59.75	Auto	0.0970
L33	56	CCI 6" x 1" Plate	58.50 - 59.75	Auto	0.0970
L33	57	CCI 6" x 1" Plate	58.50 - 59.75	Auto	0.0970
L34	27	CCI 6.5" x 1.25" Plate	58.25 - 58.50	Auto	0.1621
L34	28	CCI 6.5" x 1.25" Plate	58.25 - 58.50	Auto	0.1621
L34	29	CCI 6.5" x 1.25" Plate	58.25 - 58.50	Auto	0.1621
L34	47	CCI 8.5" x 1.25" Plate	58.25 - 58.50	Auto	0.3592
L34	53	CCI 6.5" x 1.25" Plate	58.25 - 58.50	Auto	0.1621
L34	55	CCI 6" x 1" Plate	58.25 - 58.50	Auto	0.0922
L34	56	CCI 6" x 1" Plate	58.25 - 58.50	Auto	0.0922
L34	57	CCI 6" x 1" Plate	58.25 - 58.50	Auto	0.0922
L35	27	CCI 6.5" x 1.25" Plate	58.00 - 58.25	Auto	0.1606
L35	28	CCI 6.5" x 1.25" Plate	58.00 - 58.25	Auto	0.1606
L35	29	CCI 6.5" x 1.25" Plate	58.00 - 58.25	Auto	0.1606
L35	47	CCI 8.5" x 1.25" Plate	58.00 - 58.25	Auto	0.3581
L35	53	CCI 6.5" x 1.25" Plate	58.00 - 58.25	Auto	0.1606
L35	55	CCI 6" x 1" Plate	58.00 - 58.25	Auto	0.0906
L35	56	CCI 6" x 1" Plate	58.00 - 58.25	Auto	0.0906
L35	57	CCI 6" x 1" Plate	58.00 - 58.25	Auto	0.0906
L36	27	CCI 6.5" x 1.25" Plate	57.75 - 58.00	Auto	0.1151
L36	28	CCI 6.5" x 1.25" Plate	57.75 - 58.00	Auto	0.1151
L36	29	CCI 6.5" x 1.25" Plate	57.75 - 58.00	Auto	0.1151
L36	47	CCI 8.5" x 1.25" Plate	57.75 - 58.00	Auto	0.3233
L36	53	CCI 6.5" x 1.25" Plate	57.75 - 58.00	Auto	0.1151
L36	55	CCI 6" x 1" Plate	57.75 - 58.00	Auto	0.0414
L36	56	CCI 6" x 1" Plate	57.75 - 58.00	Auto	0.0414
L36	57	CCI 6" x 1" Plate	57.75 - 58.00	Auto	0.0414
L37	27	CCI 6.5" x 1.25" Plate	56.75 - 57.75	Auto	0.1115
L37	28	CCI 6.5" x 1.25" Plate	56.75 - 57.75	Auto	0.1115
L37	29	CCI 6.5" x 1.25" Plate	56.75 - 57.75	Auto	0.1115
L37	47	CCI 8.5" x 1.25" Plate	56.75 - 57.75	Auto	0.3206
L37	53	CCI 6.5" x 1.25" Plate	56.75 - 57.75	Auto	0.1115
L37	55	CCI 6" x 1" Plate	56.75 - 57.75	Auto	0.0374
L37	56	CCI 6" x 1" Plate	56.75 - 57.75	Auto	0.0374
L37	57	CCI 6" x 1" Plate	56.75 - 57.75	Auto	0.0374
L38	27	CCI 6.5" x 1.25" Plate	56.50 - 56.75	Auto	0.1417
L38	28	CCI 6.5" x 1.25" Plate	56.50 - 56.75	Auto	0.1417
L38	29	CCI 6.5" x 1.25" Plate	56.50 - 56.75	Auto	0.1417

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L38	47	CCI 8.5" x 1.25" Plate	56.50 - 56.75	Auto	0.3436
L38	53	CCI 6.5" x 1.25" Plate	56.50 - 56.75	Auto	0.1417
L38	55	CCI 6" x 1" Plate	56.50 - 56.75	Auto	0.0702
L38	56	CCI 6" x 1" Plate	56.50 - 56.75	Auto	0.0702
L38	57	CCI 6" x 1" Plate	56.50 - 56.75	Auto	0.0702
L39	27	CCI 6.5" x 1.25" Plate	51.50 - 56.50	Auto	0.1230
L39	28	CCI 6.5" x 1.25" Plate	51.50 - 56.50	Auto	0.1230
L39	29	CCI 6.5" x 1.25" Plate	51.50 - 56.50	Auto	0.1230
L39	47	CCI 8.5" x 1.25" Plate	51.50 - 56.50	Auto	0.3293
L39	53	CCI 6.5" x 1.25" Plate	51.50 - 56.50	Auto	0.1230
L39	55	CCI 6" x 1" Plate	56.00 - 56.50	Auto	0.0641
L39	56	CCI 6" x 1" Plate	56.00 - 56.50	Auto	0.0641
L39	57	CCI 6" x 1" Plate	56.00 - 56.50	Auto	0.0641
L40	27	CCI 6.5" x 1.25" Plate	42.04 - 51.50	Auto	0.0774
L40	28	CCI 6.5" x 1.25" Plate	42.04 - 51.50	Auto	0.0774
L40	29	CCI 6.5" x 1.25" Plate	42.04 - 51.50	Auto	0.0774
L40	47	CCI 8.5" x 1.25" Plate	42.04 - 51.50	Auto	0.2945
L40	53	CCI 6.5" x 1.25" Plate	42.04 - 51.50	Auto	0.0774
L41	27	CCI 6.5" x 1.25" Plate	41.04 - 42.04	Auto	0.0876
L41	28	CCI 6.5" x 1.25" Plate	41.04 - 42.04	Auto	0.0876
L41	29	CCI 6.5" x 1.25" Plate	41.04 - 42.04	Auto	0.0876
L41	47	CCI 8.5" x 1.25" Plate	41.04 - 42.04	Auto	0.3023
L41	53	CCI 6.5" x 1.25" Plate	41.04 - 42.04	Auto	0.0876
L42	27	CCI 6.5" x 1.25" Plate	36.04 - 41.04	Auto	0.0702
L42	28	CCI 6.5" x 1.25" Plate	36.04 - 41.04	Auto	0.0702
L42	29	CCI 6.5" x 1.25" Plate	36.04 - 41.04	Auto	0.0702
L42	47	CCI 8.5" x 1.25" Plate	36.04 - 41.04	Auto	0.2890
L42	53	CCI 6.5" x 1.25" Plate	36.04 - 41.04	Auto	0.0702
L43	23	CCI 8.5" x 1.25" Plate	31.25 - 35.00	Auto	0.2597
L43	24	CCI 8.5" x 1.25" Plate	31.25 - 35.00	Auto	0.2597
L43	25	CCI 8.5" x 1.25" Plate	31.25 - 35.00	Auto	0.2597
L43	27	CCI 6.5" x 1.25" Plate	31.25 - 36.04	Auto	0.0349
L43	28	CCI 6.5" x 1.25" Plate	35.00 - 36.04	Auto	0.0458
L43	29	CCI 6.5" x 1.25" Plate	35.00 - 36.04	Auto	0.0458
L43	47	CCI 8.5" x 1.25" Plate	31.25 - 36.04	Auto	0.2620
L43	53	CCI 6.5" x 1.25" Plate	31.25 - 36.04	Auto	0.0349
L44	23	CCI 8.5" x 1.25" Plate	31.00 - 31.25	Auto	0.2275
L44	24	CCI 8.5" x 1.25" Plate	31.00 - 31.25	Auto	0.2275
L44	25	CCI 8.5" x 1.25" Plate	31.00 - 31.25	Auto	0.2275
L44	27	CCI 6.5" x 1.25" Plate	31.00 - 31.25	Auto	0.0000
L44	47	CCI 8.5" x 1.25" Plate	31.00 - 31.25	Auto	0.2275
L44	53	CCI 6.5" x 1.25" Plate	31.00 - 31.25	Auto	0.0000
L45	23	CCI 8.5" x 1.25" Plate	27.75 - 31.00	Auto	0.2197
L45	24	CCI 8.5" x 1.25" Plate	27.75 - 31.00	Auto	0.2197
L45	25	CCI 8.5" x 1.25" Plate	27.75 - 31.00	Auto	0.2197
L45	27	CCI 6.5" x 1.25" Plate	27.75 - 31.00	Auto	0.0000
L45	43	CCI 5.5" x 1.25" Plate	27.75 - 30.00	Auto	0.0000
L45	44	CCI 5.5" x 1.25" Plate	27.75 - 30.00	Auto	0.0000
L45	45	CCI 6.5" x 1.25" Plate	27.75 - 30.00	Auto	0.0000
L45	47	CCI 8.5" x 1.25" Plate	27.75 - 31.00	Auto	0.2197
L45	53	CCI 6.5" x 1.25" Plate	27.75 - 31.00	Auto	0.0000
L46	23	CCI 8.5" x 1.25" Plate	27.50 - 27.75	Auto	0.2119
L46	24	CCI 8.5" x 1.25" Plate	27.50 - 27.75	Auto	0.2119
L46	25	CCI 8.5" x 1.25" Plate	27.50 - 27.75	Auto	0.2119
L46	27	CCI 6.5" x 1.25" Plate	27.50 - 27.75	Auto	0.0000
L46	43	CCI 5.5" x 1.25" Plate	27.50 - 27.75	Auto	0.0000
L46	44	CCI 5.5" x 1.25" Plate	27.50 - 27.75	Auto	0.0000
L46	45	CCI 6.5" x 1.25" Plate	27.50 - 27.75	Auto	0.0000
L46	47	CCI 8.5" x 1.25" Plate	27.50 - 27.75	Auto	0.2119
L46	53	CCI 6.5" x 1.25" Plate	27.50 - 27.75	Auto	0.0000
L47	23	CCI 8.5" x 1.25" Plate	27.25 - 27.50	Auto	0.2108

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L47	24	CCI 8.5" x 1.25" Plate	27.25 - 27.50	Auto	0.2108
L47	25	CCI 8.5" x 1.25" Plate	27.25 - 27.50	Auto	0.2108
L47	27	CCI 6.5" x 1.25" Plate	27.25 - 27.50	Auto	0.0000
L47	43	CCI 5.5" x 1.25" Plate	27.25 - 27.50	Auto	0.0000
L47	44	CCI 5.5" x 1.25" Plate	27.25 - 27.50	Auto	0.0000
L47	45	CCI 6.5" x 1.25" Plate	27.25 - 27.50	Auto	0.0000
L47	47	CCI 8.5" x 1.25" Plate	27.25 - 27.50	Auto	0.2108
L47	53	CCI 6.5" x 1.25" Plate	27.25 - 27.50	Auto	0.0000
L48	23	CCI 8.5" x 1.25" Plate	27.00 - 27.25	Auto	0.2252
L48	24	CCI 8.5" x 1.25" Plate	27.00 - 27.25	Auto	0.2252
L48	25	CCI 8.5" x 1.25" Plate	27.00 - 27.25	Auto	0.2252
L48	27	CCI 6.5" x 1.25" Plate	27.00 - 27.25	Auto	0.0000
L48	43	CCI 5.5" x 1.25" Plate	27.00 - 27.25	Auto	0.0000
L48	44	CCI 5.5" x 1.25" Plate	27.00 - 27.25	Auto	0.0000
L48	45	CCI 6.5" x 1.25" Plate	27.00 - 27.25	Auto	0.0000
L48	53	CCI 6.5" x 1.25" Plate	27.00 - 27.25	Auto	0.0000
L49	23	CCI 8.5" x 1.25" Plate	22.00 - 27.00	Auto	0.2109
L49	24	CCI 8.5" x 1.25" Plate	22.00 - 27.00	Auto	0.2109
L49	25	CCI 8.5" x 1.25" Plate	22.00 - 27.00	Auto	0.2109
L49	27	CCI 6.5" x 1.25" Plate	25.00 - 27.00	Auto	0.0000
L49	43	CCI 5.5" x 1.25" Plate	22.00 - 27.00	Auto	0.0000
L49	44	CCI 5.5" x 1.25" Plate	22.00 - 27.00	Auto	0.0000
L49	45	CCI 6.5" x 1.25" Plate	22.00 - 27.00	Auto	0.0000
L49	53	CCI 6.5" x 1.25" Plate	24.50 - 27.00	Auto	0.0000
L50	23	CCI 8.5" x 1.25" Plate	17.00 - 22.00	Auto	0.1887
L50	24	CCI 8.5" x 1.25" Plate	17.00 - 22.00	Auto	0.1887
L50	25	CCI 8.5" x 1.25" Plate	17.00 - 22.00	Auto	0.1887
L50	43	CCI 5.5" x 1.25" Plate	17.00 - 22.00	Auto	0.0000
L50	44	CCI 5.5" x 1.25" Plate	17.00 - 22.00	Auto	0.0000
L50	45	CCI 6.5" x 1.25" Plate	17.00 - 22.00	Auto	0.0000
L51	23	CCI 8.5" x 1.25" Plate	12.00 - 17.00	Auto	0.1664
L51	24	CCI 8.5" x 1.25" Plate	12.00 - 17.00	Auto	0.1664
L51	25	CCI 8.5" x 1.25" Plate	12.00 - 17.00	Auto	0.1664
L51	43	CCI 5.5" x 1.25" Plate	12.00 - 17.00	Auto	0.0000
L51	44	CCI 5.5" x 1.25" Plate	12.00 - 17.00	Auto	0.0000
L51	45	CCI 6.5" x 1.25" Plate	12.00 - 17.00	Auto	0.0000
L52	23	CCI 8.5" x 1.25" Plate	7.00 - 12.00	Auto	0.1442
L52	24	CCI 8.5" x 1.25" Plate	7.00 - 12.00	Auto	0.1442
L52	25	CCI 8.5" x 1.25" Plate	7.00 - 12.00	Auto	0.1442
L52	43	CCI 5.5" x 1.25" Plate	7.00 - 12.00	Auto	0.0000
L52	44	CCI 5.5" x 1.25" Plate	7.00 - 12.00	Auto	0.0000
L52	45	CCI 6.5" x 1.25" Plate	7.00 - 12.00	Auto	0.0000
L53	23	CCI 8.5" x 1.25" Plate	2.00 - 7.00	Auto	0.1193
L53	24	CCI 8.5" x 1.25" Plate	2.00 - 7.00	Auto	0.1193
L53	25	CCI 8.5" x 1.25" Plate	2.00 - 7.00	Auto	0.1193
L53	43	CCI 5.5" x 1.25" Plate	2.00 - 7.00	Auto	0.0000
L53	44	CCI 5.5" x 1.25" Plate	2.00 - 7.00	Auto	0.0000
L53	45	CCI 6.5" x 1.25" Plate	2.00 - 7.00	Auto	0.0000
L54	23	CCI 8.5" x 1.25" Plate	0.00 - 2.00	Auto	0.1037
L54	24	CCI 8.5" x 1.25" Plate	0.00 - 2.00	Auto	0.1037
L54	25	CCI 8.5" x 1.25" Plate	0.00 - 2.00	Auto	0.1037
L54	43	CCI 5.5" x 1.25" Plate	0.00 - 2.00	Auto	0.0000
L54	44	CCI 5.5" x 1.25" Plate	0.00 - 2.00	Auto	0.0000
L54	45	CCI 6.5" x 1.25" Plate	0.00 - 2.00	Auto	0.0000

Discrete Tower Loads

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
Lightning Rod 5/8" x 5'	C	None		0.000	147.000	No Ice	0.313	0.313	0.006
						1/2" Ice	0.826	0.826	0.010
						1" Ice	1.322	1.322	0.016
						2" Ice	1.957	1.957	0.040
Strobe	C	None		0.000	149.500	No Ice	4.500	3.000	0.020
						1/2" Ice	4.770	3.237	0.058
						1" Ice	5.048	3.481	0.100
						2" Ice	5.626	3.993	0.198
5' x 2" Pipe Mount	C	None		0.000	147.000	No Ice	1.188	1.188	0.018
						1/2" Ice	1.496	1.496	0.027
						1" Ice	1.807	1.807	0.040
						2" Ice	2.458	2.458	0.076
Top Hat	C	None		0.000	146.000	No Ice	3.000	3.000	0.081
						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
						2" Ice	4.920	4.920	0.201
*									
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	147.000	No Ice	5.746	4.254	0.055
						1/2" Ice	6.179	5.014	0.103
						1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	147.000	No Ice	5.746	4.254	0.055
						1/2" Ice	6.179	5.014	0.103
						1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	147.000	No Ice	5.746	4.254	0.055
						1/2" Ice	6.179	5.014	0.103
						1" Ice	6.607	5.711	0.157
						2" Ice	7.488	7.155	0.287
840370799 w/ Mount Pipe	A	From Leg	4.000 0.000 -1.000	0.000	147.000	No Ice	12.880	7.800	0.168
						1/2" Ice	13.850	8.710	0.258
						1" Ice	14.840	9.640	0.361
						2" Ice	16.860	11.560	0.610
840370799 w/ Mount Pipe	B	From Leg	4.000 0.000 -1.000	0.000	147.000	No Ice	12.880	7.800	0.168
						1/2" Ice	13.850	8.710	0.258
						1" Ice	14.840	9.640	0.361
						2" Ice	16.860	11.560	0.610
840370799 w/ Mount Pipe	C	From Leg	4.000 0.000 -1.000	0.000	147.000	No Ice	12.880	7.800	0.168
						1/2" Ice	13.850	8.710	0.258
						1" Ice	14.840	9.640	0.361
						2" Ice	16.860	11.560	0.610
SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.000 0.000 -1.000	0.000	147.000	No Ice	5.560	4.470	0.085
						1/2" Ice	6.070	4.970	0.167
						1" Ice	6.590	5.470	0.262
						2" Ice	7.650	6.520	0.495
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From Leg	4.000 0.000 -1.000	0.000	147.000	No Ice	6.090	4.310	0.092
						1/2" Ice	6.660	4.860	0.170
						1" Ice	7.240	5.420	0.261
						2" Ice	8.430	6.570	0.484
AM-X-CD-17-65-00T-RET w/ Mount Pipe	C	From Leg	4.000 0.000 -1.000	0.000	147.000	No Ice	6.090	4.310	0.092
						1/2" Ice	6.660	4.860	0.170
						1" Ice	7.240	5.420	0.261
						2" Ice	8.430	6.570	0.484
(2) RRUS 11	A	From Leg	4.000	0.000	147.000	No Ice	2.784	1.187	0.048

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	2.992	1.334	0.068
			0.000			1" Ice	3.207	1.490	0.092
						2" Ice	3.658	1.833	0.150
(2) RRUS 11	B	From Leg	4.000	0.000	147.000	No Ice	2.784	1.187	0.048
			0.000			1/2" Ice	2.992	1.334	0.068
			0.000			1" Ice	3.207	1.490	0.092
						2" Ice	3.658	1.833	0.150
(2) RRUS 11	C	From Leg	4.000	0.000	147.000	No Ice	2.784	1.187	0.048
			0.000			1/2" Ice	2.992	1.334	0.068
			0.000			1" Ice	3.207	1.490	0.092
						2" Ice	3.658	1.833	0.150
RRUS 32	A	From Leg	4.000	0.000	147.000	No Ice	2.857	1.777	0.055
			0.000			1/2" Ice	3.083	1.968	0.077
			0.000			1" Ice	3.316	2.166	0.103
						2" Ice	3.805	2.583	0.165
RRUS 32	B	From Leg	4.000	0.000	147.000	No Ice	2.857	1.777	0.055
			0.000			1/2" Ice	3.083	1.968	0.077
			0.000			1" Ice	3.316	2.166	0.103
						2" Ice	3.805	2.583	0.165
RRUS 32	C	From Leg	4.000	0.000	147.000	No Ice	2.857	1.777	0.055
			0.000			1/2" Ice	3.083	1.968	0.077
			0.000			1" Ice	3.316	2.166	0.103
						2" Ice	3.805	2.583	0.165
RRUS 32 B2	A	From Leg	4.000	0.000	147.000	No Ice	2.731	1.668	0.053
			0.000			1/2" Ice	2.953	1.855	0.074
			0.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 32 B2	B	From Leg	4.000	0.000	147.000	No Ice	2.731	1.668	0.053
			0.000			1/2" Ice	2.953	1.855	0.074
			0.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 32 B2	C	From Leg	4.000	0.000	147.000	No Ice	2.731	1.668	0.053
			0.000			1/2" Ice	2.953	1.855	0.074
			0.000			1" Ice	3.182	2.049	0.098
						2" Ice	3.663	2.458	0.157
RRUS 4478 B5	A	From Leg	4.000	0.000	147.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B5	B	From Leg	4.000	0.000	147.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B5	C	From Leg	4.000	0.000	147.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14	A	From Leg	4.000	0.000	147.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14	B	From Leg	4.000	0.000	147.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076
			0.000			1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14	C	From Leg	4.000	0.000	147.000	No Ice	1.843	1.059	0.060
			0.000			1/2" Ice	2.012	1.197	0.076

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
(2) 7020.00	A	From Leg	4.000	0.000	147.000	No Ice	0.102	0.175	0.002
			0.000			1/2" Ice	0.147	0.239	0.005
			0.000			1" Ice	0.199	0.311	0.009
						2" Ice	0.326	0.476	0.022
(2) 7020.00	B	From Leg	4.000	0.000	147.000	No Ice	0.102	0.175	0.002
			0.000			1/2" Ice	0.147	0.239	0.005
			0.000			1" Ice	0.199	0.311	0.009
						2" Ice	0.326	0.476	0.022
(2) 7020.00	C	From Leg	4.000	0.000	147.000	No Ice	0.102	0.175	0.002
			0.000			1/2" Ice	0.147	0.239	0.005
			0.000			1" Ice	0.199	0.311	0.009
						2" Ice	0.326	0.476	0.022
(2) LGP21401	A	From Leg	4.000	0.000	147.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	B	From Leg	4.000	0.000	147.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	C	From Leg	4.000	0.000	147.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) DBCT108F1V92-1	A	From Leg	4.000	0.000	147.000	No Ice	0.637	0.604	0.029
			0.000			1/2" Ice	0.740	0.705	0.036
			0.000			1" Ice	0.850	0.813	0.045
						2" Ice	1.093	1.052	0.069
(2) DBCT108F1V92-1	B	From Leg	4.000	0.000	147.000	No Ice	0.637	0.604	0.029
			0.000			1/2" Ice	0.740	0.705	0.036
			0.000			1" Ice	0.850	0.813	0.045
						2" Ice	1.093	1.052	0.069
(2) DBCT108F1V92-1	C	From Leg	4.000	0.000	147.000	No Ice	0.637	0.604	0.029
			0.000			1/2" Ice	0.740	0.705	0.036
			0.000			1" Ice	0.850	0.813	0.045
						2" Ice	1.093	1.052	0.069
DC6-48-60-18-8F	A	From Leg	4.000	0.000	147.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			-1.000			1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
DC6-48-60-0-8F	B	From Leg	4.000	0.000	147.000	No Ice	0.917	0.917	0.033
			0.000			1/2" Ice	1.458	1.458	0.051
			-1.000			1" Ice	1.643	1.643	0.071
						2" Ice	2.042	2.042	0.119
DC6-48-60-18-8F	C	From Leg	4.000	0.000	147.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			-1.000			1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
8' x 2" Pipe Mount	A	From Leg	4.000	0.000	147.000	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
						2" Ice	4.396	4.396	0.119
8' x 2" Pipe Mount	B	From Leg	4.000	0.000	147.000	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

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	4.396	4.396	0.119
8' x 2" Pipe Mount	C	From Leg	4.000 0.000 0.000	0.000	147.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Platform Mount [LP 602-1]	C	None		0.000	147.000	No Ice 1/2" Ice 1" Ice 2" Ice	31.070 34.820 38.480 45.600	31.070 34.820 38.480 45.600	1.343 1.967 2.669 4.314
Transition Ladder	A	From Leg	3.000 0.000 -2.000	0.000	147.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.000 8.000 10.000 14.000	6.000 8.000 10.000 14.000	0.160 0.240 0.320 0.480
*									
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.970 8.730 9.500 11.110	5.990 6.720 7.470 9.020	0.078 0.141 0.216 0.399
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.970 8.730 9.500 11.110	5.990 6.720 7.470 9.020	0.078 0.141 0.216 0.399
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.970 8.730 9.500 11.110	5.990 6.720 7.470 9.020	0.078 0.141 0.216 0.399
QUAD656C0000X w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.900 14.770 15.640 17.460	6.620 7.390 8.170 9.780	0.096 0.184 0.283 0.518
QUAD656C0000X w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.900 14.770 15.640 17.460	6.620 7.390 8.170 9.780	0.096 0.184 0.283 0.518
QUAD656C0000X w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	13.900 14.770 15.640 17.460	6.620 7.390 8.170 9.780	0.096 0.184 0.283 0.518
LNX-6512DS-VTM w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.670 2.940 3.220 3.810	2.150 2.420 2.690 3.250	0.047 0.091 0.143 0.272
LNX-6512DS-VTM w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.670 2.940 3.220 3.810	2.150 2.420 2.690 3.250	0.047 0.091 0.143 0.272
LNX-6512DS-VTM w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.670 2.940 3.220 3.810	2.150 2.420 2.690 3.250	0.047 0.091 0.143 0.272
B66A RRH4X45	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.537 2.750 2.970 3.432	1.610 1.791 1.978 2.374	0.057 0.077 0.100 0.157
B66A RRH4X45	B	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice	2.537 2.750 2.970	1.610 1.791 1.978	0.057 0.077 0.100

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	3.432	2.374	0.157
B66A RRH4X45	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.537 2.750 2.970 3.432	1.610 1.791 1.978 2.374	0.057 0.077 0.100 0.157
RRH2X60-700	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-700	B	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-700	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.500 3.761 4.029 4.585	1.816 2.052 2.289 2.785	0.060 0.083 0.109 0.173
RRH2X60-PCS	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
RRH2X60-PCS	B	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
RRH2X60-PCS	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.200 2.393 2.593 3.015	1.723 1.901 2.087 2.480	0.055 0.075 0.099 0.155
DB-T1-6Z-8AB-0Z	A	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.800 5.070 5.348 5.926	2.000 2.193 2.393 2.815	0.044 0.080 0.120 0.213
DB-T1-6Z-8AB-0Z	C	From Leg	4.000 0.000 0.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.800 5.070 5.348 5.926	2.000 2.193 2.393 2.815	0.044 0.080 0.120 0.213
Platform Mount [LP 601-1]	C	None		0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	28.500 31.690 34.870 41.230	28.500 31.690 34.870 41.230	1.122 1.676 2.282 3.653
Transition Ladder	A	From Leg	3.000 0.000 -2.000	0.000	135.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.000 8.000 10.000 14.000	6.000 8.000 10.000 14.000	0.160 0.240 0.320 0.480
*									
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.087 7.561 8.021 8.966	6.392 7.249 7.991 9.526	0.194 0.257 0.328 0.493
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	7.087 7.561 8.021 8.966	6.392 7.249 7.991 9.526	0.194 0.257 0.328 0.493
AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice	7.087 7.561 8.021	6.392 7.249 7.991	0.194 0.257 0.328

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	8.966	9.526	0.493
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.870 6.233 6.606 7.382	3.270 3.728 4.203 5.200	0.128 0.177 0.232 0.359
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.870 6.233 6.606 7.382	3.270 3.728 4.203 5.200	0.128 0.177 0.232 0.359
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.870 6.233 6.606 7.382	3.270 3.728 4.203 5.200	0.128 0.177 0.232 0.359
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4415 B25_TMO	A	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	0.870 0.997 1.134 1.432	0.047 0.062 0.079 0.122
RADIO 4415 B25_TMO	B	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	0.870 0.997 1.134 1.432	0.047 0.062 0.079 0.122
RADIO 4415 B25_TMO	C	From Leg	4.000 0.000 0.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.856 2.027 2.204 2.582	0.870 0.997 1.134 1.432	0.047 0.062 0.079 0.122
Platform Mount [LP 601-1]	C	None		0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	28.500 31.690 34.870 41.230	28.500 31.690 34.870 41.230	1.122 1.676 2.282 3.653
Transition Ladder	A	From Leg	3.000 0.000 -2.000	0.000	128.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.000 8.000 10.000 14.000	6.000 8.000 10.000 14.000	0.160 0.240 0.320 0.480

