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

January 7, 2021

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

RE: **Notice of Exempt Modification for T-Mobile:**
829046 - T-Mobile Site ID: CT11118C
56 Norfield Road, Weston, CT 06883
Latitude: 41° 12′ 8.40″ / Longitude: -73° 22′ 46.60″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 170-foot mount on the existing 190-foot Monopole Tower, located at 56 Norfield Road, Weston, CT. The tower is owned by Crown Castle and the property is owned by the Town of Weston. T-Mobile now intends to replace six (6) existing antennas with three (3) new 1900/2100 antennas, three (3) new 600/700 MHz antennas, and three (3) new 2500/2500 antennas. The new antennas will be installed at the 170-foot mount level of the tower and some will be capable of providing 5G services. T-Mobile is also proposing tower mount modification as shown on the enclosed Mount Analysis.

Planned Modifications:
Tower:

Remove:
(6) 1 5/8" Coax

Remove and Replace:
(3) AIR21_B2A_B4P Antenna **(REMOVE)** - (3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz **(REPLACE)**

(3) AIR21_B4A_B12P Antenna **(REMOVE)** – (3) AIR32_B66A_B2A Antenna 1900/2100 MHz **(REPLACE)**

(3) RRUS11 B12 **(REMOVE) –** (3) Radio 4449 B71/B12 **(REPLACE)**

Install New:
(3) 1 5/8" Hybrid Fiber Line
(3) Diplexer
(3) Radio 4415 B25
(3) AIR6449 B41 Antenna 2500/2500 MHz

Existing to Remain:
(6) 1 5/8" Coax

(1) Fiber line
(3) TMA

Ground:

Upgrade existing breakers.
Internal upgrade to existing cabinet.
Replace existing cabinet with (1) new 6160 SSC cabinet and (1) new B160 cabinet.

The facility was approved by the Planning & Zoning Commission of the Town of Weston on July 26, 1999. No conditions of approval were applied that would impact this exempt modification application.

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 Chris Spaulding, First Selectman for the Town of Weston, as the municipality and the property owner, James Pjura, Town of Weston Zoning Enforcement Officer, and Crown Castle is the tower owner.

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

For the foregoing reasons, 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). Please send approval/rejection letter to Attn: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba
Site Acquisition Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments

cc:

Chris Spaulding, First Selectman *(via email only to cspaulding@westonct.gov)*
Weston Town Hall
56 Norfield Road
Weston, CT 06883

James Pjura, Zoning Enforcement Officer *(via email only to jpjura@westonct.gov)*
Weston Town Hall Annex
24 School Road
Weston, CT 06883

Crown Castle, Tower Owner

From: Zsamba, Anne Marie
To: "cspaulding@westonct.gov"
Subject: Notice of Exempt Modification - T-Mobile - 56 Norfield Road, Weston - 829046
Date: Thursday, January 7, 2021 11:26:00 AM
Attachments: EM-T-MOBILE-56 NORFIELD RD WESTON-829046-CT11118C-NOTICE.pdf

---

Dear First Selectman Spaulding:

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, January 7, 2021.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Site Acquisition Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

From: Zsamba, Anne Marie
To: "jpjura@westonct.gov"
Subject: Notice of Exempt Modification - T-Mobile - 56 Norfield Road, Weston - 829046
Date: Thursday, January 7, 2021 11:26:00 AM
Attachments: EM-T-MOBILE-56 NORFIELD RD WESTON-829046-CT11118C-NOTICE.pdf

---

Dear ZEO Pjura:

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, January 7, 2021.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Site Acquisition Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

Exhibit A

Original Facility Approval

VOL 278 PG 0706

8.3.99
Cau

009564

TOWN of WESTON, CONNECTICUT

Incorporated 1787

Planning & Zoning Commission

8-24 Report

Town of Weston
Omnipoint Communications
Monopole Tower

At a regularly scheduled meeting of the Planning & Zoning Commission held on July 26, 1999, the Commission unanimously approved the plan presented by the First Selectman George Guidera and Town Administrator Roy Hill to service six communication companies plus the Town of Weston antennas for public safety and radio emergency equipment on a monopole tower, in accordance with letter dated July 1, 1999 and the standard lease agreement dated May 24, 1999, which will be modified to include maintenance of the building.

RECEIVED FOR RECORD Aug 23 19 99
at 10:14A M. ATTEST [illegible]

56 Norfield Road, P.O. Box 1007, Weston CT 06883 Tel. (203) 222-2618 FAX (203) 222-8871

8-24 REPORT: TOWN OF WESTON OMNIPOINT COMMUNICATION MONOPOLE TOWER

First Selectman George Guidera presented an 8-24 Report for a communication monopole tower. Roy Hill, Town Administrator was also present. Mr. Guidera stated that the Town has been working on this project for almost 4 years to replace the existing emergency services radio tower located at the rear of the Town Hall complex. The existing tower is 20 plus years old and in need of replacement. There is noticeable deterioration of the cement base and several companies have described the tower as having lasted its useful life expectancy. The Town determined that the emergency services radio tower needed to be replaced and upgrading the need for better cellular phone service in Weston. The recommendation of the Communications Tower and Antenna Advisory Committee, it was decided to replace the existing emergency services radio tower with a 190 foot monopole tower in essentially the same as the current tower.

The Omnipoint Communications, Inc. will build this 190 foot monopole tower for the Town of Weston and pay $72,000. rent per year. After construction the tower will be leased back to Omnipoint Communications. Besides the antennas for all radio's of the Weston Fire, EMS, Highway, and Police Departments, it will also have 6 cellular/PCS (personal communications services) carriers on board. In the agreement with Omnipoint, the Town of Weston has the top of the tower allocated for the emergency services radios as appropriate by radio frequency.

An equipment building will also have to built next to the monopole tower to house the radio equipment for the police, fire and EMS, along with equipment for the six cellular/PCS carriers. The proposed building is a white brick, single story structure, approximately 77' by 23' in size.

Due to the placement of the existing underground utilities the most effective location for the new antenna is where the Police/Fire/EMS Fitness Center currently is. It is proposed that the fitness center be moved from its current location on the northeast corner of the of the firehouse to the northwest corner of the firehouse. This proposed tower will eliminate the tower planned at Timber Mill.

Mark Finely of Omnipoint introduced his staff and went over the tower in detail. He also stated that this 8-24 report if only for the tower at Town Hall and showed the coverage this tower would have for the Town.

8-24 REPORT: TOWER CONTINUED:
Questions from the Commission:
1. Will the tower need guy wires? The tower does not need quy wires.
The architect from Omnipoint stated it is extremely safe and has to sustain winds of 100 miles per hour and is designed to crumple down into itself.
2. Address land use issues such as the parking at Town Hall and the possible loss of parking spaces for the utility building. Also the increased traffic for maintenance of the tower.
3. Questioned the use of the land on the other side of the Fire House for the location of the tower. The Town Engineer explained that this area contains a new drainage system and could not withstand the weight of a tower.
4. Omnipoint will install the utility building and the Town will pay for the equipment.
5. Questioned the construction details of the tower and concerned about icing on the platforms. Omnipoint stated that they had not had this problem.

The Commission requested that the utility building be staked for this site walk on July 17.

PUBLIC HEARING CONT: 2 LOT RESUB. 35 SALEM ROAD MITCHELL (BARR)
Mel Barr was present, representing the owner R. Mitchell. The Commissioners walked the site and expressed concern about saving the trees and also a better site line for the driveway as the vegetation is on Town land and needs to be removed. Also discussed possible conditions for the approval including horses on Salem Road during construction, and an updated letter from the Fire Marshal.

Don Saltzman moved that the Commission close the public hearing. Seconded by Michael Widland. Vote in favor (7-0).

PUBLIC HEARING CONT: OLIVE PHILLIPS CALVIN ROAD 4 LOT SUB. (ROMANO)
Peter Romano of Richard Bennett Associates was present for the applicant. Mr. Romano and the Commission discussed the site walk and that the parcel they saw with the foundation is not a lot that is included in the subdivision. Also a discussion followed about the access to this lot which is off the subdivision road "Quail Road". The question arose as to why this lot is not part of the subdivision. Mr. Romano stated that they received a site specific approval from Conservation for this lot. Michael Widland was concerned about two curb cuts onto Georgetown Road and a discussion about the site lines and safety of the access to Georgetown Road. The Chairman requested that the applicant incorporate the adjacent 2 acre lot into the subdivision. Peter Romano agreed to submit a new map and also walk this thru with the Conservation officer as it was included in the subdivision when it was approved by Conservation.

8-24 REPORT CONT: TOWN OF WESTON OMNIPOINT COMMUNICATIONS MONOPOLE TOWER

First Selectman George Guidera, Town Administrator Roy Hill and members of Omnipoint Communications were present. The Commissioners walked the site and had the following concerns:

Don Saltzman looked at other potential locations and feels that the proposed location is the best location. Also concerned about ice buildup on 6 platforms and asked if there was a way to heat the platforms? The Omnipoint representative stated they have no technology for this and to his knowledge they have never had a problem. He felt the ground space around the tower is enough are to catch any ice. A discussion then followed regarding insurance and if the Town is covered. George Guidera stated that the Town has its own insurance and feels the Town is adequately protected. Mr. Saltzman was also concerned about having it in writing that the towers will be at Town Hall and possibly at the Landfill and not at Timbermill. A discussion followed regarding the 6 carriers on one pole.

Michael Widland clarified that the Commission is only dealing with this tower at Town Hall. Marguerite Terzian is concerned about service trucks regarding safety in the Town Hall parking lot and had considered some other location. Ms. Terzian then read the following letter from the Fire Chief, dated 7/20/99:

"I was chairman of the original tower fact-finding committee comprised of representatives from the police department, communications center, fire department, EMS, and the town engineer. When Selectman Guidera appointed a Town Tower Committee I forwarded our findings and became a member of that committee. Many hours have been spent examining in detail all feasible options for a tower location. The area behind the Communications Center is best for a number of short and long term reasons. The further away the tower is from the Communications Center, the greater the potential for problems. The Town Hall building will help screen the tower. When the Communications center expands it will have room to do so back toward the school. Locating the tower and radio building to the west side of the firehouse will make future expansion of Norfield Station impossible. At a minimum I anticipate the need for an aerial ladder truck which will require an additional bay. Parking for volunteers responding during the week is becoming very scarce. Taking space from Station 1's west side will only compound a growing problem. When a firefighter dormitory is added it will have to be at ground level, With no room on the west side the only option would be to build north into the school playing fields. It's highly unlikely the Board of Ed would approve. Marguerite, I cannot emphasize too strongly that the tower will help save lives and property by providing the emergency services the required antenna height for uninterrupted communications. It will also give residents access to emergency services while on the roads, in the woods, or at their homes when conventional telephones are

8-24 REPORT TOWER CONTINUED:

unavailable or out of service. The increasing portability of cellular phones will make 24 hour a day, anywhere in Weston emergency help a reality, particularly for the elderly, infirm and handicapped. Finally, we anticipate mobile computer data exchange in our emergency vehicles for transferring vital statistics to and from the field. We have been working on this very important project for years and are available to you for help and to answer any questions". Ms. Terzian stated that this letter convinced me that the other side of the Fire House was important to the Fire Department.

Town Engineer John Conte showed a map and went over in detail the drainage implications on the other side of the Fire House.

Don Saltzman suggested Omnipoint coordinate their installation with the trench wiring for the Technology Plan for Town Hall.

Michael Widland asked if the lease been amended? The Town Administrator stated it covers at least four and Mr. Widland wants to make sure there are six carriers.

There was a discussion regarding the block house and maintenance and that it is part of Omnipoint's responsibility. The Commission expressed concern about traffic involved for the maintenance and the Town Hall parking and to consider proper signage for same. It was noted by the Town Engineer that there will no loss of parking spaces for the construction of the block house.

Don Saltzman moved that the Commission approve the plan presented by the First Selectman George Guidera and Town Administrator Roy Hill to service six communication companies plus the Town of Weston antennas for public safety and radio emergency equipment on a monopole tower, in accordance with letter dated July l, l999 and the standard lease agreement dated May 24, 1999, which will be modified to include maintenance of the building. Seconded by Michael Widland. Vote in favor (6-0). Paul Schultz absent.

PUBLIC HEARING CONT: OLIVE PHILLIPS CALVIN ROAD 4 LOT SUB. (ROMANO)

This application was withdrawn.

PUBLIC HEARING CONT: SPECIAL PERMIT APARTMENT 7 NIMROD FARM (MATTERA)

This application was withdrawn

Exhibit B

Property Card

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2018.

Town of Weston, CT

Information on the Property Records for the Municipality of Weston was last updated on 4/4/2020.

Parcel Information

Location:	56 NORFIELD ROAD	Property Use:	Public Use	Primary Use:	Governmental Building
Unique ID:	E00116	Map Block Lot:	22 6 28+31	Acres:	0.00
490 Acres:	0.00	Zone:	C	Volume / Page:	42/ 272
Developers Map / Lot:	569A,569B,3471	Census:			

Value Information

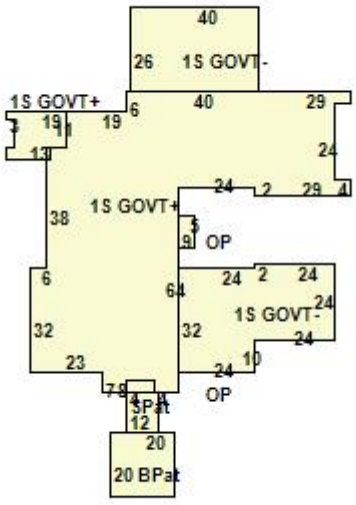
	Appraised Value	Assessed Value
Land	0	0
Buildings	4,401,064	3,080,740
Detached Outbuildings	280,222	196,160
Total	4,681,286	3,276,900

Owner's Information

Owner's Data
TOWN OF WESTON TOWN HALL & FIRE STATION 56 NORFIELD RRD WESTON CT 06883

Building 1





Category:	Public Use	Use:	Governmental Building	GLA:	7,858
Stories:	1.00	Construction:	Wood Frame	Year Built:	1956

Heating:	Hot Water	Fuel:	Natural Gas	Cooling Percent:	100
Siding:	Wood Frame/Wood Frame	Roof Material:	Slate	Beds/Units:	1

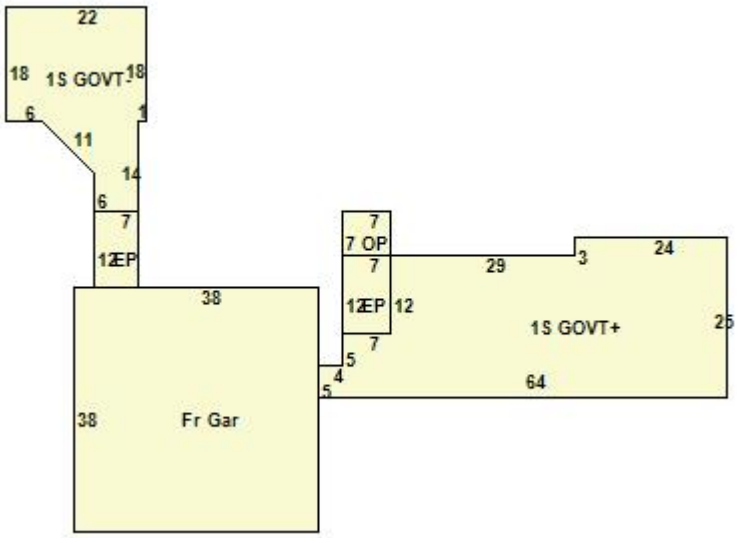
Special Features

Attached Components

Type:	Year Built:	Area:
Brick Patio	1956	400
Stone Patio	1956	120
Open Porch	1956	45
Open Porch	1956	32

Building 2





Category:	Public Use	Use:	Governmental Building	GLA:	1,854
Stories:	1.00	Construction:	Wood Frame	Year Built:	1956
Heating:	Forced Hot Air	Fuel:	Natural Gas	Cooling Percent:	100
Siding:	Wood Frame/Wood Frame	Roof Material:	Slate	Beds/Units:	1

Special Features

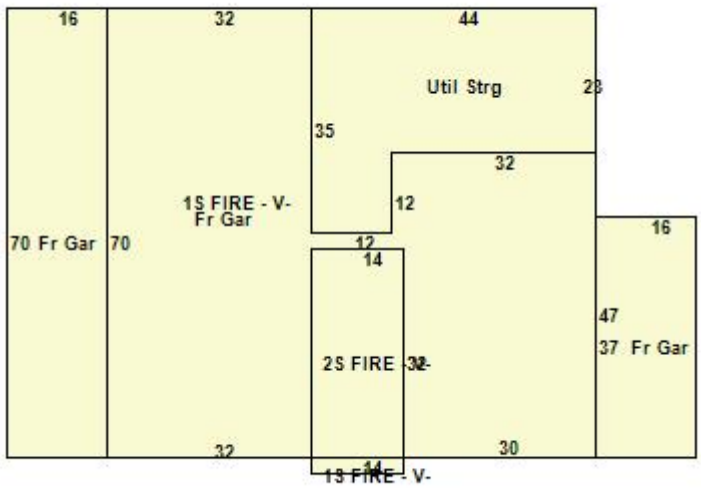
Attached Components

Type:	Year Built:	Area:

Type:	Year Built:	Area:
Frame Garage	1956	1,444
Enclosed Porch	1956	84
Enclosed Porch	1956	84
Open Porch	1956	49

Building 3





Category:	Public Use	Use:	Fire Station - Volunteer	GLA:	4,654
Stories:	2.00	Construction:	Wood Frame	Year Built:	1956

Heating:	Hot Water	Fuel:	Natural Gas	Cooling Percent:	100
Siding:	Wood Frame/Wood Frame	Roof Material:	Asphalt	Beds/Units:	1

Special Features

Attached Components

Type:	Year Built:	Area:
Frame Garage	1956	1,120
Frame Garage	1956	3,716
Frame Garage	1956	592
Utility Storage	1956	1,156

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Studio Office	2008	32.00	24.00	768
Average Work Shop	2008	20.00	12.00	240
Lights in W/PL	2008	0.00	0.00	7
Gazebo	2008	0.00	0.00	100
Paving	2008	25,600.00	0.00	25,600
Paving	2008	9,600.00	0.00	9,600
Light Poles 2	2008	0.00	0.00	1

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
TOWN OF WESTON	42	272	12/21/1948	Warranty Deed	No	$23,500

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
8325	Building	11/07/2019		Permit Issued	VERIZON REMOVE & REPLACE ANTENNAS. RADIOS, OPV BOX & CABLE
8105	Building	06/12/2018		Reval	AT&T ATENNAS
7970		09/28/2017		Closed	SPRINT ADDING 3 ANTENNAS 3 RRHS 1 HYBRID CABLE TO EXSISTING EQUIPMENT ON TOWER
7857		01/12/2017		Closed	SEE PERMIT
7832		10/27/2016		Closed	SEE PERMIT
7790		07/12/2016		Closed	INTERIOR RENOVATIONS TO LIBRARY
7702		12/17/2015		Closed	AT&T REMOVE AND REPLCE ANTENNAS
7502		01/13/2015		Closed	SEE PERMIT
7429		08/20/2014		Closed	ANTENNAS
7346		03/19/2014		Closed	SEE PERMIT
7291		11/05/2013		Closed	ELECTRICAL
6512		11/05/2008		Closed	FOOD PANTRY
6490		09/19/2008		Closed	REPLACE ROOF
5362		10/06/2003		Closed	CELL TOWER

Information Published With Permission From The Assessor

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11118C
T-MOBILE SITE NAME: WESTON/ RT-57/ NORFIELD R
SITE TYPE: MONOPOLE
TOWER HEIGHT: 190'-0"

BUSINESS UNIT #: 829046
SITE ADDRESS: 56 NORFIELD RD WESTON,CT 06883
COUNTY: FAIRFIELD
JURISDICTION: FAIRFIELD COUNTY

T-MOBILE L600 SITE CONFIGURATION: 67D5A997DB

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WESTON/ RT-57/ NORFIELD R
SITE ADDRESS:	56 NORFIELD RD WESTON,CT 06883
COUNTY:	FAIRFIELD
MAP/PARCEL #:	22-6-28-31
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.202362
LONGITUDE:	-73.379616
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	326'
CURRENT ZONING:	MULTI-USE
JURISDICTION:	FAIRFIELD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TOWN OF WESTON 56 NORFIELD ROAD WESTON, CT 06883
TOWER OWNER:	CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	UNITED ILLUMINATING CO. 800-722-584
TELCO PROVIDER:	VERIZON 1-800-92-0204

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S BOULDER AVE, SUITE 300 TULSA, OK 74119 RICHARD MCCLURE (918) 587-4630
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	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 24X36. 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 (6) ANTENNAS
- REMOVE (3) RRUs
- RELOCATE (3) TMAs
- INSTALL (9) ANTENNAS
- INSTALL (6) RRUs
- INSTALL (3) DIPLEXERS
- INSTALL (3) 6x12 HCS HYBRID CABLES
- INSTALL (3) 2" STD. X 16'-6" LONG SUPPORT RAIL

GROUND SCOPE OF WORK:
- REMOVE (1) S800 CABINET
- INSTALL (1) 6160 SSC
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (2) BB6630
- INSTALL (1) BB6648
- INSTALL (1) PSU 4813
- INSTALL (1) IXRe ROUTER
- UPGRADE EXISTING CABINET BREAKER

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

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	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	CROWN CASTLE
DATED:	10/14/20
MOUNT ANALYSIS:	B+T GROUP
DATED:	10/7/20
RFDS REVISION:	7
DATED:	9/18/20
ORDER ID:	494413
REVISION:	1

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
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/ NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
No. 23924
LICENSED PROFESSIONAL ENGINEER
12/23/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: T-1
REVISION: 4

136353.009.01_Weston_Rt-57_Norfield_CC_TMO_NE_CD_Upgrades.dwg — Sheet:T-1 — User: mjones — Dec 23, 2020 — 9:32am

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 F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER 40 ksi
   #5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER 2"
   #5 BARS AND SMALLER 1-1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS 3/4"
   BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "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, STEAM, PETROLEUM, O

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS OR FROM ASSESSORS MAPS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET



1 OVERALL SITE PLAN

SCALE: 4" 3" 2" 1" 0 4" 1/4"=1'-0" (FULL SIZE) 1/8"=1'-0" (11x17)

N

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/ NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ



B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

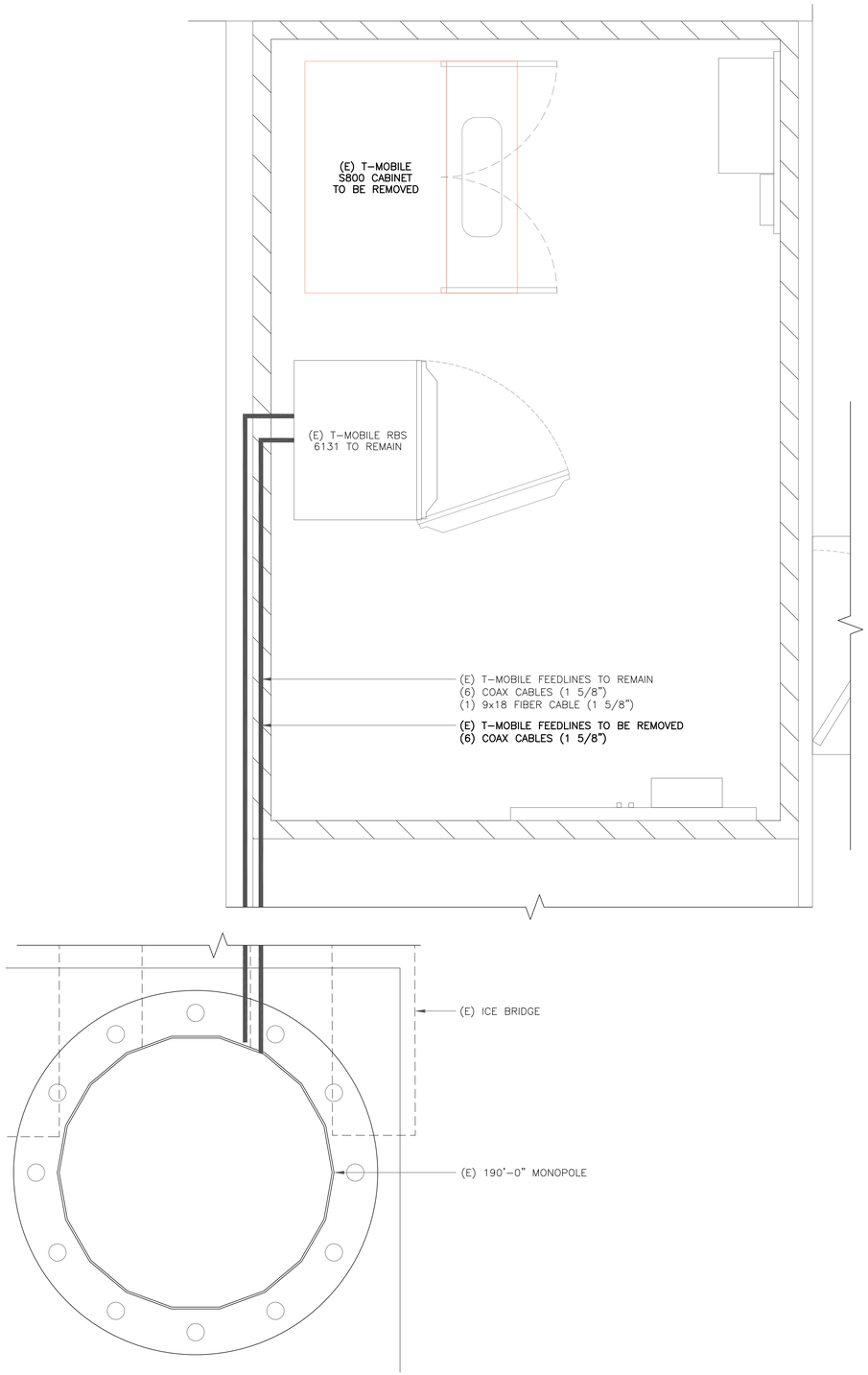
SHEET NUMBER: C-1.1

REVISION: 4

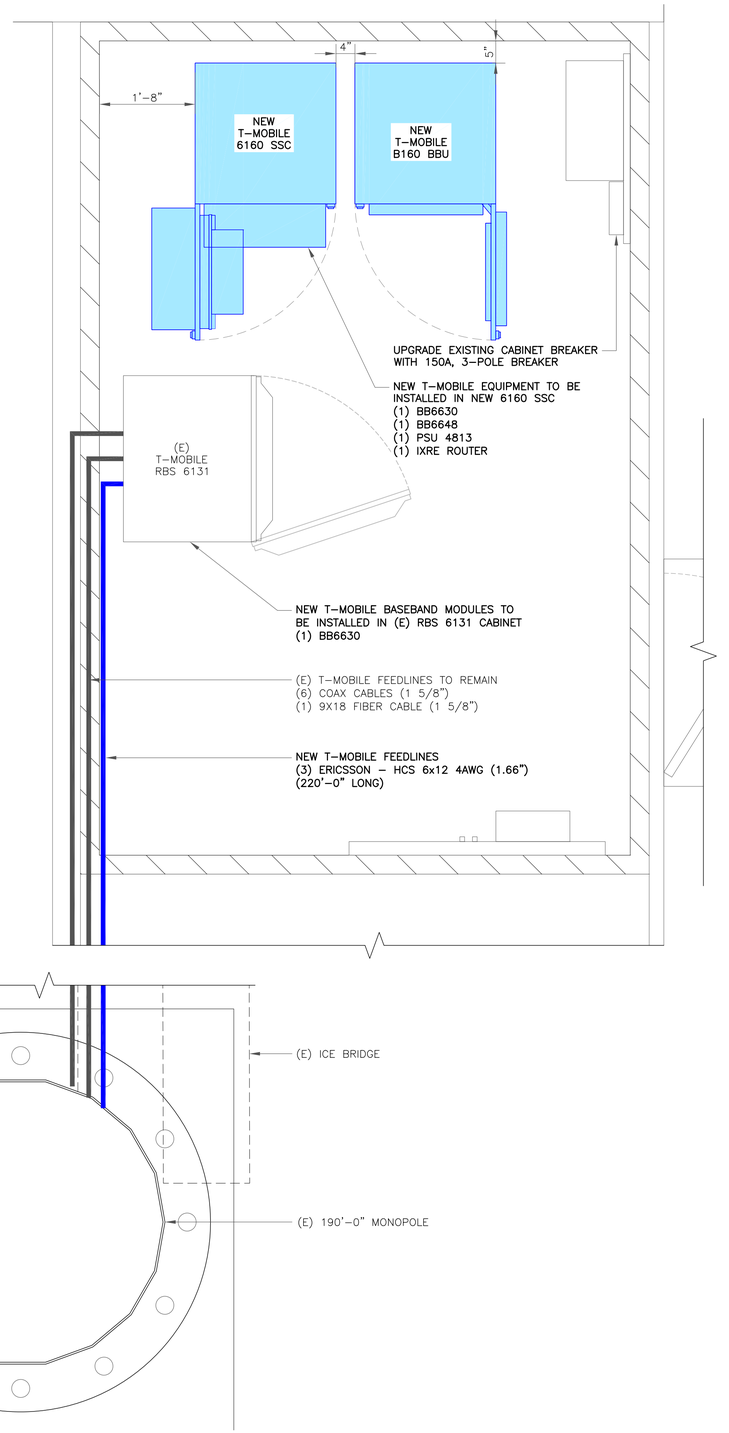
136353.009.01_Weston Rt-57 Norfield_CC_TMO_NE_CD Upgrades.dwg — Sheet:C-1.1 — User: mjones — Dec 23, 2020 — 9:30am

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW



1 EXISTING EQUIPMENT PLAN
SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)



2 FINAL EQUIPMENT PLAN
SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23824
LICENSED PROFESSIONAL ENGINEER
12/23/20

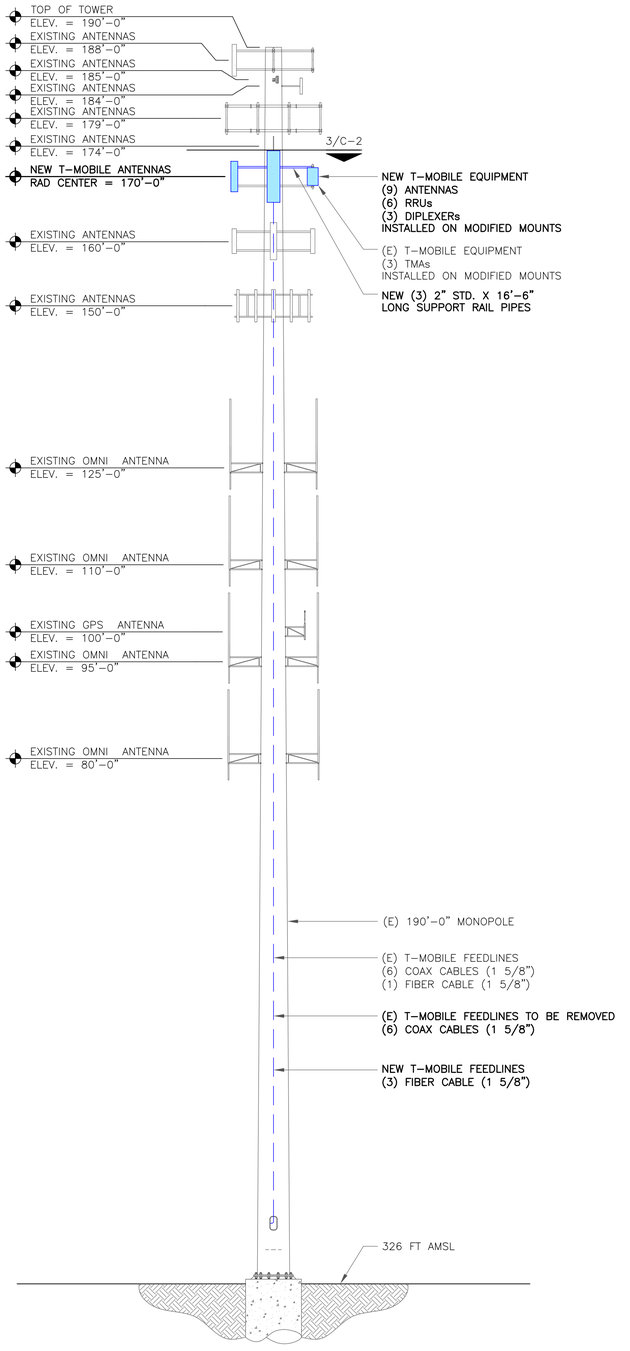
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: C-1.2

REVISION: 4

136353.009.01_Weston RT-57 Norfield_CC_TMO_NE_CD Upgrades.dwg - Sheet:C-1.2 - User: mjones - Dec 23, 2020 - 9:30am

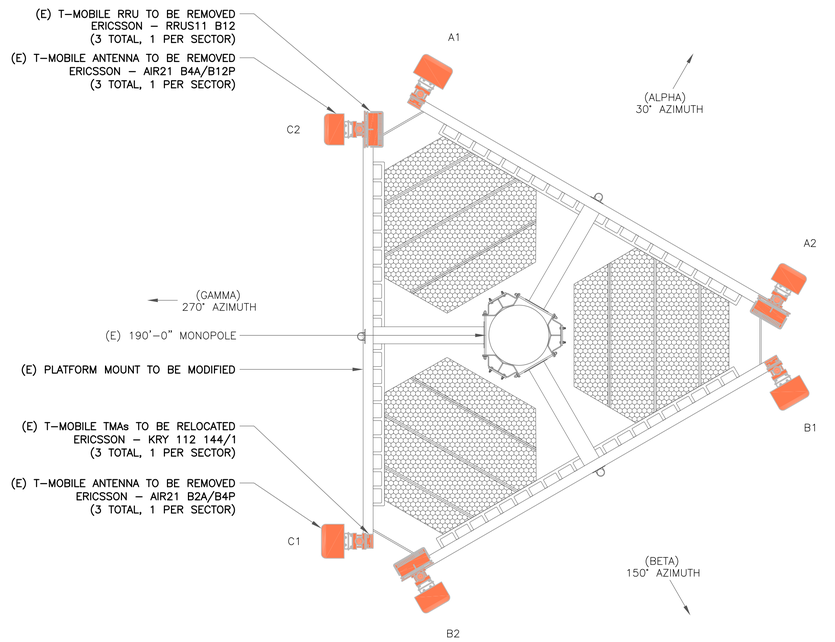


T-MOBILE EQUIPMENT

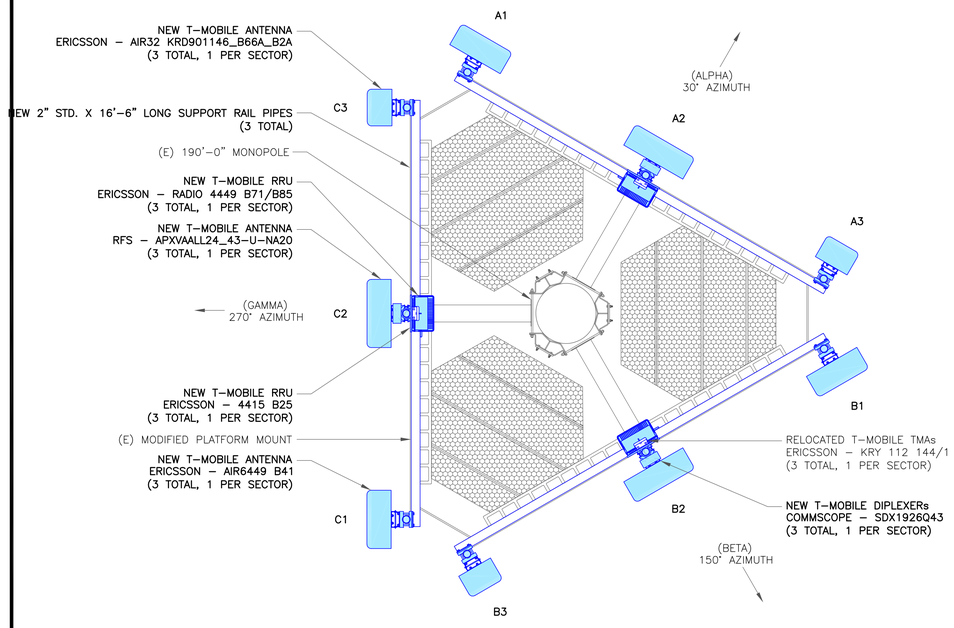
ANTENNA CL: 170'-0"
MOUNT CL: 170'-0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV.	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ



B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: C-2

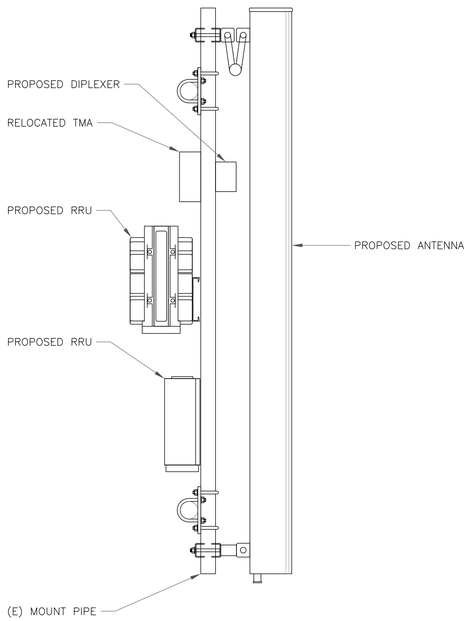
REVISION: 4

136353.009.01_Weston_Rt-57_Norfield_CC_TMO_NE_CD Upgrades.dwg — Sheet:C-2 — User: mjones — Dec 23, 2020 — 9:30am

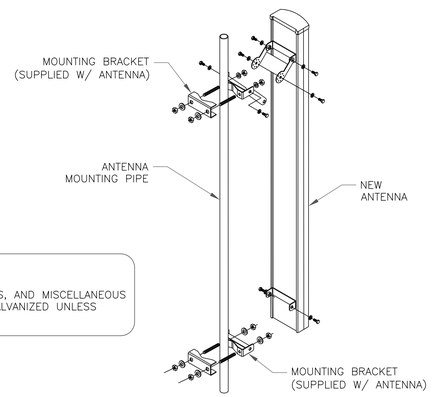
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	CABLE TYPE	CABLE DIAMETER	CABLE LENGTH
ALPHA	A-1	L2500/N2500	ERICSSON	AIR6449 B41	30°	0°	2°	170'-0"	-	(1) FIBER	6x12 HYBRID	220'
	A-2	L700/L600/N600 U2100/L1900	RFS	APXVAALL24_43-U-NA20	30°	0°	2°/2°	170'-0"	(1) 4449 B71+B85 (1) 4415 B25 (1) KRY 112 144/1 (1) SDX1926Q-43	(1) FIBER (2) COAX	6x12 HYBRID 1 5/8"	220'
	A-3	L2100/G1900/ L1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	30°	0°	2°/2°	170'-0"	-	(1) FIBER	6x12 HYBRID	220'
BETA	B-1	L2500/N2500	ERICSSON	AIR6449 B41	150°	0°	2°	170'-0"	-	(1) FIBER	6x12 HYBRID (SHARED)	220'
	B-2	L700/L600/N600 U2100/L1900	RFS	APXVAALL24_43-U-NA20	150°	0°	2°/2°	170'-0"	(1) 4449 B71+B85 (1) 4415 B25 (1) KRY 112 144/1 (1) SDX1926Q-43	(1) FIBER (2) COAX	6x12 HYBRID (SHARED) 1 5/8"	220'
	B-3	L2100/G1900/ L1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	150°	0°	2°/2°	170'-0"	-	(1) FIBER	6x12 HYBRID (SHARED)	220'
GAMMA	C-1	L2500/N2500	ERICSSON	AIR6449 B41	270°	0°	2°	170'-0"	-	(1) FIBER	6x12 HYBRID (SHARED)	220'
	C-2	L700/L600/N600 U2100/L1900	RFS	APXVAALL24_43-U-NA20	270°	0°	2°/2°	170'-0"	(1) 4449 B71+B85 (1) 4415 B25 (1) KRY 112 144/1 (1) SDX1926Q-43	(1) FIBER (2) COAX	6x12 HYBRID (SHARED) 1 5/8"	220'
	B-3	L2100/G1900/ L1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	270°	0°	2°/2°	170'-0"	-	(1) FIBER	6x12 HYBRID (SHARED)	220'

1 ANTENNA & FEEDLINE SCHEDULE
SCALE: NOT TO SCALE



2 ANTENNA WITH RRUs MOUNTING DETAIL
SCALE: NOT TO SCALE



INSTALLER NOTE:

1. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.

3 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ



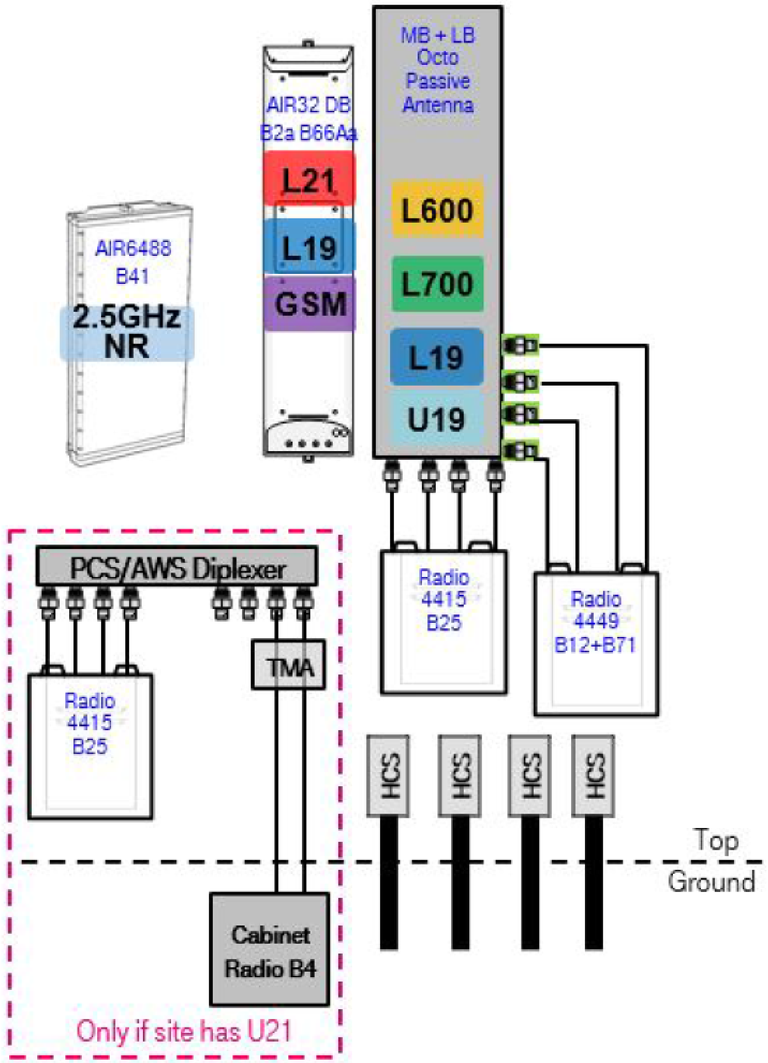
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: C-3

REVISION: 4

136353.009.01_Weston Rt-57 Norfield_CC_TMO_NE_CD Upgrades.dwg - Sheet:C-3 - User: mjones - Dec 23, 2020 - 9:30am



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ



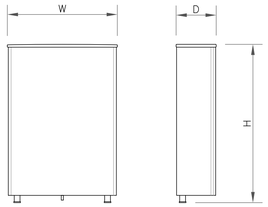
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: C-4

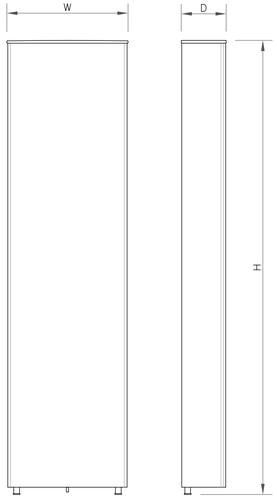
REVISION: 4

136353.009.01_Weston Rt-57 Norfield_CC_TMO_NE_CD Upgrades.dwg – Sheet:C-4 – User: mjones – Dec 23, 2020 – 9:30am



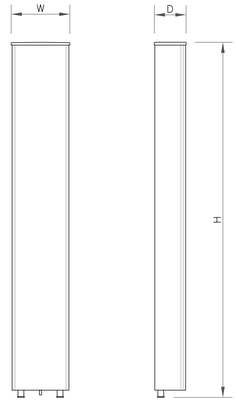
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR6449 B41
WIDTH	20.51"
DEPTH	8.54"
HEIGHT	33.11"
WEIGHT	114.63 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



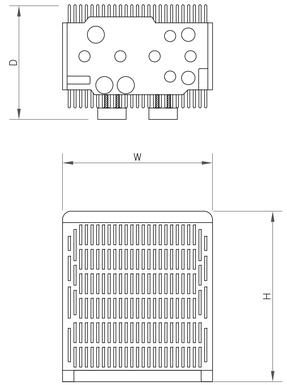
ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAALL24_43-U-NA20
WIDTH	24.0"
DEPTH	8.50"
HEIGHT	95.90"
WEIGHT	149.9 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



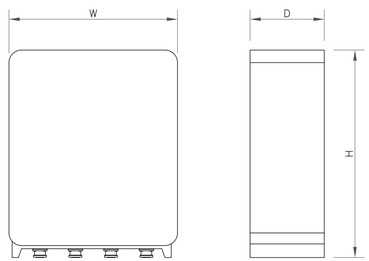
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR 32 KRD901146-1_B66A_B2A
WIDTH	12.90"
DEPTH	8.70"
HEIGHT	56.60"
WEIGHT	132.20 LBS

3 ANTENNA SPECS
SCALE: NOT TO SCALE



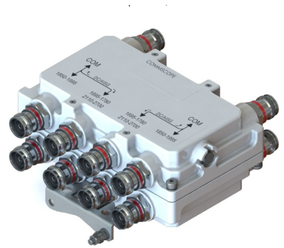
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449 B71 B85
WIDTH	13.20"
DEPTH	10.63"
HEIGHT	17.91"
WEIGHT	73.21 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4415 B25
WIDTH	13.19"
DEPTH	5.39"
HEIGHT	14.96"
WEIGHT	44.0 LBS

5 RRU SPECS
SCALE: NOT TO SCALE



DIPLEXER SPECIFICATIONS	
MANUFACTURER	COMMSCOPE
MODEL #	SCX1926Q-43
WIDTH	6.93"
DEPTH	2.91"
HEIGHT	4.17"
WEIGHT	6.17 LBS

6 DIPLEXER SPECS
SCALE: NOT TO SCALE



ERICSSON 6160 SSC
WEIGHT: 60.0 LBS
SIZE (HxWxD): 63"x25.6"x33.5" IN.

7 ERICSSON 6160 SSC
SCALE: NOT TO SCALE



BATTERY CABINET SPECIFICATIONS	
MODEL #	B160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH	26"
WEIGHT	

8 ERICSSON B160 BATTERY CABINET
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ



B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: C-5

REVISION: 4

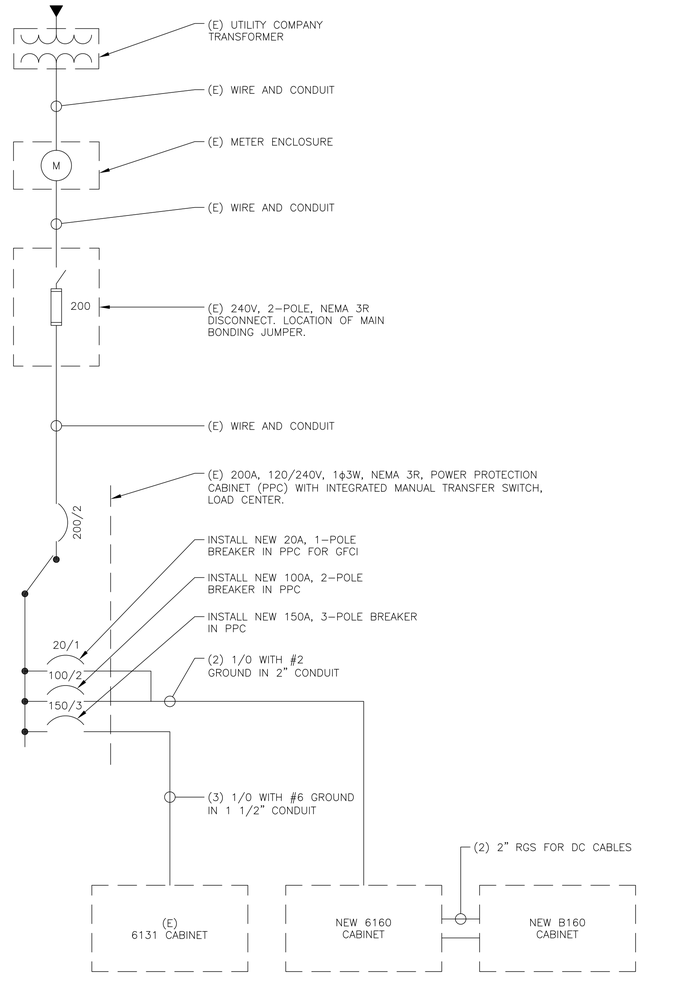
136353.009.01_Weston Rt-57 Norfield_CC_TMO_NE_CD Upgrades.dwg — Sheet:C-5 — User: mjones — Dec 23, 2020 — 9:30am

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
BTS	2	40A	1	2	20A	1	FAN
			3	4	20A	1	OUTLET 1
OUTLET 2	1	20A	5	6	20A	1	OUTLET 3
PHONE OUTLET	1	20A	7	8	20A	1	LIGHTS
6131	3	150A	9	10	15A	1	DAMPER SWITCH
			11	12	100A	2	RBS 6160
			13	14			
			15	16	20A	1	6160 GFCI
			17	18			
			19	20			
			21	22			
			23	24			
			25	26			
			27	28			
			29	30			

RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■225 □400 □_____,	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY ■MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

REPLACE EXISTING BREAKER IN POSITION 9, 11 AND 13 WITH A NEW 3P 150A BREAKER
INSTALL NEW BREAKER IN POSITION 12 AND 14 USING A NEW 2P 100A BREAKER
INSTALL NEW BREAKER IN POSITION 16 USING A NEW 1P 20A BREAKER
REPLACE EXISTING WIRES FOR EXISTING 6131 CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG IN 1 1/2" CONDUIT.
INSTALL NEW WIRES FOR NEW 6160 CABINET USING (2) 1/0 AWG AND (1) #2 AWG GROUND IN 2" CONDUIT'
IF 150A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1 FINAL T-MOBILE PANEL DETAIL
SCALE: NOT TO SCALE



NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-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
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ

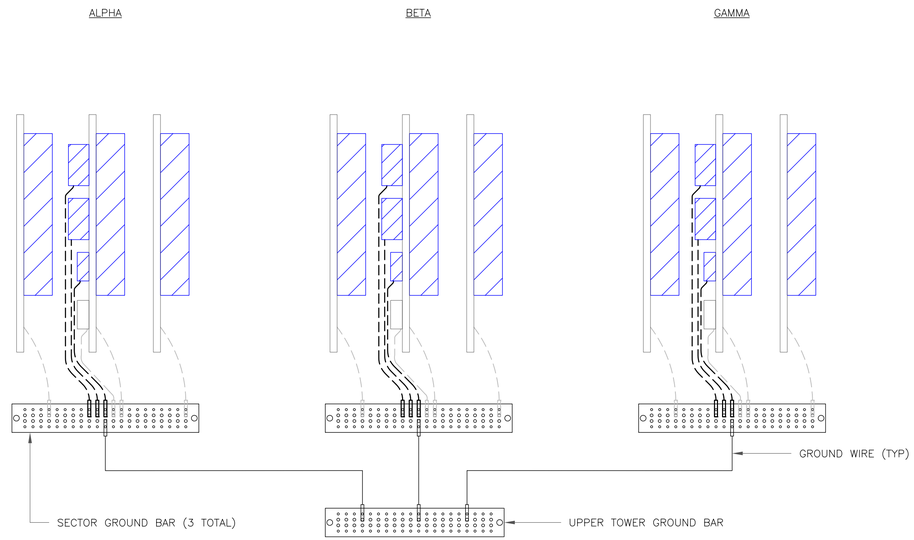
STATE OF CONNECTICUT
MICHAEL T. JOSEPH
No. 23924
LICENSED
PROFESSIONAL ENGINEER
12/23/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: E-1
REVISION: 4

136353.009.01_Weston Rt-57 Norfield_CC_TMO_NE_CD Upgrades.dwg — Sheet:E-1 — User: mjones — Dec 23, 2020 — 9:30am



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
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ



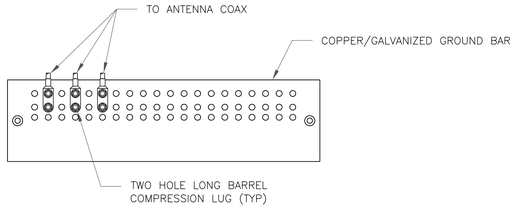
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: G-1

REVISION: 4

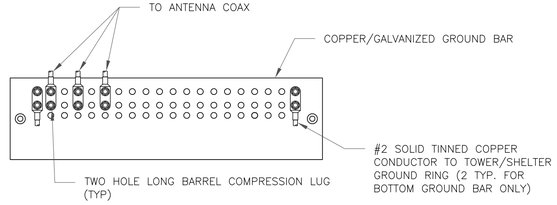
136353.009.01_Weston Rt-57 Norfield_CC_TMO_NE_CD Upgrades.dwg – Sheet:G-1 – User: mjones – Dec 23, 2020 – 9:31am



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.