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
Miscellaneous [NA 507-1]	C	None		0.000	130.000	No Ice	4.560	4.560	0.245
						1/2" Ice	6.390	6.390	0.311
						1" Ice	8.180	8.180	0.402
						2" Ice	11.660	11.660	0.657
*									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	118.000	No Ice	4.600	4.010	0.095
						1/2" Ice	5.050	4.450	0.160
			0.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	118.000	No Ice	4.600	4.010	0.095
						1/2" Ice	5.050	4.450	0.160
			0.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	118.000	No Ice	4.600	4.010	0.095
						1/2" Ice	5.050	4.450	0.160
			0.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	118.000	No Ice	4.090	2.860	0.077
						1/2" Ice	4.480	3.230	0.127
			0.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	118.000	No Ice	4.090	2.860	0.077
						1/2" Ice	4.480	3.230	0.127
			0.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	118.000	No Ice	4.090	2.860	0.077
						1/2" Ice	4.480	3.230	0.127
			0.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
TD-RRH8X20-25	A	From Leg	4.000 0.000	0.000	118.000	No Ice	4.045	1.535	0.070
						1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
TD-RRH8X20-25	B	From Leg	4.000 0.000	0.000	118.000	No Ice	4.045	1.535	0.070
						1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
TD-RRH8X20-25	C	From Leg	4.000 0.000	0.000	118.000	No Ice	4.045	1.535	0.070
						1/2" Ice	4.298	1.714	0.097
			0.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
Platform Mount [LP 601-1]	C	None		0.000	118.000	No Ice	28.500	28.500	1.122
						1/2" Ice	31.690	31.690	1.676
						1" Ice	34.870	34.870	2.282
						2" Ice	41.230	41.230	3.653
Transition Ladder	A	From Leg	3.000 0.000	0.000	118.000	No Ice	6.000	6.000	0.160
						1/2" Ice	8.000	8.000	0.240
			-2.000			1" Ice	10.000	10.000	0.320
						2" Ice	14.000	14.000	0.480
*									
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	4.000 0.000	0.000	108.000	No Ice	2.322	2.238	0.060
						1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	4.000 0.000	0.000	108.000	No Ice	2.322	2.238	0.060
						1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	3.185	3.093	0.173
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	4.000 0.000 0.000	0.000	108.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.322 2.527 2.739 3.185	2.238 2.441 2.651 3.093	0.060 0.083 0.110 0.173
TME-800MHz 2X50W RRH W/FILTER	A	From Leg	4.000 0.000 -2.000	0.000	108.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.064 0.086 0.111 0.172
TME-800MHz 2X50W RRH W/FILTER	B	From Leg	4.000 0.000 -2.000	0.000	108.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.064 0.086 0.111 0.172
TME-800MHz 2X50W RRH W/FILTER	C	From Leg	4.000 0.000 -2.000	0.000	108.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.064 0.086 0.111 0.172
Side Arm Mount [SO 102-3]	C	None		0.000	108.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.600 4.180 4.750 5.900	3.600 4.180 4.750 5.900	0.075 0.105 0.135 0.195
*									
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
8' x 2" Pipe Mount	A	From Leg	4.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
8' x 2" Pipe Mount	B	From Leg	4.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
8' x 2" Pipe Mount	C	From Leg	4.000 0.000 0.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Platform Mount [LP 601-1]	C	None		0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	28.500 31.690 34.870 41.230	28.500 31.690 34.870 41.230	1.122 1.676 2.282 3.653
Transition Ladder	A	From Leg	3.000 0.000 -2.000	0.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice	6.000 8.000 10.000 14.000	6.000 8.000 10.000 14.000	0.160 0.240 0.320 0.480
*									

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
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	144.5 - 139.5	Pole	Max Tension	26	0.000	-0.000	-0.000
			Max. Compression	26	-12.325	0.081	1.789
			Max. Mx	20	-3.686	76.253	0.558
			Max. My	2	-3.687	-0.008	76.679
			Max. Vy	20	-11.117	76.253	0.558
			Max. Vx	2	-11.075	-0.008	76.679
			Max. Torque	20			-1.643
L2	139.5 - 134.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.927	0.847	3.983
			Max. Mx	20	-6.368	136.397	1.251
			Max. My	2	-6.357	0.133	137.306
			Max. Vy	20	-19.388	136.397	1.251
			Max. Vx	2	-19.416	0.133	137.306
			Max. Torque	20			-3.287
L3	134.5 - 129.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-23.186	0.876	4.094
			Max. Mx	20	-7.094	234.673	1.033
			Max. My	2	-7.083	-0.169	235.722
			Max. Vy	20	-20.183	234.673	1.033
			Max. Vx	2	-20.211	-0.169	235.722
			Max. Torque	20			-3.286
L4	129.5 - 124.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.482	0.908	5.934
			Max. Mx	20	-10.690	357.981	1.408
			Max. My	2	-10.678	-0.474	359.939
			Max. Vy	20	-26.928	357.981	1.408
			Max. Vx	2	-26.957	-0.474	359.939
			Max. Torque	21			-4.708
L5	124.5 - 117.568	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-32.964	0.928	6.012
			Max. Mx	20	-11.101	441.630	1.272
			Max. My	2	-11.089	-0.664	443.678
			Max. Vy	20	-27.210	441.630	1.272
			Max. Vx	2	-27.239	-0.664	443.678
			Max. Torque	21			-4.704
L6	117.568 - 116.409	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.172	0.959	7.879
			Max. Mx	20	-14.029	584.455	1.669
			Max. My	2	-14.017	-0.972	587.437
			Max. Vy	20	-31.615	584.455	1.669
			Max. Vx	2	-31.645	-0.972	587.437
			Max. Torque	20			-6.204
L7	116.409 - 112.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.928	0.984	7.975
			Max. Mx	20	-14.683	706.026	1.493
			Max. My	2	-14.672	-1.210	709.122
			Max. Vy	20	-31.966	706.026	1.493
			Max. Vx	2	-31.996	-1.210	709.122
			Max. Torque	20			-6.202
L8	112.583 - 112.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.982	0.985	7.981
			Max. Mx	20	-14.756	714.017	1.479
			Max. My	2	-14.745	-1.225	717.120
			Max. Vy	20	-31.976	714.017	1.479
			Max. Vx	2	-32.006	-1.225	717.120
			Max. Torque	20			-6.197

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L9	112.333 - 107.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.150	1.016	8.092
			Max. Mx	20	-16.099	875.012	1.235
			Max. My	2	-16.089	-1.536	878.262
			Max. Vy	20	-33.301	875.012	1.235
			Max. Vx	2	-33.331	-1.536	878.262
			Max. Torque	20			-6.196
L10	107.333 - 106.92	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.243	1.018	8.100
			Max. Mx	20	-16.196	888.767	1.213
			Max. My	2	-16.186	-1.562	892.029
			Max. Vy	20	-33.329	888.767	1.213
			Max. Vx	2	-33.358	-1.562	892.029
			Max. Torque	20			-6.188
L11	106.92 - 106.67	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-43.328	1.020	8.106
			Max. Mx	20	-16.267	897.101	1.201
			Max. My	2	-16.257	-1.578	900.370
			Max. Vy	20	-33.352	897.101	1.201
			Max. Vx	2	-33.382	-1.578	900.370
			Max. Torque	20			-6.187
L12	106.67 - 103.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-44.445	1.039	8.170
			Max. Mx	20	-17.048	1003.381	1.045
			Max. My	2	-17.039	-1.775	1006.742
			Max. Vy	20	-33.712	1003.381	1.045
			Max. Vx	2	-33.741	-1.775	1006.742
			Max. Torque	20			-6.187
L13	103.5 - 103.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-44.537	1.040	8.175
			Max. Mx	20	-17.125	1011.810	1.032
			Max. My	2	-17.115	-1.790	1015.179
			Max. Vy	20	-33.733	1011.810	1.032
			Max. Vx	2	-33.763	-1.790	1015.179
			Max. Torque	20			-6.184
L14	103.25 - 98.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.312	1.069	10.052
			Max. Mx	20	-19.819	1184.450	1.470
			Max. My	2	-19.810	-2.087	1188.768
			Max. Vy	20	-36.903	1184.450	1.470
			Max. Vx	2	-36.933	-2.087	1188.768
			Max. Torque	20			-7.663
L15	98.5 - 98.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.419	1.071	10.058
			Max. Mx	20	-19.916	1193.676	1.456
			Max. My	2	-19.907	-2.103	1198.002
			Max. Vy	20	-36.922	1193.676	1.456
			Max. Vx	2	-36.953	-2.103	1198.002
			Max. Torque	20			-7.658
L16	98.25 - 97.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.707	1.075	10.071
			Max. Mx	20	-20.117	1218.439	1.423
			Max. My	2	-20.108	-2.144	1222.785
			Max. Vy	20	-37.005	1218.439	1.423
			Max. Vx	2	-37.035	-2.144	1222.785
			Max. Torque	20			-7.658
L17	97.58 - 97.33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-50.805	1.076	10.076

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-20.193	1227.693	1.410
			Max. My	2	-20.184	-2.160	1232.046
			Max. Vy	20	-37.030	1227.693	1.410
			Max. Vx	2	-37.061	-2.160	1232.046
			Max. Torque	20			-7.657
L18	97.33 - 92.33	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-52.657	1.107	10.171
			Max. Mx	20	-21.587	1414.221	1.152
			Max. My	2	-21.579	-2.473	1418.721
			Max. Vy	20	-37.595	1414.221	1.152
			Max. Vx	2	-37.625	-2.473	1418.721
			Max. Torque	20			-7.657
L19	92.33 - 87.1178	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-52.859	1.110	10.182
			Max. Mx	20	-21.764	1436.309	1.121
			Max. My	2	-21.756	-2.510	1440.826
			Max. Vy	20	-37.655	1436.309	1.121
			Max. Vx	2	-37.685	-2.510	1440.826
			Max. Torque	20			-7.652
L20	87.1178 - 86.1178	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.715	1.145	10.284
			Max. Mx	20	-23.983	1650.164	0.827
			Max. My	2	-23.975	-2.862	1654.846
			Max. Vy	20	-38.372	1650.164	0.827
			Max. Vx	2	-38.402	-2.862	1654.846
			Max. Torque	20			-7.648
L21	86.1178 - 83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.610	1.163	10.337
			Max. Mx	20	-24.783	1770.180	0.655
			Max. My	2	-24.776	-3.058	1774.953
			Max. Vy	20	-38.655	1770.180	0.655
			Max. Vx	2	-38.684	-3.058	1774.953
			Max. Torque	20			-7.646
L22	83 - 82.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-56.685	1.165	10.341
			Max. Mx	20	-24.873	1779.841	0.640
			Max. My	2	-24.866	-3.073	1784.621
			Max. Vy	20	-38.661	1779.841	0.640
			Max. Vx	2	-38.692	-3.073	1784.621
			Max. Torque	20			-7.641
L23	82.75 - 77.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.280	1.194	10.415
			Max. Mx	20	-26.167	1974.235	0.358
			Max. My	2	-26.161	-3.387	1979.160
			Max. Vy	20	-39.122	1974.235	0.358
			Max. Vx	2	-39.151	-3.387	1979.160
			Max. Torque	20			-7.640
L24	77.75 - 77.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.450	1.197	10.422
			Max. Mx	20	-26.317	1993.797	0.328
			Max. My	2	-26.311	-3.418	1998.736
			Max. Vy	20	-39.155	1993.797	0.328
			Max. Vx	2	-39.185	-3.418	1998.736
			Max. Torque	20			-7.633
L25	77.25 - 77	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.579	1.199	10.426
			Max. Mx	20	-26.431	2003.587	0.313
			Max. My	2	-26.425	-3.433	2008.533
			Max. Vy	20	-39.178	2003.587	0.313

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-39.207	-3.433	2008.533
			Max. Torque	20			-7.633
L26	77 - 76.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.689	1.200	10.430
			Max. Mx	20	-26.515	2013.384	0.299
			Max. My	2	-26.509	-3.449	2018.338
			Max. Vy	20	-39.206	2013.384	0.299
			Max. Vx	2	-39.236	-3.449	2018.338
			Max. Torque	20			-7.633
L27	76.75 - 71.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-60.802	1.229	10.494
			Max. Mx	20	-28.225	2210.772	0.017
			Max. My	2	-28.219	-3.761	2215.869
			Max. Vy	20	-39.767	2210.772	0.017
			Max. Vx	2	-39.796	-3.761	2215.869
			Max. Torque	20			-7.632
L28	71.75 - 69	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.012	1.244	10.527
			Max. Mx	20	-29.181	2320.505	-0.140
			Max. My	2	-29.176	-3.933	2325.681
			Max. Vy	20	-40.073	2320.505	-0.140
			Max. Vx	2	-40.102	-3.933	2325.681
			Max. Torque	20			-7.628
L29	69 - 68.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-62.143	1.246	10.531
			Max. Mx	20	-29.309	2330.522	-0.156
			Max. My	2	-29.304	-3.948	2335.705
			Max. Vy	20	-40.085	2330.522	-0.156
			Max. Vx	2	-40.115	-3.948	2335.705
			Max. Torque	20			-7.626
L30	68.75 - 63.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-64.767	1.274	10.588
			Max. Mx	20	-31.393	2532.407	-0.442
			Max. My	2	-31.389	-4.260	2537.731
			Max. Vy	20	-40.684	2532.407	-0.442
			Max. Vx	2	-40.712	-4.260	2537.731
			Max. Torque	20			-7.626
L31	63.75 - 60	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.787	1.319	10.581
			Max. Mx	20	-32.985	2685.742	-0.659
			Max. My	2	-32.981	-4.494	2691.173
			Max. Vy	20	-41.124	2685.742	-0.659
			Max. Vx	2	-41.152	-4.494	2691.173
			Max. Torque	20			-7.623
L32	60 - 59.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.924	1.323	10.579
			Max. Mx	20	-33.109	2696.023	-0.675
			Max. My	2	-33.105	-4.509	2701.460
			Max. Vy	20	-41.140	2696.023	-0.675
			Max. Vx	2	-41.169	-4.509	2701.460
			Max. Torque	20			-7.621
L33	59.75 - 58.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.620	1.343	10.547
			Max. Mx	20	-33.630	2747.534	-0.747
			Max. My	2	-33.626	-4.587	2753.007
			Max. Vy	20	-41.298	2747.534	-0.747
			Max. Vx	2	-41.326	-4.587	2753.007
			Max. Torque	20			-7.620
L34	58.5 - 58.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.760	1.347	10.540
			Max. Mx	20	-33.755	2757.858	-0.762

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-33.750	-4.603	2763.338
			Max. Vy	20	-41.313	2757.858	-0.762
			Max. Vx	2	-41.343	-4.603	2763.338
			Max. Torque	20			-7.620
L35	58.25 - 58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.900	1.351	10.533
			Max. Mx	20	-33.863	2768.189	-0.777
			Max. My	2	-33.858	-4.618	2773.676
			Max. Vy	20	-41.342	2768.189	-0.777
			Max. Vx	2	-41.372	-4.618	2773.676
			Max. Torque	20			-7.620
L36	58 - 57.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.033	1.355	10.525
			Max. Mx	20	-33.964	2778.527	-0.791
			Max. My	2	-33.960	-4.634	2784.021
			Max. Vy	20	-41.370	2778.527	-0.791
			Max. Vx	2	-41.399	-4.634	2784.021
			Max. Torque	20			-7.620
L37	57.75 - 56.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.564	1.371	10.495
			Max. Mx	20	-34.359	2819.946	-0.849
			Max. My	2	-34.355	-4.696	2825.469
			Max. Vy	20	-41.490	2819.946	-0.849
			Max. Vx	2	-41.518	-4.696	2825.469
			Max. Torque	20			-7.619
L38	56.75 - 56.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-68.705	1.375	10.488
			Max. Mx	20	-34.485	2830.318	-0.865
			Max. My	2	-34.481	-4.712	2835.848
			Max. Vy	20	-41.504	2830.318	-0.865
			Max. Vx	2	-41.534	-4.712	2835.848
			Max. Torque	20			-7.619
L39	56.5 - 51.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.400	1.455	10.329
			Max. Mx	20	-36.670	3039.221	-1.158
			Max. My	2	-36.666	-5.023	3044.891
			Max. Vy	20	-42.076	3039.221	-1.158
			Max. Vx	2	-42.104	-5.023	3044.891
			Max. Torque	20			-7.618
L40	51.5 - 42.0418	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.394	1.511	10.188
			Max. Mx	20	-38.308	3194.828	-1.376
			Max. My	2	-38.305	-5.251	3200.601
			Max. Vy	20	-42.477	3194.828	-1.376
			Max. Vx	2	-42.506	-5.251	3200.601
			Max. Torque	20			-7.616
L41	42.0418 - 41.0418	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-79.876	1.615	9.929
			Max. Mx	20	-43.642	3485.716	-1.775
			Max. My	2	-43.639	-5.672	3491.679
			Max. Vy	20	-43.386	3485.716	-1.775
			Max. Vx	2	-43.414	-5.672	3491.679
			Max. Torque	20			-7.612
L42	41.0418 - 36.0418	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-82.783	1.692	9.737
			Max. Mx	20	-46.074	3703.843	-2.074
			Max. My	2	-46.072	-5.982	3709.945
			Max. Vy	20	-43.900	3703.843	-2.074
			Max. Vx	2	-43.928	-5.982	3709.945

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-7.612
L43	36.0418 - 31.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.658	1.815	9.608
			Max. Mx	20	-48.438	3915.244	-2.363
			Max. My	2	-48.435	-6.279	3921.479
			Max. Vy	20	-44.375	3915.244	-2.363
			Max. Vx	2	-44.403	-6.279	3921.479
			Max. Torque	20			-7.610
L44	31.25 - 31	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.807	1.822	9.602
			Max. Mx	20	-48.577	3926.335	-2.379
			Max. My	2	-48.575	-6.294	3932.577
			Max. Vy	20	-44.380	3926.335	-2.379
			Max. Vx	2	-44.409	-6.294	3932.577
			Max. Torque	20			-7.608
L45	31 - 27.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.807	1.884	9.536
			Max. Mx	20	-50.163	4071.018	-2.575
			Max. My	2	-50.161	-6.495	4077.350
			Max. Vy	20	-44.685	4071.018	-2.575
			Max. Vx	2	-44.713	-6.495	4077.350
			Max. Torque	20			-7.608
L46	27.75 - 27.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.963	1.888	9.532
			Max. Mx	20	-50.304	4082.186	-2.591
			Max. My	2	-50.303	-6.510	4088.525
			Max. Vy	20	-44.688	4082.186	-2.591
			Max. Vx	2	-44.716	-6.510	4088.525
			Max. Torque	20			-7.607
L47	27.5 - 27.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-88.120	1.892	9.527
			Max. Mx	20	-50.429	4093.359	-2.607
			Max. My	2	-50.427	-6.526	4099.705
			Max. Vy	20	-44.709	4093.359	-2.607
			Max. Vx	2	-44.738	-6.526	4099.705
			Max. Torque	20			-7.607
L48	27.25 - 27	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-88.274	1.893	9.528
			Max. Mx	20	-50.553	4104.538	-2.622
			Max. My	2	-50.551	-6.541	4110.891
			Max. Vy	20	-44.731	4104.538	-2.622
			Max. Vx	2	-44.760	-6.541	4110.891
			Max. Torque	20			-7.607
L49	27 - 22	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-91.298	1.850	9.590
			Max. Mx	20	-53.016	4329.257	-2.926
			Max. My	2	-53.014	-6.848	4335.746
			Max. Vy	20	-45.182	4329.257	-2.926
			Max. Vx	2	-45.210	-6.848	4335.746
			Max. Torque	20			-7.606
L50	22 - 17	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-94.301	1.767	9.696
			Max. Mx	20	-55.525	4556.075	-3.231
			Max. My	2	-55.524	-7.154	4562.699
			Max. Vy	20	-45.588	4556.075	-3.231
			Max. Vx	2	-45.615	-7.154	4562.699
			Max. Torque	21			-7.605
L51	17 - 12	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.320	1.684	9.800
			Max. Mx	20	-58.066	4784.836	-3.538

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-58.065	-7.458	4791.593
			Max. Vy	20	-45.961	4784.836	-3.538
			Max. Vx	2	-45.987	-7.458	4791.593
			Max. Torque	21			-7.604
L52	12 - 7	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-100.346	1.603	9.901
			Max. Mx	20	-60.637	5015.453	-3.845
			Max. My	2	-60.637	-7.761	5022.342
			Max. Vy	20	-46.332	5015.453	-3.845
			Max. Vx	2	-46.358	-7.761	5022.342
			Max. Torque	21			-7.603
L53	7 - 2	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-103.361	1.527	9.996
			Max. Mx	20	-63.242	5247.910	-4.153
			Max. My	2	-63.242	-8.062	5254.930
			Max. Vy	20	-46.698	5247.910	-4.153
			Max. Vx	2	-46.724	-8.062	5254.930
			Max. Torque	21			-7.603
L54	2 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-104.543	1.501	10.028
			Max. Mx	20	-64.295	5341.404	-4.276
			Max. My	2	-64.295	-8.182	5348.475
			Max. Vy	20	-46.844	5341.404	-4.276
			Max. Vx	2	-46.870	-8.182	5348.475
			Max. Torque	21			-7.602

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	104.543	0.000	0.000
	Max. H_x	21	48.235	46.819	-0.060
	Max. H_z	2	64.313	-0.060	46.845
	Max. M_x	2	5348.475	-0.060	46.845
	Max. M_z	8	5340.821	-46.819	0.060
	Max. Torsion	9	7.592	-46.819	0.060
	Min. Vert	5	48.235	-23.462	40.599
	Min. H_x	8	64.313	-46.819	0.060
	Min. H_z	14	64.313	0.060	-46.845
	Min. M_x	14	-5340.000	0.060	-46.845
	Min. M_z	20	-5341.404	46.819	-0.060
	Min. Torsion	21	-7.602	46.819	-0.060

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	53.594	0.000	-0.000	-3.454	0.239	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	64.313	0.060	-46.845	-5348.475	-8.182	-0.484
0.9 Dead+1.0 Wind 0 deg - No	48.235	0.060	-46.845	-5294.352	-8.168	-0.489

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 30 deg - No Ice	64.313	23.462	-40.599	-4636.677	-2677.599	-4.211
0.9 Dead+1.0 Wind 30 deg - No Ice	48.235	23.462	-40.599	-4589.614	-2651.105	-4.215
1.2 Dead+1.0 Wind 60 deg - No Ice	64.313	40.577	-23.475	-2683.644	-4629.469	-6.811
0.9 Dead+1.0 Wind 60 deg - No Ice	48.235	40.577	-23.475	-2655.953	-4583.618	-6.814
1.2 Dead+1.0 Wind 90 deg - No Ice	64.313	46.819	-0.060	-12.665	-5340.821	-7.592
0.9 Dead+1.0 Wind 90 deg - No Ice	48.235	46.819	-0.060	-11.465	-5287.922	-7.592
1.2 Dead+1.0 Wind 120 deg - No Ice	64.313	40.516	23.370	2660.599	-4621.023	-6.342
0.9 Dead+1.0 Wind 120 deg - No Ice	48.235	40.516	23.370	2635.286	-4575.270	-6.340
1.2 Dead+1.0 Wind 150 deg - No Ice	64.313	23.357	40.539	4619.817	-2662.926	-3.391
0.9 Dead+1.0 Wind 150 deg - No Ice	48.235	23.357	40.539	4575.074	-2636.597	-3.387
1.2 Dead+1.0 Wind 180 deg - No Ice	64.313	-0.060	46.845	5340.000	8.760	0.474
0.9 Dead+1.0 Wind 180 deg - No Ice	48.235	-0.060	46.845	5288.115	8.592	0.478
1.2 Dead+1.0 Wind 210 deg - No Ice	64.313	-23.462	40.599	4628.227	2678.140	4.215
0.9 Dead+1.0 Wind 210 deg - No Ice	48.235	-23.462	40.599	4583.396	2651.502	4.219
1.2 Dead+1.0 Wind 240 deg - No Ice	64.313	-40.577	23.475	2675.238	4630.012	6.826
0.9 Dead+1.0 Wind 240 deg - No Ice	48.235	-40.577	23.475	2649.768	4584.017	6.828
1.2 Dead+1.0 Wind 270 deg - No Ice	64.313	-46.819	0.060	4.277	5341.404	7.602
0.9 Dead+1.0 Wind 270 deg - No Ice	48.235	-46.819	0.060	5.294	5288.351	7.602
1.2 Dead+1.0 Wind 300 deg - No Ice	64.313	-40.516	-23.370	-2669.012	4621.643	6.338
0.9 Dead+1.0 Wind 300 deg - No Ice	48.235	-40.516	-23.370	-2641.476	4575.727	6.336
1.2 Dead+1.0 Wind 330 deg - No Ice	64.313	-23.357	-40.539	-4628.273	2663.543	3.377
0.9 Dead+1.0 Wind 330 deg - No Ice	48.235	-23.357	-40.539	-4581.297	2637.051	3.373
1.2 Dead+1.0 Ice+1.0 Temp	104.543	-0.000	-0.000	-10.028	1.501	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	104.543	0.009	-9.737	-1135.926	0.213	-0.084
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	104.543	4.874	-8.437	-985.770	-562.199	-1.102
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	104.543	8.433	-4.876	-574.215	-973.556	-1.825
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	104.543	9.733	-0.009	-11.540	-1123.636	-2.059
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	104.543	8.424	4.861	551.486	-972.228	-1.741
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	104.543	4.859	8.428	964.002	-559.902	-0.956
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	104.543	-0.009	9.737	1115.475	2.859	0.085
1.2 Dead+1.0 Wind 210	104.543	-4.874	8.437	965.324	565.264	1.103

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 240	104.543	-8.433	4.876	553.777	976.622	1.826
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 270	104.543	-9.733	0.009	-8.895	1126.708	2.060
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 300	104.543	-8.424	-4.861	-571.925	975.306	1.741
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 330	104.543	-4.859	-8.428	-984.448	562.980	0.956
deg+1.0 Ice+1.0 Temp Dead+Wind 0 deg - Service	53.594	0.011	-8.715	-993.299	-1.323	-0.092
Dead+Wind 30 deg - Service	53.594	4.365	-7.553	-861.483	-495.700	-0.799
Dead+Wind 60 deg - Service	53.594	7.549	-4.367	-499.782	-857.188	-1.292
Dead+Wind 90 deg - Service	53.594	8.710	-0.011	-5.115	-988.927	-1.440
Dead+Wind 120 deg - Service	53.594	7.538	4.348	489.971	-855.619	-1.201
Dead+Wind 150 deg - Service	53.594	4.345	7.542	852.820	-492.982	-0.641
Dead+Wind 180 deg - Service	53.594	-0.011	8.715	986.203	1.814	0.091
Dead+Wind 210 deg - Service	53.594	-4.365	7.553	854.388	496.189	0.799
Dead+Wind 240 deg - Service	53.594	-7.549	4.367	492.688	857.677	1.293
Dead+Wind 270 deg - Service	53.594	-8.710	0.011	-1.978	989.418	1.440
Dead+Wind 300 deg - Service	53.594	-7.538	-4.348	-497.066	856.110	1.201
Dead+Wind 330 deg - Service	53.594	-4.345	-7.542	-859.915	493.474	0.640

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	-53.594	0.000	0.000	53.594	0.000	0.000%
2	0.060	-64.313	-46.845	-0.060	64.313	46.845	0.000%
3	0.060	-48.235	-46.845	-0.060	48.235	46.845	0.000%
4	23.462	-64.313	-40.599	-23.462	64.313	40.599	0.000%
5	23.462	-48.235	-40.599	-23.462	48.235	40.599	0.000%
6	40.577	-64.313	-23.475	-40.577	64.313	23.475	0.000%
7	40.577	-48.235	-23.475	-40.577	48.235	23.475	0.000%
8	46.819	-64.313	-0.060	-46.819	64.313	0.060	0.000%
9	46.819	-48.235	-0.060	-46.819	48.235	0.060	0.000%
10	40.516	-64.313	23.370	-40.516	64.313	-23.370	0.000%
11	40.516	-48.235	23.370	-40.516	48.235	-23.370	0.000%
12	23.357	-64.313	40.539	-23.357	64.313	-40.539	0.000%
13	23.357	-48.235	40.539	-23.357	48.235	-40.539	0.000%
14	-0.060	-64.313	46.845	0.060	64.313	-46.845	0.000%
15	-0.060	-48.235	46.845	0.060	48.235	-46.845	0.000%
16	-23.462	-64.313	40.599	23.462	64.313	-40.599	0.000%
17	-23.462	-48.235	40.599	23.462	48.235	-40.599	0.000%
18	-40.577	-64.313	23.475	40.577	64.313	-23.475	0.000%
19	-40.577	-48.235	23.475	40.577	48.235	-23.475	0.000%
20	-46.819	-64.313	0.060	46.819	64.313	-0.060	0.000%
21	-46.819	-48.235	0.060	46.819	48.235	-0.060	0.000%
22	-40.516	-64.313	-23.370	40.516	64.313	23.370	0.000%
23	-40.516	-48.235	-23.370	40.516	48.235	23.370	0.000%
24	-23.357	-64.313	-40.539	23.357	64.313	40.539	0.000%
25	-23.357	-48.235	-40.539	23.357	48.235	40.539	0.000%
26	0.000	-104.543	0.000	0.000	104.543	0.000	0.000%
27	0.009	-104.543	-9.737	-0.009	104.543	9.737	0.000%
28	4.874	-104.543	-8.437	-4.874	104.543	8.437	0.000%
29	8.433	-104.543	-4.876	-8.433	104.543	4.876	0.000%
30	9.733	-104.543	-0.009	-9.733	104.543	0.009	0.000%
31	8.424	-104.543	4.861	-8.424	104.543	-4.861	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
32	4.859	-104.543	8.428	-4.859	104.543	-8.428	0.000%
33	-0.009	-104.543	9.737	0.009	104.543	-9.737	0.000%
34	-4.874	-104.543	8.437	4.874	104.543	-8.437	0.000%
35	-8.433	-104.543	4.876	8.433	104.543	-4.876	0.000%
36	-9.733	-104.543	0.009	9.733	104.543	-0.009	0.000%
37	-8.424	-104.543	-4.861	8.424	104.543	4.861	0.000%
38	-4.859	-104.543	-8.428	4.859	104.543	8.428	0.000%
39	0.011	-53.594	-8.715	-0.011	53.594	8.715	0.000%
40	4.365	-53.594	-7.553	-4.365	53.594	7.553	0.000%
41	7.549	-53.594	-4.367	-7.549	53.594	4.367	0.000%
42	8.710	-53.594	-0.011	-8.710	53.594	0.011	0.000%
43	7.538	-53.594	4.348	-7.538	53.594	-4.348	0.000%
44	4.345	-53.594	7.542	-4.345	53.594	-7.542	0.000%
45	-0.011	-53.594	8.715	0.011	53.594	-8.715	0.000%
46	-4.365	-53.594	7.553	4.365	53.594	-7.553	0.000%
47	-7.549	-53.594	4.367	7.549	53.594	-4.367	0.000%
48	-8.710	-53.594	0.011	8.710	53.594	-0.011	0.000%
49	-7.538	-53.594	-4.348	7.538	53.594	4.348	0.000%
50	-4.345	-53.594	-7.542	4.345	53.594	7.542	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000488
2	Yes	5	0.00000001	0.00019073
3	Yes	5	0.00000001	0.00006518
4	Yes	6	0.00000001	0.00083462
5	Yes	6	0.00000001	0.00022779
6	Yes	6	0.00000001	0.00094316
7	Yes	6	0.00000001	0.00026441
8	Yes	6	0.00000001	0.00012078
9	Yes	6	0.00000001	0.00003629
10	Yes	6	0.00000001	0.00081268
11	Yes	6	0.00000001	0.00022176
12	Yes	6	0.00000001	0.00090186
13	Yes	6	0.00000001	0.00025181
14	Yes	5	0.00000001	0.00031913
15	Yes	5	0.00000001	0.00012636
16	Yes	6	0.00000001	0.00091370
17	Yes	6	0.00000001	0.00025502
18	Yes	6	0.00000001	0.00081240
19	Yes	6	0.00000001	0.00022082
20	Yes	6	0.00000001	0.00011269
21	Yes	6	0.00000001	0.00003390
22	Yes	6	0.00000001	0.00093486
23	Yes	6	0.00000001	0.00026237
24	Yes	6	0.00000001	0.00083848
25	Yes	6	0.00000001	0.00022989
26	Yes	5	0.00000001	0.00024279
27	Yes	7	0.00000001	0.00011279
28	Yes	7	0.00000001	0.00013340
29	Yes	7	0.00000001	0.00013656
30	Yes	7	0.00000001	0.00011178
31	Yes	7	0.00000001	0.00012769
32	Yes	7	0.00000001	0.00012935