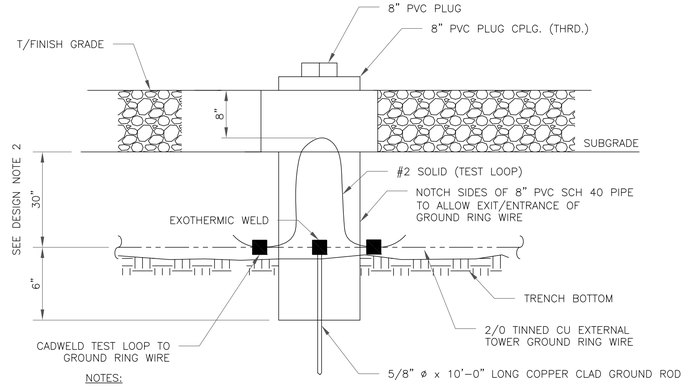
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

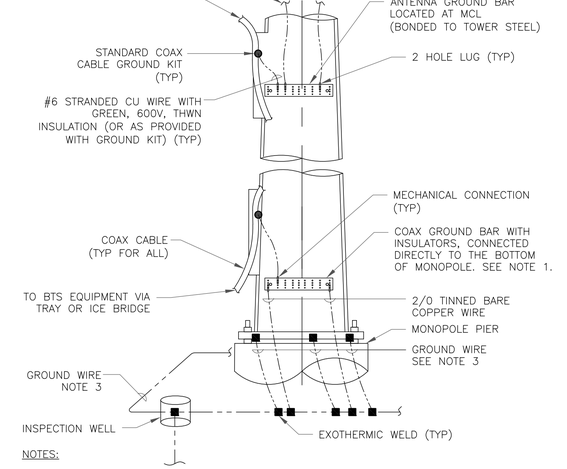
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



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)

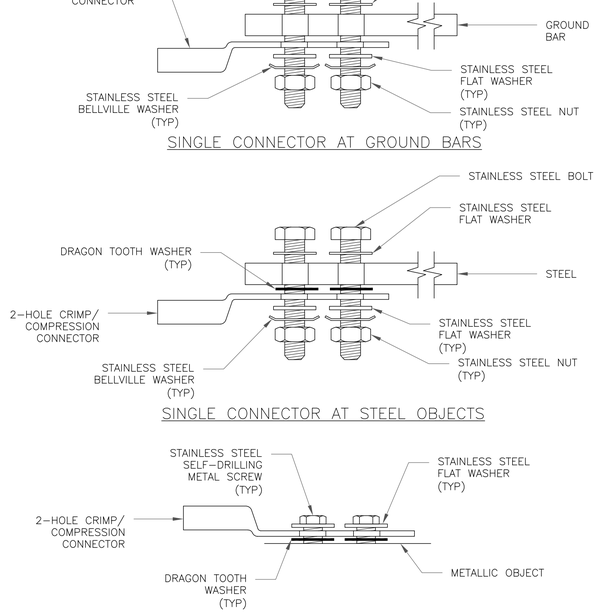
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



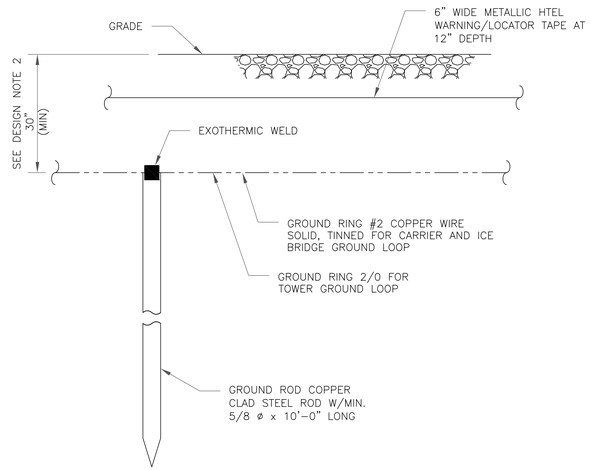
NOTES:

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
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ

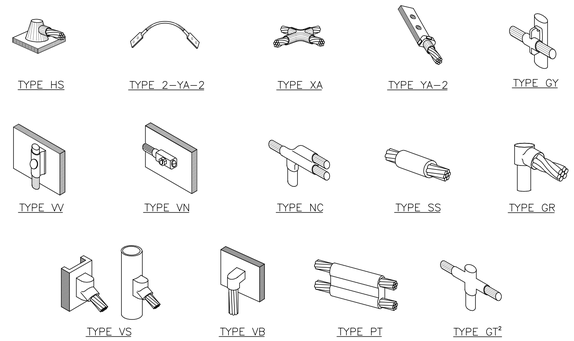


B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: G-2
REVISION: 4

136353.009.01_Weston RT-57 Norfield_CC_TMO_NE_CD Upgrades.dwg – Sheet:G-2 – User: mjones – Dec 23, 2020 – 9:31am

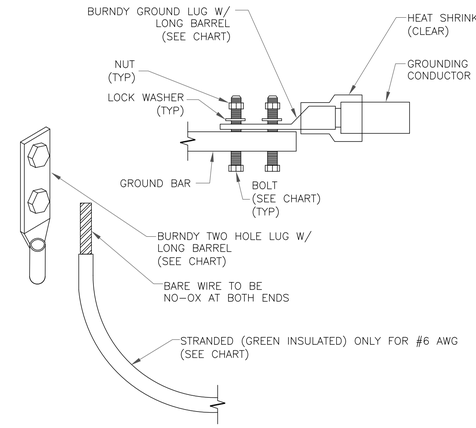


NOTE:

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

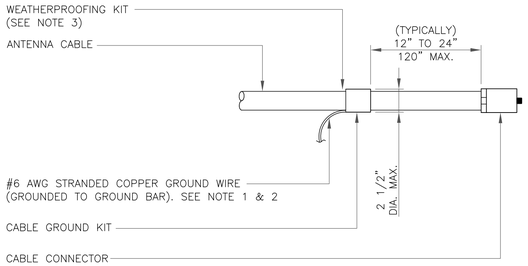
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



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.

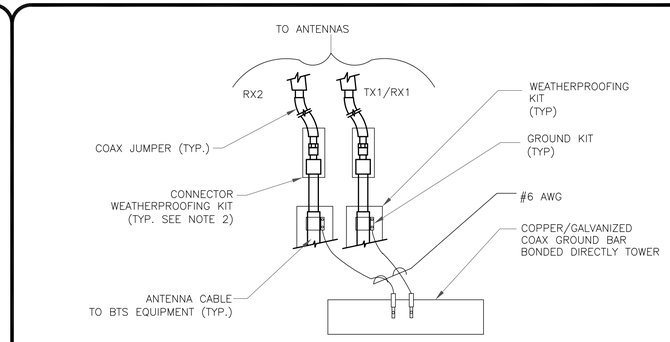
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

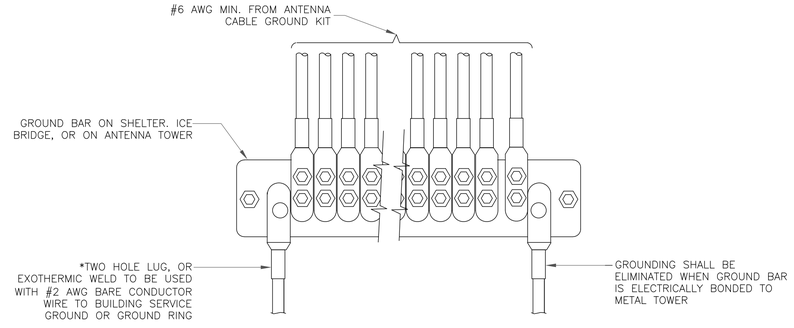
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



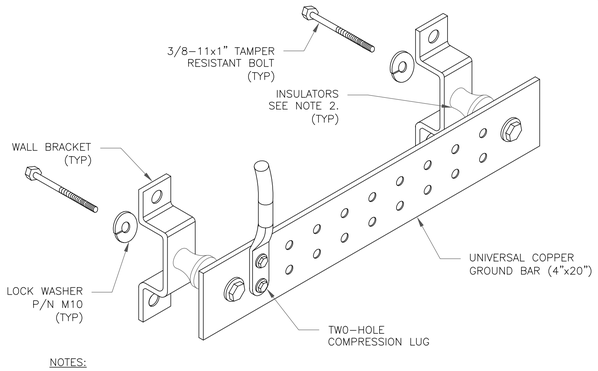
NOTES:

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



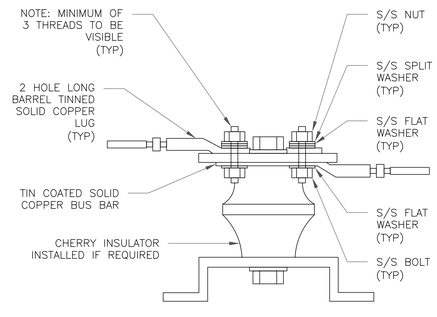
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



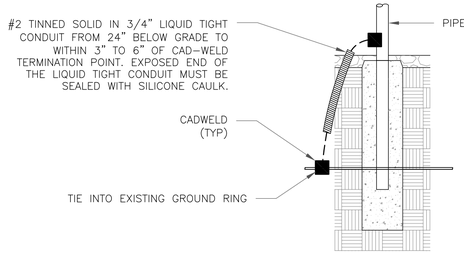
NOTES:

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
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11118C

BU #: **829046**
WESTON/ RT-57/
NORFIELD R

56 NORFIELD RD
WESTON,CT 06883

EXISTING
190'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/31/19	MLC	CONSTRUCTION	RMC
1	10/30/20	JTS	CONSTRUCTION	MTJ
2	12/4/20	JTS	CONSTRUCTION	MTJ
3	12/9/20	LHT	CONSTRUCTION	MTJ
4	12/23/20	MLC	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
CHRISTOPHER M. LOUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
12/23/20

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21

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

SHEET NUMBER: G-3
REVISION: 4

136353.009.01_Weston_Rt-57_Norfield_CC_TMO_NE_CD Upgrades.dwg - Sheet:G-3 - User: mjones - Dec 23, 2020 - 9:31am

Exhibit D

Structural Analysis Report

Date: **October 14, 2020**

Denice Nicholson
Crown Castle
3 Corporate Dr
Clifton Park, NY 12065

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11118C
	Carrier Site Name:	Weston/Rt-57/ Norfield R
Crown Castle Designation:	**Crown Castle BU Number:**	829046
	Crown Castle Site Name:	Weston/ Rt-57/ Norfield R
	Crown Castle JDE Job Number:	576570
	Crown Castle Work Order Number:	1890172
	Crown Castle Order Number:	494413 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1890172
Site Data:	**56 Norfield Rd. (Town Hall), Weston, Fairfield County, CT**	
	Latitude *41° 12' 8.4"*, Longitude *-73° 22' 46.6"*	
	190 Foot - Monopole Tower	

Dear Denice Nicholson,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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

LC7: Proposed Equipment Configuration **Sufficient Capacity – 70.4%**

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

Structural analysis prepared by: Hayes Lei

Respectfully submitted by:

Digitally signed by Maham Barimani
Date: 2020.10.15 18:26:55 -04'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Equipment Configuration
Table 2 - Other Considered Equipment

3) ANALYSIS PROCEDURE
Table 3 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 4 - Section Capacity (Summary)
Table 5 - Tower Component Stresses vs. Capacity - LC7
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 190 ft Monopole tower designed by PIROD MANUFACTURES INC. and mapped by Tower Engineering Professionals, Inc.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120
Exposure Category:	B
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)
170.0	170.0	3	commscope	SDX1926Q-43	10	1-5/8
		3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25		
		3	rfs celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	-	support rail pipes 2” Std. x 16’-6” long		
		1	SitePro1	support rail connection angles Part# AHCP		
		12	SitePro1	SCX1-K.		
		1	tower mounts	Platform Mount [LP 405-1] (16.3’ Platform Mount)		

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)
188.0	193.0	1	rfs celwave	PD201-7	4 1 1 1	1-1/4 5/16 5/8 7/8
	190.0	3	alcatel lucent	TD-RRH8x20-25		
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-ALU-I20 w/ Mount Pipe		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	188.0	1	tower mounts	Platform Mount [LP 403-1]		
	187.0	1	radiowaves	SP2-5.8		
185.0	188.0	3	alcatel lucent	1900MHz RRH	-	-
		3	alcatel lucent	800MHZ RRH		
	185.0	1	tower mounts	Side Arm Mount [SO 102-3]		
184.0	184.0	1	tower mounts	Side Arm Mount [SO 701-1]	-	-
179.0	185.0	2	rfs celwave	458-2D	2	7/8
	179.0	1	tower mounts	Platform Mount [LP 403-1]		
		2	tower mounts	Side Arm Mount [SO 301-1]		
170.0	174.0	1	rfs celwave	PD201-7	10	1-5/8
	170.0	1	ericsson	RRUS 11 B12		
162.0	163.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe	6 2 6	1-5/8 3/8 3/4
		3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		6	kaelus	DBCT108F1V92-1		
		3	kathrein	80010965 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8C		
		1	raycap	DC6-48-60-18-8F		
	162.0	1	site pro 1	HRK-14 Handrail Kit [NA 510-1]		
		3	site pro 1	PRK-SFS-L Reinforcement Kit		
		1	tower mounts	Platform Mount [LP 403-1]		
150.0	153.0	2	antel	LPA-80080/6CF w/ Mount Pipe	7	1-5/8
		4	decibel	DB846F65ZAXY w/ Mount Pipe		
		6	quintel technology	QS6656-5D w/ Mount Pipe		
		1	rfs celwave	DB-C1-12C-24AB-0Z		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
	150.0	1	tower mounts	Platform Mount [LP 403-1]		
125.0	130.0	1	rfs celwave	PD128-1	1 1	1/2 7/8
		1	rfs celwave	PD201-1		
	125.0	2	tower mounts	Side Arm Mount [SO 901-1]		
110.0	115.0	2	rfs celwave	PD128-1	2	1/2
	110.0	2	tower mounts	Side Arm Mount [SO 901-1]		
100.0	101.0	1	gps	GPS_A	1	1/2
	100.0	1	tower mounts	Side Arm Mount [SO 901-1]		
95.0	100.0	2	rfs celwave	PD128-1	2	1/2

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	95.0	2	tower mounts	Side Arm Mount [SO 901-1]		
80.0	85.0	1	decibel	DB222	2	1/2
		1	rfs celwave	PD128-1		
	80.0	2	tower mounts	Side Arm Mount [SO 901-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Arcnet architects, Inc.	3529916	CCISITES
4-POST-MODIFICATION INSPECTION	Sabre Tower & Poles	3673725	CCISITES
4-POST-MODIFICATION INSPECTION	Tower Engineering Professionals, Inc.	5392198	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Pirod, Inc.	3755295	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Pirod, Inc. / Tower Engineering Professionals, Inc. (mapped)	7340070	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Sabre Tower & Poles	3667108	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Company	3801440	CCISITES

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) 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. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
190 - 185	Pole	TP30x30x0.375	Pole	1.3%	Pass
185 - 180	Pole	TP30x30x0.375	Pole	3.5%	Pass
180 - 175	Pole	TP36x36x0.375	Pole	4.9%	Pass
175 - 170	Pole	TP36x36x0.375	Pole	7.3%	Pass
170 - 165	Pole	TP36x36x0.375	Pole	11.7%	Pass
165 - 160	Pole	TP36x36x0.375	Pole	17.3%	Pass
160 - 155	Pole	TP42x42x0.375	Pole	17.7%	Pass
155 - 150	Pole	TP42x42x0.375	Pole	22.4%	Pass
150 - 145	Pole	TP42x42x0.375	Pole	28.9%	Pass
145 - 140	Pole	TP42x42x0.375	Pole	34.8%	Pass
140 - 135	Pole	TP48x48x0.375	Pole	31.9%	Pass
135 - 130	Pole	TP48x48x0.375	Pole	36.7%	Pass
130 - 125	Pole	TP48x48x0.375	Pole	41.6%	Pass
125 - 120	Pole	TP48x48x0.375	Pole	46.7%	Pass
120 - 115	Pole	TP54x54x0.375	Pole	41.5%	Pass
115 - 112.67	Pole	TP54x54x0.375	Pole	43.4%	Pass
112.67 - 112.42	Pole + Reinf.	TP54x54x0.4875	Pole	33.4%	Pass
112.42 - 107.42	Pole + Reinf.	TP54x54x0.4875	Pole	36.7%	Pass
107.42 - 103.33	Pole + Reinf.	TP54x54x0.4875	Pole	39.4%	Pass
103.33 - 103.08	Pole + Reinf.	TP54x54x0.4875	Pole	39.6%	Pass
103.08 - 100	Pole + Reinf.	TP54x54x0.4875	Pole	41.6%	Pass
100 - 95	Pole + Reinf.	TP60x60x0.475	Pole	37.9%	Pass
95 - 90	Pole + Reinf.	TP60x60x0.475	Pole	40.8%	Pass
90 - 89.5	Pole + Reinf.	TP60x60x0.475	Pole	41.1%	Pass
89.5 - 89.25	Pole + Reinf.	TP60x60x0.5563	Pole	35.6%	Pass
89.25 - 85.5	Pole + Reinf.	TP60x60x0.5563	Pole	37.5%	Pass
85.5 - 85.25	Pole + Reinf.	TP60x60x0.6375	Pole	33.1%	Pass
85.25 - 84	Pole + Reinf.	TP60x60x0.6375	Pole	33.7%	Pass
84 - 83.75	Pole + Reinf.	TP60x60x0.525	Pole	40.4%	Pass
83.75 - 82.5	Pole + Reinf.	TP60x60x0.525	Pole	41.1%	Pass
82.5 - 82.25	Pole + Reinf.	TP60x60x0.45	Pole	48.2%	Pass
82.25 - 80	Pole + Reinf.	TP60x60x0.45	Pole	49.7%	Pass
80 - 75	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	40.9%	Pass
75 - 70	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	43.6%	Pass
70 - 65	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	46.4%	Pass

65 - 60	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	49.2%	Pass
60 - 58.5	Pole + Reinf.	TP60x60x0.7	Reinf. 3 Compression	41.3%	Pass
58.5 - 58.25	Pole	TP60x60x0.625	Pole	45.3%	Pass
58.25 - 53.25	Pole	TP60x60x0.625	Pole	47.9%	Pass
53.25 - 48.25	Pole	TP60x60x0.625	Pole	50.5%	Pass
48.25 - 48	Pole + Reinf.	TP60x60x0.775	Pole	41.3%	Pass
48 - 43	Pole + Reinf.	TP60x60x0.775	Pole	43.5%	Pass
43 - 40	Pole + Reinf.	TP60x60x0.775	Pole	44.9%	Pass
40 - 35	Pole + Reinf.	TP60x60x0.775	Pole	47.2%	Pass
35 - 32.08	Pole + Reinf.	TP60x60x0.775	Pole	48.5%	Pass
32.08 - 31.83	Pole + Reinf.	TP60x60x0.9625	Pole	39.2%	Pass
31.83 - 28.75	Pole + Reinf.	TP60x60x0.9625	Pole	40.4%	Pass
28.75 - 28.5	Pole + Reinf.	TP60x60x0.8125	Pole	47.5%	Pass
28.5 - 23.5	Pole + Reinf.	TP60x60x0.8125	Pole	49.7%	Pass
23.5 - 18.5	Pole + Reinf.	TP60x60x0.95	Pole	44.2%	Pass
18.5 - 13.5	Pole + Reinf.	TP60x60x0.95	Pole	46.2%	Pass
13.5 - 8.5	Pole + Reinf.	TP60x60x0.95	Pole	48.2%	Pass
8.5 - 3.5	Pole + Reinf.	TP60x60x0.95	Pole	50.2%	Pass
3.5 - 0	Pole + Reinf.	TP60x60x0.95	Pole	51.6%	Pass
				Summary	
			Pole	51.6%	Pass
			Reinforcement	49.2%	Pass
			Overall	51.6%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	180	3.0	Pass
1,2	Flange Plates		3.5	Pass
1	Flange Bolts	160	15.9	Pass
1,2	Flange Plates		17.3	Pass
1	Flange Bolts	140	34.9	Pass
1,2	Flange Plates		34.9	Pass
1	Flange Bolts	120	48.2	Pass
1,2	Flange Plates		48.2	Pass
1	Flange Bolts	100	47.6	Pass
1,2	Flange Plates		47.6	Pass
1	Flange Bolts	80	33.0	Pass
1	Flange Plate		52.1	Pass
1	Jump Plates		67.8	Pass
1	Flange Bolts	60	36.5	Pass
1	Flange Plates		51.0	Pass
1	Jump Plates		60.8	Pass

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	40	39.3	Pass
1	Flange Plates		51.0	Pass
1	Jump Plates		67.9	Pass
1	Flange Bolts	20	41.7	Pass
1	Flange Plates		54.8	Pass
1	Jump Plates		70.3	Pass
1	Additional Anchor Rods	0	40.3	Pass
1	Anchor Rods	0	36.0	Pass
1	Base Plate	0	48.4	Pass
1,3	Base Foundation (Compared w/ Design Loads)	0	70.4	Pass

Structure Rating (max from all components) =	**70.4%**

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.
2) Base/Flange plates is/are assumed to have the same capacity as their respective splice bolts or shaft.
3) Foundation capacity determined by comparing analysis reactions to original design reactions.

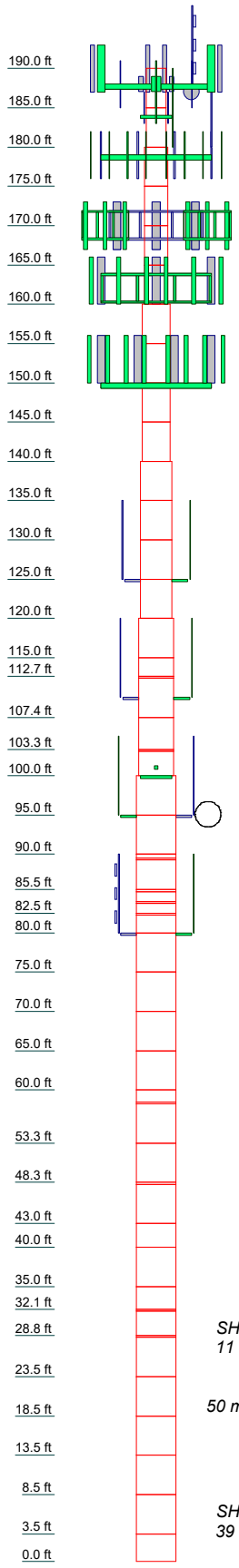
4.1) Recommendations

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	Size	Length (ft)	Grade	Weight (K)
1	P60x0.375	5.00	A53-B-42	0.6
2	P60x0.375	5.00		0.6
3	P60x0.375	5.00		0.7
4	P60x0.375	5.00		0.7
5	P60x0.375	5.00		0.7
6	P60x0.375	5.00		0.7
7	P60x0.375	5.00		0.8
8	P60x0.375	5.00		0.8
9	P60x0.375	5.00		0.8
10	P60x0.375	5.00		0.8
11	P60x0.375	5.00		1.0
12	P60x0.375	5.00		1.0
13	P60x0.375	5.00		1.0
14	P60x0.375	5.00		1.0
15	P60x0.375	5.00		1.1
16	P60x0.375	2.33		0.5
18	P60x0.375	5.00		1.4
19	P60x0.375	4.09		1.1
21	P60x0.375	3.00		0.9
22	P60x0.375	5.00		1.5
23	P60x0.375	5.00		1.5
24	P60x0.375	5.00		1.5
26	P60x0.375	4.70		1.3
27	P60x0.375	0.30		0.1
32	P60x0.375	0.00		0.0
33	P60x0.375	5.00		1.8
34	P60x0.375	5.00		1.8
35	P60x0.375	5.00		1.8
36	P60x0.375	5.00		1.8
37	P60x0.375	0.25		0.1
39	P60x0.375	5.00		2.0
40	P60x0.375	5.00		2.0
41	P60x0.375	0.25		0.1
42	P60x0.375	5.00		2.4
43	P60x0.375	3.00		1.4
44	P60x0.375	5.00		2.4
45	P60x0.375	2.92		1.4
47	P60x0.375	0.25		0.1
48	P60x0.375	0.25		0.1
49	P60x0.375	5.00		2.5
50	P60x0.375	5.00		2.9
51	P60x0.375	5.00		2.9
52	P60x0.375	5.00		2.9
53	P60x0.375	5.00		2.9
54	P60x0.375	3.50		2.0
				60.7



ALL REACTIONS ARE FACTORED

AXIAL 165 K

SHEAR 11 K *MOMENT 1477 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 108 K

SHEAR 39 K *MOMENT 4966 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 120 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 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 0.00 ft
8. TOWER RATING: 51.6%

CROWN CASTLE
The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
Phone: (724) 416-2000
FAX: (724) 416-4623

Job: ***BU# 829046***			
Project:			
Client: Crown Castle	Drawn by: HLei		App'd:
Code: TIA-222-H	Date: 10/14/20		Scale: NTS
Path: C:\Users\HLei\Desktop\Temporary Working Space\829046\WO 1890172 - SA\Prod\829046 - Reinf.eri			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Fairfield County, Connecticut.
4) Tower base elevation above sea level: 322.00 ft.
5) Basic wind speed of 120 mph.
6) Risk Category II.
7) Exposure Category B.
8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
9) Topographic Category: 1.
10) Crest Height: 0.00 ft.
11) Nominal ice thickness of 1.5000 in.
12) Ice thickness is considered to increase with height.
13) Ice density of 56 pcf.
14) A wind speed of 50 mph is used in combination with ice.
15) Temperature drop of 50 °F.
16) Deflections calculated using a wind speed of 60 mph.
17) TOWER RATING: 51.6%.
18) A non-linear (P-delta) analysis was used.
19) Pressures are calculated at each section.
20) Stress ratio used in pole design is 1.05.
21) Tower analysis based on target reliabilities in accordance with Annex S.
22) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
23) 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

Pole Section Geometry

Section	*Elevation*	*Section Length*	*Pole Size*	*Pole Grade*	*Socket Length*
	ft	*ft*			*ft*

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	190.00-185.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L2	185.00-180.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L3	180.00-175.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L4	175.00-170.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L5	170.00-165.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L6	165.00-160.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L7	160.00-155.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L8	155.00-150.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L9	150.00-145.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L10	145.00-140.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L11	140.00-135.00	5.00	P48x0.375	A53-B-42 (42 ksi)	
L12	135.00-130.00	5.00	P48x0.375	A53-B-42 (42 ksi)	
L13	130.00-125.00	5.00	P48x0.375	A53-B-42 (42 ksi)	
L14	125.00-120.00	5.00	P48x0.375	A53-B-42 (42 ksi)	
L15	120.00-115.00	5.00	P54x0.375	A53-B-42 (42 ksi)	
L16	115.00-112.67	2.33	P54x0.375	A53-B-42 (42 ksi)	
L17	112.67-112.42	0.25	P54x0.4875	A53-B-42 (42 ksi)	
L18	112.42-107.42	5.00	P54x0.4875	A53-B-42 (42 ksi)	
L19	107.42-103.33	4.09	P54x0.4875	A53-B-42 (42 ksi)	
L20	103.33-103.08	0.25	P54x0.4875	A53-B-42 (42 ksi)	
L21	103.08-100.00	3.08	P54x0.4875	A53-B-42 (42 ksi)	
L22	100.00-95.00	5.00	P60x0.475	A53-B-42 (42 ksi)	
L23	95.00-90.00	5.00	P60x0.475	A53-B-42 (42 ksi)	
L24	90.00-89.50	0.50	P60x0.475	A53-B-42 (42 ksi)	
L25	89.50-89.25	0.25	P60x0.55625	A53-B-42 (42 ksi)	
L26	89.25-85.50	3.75	P60x0.55625	A53-B-42 (42 ksi)	
L27	85.50-85.25	0.25	P60x0.6375	A53-B-42 (42 ksi)	
L28	85.25-84.00	1.25	P60x0.6375	A53-B-42 (42 ksi)	
L29	84.00-83.75	0.25	P60x0.525	A53-B-42 (42 ksi)	
L30	83.75-82.50	1.25	P60x0.525	A53-B-42 (42 ksi)	
L31	82.50-82.25	0.25	P60x0.45	A53-B-42 (42 ksi)	
L32	82.25-80.00	2.25	P60x0.45	A53-B-42 (42 ksi)	
L33	80.00-75.00	5.00	P60x0.575	A53-B-42 (42 ksi)	
L34	75.00-70.00	5.00	P60x0.575	A53-B-42 (42 ksi)	
L35	70.00-65.00	5.00	P60x0.575	A53-B-42	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L36	65.00-60.00	5.00	P60x0.575	A53-B-42 (42 ksi)	
L37	60.00-58.50	1.50	P60x0.7	A53-B-42 (42 ksi)	
L38	58.50-58.25	0.25	P60x0.625	A53-B-42 (42 ksi)	
L39	58.25-53.25	5.00	P60x0.625	A53-B-42 (42 ksi)	
L40	53.25-48.25	5.00	P60x0.625	A53-B-42 (42 ksi)	
L41	48.25-48.00	0.25	P60x0.775	A53-B-42 (42 ksi)	
L42	48.00-43.00	5.00	P60x0.775	A53-B-42 (42 ksi)	
L43	43.00-40.00	3.00	P60x0.775	A53-B-42 (42 ksi)	
L44	40.00-35.00	5.00	P60x0.775	A53-B-42 (42 ksi)	
L45	35.00-32.08	2.92	P60x0.775	A53-B-42 (42 ksi)	
L46	32.08-31.83	0.25	P60x0.9625	A53-B-42 (42 ksi)	
L47	31.83-28.75	3.08	P60x0.9625	A53-B-42 (42 ksi)	
L48	28.75-28.50	0.25	P60x0.8125	A53-B-42 (42 ksi)	
L49	28.50-23.50	5.00	P60x0.8125	A53-B-42 (42 ksi)	
L50	23.50-18.50	5.00	P60x0.95	A53-B-42 (42 ksi)	
L51	18.50-13.50	5.00	P60x0.95	A53-B-42 (42 ksi)	
L52	13.50-8.50	5.00	P60x0.95	A53-B-42 (42 ksi)	
L53	8.50-3.50	5.00	P60x0.95	A53-B-42 (42 ksi)	
L54	3.50-0.00	3.50	P60x0.95	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 190.00-185.00				1	1	1			
L2 185.00-180.00				1	1	1			
L3 180.00-175.00				1	1	1			
L4 175.00-170.00				1	1	1			
L5 170.00-165.00				1	1	1			
L6 165.00-160.00				1	1	1			
L7 160.00-155.00				1	1	1			
L8 155.00-150.00				1	1	1			
L9 150.00-145.00				1	1	1			
L10 145.00-140.00				1	1	1			
L11 140.00-135.00				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
L12 135.00-130.00				1	1	1			
L13 130.00-125.00				1	1	1			
L14 125.00-120.00				1	1	1			
L15 120.00-115.00				1	1	1			
L16 115.00-112.67				1	1	1			
L17 112.67-112.42				1	1	0.990478			
L18 112.42-107.42				1	1	0.990478			
L19 107.42-103.33				1	1	0.990478			
L20 103.33-103.08				1	1	0.990478			
L21 103.08-100.00				1	1	0.990478			
L22 100.00-95.00				1	1	0.993442			
L23 95.00-90.00				1	1	0.993442			
L24 90.00-89.50				1	1	0.993442			
L25 89.50-89.25				1	1	0.979451			
L26 89.25-85.50				1	1	0.979451			
L27 85.50-85.25				1	1	0.96934			
L28 85.25-84.00				1	1	0.96934			
L29 84.00-83.75				1	1	0.991333			
L30 83.75-82.50				1	1	0.991333			
L31 82.50-82.25				1	1	0.99474			
L32 82.25-80.00				1	1	0.99474			
L33 80.00-75.00				1	1	0.996424			
L34 75.00-70.00				1	1	0.996424			
L35 70.00-65.00				1	1	0.996424			
L36 65.00-60.00				1	1	0.996424			
L37 60.00-58.50				1	1	0.997508			
L38 58.50-58.25				1	1	1			
L39 58.25-53.25				1	1	1			
L40 53.25-48.25				1	1	1			
L41 48.25-48.00				1	1	0.977534			
L42 48.00-43.00				1	1	0.977534			
L43 43.00-40.00				1	1	0.977534			
L44 40.00-35.00				1	1	0.977534			
L45 35.00-				1	1	0.977534			

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
32.08									
L46 32.08-31.83				1	1	0.96816			
L47 31.83-28.75				1	1	0.96816			
L48 28.75-28.50				1	1	0.98265			
L49 28.50-23.50				1	1	0.98265			
L50 23.50-18.50				1	1	0.973014			
L51 18.50-13.50				1	1	0.973014			
L52 13.50-8.50				1	1	0.973014			
L53 8.50-3.50				1	1	0.973014			
L54 3.50-0.00				1	1	0.973014			

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 plf
Safety Line 3/8	C	No	Surface Ar (CaAa)	190.00 - 10.00	1	1	0.492 0.500	0.3750		0.22
Climbing Rungs ***188***	C	No	Surface Ar (CaAa)	190.00 - 10.00	1	1	0.500 0.500	0.8000		7.90
(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4) ***170***	B	No	Surface Ar (CaAa)	188.00 - 6.00	3	3	0.000 0.099	1.5400		1.22
(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8) ***160***	B	No	Surface Ar (CaAa)	170.00 - 8.00	10	10	-0.412 0.000	1.9800		0.82
(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	A	No	Surface Ar (CaAa)	162.00 - 11.00	8	3	0.401 0.450	0.7950		0.58
LDF7-50A(1-5/8) *** ***MOD 2012 ***	A	No	Surface Ar (CaAa)	162.00 - 11.00	6	6	0.155 0.400	1.9800		0.82
8.5" x 1.25" Flat Plate	A	No	Surface Af (CaAa)	35.83 - 0.83	1	1	0.000 0.000	8.5000	19.5000	0.00
8.5" x 1.25" Flat Plate	B	No	Surface Af (CaAa)	35.83 - 0.83	1	1	0.000 0.000	8.5000	19.5000	0.00
8.5" x 1.25" Flat Plate *	C	No	Surface Af (CaAa)	35.83 - 0.83	1	1	0.000 0.000	8.5000	19.5000	0.00
6.5" x 1.25" Flat Plate	A	No	Surface Af (CaAa)	51.00 - 26.00	1	1	0.000 0.000	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate	B	No	Surface Af (CaAa)	51.00 - 26.00	1	1	0.000 0.000	6.5000	15.5000	0.00
6.5" x 1.25" Flat Plate *	C	No	Surface Af (CaAa)	51.00 - 26.00	1	1	0.000 0.000	6.5000	15.5000	0.00
4.5" x 1" Flat Plate	A	No	Surface Af (CaAa)	87.00 - 57.00	1	1	0.000 0.000	4.5000	11.0000	0.00

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 plf
4.5" x 1" Flat Plate	B	No	Surface Af (CaAa)	87.00 - 57.00	1	1	0.000 0.000	4.5000	11.0000	0.00
4.5" x 1" Flat Plate *	C	No	Surface Af (CaAa)	87.00 - 57.00	1	1	0.000 0.000	4.5000	11.0000	0.00
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	105.33 - 82.00	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	105.33 - 82.00	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate *	C	No	Surface Af (CaAa)	105.33 - 82.00	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate	A	No	Surface Af (CaAa)	114.67 - 101.33	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate	B	No	Surface Af (CaAa)	114.67 - 101.33	1	1	0.000 0.000	6.0000	14.0000	0.00
6" x 1" Flat Plate ***MOD 2013***	C	No	Surface Af (CaAa)	114.67 - 101.33	1	1	0.000 0.000	6.0000	14.0000	0.00
4.5" x 1" Flat Plate	A	No	Surface Af (CaAa)	91.00 - 81.00	1	1	0.000 0.000	4.5000	11.0000	0.00
4.5" x 1" Flat Plate	B	No	Surface Af (CaAa)	91.00 - 81.00	1	1	0.000 0.000	4.5000	11.0000	0.00
4.5" x 1" Flat Plate ********** *** ** *	C	No	Surface Af (CaAa)	91.00 - 81.00	1	1	0.000 0.000	4.5000	11.0000	0.00

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 plf
TYPE I(1-1/4)	C	No	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	0.63
							1/2" Ice	0.00	0.63
							1" Ice	0.00	0.63
							2" Ice	0.00	0.63
ATCB-B01(5/16)	C	No	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	0.07
							1/2" Ice	0.00	0.07
							1" Ice	0.00	0.07
							2" Ice	0.00	0.07
LDF4.5-50(5/8)	C	No	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF5-50A(7/8)	C	No	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
179									
LDF5-50A(7/8)	C	No	No	Inside Pole	179.00 - 0.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
150									
HB158-1-13U6-S6F18(1-5/8)	C	No	No	Inside Pole	150.00 - 0.00	1	No Ice	0.00	1.90
							1/2" Ice	0.00	1.90
							1" Ice	0.00	1.90
							2" Ice	0.00	1.90
LDF7-50A(1-5/8)	C	No	No	Inside Pole	150.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	0.82
125									
LDF4-50A(1/2)	B	No	No	Inside Pole	125.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF5-50A(7/8)	B	No	No	Inside Pole	125.00 - 0.00	1	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
110									
LDF4-50A(1/2)	B	No	No	Inside Pole	110.00 - 0.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
100									
LDF4-50A(1/2)	B	No	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
95									
LDF4-50A(1/2)	B	No	No	Inside Pole	95.00 - 0.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
80									
LDF4-50A(1/2)	B	No	No	Inside Pole	80.00 - 0.00	2	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
***									
**********									
***									
**									
*									

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	190.00-185.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	1.386	0.000	0.01
		C	0.000	0.000	0.588	0.000	0.04
L2	185.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.310	0.000	0.02
		C	0.000	0.000	0.588	0.000	0.05
L3	180.00-175.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.310	0.000	0.02
		C	0.000	0.000	0.588	0.000	0.05
L4	175.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	2.310	0.000	0.02
		C	0.000	0.000	0.588	0.000	0.05
L5	170.00-165.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.05
L6	165.00-160.00	A	0.000	0.000	2.853	0.000	0.02
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.05
L7	160.00-155.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.05

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
L8	155.00-150.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.05
L9	150.00-145.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L10	145.00-140.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L11	140.00-135.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L12	135.00-130.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L13	130.00-125.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L14	125.00-120.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L15	120.00-115.00	A	0.000	0.000	7.132	0.000	0.05
		B	0.000	0.000	12.210	0.000	0.06
		C	0.000	0.000	0.588	0.000	0.08
L16	115.00-112.67	A	0.000	0.000	5.320	0.000	0.02
		B	0.000	0.000	7.686	0.000	0.03
		C	0.000	0.000	2.270	0.000	0.04
L17	112.67-112.42	A	0.000	0.000	0.607	0.000	0.00
		B	0.000	0.000	0.861	0.000	0.00
		C	0.000	0.000	0.279	0.000	0.00
L18	112.42-107.42	A	0.000	0.000	12.133	0.000	0.05
		B	0.000	0.000	17.210	0.000	0.06
		C	0.000	0.000	5.588	0.000	0.08
L19	107.42-103.33	A	0.000	0.000	11.927	0.000	0.04
		B	0.000	0.000	16.081	0.000	0.05
		C	0.000	0.000	6.574	0.000	0.07
L20	103.33-103.08	A	0.000	0.000	0.857	0.000	0.00
		B	0.000	0.000	1.111	0.000	0.00
		C	0.000	0.000	0.529	0.000	0.00
L21	103.08-100.00	A	0.000	0.000	9.221	0.000	0.03
		B	0.000	0.000	12.348	0.000	0.04
		C	0.000	0.000	5.189	0.000	0.05
L22	100.00-95.00	A	0.000	0.000	12.133	0.000	0.05
		B	0.000	0.000	17.210	0.000	0.06
		C	0.000	0.000	5.588	0.000	0.08
L23	95.00-90.00	A	0.000	0.000	12.883	0.000	0.05
		B	0.000	0.000	17.960	0.000	0.07
		C	0.000	0.000	6.338	0.000	0.08
L24	90.00-89.50	A	0.000	0.000	1.588	0.000	0.00
		B	0.000	0.000	2.096	0.000	0.01
		C	0.000	0.000	0.934	0.000	0.01
L25	89.50-89.25	A	0.000	0.000	0.794	0.000	0.00
		B	0.000	0.000	1.048	0.000	0.00
		C	0.000	0.000	0.467	0.000	0.00
L26	89.25-85.50	A	0.000	0.000	13.037	0.000	0.04
		B	0.000	0.000	16.845	0.000	0.05
		C	0.000	0.000	8.128	0.000	0.06
L27	85.50-85.25	A	0.000	0.000	0.982	0.000	0.00
		B	0.000	0.000	1.236	0.000	0.00
		C	0.000	0.000	0.654	0.000	0.00
L28	85.25-84.00	A	0.000	0.000	4.908	0.000	0.01
		B	0.000	0.000	6.178	0.000	0.02
		C	0.000	0.000	3.272	0.000	0.02
L29	84.00-83.75	A	0.000	0.000	0.982	0.000	0.00
		B	0.000	0.000	1.236	0.000	0.00
		C	0.000	0.000	0.654	0.000	0.00
L30	83.75-82.50	A	0.000	0.000	4.908	0.000	0.01
		B	0.000	0.000	6.178	0.000	0.02
		C	0.000	0.000	3.272	0.000	0.02

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
L31	82.50-82.25	A	0.000	0.000	0.982	0.000	0.00
		B	0.000	0.000	1.236	0.000	0.00
		C	0.000	0.000	0.654	0.000	0.00
L32	82.25-80.00	A	0.000	0.000	6.085	0.000	0.02
		B	0.000	0.000	8.370	0.000	0.03
		C	0.000	0.000	3.139	0.000	0.04
L33	80.00-75.00	A	0.000	0.000	10.883	0.000	0.05
		B	0.000	0.000	15.960	0.000	0.07
		C	0.000	0.000	4.338	0.000	0.08
L34	75.00-70.00	A	0.000	0.000	10.883	0.000	0.05
		B	0.000	0.000	15.960	0.000	0.07
		C	0.000	0.000	4.338	0.000	0.08
L35	70.00-65.00	A	0.000	0.000	10.883	0.000	0.05
		B	0.000	0.000	15.960	0.000	0.07
		C	0.000	0.000	4.338	0.000	0.08
L36	65.00-60.00	A	0.000	0.000	10.883	0.000	0.05
		B	0.000	0.000	15.960	0.000	0.07
		C	0.000	0.000	4.338	0.000	0.08
L37	60.00-58.50	A	0.000	0.000	3.265	0.000	0.01
		B	0.000	0.000	4.788	0.000	0.02
		C	0.000	0.000	1.301	0.000	0.03
L38	58.50-58.25	A	0.000	0.000	0.544	0.000	0.00
		B	0.000	0.000	0.798	0.000	0.00
		C	0.000	0.000	0.217	0.000	0.00
L39	58.25-53.25	A	0.000	0.000	8.070	0.000	0.05
		B	0.000	0.000	13.148	0.000	0.07
		C	0.000	0.000	1.525	0.000	0.08
L40	53.25-48.25	A	0.000	0.000	10.112	0.000	0.05
		B	0.000	0.000	15.189	0.000	0.07
		C	0.000	0.000	3.567	0.000	0.08
L41	48.25-48.00	A	0.000	0.000	0.627	0.000	0.00
		B	0.000	0.000	0.881	0.000	0.00
		C	0.000	0.000	0.300	0.000	0.00
L42	48.00-43.00	A	0.000	0.000	12.549	0.000	0.05
		B	0.000	0.000	17.627	0.000	0.07
		C	0.000	0.000	6.004	0.000	0.08
L43	43.00-40.00	A	0.000	0.000	7.530	0.000	0.03
		B	0.000	0.000	10.576	0.000	0.04
		C	0.000	0.000	3.603	0.000	0.05
L44	40.00-35.00	A	0.000	0.000	13.729	0.000	0.05
		B	0.000	0.000	18.807	0.000	0.07
		C	0.000	0.000	7.184	0.000	0.08
L45	35.00-32.08	A	0.000	0.000	11.465	0.000	0.03
		B	0.000	0.000	14.431	0.000	0.04
		C	0.000	0.000	7.643	0.000	0.05
L46	32.08-31.83	A	0.000	0.000	0.982	0.000	0.00
		B	0.000	0.000	1.236	0.000	0.00
		C	0.000	0.000	0.654	0.000	0.00
L47	31.83-28.75	A	0.000	0.000	12.094	0.000	0.03
		B	0.000	0.000	15.221	0.000	0.04
		C	0.000	0.000	8.062	0.000	0.05
L48	28.75-28.50	A	0.000	0.000	0.982	0.000	0.00
		B	0.000	0.000	1.236	0.000	0.00
		C	0.000	0.000	0.654	0.000	0.00
L49	28.50-23.50	A	0.000	0.000	16.924	0.000	0.05
		B	0.000	0.000	22.002	0.000	0.07
		C	0.000	0.000	10.379	0.000	0.08
L50	23.50-18.50	A	0.000	0.000	14.216	0.000	0.05
		B	0.000	0.000	19.293	0.000	0.07
		C	0.000	0.000	7.671	0.000	0.08
L51	18.50-13.50	A	0.000	0.000	14.216	0.000	0.05
		B	0.000	0.000	19.293	0.000	0.07
		C	0.000	0.000	7.671	0.000	0.08
L52	13.50-8.50	A	0.000	0.000	10.650	0.000	0.02
		B	0.000	0.000	19.293	0.000	0.07
		C	0.000	0.000	7.495	0.000	0.07
L53	8.50-3.50	A	0.000	0.000	7.083	0.000	0.00
		B	0.000	0.000	9.228	0.000	0.02
		C	0.000	0.000	7.083	0.000	0.04

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
L54	3.50-0.00	A	0.000	0.000	3.778	0.000	0.00
		B	0.000	0.000	3.778	0.000	0.01
		C	0.000	0.000	3.778	0.000	0.03

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	190.00-185.00	A	1.517	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	2.870	0.000	0.04
		C		0.000	0.000	3.621	0.000	0.08
L2	185.00-180.00	A	1.513	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.779	0.000	0.07
		C		0.000	0.000	3.613	0.000	0.09
L3	180.00-175.00	A	1.509	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.773	0.000	0.07
		C		0.000	0.000	3.605	0.000	0.09
L4	175.00-170.00	A	1.504	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	4.768	0.000	0.07
		C		0.000	0.000	3.596	0.000	0.09
L5	170.00-165.00	A	1.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	19.012	0.000	0.26
		C		0.000	0.000	3.587	0.000	0.09
L6	165.00-160.00	A	1.495	0.000	0.000	5.062	0.000	0.07
		B		0.000	0.000	19.001	0.000	0.26
		C		0.000	0.000	3.578	0.000	0.09
L7	160.00-155.00	A	1.491	0.000	0.000	12.642	0.000	0.18
		B		0.000	0.000	18.989	0.000	0.26
		C		0.000	0.000	3.569	0.000	0.09
L8	155.00-150.00	A	1.486	0.000	0.000	12.630	0.000	0.18
		B		0.000	0.000	18.977	0.000	0.26
		C		0.000	0.000	3.559	0.000	0.09
L9	150.00-145.00	A	1.481	0.000	0.000	12.618	0.000	0.18
		B		0.000	0.000	18.965	0.000	0.26
		C		0.000	0.000	3.549	0.000	0.12
L10	145.00-140.00	A	1.476	0.000	0.000	12.605	0.000	0.18
		B		0.000	0.000	18.952	0.000	0.25
		C		0.000	0.000	3.539	0.000	0.12
L11	140.00-135.00	A	1.471	0.000	0.000	12.592	0.000	0.18
		B		0.000	0.000	18.939	0.000	0.25
		C		0.000	0.000	3.529	0.000	0.12
L12	135.00-130.00	A	1.465	0.000	0.000	12.578	0.000	0.18
		B		0.000	0.000	18.925	0.000	0.25
		C		0.000	0.000	3.518	0.000	0.12
L13	130.00-125.00	A	1.460	0.000	0.000	12.564	0.000	0.18
		B		0.000	0.000	18.911	0.000	0.25
		C		0.000	0.000	3.507	0.000	0.12
L14	125.00-120.00	A	1.454	0.000	0.000	12.550	0.000	0.18
		B		0.000	0.000	18.897	0.000	0.25
		C		0.000	0.000	3.495	0.000	0.12
L15	120.00-115.00	A	1.448	0.000	0.000	12.535	0.000	0.18
		B		0.000	0.000	18.882	0.000	0.25
		C		0.000	0.000	3.483	0.000	0.12
L16	115.00-112.67	A	1.443	0.000	0.000	8.176	0.000	0.11
		B		0.000	0.000	11.134	0.000	0.14
		C		0.000	0.000	3.959	0.000	0.08
L17	112.67-112.42	A	1.441	0.000	0.000	0.919	0.000	0.01
		B		0.000	0.000	1.236	0.000	0.02
		C		0.000	0.000	0.467	0.000	0.01
L18	112.42-107.42	A	1.438	0.000	0.000	18.370	0.000	0.23
		B		0.000	0.000	24.717	0.000	0.31
		C		0.000	0.000	9.323	0.000	0.17
L19	107.42-103.33	A	1.432	0.000	0.000	17.589	0.000	0.21
		B		0.000	0.000	22.780	0.000	0.27
		C		0.000	0.000	10.191	0.000	0.16

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
L20	103.33-103.08	A	1.429	0.000	0.000	1.239	0.000	0.01
		B		0.000	0.000	1.556	0.000	0.02
		C		0.000	0.000	0.786	0.000	0.01
L21	103.08-100.00	A	1.427	0.000	0.000	13.693	0.000	0.16
		B		0.000	0.000	17.603	0.000	0.21
		C		0.000	0.000	8.124	0.000	0.13
L22	100.00-95.00	A	1.421	0.000	0.000	18.889	0.000	0.23
		B		0.000	0.000	25.236	0.000	0.30
		C		0.000	0.000	9.850	0.000	0.17
L23	95.00-90.00	A	1.413	0.000	0.000	19.773	0.000	0.24
		B		0.000	0.000	26.120	0.000	0.31
		C		0.000	0.000	10.738	0.000	0.18
L24	90.00-89.50	A	1.409	0.000	0.000	2.340	0.000	0.03
		B		0.000	0.000	2.974	0.000	0.03
		C		0.000	0.000	1.436	0.000	0.02
L25	89.50-89.25	A	1.409	0.000	0.000	1.170	0.000	0.01
		B		0.000	0.000	1.487	0.000	0.02
		C		0.000	0.000	0.718	0.000	0.01
L26	89.25-85.50	A	1.405	0.000	0.000	19.083	0.000	0.22
		B		0.000	0.000	23.843	0.000	0.27
		C		0.000	0.000	12.310	0.000	0.18
L27	85.50-85.25	A	1.402	0.000	0.000	1.426	0.000	0.02
		B		0.000	0.000	1.743	0.000	0.02
		C		0.000	0.000	0.975	0.000	0.01
L28	85.25-84.00	A	1.401	0.000	0.000	7.129	0.000	0.08
		B		0.000	0.000	8.716	0.000	0.10
		C		0.000	0.000	4.872	0.000	0.06
L29	84.00-83.75	A	1.400	0.000	0.000	1.425	0.000	0.02
		B		0.000	0.000	1.743	0.000	0.02
		C		0.000	0.000	0.974	0.000	0.01
L30	83.75-82.50	A	1.398	0.000	0.000	7.126	0.000	0.08
		B		0.000	0.000	8.712	0.000	0.10
		C		0.000	0.000	4.869	0.000	0.06
L31	82.50-82.25	A	1.397	0.000	0.000	1.425	0.000	0.02
		B		0.000	0.000	1.742	0.000	0.02
		C		0.000	0.000	0.973	0.000	0.01
L32	82.25-80.00	A	1.395	0.000	0.000	9.352	0.000	0.11
		B		0.000	0.000	12.208	0.000	0.15
		C		0.000	0.000	5.291	0.000	0.09
L33	80.00-75.00	A	1.389	0.000	0.000	17.526	0.000	0.22
		B		0.000	0.000	23.873	0.000	0.29
		C		0.000	0.000	8.503	0.000	0.16
L34	75.00-70.00	A	1.379	0.000	0.000	17.494	0.000	0.22
		B		0.000	0.000	23.840	0.000	0.29
		C		0.000	0.000	8.476	0.000	0.16
L35	70.00-65.00	A	1.370	0.000	0.000	17.459	0.000	0.22
		B		0.000	0.000	23.806	0.000	0.29
		C		0.000	0.000	8.446	0.000	0.16
L36	65.00-60.00	A	1.359	0.000	0.000	17.422	0.000	0.21
		B		0.000	0.000	23.769	0.000	0.29
		C		0.000	0.000	8.415	0.000	0.16
L37	60.00-58.50	A	1.352	0.000	0.000	5.219	0.000	0.06
		B		0.000	0.000	7.123	0.000	0.09
		C		0.000	0.000	2.518	0.000	0.05
L38	58.50-58.25	A	1.350	0.000	0.000	0.870	0.000	0.01
		B		0.000	0.000	1.187	0.000	0.01
		C		0.000	0.000	0.419	0.000	0.01
L39	58.25-53.25	A	1.344	0.000	0.000	13.548	0.000	0.18
		B		0.000	0.000	19.895	0.000	0.25
		C		0.000	0.000	4.548	0.000	0.13
L40	53.25-48.25	A	1.331	0.000	0.000	15.955	0.000	0.20
		B		0.000	0.000	22.301	0.000	0.27
		C		0.000	0.000	6.961	0.000	0.14
L41	48.25-48.00	A	1.324	0.000	0.000	0.948	0.000	0.01
		B		0.000	0.000	1.266	0.000	0.01
		C		0.000	0.000	0.499	0.000	0.01
L42	48.00-43.00	A	1.317	0.000	0.000	18.940	0.000	0.22
		B		0.000	0.000	25.287	0.000	0.29
		C		0.000	0.000	9.954	0.000	0.17

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
L43	43.00-40.00	A	1.305	0.000	0.000	11.339	0.000	0.13
		B		0.000	0.000	15.147	0.000	0.17
		C		0.000	0.000	5.951	0.000	0.10
L44	40.00-35.00	A	1.291	0.000	0.000	20.247	0.000	0.23
		B		0.000	0.000	26.594	0.000	0.30
		C		0.000	0.000	11.274	0.000	0.17
L45	35.00-32.08	A	1.277	0.000	0.000	15.863	0.000	0.16
		B		0.000	0.000	19.569	0.000	0.20
		C		0.000	0.000	10.626	0.000	0.13
L46	32.08-31.83	A	1.271	0.000	0.000	1.357	0.000	0.01
		B		0.000	0.000	1.674	0.000	0.02
		C		0.000	0.000	0.909	0.000	0.01
L47	31.83-28.75	A	1.264	0.000	0.000	16.696	0.000	0.17
		B		0.000	0.000	20.606	0.000	0.21
		C		0.000	0.000	11.177	0.000	0.14
L48	28.75-28.50	A	1.257	0.000	0.000	1.354	0.000	0.01
		B		0.000	0.000	1.671	0.000	0.02
		C		0.000	0.000	0.906	0.000	0.01
L49	28.50-23.50	A	1.245	0.000	0.000	23.687	0.000	0.24
		B		0.000	0.000	30.034	0.000	0.31
		C		0.000	0.000	14.737	0.000	0.19
L50	23.50-18.50	A	1.219	0.000	0.000	20.264	0.000	0.21
		B		0.000	0.000	26.611	0.000	0.28
		C		0.000	0.000	11.327	0.000	0.17
L51	18.50-13.50	A	1.186	0.000	0.000	20.150	0.000	0.21
		B		0.000	0.000	26.497	0.000	0.28
		C		0.000	0.000	11.229	0.000	0.16
L52	13.50-8.50	A	1.142	0.000	0.000	14.111	0.000	0.13
		B		0.000	0.000	26.344	0.000	0.27
		C		0.000	0.000	10.236	0.000	0.14
L53	8.50-3.50	A	1.075	0.000	0.000	8.158	0.000	0.05
		B		0.000	0.000	11.646	0.000	0.10
		C		0.000	0.000	8.158	0.000	0.09
L54	3.50-0.00	A	0.951	0.000	0.000	4.285	0.000	0.02
		B		0.000	0.000	4.285	0.000	0.03
		C		0.000	0.000	4.285	0.000	0.05

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	190.00-185.00	1.2843	-0.4636	-0.2648	0.3813
L2	185.00-180.00	2.4497	-0.9941	0.7579	-0.1049
L3	180.00-175.00	2.5446	-1.0320	0.8070	-0.1087
L4	175.00-170.00	2.5446	-1.0320	0.8090	-0.1100
L5	170.00-165.00	6.3740	-7.6015	3.7732	-4.6669
L6	165.00-160.00	4.7564	-8.7240	2.6340	-5.6593
L7	160.00-155.00	3.2246	-10.9997	1.5403	-7.4617
L8	155.00-150.00	3.2246	-10.9997	1.5426	-7.4640
L9	150.00-145.00	3.2246	-10.9997	1.5450	-7.4663
L10	145.00-140.00	3.2246	-10.9997	1.5474	-7.4688
L11	140.00-135.00	3.4931	-11.9121	1.6858	-8.1331
L12	135.00-130.00	3.4931	-11.9121	1.6885	-8.1356
L13	130.00-125.00	3.4931	-11.9121	1.6914	-8.1382
L14	125.00-120.00	3.4931	-11.9121	1.6944	-8.1409
L15	120.00-115.00	3.7375	-12.7427	1.8231	-8.7518
L16	115.00-112.67	2.6998	-9.2046	1.5183	-7.2807
L17	112.67-112.42	2.5799	-8.7959	1.4774	-7.0817
L18	112.42-107.42	2.5799	-8.7959	1.4788	-7.0825
L19	107.42-103.33	2.2401	-7.6375	1.3432	-6.4233
L20	103.33-103.08	1.6202	-5.5239	1.2231	-5.8447
L21	103.08-100.00	2.1944	-7.4816	1.3161	-6.2855
L22	100.00-95.00	2.7710	-9.4456	1.5637	-7.4613
L23	95.00-90.00	2.6515	-9.0383	1.5239	-7.2577