33	Yes	6	0.00000001	0.00097133
34	Yes	7	0.00000001	0.00013069
35	Yes	7	0.00000001	0.00012883
36	Yes	7	0.00000001	0.00011240
37	Yes	7	0.00000001	0.00013671
38	Yes	7	0.00000001	0.00013371
39	Yes	4	0.00000001	0.00093517
40	Yes	5	0.00000001	0.00022207
41	Yes	5	0.00000001	0.00031165
42	Yes	5	0.00000001	0.00013523
43	Yes	5	0.00000001	0.00020943
44	Yes	5	0.00000001	0.00026446
45	Yes	4	0.00000001	0.00092839
46	Yes	5	0.00000001	0.00027577
47	Yes	5	0.00000001	0.00021224
48	Yes	5	0.00000001	0.00013381
49	Yes	5	0.00000001	0.00030425
50	Yes	5	0.00000001	0.00022308

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	144.5 - 139.5	21.017	39	1.491	0.012
L2	139.5 - 134.5	19.464	39	1.472	0.011
L3	134.5 - 129.5	17.939	40	1.439	0.010
L4	129.5 - 124.5	16.459	40	1.388	0.009
L5	124.5 - 117.568	15.042	40	1.317	0.008
L6	121.409 - 116.409	14.207	40	1.263	0.007
L7	116.409 - 112.583	12.907	40	1.211	0.006
L8	112.583 - 112.333	11.964	40	1.143	0.006
L9	112.333 - 107.333	11.904	40	1.138	0.006
L10	107.333 - 106.92	10.763	40	1.040	0.005
L11	106.92 - 106.67	10.673	40	1.032	0.004
L12	106.67 - 103.5	10.619	40	1.030	0.004
L13	103.5 - 103.25	9.947	40	0.997	0.004
L14	103.25 - 98.5	9.895	40	0.994	0.004
L15	98.5 - 98.25	8.931	40	0.942	0.004
L16	98.25 - 97.58	8.882	40	0.939	0.004
L17	97.58 - 97.33	8.751	40	0.934	0.004
L18	97.33 - 92.33	8.702	40	0.931	0.004
L19	92.33 - 87.1178	7.755	40	0.876	0.003
L20	91.7428 - 86.1178	7.648	40	0.870	0.003
L21	86.1178 - 83	6.647	40	0.821	0.003
L22	83 - 82.75	6.128	40	0.767	0.003
L23	82.75 - 77.75	6.088	40	0.763	0.003
L24	77.75 - 77.25	5.335	40	0.675	0.002
L25	77.25 - 77	5.265	40	0.667	0.002
L26	77 - 76.75	5.230	40	0.664	0.002
L27	76.75 - 71.75	5.195	40	0.662	0.002
L28	71.75 - 69	4.531	40	0.608	0.002
L29	69 - 68.75	4.189	40	0.578	0.002
L30	68.75 - 63.75	4.159	40	0.576	0.002
L31	63.75 - 60	3.578	40	0.533	0.001
L32	60 - 59.75	3.172	40	0.501	0.001
L33	59.75 - 58.5	3.145	40	0.499	0.001
L34	58.5 - 58.25	3.016	40	0.488	0.001
L35	58.25 - 58	2.991	40	0.486	0.001
L36	58 - 57.75	2.965	40	0.484	0.001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L37	57.75 - 56.75	2.940	40	0.481	0.001
L38	56.75 - 56.5	2.840	40	0.470	0.001
L39	56.5 - 51.5	2.816	40	0.468	0.001
L40	51.5 - 42.0418	2.350	40	0.423	0.001
L41	47.8178 - 41.0418	2.037	40	0.389	0.001
L42	41.0418 - 36.0418	1.506	40	0.355	0.001
L43	36.0418 - 31.25	1.156	40	0.313	0.001
L44	31.25 - 31	0.863	40	0.271	0.001
L45	31 - 27.75	0.849	40	0.269	0.001
L46	27.75 - 27.5	0.677	40	0.237	0.001
L47	27.5 - 27.25	0.665	40	0.235	0.001
L48	27.25 - 27	0.652	40	0.232	0.000
L49	27 - 22	0.640	40	0.230	0.000
L50	22 - 17	0.423	40	0.186	0.000
L51	17 - 12	0.251	40	0.142	0.000
L52	12 - 7	0.125	40	0.100	0.000
L53	7 - 2	0.042	40	0.058	0.000
L54	2 - 0	0.003	40	0.016	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.500	Strobe	39	21.017	1.491	0.012	10971
147.000	Lightning Rod 5/8" x 5'	39	21.017	1.491	0.012	10971
146.000	Top Hat	39	21.017	1.491	0.012	10971
135.000	(2) HBXX-6517DS-A2M w/ Mount Pipe	40	18.090	1.443	0.010	7098
130.000	Miscellaneous [NA 507-1]	40	16.604	1.393	0.009	4900
128.000	AIR 32 B2A B66AA_T-MOBILE w/ Mount Pipe	40	16.026	1.369	0.009	4204
118.000	APXVSPP18-C-A20 w/ Mount Pipe	40	13.313	1.229	0.007	4276
108.000	TME-PCS 1900MHz 4x45W-65MHz	40	10.909	1.055	0.005	3396
103.000	6' x 2" Mount Pipe	40	9.843	0.992	0.004	5252

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	144.5 - 139.5	112.572	2	7.967	0.062
L2	139.5 - 134.5	104.305	2	7.872	0.058
L3	134.5 - 129.5	96.182	4	7.698	0.054
L4	129.5 - 124.5	88.292	4	7.429	0.048
L5	124.5 - 117.568	80.733	4	7.058	0.042
L6	121.409 - 116.409	76.272	4	6.775	0.038
L7	116.409 - 112.583	69.327	4	6.497	0.034
L8	112.583 - 112.333	64.281	4	6.136	0.030
L9	112.333 - 107.333	63.962	4	6.111	0.029
L10	107.333 - 106.92	57.850	4	5.590	0.024

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L11	106.92 - 106.67	57.369	4	5.545	0.024
L12	106.67 - 103.5	57.080	4	5.532	0.024
L13	103.5 - 103.25	53.474	4	5.358	0.022
L14	103.25 - 98.5	53.195	4	5.344	0.022
L15	98.5 - 98.25	48.030	4	5.063	0.020
L16	98.25 - 97.58	47.766	4	5.051	0.020
L17	97.58 - 97.33	47.061	4	5.020	0.019
L18	97.33 - 92.33	46.799	4	5.006	0.019
L19	92.33 - 87.1178	41.720	4	4.713	0.017
L20	91.7428 - 86.1178	41.143	4	4.678	0.017
L21	86.1178 - 83	35.767	4	4.417	0.015
L22	83 - 82.75	32.981	4	4.127	0.013
L23	82.75 - 77.75	32.766	4	4.104	0.013
L24	77.75 - 77.25	28.719	4	3.635	0.011
L25	77.25 - 77	28.342	4	3.588	0.011
L26	77 - 76.75	28.154	4	3.577	0.011
L27	76.75 - 71.75	27.968	4	3.563	0.011
L28	71.75 - 69	24.392	4	3.274	0.009
L29	69 - 68.75	22.554	4	3.115	0.009
L30	68.75 - 63.75	22.391	4	3.103	0.008
L31	63.75 - 60	19.265	4	2.872	0.008
L32	60 - 59.75	17.079	4	2.697	0.007
L33	59.75 - 58.5	16.939	4	2.686	0.007
L34	58.5 - 58.25	16.243	4	2.628	0.007
L35	58.25 - 58	16.106	4	2.617	0.007
L36	58 - 57.75	15.970	4	2.605	0.007
L37	57.75 - 56.75	15.834	4	2.591	0.006
L38	56.75 - 56.5	15.297	4	2.533	0.006
L39	56.5 - 51.5	15.165	4	2.521	0.006
L40	51.5 - 42.0418	12.654	4	2.277	0.005
L41	47.8178 - 41.0418	10.969	4	2.096	0.005
L42	41.0418 - 36.0418	8.111	4	1.912	0.004
L43	36.0418 - 31.25	6.229	4	1.684	0.004
L44	31.25 - 31	4.651	4	1.462	0.003
L45	31 - 27.75	4.575	4	1.449	0.003
L46	27.75 - 27.5	3.647	4	1.277	0.003
L47	27.5 - 27.25	3.581	4	1.264	0.003
L48	27.25 - 27	3.515	4	1.250	0.003
L49	27 - 22	3.450	4	1.239	0.003
L50	22 - 17	2.278	4	1.000	0.002
L51	17 - 12	1.354	4	0.766	0.002
L52	12 - 7	0.672	4	0.537	0.001
L53	7 - 2	0.228	4	0.312	0.001
L54	2 - 0	0.018	4	0.088	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.500	Strobe	2	112.572	7.967	0.062	2182
147.000	Lightning Rod 5/8" x 5'	2	112.572	7.967	0.062	2182
146.000	Top Hat	2	112.572	7.967	0.062	2182
135.000	(2) HBXX-6517DS-A2M w/ Mount Pipe	4	96.984	7.720	0.055	1407
130.000	Miscellaneous [NA 507-1]	4	89.069	7.460	0.049	965
128.000	AIR 32 B2A B66AA_T-MOBILE	4	85.983	7.333	0.047	826

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	w/ Mount Pipe					
118.000	APXVSPP18-C-A20 w/ Mount Pipe	4	71.499	6.592	0.035	828
108.000	TME-PCS 1900MHz 4x45W-65MHz	4	58.633	5.670	0.025	650
103.000	6' x 2" Mount Pipe	4	52.916	5.329	0.022	1002

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	144.5 - 139.5 (1)	TP22.092x21x0.188	5.000	0.000	0.0	13.036	-3.684	762.603	0.005
L2	139.5 - 134.5 (2)	TP23.184x22.092x0.188	5.000	0.000	0.0	13.686	-6.369	800.623	0.008
L3	134.5 - 129.5 (3)	TP24.276x23.184x0.188	5.000	0.000	0.0	14.336	-7.075	838.642	0.008
L4	129.5 - 124.5 (4)	TP25.368x24.276x0.188	5.000	0.000	0.0	14.986	-10.669	876.662	0.012
L5	124.5 - 117.568 (5)	TP26.882x25.368x0.188	6.932	0.000	0.0	15.387	-11.080	900.167	0.012
L6	117.568 - 116.409 (6)	TP26.737x25.668x0.25	5.000	0.000	0.0	21.017	-14.008	1229.520	0.011
L7	116.409 - 112.583 (7)	TP27.555x26.737x0.25	3.826	0.000	0.0	21.666	-14.664	1267.470	0.012
L8	112.583 - 112.333 (8)	TP27.608x27.555x0.25	0.250	0.000	0.0	21.709	-14.736	1269.950	0.012
L9	112.333 - 107.333 (9)	TP28.677x27.608x0.25	5.000	0.000	0.0	22.557	-16.081	1319.560	0.012
L10	107.333 - 106.92 (10)	TP28.765x28.677x0.25	0.413	0.000	0.0	22.627	-16.178	1323.660	0.012
L11	106.92 - 106.67 (11)	TP28.818x28.765x0.538	0.250	0.000	0.0	48.248	-16.249	2822.500	0.006
L12	106.67 - 103.5 (12)	TP29.496x28.818x0.525	3.170	0.000	0.0	48.276	-17.031	2824.120	0.006
L13	103.5 - 103.25 (13)	TP29.549x29.496x0.525	0.250	0.000	0.0	48.365	-17.108	2829.330	0.006
L14	103.25 - 98.5 (14)	TP30.564x29.549x0.513	4.750	0.000	0.0	48.885	-19.802	2859.760	0.007
L15	98.5 - 98.25 (15)	TP30.618x30.564x0.675	0.250	0.000	0.0	64.151	-19.899	3752.840	0.005
L16	98.25 - 97.58 (16)	TP30.761x30.618x0.675	0.670	0.000	0.0	64.458	-20.100	3770.790	0.005
L17	97.58 - 97.33 (17)	TP30.815x30.761x0.563	0.250	0.000	0.0	54.011	-20.176	3159.660	0.006
L18	97.33 - 92.33 (18)	TP31.883x30.815x0.55	5.000	0.000	0.0	54.698	-21.572	3199.850	0.007
L19	92.33 - 87.1178 (19)	TP32.997x31.883x0.55	5.212	0.000	0.0	54.917	-21.749	3212.660	0.007
L20	87.1178 - 86.1178 (20)	TP32.72x31.509x0.375	5.625	0.000	0.0	38.499	-23.968	2252.200	0.011
L21	86.1178 - 83	TP33.392x32.72x0.375	3.118	0.000	0.0	39.299	-24.769	2298.970	0.011

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	(21)								
L22	83 - 82.75 (22)	TP33.446x33.392x0.375	0.250	0.000	0.0	39.363	-24.859	2302.720	0.011
L23	82.75 - 77.75 (23)	TP34.523x33.446x0.375	5.000	0.000	0.0	40.645	-26.155	2377.720	0.011
L24	77.75 - 77.25 (24)	TP34.631x34.523x0.375	0.500	0.000	0.0	40.773	-26.305	2385.220	0.011
L25	77.25 - 77 (25)	TP34.685x34.631x0.825	0.250	0.000	0.0	88.663	-26.419	5186.790	0.005
L26	77 - 76.75 (26)	TP34.738x34.685x0.638	0.250	0.000	0.0	69.001	-26.504	4036.540	0.007
L27	76.75 - 71.75 (27)	TP35.816x34.738x0.625	5.000	0.000	0.0	69.809	-28.214	4083.850	0.007
L28	71.75 - 69 (28)	TP36.408x35.816x0.625	2.750	0.000	0.0	70.985	-29.171	4152.600	0.007
L29	69 - 68.75 (29)	TP36.462x36.408x0.8	0.250	0.000	0.0	90.553	-29.299	5297.330	0.006
L30	68.75 - 63.75 (30)	TP37.539x36.462x0.788	5.000	0.000	0.0	91.861	-31.384	5373.890	0.006
L31	63.75 - 60 (31)	TP38.347x37.539x0.775	3.750	0.000	0.0	92.421	-32.977	5406.630	0.006
L32	60 - 59.75 (32)	TP38.401x38.347x0.775	0.250	0.000	0.0	92.554	-33.101	5414.380	0.006
L33	59.75 - 58.5 (33)	TP38.67x38.401x0.775	1.250	0.000	0.0	93.216	-33.622	5453.130	0.006
L34	58.5 - 58.25 (34)	TP38.724x38.67x0.775	0.250	0.000	0.0	93.349	-33.746	5460.880	0.006
L35	58.25 - 58 (35)	TP38.778x38.724x0.775	0.250	0.000	0.0	93.481	-33.854	5468.630	0.006
L36	58 - 57.75 (36)	TP38.832x38.778x0.613	0.250	0.000	0.0	74.301	-33.956	4346.590	0.008
L37	57.75 - 56.75 (37)	TP39.047x38.832x0.613	1.000	0.000	0.0	74.719	-34.351	4371.090	0.008
L38	56.75 - 56.5 (38)	TP39.101x39.047x0.738	0.250	0.000	0.0	89.802	-34.477	5253.410	0.007
L39	56.5 - 51.5 (39)	TP40.178x39.101x0.725	5.000	0.000	0.0	90.787	-36.663	5311.050	0.007
L40	51.5 - 42.0418 (40)	TP42.216x40.178x0.713	9.458	0.000	0.0	91.044	-38.301	5326.080	0.007
L41	42.0418 - 41.0418 (41)	TP41.678x40.221x0.788	6.776	0.000	0.0	102.206	-43.635	5979.060	0.007
L42	41.0418 - 36.0418 (42)	TP42.753x41.678x0.788	5.000	0.000	0.0	104.893	-46.069	6136.220	0.008
L43	36.0418 - 31.25 (43)	TP43.783x42.753x0.763	4.792	0.000	0.0	104.116	-48.433	6090.790	0.008
L44	31.25 - 31 (44)	TP43.836x43.783x0.65	0.250	0.000	0.0	89.098	-48.572	5212.210	0.009
L45	31 - 27.75 (45)	TP44.535x43.836x0.65	3.250	0.000	0.0	90.539	-50.159	5296.530	0.009
L46	27.75 - 27.5 (46)	TP44.589x44.535x0.65	0.250	0.000	0.0	90.650	-50.300	5303.020	0.009
L47	27.5 - 27.25 (47)	TP44.642x44.589x0.65	0.250	0.000	0.0	90.761	-50.425	5309.500	0.009
L48	27.25 - 27 (48)	TP44.696x44.642x0.725	0.250	0.000	0.0	101.184	-50.549	5919.280	0.009
L49	27 - 22 (49)	TP45.771x44.696x0.713	5.000	0.000	0.0	101.899	-53.013	5961.060	0.009
L50	22 - 17 (50)	TP46.846x45.771x0.713	5.000	0.000	0.0	104.329	-55.523	6103.250	0.009
L51	17 - 12 (51)	TP47.921x46.846x0.713	5.000	0.000	0.0	106.760	-58.064	6245.440	0.009
L52	12 - 7 (52)	TP48.995x47.921x0.713	5.000	0.000	0.0	109.190	-60.636	6387.640	0.009
L53	7 - 2 (53)	TP50.07x48.995x0.7	5.000	0.000	0.0	109.690	-63.242	6416.890	0.010
L54	2 - 0 (54)	TP50.5x50.07x0.7	2.000	0.000	0.0	110.646	-64.295	6472.770	0.010

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	144.5 - 139.5 (1)	TP22.092x21x0.188	76.657	412.151	0.186	0.000	412.151	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L2	139.5 - 134.5 (2)	TP23.184x22.092x0.188	137.287	447.433	0.307	0.000	447.433	0.000
L3	134.5 - 129.5 (3)	TP24.276x23.184x0.188	235.774	483.412	0.488	0.000	483.412	0.000
L4	129.5 - 124.5 (4)	TP25.368x24.276x0.188	360.121	519.990	0.693	0.000	519.990	0.000
L5	124.5 - 117.568 (5)	TP26.882x25.368x0.188	444.005	542.862	0.818	0.000	542.862	0.000
L6	117.568 - 116.409 (6)	TP26.737x25.668x0.25	587.893	825.969	0.712	0.000	825.969	0.000
L7	116.409 - 112.583 (7)	TP27.555x26.737x0.25	709.757	870.592	0.815	0.000	870.592	0.000
L8	112.583 - 112.333 (8)	TP27.608x27.555x0.25	717.766	873.533	0.822	0.000	873.533	0.000
L9	112.333 - 107.333 (9)	TP28.677x27.608x0.25	879.142	932.942	0.942	0.000	932.942	0.000
L10	107.333 - 106.92 (10)	TP28.765x28.677x0.25	892.933	937.892	0.952	0.000	937.892	0.000
L11	106.92 - 106.67 (11)	TP28.818x28.765x0.538	901.283	2061.800	0.437	0.000	2061.800	0.000
L12	106.67 - 103.5 (12)	TP29.496x28.818x0.525	1007.800	2115.150	0.476	0.000	2115.150	0.000
L13	103.5 - 103.25 (13)	TP29.549x29.496x0.525	1016.250	2123.033	0.479	0.000	2123.033	0.000
L14	103.25 - 98.5 (14)	TP30.564x29.549x0.513	1189.958	2224.100	0.535	0.000	2224.100	0.000
L15	98.5 - 98.25 (15)	TP30.618x30.564x0.675	1199.200	2892.475	0.415	0.000	2892.475	0.000
L16	98.25 - 97.58 (16)	TP30.761x30.618x0.675	1224.017	2920.508	0.419	0.000	2920.508	0.000
L17	97.58 - 97.33 (17)	TP30.815x30.761x0.563	1233.292	2469.958	0.499	0.000	2469.958	0.000
L18	97.33 - 92.33 (18)	TP31.883x30.815x0.55	1420.200	2593.417	0.548	0.000	2593.417	0.000
L19	92.33 - 87.1178 (19)	TP32.997x31.883x0.55	1442.333	2614.417	0.552	0.000	2614.417	0.000
L20	87.1178 - 86.1178 (20)	TP32.72x31.509x0.375	1656.625	1895.433	0.874	0.000	1895.433	0.000
L21	86.1178 - 83 (21)	TP33.392x32.72x0.375	1776.875	1975.433	0.899	0.000	1975.433	0.000
L22	83 - 82.75 (22)	TP33.446x33.392x0.375	1786.558	1981.917	0.901	0.000	1981.917	0.000
L23	82.75 - 77.75 (23)	TP34.523x33.446x0.375	1981.333	2113.875	0.937	0.000	2113.875	0.000
L24	77.75 - 77.25 (24)	TP34.631x34.523x0.375	2000.933	2127.300	0.941	0.000	2127.300	0.000
L25	77.25 - 77 (25)	TP34.685x34.631x0.825	2010.742	4512.550	0.446	0.000	4512.550	0.000
L26	77 - 76.75 (26)	TP34.738x34.685x0.638	2020.558	3556.550	0.568	0.000	3556.550	0.000
L27	76.75 - 71.75 (27)	TP35.816x34.738x0.625	2218.325	3716.608	0.597	0.000	3716.608	0.000
L28	71.75 - 69 (28)	TP36.408x35.816x0.625	2328.267	3843.908	0.606	0.000	3843.908	0.000
L29	69 - 68.75 (29)	TP36.462x36.408x0.8	2338.300	4863.200	0.481	0.000	4863.200	0.000
L30	68.75 - 63.75 (30)	TP37.539x36.462x0.788	2540.567	5089.233	0.499	0.000	5089.233	0.000
L31	63.75 - 60 (31)	TP38.347x37.539x0.775	2694.183	5238.642	0.514	0.000	5238.642	0.000
L32	60 - 59.75 (32)	TP38.401x38.347x0.775	2704.483	5253.825	0.515	0.000	5253.825	0.000
L33	59.75 - 58.5 (33)	TP38.67x38.401x0.775	2756.083	5330.058	0.517	0.000	5330.058	0.000
L34	58.5 - 58.25 (34)	TP38.724x38.67x0.775	2766.433	5345.367	0.518	0.000	5345.367	0.000
L35	58.25 - 58 (35)	TP38.778x38.724x0.775	2776.783	5360.708	0.518	0.000	5360.708	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L36	58 - 57.75 (36)	TP38.832x38.778x0.613	2787.133	4303.483	0.648	0.000	4303.483	0.000
L37	57.75 - 56.75 (37)	TP39.047x38.832x0.613	2828.633	4352.517	0.650	0.000	4352.517	0.000
L38	56.75 - 56.5 (38)	TP39.101x39.047x0.738	2839.025	5204.558	0.545	0.000	5204.558	0.000
L39	56.5 - 51.5 (39)	TP40.178x39.101x0.725	3048.300	5415.617	0.563	0.000	5415.617	0.000
L40	51.5 - 42.0418 (40)	TP42.216x40.178x0.713	3204.183	5545.550	0.578	0.000	5545.550	0.000
L41	42.0418 - 41.0418 (41)	TP41.678x40.221x0.788	3495.583	6313.417	0.554	0.000	6313.417	0.000
L42	41.0418 - 36.0418 (42)	TP42.753x41.678x0.788	3714.083	6652.891	0.558	0.000	6652.891	0.000
L43	36.0418 - 31.25 (43)	TP43.783x42.753x0.763	3925.842	6776.591	0.579	0.000	6776.591	0.000
L44	31.25 - 31 (44)	TP43.836x43.783x0.65	3936.950	5836.825	0.675	0.000	5836.825	0.000
L45	31 - 27.75 (45)	TP44.535x43.836x0.65	4081.875	6028.617	0.677	0.000	6028.617	0.000
L46	27.75 - 27.5 (46)	TP44.589x44.535x0.65	4093.058	6043.500	0.677	0.000	6043.500	0.000
L47	27.5 - 27.25 (47)	TP44.642x44.589x0.65	4104.250	6058.400	0.677	0.000	6058.400	0.000
L48	27.25 - 27 (48)	TP44.696x44.642x0.725	4115.450	6739.541	0.611	0.000	6739.541	0.000
L49	27 - 22 (49)	TP45.771x44.696x0.713	4340.542	6959.567	0.624	0.000	6959.567	0.000
L50	22 - 17 (50)	TP46.846x45.771x0.713	4567.725	7298.191	0.626	0.000	7298.191	0.000
L51	17 - 12 (51)	TP47.921x46.846x0.713	4796.850	7644.858	0.627	0.000	7644.858	0.000
L52	12 - 7 (52)	TP48.995x47.921x0.713	5027.825	7999.575	0.629	0.000	7999.575	0.000
L53	7 - 2 (53)	TP50.07x48.995x0.7	5260.642	8221.867	0.640	0.000	8221.867	0.000
L54	2 - 0 (54)	TP50.5x50.07x0.7	5354.283	8366.667	0.640	0.000	8366.667	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	144.5 - 139.5 (1)	TP22.092x21x0.188	11.086	228.781	0.048	0.885	438.868	0.002
L2	139.5 - 134.5 (2)	TP23.184x22.092x0.188	19.356	240.187	0.081	1.213	483.718	0.003
L3	134.5 - 129.5 (3)	TP24.276x23.184x0.188	20.258	251.593	0.081	2.058	530.751	0.004
L4	129.5 - 124.5 (4)	TP25.368x24.276x0.188	27.004	262.999	0.103	2.765	579.964	0.005
L5	124.5 - 117.568 (5)	TP26.882x25.368x0.188	27.286	270.050	0.101	2.763	611.482	0.005
L6	117.568 - 116.409 (6)	TP26.737x25.668x0.25	31.692	368.856	0.086	3.517	855.600	0.004
L7	116.409 - 112.583 (7)	TP27.555x26.737x0.25	32.043	380.242	0.084	3.514	909.233	0.004
L8	112.583 - 112.333 (8)	TP27.608x27.555x0.25	32.056	380.986	0.084	3.513	912.800	0.004
L9	112.333 - 107.333 (9)	TP28.677x27.608x0.25	33.378	395.868	0.084	3.508	985.500	0.004
L10	107.333 - 106.92 (10)	TP28.765x28.677x0.25	33.406	397.097	0.084	3.508	991.625	0.004
L11	106.92 - 106.67 (11)	TP28.818x28.765x0.538	33.435	846.750	0.039	3.508	2097.142	0.002
L12	106.67 - 103.5	TP29.496x28.818x0.525	33.789	847.237	0.040	3.506	2149.542	0.002