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L24	90.00-89.50	2.2614	-7.7087	1.3741	-6.5377
L25	89.50-89.25	2.2614	-7.7087	1.3743	-6.5378
L26	89.25-85.50	1.7138	-5.8422	1.3017	-6.1873
L27	85.50-85.25	1.5740	-5.3655	1.2022	-5.7098
L28	85.25-84.00	1.5740	-5.3655	1.2026	-5.7101
L29	84.00-83.75	1.5740	-5.3655	1.2030	-5.7103
L30	83.75-82.50	1.5740	-5.3655	1.2035	-5.7106
L31	82.50-82.25	1.5740	-5.3655	1.2039	-5.7109
L32	82.25-80.00	2.5575	-8.7181	1.4834	-7.0332
L33	80.00-75.00	2.9960	-10.2127	1.6425	-7.7752
L34	75.00-70.00	2.9960	-10.2127	1.6470	-7.7786
L35	70.00-65.00	2.9960	-10.2127	1.6517	-7.7823
L36	65.00-60.00	2.9960	-10.2127	1.6569	-7.7863
L37	60.00-58.50	2.9960	-10.2127	1.6604	-7.7890
L38	58.50-58.25	2.9960	-10.2127	1.6614	-7.7898
L39	58.25-53.25	3.6657	-12.4958	1.9029	-8.9086
L40	53.25-48.25	3.1539	-10.7510	1.7494	-8.1646
L41	48.25-48.00	2.7033	-9.2149	1.5870	-7.3939
L42	48.00-43.00	2.7033	-9.2149	1.5904	-7.3961
L43	43.00-40.00	2.7033	-9.2149	1.5959	-7.3997
L44	40.00-35.00	2.5284	-8.6188	1.5347	-7.0931
L45	35.00-32.08	1.5740	-5.3655	1.2685	-5.8419
L46	32.08-31.83	1.5740	-5.3655	1.2706	-5.8429
L47	31.83-28.75	1.5740	-5.3655	1.2730	-5.8441
L48	28.75-28.50	1.5740	-5.3655	1.2755	-5.8454
L49	28.50-23.50	2.1515	-7.3341	1.4019	-6.4053
L50	23.50-18.50	2.4627	-8.3948	1.5535	-7.0523
L51	18.50-13.50	2.4627	-8.3948	1.5678	-7.0598
L52	13.50-8.50	3.5701	-7.1266	2.7711	-6.0559
L53	8.50-3.50	1.3070	-1.0297	1.3898	-1.0133
L54	3.50-0.00	0.0000	0.0000	0.0000	0.0000