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	(12)							
L13	103.5 - 103.25	TP29.549x29.496x0.525	33.816	848.799	0.040	3.506	2157.483	0.002
	(13)							
L14	103.25 - 98.5	TP30.564x29.549x0.513	36.980	857.928	0.043	4.243	2257.900	0.002
	(14)							
L15	98.5 - 98.25	TP30.618x30.564x0.675	37.007	1125.850	0.033	4.243	2952.267	0.001
	(15)							
L16	98.25 - 97.58	TP30.761x30.618x0.675	37.083	1131.240	0.033	4.242	2980.575	0.001
	(16)							
L17	97.58 - 97.33	TP30.815x30.761x0.563	37.113	947.897	0.039	4.242	2511.283	0.002
	(17)							
L18	97.33 - 92.33	TP31.883x30.815x0.55	37.672	959.955	0.039	4.239	2634.117	0.002
	(18)							
L19	92.33 -	TP32.997x31.883x0.55	37.733	963.799	0.039	4.239	2655.258	0.002
	87.1178 (19)							
L20	87.1178 -	TP32.72x31.509x0.375	38.450	675.660	0.057	4.237	1913.908	0.002
	86.1178 (20)							
L21	86.1178 - 83	TP33.392x32.72x0.375	38.732	689.690	0.056	4.234	1994.217	0.002
	(21)							
L22	83 - 82.75 (22)	TP33.446x33.392x0.375	38.741	690.815	0.056	4.233	2000.725	0.002
L23	82.75 - 77.75	TP34.523x33.446x0.375	39.199	713.315	0.055	4.229	2133.175	0.002
	(23)							
L24	77.75 - 77.25	TP34.631x34.523x0.375	39.232	715.565	0.055	4.229	2146.658	0.002
	(24)							
L25	77.25 - 77 (25)	TP34.685x34.631x0.825	39.259	1556.040	0.025	4.228	4614.050	0.001
L26	77 - 76.75 (26)	TP34.738x34.685x0.638	39.286	1210.960	0.032	4.228	3616.408	0.001
L27	76.75 - 71.75	TP35.816x34.738x0.625	39.843	1225.150	0.033	4.226	3775.700	0.001
	(27)							
L28	71.75 - 69 (28)	TP36.408x35.816x0.625	40.149	1245.780	0.032	4.225	3903.892	0.001
L29	69 - 68.75 (29)	TP36.462x36.408x0.8	40.165	1589.200	0.025	4.225	4963.208	0.001
L30	68.75 - 63.75	TP37.539x36.462x0.788	40.760	1612.170	0.025	4.223	5188.775	0.001
	(30)							
L31	63.75 - 60 (31)	TP38.347x37.539x0.775	41.200	1621.990	0.025	4.222	5336.925	0.001
L32	60 - 59.75 (32)	TP38.401x38.347x0.775	41.218	1624.320	0.025	4.222	5352.233	0.001
L33	59.75 - 58.5	TP38.67x38.401x0.775	41.374	1635.940	0.025	4.221	5429.117	0.001
	(33)							
L34	58.5 - 58.25	TP38.724x38.67x0.775	41.391	1638.270	0.025	4.221	5444.558	0.001
	(34)							
L35	58.25 - 58 (35)	TP38.778x38.724x0.775	41.420	1640.590	0.025	4.221	5460.025	0.001
L36	58 - 57.75 (36)	TP38.832x38.778x0.613	41.447	1303.980	0.032	4.221	4364.458	0.001
L37	57.75 - 56.75	TP39.047x38.832x0.613	41.565	1311.330	0.032	4.221	4413.792	0.001
	(37)							
L38	56.75 - 56.5	TP39.101x39.047x0.738	41.582	1576.020	0.026	4.221	5294.908	0.001
	(38)							
L39	56.5 - 51.5 (39)	TP40.178x39.101x0.725	42.151	1593.320	0.026	4.219	5505.050	0.001
L40	51.5 - 42.0418	TP42.216x40.178x0.713	42.553	1597.820	0.027	4.218	5633.375	0.001
	(40)							
L41	42.0418 -	TP41.678x40.221x0.788	43.461	1793.720	0.024	4.217	6423.241	0.001
	41.0418 (41)							
L42	41.0418 -	TP42.753x41.678x0.788	43.975	1840.870	0.024	4.216	6765.341	0.001
	36.0418 (42)							
L43	36.0418 -	TP43.783x42.753x0.763	44.450	1827.240	0.024	4.215	6884.083	0.001
	31.25 (43)							
L44	31.25 - 31 (44)	TP43.836x43.783x0.65	44.456	1563.660	0.028	4.215	5913.841	0.001
L45	31 - 27.75 (45)	TP44.535x43.836x0.65	44.760	1588.960	0.028	4.214	6106.725	0.001
L46	27.75 - 27.5	TP44.589x44.535x0.65	44.763	1590.910	0.028	4.214	6121.683	0.001
	(46)							
L47	27.5 - 27.25	TP44.642x44.589x0.65	44.784	1592.850	0.028	4.214	6136.675	0.001
	(47)							
L48	27.25 - 27 (48)	TP44.696x44.642x0.725	44.806	1775.780	0.025	4.214	6838.133	0.001

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 $\frac{T_u}{\phi T_n}$
L49	27 - 22 (49)	TP45.771x44.696x0.713	45.257	1788.320	0.025	4.213	7056.691	0.001
L50	22 - 17 (50)	TP46.846x45.771x0.713	45.661	1830.980	0.025	4.212	7397.358	0.001
L51	17 - 12 (51)	TP47.921x46.846x0.713	46.034	1873.630	0.025	4.212	7746.050	0.001
L52	12 - 7 (52)	TP48.995x47.921x0.713	46.404	1916.290	0.024	4.212	8102.775	0.001
L53	7 - 2 (53)	TP50.07x48.995x0.7	46.770	1925.070	0.024	4.211	8323.191	0.001
L54	2 - 0 (54)	TP50.5x50.07x0.7	46.916	1941.830	0.024	4.211	8468.750	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	144.5 - 139.5 (1)	0.005	0.186	0.000	0.048	0.002	0.193 ✔	1.050	4.8.2 ✔
L2	139.5 - 134.5 (2)	0.008	0.307	0.000	0.081	0.003	0.322 ✔	1.050	4.8.2 ✔
L3	134.5 - 129.5 (3)	0.008	0.488	0.000	0.081	0.004	0.503 ✔	1.050	4.8.2 ✔
L4	129.5 - 124.5 (4)	0.012	0.693	0.000	0.103	0.005	0.716 ✔	1.050	4.8.2 ✔
L5	124.5 - 117.568 (5)	0.012	0.818	0.000	0.101	0.005	0.841 ✔	1.050	4.8.2 ✔
L6	117.568 - 116.409 (6)	0.011	0.712	0.000	0.086	0.004	0.731 ✔	1.050	4.8.2 ✔
L7	116.409 - 112.583 (7)	0.012	0.815	0.000	0.084	0.004	0.835 ✔	1.050	4.8.2 ✔
L8	112.583 - 112.333 (8)	0.012	0.822	0.000	0.084	0.004	0.841 ✔	1.050	4.8.2 ✔
L9	112.333 - 107.333 (9)	0.012	0.942	0.000	0.084	0.004	0.962 ✔	1.050	4.8.2 ✔
L10	107.333 - 106.92 (10)	0.012	0.952	0.000	0.084	0.004	0.972 ✔	1.050	4.8.2 ✔
L11	106.92 - 106.67 (11)	0.006	0.437	0.000	0.039	0.002	0.445 ✔	1.050	4.8.2 ✔
L12	106.67 - 103.5 (12)	0.006	0.476	0.000	0.040	0.002	0.484 ✔	1.050	4.8.2 ✔
L13	103.5 - 103.25 (13)	0.006	0.479	0.000	0.040	0.002	0.486 ✔	1.050	4.8.2 ✔
L14	103.25 - 98.5 (14)	0.007	0.535	0.000	0.043	0.002	0.544 ✔	1.050	4.8.2 ✔
L15	98.5 - 98.25 (15)	0.005	0.415	0.000	0.033	0.001	0.421 ✔	1.050	4.8.2 ✔
L16	98.25 - 97.58 (16)	0.005	0.419	0.000	0.033	0.001	0.426 ✔	1.050	4.8.2 ✔
L17	97.58 - 97.33 (17)	0.006	0.499	0.000	0.039	0.002	0.507 ✔	1.050	4.8.2 ✔
L18	97.33 - 92.33 (18)	0.007	0.548	0.000	0.039	0.002	0.556 ✔	1.050	4.8.2 ✔
L19	92.33 -	0.007	0.552	0.000	0.039	0.002	0.560	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	87.1178 (19)						✔		
L20	87.1178 - 86.1178 (20)	0.011	0.874	0.000	0.057	0.002	0.888 ✔	1.050	4.8.2 ✔
L21	86.1178 - 83 (21)	0.011	0.899	0.000	0.056	0.002	0.914 ✔	1.050	4.8.2 ✔
L22	83 - 82.75 (22)	0.011	0.901	0.000	0.056	0.002	0.916 ✔	1.050	4.8.2 ✔
L23	82.75 - 77.75 (23)	0.011	0.937	0.000	0.055	0.002	0.952 ✔	1.050	4.8.2 ✔
L24	77.75 - 77.25 (24)	0.011	0.941	0.000	0.055	0.002	0.955 ✔	1.050	4.8.2 ✔
L25	77.25 - 77 (25)	0.005	0.446	0.000	0.025	0.001	0.451 ✔	1.050	4.8.2 ✔
L26	77 - 76.75 (26)	0.007	0.568	0.000	0.032	0.001	0.576 ✔	1.050	4.8.2 ✔
L27	76.75 - 71.75 (27)	0.007	0.597	0.000	0.033	0.001	0.605 ✔	1.050	4.8.2 ✔
L28	71.75 - 69 (28)	0.007	0.606	0.000	0.032	0.001	0.614 ✔	1.050	4.8.2 ✔
L29	69 - 68.75 (29)	0.006	0.481	0.000	0.025	0.001	0.487 ✔	1.050	4.8.2 ✔
L30	68.75 - 63.75 (30)	0.006	0.499	0.000	0.025	0.001	0.506 ✔	1.050	4.8.2 ✔
L31	63.75 - 60 (31)	0.006	0.514	0.000	0.025	0.001	0.521 ✔	1.050	4.8.2 ✔
L32	60 - 59.75 (32)	0.006	0.515	0.000	0.025	0.001	0.522 ✔	1.050	4.8.2 ✔
L33	59.75 - 58.5 (33)	0.006	0.517	0.000	0.025	0.001	0.524 ✔	1.050	4.8.2 ✔
L34	58.5 - 58.25 (34)	0.006	0.518	0.000	0.025	0.001	0.524 ✔	1.050	4.8.2 ✔
L35	58.25 - 58 (35)	0.006	0.518	0.000	0.025	0.001	0.525 ✔	1.050	4.8.2 ✔
L36	58 - 57.75 (36)	0.008	0.648	0.000	0.032	0.001	0.657 ✔	1.050	4.8.2 ✔
L37	57.75 - 56.75 (37)	0.008	0.650	0.000	0.032	0.001	0.659 ✔	1.050	4.8.2 ✔
L38	56.75 - 56.5 (38)	0.007	0.545	0.000	0.026	0.001	0.553 ✔	1.050	4.8.2 ✔
L39	56.5 - 51.5 (39)	0.007	0.563	0.000	0.026	0.001	0.571 ✔	1.050	4.8.2 ✔
L40	51.5 - 42.0418 (40)	0.007	0.578	0.000	0.027	0.001	0.586 ✔	1.050	4.8.2 ✔
L41	42.0418 - 41.0418 (41)	0.007	0.554	0.000	0.024	0.001	0.562 ✔	1.050	4.8.2 ✔
L42	41.0418 - 36.0418 (42)	0.008	0.558	0.000	0.024	0.001	0.566 ✔	1.050	4.8.2 ✔
L43	36.0418 - 31.25 (43)	0.008	0.579	0.000	0.024	0.001	0.588 ✔	1.050	4.8.2 ✔
L44	31.25 - 31 (44)	0.009	0.675	0.000	0.028	0.001	0.685 ✔	1.050	4.8.2 ✔
L45	31 - 27.75 (45)	0.009	0.677	0.000	0.028	0.001	0.687 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L46	27.75 - 27.5 (46)	0.009	0.677	0.000	0.028	0.001	0.688	1.050	4.8.2
L47	27.5 - 27.25 (47)	0.009	0.677	0.000	0.028	0.001	0.688	1.050	4.8.2
L48	27.25 - 27 (48)	0.009	0.611	0.000	0.025	0.001	0.620	1.050	4.8.2
L49	27 - 22 (49)	0.009	0.624	0.000	0.025	0.001	0.633	1.050	4.8.2
L50	22 - 17 (50)	0.009	0.626	0.000	0.025	0.001	0.636	1.050	4.8.2
L51	17 - 12 (51)	0.009	0.627	0.000	0.025	0.001	0.637	1.050	4.8.2
L52	12 - 7 (52)	0.009	0.629	0.000	0.024	0.001	0.639	1.050	4.8.2
L53	7 - 2 (53)	0.010	0.640	0.000	0.024	0.001	0.650	1.050	4.8.2
L54	2 - 0 (54)	0.010	0.640	0.000	0.024	0.000	0.650	1.050	4.8.2

Section Capacity Table

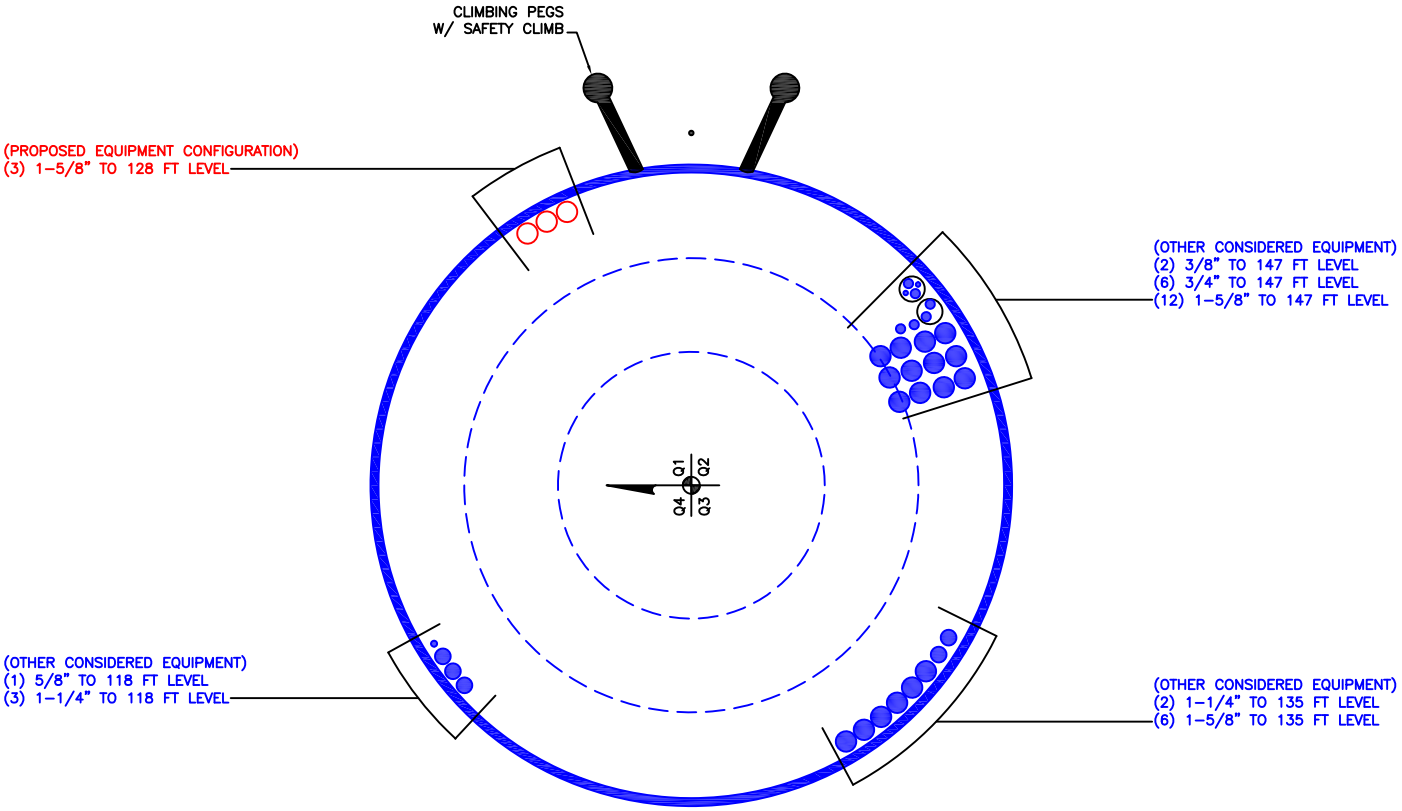
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	144.5 - 139.5	Pole	TP22.092x21x0.188	1	-3.684	800.733	**	**
L2	139.5 - 134.5	Pole	TP23.184x22.092x0.188	2	-6.369	840.654	**	**
L3	134.5 - 129.5	Pole	TP24.276x23.184x0.188	3	-7.075	880.574	**	**
L4	129.5 - 124.5	Pole	TP25.368x24.276x0.188	4	-10.669	920.495	**	**
L5	124.5 - 117.568	Pole	TP26.882x25.368x0.188	5	-11.080	945.175	**	**
L6	117.568 - 116.409	Pole	TP26.737x25.668x0.25	6	-14.008	1290.996	**	**
L7	116.409 - 112.583	Pole	TP27.555x26.737x0.25	7	-14.664	1330.843	**	**
L8	112.583 - 112.333	Pole	TP27.608x27.555x0.25	8	-14.736	1333.447	**	**
L9	112.333 - 107.333	Pole	TP28.677x27.608x0.25	9	-16.081	1385.538	**	**
L10	107.333 - 106.92	Pole	TP28.765x28.677x0.25	10	-16.178	1389.843	**	**
L11	106.92 - 106.67	Pole	TP28.818x28.765x0.538	11	-16.249	2963.625	**	**
L12	106.67 - 103.5	Pole	TP29.496x28.818x0.525	12	-17.031	2965.326	**	**
L13	103.5 - 103.25	Pole	TP29.549x29.496x0.525	13	-17.108	2970.796	**	**
L14	103.25 - 98.5	Pole	TP30.564x29.549x0.513	14	-19.802	3002.748	**	**
L15	98.5 - 98.25	Pole	TP30.618x30.564x0.675	15	-19.899	3940.482	**	**
L16	98.25 - 97.58	Pole	TP30.761x30.618x0.675	16	-20.100	3959.329	**	**
L17	97.58 - 97.33	Pole	TP30.815x30.761x0.563	17	-20.176	3317.643	**	**
L18	97.33 - 92.33	Pole	TP31.883x30.815x0.55	18	-21.572	3359.842	**	**
L19	92.33 - 87.1178	Pole	TP32.997x31.883x0.55	19	-21.749	3373.293	**	**
L20	87.1178 - 86.1178	Pole	TP32.72x31.509x0.375	20	-23.968	2364.810	**	**
L21	86.1178 - 83	Pole	TP33.392x32.72x0.375	21	-24.769	2413.918	**	**

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L22	83 - 82.75	Pole	TP33.446x33.392x0.375	22	-24.859	2417.856	**	**
L23	82.75 - 77.75	Pole	TP34.523x33.446x0.375	23	-26.155	2496.606	**	**
L24	77.75 - 77.25	Pole	TP34.631x34.523x0.375	24	-26.305	2504.481	**	**
L25	77.25 - 77	Pole	TP34.685x34.631x0.825	25	-26.419	5446.129	**	**
L26	77 - 76.75	Pole	TP34.738x34.685x0.638	26	-26.504	4238.367	**	**
L27	76.75 - 71.75	Pole	TP35.816x34.738x0.625	27	-28.214	4288.042	**	**
L28	71.75 - 69	Pole	TP36.408x35.816x0.625	28	-29.171	4360.230	**	**
L29	69 - 68.75	Pole	TP36.462x36.408x0.8	29	-29.299	5562.196	**	**
L30	68.75 - 63.75	Pole	TP37.539x36.462x0.788	30	-31.384	5642.584	**	**
L31	63.75 - 60	Pole	TP38.347x37.539x0.775	31	-32.977	5676.961	**	**
L32	60 - 59.75	Pole	TP38.401x38.347x0.775	32	-33.101	5685.099	**	**
L33	59.75 - 58.5	Pole	TP38.67x38.401x0.775	33	-33.622	5725.786	**	**
L34	58.5 - 58.25	Pole	TP38.724x38.67x0.775	34	-33.746	5733.924	**	**
L35	58.25 - 58	Pole	TP38.778x38.724x0.775	35	-33.854	5742.061	**	**
L36	58 - 57.75	Pole	TP38.832x38.778x0.613	36	-33.956	4563.919	**	**
L37	57.75 - 56.75	Pole	TP39.047x38.832x0.613	37	-34.351	4589.644	**	**
L38	56.75 - 56.5	Pole	TP39.101x39.047x0.738	38	-34.477	5516.080	**	**
L39	56.5 - 51.5	Pole	TP40.178x39.101x0.725	39	-36.663	5576.602	**	**
L40	51.5 - 42.0418	Pole	TP42.216x40.178x0.713	40	-38.301	5592.384	**	**
L41	42.0418 - 41.0418	Pole	TP41.678x40.221x0.788	41	-43.635	6278.013	**	**
L42	41.0418 - 36.0418	Pole	TP42.753x41.678x0.788	42	-46.069	6443.031	**	**
L43	36.0418 - 31.25	Pole	TP43.783x42.753x0.763	43	-48.433	6395.329	**	**
L44	31.25 - 31	Pole	TP43.836x43.783x0.65	44	-48.572	5472.820	**	**
L45	31 - 27.75	Pole	TP44.535x43.836x0.65	45	-50.159	5561.356	**	**
L46	27.75 - 27.5	Pole	TP44.589x44.535x0.65	46	-50.300	5568.171	**	**
L47	27.5 - 27.25	Pole	TP44.642x44.589x0.65	47	-50.425	5574.975	**	**
L48	27.25 - 27	Pole	TP44.696x44.642x0.725	48	-50.549	6215.244	**	**
L49	27 - 22	Pole	TP45.771x44.696x0.713	49	-53.013	6259.113	**	**
L50	22 - 17	Pole	TP46.846x45.771x0.713	50	-55.523	6408.412	**	**
L51	17 - 12	Pole	TP47.921x46.846x0.713	51	-58.064	6557.712	**	**
L52	12 - 7	Pole	TP48.995x47.921x0.713	52	-60.636	6707.022	**	**
L53	7 - 2	Pole	TP50.07x48.995x0.7	53	-63.242	6737.734	**	**
L54	2 - 0	Pole	TP50.5x50.07x0.7	54	-64.295	6796.408	**	**
							Summary	
						Pole (L10)	**	**
						RATING =	**	**

** Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 881533

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 881533

Work Order: 1926924

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	144.5	26.9323	3.8411	18	21	26.8823	0.1875	Auto	A572-65
2	121.4088	34.291	4.625	18	25.67	32.9971	0.25	Auto	A572-65
3	91.7428	49.701	5.776	18	31.51	42.2155	0.375	Auto	A572-65
4	47.8178	47.8178	0	18	40.22	50.5	0.4375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	91.48	98.5	plate	CCI-SFP-045100	3		E3						E3						E3				
2	0	31.25	plate	CCI-WSFP-085125	3		E4								E4						E4		
3	31.25	60	plate	CCI-SFP-065125	3				E4						E4						E4		
4	60	77.25	plate	CCI-SFP-065125	3				E4						E4						E4		
5	91.48	103.5	plate	CCI-SFP-045100	3			E4						E4						E4			
6	77	83	plate	CCI-SFP-060100	3		E5						E5						E5				
7	103.5	112.583	plate	CCI-SFP-045100	3						E5						E5						E5
8	0	27.75	plate	WCFP-5.5x1.25	2					E6							E6						
9	0	27.25	plate	CCI-WSFP-065125	1															E6			
10	31.25	58.5	plate	CCI-SFP-085125	1							E6											
11	97.58	106.92	plate	CCI-SFP-040075	3	E6						E6						E6					
12	27.25	56.75	plate	CCI-SFP-065125	1													E7					
13	58	69	plate	CCI-SFP-060100	3						E7						E7						E7
14																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
2	8.5	1.25	10.625	0.625	Welded	n/a	PC 8.8 - M20 (100)	45.000	17.000	9.063	1.1875	A572-65
3	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
4	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
5	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
6	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65
7	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	20.000	3.250	1.1875	A572-65
8	5.5	1.25	6.875	0.625	Welded	n/a	PC 8.8 - M20 (100)	27.000	21.000	5.313	1.1875	A572-65
9	6.5	1.25	8.125	0.625	Welded	n/a	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
10	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	45	PC 8.8 - M20 (100)	45.000	17.000	9.063	1.1875	A572-65
11	4	0.75	3	0.375	PC 8.8 - M20 (100)	12	PC 8.8 - M20 (100)	12.000	16.000	2.063	1.1875	A572-65
12	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
13	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
WCFP-5.5x1.25	Top	9	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	70	CJP Groove	5.5	1.25	45	0.25	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	144.5 - 139.5	5		18	21.000	22.092	0.1875	A572-65	1.000
2	139.5 - 134.5	5		18	22.092	23.184	0.1875	A572-65	1.000
3	134.5 - 129.5	5		18	23.184	24.276	0.1875	A572-65	1.000
4	129.5 - 124.5	5		18	24.276	25.368	0.1875	A572-65	1.000
5	124.5 - 121.4088	6.9323	3.8411	18	25.368	26.882	0.1875	A572-65	1.000
6	121.4088 - 116.4088	5		18	25.668	26.737	0.25	A572-65	1.000
7	116.4088 - 112.583	3.8258		18	26.737	27.555	0.25	A572-65	1.000
8	112.583 - 112.333	0.25		18	27.555	27.608	0.25	A572-65	1.000
9	112.333 - 107.333	5		18	27.608	28.677	0.25	A572-65	1.000
10	107.333 - 106.92	0.413		18	28.677	28.765	0.25	A572-65	1.000
11	106.92 - 106.67	0.25		18	28.765	28.818	0.5375	A572-65	0.936
12	106.67 - 103.5	3.17		18	28.818	29.496	0.525	A572-65	0.947
13	103.5 - 103.25	0.25		18	29.496	29.549	0.525	A572-65	0.946
14	103.25 - 98.5	4.75		18	29.549	30.564	0.5125	A572-65	0.952
15	98.5 - 98.25	0.25		18	30.564	30.618	0.675	A572-65	0.937
16	98.25 - 97.58	0.67		18	30.618	30.761	0.675	A572-65	0.934
17	97.58 - 97.33	0.25		18	30.761	30.815	0.5625	A572-65	0.949
18	97.33 - 92.33	5		18	30.815	31.883	0.55	A572-65	0.953
19	92.33 - 91.7428	5.2122	4.625	18	31.883	32.997	0.55	A572-65	0.951
20	91.7428 - 86.1178	5.625		18	31.509	32.720	0.375	A572-65	1.000
21	86.1178 - 83	3.1178		18	32.720	33.392	0.375	A572-65	1.000
22	83 - 82.75	0.25		18	33.392	33.446	0.375	A572-65	1.000
23	82.75 - 77.75	5		18	33.446	34.523	0.375	A572-65	1.000
24	77.75 - 77.25	0.5		18	34.523	34.631	0.375	A572-65	1.000
25	77.25 - 77	0.25		18	34.631	34.685	0.825	A572-65	0.939
26	77 - 76.75	0.25		18	34.685	34.738	0.6375	A572-65	0.946
27	76.75 - 71.75	5		18	34.738	35.816	0.625	A572-65	0.953
28	71.75 - 69	2.75		18	35.816	36.408	0.625	A572-65	0.948
29	69 - 68.75	0.25		18	36.408	36.462	0.8	A572-65	0.942
30	68.75 - 63.75	5		18	36.462	37.539	0.7875	A572-65	0.943
31	63.75 - 60	3.75		18	37.539	38.347	0.775	A572-65	0.948
32	60 - 59.75	0.25		18	38.347	38.401	0.775	A572-65	0.947
33	59.75 - 58.5	1.25		18	38.401	38.670	0.775	A572-65	0.944
34	58.5 - 58.25	0.25		18	38.670	38.724	0.775	A572-65	0.943
35	58.25 - 58	0.25		18	38.724	38.778	0.775	A572-65	0.942
36	58 - 57.75	0.25		18	38.778	38.832	0.6125	A572-65	1.087
37	57.75 - 56.75	1		18	38.832	39.047	0.6125	A572-65	1.084
38	56.75 - 56.5	0.25		18	39.047	39.101	0.7375	A572-65	0.994
39	56.5 - 51.5	5		18	39.101	40.178	0.725	A572-65	0.997
40	51.5 - 47.8178	9.4582	5.776	18	40.178	42.216	0.7125	A572-65	1.004
41	47.8178 - 41.0418	6.776		18	40.221	41.678	0.7875	A572-65	0.982
42	41.0418 - 36.0418	5		18	41.678	42.753	0.7875	A572-65	0.971
43	36.0418 - 31.25	4.7918		18	42.753	43.783	0.7625	A572-65	0.992
44	31.25 - 31	0.25		18	43.783	43.836	0.65	A572-65	1.125
45	31 - 27.75	3.25		18	43.836	44.535	0.65	A572-65	1.118
46	27.75 - 27.5	0.25		18	44.535	44.589	0.65	A572-65	1.118
47	27.5 - 27.25	0.25		18	44.589	44.642	0.65	A572-65	1.117
48	27.25 - 27	0.25		18	44.642	44.696	0.725	A572-65	1.003
49	27 - 22	5		18	44.696	45.771	0.7125	A572-65	1.010
50	22 - 17	5		18	45.771	46.846	0.7125	A572-65	1.001
51	17 - 12	5		18	46.846	47.921	0.7125	A572-65	0.992
52	12 - 7	5		18	47.921	48.995	0.7125	A572-65	0.984
53	7 - 2	5		18	48.995	50.070	0.7	A572-65	0.993
54	2 - 0	2		18	50.070	50.500	0.7	A572-65	0.990