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	1	Safety Line 3/8	185.00 - 190.00	1.0000	1.0000
L1	2	Climbing Rungs	185.00 - 190.00	1.0000	1.0000
L1	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	185.00 - 188.00	1.0000	1.0000
L2	1	Safety Line 3/8	180.00 - 185.00	1.0000	1.0000
L2	2	Climbing Rungs	180.00 - 185.00	1.0000	1.0000
L2	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	180.00 - 185.00	1.0000	1.0000
L3	1	Safety Line 3/8	175.00 - 180.00	1.0000	1.0000
L3	2	Climbing Rungs	175.00 - 180.00	1.0000	1.0000
L3	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	175.00 - 180.00	1.0000	1.0000
L4	1	Safety Line 3/8	170.00 - 175.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	2	Climbing Rungs	170.00 - 175.00	1.0000	1.0000
L4	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	170.00 - 175.00	1.0000	1.0000
L5	1	Safety Line 3/8	165.00 - 170.00	1.0000	1.0000
L5	2	Climbing Rungs	165.00 - 170.00	1.0000	1.0000
L5	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	165.00 - 170.00	1.0000	1.0000
L5	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	165.00 - 170.00	1.0000	1.0000
L6	1	Safety Line 3/8	160.00 - 165.00	1.0000	1.0000
L6	2	Climbing Rungs	160.00 - 165.00	1.0000	1.0000
L6	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	160.00 - 165.00	1.0000	1.0000
L6	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	160.00 - 165.00	1.0000	1.0000
L6	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	160.00 - 162.00	1.0000	1.0000
L6	15	LDF7-50A(1-5/8)	160.00 - 162.00	1.0000	1.0000
L7	1	Safety Line 3/8	155.00 - 160.00	1.0000	1.0000
L7	2	Climbing Rungs	155.00 - 160.00	1.0000	1.0000
L7	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	155.00 - 160.00	1.0000	1.0000
L7	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	155.00 - 160.00	1.0000	1.0000
L7	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	155.00 - 160.00	1.0000	1.0000
L7	15	LDF7-50A(1-5/8)	155.00 - 160.00	1.0000	1.0000
L8	1	Safety Line 3/8	150.00 - 155.00	1.0000	1.0000
L8	2	Climbing Rungs	150.00 - 155.00	1.0000	1.0000
L8	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	150.00 - 155.00	1.0000	1.0000
L8	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	150.00 - 155.00	1.0000	1.0000
L8	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	150.00 - 155.00	1.0000	1.0000
L8	15	LDF7-50A(1-5/8)	150.00 - 155.00	1.0000	1.0000
L9	1	Safety Line 3/8	145.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			150.00		
L9	2	Climbing Rungs	145.00 - 150.00	1.0000	1.0000
L9	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	145.00 - 150.00	1.0000	1.0000
L9	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	145.00 - 150.00	1.0000	1.0000
L9	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	145.00 - 150.00	1.0000	1.0000
L9	15	LDF7-50A(1-5/8)	145.00 - 150.00	1.0000	1.0000
L10	1	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L10	2	Climbing Rungs	140.00 - 145.00	1.0000	1.0000
L10	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	140.00 - 145.00	1.0000	1.0000
L10	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	140.00 - 145.00	1.0000	1.0000
L10	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	140.00 - 145.00	1.0000	1.0000
L10	15	LDF7-50A(1-5/8)	140.00 - 145.00	1.0000	1.0000
L11	1	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L11	2	Climbing Rungs	135.00 - 140.00	1.0000	1.0000
L11	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	135.00 - 140.00	1.0000	1.0000
L11	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	135.00 - 140.00	1.0000	1.0000
L11	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	135.00 - 140.00	1.0000	1.0000
L11	15	LDF7-50A(1-5/8)	135.00 - 140.00	1.0000	1.0000
L12	1	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L12	2	Climbing Rungs	130.00 - 135.00	1.0000	1.0000
L12	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	130.00 - 135.00	1.0000	1.0000
L12	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	130.00 - 135.00	1.0000	1.0000
L12	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	130.00 - 135.00	1.0000	1.0000
L12	15	LDF7-50A(1-5/8)	130.00 - 135.00	1.0000	1.0000
L13	1	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L13	2	Climbing Rungs	125.00 - 130.00	1.0000	1.0000
L13	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	125.00 - 130.00	1.0000	1.0000
L13	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	125.00 - 130.00	1.0000	1.0000
L13	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	125.00 - 130.00	1.0000	1.0000
L13	15	LDF7-50A(1-5/8)	125.00 - 130.00	1.0000	1.0000
L14	1	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L14	2	Climbing Rungs	120.00 - 125.00	1.0000	1.0000
L14	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	120.00 - 125.00	1.0000	1.0000
L14	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	120.00 - 125.00	1.0000	1.0000
L14	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	120.00 - 125.00	1.0000	1.0000
L14	15	LDF7-50A(1-5/8)	120.00 - 125.00	1.0000	1.0000
L15	1	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L15	2	Climbing Rungs	115.00 - 120.00	1.0000	1.0000
L15	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	115.00 - 120.00	1.0000	1.0000
L15	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	115.00 - 120.00	1.0000	1.0000
L15	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	115.00 - 120.00	1.0000	1.0000
L15	15	LDF7-50A(1-5/8)	115.00 - 120.00	1.0000	1.0000
L16	1	Safety Line 3/8	112.67 - 115.00	1.0000	1.0000
L16	2	Climbing Rungs	112.67 - 115.00	1.0000	1.0000
L16	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	112.67 - 115.00	1.0000	1.0000
L16	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	112.67 - 115.00	1.0000	1.0000
L16	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	112.67 - 115.00	1.0000	1.0000
L16	15	LDF7-50A(1-5/8)	112.67 - 115.00	1.0000	1.0000
L16	51	6" x 1" Flat Plate	112.67 - 114.67	1.0000	1.0000
L16	52	6" x 1" Flat Plate	112.67 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	53	6" x 1" Flat Plate	114.67 - 112.67	1.0000	1.0000
L17	1	Safety Line 3/8	114.67 - 112.42	1.0000	1.0000
L17	2	Climbing Rungs	112.67 - 112.42	1.0000	1.0000
L17	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	112.67 - 112.42	1.0000	1.0000
L17	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	112.67 - 112.42	1.0000	1.0000
L17	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	112.67 - 112.42	1.0000	1.0000
L17	15	LDF7-50A(1-5/8)	112.67 - 112.42	1.0000	1.0000
L17	51	6" x 1" Flat Plate	112.67 - 112.42	1.0000	1.0000
L17	52	6" x 1" Flat Plate	112.67 - 112.42	1.0000	1.0000
L17	53	6" x 1" Flat Plate	112.67 - 112.42	1.0000	1.0000
L18	1	Safety Line 3/8	107.42 - 112.42	1.0000	1.0000
L18	2	Climbing Rungs	107.42 - 112.42	1.0000	1.0000
L18	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	107.42 - 112.42	1.0000	1.0000
L18	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	107.42 - 112.42	1.0000	1.0000
L18	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	107.42 - 112.42	1.0000	1.0000
L18	15	LDF7-50A(1-5/8)	107.42 - 112.42	1.0000	1.0000
L18	51	6" x 1" Flat Plate	107.42 - 112.42	1.0000	1.0000
L18	52	6" x 1" Flat Plate	107.42 - 112.42	1.0000	1.0000
L18	53	6" x 1" Flat Plate	107.42 - 112.42	1.0000	1.0000
L19	1	Safety Line 3/8	103.33 - 107.42	1.0000	1.0000
L19	2	Climbing Rungs	103.33 - 107.42	1.0000	1.0000
L19	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	103.33 - 107.42	1.0000	1.0000
L19	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	103.33 - 107.42	1.0000	1.0000
L19	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	103.33 - 107.42	1.0000	1.0000
L19	15	LDF7-50A(1-5/8)	103.33 - 107.42	1.0000	1.0000
L19	47	6" x 1" Flat Plate	103.33 - 105.33	1.0000	1.0000
L19	48	6" x 1" Flat Plate	103.33 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			105.33		
L19	49	6" x 1" Flat Plate	103.33 - 105.33	1.0000	1.0000
L19	51	6" x 1" Flat Plate	103.33 - 107.42	1.0000	1.0000
L19	52	6" x 1" Flat Plate	103.33 - 107.42	1.0000	1.0000
L19	53	6" x 1" Flat Plate	103.33 - 107.42	1.0000	1.0000
L20	1	Safety Line 3/8	103.08 - 103.33	1.0000	1.0000
L20	2	Climbing Rungs	103.08 - 103.33	1.0000	1.0000
L20	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	103.08 - 103.33	1.0000	1.0000
L20	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	103.08 - 103.33	1.0000	1.0000
L20	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	103.08 - 103.33	1.0000	1.0000
L20	15	LDF7-50A(1-5/8)	103.08 - 103.33	1.0000	1.0000
L20	47	6" x 1" Flat Plate	103.08 - 103.33	1.0000	1.0000
L20	48	6" x 1" Flat Plate	103.08 - 103.33	1.0000	1.0000
L20	49	6" x 1" Flat Plate	103.08 - 103.33	1.0000	1.0000
L20	51	6" x 1" Flat Plate	103.08 - 103.33	1.0000	1.0000
L20	52	6" x 1" Flat Plate	103.08 - 103.33	1.0000	1.0000
L20	53	6" x 1" Flat Plate	103.08 - 103.33	1.0000	1.0000
L21	1	Safety Line 3/8	100.00 - 103.08	1.0000	1.0000
L21	2	Climbing Rungs	100.00 - 103.08	1.0000	1.0000
L21	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	100.00 - 103.08	1.0000	1.0000
L21	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	100.00 - 103.08	1.0000	1.0000
L21	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	100.00 - 103.08	1.0000	1.0000
L21	15	LDF7-50A(1-5/8)	100.00 - 103.08	1.0000	1.0000
L21	47	6" x 1" Flat Plate	100.00 - 103.08	1.0000	1.0000
L21	48	6" x 1" Flat Plate	100.00 - 103.08	1.0000	1.0000
L21	49	6" x 1" Flat Plate	100.00 - 103.08	1.0000	1.0000
L21	51	6" x 1" Flat Plate	101.33 - 103.08	1.0000	1.0000
L21	52	6" x 1" Flat Plate	101.33 - 103.08	1.0000	1.0000
L21	53	6" x 1" Flat Plate	101.33 - 103.08	1.0000	1.0000
L22	1	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L22	2	Climbing Rungs	95.00 - 100.00	1.0000	1.0000
L22	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	95.00 - 100.00	1.0000	1.0000
L22	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	95.00 - 100.00	1.0000	1.0000
L22	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	95.00 - 100.00	1.0000	1.0000
L22	15	LDF7-50A(1-5/8)	95.00 - 100.00	1.0000	1.0000
L22	47	6" x 1" Flat Plate	95.00 - 100.00	1.0000	1.0000
L22	48	6" x 1" Flat Plate	95.00 - 100.00	1.0000	1.0000
L22	49	6" x 1" Flat Plate	95.00 - 100.00	1.0000	1.0000
L23	1	Safety Line 3/8	90.00 - 95.00	1.0000	1.0000
L23	2	Climbing Rungs	90.00 - 95.00	1.0000	1.0000
L23	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	90.00 - 95.00	1.0000	1.0000
L23	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	90.00 - 95.00	1.0000	1.0000
L23	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	90.00 - 95.00	1.0000	1.0000
L23	15	LDF7-50A(1-5/8)	90.00 - 95.00	1.0000	1.0000
L23	47	6" x 1" Flat Plate	90.00 - 95.00	1.0000	1.0000
L23	48	6" x 1" Flat Plate	90.00 - 95.00	1.0000	1.0000
L23	49	6" x 1" Flat Plate	90.00 - 95.00	1.0000	1.0000
L23	55	4.5" x 1" Flat Plate	90.00 - 91.00	1.0000	1.0000
L23	56	4.5" x 1" Flat Plate	90.00 - 91.00	1.0000	1.0000
L23	57	4.5" x 1" Flat Plate	90.00 - 91.00	1.0000	1.0000
L24	1	Safety Line 3/8	89.50 - 90.00	1.0000	1.0000
L24	2	Climbing Rungs	89.50 - 90.00	1.0000	1.0000
L24	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	89.50 - 90.00	1.0000	1.0000
L24	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	89.50 - 90.00	1.0000	1.0000
L24	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	89.50 - 90.00	1.0000	1.0000
L24	15	LDF7-50A(1-5/8)	89.50 - 90.00	1.0000	1.0000
L24	47	6" x 1" Flat Plate	89.50 - 90.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L24	48	6" x 1" Flat Plate	89.50 - 90.00	1.0000	1.0000
L24	49	6" x 1" Flat Plate	89.50 - 90.00	1.0000	1.0000
L24	55	4.5" x 1" Flat Plate	89.50 - 90.00	1.0000	1.0000
L24	56	4.5" x 1" Flat Plate	89.50 - 90.00	1.0000	1.0000
L24	57	4.5" x 1" Flat Plate	89.50 - 90.00	1.0000	1.0000
L25	1	Safety Line 3/8	89.25 - 89.50	1.0000	1.0000
L25	2	Climbing Rungs	89.25 - 89.50	1.0000	1.0000
L25	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	89.25 - 89.50	1.0000	1.0000
L25	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	89.25 - 89.50	1.0000	1.0000
L25	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	89.25 - 89.50	1.0000	1.0000
L25	15	LDF7-50A(1-5/8)	89.25 - 89.50	1.0000	1.0000
L25	47	6" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L25	48	6" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L25	49	6" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L25	55	4.5" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L25	56	4.5" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L25	57	4.5" x 1" Flat Plate	89.25 - 89.50	1.0000	1.0000
L26	1	Safety Line 3/8	85.50 - 89.25	1.0000	1.0000
L26	2	Climbing Rungs	85.50 - 89.25	1.0000	1.0000
L26	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	85.50 - 89.25	1.0000	1.0000
L26	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	85.50 - 89.25	1.0000	1.0000
L26	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	85.50 - 89.25	1.0000	1.0000
L26	15	LDF7-50A(1-5/8)	85.50 - 89.25	1.0000	1.0000
L26	43	4.5" x 1" Flat Plate	85.50 - 87.00	1.0000	1.0000
L26	44	4.5" x 1" Flat Plate	85.50 - 87.00	1.0000	1.0000
L26	45	4.5" x 1" Flat Plate	85.50 - 87.00	1.0000	1.0000
L26	47	6" x 1" Flat Plate	85.50 - 89.25	1.0000	1.0000
L26	48	6" x 1" Flat Plate	85.50 - 89.25	1.0000	1.0000
L26	49	6" x 1" Flat Plate	85.50 - 89.25	1.0000	1.0000
L26	55	4.5" x 1" Flat Plate	85.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			89.25		
L26	56	4.5" x 1" Flat Plate	85.50 - 89.25	1.0000	1.0000
L26	57	4.5" x 1" Flat Plate	85.50 - 89.25	1.0000	1.0000
L27	1	Safety Line 3/8	85.25 - 85.50	1.0000	1.0000
L27	2	Climbing Rungs	85.25 - 85.50	1.0000	1.0000
L27	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	85.25 - 85.50	1.0000	1.0000
L27	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	85.25 - 85.50	1.0000	1.0000
L27	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	85.25 - 85.50	1.0000	1.0000
L27	15	LDF7-50A(1-5/8)	85.25 - 85.50	1.0000	1.0000
L27	43	4.5" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	44	4.5" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	45	4.5" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	47	6" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	48	6" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	49	6" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	55	4.5" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	56	4.5" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L27	57	4.5" x 1" Flat Plate	85.25 - 85.50	1.0000	1.0000
L28	1	Safety Line 3/8	84.00 - 85.25	1.0000	1.0000
L28	2	Climbing Rungs	84.00 - 85.25	1.0000	1.0000
L28	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	84.00 - 85.25	1.0000	1.0000
L28	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	84.00 - 85.25	1.0000	1.0000
L28	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	84.00 - 85.25	1.0000	1.0000
L28	15	LDF7-50A(1-5/8)	84.00 - 85.25	1.0000	1.0000
L28	43	4.5" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	44	4.5" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	45	4.5" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	47	6" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	48	6" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	49	6" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	55	4.5" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	56	4.5" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L28	57	4.5" x 1" Flat Plate	84.00 - 85.25	1.0000	1.0000
L29	1	Safety Line 3/8	83.75 - 84.00	1.0000	1.0000
L29	2	Climbing Rungs	83.75 - 84.00	1.0000	1.0000
L29	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	83.75 - 84.00	1.0000	1.0000
L29	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	83.75 - 84.00	1.0000	1.0000
L29	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	83.75 - 84.00	1.0000	1.0000
L29	15	LDF7-50A(1-5/8)	83.75 - 84.00	1.0000	1.0000
L29	43	4.5" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	44	4.5" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	45	4.5" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	47	6" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	48	6" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	49	6" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	55	4.5" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	56	4.5" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L29	57	4.5" x 1" Flat Plate	83.75 - 84.00	1.0000	1.0000
L30	1	Safety Line 3/8	82.50 - 83.75	1.0000	1.0000
L30	2	Climbing Rungs	82.50 - 83.75	1.0000	1.0000
L30	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	82.50 - 83.75	1.0000	1.0000
L30	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	82.50 - 83.75	1.0000	1.0000
L30	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	82.50 - 83.75	1.0000	1.0000
L30	15	LDF7-50A(1-5/8)	82.50 - 83.75	1.0000	1.0000
L30	43	4.5" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	44	4.5" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	45	4.5" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	47	6" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	48	6" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	49	6" x 1" Flat Plate	82.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			83.75		
L30	55	4.5" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	56	4.5" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L30	57	4.5" x 1" Flat Plate	82.50 - 83.75	1.0000	1.0000
L31	1	Safety Line 3/8	82.25 - 82.50	1.0000	1.0000
L31	2	Climbing Rungs	82.25 - 82.50	1.0000	1.0000
L31	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	82.25 - 82.50	1.0000	1.0000
L31	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	82.25 - 82.50	1.0000	1.0000
L31	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	82.25 - 82.50	1.0000	1.0000
L31	15	LDF7-50A(1-5/8)	82.25 - 82.50	1.0000	1.0000
L31	43	4.5" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	44	4.5" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	45	4.5" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	47	6" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	48	6" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	49	6" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	55	4.5" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	56	4.5" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L31	57	4.5" x 1" Flat Plate	82.25 - 82.50	1.0000	1.0000
L32	1	Safety Line 3/8	80.00 - 82.25	1.0000	1.0000
L32	2	Climbing Rungs	80.00 - 82.25	1.0000	1.0000
L32	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	80.00 - 82.25	1.0000	1.0000
L32	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	80.00 - 82.25	1.0000	1.0000
L32	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	80.00 - 82.25	1.0000	1.0000
L32	15	LDF7-50A(1-5/8)	80.00 - 82.25	1.0000	1.0000
L32	43	4.5" x 1" Flat Plate	80.00 - 82.25	1.0000	1.0000
L32	44	4.5" x 1" Flat Plate	80.00 - 82.25	1.0000	1.0000
L32	45	4.5" x 1" Flat Plate	80.00 - 82.25	1.0000	1.0000
L32	47	6" x 1" Flat Plate	82.00 - 82.25	1.0000	1.0000
L32	48	6" x 1" Flat Plate	82.00 - 82.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	49	6" x 1" Flat Plate	82.00 - 82.25	1.0000	1.0000
L32	55	4.5" x 1" Flat Plate	81.00 - 82.25	1.0000	1.0000
L32	56	4.5" x 1" Flat Plate	81.00 - 82.25	1.0000	1.0000
L32	57	4.5" x 1" Flat Plate	81.00 - 82.25	1.0000	1.0000
L33	1	Safety Line 3/8	75.00 - 80.00	1.0000	1.0000
L33	2	Climbing Rungs	75.00 - 80.00	1.0000	1.0000
L33	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	75.00 - 80.00	1.0000	1.0000
L33	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	75.00 - 80.00	1.0000	1.0000
L33	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	75.00 - 80.00	1.0000	1.0000
L33	15	LDF7-50A(1-5/8)	75.00 - 80.00	1.0000	1.0000
L33	43	4.5" x 1" Flat Plate	75.00 - 80.00	1.0000	1.0000
L33	44	4.5" x 1" Flat Plate	75.00 - 80.00	1.0000	1.0000
L33	45	4.5" x 1" Flat Plate	75.00 - 80.00	1.0000	1.0000
L34	1	Safety Line 3/8	70.00 - 75.00	1.0000	1.0000
L34	2	Climbing Rungs	70.00 - 75.00	1.0000	1.0000
L34	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	70.00 - 75.00	1.0000	1.0000
L34	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	70.00 - 75.00	1.0000	1.0000
L34	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	70.00 - 75.00	1.0000	1.0000
L34	15	LDF7-50A(1-5/8)	70.00 - 75.00	1.0000	1.0000
L34	43	4.5" x 1" Flat Plate	70.00 - 75.00	1.0000	1.0000
L34	44	4.5" x 1" Flat Plate	70.00 - 75.00	1.0000	1.0000
L34	45	4.5" x 1" Flat Plate	70.00 - 75.00	1.0000	1.0000
L35	1	Safety Line 3/8	65.00 - 70.00	1.0000	1.0000
L35	2	Climbing Rungs	65.00 - 70.00	1.0000	1.0000
L35	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	65.00 - 70.00	1.0000	1.0000
L35	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	65.00 - 70.00	1.0000	1.0000
L35	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	65.00 - 70.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	15	LDF7-50A(1-5/8)	65.00 - 70.00	1.0000	1.0000
L35	43	4.5" x 1" Flat Plate	65.00 - 70.00	1.0000	1.0000
L35	44	4.5" x 1" Flat Plate	65.00 - 70.00	1.0000	1.0000
L35	45	4.5" x 1" Flat Plate	65.00 - 70.00	1.0000	1.0000
L36	1	Safety Line 3/8	60.00 - 65.00	1.0000	1.0000
L36	2	Climbing Rungs	60.00 - 65.00	1.0000	1.0000
L36	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	60.00 - 65.00	1.0000	1.0000
L36	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	60.00 - 65.00	1.0000	1.0000
L36	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	60.00 - 65.00	1.0000	1.0000
L36	15	LDF7-50A(1-5/8)	60.00 - 65.00	1.0000	1.0000
L36	43	4.5" x 1" Flat Plate	60.00 - 65.00	1.0000	1.0000
L36	44	4.5" x 1" Flat Plate	60.00 - 65.00	1.0000	1.0000
L36	45	4.5" x 1" Flat Plate	60.00 - 65.00	1.0000	1.0000
L37	1	Safety Line 3/8	58.50 - 60.00	1.0000	1.0000
L37	2	Climbing Rungs	58.50 - 60.00	1.0000	1.0000
L37	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	58.50 - 60.00	1.0000	1.0000
L37	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	58.50 - 60.00	1.0000	1.0000
L37	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	58.50 - 60.00	1.0000	1.0000
L37	15	LDF7-50A(1-5/8)	58.50 - 60.00	1.0000	1.0000
L37	43	4.5" x 1" Flat Plate	58.50 - 60.00	1.0000	1.0000
L37	44	4.5" x 1" Flat Plate	58.50 - 60.00	1.0000	1.0000
L37	45	4.5" x 1" Flat Plate	58.50 - 60.00	1.0000	1.0000
L38	1	Safety Line 3/8	58.25 - 58.50	1.0000	1.0000
L38	2	Climbing Rungs	58.25 - 58.50	1.0000	1.0000
L38	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	58.25 - 58.50	1.0000	1.0000
L38	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	58.25 - 58.50	1.0000	1.0000
L38	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	58.25 - 58.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L38	15	LDF7-50A(1-5/8)	58.25 - 58.50	1.0000	1.0000
L38	43	4.5" x 1" Flat Plate	58.25 - 58.50	1.0000	1.0000
L38	44	4.5" x 1" Flat Plate	58.25 - 58.50	1.0000	1.0000
L38	45	4.5" x 1" Flat Plate	58.25 - 58.50	1.0000	1.0000
L39	1	Safety Line 3/8	53.25 - 58.25	1.0000	1.0000
L39	2	Climbing Rungs	53.25 - 58.25	1.0000	1.0000
L39	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	53.25 - 58.25	1.0000	1.0000
L39	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	53.25 - 58.25	1.0000	1.0000
L39	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	53.25 - 58.25	1.0000	1.0000
L39	15	LDF7-50A(1-5/8)	53.25 - 58.25	1.0000	1.0000
L39	43	4.5" x 1" Flat Plate	57.00 - 58.25	1.0000	1.0000
L39	44	4.5" x 1" Flat Plate	57.00 - 58.25	1.0000	1.0000
L39	45	4.5" x 1" Flat Plate	57.00 - 58.25	1.0000	1.0000
L40	1	Safety Line 3/8	48.25 - 53.25	1.0000	1.0000
L40	2	Climbing Rungs	48.25 - 53.25	1.0000	1.0000
L40	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	48.25 - 53.25	1.0000	1.0000
L40	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	48.25 - 53.25	1.0000	1.0000
L40	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	48.25 - 53.25	1.0000	1.0000
L40	15	LDF7-50A(1-5/8)	48.25 - 53.25	1.0000	1.0000
L40	39	6.5" x 1.25" Flat Plate	48.25 - 51.00	1.0000	1.0000
L40	40	6.5" x 1.25" Flat Plate	48.25 - 51.00	1.0000	1.0000
L40	41	6.5" x 1.25" Flat Plate	48.25 - 51.00	1.0000	1.0000
L41	1	Safety Line 3/8	48.00 - 48.25	1.0000	1.0000
L41	2	Climbing Rungs	48.00 - 48.25	1.0000	1.0000
L41	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	48.00 - 48.25	1.0000	1.0000
L41	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	48.00 - 48.25	1.0000	1.0000
L41	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	48.00 - 48.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L41	15	LDF7-50A(1-5/8)	48.00 - 48.25	1.0000	1.0000
L41	39	6.5" x 1.25" Flat Plate	48.00 - 48.25	1.0000	1.0000
L41	40	6.5" x 1.25" Flat Plate	48.00 - 48.25	1.0000	1.0000
L41	41	6.5" x 1.25" Flat Plate	48.00 - 48.25	1.0000	1.0000
L42	1	Safety Line 3/8	43.00 - 48.00	1.0000	1.0000
L42	2	Climbing Rungs	43.00 - 48.00	1.0000	1.0000
L42	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	43.00 - 48.00	1.0000	1.0000
L42	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	43.00 - 48.00	1.0000	1.0000
L42	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	43.00 - 48.00	1.0000	1.0000
L42	15	LDF7-50A(1-5/8)	43.00 - 48.00	1.0000	1.0000
L42	39	6.5" x 1.25" Flat Plate	43.00 - 48.00	1.0000	1.0000
L42	40	6.5" x 1.25" Flat Plate	43.00 - 48.00	1.0000	1.0000
L42	41	6.5" x 1.25" Flat Plate	43.00 - 48.00	1.0000	1.0000
L43	1	Safety Line 3/8	40.00 - 43.00	1.0000	1.0000
L43	2	Climbing Rungs	40.00 - 43.00	1.0000	1.0000
L43	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	40.00 - 43.00	1.0000	1.0000
L43	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	40.00 - 43.00	1.0000	1.0000
L43	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	40.00 - 43.00	1.0000	1.0000
L43	15	LDF7-50A(1-5/8)	40.00 - 43.00	1.0000	1.0000
L43	39	6.5" x 1.25" Flat Plate	40.00 - 43.00	1.0000	1.0000
L43	40	6.5" x 1.25" Flat Plate	40.00 - 43.00	1.0000	1.0000
L43	41	6.5" x 1.25" Flat Plate	40.00 - 43.00	1.0000	1.0000
L44	1	Safety Line 3/8	35.00 - 40.00	1.0000	1.0000
L44	2	Climbing Rungs	35.00 - 40.00	1.0000	1.0000
L44	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	35.00 - 40.00	1.0000	1.0000
L44	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	35.00 - 40.00	1.0000	1.0000
L44	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	35.00 - 40.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L44	15	LDF7-50A(1-5/8)	35.00 - 40.00	1.0000	1.0000
L44	35	8.5" x 1.25" Flat Plate	35.00 - 35.83	1.0000	1.0000
L44	36	8.5" x 1.25" Flat Plate	35.00 - 35.83	1.0000	1.0000
L44	37	8.5" x 1.25" Flat Plate	35.00 - 35.83	1.0000	1.0000
L44	39	6.5" x 1.25" Flat Plate	35.00 - 40.00	1.0000	1.0000
L44	40	6.5" x 1.25" Flat Plate	35.00 - 40.00	1.0000	1.0000
L44	41	6.5" x 1.25" Flat Plate	35.00 - 40.00	1.0000	1.0000
L45	1	Safety Line 3/8	32.08 - 35.00	1.0000	1.0000
L45	2	Climbing Rungs	32.08 - 35.00	1.0000	1.0000
L45	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	32.08 - 35.00	1.0000	1.0000
L45	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	32.08 - 35.00	1.0000	1.0000
L45	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	32.08 - 35.00	1.0000	1.0000
L45	15	LDF7-50A(1-5/8)	32.08 - 35.00	1.0000	1.0000
L45	35	8.5" x 1.25" Flat Plate	32.08 - 35.00	1.0000	1.0000
L45	36	8.5" x 1.25" Flat Plate	32.08 - 35.00	1.0000	1.0000
L45	37	8.5" x 1.25" Flat Plate	32.08 - 35.00	1.0000	1.0000
L45	39	6.5" x 1.25" Flat Plate	32.08 - 35.00	1.0000	1.0000
L45	40	6.5" x 1.25" Flat Plate	32.08 - 35.00	1.0000	1.0000
L45	41	6.5" x 1.25" Flat Plate	32.08 - 35.00	1.0000	1.0000
L46	1	Safety Line 3/8	31.83 - 32.08	1.0000	1.0000
L46	2	Climbing Rungs	31.83 - 32.08	1.0000	1.0000
L46	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	31.83 - 32.08	1.0000	1.0000
L46	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	31.83 - 32.08	1.0000	1.0000
L46	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	31.83 - 32.08	1.0000	1.0000
L46	15	LDF7-50A(1-5/8)	31.83 - 32.08	1.0000	1.0000
L46	35	8.5" x 1.25" Flat Plate	31.83 - 32.08	1.0000	1.0000
L46	36	8.5" x 1.25" Flat Plate	31.83 - 32.08	1.0000	1.0000
L46	37	8.5" x 1.25" Flat Plate	31.83 - 32.08	1.0000	1.0000
L46	39	6.5" x 1.25" Flat Plate	31.83 - 32.08	1.0000	1.0000
L46	40	6.5" x 1.25" Flat Plate	31.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			32.08		
L46	41	6.5" x 1.25" Flat Plate	31.83 - 32.08	1.0000	1.0000
L47	1	Safety Line 3/8	28.75 - 31.83	1.0000	1.0000
L47	2	Climbing Rungs	28.75 - 31.83	1.0000	1.0000
L47	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	28.75 - 31.83	1.0000	1.0000
L47	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	28.75 - 31.83	1.0000	1.0000
L47	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	28.75 - 31.83	1.0000	1.0000
L47	15	LDF7-50A(1-5/8)	28.75 - 31.83	1.0000	1.0000
L47	35	8.5" x 1.25" Flat Plate	28.75 - 31.83	1.0000	1.0000
L47	36	8.5" x 1.25" Flat Plate	28.75 - 31.83	1.0000	1.0000
L47	37	8.5" x 1.25" Flat Plate	28.75 - 31.83	1.0000	1.0000
L47	39	6.5" x 1.25" Flat Plate	28.75 - 31.83	1.0000	1.0000
L47	40	6.5" x 1.25" Flat Plate	28.75 - 31.83	1.0000	1.0000
L47	41	6.5" x 1.25" Flat Plate	28.75 - 31.83	1.0000	1.0000
L48	1	Safety Line 3/8	28.50 - 28.75	1.0000	1.0000
L48	2	Climbing Rungs	28.50 - 28.75	1.0000	1.0000
L48	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	28.50 - 28.75	1.0000	1.0000
L48	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	28.50 - 28.75	1.0000	1.0000
L48	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	28.50 - 28.75	1.0000	1.0000
L48	15	LDF7-50A(1-5/8)	28.50 - 28.75	1.0000	1.0000
L48	35	8.5" x 1.25" Flat Plate	28.50 - 28.75	1.0000	1.0000
L48	36	8.5" x 1.25" Flat Plate	28.50 - 28.75	1.0000	1.0000
L48	37	8.5" x 1.25" Flat Plate	28.50 - 28.75	1.0000	1.0000
L48	39	6.5" x 1.25" Flat Plate	28.50 - 28.75	1.0000	1.0000
L48	40	6.5" x 1.25" Flat Plate	28.50 - 28.75	1.0000	1.0000
L48	41	6.5" x 1.25" Flat Plate	28.50 - 28.75	1.0000	1.0000
L49	1	Safety Line 3/8	23.50 - 28.50	1.0000	1.0000
L49	2	Climbing Rungs	23.50 - 28.50	1.0000	1.0000
L49	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	23.50 - 28.50	1.0000	1.0000
L49	12	(6) LDF7-50A(1-5/8) + (3)	23.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	28.50		
L49	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	23.50 - 28.50	1.0000	1.0000
L49	15	LDF7-50A(1-5/8)	23.50 - 28.50	1.0000	1.0000
L49	35	8.5" x 1.25" Flat Plate	23.50 - 28.50	1.0000	1.0000
L49	36	8.5" x 1.25" Flat Plate	23.50 - 28.50	1.0000	1.0000
L49	37	8.5" x 1.25" Flat Plate	23.50 - 28.50	1.0000	1.0000
L49	39	6.5" x 1.25" Flat Plate	26.00 - 28.50	1.0000	1.0000
L49	40	6.5" x 1.25" Flat Plate	26.00 - 28.50	1.0000	1.0000
L49	41	6.5" x 1.25" Flat Plate	26.00 - 28.50	1.0000	1.0000
L50	1	Safety Line 3/8	18.50 - 23.50	1.0000	1.0000
L50	2	Climbing Rungs	18.50 - 23.50	1.0000	1.0000
L50	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	18.50 - 23.50	1.0000	1.0000
L50	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	18.50 - 23.50	1.0000	1.0000
L50	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	18.50 - 23.50	1.0000	1.0000
L50	15	LDF7-50A(1-5/8)	18.50 - 23.50	1.0000	1.0000
L50	35	8.5" x 1.25" Flat Plate	18.50 - 23.50	1.0000	1.0000
L50	36	8.5" x 1.25" Flat Plate	18.50 - 23.50	1.0000	1.0000
L50	37	8.5" x 1.25" Flat Plate	18.50 - 23.50	1.0000	1.0000
L51	1	Safety Line 3/8	13.50 - 18.50	1.0000	1.0000
L51	2	Climbing Rungs	13.50 - 18.50	1.0000	1.0000
L51	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	13.50 - 18.50	1.0000	1.0000
L51	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	13.50 - 18.50	1.0000	1.0000
L51	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	13.50 - 18.50	1.0000	1.0000
L51	15	LDF7-50A(1-5/8)	13.50 - 18.50	1.0000	1.0000
L51	35	8.5" x 1.25" Flat Plate	13.50 - 18.50	1.0000	1.0000
L51	36	8.5" x 1.25" Flat Plate	13.50 - 18.50	1.0000	1.0000
L51	37	8.5" x 1.25" Flat Plate	13.50 - 18.50	1.0000	1.0000
L52	1	Safety Line 3/8	10.00 - 13.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L52	2	Climbing Rungs	10.00 - 13.50	1.0000	1.0000
L52	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	8.50 - 13.50	1.0000	1.0000
L52	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	8.50 - 13.50	1.0000	1.0000
L52	14	(6) WR-VG86ST-BRD(3/4) + (2) FB-L98B-034-XXX(3/8)	11.00 - 13.50	1.0000	1.0000
L52	15	LDF7-50A(1-5/8)	11.00 - 13.50	1.0000	1.0000
L52	35	8.5" x 1.25" Flat Plate	8.50 - 13.50	1.0000	1.0000
L52	36	8.5" x 1.25" Flat Plate	8.50 - 13.50	1.0000	1.0000
L52	37	8.5" x 1.25" Flat Plate	8.50 - 13.50	1.0000	1.0000
L53	4	(1) HB114-21U3M12-XXXF(1-1/4) + (2) TYPE I(1-1/4)	6.00 - 8.50	1.0000	1.0000
L53	12	(6) LDF7-50A(1-5/8) + (3) HCS 6X12 4AWG(1-5/8) + (1) MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	8.00 - 8.50	1.0000	1.0000
L53	35	8.5" x 1.25" Flat Plate	3.50 - 8.50	1.0000	1.0000
L53	36	8.5" x 1.25" Flat Plate	3.50 - 8.50	1.0000	1.0000
L53	37	8.5" x 1.25" Flat Plate	3.50 - 8.50	1.0000	1.0000
L54	35	8.5" x 1.25" Flat Plate	0.83 - 3.50	1.0000	1.0000
L54	36	8.5" x 1.25" Flat Plate	0.83 - 3.50	1.0000	1.0000
L54	37	8.5" x 1.25" Flat Plate	0.83 - 3.50	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
L16	51	6" x 1" Flat Plate	112.67 - 114.67	Auto	1.0000
L16	52	6" x 1" Flat Plate	112.67 - 114.67	Auto	1.0000
L16	53	6" x 1" Flat Plate	112.67 - 114.67	Auto	1.0000
L17	51	6" x 1" Flat Plate	112.42 - 112.67	Auto	1.0000
L17	52	6" x 1" Flat Plate	112.42 - 112.67	Auto	1.0000
L17	53	6" x 1" Flat Plate	112.42 - 112.67	Auto	1.0000
L18	51	6" x 1" Flat Plate	107.42 - 112.42	Auto	1.0000
L18	52	6" x 1" Flat Plate	107.42 - 112.42	Auto	1.0000
L18	53	6" x 1" Flat Plate	107.42 - 112.42	Auto	1.0000
L19	47	6" x 1" Flat Plate	103.33 - 105.33	Auto	1.0000
L19	48	6" x 1" Flat Plate	103.33 - 105.33	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L19	49	6" x 1" Flat Plate	103.33 - 105.33	Auto	1.0000
L19	51	6" x 1" Flat Plate	103.33 - 107.42	Auto	1.0000
L19	52	6" x 1" Flat Plate	103.33 - 107.42	Auto	1.0000
L19	53	6" x 1" Flat Plate	103.33 - 107.42	Auto	1.0000
L20	47	6" x 1" Flat Plate	103.08 - 103.33	Auto	1.0000
L20	48	6" x 1" Flat Plate	103.08 - 103.33	Auto	1.0000
L20	49	6" x 1" Flat Plate	103.08 - 103.33	Auto	1.0000
L20	51	6" x 1" Flat Plate	103.08 - 103.33	Auto	1.0000
L20	52	6" x 1" Flat Plate	103.08 - 103.33	Auto	1.0000
L20	53	6" x 1" Flat Plate	103.08 - 103.33	Auto	1.0000
L21	47	6" x 1" Flat Plate	100.00 - 103.08	Auto	1.0000
L21	48	6" x 1" Flat Plate	100.00 - 103.08	Auto	1.0000
L21	49	6" x 1" Flat Plate	100.00 - 103.08	Auto	1.0000
L21	51	6" x 1" Flat Plate	101.33 - 103.08	Auto	1.0000
L21	52	6" x 1" Flat Plate	101.33 - 103.08	Auto	1.0000
L21	53	6" x 1" Flat Plate	101.33 - 103.08	Auto	1.0000
L22	47	6" x 1" Flat Plate	95.00 - 100.00	Auto	1.0000
L22	48	6" x 1" Flat Plate	95.00 - 100.00	Auto	1.0000
L22	49	6" x 1" Flat Plate	95.00 - 100.00	Auto	1.0000
L23	47	6" x 1" Flat Plate	90.00 - 95.00	Auto	1.0000
L23	48	6" x 1" Flat Plate	90.00 - 95.00	Auto	1.0000
L23	49	6" x 1" Flat Plate	90.00 - 95.00	Auto	1.0000
L23	55	4.5" x 1" Flat Plate	90.00 - 91.00	Auto	1.0000
L23	56	4.5" x 1" Flat Plate	90.00 - 91.00	Auto	1.0000
L23	57	4.5" x 1" Flat Plate	90.00 - 91.00	Auto	1.0000
L24	47	6" x 1" Flat Plate	89.50 - 90.00	Auto	1.0000
L24	48	6" x 1" Flat Plate	89.50 - 90.00	Auto	1.0000
L24	49	6" x 1" Flat Plate	89.50 - 90.00	Auto	1.0000
L24	55	4.5" x 1" Flat Plate	89.50 - 90.00	Auto	1.0000
L24	56	4.5" x 1" Flat Plate	89.50 - 90.00	Auto	1.0000
L24	57	4.5" x 1" Flat Plate	89.50 - 90.00	Auto	1.0000
L25	47	6" x 1" Flat Plate	89.25 - 89.50	Auto	1.0000
L25	48	6" x 1" Flat Plate	89.25 - 89.50	Auto	1.0000
L25	49	6" x 1" Flat Plate	89.25 - 89.50	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L25	55	4.5" x 1" Flat Plate	89.25 - 89.50	Auto	1.0000
L25	56	4.5" x 1" Flat Plate	89.25 - 89.50	Auto	1.0000
L25	57	4.5" x 1" Flat Plate	89.25 - 89.50	Auto	1.0000
L26	43	4.5" x 1" Flat Plate	85.50 - 87.00	Auto	1.0000
L26	44	4.5" x 1" Flat Plate	85.50 - 87.00	Auto	1.0000
L26	45	4.5" x 1" Flat Plate	85.50 - 87.00	Auto	1.0000
L26	47	6" x 1" Flat Plate	85.50 - 89.25	Auto	1.0000
L26	48	6" x 1" Flat Plate	85.50 - 89.25	Auto	1.0000
L26	49	6" x 1" Flat Plate	85.50 - 89.25	Auto	1.0000
L26	55	4.5" x 1" Flat Plate	85.50 - 89.25	Auto	1.0000
L26	56	4.5" x 1" Flat Plate	85.50 - 89.25	Auto	1.0000
L26	57	4.5" x 1" Flat Plate	85.50 - 89.25	Auto	1.0000
L27	43	4.5" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	44	4.5" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	45	4.5" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	47	6" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	48	6" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	49	6" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	55	4.5" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	56	4.5" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L27	57	4.5" x 1" Flat Plate	85.25 - 85.50	Auto	1.0000
L28	43	4.5" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	44	4.5" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	45	4.5" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	47	6" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	48	6" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	49	6" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	55	4.5" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	56	4.5" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L28	57	4.5" x 1" Flat Plate	84.00 - 85.25	Auto	1.0000
L29	43	4.5" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	44	4.5" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	45	4.5" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	47	6" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L29	48	6" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	49	6" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	55	4.5" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	56	4.5" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L29	57	4.5" x 1" Flat Plate	83.75 - 84.00	Auto	1.0000
L30	43	4.5" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	44	4.5" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	45	4.5" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	47	6" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	48	6" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	49	6" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	55	4.5" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	56	4.5" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L30	57	4.5" x 1" Flat Plate	82.50 - 83.75	Auto	1.0000
L31	43	4.5" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	44	4.5" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	45	4.5" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	47	6" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	48	6" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	49	6" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	55	4.5" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	56	4.5" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L31	57	4.5" x 1" Flat Plate	82.25 - 82.50	Auto	1.0000
L32	43	4.5" x 1" Flat Plate	80.00 - 82.25	Auto	1.0000
L32	44	4.5" x 1" Flat Plate	80.00 - 82.25	Auto	1.0000
L32	45	4.5" x 1" Flat Plate	80.00 - 82.25	Auto	1.0000
L32	47	6" x 1" Flat Plate	82.00 - 82.25	Auto	1.0000
L32	48	6" x 1" Flat Plate	82.00 - 82.25	Auto	1.0000
L32	49	6" x 1" Flat Plate	82.00 - 82.25	Auto	1.0000
L32	55	4.5" x 1" Flat Plate	81.00 - 82.25	Auto	1.0000
L32	56	4.5" x 1" Flat Plate	81.00 - 82.25	Auto	1.0000
L32	57	4.5" x 1" Flat Plate	81.00 - 82.25	Auto	1.0000
L33	43	4.5" x 1" Flat Plate	75.00 - 80.00	Auto	1.0000
L33	44	4.5" x 1" Flat Plate	75.00 - 80.00	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L33	45	4.5" x 1" Flat Plate	75.00 - 80.00	Auto	1.0000
L34	43	4.5" x 1" Flat Plate	70.00 - 75.00	Auto	1.0000
L34	44	4.5" x 1" Flat Plate	70.00 - 75.00	Auto	1.0000
L34	45	4.5" x 1" Flat Plate	70.00 - 75.00	Auto	1.0000
L35	43	4.5" x 1" Flat Plate	65.00 - 70.00	Auto	1.0000
L35	44	4.5" x 1" Flat Plate	65.00 - 70.00	Auto	1.0000
L35	45	4.5" x 1" Flat Plate	65.00 - 70.00	Auto	1.0000
L36	43	4.5" x 1" Flat Plate	60.00 - 65.00	Auto	1.0000
L36	44	4.5" x 1" Flat Plate	60.00 - 65.00	Auto	1.0000
L36	45	4.5" x 1" Flat Plate	60.00 - 65.00	Auto	1.0000
L37	43	4.5" x 1" Flat Plate	58.50 - 60.00	Auto	1.0000
L37	44	4.5" x 1" Flat Plate	58.50 - 60.00	Auto	1.0000
L37	45	4.5" x 1" Flat Plate	58.50 - 60.00	Auto	1.0000
L38	43	4.5" x 1" Flat Plate	58.25 - 58.50	Auto	1.0000
L38	44	4.5" x 1" Flat Plate	58.25 - 58.50	Auto	1.0000
L38	45	4.5" x 1" Flat Plate	58.25 - 58.50	Auto	1.0000
L39	43	4.5" x 1" Flat Plate	57.00 - 58.25	Auto	1.0000
L39	44	4.5" x 1" Flat Plate	57.00 - 58.25	Auto	1.0000
L39	45	4.5" x 1" Flat Plate	57.00 - 58.25	Auto	1.0000
L40	39	6.5" x 1.25" Flat Plate	48.25 - 51.00	Auto	1.0000
L40	40	6.5" x 1.25" Flat Plate	48.25 - 51.00	Auto	1.0000
L40	41	6.5" x 1.25" Flat Plate	48.25 - 51.00	Auto	1.0000
L41	39	6.5" x 1.25" Flat Plate	48.00 - 48.25	Auto	1.0000
L41	40	6.5" x 1.25" Flat Plate	48.00 - 48.25	Auto	1.0000
L41	41	6.5" x 1.25" Flat Plate	48.00 - 48.25	Auto	1.0000
L42	39	6.5" x 1.25" Flat Plate	43.00 - 48.00	Auto	1.0000
L42	40	6.5" x 1.25" Flat Plate	43.00 - 48.00	Auto	1.0000
L42	41	6.5" x 1.25" Flat Plate	43.00 - 48.00	Auto	1.0000
L43	39	6.5" x 1.25" Flat Plate	40.00 - 43.00	Auto	1.0000
L43	40	6.5" x 1.25" Flat Plate	40.00 - 43.00	Auto	1.0000
L43	41	6.5" x 1.25" Flat Plate	40.00 - 43.00	Auto	1.0000
L44	35	8.5" x 1.25" Flat Plate	35.00 - 35.83	Auto	1.0000
L44	36	8.5" x 1.25" Flat Plate	35.00 - 35.83	Auto	1.0000
L44	37	8.5" x 1.25" Flat Plate	35.00 - 35.83	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L44	39	6.5" x 1.25" Flat Plate	35.00 - 40.00	Auto	1.0000
L44	40	6.5" x 1.25" Flat Plate	35.00 - 40.00	Auto	1.0000
L44	41	6.5" x 1.25" Flat Plate	35.00 - 40.00	Auto	1.0000
L45	35	8.5" x 1.25" Flat Plate	32.08 - 35.00	Auto	1.0000
L45	36	8.5" x 1.25" Flat Plate	32.08 - 35.00	Auto	1.0000
L45	37	8.5" x 1.25" Flat Plate	32.08 - 35.00	Auto	1.0000
L45	39	6.5" x 1.25" Flat Plate	32.08 - 35.00	Auto	1.0000
L45	40	6.5" x 1.25" Flat Plate	32.08 - 35.00	Auto	1.0000
L45	41	6.5" x 1.25" Flat Plate	32.08 - 35.00	Auto	1.0000
L46	35	8.5" x 1.25" Flat Plate	31.83 - 32.08	Auto	1.0000
L46	36	8.5" x 1.25" Flat Plate	31.83 - 32.08	Auto	1.0000
L46	37	8.5" x 1.25" Flat Plate	31.83 - 32.08	Auto	1.0000
L46	39	6.5" x 1.25" Flat Plate	31.83 - 32.08	Auto	1.0000
L46	40	6.5" x 1.25" Flat Plate	31.83 - 32.08	Auto	1.0000
L46	41	6.5" x 1.25" Flat Plate	31.83 - 32.08	Auto	1.0000
L47	35	8.5" x 1.25" Flat Plate	28.75 - 31.83	Auto	1.0000
L47	36	8.5" x 1.25" Flat Plate	28.75 - 31.83	Auto	1.0000
L47	37	8.5" x 1.25" Flat Plate	28.75 - 31.83	Auto	1.0000
L47	39	6.5" x 1.25" Flat Plate	28.75 - 31.83	Auto	1.0000
L47	40	6.5" x 1.25" Flat Plate	28.75 - 31.83	Auto	1.0000
L47	41	6.5" x 1.25" Flat Plate	28.75 - 31.83	Auto	1.0000
L48	35	8.5" x 1.25" Flat Plate	28.50 - 28.75	Auto	1.0000
L48	36	8.5" x 1.25" Flat Plate	28.50 - 28.75	Auto	1.0000
L48	37	8.5" x 1.25" Flat Plate	28.50 - 28.75	Auto	1.0000
L48	39	6.5" x 1.25" Flat Plate	28.50 - 28.75	Auto	1.0000
L48	40	6.5" x 1.25" Flat Plate	28.50 - 28.75	Auto	1.0000
L48	41	6.5" x 1.25" Flat Plate	28.50 - 28.75	Auto	1.0000
L49	35	8.5" x 1.25" Flat Plate	23.50 - 28.50	Auto	1.0000
L49	36	8.5" x 1.25" Flat Plate	23.50 - 28.50	Auto	1.0000
L49	37	8.5" x 1.25" Flat Plate	23.50 - 28.50	Auto	1.0000
L49	39	6.5" x 1.25" Flat Plate	26.00 - 28.50	Auto	1.0000
L49	40	6.5" x 1.25" Flat Plate	26.00 - 28.50	Auto	1.0000
L49	41	6.5" x 1.25" Flat Plate	26.00 - 28.50	Auto	1.0000
L50	35	8.5" x 1.25" Flat Plate	18.50 - 23.50	Auto	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L50	36	8.5" x 1.25" Flat Plate	18.50 - 23.50	Auto	1.0000
L50	37	8.5" x 1.25" Flat Plate	18.50 - 23.50	Auto	1.0000
L51	35	8.5" x 1.25" Flat Plate	13.50 - 18.50	Auto	1.0000
L51	36	8.5" x 1.25" Flat Plate	13.50 - 18.50	Auto	1.0000
L51	37	8.5" x 1.25" Flat Plate	13.50 - 18.50	Auto	1.0000
L52	35	8.5" x 1.25" Flat Plate	8.50 - 13.50	Auto	1.0000
L52	36	8.5" x 1.25" Flat Plate	8.50 - 13.50	Auto	1.0000
L52	37	8.5" x 1.25" Flat Plate	8.50 - 13.50	Auto	1.0000
L53	35	8.5" x 1.25" Flat Plate	3.50 - 8.50	Auto	1.0000
L53	36	8.5" x 1.25" Flat Plate	3.50 - 8.50	Auto	1.0000
L53	37	8.5" x 1.25" Flat Plate	3.50 - 8.50	Auto	1.0000
L54	35	8.5" x 1.25" Flat Plate	0.83 - 3.50	Auto	1.0000
L54	36	8.5" x 1.25" Flat Plate	0.83 - 3.50	Auto	1.0000
L54	37	8.5" x 1.25" Flat Plate	0.83 - 3.50	Auto	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment ° °	Placement ft ft		C_AA_A Front ft^2 ft^2	C_AA_A Side ft^2 ft^2	Weight K K
188									
Platform Mount [LP 403-1]	C	None		0.0000	188.00	No Ice	18.94	18.94	1.50
						1/2" Ice	23.31	23.31	1.90
						1" Ice	27.74	27.74	2.37
						2" Ice	36.77	36.77	3.53
6'x2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Face	4.00 -7.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Face	4.00 -7.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVTM14-ALU-I20 w/	C	From Face	4.00	0.0000	188.00	No Ice	4.09	2.86	0.08