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	144.5 - 139.5	3.69	76.68	11.08
2	139.5 - 134.5	6.36	137.31	19.42
3	134.5 - 129.5	7.07	235.77	20.26
4	129.5 - 124.5	10.67	360.12	27.00
5	124.5 - 121.4088	11.08	444.00	27.29
6	121.4088 - 116.4088	14.01	587.89	31.69
7	116.4088 - 112.583	14.66	709.76	32.04
8	112.583 - 112.333	14.74	717.77	32.06
9	112.333 - 107.333	16.08	879.14	33.38
10	107.333 - 106.92	16.18	892.93	33.41
11	106.92 - 106.67	16.25	901.28	33.44
12	106.67 - 103.5	17.03	1007.80	33.79
13	103.5 - 103.25	17.11	1016.25	33.82
14	103.25 - 98.5	19.80	1189.96	36.98
15	98.5 - 98.25	19.90	1199.20	37.01
16	98.25 - 97.58	20.10	1224.02	37.08
17	97.58 - 97.33	20.18	1233.29	37.11
18	97.33 - 92.33	21.57	1420.20	37.67
19	92.33 - 91.7428	21.75	1442.34	37.73
20	91.7428 - 86.1178	23.97	1656.62	38.45
21	86.1178 - 83	24.77	1776.88	38.73
22	83 - 82.75	24.86	1786.56	38.74
23	82.75 - 77.75	26.16	1981.33	39.20
24	77.75 - 77.25	26.31	2000.93	39.23
25	77.25 - 77	26.42	2010.74	39.26
26	77 - 76.75	26.50	2020.56	39.29
27	76.75 - 71.75	28.21	2218.32	39.84
28	71.75 - 69	29.17	2328.27	40.15
29	69 - 68.75	29.30	2338.30	40.16
30	68.75 - 63.75	31.38	2540.56	40.76
31	63.75 - 60	32.98	2694.18	41.20
32	60 - 59.75	33.10	2704.48	41.22
33	59.75 - 58.5	33.62	2756.09	41.37
34	58.5 - 58.25	33.75	2766.43	41.39
35	58.25 - 58	33.85	2776.78	41.42
36	58 - 57.75	33.96	2787.14	41.45
37	57.75 - 56.75	34.35	2828.63	41.57
38	56.75 - 56.5	34.48	2839.02	41.58
39	56.5 - 51.5	36.66	3048.30	42.15
40	51.5 - 47.8178	38.30	3204.18	42.55
41	47.8178 - 41.0418	43.64	3495.58	43.46
42	41.0418 - 36.0418	46.07	3714.08	43.98
43	36.0418 - 31.25	48.43	3925.84	44.45
44	31.25 - 31	48.57	3936.95	44.46
45	31 - 27.75	50.16	4081.88	44.76
46	27.75 - 27.5	50.30	4093.06	44.76
47	27.5 - 27.25	50.42	4104.25	44.78
48	27.25 - 27	50.55	4115.45	44.81
49	27 - 22	53.01	4340.54	45.26
50	22 - 17	55.52	4567.72	45.66
51	17 - 12	58.06	4796.85	46.03
52	12 - 7	60.64	5027.83	46.40
53	7 - 2	63.24	5260.64	46.77
54	2 - 0	64.29	5354.28	46.92

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
144.5 - 139.5	Pole	TP22.092x21x0.1875	Pole	18.2%	Pass
139.5 - 134.5	Pole	TP23.184x22.092x0.1875	Pole	30.0%	Pass
134.5 - 129.5	Pole	TP24.276x23.184x0.1875	Pole	47.3%	Pass
129.5 - 124.5	Pole	TP25.368x24.276x0.1875	Pole	67.3%	Pass
124.5 - 121.41	Pole	TP26.882x25.368x0.1875	Pole	79.2%	Pass
121.41 - 116.41	Pole	TP26.737x25.668x0.25	Pole	68.8%	Pass
116.41 - 112.58	Pole	TP27.555x26.737x0.25	Pole	78.7%	Pass
112.58 - 112.33	Pole	TP27.608x27.555x0.25	Pole	79.3%	Pass
112.33 - 107.33	Pole	TP28.677x27.608x0.25	Pole	90.9%	Pass
107.33 - 106.92	Pole	TP28.765x28.677x0.25	Pole	91.8%	Pass
106.92 - 106.67	Pole + Reinf.	TP28.818x28.765x0.5375	Reinf. 11 Tension Rupture	76.9%	Pass
106.67 - 103.5	Pole + Reinf.	TP29.496x28.818x0.525	Reinf. 11 Tension Rupture	83.1%	Pass
103.5 - 103.25	Pole + Reinf.	TP29.549x29.496x0.525	Reinf. 11 Tension Rupture	83.6%	Pass
103.25 - 98.5	Pole + Reinf.	TP30.564x29.549x0.5125	Reinf. 11 Tension Rupture	93.0%	Pass
98.5 - 98.25	Pole + Reinf.	TP30.618x30.564x0.675	Reinf. 11 Tension Rupture	71.8%	Pass
98.25 - 97.58	Pole + Reinf.	TP30.761x30.618x0.675	Reinf. 11 Tension Rupture	72.8%	Pass
97.58 - 97.33	Pole + Reinf.	TP30.815x30.761x0.5625	Reinf. 1 Tension Rupture	82.8%	Pass
97.33 - 92.33	Pole + Reinf.	TP31.883x30.815x0.55	Reinf. 1 Tension Rupture	90.7%	Pass
92.33 - 91.74	Pole + Reinf.	TP32.997x31.883x0.55	Reinf. 1 Tension Rupture	91.6%	Pass
91.74 - 86.12	Pole	TP32.72x31.509x0.375	Pole	84.1%	Pass
86.12 - 83	Pole	TP33.392x32.72x0.375	Pole	86.5%	Pass
83 - 82.75	Pole	TP33.446x33.392x0.375	Pole	86.7%	Pass
82.75 - 77.75	Pole	TP34.523x33.446x0.375	Pole	90.1%	Pass
77.75 - 77.25	Pole	TP34.631x34.523x0.375	Pole	90.4%	Pass
77.25 - 77	Pole + Reinf.	TP34.685x34.631x0.825	Reinf. 6 Tension Rupture	67.2%	Pass
77 - 76.75	Pole + Reinf.	TP34.738x34.685x0.6375	Reinf. 4 Tension Rupture	85.6%	Pass
76.75 - 71.75	Pole + Reinf.	TP35.816x34.738x0.625	Reinf. 4 Tension Rupture	89.4%	Pass
71.75 - 69	Pole + Reinf.	TP36.408x35.816x0.625	Reinf. 4 Tension Rupture	91.4%	Pass
69 - 68.75	Pole + Reinf.	TP36.462x36.408x0.8	Reinf. 13 Tension Rupture	72.6%	Pass
68.75 - 63.75	Pole + Reinf.	TP37.539x36.462x0.7875	Reinf. 13 Tension Rupture	75.5%	Pass
63.75 - 60	Pole + Reinf.	TP38.347x37.539x0.775	Reinf. 13 Tension Rupture	77.6%	Pass
60 - 59.75	Pole + Reinf.	TP38.401x38.347x0.775	Reinf. 13 Tension Rupture	77.7%	Pass
59.75 - 58.5	Pole + Reinf.	TP38.67x38.401x0.775	Reinf. 13 Tension Rupture	78.4%	Pass
58.5 - 58.25	Pole + Reinf.	TP38.724x38.67x0.775	Reinf. 13 Tension Rupture	78.5%	Pass
58.25 - 58	Pole + Reinf.	TP38.778x38.724x0.775	Reinf. 13 Tension Rupture	78.7%	Pass
58 - 57.75	Pole + Reinf.	TP38.832x38.778x0.6125	Reinf. 3 Tension Rupture	89.6%	Pass
57.75 - 56.75	Pole + Reinf.	TP39.047x38.832x0.6125	Reinf. 3 Tension Rupture	90.2%	Pass
56.75 - 56.5	Pole + Reinf.	TP39.101x39.047x0.7375	Reinf. 3 Tension Rupture	81.9%	Pass
56.5 - 51.5	Pole + Reinf.	TP40.178x39.101x0.725	Reinf. 3 Tension Rupture	84.3%	Pass
51.5 - 47.82	Pole + Reinf.	TP42.216x40.178x0.7125	Reinf. 3 Tension Rupture	85.9%	Pass
47.82 - 41.04	Pole + Reinf.	TP41.678x40.221x0.7875	Reinf. 3 Tension Rupture	83.5%	Pass
41.04 - 36.04	Pole + Reinf.	TP42.753x41.678x0.7875	Reinf. 3 Tension Rupture	85.1%	Pass
36.04 - 31.25	Pole + Reinf.	TP43.783x42.753x0.7625	Reinf. 3 Tension Rupture	86.6%	Pass
31.25 - 31	Pole + Reinf.	TP43.836x43.783x0.65	Reinf. 2 Bolt Shear	85.2%	Pass
31 - 27.75	Pole + Reinf.	TP44.535x43.836x0.65	Reinf. 2 Compression	82.8%	Pass
27.75 - 27.5	Pole + Reinf.	TP44.589x44.535x0.65	Reinf. 2 Compression	82.9%	Pass
27.5 - 27.25	Pole + Reinf.	TP44.642x44.589x0.65	Reinf. 2 Compression	82.9%	Pass
27.25 - 27	Pole + Reinf.	TP44.696x44.642x0.725	Reinf. 2 Compression	84.5%	Pass
27 - 22	Pole + Reinf.	TP45.771x44.696x0.7125	Reinf. 2 Compression	85.7%	Pass
22 - 17	Pole + Reinf.	TP46.846x45.771x0.7125	Reinf. 2 Compression	86.8%	Pass
17 - 12	Pole + Reinf.	TP47.921x46.846x0.7125	Reinf. 2 Compression	87.9%	Pass
12 - 7	Pole + Reinf.	TP48.995x47.921x0.7125	Reinf. 2 Compression	88.8%	Pass
7 - 2	Pole + Reinf.	TP50.07x48.995x0.7	Reinf. 2 Compression	89.6%	Pass
2 - 0	Pole + Reinf.	TP50.5x50.07x0.7	Reinf. 2 Compression	89.9%	Pass
				Summary	
			Pole	91.8%	Pass
			Reinforcement	93.0%	Pass
			Overall	93.0%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*												
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13
144.5 - 139.5	790	n/a	790	13.04	n/a	13.04	18.2%													
139.5 - 134.5	914	n/a	914	13.69	n/a	13.69	30.0%													
134.5 - 129.5	1051	n/a	1051	14.34	n/a	14.34	47.3%													
129.5 - 124.5	1200	n/a	1200	14.99	n/a	14.99	67.3%													
124.5 - 121.41	1299	n/a	1299	15.39	n/a	15.39	79.2%													
121.41 - 116.41	1862	n/a	1862	21.02	n/a	21.02	68.8%													
116.41 - 112.58	2040	n/a	2040	21.67	n/a	21.67	78.7%													
112.58 - 112.33	2052	n/a	2052	21.71	n/a	21.71	79.3%													
112.33 - 107.33	2302	n/a	2302	22.56	n/a	22.56	90.9%													
107.33 - 106.92	2324	n/a	2324	22.63	n/a	22.63	91.8%													
106.92 - 106.67	2337	2502	4839	22.67	22.50	45.17	44.1%							73.9%				76.9%		
106.67 - 103.5	2507	2617	5124	23.21	22.50	45.71	47.9%							79.8%				83.1%		
103.5 - 103.25	2521	2626	5146	23.25	22.50	45.75	48.2%					80.2%						83.6%		
103.25 - 98.5	2792	2803	5594	24.05	22.50	46.55	54.3%					89.3%						93.0%		
98.5 - 98.25	2807	4511	7318	24.10	36.00	60.10	42.0%	69.0%				69.0%						71.8%		
98.25 - 97.58	2846	4552	7398	24.21	36.00	60.21	42.6%	69.9%				69.9%						72.8%		
97.58 - 97.33	2861	3440	6301	24.25	27.00	51.25	50.5%	82.8%				82.8%								
97.33 - 92.33	3172	3673	6845	25.10	27.00	52.10	56.0%	90.7%				90.7%								
92.33 - 91.74	3210	3701	6911	25.20	27.00	52.20	56.7%	91.6%				91.6%								
91.74 - 86.12	5087	n/a	5087	38.50	n/a	38.50	84.1%													
86.12 - 83	5411	n/a	5411	39.30	n/a	39.30	86.5%													
83 - 82.75	5437	n/a	5437	39.36	n/a	39.36	86.7%													
82.75 - 77.75	5986	n/a	5986	40.64	n/a	40.64	90.1%													
77.75 - 77.25	6043	n/a	6043	40.77	n/a	40.77	90.4%													
77.25 - 77	6071	6872	12943	40.84	42.38	83.21	42.0%				66.3%		67.2%							
77 - 76.75	6100	3991	10091	40.90	24.38	65.27	54.1%				85.6%									
76.75 - 71.75	6692	4230	10922	42.18	24.38	66.56	56.6%				89.4%									
71.75 - 69	7033	4365	11398	42.89	24.38	67.26	58.0%				91.4%									
69 - 68.75	7064	7563	14627	42.95	42.38	85.33	45.5%				71.6%									72.6%
68.75 - 63.75	7716	7998	15714	44.23	42.38	86.61	47.8%				74.5%									75.5%
63.75 - 60	8230	8333	16563	45.19	42.38	87.57	49.4%				76.6%									77.6%
60 - 59.75	8265	8355	16621	45.26	42.38	87.63	49.5%			76.7%										77.7%
59.75 - 58.5	8442	8469	16911	45.58	42.38	87.95	50.0%			77.3%										78.4%
58.5 - 58.25	8478	8491	16969	45.64	42.38	88.02	50.1%			77.5%										78.5%
58.25 - 58	8514	8514	17028	45.71	42.38	88.08	50.2%			77.6%										78.7%
58 - 57.75	8571	5226	13797	45.77	35.00	80.77	65.0%			89.6%							63.7%			
57.75 - 56.75	8715	5281	13997	46.03	35.00	81.03	65.5%			90.2%							64.2%			
56.75 - 56.5	8809	7891	16700	46.09	43.13	89.22	56.3%			81.9%							64.3%		73.2%	
56.5 - 51.5	9562	8314	17876	47.37	43.13	90.50	58.5%			84.3%							66.4%		75.5%	
51.5 - 47.82	10144	8633	18776	48.32	43.13	91.44	59.9%			85.9%							67.9%		77.1%	
47.82 - 41.04	12369	9355	21724	57.27	43.13	100.39	55.5%			83.5%							67.3%		76.0%	
41.04 - 36.04	13359	9826	23185	58.76	43.13	101.88	56.9%			85.1%							68.9%		77.7%	
36.04 - 31.25	14356	10288	24645	60.19	43.13	103.31	58.3%			86.6%							73.0%		79.2%	
31.25 - 31	14751	6753	21504	60.26	40.00	100.26	71.3%		85.2%										80.2%	
31 - 27.75	15466	6968	22434	61.23	40.00	101.23	72.2%		82.8%										81.1%	
27.75 - 27.5	15522	6984	22506	61.31	40.00	101.31	72.3%		82.9%										81.2%	
27.5 - 27.25	15578	7001	22579	61.38	40.00	101.38	72.4%		82.9%										81.2%	
27.25 - 27	15256	9465	24721	61.46	40.00	101.46	61.3%		84.5%							81.8%				
27 - 22	16393	9909	26302	62.95	40.00	102.95	62.6%		85.7%							83.1%				
22 - 17	17556	10786	28342	64.44	40.00	104.44	62.9%		86.8%							84.3%				
17 - 12	18803	11269	30072	65.93	40.00	105.93	64.1%		87.9%							85.4%				
12 - 7	20108	11763	31871	67.43	40.00	107.43	65.2%		88.8%							86.4%				
7 - 2	21472	12268	33740	68.92	40.00	108.92	66.2%		89.6%							87.3%				
2 - 0	22035	12472	34507	69.52	40.00	109.52	66.7%		89.9%							87.6%				

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

PROJECT	**92739.017.01 - GROTON TOWER, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**02/18/21**

v4.6.1

TIA-222 Rev.	H
Apply TIA-222-H Section 15.5?	Yes

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

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	135.05	kips
AR Capacity	227.3	kips

Tower Type	Monopole

Manufacturers Tower Prop.		
Pole Thickness	0.4375	in
Pole Grade	A572-65	
Fy	65	ksi
Fu	80	ksi
Base Plate Gr.	A572-60	
Fy	60	ksi
Fu	75	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	1.75	in
Grade	F1554-105	
Fy	105	ksi
Fu	125	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	34.4%	-
Tube Compression	51.6%	-
Gusset Shear	11.9%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	28.4%	-
Welds: Gusset to Tube	38.5%	-
Welds: Geometry	N/A	
Tower Punching	16.3%	-
Tube Punching	10.3%	-
Utilization	**51.6%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	1.25	in	Size	HSS4x4x1/2		FEXX	70	ksi
Width at Tube	4	in	Total Length	27	in	Weld Type	Double Fillet	
Height at Pole	30	in	Length above Gusset	3	in	Fillet Size	5/16	in
Height at Tube	24	in	Length below Gusset	0	in			
Grade	A572-65		Grade	A500 Grade B (Square)				
Fy	65	ksi	Fy	46	ksi			
Fu	80	ksi	Fu	58	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate		
FEXX	70	ksi	FEXX	70	ksi
Weld Type	Double Fillet		Weld Type	CJP - Double Bevel	
Fillet Size	5/16	in	Fillet Size	9/16	in
			Bevel Depth	9/16	in
			Gap	0	in
			Notch (horiz)	0.75	in
			Notch (vert)	0.75	in
			Pipe/Tube Welded to Base/Footpad?	Yes	
			Fillet Size	1/2	in

PROJECT	**92739.017.01 - GROTON TOWER, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**02/18/21**

v4.6.1

TIA-222 Rev.	H
Apply TIA-222-H Section 15.5?	Yes

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

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	135.05	kips
AR Capacity	227.3	kips

Tower Type	Monopole

Manufacturers Tower Prop.		
Pole Thickness	0.4375	in
Pole Grade	A572-65	
Fy	65	ksi
Fu	80	ksi
Base Plate Gr.	A572-60	
Fy	60	ksi
Fu	75	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	1.75	in
Grade	F1554-105	
Fy	105	ksi
Fu	125	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	34.4%	-
Tube Compression	51.6%	-
Gusset Shear	11.9%	-
Gusset Flexure	N/A	-
Welds: Gusset to Tower and BP	29.9%	-
Welds: Gusset to Tube	38.5%	-
Welds: Geometry	N/A	
Tower Punching	12.9%	-
Tube Punching	10.3%	-
Utilization	**51.6%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	1.25	in	Size	HSS4x4x1/2		FEXX	70	ksi
Width at Tube	2.75	in	Total Length	27	in	Weld Type	Double Fillet	
Height at Pole	30	in	Length above Gusset	3	in	Fillet Size	5/16	in
Height at Tube	24	in	Length below Gusset	0	in			
Grade	A572-65		Grade	A500 Grade B (Square)				
Fy	65	ksi	Fy	46	ksi			
Fu	80	ksi	Fu	58	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate		
FEXX	70	ksi	FEXX	70	ksi
Weld Type	Double Fillet		Weld Type	CJP - Double Bevel	
Fillet Size	5/16	in	Fillet Size	9/16	in
			Bevel Depth	9/16	in
			Gap	0	in
			Notch (horiz)	0.75	in
			Notch (vert)	0.75	in
			Pipe/Tube Welded to Base/Footpad?	Yes	
			Fillet Size	1/2	in

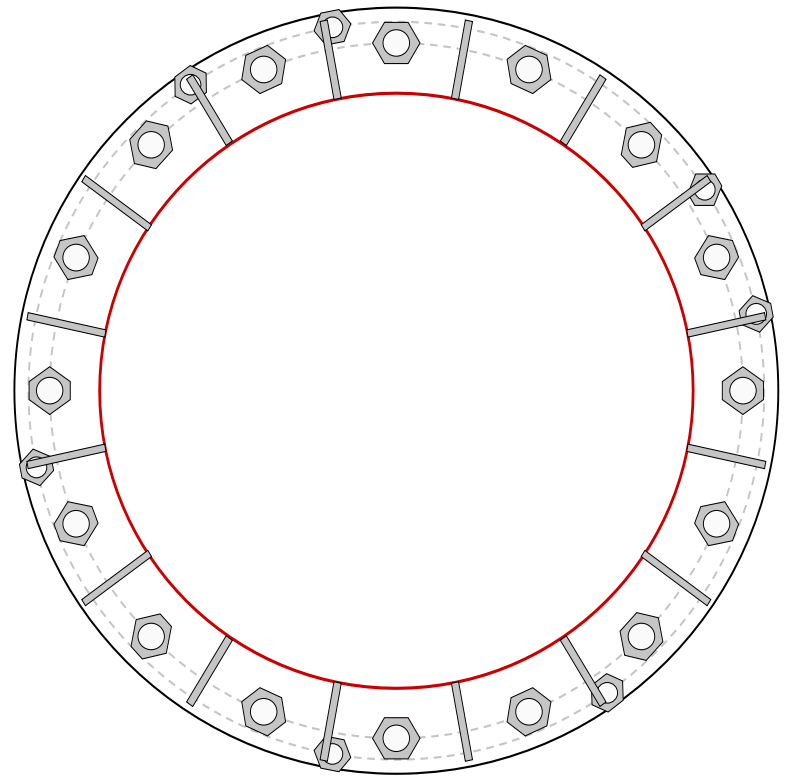
Monopole Base Plate Connection

Site Info	
BU #	881533
Site Name	GROTON TOWER, CT
Order #	544400, Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	5354.28
Axial Force (kips)	64.29
Shear Force (kips)	46.92

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 59" BC

GROUP 2: (7) 1-3/4" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 62.61" BC

pos. (deg): 12, 33, 100, 124, 192, 260, 305

Base Plate Data

65" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(16) 17.75"H x 6.75"W x 0.625"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.625" fillet
vert. weld: 0.375" fillet

Pole Data

50.5" x 0.4375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 222.16	ϕPn_c = 268.39	**Stress Rating**
Vu = 2.93	ϕVn = 120.77	**78.9%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 135.05	ϕPn_c = 227.3	**Stress Rating**
Vu = 0	ϕVn = 102.28	**56.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	37.43	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**66.0%**	**Pass**

Stiffener Summary

Horizontal Weld:	**70.6%**	**Pass**
Vertical Weld:	**46.3%**	**Pass**
Plate Flexure+Shear:	**27.4%**	**Pass**
Plate Tension+Shear:	**77.2%**	**Pass**
Plate Compression:	**81.9%**	**Pass**

Pole Summary

Punching Shear:	**11.8%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	No	No	No	No	No	

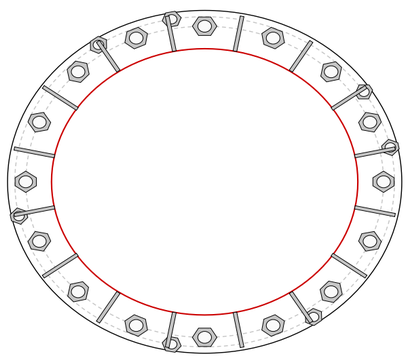
Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	2.25	A615-75	59	0.5	0	N-Included		No
2	1	22.5	2.25	A615-75	59	0.5	0	N-Included		No
3	1	45	2.25	A615-75	59	0.5	0	N-Included		No
4	1	67.5	2.25	A615-75	59	0.5	0	N-Included		No
5	1	90	2.25	A615-75	59	0.5	0	N-Included		No
6	1	112.5	2.25	A615-75	59	0.5	0	N-Included		No
7	1	135	2.25	A615-75	59	0.5	0	N-Included		No
8	1	157.5	2.25	A615-75	59	0.5	0	N-Included		No
9	1	180	2.25	A615-75	59	0.5	0	N-Included		No
10	1	202.5	2.25	A615-75	59	0.5	0	N-Included		No
11	1	225	2.25	A615-75	59	0.5	0	N-Included		No
12	1	247.5	2.25	A615-75	59	0.5	0	N-Included		No
13	1	270	2.25	A615-75	59	0.5	0	N-Included		No
14	1	292.5	2.25	A615-75	59	0.5	0	N-Included		No
15	1	315	2.25	A615-75	59	0.5	0	N-Included		No
16	1	337.5	2.25	A615-75	59	0.5	0	N-Included		No
17	2	12	1.75	F1554-105	62.61	0.5	0	N-Included		No
18	2	33	1.75	F1554-105	62.61	0.5	0	N-Included		No
19	2	100	1.75	F1554-105	62.61	0.5	0	N-Included		No
20	2	124	1.75	F1554-105	62.61	0.5	0	N-Included		No
21	2	192	1.75	F1554-105	62.61	0.5	0	N-Included		No
22	2	260	1.75	F1554-105	62.61	0.5	0	N-Included		No
23	2	305	1.75	F1554-105	62.61	0.5	0	N-Included		No

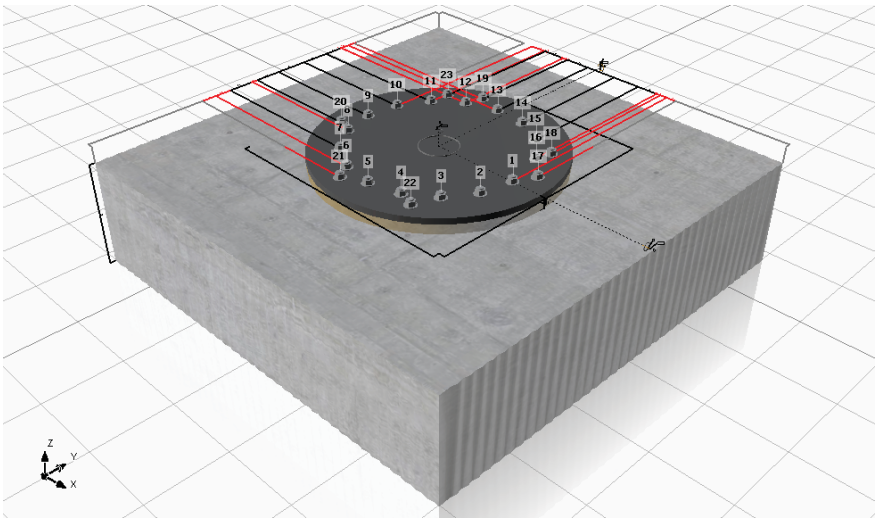
Custom Stiffener Connection

Stiffener	Stiffener Group ID	Location (deg.)	Width (in)	Height (in)	Thickness (in)	H. Notch (in)	V. Notch (in)	Grade (ksi)	Weld Type	Groove Depth (in)	Groove Angle (deg.)	H. Fillet Weld Size (in)	V. Fillet Weld Size (in)	Weld Strength (ksi)
1	1	11.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
2	1	33.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
3	1	56.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
4	1	78.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
5	1	101.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
6	1	123.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
7	1	146.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
8	1	168.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
9	1	191.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
10	1	213.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
11	1	236.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
12	1	258.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
13	1	281.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
14	1	303.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
15	1	326.25	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70
16	1	348.75	6.75	17.75	0.625	0.75	0.75	50	Fillet			0.625	0.375	70

Plot Graphic



5.Geometric Conditions



h_{min} 25.250 in c_{min} 2.000 in c_{ac} 35.718 in s_{min} 7.000 in

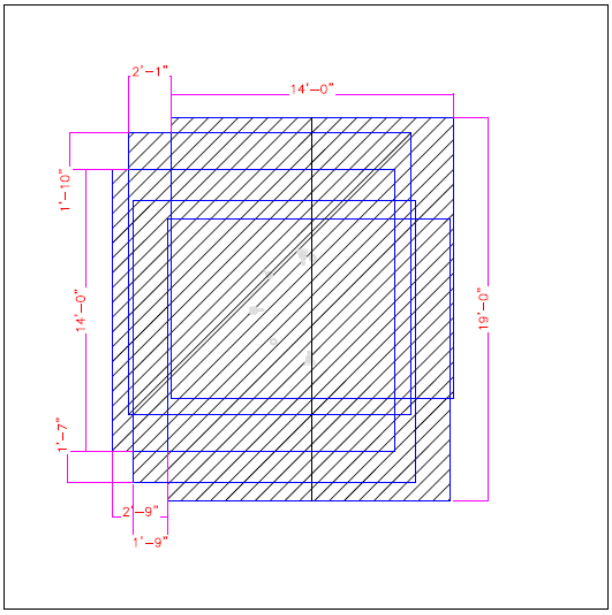
6.Summary Results

Tension Loading

Design Proof	Demand (lb)	Capacity (lb)	Utilization	Status	Critical
Steel Strength	189911.00	234375*	0.81	OK	
Concrete Breakout Strength	1311172.00	1021706*	0.952	OK	Controls

REV H=90.73%

Anco = 14'X19'+2.75'X14'+2.083'X1.83'+1.583'x1.75'
= 44795.83 in^2

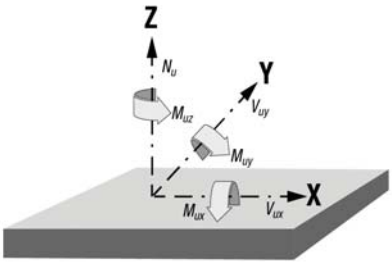


8.Load Conditions

Design Loads / Actions

Nu	-64000	lb	Vux	47000	lb	Vuy	0	lb
Muz	0	in-lb	Demand	0	in-lb	Muy	64248000	in-lb

Consider Load Reversal X Direction 0% Y Direction 0%



9.Load Distribution

Max. concrete compressive strain:	0.000	%	Anchor Eccentricity					
Max. concrete compressive stress:	0.000	psi	ex	-2.941	in	ey	-0.107	in
Resulting tension force:	1311171.756	lb	Profile Eccentricity					
Resulting compression force:	1375171.756	lb	ex	0	in	ey	0	in

Resulting anchor forces / Load distribution

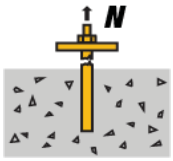
Anchor	Tension Load (lb)	Shear Load (lb)	Component Shear Load (lb)		Anchor Coordinates (in)	
			Shear Y	Shear Y	X	Y
1	-181996.02	2044.0	2043.8	25.5	29.500	0.000
2	-167876.81	2053.4	2053.3	23.6	27.352	-11.051
3	-129915.16	2061.5	2061.4	18.4	21.221	-20.492
4	-73639.51	2066.9	2066.9	10.5	11.999	-26.950
5	-7245.41	2069.1	2069.1	1.1	1.030	-29.482
6	59598.02	2067.6	2067.6	-8.4	-10.090	-27.721
7	117156.20	2062.7	2062.6	-16.7	-19.739	-21.923
8	157046.82	2055.0	2054.9	-22.5	-26.514	-12.932
9	173460.50	2045.7	2045.6	-25.0	-29.428	-2.058
10	164006.90	2036.1	2036.0	-23.8	-28.056	9.116
11	130062.75	2027.7	2027.6	-19.2	-22.598	18.962
12	76571.42	2021.5	2021.5	-11.7	-13.849	26.047
13	11322.98	2018.7	2018.7	-2.4	-3.084	29.338
14	-56180.30	2019.5	2019.5	7.2	8.131	28.357
15	-116107.75	2024.0	2023.9	15.8	18.162	23.246
16	-159732.01	2031.3	2031.2	22.1	25.548	14.750
17	-203836.24	2038.0	2037.8	28.5	33.000	7.000
18	-169042.44	2026.8	2026.7	23.3	27.000	20.000
19	64792.34	2016.4	2016.4	-10.1	-12.000	32.000
20	189911.19	2053.4	2053.2	-27.2	-32.000	-11.000
21	41531.76	2072.1	2072.1	-5.8	-7.000	-33.000
22	-109600.12	2068.7	2068.7	15.6	18.000	-29.000