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
Mount Pipe			-7.00 2.00			1/2" Ice 1" Ice 2" Ice	4.48 4.88 5.71	3.23 3.61 4.40	0.13 0.19 0.33
APXVSPP18-C-A20 w/ Mount Pipe	A	From Face	4.00 7.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
APXVSPP18-C-A20 w/ Mount Pipe	B	From Face	4.00 7.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
APXVSPP18-C-A20 w/ Mount Pipe	C	From Face	4.00 7.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	0.10 0.16 0.23 0.42
PD201-7	B	From Face	4.00 0.00 5.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.02 1.81 2.62 3.76	1.02 1.81 2.62 3.76	0.00 0.01 0.03 0.07
TD-RRH8x20-25	A	From Face	4.00 0.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
TD-RRH8x20-25	B	From Face	4.00 0.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
TD-RRH8x20-25	C	From Face	4.00 0.00 2.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
185 Side Arm Mount [SO 102-3]	C	None		0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.60 4.18 4.75 5.90	3.60 4.18 4.75 5.90	0.07 0.11 0.14 0.20
4'x2" Mount Pipe	A	From Face	0.50 0.00 0.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
4'x2" Mount Pipe	B	From Face	0.50 0.00 0.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
4'x2" Mount Pipe	C	From Face	0.50 0.00 0.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
800MHZ RRH	A	From Face	1.00 0.00 3.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800MHZ RRH	B	From Face	1.00 0.00 3.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Face	1.00 0.00 3.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
1900MHz RRH	A	From Face	1.00 0.00 3.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.49 2.70 2.91 3.35	3.26 3.48 3.72 4.21	0.04 0.08 0.11 0.19
1900MHz RRH	B	From Face	1.00 0.00 3.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.49 2.70 2.91 3.35	3.26 3.48 3.72 4.21	0.04 0.08 0.11 0.19
1900MHz RRH	C	From Face	1.00 0.00 3.00	0.0000	185.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.49 2.70 2.91 3.35	3.26 3.48 3.72 4.21	0.04 0.08 0.11 0.19
184									
Side Arm Mount [SO 701-1]	C	From Face	1.50 0.00 0.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
4'x2" Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	184.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.11 1.36 1.90	0.87 1.11 1.36 1.90	0.01 0.02 0.03 0.06
179									
Platform Mount [LP 403-1]	C	None		0.0000	179.00	No Ice 1/2" Ice 1" Ice 2" Ice	18.94 23.31 27.74 36.77	18.94 23.31 27.74 36.77	1.50 1.90 2.37 3.53
Side Arm Mount [SO 301-1]	A	From Leg	4.00 7.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.46 0.65 0.87 1.41	0.91 1.30 1.71 2.62	0.02 0.03 0.05 0.09
Side Arm Mount [SO 301-1]	B	From Leg	4.00 7.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.46 0.65 0.87 1.41	0.91 1.30 1.71 2.62	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	A	From Leg	4.00 -7.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	B	From Leg	4.00 -7.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	C	From Leg	4.00 -7.00 0.00	0.0000	179.00	No Ice 1/2" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	3.06	3.06	0.09
						2" Ice			
6'x2" Mount Pipe	A	From Leg	4.00 -2.33 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	B	From Leg	4.00 -2.33 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	C	From Leg	4.00 -2.33 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	A	From Leg	4.00 2.33 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	B	From Leg	4.00 2.33 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	C	From Leg	4.00 2.33 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	A	From Leg	4.00 7.00 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	B	From Leg	4.00 7.00 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
6'x2" Mount Pipe	C	From Leg	4.00 7.00 0.00	0.0000	179.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
458-2D	A	From Leg	5.00 7.00 6.00	0.0000	179.00	No Ice	3.67	3.67	0.02
						1/2" Ice	5.03	5.03	0.05
						1" Ice	6.41	6.41	0.08
						2" Ice	9.10	9.10	0.18
458-2D	B	From Leg	5.00 7.00 6.00	0.0000	179.00	No Ice	3.67	3.67	0.02
						1/2" Ice	5.03	5.03	0.05
						1" Ice	6.41	6.41	0.08
						2" Ice	9.10	9.10	0.18
170									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	170.00	No Ice	5.87	3.27	0.13
						1/2" Ice	6.23	3.73	0.18
						1" Ice	6.61	4.20	0.23
						2" Ice	7.38	5.20	0.36
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00	0.0000	170.00	No Ice	5.87	3.27	0.13
						1/2"	6.23	3.73	0.18

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
			0.00			Ice	6.61	4.20	0.23
						1" Ice	7.38	5.20	0.36
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00	0.0000	170.00	No Ice	5.87	3.27	0.13
			0.00			1/2"	6.23	3.73	0.18
			0.00			Ice	6.61	4.20	0.23
						1" Ice	7.38	5.20	0.36
						2" Ice			
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00	0.0000	170.00	No Ice	20.48	10.87	0.18
			0.00			1/2"	21.23	12.39	0.32
			0.00			Ice	21.99	13.94	0.46
						1" Ice	23.44	16.29	0.79
						2" Ice			
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00	0.0000	170.00	No Ice	20.48	10.87	0.18
			0.00			1/2"	21.23	12.39	0.32
			0.00			Ice	21.99	13.94	0.46
						1" Ice	23.44	16.29	0.79
						2" Ice			
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00	0.0000	170.00	No Ice	20.48	10.87	0.18
			0.00			1/2"	21.23	12.39	0.32
			0.00			Ice	21.99	13.94	0.46
						1" Ice	23.44	16.29	0.79
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00	0.0000	170.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			0.00			Ice	7.65	7.58	0.28
						1" Ice	8.57	9.06	0.44
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00	0.0000	170.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			0.00			Ice	7.65	7.58	0.28
						1" Ice	8.57	9.06	0.44
						2" Ice			
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00	0.0000	170.00	No Ice	6.75	6.07	0.15
			0.00			1/2"	7.20	6.87	0.21
			0.00			Ice	7.65	7.58	0.28
						1" Ice	8.57	9.06	0.44
						2" Ice			
KRY 112 144/1	A	From Leg	4.00	0.0000	170.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			0.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
KRY 112 144/1	B	From Leg	4.00	0.0000	170.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			0.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
KRY 112 144/1	C	From Leg	4.00	0.0000	170.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			0.00			Ice	0.51	0.30	0.02
						1" Ice	0.70	0.46	0.03
						2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00	0.0000	170.00	No Ice	1.97	1.59	0.07
			0.00			1/2"	2.15	1.75	0.09
			0.00			Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
						2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00	0.0000	170.00	No Ice	1.97	1.59	0.07
			0.00			1/2"	2.15	1.75	0.09
			0.00			Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
						2" Ice			
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00	0.0000	170.00	No Ice	1.97	1.59	0.07
			0.00			1/2"	2.15	1.75	0.09

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
			0.00			Ice	2.33	1.92	0.12
						1" Ice	2.72	2.28	0.17
						2" Ice			
SDX1926Q-43	A	From Leg	4.00	0.0000	170.00	No Ice	0.24	0.10	0.01
			0.00			1/2"	0.31	0.14	0.01
			0.00			Ice	0.38	0.19	0.01
						1" Ice	0.55	0.32	0.02
						2" Ice			
SDX1926Q-43	B	From Leg	4.00	0.0000	170.00	No Ice	0.24	0.10	0.01
			0.00			1/2"	0.31	0.14	0.01
			0.00			Ice	0.38	0.19	0.01
						1" Ice	0.55	0.32	0.02
						2" Ice			
SDX1926Q-43	C	From Leg	4.00	0.0000	170.00	No Ice	0.24	0.10	0.01
			0.00			1/2"	0.31	0.14	0.01
			0.00			Ice	0.38	0.19	0.01
						1" Ice	0.55	0.32	0.02
						2" Ice			
RRUS 4415 B25	A	From Leg	4.00	0.0000	170.00	No Ice	1.64	0.68	0.04
			0.00			1/2"	1.80	0.79	0.06
			0.00			Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
						2" Ice			
RRUS 4415 B25	B	From Leg	4.00	0.0000	170.00	No Ice	1.64	0.68	0.04
			0.00			1/2"	1.80	0.79	0.06
			0.00			Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
						2" Ice			
RRUS 4415 B25	C	From Leg	4.00	0.0000	170.00	No Ice	1.64	0.68	0.04
			0.00			1/2"	1.80	0.79	0.06
			0.00			Ice	1.97	0.91	0.07
						1" Ice	2.33	1.18	0.11
						2" Ice			
town ** 170ft									
PD201-7	C	From Leg	4.00	0.0000	170.00	No Ice	1.02	1.02	0.00
			0.00			1/2"	1.81	1.81	0.01
			4.00			Ice	2.62	2.62	0.03
						1" Ice	3.76	3.76	0.07
						2" Ice			
RRUS 11 B12	B	From Leg	4.00	0.0000	170.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			0.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
Platform Mount [LP 405-1_HR-1]	C	None		0.0000	170.00	No Ice	25.33	25.33	2.06
						1/2"	33.79	33.79	2.63
						Ice	42.16	42.16	3.36
						1" Ice	58.77	58.77	5.25
						2" Ice			
160									
Platform Mount [LP 403-1]	C	None		0.0000	162.00	No Ice	18.94	18.94	1.50
						1/2"	23.31	23.31	1.90
						Ice	27.74	27.74	2.37
						1" Ice	36.77	36.77	3.53
						2" Ice			
HRK-14 Handrail Kit [NA 510-1]	C	None		0.0000	162.00	No Ice	6.36	6.36	0.26
						1/2"	8.52	8.52	0.34
						Ice	10.62	10.62	0.46
						1" Ice	14.64	14.64	0.77
						2" Ice			
PRK-SFS-L Reinforcement Kit	A	From Leg	0.00	0.0000	162.00	No Ice	1.97	0.06	0.08
			0.00			1/2"	2.54	0.10	0.96
			0.00			Ice	3.13	0.14	0.13
						1" Ice	4.35	0.26	0.22
						2" Ice			

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
PRK-SFS-L Reinforcement Kit	B	From Leg	0.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.54 3.13 4.35	0.06 0.10 0.14 0.26	0.08 0.96 0.13 0.22
PRK-SFS-L Reinforcement Kit	C	From Leg	0.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.54 3.13 4.35	0.06 0.10 0.14 0.26	0.08 0.96 0.13 0.22
(2) L1-1/2"x2-1/2"x1/4"x1'-2"	A	From Leg	0.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(2) L1-1/2"x2-1/2"x1/4"x1'-2"	B	From Leg	0.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(2) L1-1/2"x2-1/2"x1/4"x1'-2"	C	From Leg	0.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00 -7.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.96 12.70 13.46 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00 -7.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.96 12.70 13.46 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.00 -7.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.96 12.70 13.46 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
80010965 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	0.14 0.23 0.33 0.57
80010965 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	0.14 0.23 0.33 0.57
80010965 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	0.14 0.23 0.33 0.57
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 7.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	0.11 0.18 0.26 0.45
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 7.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	0.11 0.18 0.26 0.45

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
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 7.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	0.11 0.18 0.26 0.45
RRUS 32 B30	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.69 2.91 3.14 3.61	1.57 1.76 1.95 2.35	0.06 0.08 0.10 0.16
RRUS 32 B30	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.69 2.91 3.14 3.61	1.57 1.76 1.95 2.35	0.06 0.08 0.10 0.16
RRUS 32 B30	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.69 2.91 3.14 3.61	1.57 1.76 1.95 2.35	0.06 0.08 0.10 0.16
RRUS 32 B2	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 4478 B14	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4478 B14	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
RRUS 4478 B14	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.84 2.01 2.19 2.57	1.06 1.20 1.34 1.66	0.06 0.08 0.09 0.14
DC6-48-60-18-8C	A	From Leg	1.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 1.79 2.00 2.45	1.14 1.79 2.00 2.45	0.03 0.05 0.07 0.13
DC6-48-60-18-8C	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.14 1.79 2.00 2.45	1.14 1.79 2.00 2.45	0.03 0.05 0.07 0.13
DC6-48-60-18-8F	C	From Leg	1.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.02 0.04 0.07 0.13

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
RRUS 4449 B5/B12	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 32 B66A	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.09 3.32 3.81	1.78 1.97 2.17 2.59	0.06 0.08 0.10 0.16
RRUS 32 B66A	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.09 3.32 3.81	1.78 1.97 2.17 2.59	0.06 0.08 0.10 0.16
RRUS 32 B66A	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.09 3.32 3.81	1.78 1.97 2.17 2.59	0.06 0.08 0.10 0.16
(2) DBCT108F1V92-1	A	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.32 0.40 0.49 0.69	0.64 0.74 0.85 1.09	0.03 0.03 0.04 0.06
(2) DBCT108F1V92-1	B	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.32 0.40 0.49 0.69	0.64 0.74 0.85 1.09	0.03 0.03 0.04 0.06
(2) DBCT108F1V92-1	C	From Leg	4.00 0.00 1.00	0.0000	162.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.32 0.40 0.49 0.69	0.64 0.74 0.85 1.09	0.03 0.03 0.04 0.06
150									
Platform Mount [LP 403-1]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	18.94 23.31 27.74 36.77	18.94 23.31 27.74 36.77	1.50 1.90 2.37 3.53
QS6656-5D w/ Mount Pipe	A	From Leg	4.00 -7.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	0.11 0.18 0.26 0.46
QS6656-5D w/ Mount Pipe	A	From Leg	4.00 2.33 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	0.11 0.18 0.26 0.46
QS6656-5D w/ Mount Pipe	B	From Leg	4.00 -7.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	0.11 0.18 0.26 0.46

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
QS6656-5D w/ Mount Pipe	B	From Leg	4.00 -2.33 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	0.11 0.18 0.26 0.46
QS6656-5D w/ Mount Pipe	C	From Leg	4.00 -7.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	0.11 0.18 0.26 0.46
QS6656-5D w/ Mount Pipe	C	From Leg	4.00 -2.33 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	0.11 0.18 0.26 0.46
DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 -2.33 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 7.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 2.33 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 7.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.10 6.80 7.51 8.98	6.81 7.52 8.24 9.73	0.06 0.12 0.19 0.37
LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 2.33 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 7.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
DB-C1-12C-24AB-0Z	A	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.06 4.32 4.58 5.14	3.10 3.34 3.58 4.09	0.03 0.07 0.11 0.20
RFV01U-D2A	A	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	B	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	C	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice			
RFV01U-D1A	A	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	B	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	C	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
125									
Side Arm Mount [SO 901-1]	A	From Face	1.50 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
Side Arm Mount [SO 901-1]	B	From Leg	1.50 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
PD128-1	A	From Face	3.00 0.00 5.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.80 2.60 4.20	1.00 1.80 2.60 4.20	0.01 0.02 0.02 0.03
PD201-1	B	From Leg	3.00 0.00 5.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.63 1.54 2.47 4.27	0.63 1.54 2.47 4.27	0.00 0.01 0.02 0.07
110									
Side Arm Mount [SO 901-1]	A	From Face	1.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
Side Arm Mount [SO 901-1]	B	From Leg	1.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
PD128-1	A	From Face	3.00 0.00 5.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.80 2.60 4.20	1.00 1.80 2.60 4.20	0.01 0.02 0.02 0.03
PD128-1	B	From Leg	3.00 0.00 5.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.80 2.60 4.20	1.00 1.80 2.60 4.20	0.01 0.02 0.02 0.03
100									
Side Arm Mount [SO 901-1]	C	From Face	1.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.33 0.46 0.62 1.01	0.62 0.78 0.97 1.43	0.11 0.11 0.12 0.15
GPS_A	C	From Face	3.00	0.0000	100.00	No Ice	0.26	0.26	0.00

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
			0.00			1/2"	0.32	0.32	0.00
			1.00			Ice	0.39	0.39	0.01
						1" Ice	0.56	0.56	0.02
						2" Ice			
95									
Side Arm Mount [SO 901-1]	B	From Face	1.50	0.0000	95.00	No Ice	0.33	0.62	0.11
			0.00			1/2"	0.46	0.78	0.11
			0.00			Ice	0.62	0.97	0.12
						1" Ice	1.01	1.43	0.15
						2" Ice			
Side Arm Mount [SO 901-1]	C	From Leg	1.50	0.0000	95.00	No Ice	0.33	0.62	0.11
			0.00			1/2"	0.46	0.78	0.11
			0.00			Ice	0.62	0.97	0.12
						1" Ice	1.01	1.43	0.15
						2" Ice			
PD128-1	B	From Face	3.00	0.0000	95.00	No Ice	1.00	1.00	0.01
			0.00			1/2"	1.80	1.80	0.02
			5.00			Ice	2.60	2.60	0.02
						1" Ice	4.20	4.20	0.03
						2" Ice			
PD128-1	C	From Leg	3.00	0.0000	95.00	No Ice	1.00	1.00	0.01
			0.00			1/2"	1.80	1.80	0.02
			5.00			Ice	2.60	2.60	0.02
						1" Ice	4.20	4.20	0.03
						2" Ice			
80									
Side Arm Mount [SO 901-1]	A	From Face	1.50	0.0000	80.00	No Ice	0.33	0.62	0.11
			0.00			1/2"	0.46	0.78	0.11
			0.00			Ice	0.62	0.97	0.12
						1" Ice	1.01	1.43	0.15
						2" Ice			
Side Arm Mount [SO 901-1]	B	From Leg	1.50	0.0000	80.00	No Ice	0.33	0.62	0.11
			0.00			1/2"	0.46	0.78	0.11
			0.00			Ice	0.62	0.97	0.12
						1" Ice	1.01	1.43	0.15
						2" Ice			
DB222	A	From Face	3.00	0.0000	80.00	No Ice	1.60	1.60	0.02
			0.00			1/2"	2.88	2.88	0.02
			5.00			Ice	4.16	4.16	0.03
						1" Ice	6.72	6.72	0.04
						2" Ice			
PD128-1	B	From Leg	3.00	0.0000	80.00	No Ice	1.00	1.00	0.01
			0.00			1/2"	1.80	1.80	0.02
			5.00			Ice	2.60	2.60	0.02
						1" Ice	4.20	4.20	0.03
						2" Ice			
***									
MOD 2013									
Jump Plate 120" x 4.5" x 1"	A	From Face	0.00	0.0000	80.00	No Ice	7.50	2.21	0.21
			0.00			1/2"	9.24	3.09	0.25
			0.00			Ice	11.01	3.99	0.28
						1" Ice	14.64	5.81	0.36
						2" Ice			
Jump Plate 120" x 4.5" x 1"	B	From Face	0.00	0.0000	80.00	No Ice	7.50	2.21	0.21
			0.00			1/2"	9.24	3.09	0.25
			0.00			Ice	11.01	3.99	0.28
						1" Ice	14.64	5.81	0.36
						2" Ice			
Jump Plate 120" x 4.5" x 1"	C	From Face	0.00	0.0000	80.00	No Ice	7.50	2.21	0.21
			0.00			1/2"	9.24	3.09	0.25
			0.00			Ice	11.01	3.99	0.28
						1" Ice	14.64	5.81	0.36
						2" Ice			
***									
Jump Plate 120" x 6.5" x	A	From Face	0.00	0.0000	60.00	No Ice	9.65	3.08	0.41

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
1.25"			0.00 0.00			1/2" Ice 1" Ice 2" Ice	11.23 12.83 16.11	3.97 4.87 6.71	0.47 0.51 0.59
Jump Plate 120" x 6.5" x 1.25"	B	From Face	0.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.65 11.23 12.83 16.11	3.08 3.97 4.87 6.71	0.41 0.47 0.51 0.59
Jump Plate 120" x 6.5" x 1.25"	C	From Face	0.00 0.00 0.00	0.0000	60.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.65 11.23 12.83 16.11	3.08 3.97 4.87 6.71	0.41 0.47 0.51 0.59
***									
(2) Jump Plate 120" x 6" x 1"	A	From Face	0.00 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.17 10.78 12.43 15.79	2.42 3.30 4.19 6.03	0.30 0.35 0.38 0.47
(2) Jump Plate 120" x 6" x 1"	B	From Face	0.00 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.17 10.78 12.43 15.79	2.42 3.30 4.19 6.03	0.30 0.35 0.38 0.47
(2) Jump Plate 120" x 6" x 1"	C	From Face	0.00 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.17 10.78 12.43 15.79	2.42 3.30 4.19 6.03	0.30 0.35 0.38 0.47
***									
(2) Jump Plate 120" x 6.5" x 1.25"	A	From Face	0.00 0.00 0.00	0.0000	20.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.65 11.23 12.83 16.11	3.08 3.97 4.87 6.71	0.41 0.47 0.51 0.59
(2) Jump Plate 120" x 6.5" x 1.25"	B	From Face	0.00 0.00 0.00	0.0000	20.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.65 11.23 12.83 16.11	3.08 3.97 4.87 6.71	0.41 0.47 0.51 0.59
(2) Jump Plate 120" x 6.5" x 1.25"	C	From Face	0.00 0.00 0.00	0.0000	20.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.65 11.23 12.83 16.11	3.08 3.97 4.87 6.71	0.41 0.47 0.51 0.59
*** *** ** *									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
SP2-5.8	B	Paraboloid	From	4.00	-45.0000		188.00	2.00	No Ice	3.14	0.02

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
		w/Radome	Face	0.00					1/2" Ice	3.41	0.04
				-1.00					1" Ice	3.68	0.06
									2" Ice	4.21	0.09
***											