23	125710.89	2021.6	2021.5	-18.6	-22.000	26.000

10.Design Proof Tension Loading

Steel Strength:

ACI 318-14 17.4.1



CONSIDERED 2" MAIN AR,
Nsa=2.5*125000=312500

Variables

N_{sa} (lb)	φ
312500	0.75

Results

φN_{sa}	=	234375	lb
N_{ua}	=	189911.0	lb
Utilization	=	0.81	%

Table 17.3.1.1

Concrete Breakout Strength

ACI 318-14 17.4.2

Equations

$N_{cbg} = (A_{Nc} / A_{Nc0}) . \Psi_{ec,N} . \Psi_{ed,N} . \Psi_{c,N} . \Psi_{cp,N} . N_b$ Eqn. 17.4.2.1b

$N_b = 16 . \lambda_a . (f'_c)^{0.5} . h_{ef}^{5/3}$ Eqn. 17.4.2.2b

Variables

A_{Nc} (in²)	A_{Nc0} (in²)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$
44795.83	28224	0.850	1.000	1.25 and 1.4	1.000

c_{ac} (in)	k_c	λ_a	f'_c (psi)	h'_{ef} (in)
NA	24 and 17	1.000	4000	56

N_b (lb)	φ
865526	0.70

Results

φN_{cbg}	=	1021706*	lb
N_{ua}	=	1311172.0	lb
Utilization	=	0.952663	

Table 17.3.1.1

Pier and Pad Foundation

BU # :	881533
Site Name:	GROTON TOWER
App. Number:	544400, Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	64	kips
Base Shear, Vu_comp:	47	kips
Moment, M_u:	5354	ft-kips
Tower Height, **H**:	145	ft
BP Dist. Above Fdn, bp_{dist}:	3.25	in
Bolt Circle / Bearing Plate Width, **BC**:	59	in

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	256.40	47.00	**17.5%**	**Pass**
Bearing Pressure (ksf)	18.00	3.02	**16.8%**	**Pass**
*Overturning (kip*ft)*	9329.50	5601.73	**60.0%**	**Pass**
*Pad Flexure (kip*ft)*	8579.25	2582.66	**28.7%**	**Pass**
Pad Shear - 1-way (kips)	1861.32	267.76	**13.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.003	**1.3%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	8603.29	0.00	**0.0%**	**Pass**

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

Soil Rating*:	**60.0%**
Structural Rating*:	**28.7%**

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	30	ft
Pad Thickness, **T**:	5	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	45	
Pad Clear Cover, cc_{pad}:	4	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	165	pcf
Ultimate Gross Bearing, Qult:	24.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	0	
Base Friction, μ:		
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

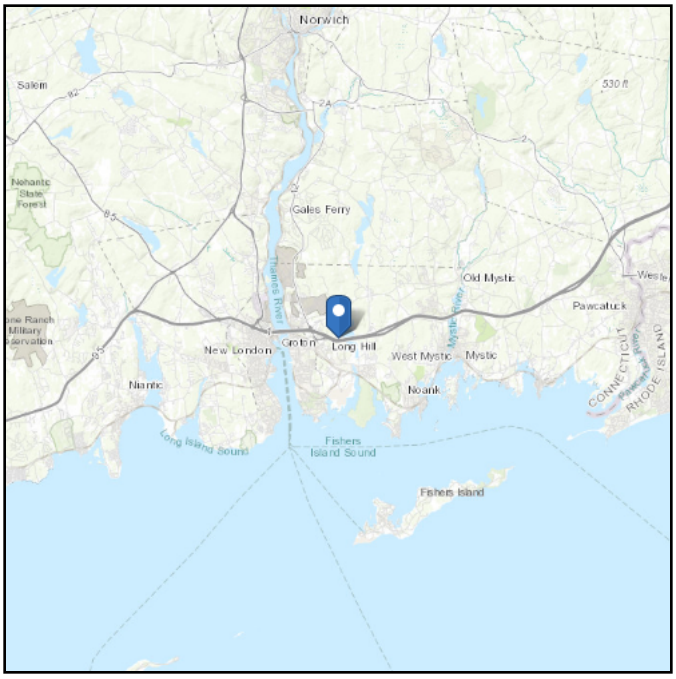
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 128.26 ft (NAVD 88)
Latitude: 41.360222
Longitude: -72.048639



Wind

Results:

Wind Speed:	135 Vmph
10-year MRI	80 Vmph
25-year MRI	90 Vmph
50-year MRI	99 Vmph
100-year MRI	109 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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

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

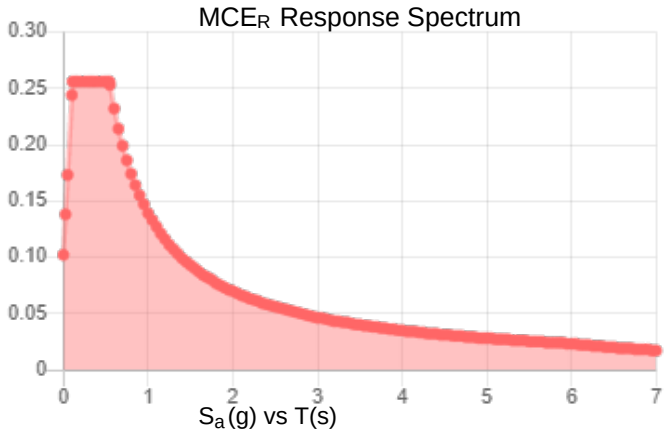
Seismic

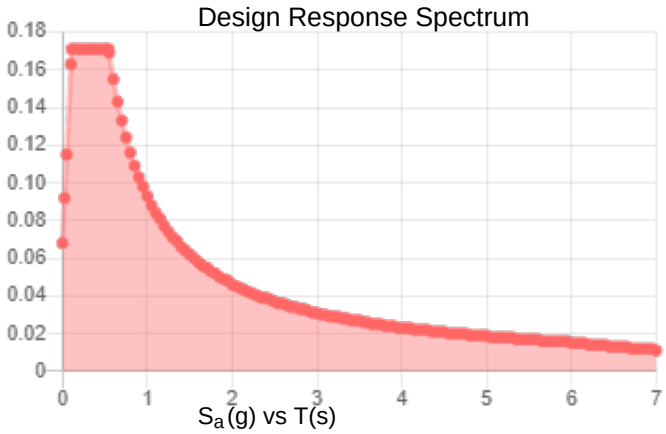
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.16	S_{DS} :	0.171
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.08
S_{MS} :	0.256	PGA_M :	0.128
S_{M1} :	0.139	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Feb 17 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Feb 17 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 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

Date: February 15, 2021

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CT11428A
	Carrier Site Name:	Groton/I-95/Buddington Rd
Crown Castle Designation:	**Crown Castle BU Number:**	881533
	Crown Castle Site Name:	Groton Tower
	Crown Castle JDE Job Number:	634986
	Crown Castle Order Number:	544400, Rev.0
Engineering Firm Designation:	**B+T Group Report Designation:**	92739.016.01
Site Data:	**75 Roberts Road, Groton, CT, New London, 06340** **Latitude 41° 21' 36.80" Longitude -72° 2' 55.10"**	
Structure Information:	**Tower Height & Type:**	**144.5 ft. Monopole**
	Mount Elevation:	**126 ft.**
	Mount Type:	**12 ft. Platform Mount**

Dear Mr. Tarr,

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

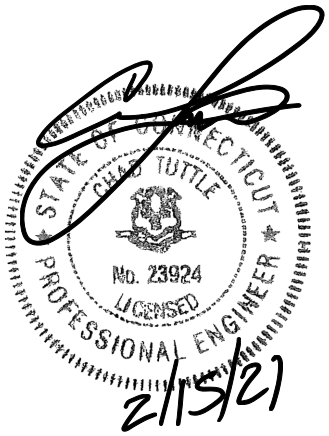
The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

Platform Mount **Sufficient**

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

Mount structural analysis prepared by: Krista Loyd, E.I.T.

Respectfully submitted by: B&T Engineering, Inc.
COA: 23924 Expires: 01/31/2021



Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 12' Platform Mount, mapped by B+T Group.

The mount has been modified per reinforcement drawings prepared by B+T Group, in July of 2019. Reinforcement consists of new Handrail kits, Sitepro Part# HRK-12.

2) ANALYSIS CRITERIA

Building Code: 2015 IBC
TIA-222 Revision: TIA-222-H
Risk Category: II
Ultimate Wind Speed: 135 mph
Exposure Category: C
Topographic Factor at Base: 1
Topographic Factor at Mount: 1
Ice Thickness: 1.5 in
Wind Speed with Ice: 50 mph
Seismic S_s: 0.16
Seismic S_1: 0.058
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 and Existing Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Qty.	Manufacturer	Model / Type	Mount / Modification Details
126	128	3	Ericsson	AIR 32 B2 B66AA_TMOBILE	12 ft. Platform Mount
		3	Ericsson	AIR6449 B41_T-MOBILE	
		3	RFS	APXVAALL24_43-UNA20_TMO	
		3	Ericsson	RADIO 4415 B25_TMO	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	Date: 02/12/2021	Crown Castle
RFDS		Date: 02/02/2021	
Mount Mapping	B+T Group	Date: 06/15/2019	On File
Mount Analysis		Date: 07/02/2019	
Mount Modification		Date: 07/08/2019	

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.1), 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 C).

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1,2	Supporting Channel	126	17	62.2	Pass
	Main Horizontals	126	18	50.3	Pass
	Mount Pipes	126	132	51.1	Pass
	Support angles	126	124	34.7	Pass
	Support Rails	126	172	40.9	Pass
	Connection Angles	126	19	27.4	Pass
3	Mount to Tower Connection	126	-	62.7	Pass

Structure Rating (max from all components) =	**62.7%**

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

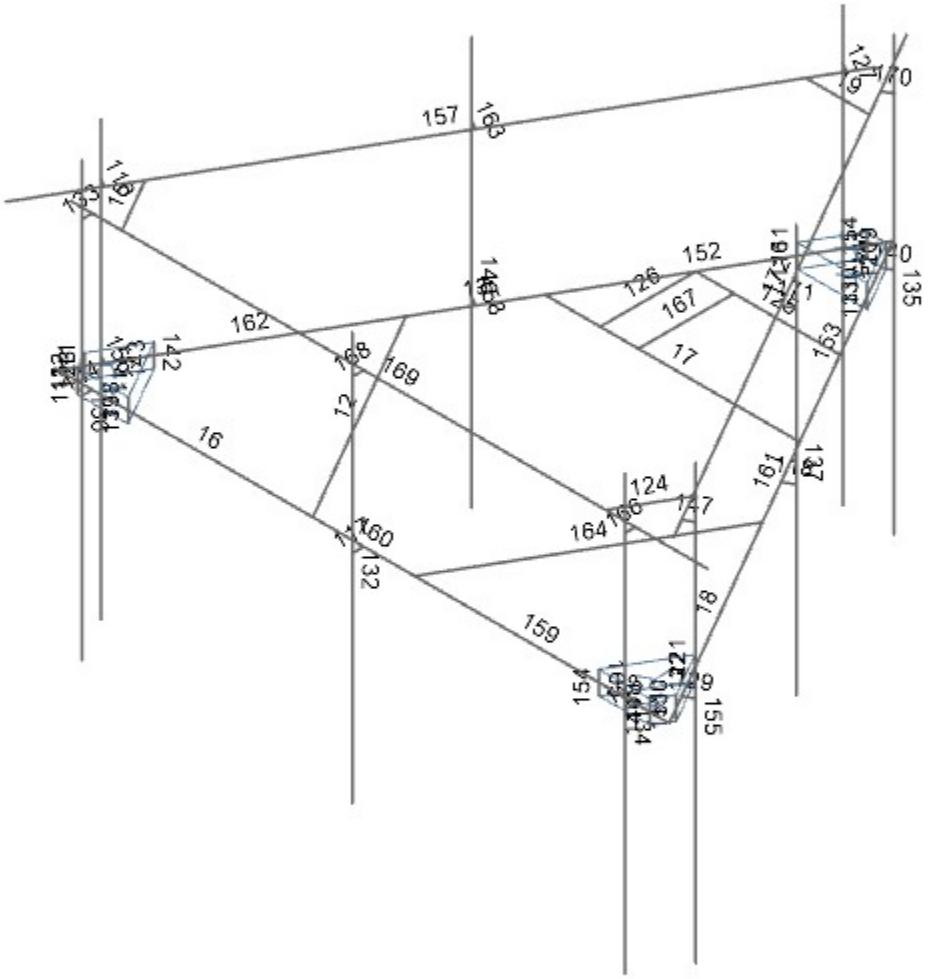
The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

WIRE FRAME AND RENDERED MODELS

Envelope Only Solution

B+T Group	881533 - Groton Tower	SK-2
SV		Feb 15, 2021
92739.016.01		92739_016_01_Groton_CT.R3D



Envelope Only Solution

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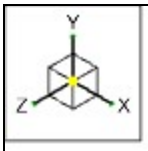

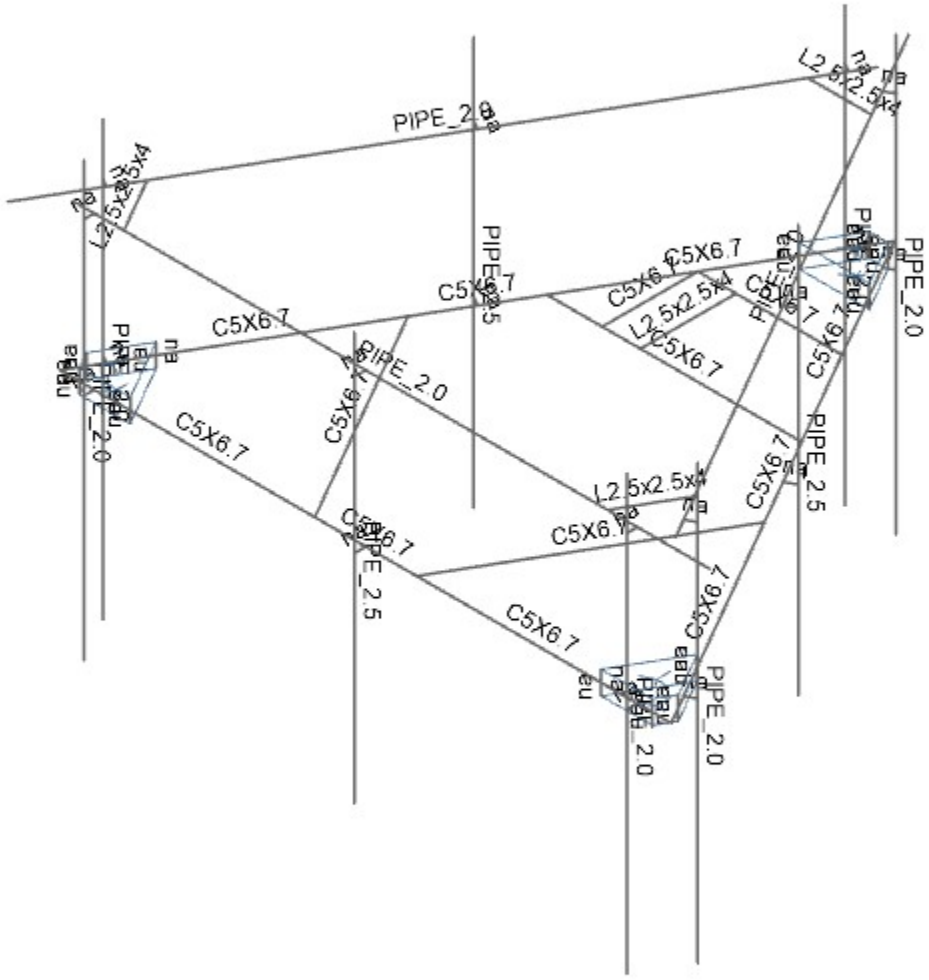

Envelope Only Solution

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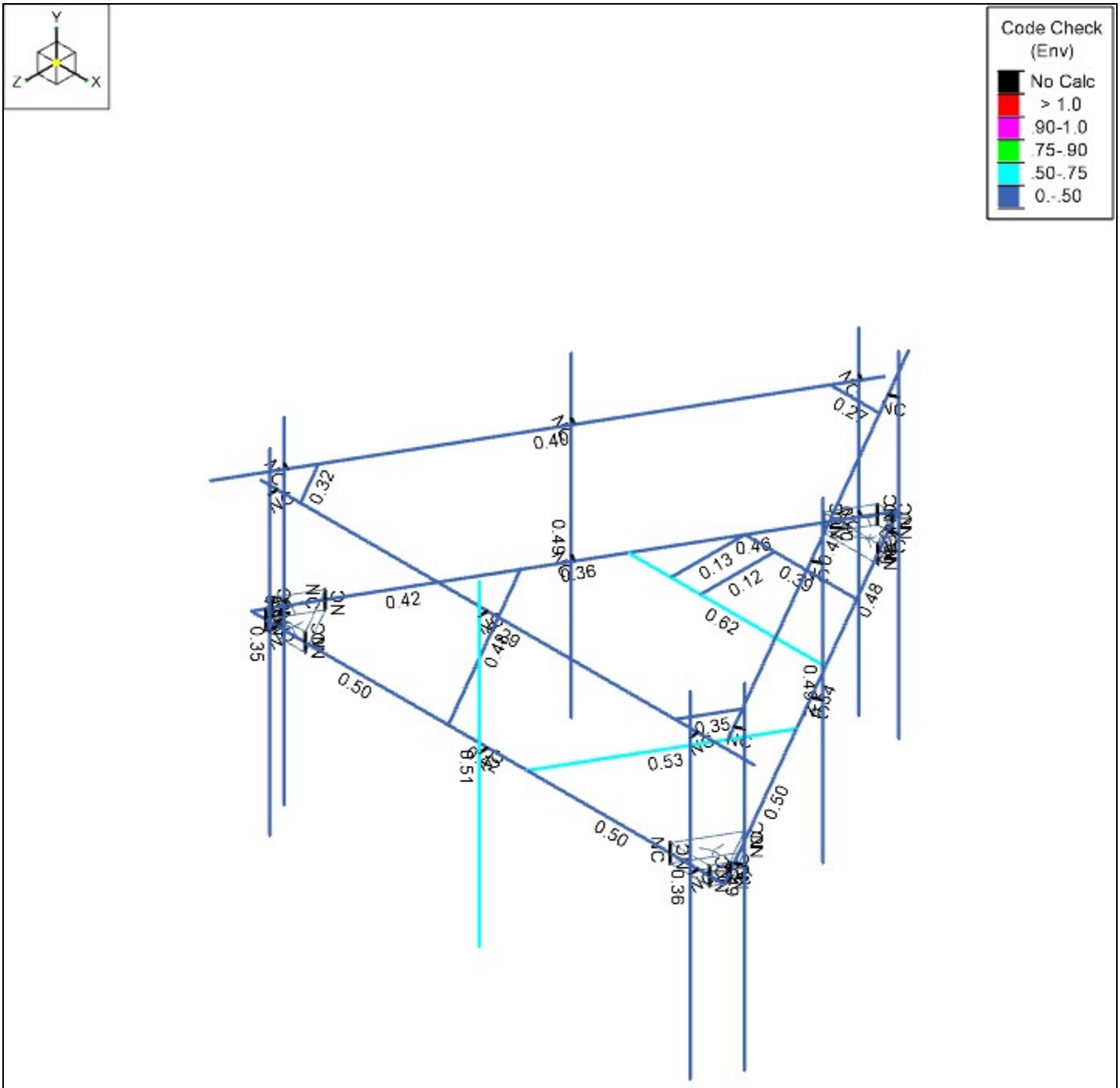
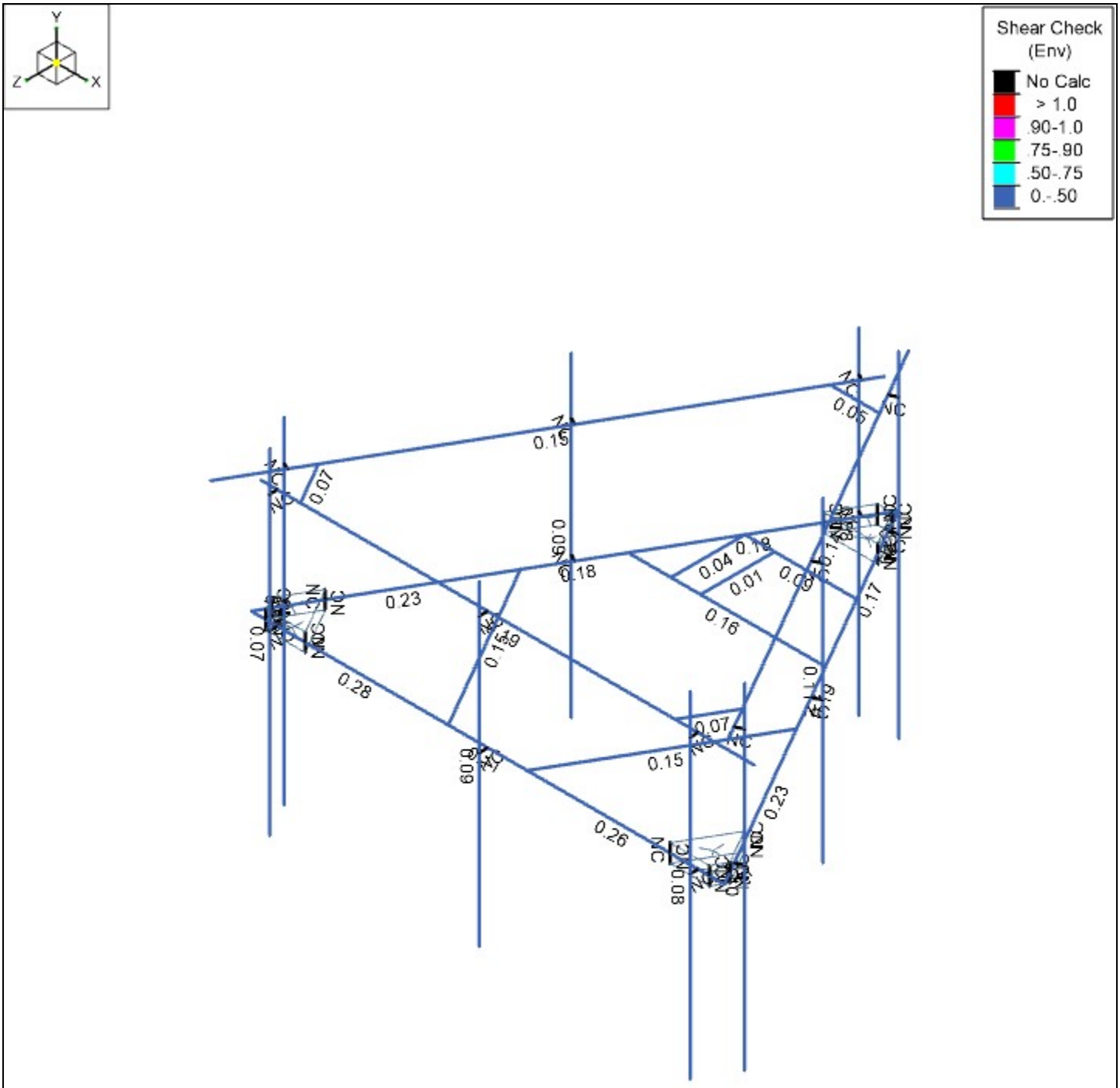


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	881533 - Groton Tower	SK-6
SV		Feb 15, 2021
92739.016.01		92739_016_01_Groton_CT.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	881533 - Groton Tower	SK-7
SV		Feb 15, 2021
92739.016.01		92739_016_01_Groton_CT.R3D

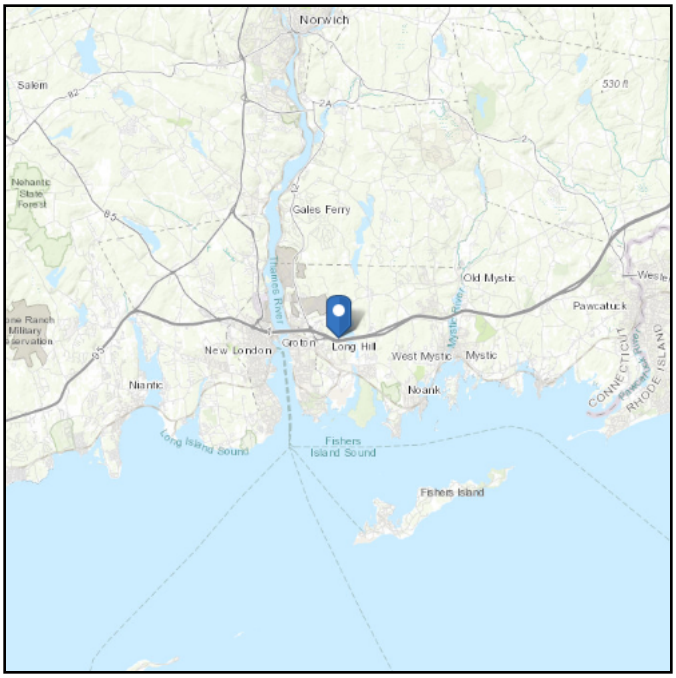
APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	128.26 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.360222
Soil Class:	D - Stiff Soil	**Longitude:**	-72.048639



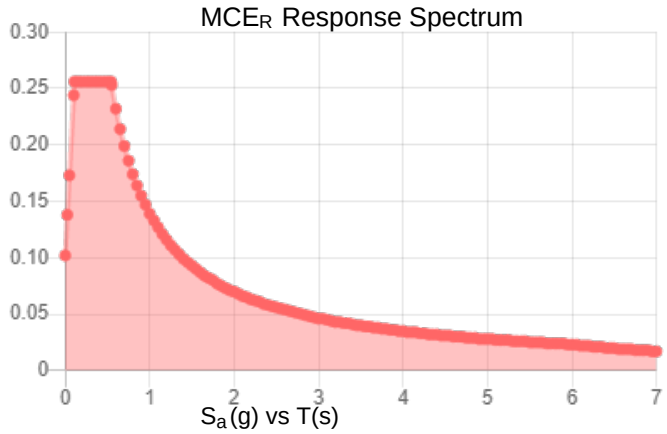
Seismic

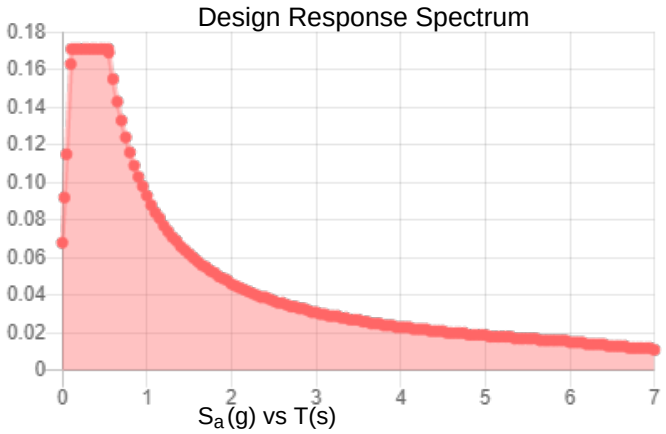
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.16	S_{DS} :	0.171
S_1 :	0.058	S_{D1} :	0.093
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.08
S_{MS} :	0.256	PGA_M :	0.128
S_{M1} :	0.139	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Sat Feb 13 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Sat Feb 13 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 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

PROJECT	**92739.016.01 - Groton Tower**		**KSC**
SUBJECT	**Platform Mount Mount Analysis**		
DATE	**02/15/21**	PAGE	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

Tower Type		:	Monopole		
Ground Elevation	z_s	:	128	ft	[ASCE7 Hazard Tool]
Tower Height		:	144.50	ft	
Mount Elevation		:	126.00	ft	
Antenna Elevation		:	128.00	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	:	135	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	:	1.50	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.16		
	S_1	:	0.06		
	S_{DS}	:	0.17		
	S_{D1}	:	0.09		

Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.33		[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}	:	1.72	in	[Sec. 2.6.10]

Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.086		[Sec. 2.7.7.1]
Amplification	A_s	:	2.487889		[Sec. 16.7]

	q_z	:	58.62	psf

PROJECT	**92739.016.01 - Groton Tower**		**KSC**
SUBJECT	**Platform Mount Mount Analysis**		
DATE	**02/15/21**	PAGE	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(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)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
ERICSSON	AIR 32 B2A B66AA	0.5	4.60	2.51	2.65	1.78	3.55	2.63	0.11	0.07	0.02	0.01
ERICSSON	AIR 32 B2A B66AA	0.5	4.60	1.29	2.65	1.78	3.55	2.63	0.11	0.07	0.02	0.01
RFS/CELWAVE	APXVAALL24_43-U-NA20	0.5	4.00	1.27	7.99	2.83	9.46	4.11	0.43	0.16	0.07	0.03
RFS/CELWAVE	APXVAALL24_43-U-NA20	0.5	4.00	1.27	7.99	2.83	9.46	4.11	0.43	0.16	0.07	0.03
ERICSSON	RADIO 4415 B25_TMO	1	1.22	1.20	1.55	0.72	2.34	1.35	0.10	0.05	0.01	0.01
ERICSSON	ADIO 4449 B71 B85A_T-MOBI	1	1.36	1.20	1.64	1.32	2.46	2.08	0.10	0.08	0.01	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.36	0.98	3.04	1.52	0.15	0.06	0.02	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.36	0.98	3.04	1.52	0.15	0.06	0.02	0.01
ERICSSON	AIR 32 B2A B66AA	0.5	4.60	1.29	2.65	1.78	3.55	2.63	0.11	0.07	0.02	0.01
ERICSSON	AIR 32 B2A B66AA	0.5	4.60	1.29	2.65	1.78	3.55	2.63	0.11	0.07	0.02	0.01
RFS/CELWAVE	APXVAALL24_43-U-NA20	0.5	4.00	1.27	7.99	2.83	9.46	4.11	0.43	0.16	0.07	0.03
RFS/CELWAVE	APXVAALL24_43-U-NA20	0.5	4.00	1.27	7.99	2.83	9.46	4.11	0.43	0.16	0.07	0.03
ERICSSON	RADIO 4415 B25_TMO	1	1.22	1.20	1.55	0.72	2.34	1.35	0.10	0.05	0.01	0.01
ERICSSON	ADIO 4449 B71 B85A_T-MOBI	1	1.36	1.20	1.64	1.32	2.46	2.08	0.10	0.08	0.01	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.36	0.98	3.04	1.52	0.15	0.06	0.02	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.36	0.98	3.04	1.52	0.15	0.06	0.02	0.01

PROJECT	**92739.016.01 - Groton Tower**		**KSC**
SUBJECT	**Platform Mount Mount Analysis**		
DATE	**02/15/21**	PAGE 3	OF

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(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)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
ERICSSON	AIR 32 B2A B66AA	0.5	4.60	1.29	2.65	1.78	3.55	2.63	0.00	0.07	0.02	0.01
ERICSSON	AIR 32 B2A B66AA	0.5	4.60	1.29	2.65	1.78	3.55	2.63	0.00	0.07	0.02	0.01
RFS/CELWAVE	APXVAALL24_43-U-NA20	0.5	4.00	1.27	7.99	2.83	9.46	4.11	0.00	0.16	0.07	0.03
RFS/CELWAVE	APXVAALL24_43-U-NA20	0.5	4.00	1.27	7.99	2.83	9.46	4.11	0.00	0.16	0.07	0.03
ERICSSON	RADIO 4415 B25_TMO	1	1.22	1.20	1.55	0.72	2.34	1.35	0.00	0.05	0.01	0.01
ERICSSON	ADIO 4449 B71 B85A_T-MOBI	1	1.36	1.20	1.64	1.32	2.46	2.08	0.00	0.08	0.01	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.36	0.98	3.04	1.52	0.00	0.06	0.02	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.36	0.98	3.04	1.52	0.00	0.06	0.02	0.01

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	F1-CH1	C5X6.7	Beam	Channel	A36 Gr.36	Typical	1.97	0.47	7.48	0.055
2	MF-H1	C5X6.7	Beam	Channel	A36 Gr.36	Typical	1.97	0.47	7.48	0.055
3	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
4	MF-P2	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
5	F1-SA1	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
6	MF-H2	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	MF-H3	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	0.692	0.692	0.026

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	125	115	122		F1-CH1	Beam	Channel	A36 Gr.36	Typical
2	126	117	122	180	F1-CH1	Beam	Channel	A36 Gr.36	Typical
3	130	123	130		RIGID	None	None	RIGID	Typical
4	120	131	111		RIGID	None	None	RIGID	Typical
5	114	14	127		RIGID	None	None	RIGID	Typical
6	119	111	129		RIGID	None	None	RIGID	Typical
7	111	16	11		RIGID	None	None	RIGID	Typical
8	116	17	16		RIGID	None	None	RIGID	Typical
9	131	133	123		RIGID	None	None	RIGID	Typical
10	115	19	14		RIGID	None	None	RIGID	Typical
11	112	12	140		RIGID	None	None	RIGID	Typical
12	11	113	141		RIGID	None	None	RIGID	Typical
13	138	136	139		RIGID	None	None	RIGID	Typical
14	139	149	136		RIGID	None	None	RIGID	Typical
15	143	154	143		RIGID	None	None	RIGID	Typical
16	113	144	12		RIGID	None	None	RIGID	Typical
17	150	156	158		RIGID	None	None	RIGID	Typical
18	148	155	160		RIGID	None	None	RIGID	Typical
19	121	112	116		RIGID	None	None	RIGID	Typical
20	122	162	112		RIGID	None	None	RIGID	Typical
21	154	165	1105		RIGID	None	None	RIGID	Typical
22	151	161	156		RIGID	None	None	RIGID	Typical
23	134	128	166		MF-P1	Column	Pipe	A53 Gr.B	Typical
24	132	125	153		MF-P2	Column	Pipe	A53 Gr.B	Typical
25	136	134	159		MF-P1	Column	Pipe	A53 Gr.B	Typical
26	128	120	124		RIGID	None	None	RIGID	Typical
27	144	167	145		RIGID	None	None	RIGID	Typical
28	117	168	18		RIGID	None	None	RIGID	Typical
29	135	132	170		MF-P1	Column	Pipe	A53 Gr.B	Typical
30	137	163	135		MF-P2	Column	Pipe	A53 Gr.B	Typical
31	155	169	171		MF-P1	Column	Pipe	A53 Gr.B	Typical
32	140	137	172		RIGID	None	None	RIGID	Typical
33	129	121	138		RIGID	None	None	RIGID	Typical
34	118	110	173		RIGID	None	None	RIGID	Typical
35	141	150	142		MF-P1	Column	Pipe	A53 Gr.B	Typical
36	146	148	174		MF-P2	Column	Pipe	A53 Gr.B	Typical
37	145	146	175		MF-P1	Column	Pipe	A53 Gr.B	Typical
38	156	176	177		RIGID	None	None	RIGID	Typical
39	14	178	179		RIGID	None	None	RIGID	Typical
40	158	181	184		RIGID	None	None	RIGID	Typical
41	159	185	189	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
42	160	186	185	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
43	16	191	186	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
44	153	188	157	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
45	161	190	188	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
46	18	189	190	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
47	162	192	191	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
48	13	193	192	180	MF-H1	Beam	Channel	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
49	152	157	193	180	MF-H1	Beam	Channel	A36 Gr.36	Typical
50	12	15	119		F1-CH1	Beam	Channel	A36 Gr.36	Typical
51	164	195	196		F1-CH1	Beam	Channel	A36 Gr.36	Typical
52	17	197	198		F1-CH1	Beam	Channel	A36 Gr.36	Typical
53	165	1104	1105		RIGID	None	None	RIGID	Typical
54	142	1106	143		RIGID	None	None	RIGID	Typical
55	167	1121	1122		F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
56	149	164	155		RIGID	None	None	RIGID	Typical
57	123	152	113		RIGID	None	None	RIGID	Typical
58	166	1112	1123		RIGID	None	None	RIGID	Typical
59	133	126	1124		RIGID	None	None	RIGID	Typical
60	168	1125	1126		RIGID	None	None	RIGID	Typical
61	169	1128	1127		MF-H2	Beam	Pipe	A53 Gr.B	Typical
62	170	1129	1130		RIGID	None	None	RIGID	Typical
63	147	151	1131		RIGID	None	None	RIGID	Typical
64	171	1132	1133		RIGID	None	None	RIGID	Typical
65	172	1149	1134		MF-H2	Beam	Pipe	A53 Gr.B	Typical
66	110	1135	1136		RIGID	None	None	RIGID	Typical
67	127	1137	118		RIGID	None	None	RIGID	Typical
68	163	194	1138		RIGID	None	None	RIGID	Typical
69	157	1150	180		MF-H2	Beam	Pipe	A53 Gr.B	Typical
70	15	1139	1143	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
71	19	1142	1141	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical
72	124	114	1140	180	MF-H3	Beam	Single Angle	A36 Gr.36	Typical

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		45		8
2	0 Wind - No Ice	WLZ			45	30	
3	90 Wind - No Ice	WLX			45	30	
4	0 Wind - Ice	WLZ			45	30	
5	90 Wind - Ice	WLX			45	30	
6	0 Wind - Service	WLZ			45	30	
7	90 Wind - Service	WLX			45	30	
8	Ice	OL1			45	30	8
9	0 Seismic	ELZ			45	30	
10	90 Seismic	ELX			45	30	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
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		
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	BLC 1 Transient Area Loads	None				48	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC
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
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8
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
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Y	-0.086	%5
2	134	Y	-0.086	%40
3	134	Y	0	0
4	134	Y	0	0
5	134	Y	0	0
6	132	Y	-0.075	%5
7	132	Y	-0.075	%90
8	132	Y	-0.047	%20
9	132	Y	-0.073	%60
10	132	Y	0	0
11	136	Y	-0.057	%5
12	136	Y	-0.057	%30
13	136	Y	0	0
14	136	Y	0	0
15	136	Y	0	0
16	141	Y	-0.086	%5
17	141	Y	-0.086	%40
18	141	Y	0	0
19	141	Y	0	0
20	141	Y	0	0
21	146	Y	-0.075	%5
22	146	Y	-0.075	%90

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
23	146	Y	-0.047	%20
24	146	Y	-0.073	%60
25	146	Y	0	0
26	145	Y	-0.057	%5
27	145	Y	-0.057	%30
28	145	Y	0	0
29	145	Y	0	0
30	145	Y	0	0
31	135	Y	-0.086	%5
32	135	Y	-0.086	%40
33	135	Y	0	0
34	135	Y	0	0
35	135	Y	0	0
36	137	Y	-0.075	%5
37	137	Y	-0.075	%90
38	137	Y	-0.047	%20
39	137	Y	-0.073	%60
40	137	Y	0	0
41	155	Y	-0.057	%5
42	155	Y	-0.057	%30
43	155	Y	0	0
44	155	Y	0	0
45	155	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Z	-0.114	%5
2	134	Z	-0.114	%40
3	134	Z	0	0
4	134	Z	0	0
5	134	Z	0	0
6	132	Z	-0.431	%5
7	132	Z	-0.431	%90
8	132	Z	-0.098	%20
9	132	Z	-0.104	%60
10	132	Z	0	0
11	136	Z	-0.15	%5
12	136	Z	-0.15	%30
13	136	Z	0	0
14	136	Z	0	0
15	136	Z	0	0
16	141	Z	-0.114	%5
17	141	Z	-0.114	%40
18	141	Z	0	0
19	141	Z	0	0
20	141	Z	0	0
21	146	Z	-0.431	%5
22	146	Z	-0.431	%90
23	146	Z	-0.098	%20
24	146	Z	-0.104	%60
25	146	Z	0	0
26	145	Z	-0.15	%5
27	145	Z	-0.15	%30
28	145	Z	0	0
29	145	Z	0	0
30	145	Z	0	0
31	135	Z	-0.114	%5
32	135	Z	-0.114	%40

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
33	135	Z	0	0
34	135	Z	0	0
35	135	Z	0	0
36	137	Z	-0.431	%5
37	137	Z	-0.431	%90
38	137	Z	-0.098	%20
39	137	Z	-0.104	%60
40	137	Z	0	0
41	155	Z	-0.15	%5
42	155	Z	-0.15	%30
43	155	Z	0	0
44	155	Z	0	0
45	155	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	X	-0.074	%5
2	134	X	-0.074	%40
3	134	X	0	0
4	134	X	0	0
5	134	X	0	0
6	132	X	-0.156	%5
7	132	X	-0.156	%90
8	132	X	-0.046	%20
9	132	X	-0.084	%60
10	132	X	0	0
11	136	X	-0.062	%5
12	136	X	-0.062	%30
13	136	X	0	0
14	136	X	0	0
15	136	X	0	0
16	141	X	-0.074	%5
17	141	X	-0.074	%40
18	141	X	0	0
19	141	X	0	0
20	141	X	0	0
21	146	X	-0.156	%5
22	146	X	-0.156	%90
23	146	X	-0.046	%20
24	146	X	-0.084	%60
25	146	X	0	0
26	145	X	-0.062	%5
27	145	X	-0.062	%30
28	145	X	0	0
29	145	X	0	0
30	145	X	0	0
31	135	X	-0.074	%5
32	135	X	-0.074	%40
33	135	X	0	0
34	135	X	0	0
35	135	X	0	0
36	137	X	-0.156	%5
37	137	X	-0.156	%90
38	137	X	-0.046	%20
39	137	X	-0.084	%60
40	137	X	0	0
41	155	X	-0.062	%5
42	155	X	-0.062	%30

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
43	155	X	0	0
44	155	X	0	0
45	155	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Z	-0.02	%5
2	134	Z	-0.02	%40
3	134	Z	0	0
4	134	Z	0	0
5	134	Z	0	0
6	132	Z	-0.069	%5
7	132	Z	-0.069	%90
8	132	Z	-0.014	%20
9	132	Z	-0.014	%60
10	132	Z	0	0
11	136	Z	-0.021	%5
12	136	Z	-0.021	%30
13	136	Z	0	0
14	136	Z	0	0
15	136	Z	0	0
16	141	Z	-0.02	%5
17	141	Z	-0.02	%40
18	141	Z	0	0
19	141	Z	0	0
20	141	Z	0	0
21	146	Z	-0.069	%5
22	146	Z	-0.069	%90
23	146	Z	-0.014	%20
24	146	Z	-0.014	%60
25	146	Z	0	0
26	145	Z	-0.021	%5
27	145	Z	-0.021	%30
28	145	Z	0	0
29	145	Z	0	0
30	145	Z	0	0
31	135	Z	-0.02	%5
32	135	Z	-0.02	%40
33	135	Z	0	0
34	135	Z	0	0
35	135	Z	0	0
36	137	Z	-0.069	%5
37	137	Z	-0.069	%90
38	137	Z	-0.014	%20
39	137	Z	-0.014	%60
40	137	Z	0	0
41	155	Z	-0.021	%5
42	155	Z	-0.021	%30
43	155	Z	0	0
44	155	Z	0	0
45	155	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	X	-0.015	%5
2	134	X	-0.015	%40
3	134	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
4	134	X	0	0
5	134	X	0	0
6	132	X	-0.03	%5
7	132	X	-0.03	%90
8	132	X	-0.006	%20
9	132	X	-0.012	%60
10	132	X	0	0
11	136	X	-0.009	%5
12	136	X	-0.009	%30
13	136	X	0	0
14	136	X	0	0
15	136	X	0	0
16	141	X	-0.015	%5
17	141	X	-0.015	%40
18	141	X	0	0
19	141	X	0	0
20	141	X	0	0
21	146	X	-0.03	%5
22	146	X	-0.03	%90
23	146	X	-0.006	%20
24	146	X	-0.012	%60
25	146	X	0	0
26	145	X	-0.009	%5
27	145	X	-0.009	%30
28	145	X	0	0
29	145	X	0	0
30	145	X	0	0
31	135	X	-0.015	%5
32	135	X	-0.015	%40
33	135	X	0	0
34	135	X	0	0
35	135	X	0	0
36	137	X	-0.03	%5
37	137	X	-0.03	%90
38	137	X	-0.006	%20
39	137	X	-0.012	%60
40	137	X	0	0
41	155	X	-0.009	%5
42	155	X	-0.009	%30
43	155	X	0	0
44	155	X	0	0
45	155	X	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Z	-0.006	%5
2	134	Z	-0.006	%40
3	134	Z	0	0
4	134	Z	0	0
5	134	Z	0	0
6	132	Z	-0.021	%5
7	132	Z	-0.021	%90
8	132	Z	-0.005	%20
9	132	Z	-0.005	%60
10	132	Z	0	0
11	136	Z	-0.007	%5
12	136	Z	-0.007	%30
13	136	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
14	136	Z	0	0
15	136	Z	0	0
16	141	Z	-0.006	%5
17	141	Z	-0.006	%40
18	141	Z	0	0
19	141	Z	0	0
20	141	Z	0	0
21	146	Z	-0.021	%5
22	146	Z	-0.021	%90
23	146	Z	-0.005	%20
24	146	Z	-0.005	%60
25	146	Z	0	0
26	145	Z	-0.007	%5
27	145	Z	-0.007	%30
28	145	Z	0	0
29	145	Z	0	0
30	145	Z	0	0
31	135	Z	-0.006	%5
32	135	Z	-0.006	%40
33	135	Z	0	0
34	135	Z	0	0
35	135	Z	0	0
36	137	Z	-0.021	%5
37	137	Z	-0.021	%90
38	137	Z	-0.005	%20
39	137	Z	-0.005	%60
40	137	Z	0	0
41	155	Z	-0.007	%5
42	155	Z	-0.007	%30
43	155	Z	0	0
44	155	Z	0	0
45	155	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	X	-0.004	%5
2	134	X	-0.004	%40
3	134	X	0	0
4	134	X	0	0
5	134	X	0	0
6	132	X	-0.008	%5
7	132	X	-0.008	%90
8	132	X	-0.002	%20
9	132	X	-0.004	%60
10	132	X	0	0
11	136	X	-0.003	%5
12	136	X	-0.003	%30
13	136	X	0	0
14	136	X	0	0
15	136	X	0	0
16	141	X	-0.004	%5
17	141	X	-0.004	%40
18	141	X	0	0
19	141	X	0	0
20	141	X	0	0
21	146	X	-0.008	%5
22	146	X	-0.008	%90
23	146	X	-0.002	%20

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
24	146	X	-0.004	%60
25	146	X	0	0
26	145	X	-0.003	%5
27	145	X	-0.003	%30
28	145	X	0	0
29	145	X	0	0
30	145	X	0	0
31	135	X	-0.004	%5
32	135	X	-0.004	%40
33	135	X	0	0
34	135	X	0	0
35	135	X	0	0
36	137	X	-0.008	%5
37	137	X	-0.008	%90
38	137	X	-0.002	%20
39	137	X	-0.004	%60
40	137	X	0	0
41	155	X	-0.003	%5
42	155	X	-0.003	%30
43	155	X	0	0
44	155	X	0	0
45	155	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Y	-0.167	%5
2	134	Y	-0.167	%40
3	134	Y	0	0
4	134	Y	0	0
5	134	Y	0	0
6	132	Y	-0.258	%5
7	132	Y	-0.258	%90
8	132	Y	-0.048	%20
9	132	Y	-0.059	%60
10	132	Y	0	0
11	136	Y	-0.069	%5
12	136	Y	-0.069	%30
13	136	Y	0	0
14	136	Y	0	0
15	136	Y	0	0
16	141	Y	-0.167	%5
17	141	Y	-0.167	%40
18	141	Y	0	0
19	141	Y	0	0
20	141	Y	0	0
21	146	Y	-0.258	%5
22	146	Y	-0.258	%90
23	146	Y	-0.048	%20
24	146	Y	-0.059	%60
25	146	Y	0	0
26	145	Y	-0.069	%5
27	145	Y	-0.069	%30
28	145	Y	0	0
29	145	Y	0	0
30	145	Y	0	0
31	135	Y	-0.167	%5
32	135	Y	-0.167	%40
33	135	Y	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
34	135	Y	0	0
35	135	Y	0	0
36	137	Y	-0.258	%5
37	137	Y	-0.258	%90
38	137	Y	-0.048	%20
39	137	Y	-0.059	%60
40	137	Y	0	0
41	155	Y	-0.069	%5
42	155	Y	-0.069	%30
43	155	Y	0	0
44	155	Y	0	0
45	155	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	Z	-0.037	%5
2	134	Z	-0.037	%40
3	134	Z	0	0
4	134	Z	0	0
5	134	Z	0	0
6	132	Z	-0.032	%5
7	132	Z	-0.032	%90
8	132	Z	-0.01	%20
9	132	Z	-0.016	%60
10	132	Z	0	0
11	136	Z	-0.024	%5
12	136	Z	-0.024	%30
13	136	Z	0	0
14	136	Z	0	0
15	136	Z	0	0
16	141	Z	-0.037	%5
17	141	Z	-0.037	%40
18	141	Z	0	0
19	141	Z	0	0
20	141	Z	0	0
21	146	Z	-0.032	%5
22	146	Z	-0.032	%90
23	146	Z	-0.01	%20
24	146	Z	-0.016	%60
25	146	Z	0	0
26	145	Z	-0.024	%5
27	145	Z	-0.024	%30
28	145	Z	0	0
29	145	Z	0	0
30	145	Z	0	0
31	135	Z	-0.037	%5
32	135	Z	-0.037	%40
33	135	Z	0	0
34	135	Z	0	0
35	135	Z	0	0
36	137	Z	-0.032	%5
37	137	Z	-0.032	%90
38	137	Z	-0.01	%20
39	137	Z	-0.016	%60
40	137	Z	0	0
41	155	Z	-0.024	%5
42	155	Z	-0.024	%30
43	155	Z	0	0

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
44	155	Z	0	0
45	155	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	134	X	-0.037	%5
2	134	X	-0.037	%40
3	134	X	0	0
4	134	X	0	0
5	134	X	0	0
6	132	X	-0.032	%5
7	132	X	-0.032	%90
8	132	X	-0.01	%20
9	132	X	-0.016	%60
10	132	X	0	0
11	136	X	-0.024	%5
12	136	X	-0.024	%30
13	136	X	0	0
14	136	X	0	0
15	136	X	0	0
16	141	X	-0.037	%5
17	141	X	-0.037	%40
18	141	X	0	0
19	141	X	0	0
20	141	X	0	0
21	146	X	-0.032	%5
22	146	X	-0.032	%90
23	146	X	-0.01	%20
24	146	X	-0.016	%60
25	146	X	0	0
26	145	X	-0.024	%5
27	145	X	-0.024	%30
28	145	X	0	0
29	145	X	0	0
30	145	X	0	0
31	135	X	-0.037	%5
32	135	X	-0.037	%40
33	135	X	0	0
34	135	X	0	0
35	135	X	0	0
36	137	X	-0.032	%5
37	137	X	-0.032	%90
38	137	X	-0.01	%20
39	137	X	-0.016	%60
40	137	X	0	0
41	155	X	-0.024	%5
42	155	X	-0.024	%30
43	155	X	0	0
44	155	X	0	0
45	155	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

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

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	159	Y	-0.25	%95

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	169	Y	-0.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	169	Y	-0.25	%95

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	152	Y	-0.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	162	Y	-0.25	%95

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	157	Y	-0.25	%5

Member Point Loads (BLC 22 : Maint LL 8)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	157	Y	-0.25	%95

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Y	-0.25	%5

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	153	Y	-0.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	172	Y	-0.25	%5

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	172	Y	-0.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	17	Y	-0.25	%50

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	164	Y	-0.25	%50

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	12	Y	-0.25	%50

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	125	Z	-0.014	-0.014	0	%100
2	126	Z	-0.013	-0.013	0	%100
3	134	Z	-0.013	-0.013	0	%100
4	132	Z	-0.015	-0.015	0	%100
5	136	Z	-0.013	-0.013	0	%100
6	135	Z	-0.013	-0.013	0	%100
7	137	Z	-0.015	-0.015	0	%100
8	155	Z	-0.013	-0.013	0	%100
9	141	Z	-0.013	-0.013	0	%100
10	146	Z	-0.015	-0.015	0	%100
11	145	Z	-0.013	-0.013	0	%100
12	159	Z	-0.009	-0.009	0	%100
13	160	Z	-0.012	-0.012	0	%100
14	16	Z	-0.009	-0.009	0	%100
15	153	Z	-0.009	-0.009	0	%100
16	161	Z	-0.012	-0.012	0	%100
17	18	Z	-0.009	-0.009	0	%100
18	162	Z	-0.009	-0.009	0	%100
19	13	Z	-0.012	-0.012	0	%100
20	152	Z	-0.009	-0.009	0	%100
21	12	Z	-0.01	-0.01	0	%100
22	164	Z	-0.01	-0.01	0	%100
23	17	Z	-0.01	-0.01	0	%100
24	167	Z	-0.016	-0.016	0	%100
25	169	Z	-0.013	-0.013	0	%100
26	172	Z	-0.013	-0.013	0	%100
27	157	Z	-0.013	-0.013	0	%100
28	15	Z	-0.015	-0.015	0	%100
29	19	Z	-0.015	-0.015	0	%100
30	124	Z	-0.015	-0.015	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	125	X	-0.014	-0.014	0	%100
2	126	X	-0.013	-0.013	0	%100
3	134	X	-0.013	-0.013	0	%100
4	132	X	-0.015	-0.015	0	%100
5	136	X	-0.013	-0.013	0	%100
6	135	X	-0.013	-0.013	0	%100
7	137	X	-0.015	-0.015	0	%100
8	155	X	-0.013	-0.013	0	%100
9	141	X	-0.013	-0.013	0	%100
10	146	X	-0.015	-0.015	0	%100
11	145	X	-0.013	-0.013	0	%100
12	159	X	-0.009	-0.009	0	%100
13	160	X	-0.012	-0.012	0	%100
14	16	X	-0.009	-0.009	0	%100
15	153	X	-0.009	-0.009	0	%100
16	161	X	-0.012	-0.012	0	%100
17	18	X	-0.009	-0.009	0	%100
18	162	X	-0.009	-0.009	0	%100
19	13	X	-0.012	-0.012	0	%100
20	152	X	-0.009	-0.009	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, %)]
21	12	X	-0.01	-0.01	0	%100
22	164	X	-0.01	-0.01	0	%100
23	17	X	-0.01	-0.01	0	%100
24	167	X	-0.016	-0.016	0	%100
25	169	X	-0.013	-0.013	0	%100
26	172	X	-0.013	-0.013	0	%100
27	157	X	-0.013	-0.013	0	%100
28	15	X	-0.015	-0.015	0	%100
29	19	X	-0.015	-0.015	0	%100
30	124	X	-0.015	-0.015	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	125	Z	-0.003	-0.003	0	%100
2	126	Z	-0.003	-0.003	0	%100
3	134	Z	-0.002	-0.002	0	%100
4	132	Z	-0.002	-0.002	0	%100
5	136	Z	-0.002	-0.002	0	%100
6	135	Z	-0.002	-0.002	0	%100
7	137	Z	-0.002	-0.002	0	%100
8	155	Z	-0.002	-0.002	0	%100
9	141	Z	-0.002	-0.002	0	%100
10	146	Z	-0.002	-0.002	0	%100
11	145	Z	-0.002	-0.002	0	%100
12	159	Z	-0.003	-0.003	0	%100
13	160	Z	-0.003	-0.003	0	%100
14	16	Z	-0.003	-0.003	0	%100
15	153	Z	-0.003	-0.003	0	%100
16	161	Z	-0.003	-0.003	0	%100
17	18	Z	-0.003	-0.003	0	%100
18	162	Z	-0.003	-0.003	0	%100
19	13	Z	-0.003	-0.003	0	%100
20	152	Z	-0.003	-0.003	0	%100
21	12	Z	-0.003	-0.003	0	%100
22	164	Z	-0.003	-0.003	0	%100
23	17	Z	-0.003	-0.003	0	%100
24	167	Z	-0.006	-0.006	0	%100
25	169	Z	-0.002	-0.002	0	%100
26	172	Z	-0.002	-0.002	0	%100
27	157	Z	-0.002	-0.002	0	%100
28	15	Z	-0.006	-0.006	0	%100
29	19	Z	-0.006	-0.006	0	%100
30	124	Z	-0.006	-0.006	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	125	X	-0.003	-0.003	0	%100
2	126	X	-0.003	-0.003	0	%100
3	134	X	-0.002	-0.002	0	%100
4	132	X	-0.002	-0.002	0	%100
5	136	X	-0.002	-0.002	0	%100
6	135	X	-0.002	-0.002	0	%100
7	137	X	-0.002	-0.002	0	%100
8	155	X	-0.002	-0.002	0	%100
9	141	X	-0.002	-0.002	0	%100
10	146	X	-0.002	-0.002	0	%100
11	145	X	-0.002	-0.002	0	%100
12	159	X	-0.003	-0.003	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, %)]
12	159	X	-0.003	-0.003	0	%100
13	160	X	-0.003	-0.003	0	%100
14	16	X	-0.003	-0.003	0	%100
15	153	X	-0.003	-0.003	0	%100
16	161	X	-0.003	-0.003	0	%100
17	18	X	-0.003	-0.003	0	%100
18	162	X	-0.003	-0.003	0	%100
19	13	X	-0.003	-0.003	0	%100
20	152	X	-0.003	-0.003	0	%100
21	12	X	-0.003	-0.003	0	%100
22	164	X	-0.003	-0.003	0	%100
23	17	X	-0.003	-0.003	0	%100
24	167	X	-0.006	-0.006	0	%100
25	169	X	-0.002	-0.002	0	%100
26	172	X	-0.002	-0.002	0	%100
27	157	X	-0.002	-0.002	0	%100
28	15	X	-0.006	-0.006	0	%100
29	19	X	-0.006	-0.006	0	%100
30	124	X	-0.006	-0.006	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	125	Z	-0.0006	-0.0006	0	%100
2	126	Z	-0.0006	-0.0006	0	%100
3	134	Z	-0.0003	-0.0003	0	%100
4	132	Z	-0.0004	-0.0004	0	%100
5	136	Z	-0.0003	-0.0003	0	%100
6	135	Z	-0.0003	-0.0003	0	%100
7	137	Z	-0.0004	-0.0004	0	%100
8	155	Z	-0.0003	-0.0003	0	%100
9	141	Z	-0.0003	-0.0003	0	%100
10	146	Z	-0.0004	-0.0004	0	%100
11	145	Z	-0.0003	-0.0003	0	%100
12	159	Z	-0.0007	-0.0007	0	%100
13	160	Z	-0.0005	-0.0005	0	%100
14	16	Z	-0.0007	-0.0007	0	%100
15	153	Z	-0.0007	-0.0007	0	%100
16	161	Z	-0.0005	-0.0005	0	%100
17	18	Z	-0.0007	-0.0007	0	%100
18	162	Z	-0.0007	-0.0007	0	%100
19	13	Z	-0.0005	-0.0005	0	%100
20	152	Z	-0.0007	-0.0007	0	%100
21	12	Z	-0.0007	-0.0007	0	%100
22	164	Z	-0.0007	-0.0007	0	%100
23	17	Z	-0.0007	-0.0007	0	%100
24	167	Z	-0.0008	-0.0008	0	%100
25	169	Z	-0.0003	-0.0003	0	%100
26	172	Z	-0.0003	-0.0003	0	%100
27	157	Z	-0.0003	-0.0003	0	%100
28	15	Z	-0.0007	-0.0007	0	%100
29	19	Z	-0.0007	-0.0007	0	%100
30	124	Z	-0.0007	-0.0007	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	125	X	-0.0006	-0.0006	0	%100
2	126	X	-0.0006	-0.0006	0	%100
3	134	X	-0.0003	-0.0003	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, %)]
3	134	X	-0.0003	-0.0003	0	%100
4	132	X	-0.0004	-0.0004	0	%100
5	136	X	-0.0003	-0.0003	0	%100
6	135	X	-0.0003	-0.0003	0	%100
7	137	X	-0.0004	-0.0004	0	%100
8	155	X	-0.0003	-0.0003	0	%100
9	141	X	-0.0003	-0.0003	0	%100
10	146	X	-0.0004	-0.0004	0	%100
11	145	X	-0.0003	-0.0003	0	%100
12	159	X	-0.0007	-0.0007	0	%100
13	160	X	-0.0005	-0.0005	0	%100
14	16	X	-0.0007	-0.0007	0	%100
15	153	X	-0.0007	-0.0007	0	%100
16	161	X	-0.0005	-0.0005	0	%100
17	18	X	-0.0007	-0.0007	0	%100
18	162	X	-0.0007	-0.0007	0	%100
19	13	X	-0.0005	-0.0005	0	%100
20	152	X	-0.0007	-0.0007	0	%100
21	12	X	-0.0007	-0.0007	0	%100
22	164	X	-0.0007	-0.0007	0	%100
23	17	X	-0.0007	-0.0007	0	%100
24	167	X	-0.0008	-0.0008	0	%100
25	169	X	-0.0003	-0.0003	0	%100
26	172	X	-0.0003	-0.0003	0	%100
27	157	X	-0.0003	-0.0003	0	%100
28	15	X	-0.0007	-0.0007	0	%100
29	19	X	-0.0007	-0.0007	0	%100
30	124	X	-0.0007	-0.0007	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	125	Y	-0.015	-0.015	0	%100
2	126	Y	-0.015	-0.015	0	%100
3	134	Y	-0.009	-0.009	0	%100
4	132	Y	-0.01	-0.01	0	%100
5	136	Y	-0.009	-0.009	0	%100
6	135	Y	-0.009	-0.009	0	%100
7	137	Y	-0.01	-0.01	0	%100
8	155	Y	-0.009	-0.009	0	%100
9	141	Y	-0.009	-0.009	0	%100
10	146	Y	-0.01	-0.01	0	%100
11	145	Y	-0.009	-0.009	0	%100
12	159	Y	-0.015	-0.015	0	%100
13	160	Y	-0.015	-0.015	0	%100
14	16	Y	-0.015	-0.015	0	%100
15	153	Y	-0.015	-0.015	0	%100
16	161	Y	-0.015	-0.015	0	%100
17	18	Y	-0.015	-0.015	0	%100
18	162	Y	-0.015	-0.015	0	%100
19	13	Y	-0.015	-0.015	0	%100
20	152	Y	-0.015	-0.015	0	%100
21	12	Y	-0.015	-0.015	0	%100
22	164	Y	-0.015	-0.015	0	%100
23	17	Y	-0.015	-0.015	0	%100
24	167	Y	-0.011	-0.011	0	%100
25	169	Y	-0.009	-0.009	0	%100
26	172	Y	-0.009	-0.009	0	%100
27	157	Y	-0.009	-0.009	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, %)]
28	15	Y	-0.011	-0.011	0	%100
29	19	Y	-0.011	-0.011	0	%100
30	124	Y	-0.011	-0.011	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	125	Z	-0.001	-0.001	0	%100
2	126	Z	-0.001	-0.001	0	%100
3	134	Z	-0.0008	-0.0008	0	%100
4	132	Z	-0.001	-0.001	0	%100
5	136	Z	-0.0008	-0.0008	0	%100
6	135	Z	-0.0008	-0.0008	0	%100
7	137	Z	-0.001	-0.001	0	%100
8	155	Z	-0.0008	-0.0008	0	%100
9	141	Z	-0.0008	-0.0008	0	%100
10	146	Z	-0.001	-0.001	0	%100
11	145	Z	-0.0008	-0.0008	0	%100
12	159	Z	-0.001	-0.001	0	%100
13	160	Z	-0.001	-0.001	0	%100
14	16	Z	-0.001	-0.001	0	%100
15	153	Z	-0.001	-0.001	0	%100
16	161	Z	-0.001	-0.001	0	%100
17	18	Z	-0.001	-0.001	0	%100
18	162	Z	-0.001	-0.001	0	%100
19	13	Z	-0.001	-0.001	0	%100
20	152	Z	-0.001	-0.001	0	%100
21	12	Z	-0.001	-0.001	0	%100
22	164	Z	-0.001	-0.001	0	%100
23	17	Z	-0.001	-0.001	0	%100
24	167	Z	-0.0009	-0.0009	0	%100
25	169	Z	-0.0008	-0.0008	0	%100
26	172	Z	-0.0008	-0.0008	0	%100
27	157	Z	-0.0008	-0.0008	0	%100
28	15	Z	-0.0009	-0.0009	0	%100
29	19	Z	-0.0009	-0.0009	0	%100
30	124	Z	-0.0009	-0.0009	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	125	X	-0.001	-0.001	0	%100
2	126	X	-0.001	-0.001	0	%100
3	134	X	-0.0008	-0.0008	0	%100
4	132	X	-0.001	-0.001	0	%100
5	136	X	-0.0008	-0.0008	0	%100
6	135	X	-0.0008	-0.0008	0	%100
7	137	X	-0.001	-0.001	0	%100
8	155	X	-0.0008	-0.0008	0	%100
9	141	X	-0.0008	-0.0008	0	%100
10	146	X	-0.001	-0.001	0	%100
11	145	X	-0.0008	-0.0008	0	%100
12	159	X	-0.001	-0.001	0	%100
13	160	X	-0.001	-0.001	0	%100
14	16	X	-0.001	-0.001	0	%100
15	153	X	-0.001	-0.001	0	%100
16	161	X	-0.001	-0.001	0	%100
17	18	X	-0.001	-0.001	0	%100
18	162	X	-0.001	-0.001	0	%100
19	13	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	13	X	-0.001	-0.001	0	%100
20	152	X	-0.001	-0.001	0	%100
21	12	X	-0.001	-0.001	0	%100
22	164	X	-0.001	-0.001	0	%100
23	17	X	-0.001	-0.001	0	%100
24	167	X	-0.0009	-0.0009	0	%100
25	169	X	-0.0008	-0.0008	0	%100
26	172	X	-0.0008	-0.0008	0	%100
27	157	X	-0.0008	-0.0008	0	%100
28	15	X	-0.0009	-0.0009	0	%100
29	19	X	-0.0009	-0.0009	0	%100
30	124	X	-0.0009	-0.0009	0	%100

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads)

	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	16	Y	-0.014	-0.008	1.1	2.75
2	16	Y	-0.008	-0.001	2.75	4.4
3	162	Y	-0.005	-0.007	1.1	2.75
4	162	Y	-0.007	-0.01	2.75	4.4
5	12	Y	-0.002	-0.013	0	1.667
6	12	Y	-0.013	-0.013	1.667	3.333
7	12	Y	-0.013	-0.002	3.333	5
8	160	Y	-0.008	-0.008	0	0.5
9	160	Y	-0.008	-0.008	0.5	1
10	12	Y	-0.0005589	-0.004	3.5	4.25
11	12	Y	-0.004	-0.008	4.25	5
12	164	Y	-0.008	-0.004	0	0.75
13	164	Y	-0.004	-0.0004764	0.75	1.5
14	159	Y	-0.001	-0.008	1.1	2.75
15	159	Y	-0.008	-0.014	2.75	4.4
16	18	Y	-0.01	-0.007	1.1	2.75
17	18	Y	-0.007	-0.005	2.75	4.4
18	164	Y	-0.002	-0.013	0	1.667
19	164	Y	-0.013	-0.013	1.667	3.333
20	164	Y	-0.013	-0.002	3.333	5
21	161	Y	-0.008	-0.008	0	0.5
22	161	Y	-0.008	-0.008	0.5	1
23	164	Y	0.000204	-0.004	3.5	4.25
24	164	Y	-0.004	-0.009	4.25	5
25	17	Y	-0.008	-0.004	0	0.75
26	17	Y	-0.004	-0.0004889	0.75	1.5
27	162	Y	-0.002	-0.002	0	0.723
28	13	Y	-0.008	-0.007	0	0.333
29	13	Y	-0.007	-0.007	0.333	0.667
30	13	Y	-0.007	-0.007	0.667	1
31	152	Y	-0.002	-0.002	4.95	5.5
32	12	Y	-0.006	-0.003	0	0.75
33	12	Y	-0.003	-0.0004642	0.75	1.5
34	17	Y	0.0002835	-0.003	3.5	4.25
35	17	Y	-0.003	-0.007	4.25	5
36	126	Y	-0.003	-0.003	0.408	1.251
37	152	Y	-0.003	-0.002	3.072	3.518
38	152	Y	-0.002	-0.003	3.518	3.964
39	152	Y	-0.003	-0.004	3.964	4.41
40	17	Y	-0.004	-0.004	3.914	4.876
41	125	Y	-0.007	-0.007	0.284	1.284
42	153	Y	-0.008	-0.008	0.633	2.86
43	17	Y	-0.007	-0.007	1.019	2.336

Member Distributed Loads (BLC 30 : BLC 1 Transient Area Loads) (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, %)]
44	167	Y	-0.009	-0.009	0	1.83
45	125	Y	-0.003	-0.003	0	1.417
46	125	Y	-0.003	-0.003	1.417	2.833
47	153	Y	-0.004	-0.003	2.2	4.4
48	152	Y	-0.004	-0.003	1.1	3.3

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	1109	15	119	183	Y	Two Way	-0.01
2	1114	199	147	1113	Y	Two Way	-0.01
3	195	196	1110	1111	Y	Two Way	-0.01
4	1101	1116	1115	1100	Y	Two Way	-0.01
5	1117	1118	117	1102	Y	Two Way	-0.01
6	122	117	198	122	Y	Two Way	-0.01
7	1122	115	197	1121	Y	Two Way	-0.01
8	187	1107	115	122	Y	Two Way	-0.01

Member Area Loads (BLC 8 : Ice)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	1109	15	119	183	Y	Two Way	-0.008
2	1114	199	147	1113	Y	Two Way	-0.008
3	195	196	1110	1111	Y	Two Way	-0.008
4	1101	1116	1115	1100	Y	Two Way	-0.008
5	1117	1118	117	1102	Y	Two Way	-0.008
6	122	117	198		Y	Two Way	-0.008
7	1122	115	197	1121	Y	Two Way	-0.008
8	187	1107	115	122	Y	Two Way	-0.008

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	167	L	Y	-0.5
2	121	L	Y	-0.5
3	178	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	168	L	Y	-0.5
2	110	L	Y	-0.5
3	181	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	120	L	Y	-0.5
2	137	L	Y	-0.5
3	176	L	Y	-0.5

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

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	1119	max	2.078	12	-0.026	12	1.206	6	0	91	0	91	0	91
2		min	-2.089	6	-4.627	6	-1.2	12	0	1	0	1	0	1
3	182	max	0.004	5	0.892	8	3.539	8	0	91	0	91	0	91
4		min	-0.004	11	-5.58	2	-3.54	2	0	1	0	1	0	1
5	1120	max	2.341	10	-0.045	4	1.352	10	0	91	0	91	0	91
6		min	-2.33	4	-4.624	10	-1.345	4	0	1	0	1	0	1
7	1144	max	1.169	4	4.122	2	2.263	3	0	91	0	91	0	91
8		min	-1.126	10	-0.608	8	-2.257	9	0	1	0	1	0	1
9	1145	max	1.1	6	4.209	2	3.945	2	0	91	0	91	0	91
10		min	-1.145	12	-0.618	8	-3.954	8	0	1	0	1	0	1
11	1146	max	0.899	6	3.319	6	1.868	13	0	91	0	91	0	91
12		min	-0.91	12	0.12	12	-1.9	7	0	1	0	1	0	1
13	1147	max	2.247	5	3.805	7	0.774	2	0	91	0	91	0	91
14		min	-2.221	11	-0.31	13	-0.746	8	0	1	0	1	0	1
15	1108	max	2.235	5	3.836	9	0.82	2	0	91	0	91	0	91
16		min	-2.261	11	-0.314	3	-0.792	8	0	1	0	1	0	1
17	1148	max	1.122	4	3.281	10	2.256	3	0	91	0	91	0	91
18		min	-1.111	10	0.154	4	-2.289	9	0	1	0	1	0	1
19	Totals:	max	4.262	5	4.087	1	6.893	2						
20		min	-4.262	11	3.503	11	-6.893	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	125	C5X6.7	0.39	2.066	2	0.089	2.095	z	2	49.457	63.828	1.604	9.585	1.682	H1-1b
2	126	C5X6.7	0.13	1.876	13	0.035	0.919	y	2	57.072	63.828	1.604	9.585	1.66	H1-1b
3	134	PIPE_2.0	0.356	3.984	6	0.077	3.984		7	13.511	32.13	1.872	1.872	3	H1-1b
4	132	PIPE_2.5	0.511	3.75	2	0.091	3.75		5	30.038	50.715	3.596	3.596	3	H1-1b
5	136	PIPE_2.0	0.354	3.984	10	0.072	3.984		9	13.511	32.13	1.872	1.872	3	H1-1b
6	135	PIPE_2.0	0.386	3.984	9	0.09	3.984		10	13.511	32.13	1.872	1.872	3	H1-1b
7	137	PIPE_2.5	0.491	4.417	8	0.106	4.417		9	30.038	50.715	3.596	3.596	2.455	H1-1b
8	155	PIPE_2.0	0.488	3.984	2	0.095	3.984		13	13.511	32.13	1.872	1.872	3	H1-1b
9	141	PIPE_2.0	0.482	3.984	2	0.102	3.984		2	13.511	32.13	1.872	1.872	3	H1-1b
10	146	PIPE_2.5	0.485	4.417	8	0.095	4.417		13	30.038	50.715	3.596	3.596	2.498	H1-1b
11	145	PIPE_2.0	0.402	3.984	7	0.083	3.984		9	13.511	32.13	1.872	1.872	3	H1-1b
12	159	C5X6.7	0.5	0.458	6	0.264	4.87	z	2	24.375	63.828	1.604	9.585	2.085	H1-1b
13	160	C5X6.7	0.415	0.5	7	0.107	1	z	12	61.832	63.828	1.604	9.585	1.048	H1-1b
14	16	C5X6.7	0.5	5.042	10	0.276	0.63	z	2	24.375	63.828	1.604	9.585	2.08	H1-1b
15	153	C5X6.7	0.478	0.458	3	0.174	4.87	z	5	24.375	63.828	1.604	9.585	1.474	H1-1b
16	161	C5X6.7	0.339	0.5	2	0.186	0	z	7	61.832	63.828	1.604	9.585	1.082	H1-1b
17	18	C5X6.7	0.503	5.042	9	0.234	0.63	z	7	24.375	63.828	1.604	9.585	1.266	H1-1b
18	162	C5X6.7	0.423	0.458	7	0.228	4.87	z	9	24.375	63.828	1.604	9.585	1.307	H1-1b
19	13	C5X6.7	0.361	0.5	2	0.183	1	z	9	61.832	63.828	1.604	9.585	1.08	H1-1b
20	152	C5X6.7	0.462	5.042	13	0.179	0.63	z	10	24.375	63.828	1.604	9.585	1.534	H1-1b
21	12	C5X6.7	0.477	2.917	5	0.146	2.865	y	7	28.842	63.828	1.604	9.585	1.505	H1-1b
22	164	C5X6.7	0.532	2.917	9	0.147	2.135	y	9	28.842	63.828	1.604	9.585	1.53	H1-1b
23	17	C5X6.7	0.622	2.865	2	0.165	2.135	y	2	28.842	63.828	1.604	9.585	1.486	H1-1b
24	167	L2.5x2.5x4	0.121	0	2	0.009	0	y	2	34.371	38.556	1.114	2.537	1.016	H2-1
25	169	PIPE_2.0	0.287	1.953	7	0.191	1.953		13	6.295	32.13	1.872	1.872	1.911	H1-1b
26	172	PIPE_2.0	0.409	6.771	2	0.141	11.589		7	6.295	32.13	1.872	1.872	3	H1-1b
27	157	PIPE_2.0	0.4	6.641	2	0.147	1.953		9	6.295	32.13	1.872	1.872	1.783	H1-1b
28	15	L2.5x2.5x4	0.325	1.25	9	0.067	1.25	y	3	36.64	38.556	1.114	2.537	1.5	H2-1
29	19	L2.5x2.5x4	0.274	1.25	6	0.048	1.25	y	11	36.64	38.556	1.114	2.537	1.5	H2-1
30	124	L2.5x2.5x4	0.347	1.25	2	0.066	1.25	y	7	36.64	38.556	1.114	2.537	1.5	H2-1

APPENDIX D

ADDITIONAL CALCULATIONS

PROJECT	**92739.016.01 - Groton Tower, CT**				**KSC**
SUBJECT	**Platform Mount Mount Analysis**				
DATE	**02/15/21**	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	:	3.945	k
Vertical Shear	:	4.209	k
Horizontal Shear	:	1.1	k
Torsion	:	0	k.ft
Moment from Horizontal Forces	:	0	k.ft
Moment from Vertical Forces	:	0	k.ft

Bolt Parameters

Bolt Grade	:	A307	
Bolt Diameter (assumed)	:	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	:	3	bolts

Summary of Forces

Shear Resultant Force	:	4.35	k
Force from Horz. Moment	:	0.00	k
Force from Vert. Moment	:	0.00	k
Shear Load / Bolt	:	1.45	k
Tension Load / Bolt	:	1.32	k
Resultant from Moments / Bolt	:	0.00	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	45.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	10.36	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**12.69%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	24.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	5.53	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**50.04%**		**OKAY**
Unity Check, Combined	:	**62.73%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**4.18%**		**OKAY**

Exhibit F

Power Density/RF Emissions Report

INFINIGY

Non-Ionizing Radiation Report

Compiled For: Northeast Site Solutions on behalf of T-Mobile

Site Name: CT11428A

Site ID: CT11428A

75 Roberts Road, Groton, CT 06340

Latitude: 41-21-36.8; Longitude: -72-2-55.1

Structure Type: Monopole

Report Date: March 4, 2021

Report Written By: Tim Harris

Status: T-Mobile will be compliant with FCC rules on RF Exposure.

Table of Contents

1. Executive Summary:

Northeast Site Solutions on behalf of T-Mobile has contracted Infinigy Solutions, LLC to determine whether the site CT11428A located at 75 Roberts Road in Groton, CT Will Be Compliant with all Federal Communications Commission (FCC) rules and regulations for radio frequency (RF) exposure as indicated in **47CFR§1.1310**.

The report incorporates a theoretical RF field analysis in accordance with the FCC Rules and Regulations for all individuals classified as "Occupational or Controlled" and "General Public or Uncontrolled" (see Appendix A and B).

This document and the conclusions herein are based on information provided by Northeast Site Solutions on behalf of T-Mobile.

As a result of the analysis, **T-Mobile Will Be Compliant with FCC rules.**

T-Mobile, All Bands Cumulative Exposure %		
Uncontrolled / General Population	Exposure values at the site (mW/cm^2)	0.0251
	% Exposure	3.07 %
Controlled / Occupational	Exposure values at the site (mW/cm^2)	0.0251
	% Exposure	0.62 %

2. Site Summary:

Site Information	
Site Name: CT11428A	
Site Address: 75 Roberts Road, Groton, CT 06340	
Site Type: Monopole	
Compliance Status	Will Be Compliant
Mitigation Required	No
Signage Required	Yes
Barriers Required	No
Access Locked	No
Area Controlled or Uncontrolled	Uncontrolled

3. Site Compliance

This report also incorporates overview of the site information:

- Antenna Inventory Table
- Calculation Tables showing exposure for each carrier transmit frequency
- Total exposure for all carriers existing and proposed at ground level considering the centerline of all antennas and horizontal distance from the tower.
- Maximum Effective Radiated Power Assumed as Worst Case for Calculations used in this study
- Calculations based on flat ground around base of the structure

4. Site Compliance Recommendations

Infinigy recommends the following upon the installation of antennas at the site:

Base of tower

Install an RF caution sign. Note: The recommendation for alerting signage is moot if there is an RF caution, or greater already installed.

5. Antenna Inventory Table

Ant ID	Sector	Operator	Antenna manufacturer	Antenna Model	Operating Frequency/Technology	Rad Ctr (Ft)	Az (Deg)	Total ERP Power (Watts)
1a	Alpha	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	2100 MHz LTE	126	30	4308
1b	Alpha	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz LTE	126	30	3052
1c	Alpha	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz GSM	126	30	3052
2a	Alpha	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	126	30	2256
2b	Alpha	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	126	30	1128
2c	Alpha	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	126	30	1128
2d	Alpha	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz LTE	126	30	1533
2e	Alpha	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz UMTS	126	30	1533
3a	Alpha	T-Mobile	Ericsson	AIR6449 B41	2500 MHz LTE	126	30	3590
3b	Alpha	T-Mobile	Ericsson	AIR6449 B41	2500 MHz 5G	126	30	3590
4a	Beta	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	2100 MHz LTE	126	150	4308
4b	Beta	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz LTE	126	150	3052
4c	Beta	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz GSM	126	150	3052
5a	Beta	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	126	150	2256
5b	Beta	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	126	150	1128
5c	Beta	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	126	150	1128
5d	Beta	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz LTE	126	150	1533
5e	Beta	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz UMTS	126	150	1533
6a	Beta	T-Mobile	Ericsson	AIR6449 B41	2500 MHz LTE	126	150	3590
6b	Beta	T-Mobile	Ericsson	AIR6449 B41	2500 MHz 5G	126	150	3590
7a	Gamma	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	2100 MHz LTE	126	270	4308
7b	Gamma	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz LTE	126	270	3052
7c	Gamma	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz GSM	126	270	3052
8a	Gamma	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	126	270	2256

Ant ID	Sector	Operator	Antenna manufacturer	Antenna Model	Operating Frequency/Technology	Rad Ctr (Ft)	Az (Deg)	Total ERP Power (Watts)
8b	Gamma	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	126	270	1128
8c	Gamma	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	126	270	1128
8d	Gamma	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz LTE	126	270	1533
8e	Gamma	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz UMTS	126	270	1533
9a	Gamma	T-Mobile	Ericsson	AIR6449 B41	2500 MHz LTE	126	270	3590
9b	Gamma	T-Mobile	Ericsson	AIR6449 B41	2500 MHz 5G	126	270	3590

6. RF Guidelines

To ensure safety of company workers, the following points need to be taken into consideration and implemented at wireless sites in accordance with the Carriers policies:

a) Worksite: Any employee at the site should avoid working directly in front of the antenna or in areas predicted to exceed general population exposure limits by 100%. Workers should insist that the transmitters be switched off during the work period.

b) RF Safety Training and Awareness: All employees working in areas exceeding the general population limits should have a basic awareness of RF safety measures. Videos, classroom lectures and online courses are all appropriate training methods on these topics.

c) Site Access: Restricting access to transmitting antenna locations is one of the most important elements of RF safety. This can be done with:
   - Locked doors/gates/ladder access
   - Alarmed doors
   - Restrictive barriers

d) Three-foot Buffer: There is an inverse relationship between the strength of the field and the distance from the antenna. The RF field diminishes with distance from the antenna. Workers should maintain a three-foot distance from the antennas.

e) Antennas: Workers should always assume that the antenna is transmitting and should never stop right in front of the antenna. If someone must pass by an antenna, he/she should move quickly, thus reducing RF exposure.

7. T-Mobile Exposure Analysis By Band and Technology

T-Mobile 600 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.4**
	Exposure values at the site (mW/cm^2)	**0.0011**
	% Exposure	**0.28%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.0**
	Exposure values at the site (mW/cm^2)	**0.0011**
	% Exposure	**0.06%**

T-Mobile 600 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.4**
	Exposure values at the site (mW/cm^2)	**0.0011**
	% Exposure	**0.28%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.0**
	Exposure values at the site (mW/cm^2)	**0.0011**
	% Exposure	**0.06%**

T-Mobile 700 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.5**
	Exposure values at the site (mW/cm^2)	**0.0023**
	% Exposure	**0.45%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.3**
	Exposure values at the site (mW/cm^2)	**0.0023**
	% Exposure	**0.10%**

T-Mobile 1900 MHz GSM		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0030**
	% Exposure	**0.30%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0030**
	% Exposure	**0.06%**

T-Mobile 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0046**
	% Exposure	**0.46%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0046**
	% Exposure	**0.09%**

T-Mobile 1900 MHz UMTS		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0015**
	% Exposure	**0.15%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0015**
	% Exposure	**0.03%**

T-Mobile 2100 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0043**
	% Exposure	**0.43%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0043**
	% Exposure	**0.09%**

T-Mobile 2500 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0036**
	% Exposure	**0.36%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0036**
	% Exposure	**0.07%**

T-Mobile 2500 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0036**
	% Exposure	**0.36%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0036**
	% Exposure	**0.07%**

8. Appendix A: FCC Guidelines

FCC Policies

The Federal Communications Commission (FCC) in 1996 implemented regulations and policies for analysis of RF propagation to evaluate RF emissions. All the analysis and results of this report are compared with FCC's (Federal Communications Commission) rules to determine whether a site is compliant for Occupational/Controlled or General Public/Uncontrolled exposure. All the analysis of RF propagation is done in terms of a percentage. The limits primarily indicate the power density and are generally expressed in terms of milliwatts per centimeter square, mW/cm^2.

FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the scenario/ situation in which that exposure takes place or the status of the individuals who are subjected to that exposure. The decision as to which tier is applied to a scenario is based on the following definitions:

Occupational / Controlled

These limits apply in situations when someone is exposed to RF energy through his/her occupation, is fully aware of the harmful effects of the RF exposure and has an ability to exercise control over this exposure. Occupational / controlled exposure limits also apply when 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. limits for Occupational/Controlled exposure can be found on Table 1(A).

General Population / Uncontrolled

These limits apply to situations in which the general public may be exposed or in which persons who are exposed because of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure to RF. Therefore, members of the general public would always be considered under this category, for example, in the case of a telecommunications tower that exposes people in a nearby residential area. Exposure limits for General Population/Uncontrolled can be found on Table 1(B).

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

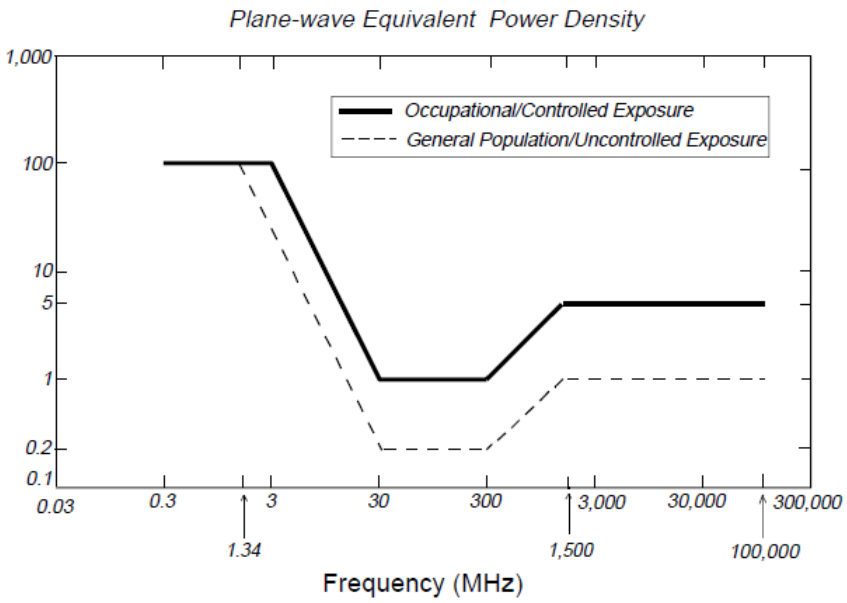
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

Figure 1. *FCC Limits for Maximum Permissible Exposure (MPE)*



OSHA Statement:

The objective of the OSHA Act is to ensure the safety and health of the working men and women by enforcing certain standards. The act also assists and encourages the states in their efforts to ensure safe and healthy working conditions through means of research, information, education and training in the field of occupational safety and health and for other purposes.

According to OSHA Act section 5, important duties to be considered are:

(a) Each employer

1) Shall furnish to each of his employees' employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious harm to his employees
2) Shall comply with occupational safety and health standards promulgated under this act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

9. Preparer Certification

I, Tim Harris, preparer of this report, certify that I am fully trained and aware of the rules and regulations of both the Federal Communications Commission and the Occupational Safety and Heath Administration regarding Human Exposure to Radio Frequency Radiation. In addition, I have been trained in RF safety practices, rules, and regulations.

I certify that the information contained in this report is true and correct to the best of my knowledge.

Timothy A. Harris *3/4/2021*

Signature Date