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 190.00-185.00	187.50	1.183	39	12.500	A	0.000	12.500	12.500	100.00	0.000	0.000
					B	0.000	12.500		100.00	1.386	0.000
					C	0.000	12.500		100.00	0.588	0.000
L2 185.00-180.00	182.50	1.174	39	12.500	A	0.000	12.500	12.500	100.00	0.000	0.000
					B	0.000	12.500		100.00	2.310	0.000
					C	0.000	12.500		100.00	0.588	0.000
L3 180.00-175.00	177.50	1.164	38	15.000	A	0.000	15.000	15.000	100.00	0.000	0.000
					B	0.000	15.000		100.00	2.310	0.000
					C	0.000	15.000		100.00	0.588	0.000
L4 175.00-170.00	172.50	1.155	38	15.000	A	0.000	15.000	15.000	100.00	0.000	0.000
					B	0.000	15.000		100.00	2.310	0.000
					C	0.000	15.000		100.00	0.588	0.000
L5 170.00-165.00	167.50	1.145	38	15.000	A	0.000	15.000	15.000	100.00	0.000	0.000
					B	0.000	15.000		100.00	12.210	0.000
					C	0.000	15.000		100.00	0.588	0.000
L6 165.00-160.00	162.50	1.135	37	15.000	A	0.000	15.000	15.000	100.00	2.853	0.000
					B	0.000	15.000		100.00	12.210	0.000
					C	0.000	15.000		100.00	0.588	0.000
L7 160.00-155.00	157.50	1.125	37	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L8 155.00-150.00	152.50	1.115	37	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L9 150.00-145.00	147.50	1.104	36	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L10 145.00-140.00	142.50	1.093	36	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L11 140.00-135.00	137.50	1.082	36	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L12 135.00-130.00	132.50	1.071	35	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L13 130.00-125.00	127.50	1.059	35	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L14 125.00-120.00	122.50	1.047	34	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L15 120.00-115.00	117.50	1.035	34	22.500	A	0.000	22.500	22.500	100.00	7.132	0.000
					B	0.000	22.500		100.00	12.210	0.000
					C	0.000	22.500		100.00	0.588	0.000
L16 115.00-112.67	113.84	1.026	34	10.485	A	0.000	10.485	10.485	100.00	5.320	0.000
					B	0.000	10.485		100.00	7.686	0.000
					C	0.000	10.485		100.00	2.270	0.000
L17 112.67-112.42	112.55	1.022	34	1.125	A	0.000	1.125	1.125	100.00	0.607	0.000
					B	0.000	1.125		100.00	0.861	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
					C	0.000	1.125		100.00	0.279	0.000
L18 112.42-107.42	109.92	1.015	33	22.500	A	0.000	22.500	22.500	100.00	12.133	0.000
					B	0.000	22.500		100.00	17.210	0.000
					C	0.000	22.500		100.00	5.588	0.000
L19 107.42-103.33	105.38	1.003	33	18.405	A	0.000	18.405	18.405	100.00	11.927	0.000
					B	0.000	18.405		100.00	16.081	0.000
					C	0.000	18.405		100.00	6.574	0.000
L20 103.33-103.08	103.21	0.997	33	1.125	A	0.000	1.125	1.125	100.00	0.857	0.000
					B	0.000	1.125		100.00	1.111	0.000
					C	0.000	1.125		100.00	0.529	0.000
L21 103.08-100.00	101.54	0.993	33	13.860	A	0.000	13.860	13.860	100.00	9.221	0.000
					B	0.000	13.860		100.00	12.348	0.000
					C	0.000	13.860		100.00	5.189	0.000
L22 100.00-95.00	97.50	0.981	32	25.000	A	0.000	25.000	25.000	100.00	12.133	0.000
					B	0.000	25.000		100.00	17.210	0.000
					C	0.000	25.000		100.00	5.588	0.000
L23 95.00-90.00	92.50	0.966	32	25.000	A	0.000	25.000	25.000	100.00	12.883	0.000
					B	0.000	25.000		100.00	17.960	0.000
					C	0.000	25.000		100.00	6.338	0.000
L24 90.00-89.50	89.75	0.958	32	2.500	A	0.000	2.500	2.500	100.00	1.588	0.000
					B	0.000	2.500		100.00	2.096	0.000
					C	0.000	2.500		100.00	0.934	0.000
L25 89.50-89.25	89.38	0.957	31	1.250	A	0.000	1.250	1.250	100.00	0.794	0.000
					B	0.000	1.250		100.00	1.048	0.000
					C	0.000	1.250		100.00	0.467	0.000
L26 89.25-85.50	87.38	0.951	31	18.750	A	0.000	18.750	18.750	100.00	13.037	0.000
					B	0.000	18.750		100.00	16.845	0.000
					C	0.000	18.750		100.00	8.128	0.000
L27 85.50-85.25	85.38	0.945	31	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L28 85.25-84.00	84.63	0.942	31	6.250	A	0.000	6.250	6.250	100.00	4.908	0.000
					B	0.000	6.250		100.00	6.178	0.000
					C	0.000	6.250		100.00	3.272	0.000
L29 84.00-83.75	83.88	0.94	31	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L30 83.75-82.50	83.13	0.937	31	6.250	A	0.000	6.250	6.250	100.00	4.908	0.000
					B	0.000	6.250		100.00	6.178	0.000
					C	0.000	6.250		100.00	3.272	0.000
L31 82.50-82.25	82.38	0.935	31	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L32 82.25-80.00	81.13	0.931	31	11.250	A	0.000	11.250	11.250	100.00	6.085	0.000
					B	0.000	11.250		100.00	8.370	0.000
					C	0.000	11.250		100.00	3.139	0.000
L33 80.00-75.00	77.50	0.919	30	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L34 75.00-70.00	72.50	0.901	30	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L35 70.00-65.00	67.50	0.883	29	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L36 65.00-60.00	62.50	0.864	28	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L37 60.00-58.50	59.25	0.851	28	7.500	A	0.000	7.500	7.500	100.00	3.265	0.000
					B	0.000	7.500		100.00	4.788	0.000
					C	0.000	7.500		100.00	1.301	0.000
L38 58.50-58.25	58.38	0.847	28	1.250	A	0.000	1.250	1.250	100.00	0.544	0.000
					B	0.000	1.250		100.00	0.798	0.000
					C	0.000	1.250		100.00	0.217	0.000
L39 58.25-53.25	55.75	0.836	28	25.000	A	0.000	25.000	25.000	100.00	8.070	0.000
					B	0.000	25.000		100.00	13.148	0.000
					C	0.000	25.000		100.00	1.525	0.000
L40 53.25-	50.75	0.814	27	25.000	A	0.000	25.000	25.000	100.00	10.112	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
48.25					B	0.000	25.000		100.00	15.189	0.000
					C	0.000	25.000		100.00	3.567	0.000
L41 48.25-48.00	48.13	0.802	26	1.250	A	0.000	1.250	1.250	100.00	0.627	0.000
					B	0.000	1.250		100.00	0.881	0.000
					C	0.000	1.250		100.00	0.300	0.000
L42 48.00-43.00	45.50	0.789	26	25.000	A	0.000	25.000	25.000	100.00	12.549	0.000
					B	0.000	25.000		100.00	17.627	0.000
					C	0.000	25.000		100.00	6.004	0.000
L43 43.00-40.00	41.50	0.769	25	15.000	A	0.000	15.000	15.000	100.00	7.530	0.000
					B	0.000	15.000		100.00	10.576	0.000
					C	0.000	15.000		100.00	3.603	0.000
L44 40.00-35.00	37.50	0.747	25	25.000	A	0.000	25.000	25.000	100.00	13.729	0.000
					B	0.000	25.000		100.00	18.807	0.000
					C	0.000	25.000		100.00	7.184	0.000
L45 35.00-32.08	33.54	0.723	24	14.600	A	0.000	14.600	14.600	100.00	11.465	0.000
					B	0.000	14.600		100.00	14.431	0.000
					C	0.000	14.600		100.00	7.643	0.000
L46 32.08-31.83	31.96	0.713	23	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L47 31.83-28.75	30.29	0.703	23	15.400	A	0.000	15.400	15.400	100.00	12.094	0.000
					B	0.000	15.400		100.00	15.221	0.000
					C	0.000	15.400		100.00	8.062	0.000
L48 28.75-28.50	28.63	0.7	23	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L49 28.50-23.50	26.00	0.7	23	25.000	A	0.000	25.000	25.000	100.00	16.924	0.000
					B	0.000	25.000		100.00	22.002	0.000
					C	0.000	25.000		100.00	10.379	0.000
L50 23.50-18.50	21.00	0.7	23	25.000	A	0.000	25.000	25.000	100.00	14.216	0.000
					B	0.000	25.000		100.00	19.293	0.000
					C	0.000	25.000		100.00	7.671	0.000
L51 18.50-13.50	16.00	0.7	23	25.000	A	0.000	25.000	25.000	100.00	14.216	0.000
					B	0.000	25.000		100.00	19.293	0.000
					C	0.000	25.000		100.00	7.671	0.000
L52 13.50-8.50	11.00	0.7	23	25.000	A	0.000	25.000	25.000	100.00	10.650	0.000
					B	0.000	25.000		100.00	19.293	0.000
					C	0.000	25.000		100.00	7.495	0.000
L53 8.50-3.50	6.00	0.7	23	25.000	A	0.000	25.000	25.000	100.00	7.083	0.000
					B	0.000	25.000		100.00	9.228	0.000
					C	0.000	25.000		100.00	7.083	0.000
L54 3.50-0.00	1.75	0.7	23	17.500	A	0.000	17.500	17.500	100.00	3.778	0.000
					B	0.000	17.500		100.00	3.778	0.000
					C	0.000	17.500		100.00	3.778	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 190.00-185.00	187.50	1.183	7	1.5169	13.764	A	0.000	13.764	13.764	100.00	0.000	0.000
						B	0.000	13.764		100.00	2.870	0.000
						C	0.000	13.764		100.00	3.621	0.000
L2 185.00-180.00	182.50	1.174	7	1.5128	13.761	A	0.000	13.761	13.761	100.00	0.000	0.000
						B	0.000	13.761		100.00	4.779	0.000
						C	0.000	13.761		100.00	3.613	0.000
L3 180.00-175.00	177.50	1.164	7	1.5086	16.257	A	0.000	16.257	16.257	100.00	0.000	0.000
						B	0.000	16.257		100.00	4.773	0.000
						C	0.000	16.257		100.00	3.605	0.000
L4 175.00-170.00	172.50	1.155	7	1.5043	16.254	A	0.000	16.254	16.254	100.00	0.000	0.000
						B	0.000	16.254		100.00	4.768	0.000
						C	0.000	16.254		100.00	3.596	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L5 170.00-165.00	167.50	1.145	7	1.4999	16.250	A	0.000	16.250	16.250	100.00	0.000	0.000
						B	0.000	16.250		100.00	19.012	0.000
						C	0.000	16.250		100.00	3.587	0.000
L6 165.00-160.00	162.50	1.135	6	1.4954	16.246	A	0.000	16.246	16.246	100.00	5.062	0.000
						B	0.000	16.246		100.00	19.001	0.000
						C	0.000	16.246		100.00	3.578	0.000
L7 160.00-155.00	157.50	1.125	6	1.4907	18.742	A	0.000	18.742	18.742	100.00	12.642	0.000
						B	0.000	18.742		100.00	18.989	0.000
						C	0.000	18.742		100.00	3.569	0.000
L8 155.00-150.00	152.50	1.115	6	1.4859	18.738	A	0.000	18.738	18.738	100.00	12.630	0.000
						B	0.000	18.738		100.00	18.977	0.000
						C	0.000	18.738		100.00	3.559	0.000
L9 150.00-145.00	147.50	1.104	6	1.4809	18.734	A	0.000	18.734	18.734	100.00	12.618	0.000
						B	0.000	18.734		100.00	18.965	0.000
						C	0.000	18.734		100.00	3.549	0.000
L10 145.00-140.00	142.50	1.093	6	1.4758	18.730	A	0.000	18.730	18.730	100.00	12.605	0.000
						B	0.000	18.730		100.00	18.952	0.000
						C	0.000	18.730		100.00	3.539	0.000
L11 140.00-135.00	137.50	1.082	6	1.4706	21.225	A	0.000	21.225	21.225	100.00	12.592	0.000
						B	0.000	21.225		100.00	18.939	0.000
						C	0.000	21.225		100.00	3.529	0.000
L12 135.00-130.00	132.50	1.071	6	1.4651	21.221	A	0.000	21.221	21.221	100.00	12.578	0.000
						B	0.000	21.221		100.00	18.925	0.000
						C	0.000	21.221		100.00	3.518	0.000
L13 130.00-125.00	127.50	1.059	6	1.4595	21.216	A	0.000	21.216	21.216	100.00	12.564	0.000
						B	0.000	21.216		100.00	18.911	0.000
						C	0.000	21.216		100.00	3.507	0.000
L14 125.00-120.00	122.50	1.047	6	1.4537	21.211	A	0.000	21.211	21.211	100.00	12.550	0.000
						B	0.000	21.211		100.00	18.897	0.000
						C	0.000	21.211		100.00	3.495	0.000
L15 120.00-115.00	117.50	1.035	6	1.4476	23.706	A	0.000	23.706	23.706	100.00	12.535	0.000
						B	0.000	23.706		100.00	18.882	0.000
						C	0.000	23.706		100.00	3.483	0.000
L16 115.00-112.67	113.84	1.026	6	1.4431	11.045	A	0.000	11.045	11.045	100.00	8.176	0.000
						B	0.000	11.045		100.00	11.134	0.000
						C	0.000	11.045		100.00	3.959	0.000
L17 112.67-112.42	112.55	1.022	6	1.4414	1.185	A	0.000	1.185	1.185	100.00	0.919	0.000
						B	0.000	1.185		100.00	1.236	0.000
						C	0.000	1.185		100.00	0.467	0.000
L18 112.42-107.42	109.92	1.015	6	1.4380	23.698	A	0.000	23.698	23.698	100.00	18.370	0.000
						B	0.000	23.698		100.00	24.717	0.000
						C	0.000	23.698		100.00	9.323	0.000
L19 107.42-103.33	105.38	1.003	6	1.4320	19.381	A	0.000	19.381	19.381	100.00	17.589	0.000
						B	0.000	19.381		100.00	22.780	0.000
						C	0.000	19.381		100.00	10.191	0.000
L20 103.33-103.08	103.21	0.997	6	1.4290	1.185	A	0.000	1.185	1.185	100.00	1.239	0.000
						B	0.000	1.185		100.00	1.556	0.000
						C	0.000	1.185		100.00	0.786	0.000
L21 103.08-100.00	101.54	0.993	6	1.4267	14.592	A	0.000	14.592	14.592	100.00	13.693	0.000
						B	0.000	14.592		100.00	17.603	0.000
						C	0.000	14.592		100.00	8.124	0.000
L22 100.00-95.00	97.50	0.981	6	1.4209	26.184	A	0.000	26.184	26.184	100.00	18.889	0.000
						B	0.000	26.184		100.00	25.236	0.000
						C	0.000	26.184		100.00	9.850	0.000
L23 95.00-90.00	92.50	0.966	6	1.4134	26.178	A	0.000	26.178	26.178	100.00	19.773	0.000
						B	0.000	26.178		100.00	26.120	0.000
						C	0.000	26.178		100.00	10.738	0.000
L24 90.00-89.50	89.75	0.958	5	1.4092	2.617	A	0.000	2.617	2.617	100.00	2.340	0.000
						B	0.000	2.617		100.00	2.974	0.000
						C	0.000	2.617		100.00	1.436	0.000
L25 89.50-89.25	89.38	0.957	5	1.4086	1.309	A	0.000	1.309	1.309	100.00	1.170	0.000
						B	0.000	1.309		100.00	1.487	0.000
						C	0.000	1.309		100.00	0.718	0.000
L26 89.25-85.50	87.38	0.951	5	1.4054	19.628	A	0.000	19.628	19.628	100.00	19.083	0.000
						B	0.000	19.628		100.00	23.843	0.000
						C	0.000	19.628		100.00	12.310	0.000
L27 85.50-85.25	85.38	0.945	5	1.4021	1.308	A	0.000	1.308	1.308	100.00	1.426	0.000
						B	0.000	1.308		100.00	1.743	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
						C	0.000	1.308		100.00	0.975	0.000
L28 85.25-84.00	84.63	0.942	5	1.4009	6.542	A	0.000	6.542	6.542	100.00	7.129	0.000
						B	0.000	6.542		100.00	8.716	0.000
						C	0.000	6.542		100.00	4.872	0.000
L29 84.00-83.75	83.88	0.94	5	1.3997	1.308	A	0.000	1.308	1.308	100.00	1.425	0.000
						B	0.000	1.308		100.00	1.743	0.000
						C	0.000	1.308		100.00	0.974	0.000
L30 83.75-82.50	83.13	0.937	5	1.3984	6.541	A	0.000	6.541	6.541	100.00	7.126	0.000
						B	0.000	6.541		100.00	8.712	0.000
						C	0.000	6.541		100.00	4.869	0.000
L31 82.50-82.25	82.38	0.935	5	1.3971	1.308	A	0.000	1.308	1.308	100.00	1.425	0.000
						B	0.000	1.308		100.00	1.742	0.000
						C	0.000	1.308		100.00	0.973	0.000
L32 82.25-80.00	81.13	0.931	5	1.3950	11.773	A	0.000	11.773	11.773	100.00	9.352	0.000
						B	0.000	11.773		100.00	12.208	0.000
						C	0.000	11.773		100.00	5.291	0.000
L33 80.00-75.00	77.50	0.919	5	1.3886	26.157	A	0.000	26.157	26.157	100.00	17.526	0.000
						B	0.000	26.157		100.00	23.873	0.000
						C	0.000	26.157		100.00	8.503	0.000
L34 75.00-70.00	72.50	0.901	5	1.3794	26.150	A	0.000	26.150	26.150	100.00	17.494	0.000
						B	0.000	26.150		100.00	23.840	0.000
						C	0.000	26.150		100.00	8.476	0.000
L35 70.00-65.00	67.50	0.883	5	1.3696	26.141	A	0.000	26.141	26.141	100.00	17.459	0.000
						B	0.000	26.141		100.00	23.806	0.000
						C	0.000	26.141		100.00	8.446	0.000
L36 65.00-60.00	62.50	0.864	5	1.3591	26.133	A	0.000	26.133	26.133	100.00	17.422	0.000
						B	0.000	26.133		100.00	23.769	0.000
						C	0.000	26.133		100.00	8.415	0.000
L37 60.00-58.50	59.25	0.851	5	1.3518	7.838	A	0.000	7.838	7.838	100.00	5.219	0.000
						B	0.000	7.838		100.00	7.123	0.000
						C	0.000	7.838		100.00	2.518	0.000
L38 58.50-58.25	58.38	0.847	5	1.3498	1.306	A	0.000	1.306	1.306	100.00	0.870	0.000
						B	0.000	1.306		100.00	1.187	0.000
						C	0.000	1.306		100.00	0.419	0.000
L39 58.25-53.25	55.75	0.836	5	1.3436	26.120	A	0.000	26.120	26.120	100.00	13.548	0.000
						B	0.000	26.120		100.00	19.895	0.000
						C	0.000	26.120		100.00	4.548	0.000
L40 53.25-48.25	50.75	0.814	5	1.3311	26.109	A	0.000	26.109	26.109	100.00	15.955	0.000
						B	0.000	26.109		100.00	22.301	0.000
						C	0.000	26.109		100.00	6.961	0.000
L41 48.25-48.00	48.13	0.802	5	1.3240	1.305	A	0.000	1.305	1.305	100.00	0.948	0.000
						B	0.000	1.305		100.00	1.266	0.000
						C	0.000	1.305		100.00	0.499	0.000
L42 48.00-43.00	45.50	0.789	5	1.3166	26.097	A	0.000	26.097	26.097	100.00	18.940	0.000
						B	0.000	26.097		100.00	25.287	0.000
						C	0.000	26.097		100.00	9.954	0.000
L43 43.00-40.00	41.50	0.769	4	1.3046	15.652	A	0.000	15.652	15.652	100.00	11.339	0.000
						B	0.000	15.652		100.00	15.147	0.000
						C	0.000	15.652		100.00	5.951	0.000
L44 40.00-35.00	37.50	0.747	4	1.2914	26.076	A	0.000	26.076	26.076	100.00	20.247	0.000
						B	0.000	26.076		100.00	26.594	0.000
						C	0.000	26.076		100.00	11.274	0.000
L45 35.00-32.08	33.54	0.723	4	1.2771	15.222	A	0.000	15.222	15.222	100.00	15.863	0.000
						B	0.000	15.222		100.00	19.569	0.000
						C	0.000	15.222		100.00	10.626	0.000
L46 32.08-31.83	31.96	0.713	4	1.2709	1.303	A	0.000	1.303	1.303	100.00	1.357	0.000
						B	0.000	1.303		100.00	1.674	0.000
						C	0.000	1.303		100.00	0.909	0.000
L47 31.83-28.75	30.29	0.703	4	1.2641	16.049	A	0.000	16.049	16.049	100.00	16.696	0.000
						B	0.000	16.049		100.00	20.606	0.000
						C	0.000	16.049		100.00	11.177	0.000
L48 28.75-28.50	28.63	0.7	4	1.2570	1.302	A	0.000	1.302	1.302	100.00	1.354	0.000
						B	0.000	1.302		100.00	1.671	0.000
						C	0.000	1.302		100.00	0.906	0.000
L49 28.50-23.50	26.00	0.7	4	1.2450	26.037	A	0.000	26.037	26.037	100.00	23.687	0.000
						B	0.000	26.037		100.00	30.034	0.000
						C	0.000	26.037		100.00	14.737	0.000
L50 23.50-	21.00	0.7	4	1.2187	26.016	A	0.000	26.016	26.016	100.00	20.264	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
18.50						B	0.000	26.016		100.00	26.611	0.000
						C	0.000	26.016		100.00	11.327	0.000
L51 18.50-13.50	16.00	0.7	4	1.1860	25.988	A	0.000	25.988	25.988	100.00	20.150	0.000
						B	0.000	25.988		100.00	26.497	0.000
						C	0.000	25.988		100.00	11.229	0.000
L52 13.50-8.50	11.00	0.7	4	1.1423	25.952	A	0.000	25.952	25.952	100.00	14.111	0.000
						B	0.000	25.952		100.00	26.344	0.000
						C	0.000	25.952		100.00	10.236	0.000
L53 8.50-3.50	6.00	0.7	4	1.0752	25.896	A	0.000	25.896	25.896	100.00	8.158	0.000
						B	0.000	25.896		100.00	11.646	0.000
						C	0.000	25.896		100.00	8.158	0.000
L54 3.50-0.00	1.75	0.7	4	0.9505	18.054	A	0.000	18.054	18.054	100.00	4.285	0.000
						B	0.000	18.054		100.00	4.285	0.000
						C	0.000	18.054		100.00	4.285	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 190.00-185.00	187.50	1.183	9	12.500	A	0.000	12.500	12.500	100.00	0.000	0.000
					B	0.000	12.500		100.00	1.386	0.000
					C	0.000	12.500		100.00	0.588	0.000
L2 185.00-180.00	182.50	1.174	9	12.500	A	0.000	12.500	12.500	100.00	0.000	0.000
					B	0.000	12.500		100.00	2.310	0.000
					C	0.000	12.500		100.00	0.588	0.000
L3 180.00-175.00	177.50	1.164	9	15.000	A	0.000	15.000	15.000	100.00	0.000	0.000
					B	0.000	15.000		100.00	2.310	0.000
					C	0.000	15.000		100.00	0.588	0.000
L4 175.00-170.00	172.50	1.155	9	15.000	A	0.000	15.000	15.000	100.00	0.000	0.000
					B	0.000	15.000		100.00	2.310	0.000
					C	0.000	15.000		100.00	0.588	0.000
L5 170.00-165.00	167.50	1.145	9	15.000	A	0.000	15.000	15.000	100.00	0.000	0.000
					B	0.000	15.000		100.00	12.210	0.000
					C	0.000	15.000		100.00	0.588	0.000
L6 165.00-160.00	162.50	1.135	9	15.000	A	0.000	15.000	15.000	100.00	2.853	0.000
					B	0.000	15.000		100.00	12.210	0.000
					C	0.000	15.000		100.00	0.588	0.000
L7 160.00-155.00	157.50	1.125	9	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L8 155.00-150.00	152.50	1.115	9	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L9 150.00-145.00	147.50	1.104	9	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L10 145.00-140.00	142.50	1.093	8	17.500	A	0.000	17.500	17.500	100.00	7.132	0.000
					B	0.000	17.500		100.00	12.210	0.000
					C	0.000	17.500		100.00	0.588	0.000
L11 140.00-135.00	137.50	1.082	8	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L12 135.00-130.00	132.50	1.071	8	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L13 130.00-125.00	127.50	1.059	8	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000
					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L14 125.00-	122.50	1.047	8	20.000	A	0.000	20.000	20.000	100.00	7.132	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
120.00					B	0.000	20.000		100.00	12.210	0.000
					C	0.000	20.000		100.00	0.588	0.000
L15 120.00-115.00	117.50	1.035	8	22.500	A	0.000	22.500	22.500	100.00	7.132	0.000
					B	0.000	22.500		100.00	12.210	0.000
					C	0.000	22.500		100.00	0.588	0.000
L16 115.00-112.67	113.84	1.026	8	10.485	A	0.000	10.485	10.485	100.00	5.320	0.000
					B	0.000	10.485		100.00	7.686	0.000
					C	0.000	10.485		100.00	2.270	0.000
L17 112.67-112.42	112.55	1.022	8	1.125	A	0.000	1.125	1.125	100.00	0.607	0.000
					B	0.000	1.125		100.00	0.861	0.000
					C	0.000	1.125		100.00	0.279	0.000
L18 112.42-107.42	109.92	1.015	8	22.500	A	0.000	22.500	22.500	100.00	12.133	0.000
					B	0.000	22.500		100.00	17.210	0.000
					C	0.000	22.500		100.00	5.588	0.000
L19 107.42-103.33	105.38	1.003	8	18.405	A	0.000	18.405	18.405	100.00	11.927	0.000
					B	0.000	18.405		100.00	16.081	0.000
					C	0.000	18.405		100.00	6.574	0.000
L20 103.33-103.08	103.21	0.997	8	1.125	A	0.000	1.125	1.125	100.00	0.857	0.000
					B	0.000	1.125		100.00	1.111	0.000
					C	0.000	1.125		100.00	0.529	0.000
L21 103.08-100.00	101.54	0.993	8	13.860	A	0.000	13.860	13.860	100.00	9.221	0.000
					B	0.000	13.860		100.00	12.348	0.000
					C	0.000	13.860		100.00	5.189	0.000
L22 100.00-95.00	97.50	0.981	8	25.000	A	0.000	25.000	25.000	100.00	12.133	0.000
					B	0.000	25.000		100.00	17.210	0.000
					C	0.000	25.000		100.00	5.588	0.000
L23 95.00-90.00	92.50	0.966	7	25.000	A	0.000	25.000	25.000	100.00	12.883	0.000
					B	0.000	25.000		100.00	17.960	0.000
					C	0.000	25.000		100.00	6.338	0.000
L24 90.00-89.50	89.75	0.958	7	2.500	A	0.000	2.500	2.500	100.00	1.588	0.000
					B	0.000	2.500		100.00	2.096	0.000
					C	0.000	2.500		100.00	0.934	0.000
L25 89.50-89.25	89.38	0.957	7	1.250	A	0.000	1.250	1.250	100.00	0.794	0.000
					B	0.000	1.250		100.00	1.048	0.000
					C	0.000	1.250		100.00	0.467	0.000
L26 89.25-85.50	87.38	0.951	7	18.750	A	0.000	18.750	18.750	100.00	13.037	0.000
					B	0.000	18.750		100.00	16.845	0.000
					C	0.000	18.750		100.00	8.128	0.000
L27 85.50-85.25	85.38	0.945	7	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L28 85.25-84.00	84.63	0.942	7	6.250	A	0.000	6.250	6.250	100.00	4.908	0.000
					B	0.000	6.250		100.00	6.178	0.000
					C	0.000	6.250		100.00	3.272	0.000
L29 84.00-83.75	83.88	0.94	7	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L30 83.75-82.50	83.13	0.937	7	6.250	A	0.000	6.250	6.250	100.00	4.908	0.000
					B	0.000	6.250		100.00	6.178	0.000
					C	0.000	6.250		100.00	3.272	0.000
L31 82.50-82.25	82.38	0.935	7	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L32 82.25-80.00	81.13	0.931	7	11.250	A	0.000	11.250	11.250	100.00	6.085	0.000
					B	0.000	11.250		100.00	8.370	0.000
					C	0.000	11.250		100.00	3.139	0.000
L33 80.00-75.00	77.50	0.919	7	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L34 75.00-70.00	72.50	0.901	7	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L35 70.00-65.00	67.50	0.883	7	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000
L36 65.00-60.00	62.50	0.864	7	25.000	A	0.000	25.000	25.000	100.00	10.883	0.000
					B	0.000	25.000		100.00	15.960	0.000
					C	0.000	25.000		100.00	4.338	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L37 60.00-58.50	59.25	0.851	7	7.500	A	0.000	7.500	7.500	100.00	3.265	0.000
					B	0.000	7.500		100.00	4.788	0.000
					C	0.000	7.500		100.00	1.301	0.000
L38 58.50-58.25	58.38	0.847	7	1.250	A	0.000	1.250	1.250	100.00	0.544	0.000
					B	0.000	1.250		100.00	0.798	0.000
					C	0.000	1.250		100.00	0.217	0.000
L39 58.25-53.25	55.75	0.836	6	25.000	A	0.000	25.000	25.000	100.00	8.070	0.000
					B	0.000	25.000		100.00	13.148	0.000
					C	0.000	25.000		100.00	1.525	0.000
L40 53.25-48.25	50.75	0.814	6	25.000	A	0.000	25.000	25.000	100.00	10.112	0.000
					B	0.000	25.000		100.00	15.189	0.000
					C	0.000	25.000		100.00	3.567	0.000
L41 48.25-48.00	48.13	0.802	6	1.250	A	0.000	1.250	1.250	100.00	0.627	0.000
					B	0.000	1.250		100.00	0.881	0.000
					C	0.000	1.250		100.00	0.300	0.000
L42 48.00-43.00	45.50	0.789	6	25.000	A	0.000	25.000	25.000	100.00	12.549	0.000
					B	0.000	25.000		100.00	17.627	0.000
					C	0.000	25.000		100.00	6.004	0.000
L43 43.00-40.00	41.50	0.769	6	15.000	A	0.000	15.000	15.000	100.00	7.530	0.000
					B	0.000	15.000		100.00	10.576	0.000
					C	0.000	15.000		100.00	3.603	0.000
L44 40.00-35.00	37.50	0.747	6	25.000	A	0.000	25.000	25.000	100.00	13.729	0.000
					B	0.000	25.000		100.00	18.807	0.000
					C	0.000	25.000		100.00	7.184	0.000
L45 35.00-32.08	33.54	0.723	6	14.600	A	0.000	14.600	14.600	100.00	11.465	0.000
					B	0.000	14.600		100.00	14.431	0.000
					C	0.000	14.600		100.00	7.643	0.000
L46 32.08-31.83	31.96	0.713	6	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L47 31.83-28.75	30.29	0.703	5	15.400	A	0.000	15.400	15.400	100.00	12.094	0.000
					B	0.000	15.400		100.00	15.221	0.000
					C	0.000	15.400		100.00	8.062	0.000
L48 28.75-28.50	28.63	0.7	5	1.250	A	0.000	1.250	1.250	100.00	0.982	0.000
					B	0.000	1.250		100.00	1.236	0.000
					C	0.000	1.250		100.00	0.654	0.000
L49 28.50-23.50	26.00	0.7	5	25.000	A	0.000	25.000	25.000	100.00	16.924	0.000
					B	0.000	25.000		100.00	22.002	0.000
					C	0.000	25.000		100.00	10.379	0.000
L50 23.50-18.50	21.00	0.7	5	25.000	A	0.000	25.000	25.000	100.00	14.216	0.000
					B	0.000	25.000		100.00	19.293	0.000
					C	0.000	25.000		100.00	7.671	0.000
L51 18.50-13.50	16.00	0.7	5	25.000	A	0.000	25.000	25.000	100.00	14.216	0.000
					B	0.000	25.000		100.00	19.293	0.000
					C	0.000	25.000		100.00	7.671	0.000
L52 13.50-8.50	11.00	0.7	5	25.000	A	0.000	25.000	25.000	100.00	10.650	0.000
					B	0.000	25.000		100.00	19.293	0.000
					C	0.000	25.000		100.00	7.495	0.000
L53 8.50-3.50	6.00	0.7	5	25.000	A	0.000	25.000	25.000	100.00	7.083	0.000
					B	0.000	25.000		100.00	9.228	0.000
					C	0.000	25.000		100.00	7.083	0.000
L54 3.50-0.00	1.75	0.7	5	17.500	A	0.000	17.500	17.500	100.00	3.778	0.000
					B	0.000	17.500		100.00	3.778	0.000
					C	0.000	17.500		100.00	3.778	0.000

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

Comb. No.	Description
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	190 - 185	Pole	Max Tension	39	0.00	0.00	-0.00
			Max. Compression	26	-7.18	-0.64	0.26
			Max. Mx	8	-3.44	-10.89	-0.01
			Max. My	14	-3.44	-0.13	-10.84
			Max. Vy	20	-2.78	10.61	-0.02
			Max. Vx	14	2.83	-0.13	-10.84
			Max. Torque	12			0.77
L2	185 - 180	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.74	-0.73	-0.35
			Max. Mx	8	-4.72	-31.32	-0.37
			Max. My	14	-4.72	-0.16	-31.76
			Max. Vy	20	-4.00	31.07	-0.41
			Max. Vx	14	4.02	-0.16	-31.76
			Max. Torque	12			0.77
L3	180 - 175	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.68	-2.72	-1.06
			Max. Mx	8	-7.76	-61.98	-0.60

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-7.76	-0.54	-62.31
			Max. Vy	20	-6.26	60.87	-0.74
			Max. Vx	14	6.27	-0.54	-62.31
			Max. Torque	14			2.40
L4	175 - 170	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.05	-2.83	-1.13
			Max. Mx	8	-8.68	-94.24	-0.68
			Max. My	14	-8.68	-0.54	-94.73
			Max. Vy	20	-6.67	93.15	-0.93
			Max. Vx	14	6.68	-0.54	-94.73
			Max. Torque	14			2.40
L5	170 - 165	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.57	-3.63	-1.55
			Max. Mx	8	-14.13	-150.78	-1.02
			Max. My	14	-14.12	-1.00	-151.12
			Max. Vy	20	-11.43	149.06	-1.13
			Max. Vx	14	11.42	-1.00	-151.12
			Max. Torque	16			2.46
L6	165 - 160	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.30	-4.20	-1.55
			Max. Mx	8	-19.99	-222.84	-1.21
			Max. My	14	-19.98	-1.28	-223.05
			Max. Vy	20	-16.88	220.83	-1.18
			Max. Vx	14	16.87	-1.28	-223.05
			Max. Torque	16			2.58
L7	160 - 155	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.26	-4.35	-1.27
			Max. Mx	8	-21.17	-308.37	-1.34
			Max. My	14	-21.16	-1.41	-308.51
			Max. Vy	20	-17.36	306.40	-1.15
			Max. Vx	14	17.33	-1.41	-308.51
			Max. Torque	16			2.58
L8	155 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.21	-4.50	-0.98
			Max. Mx	8	-22.36	-396.30	-1.47
			Max. My	14	-22.35	-1.53	-396.25
			Max. Vy	20	-17.84	394.36	-1.13
			Max. Vx	14	17.78	-1.53	-396.25
			Max. Torque	16			2.58
L9	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.53	-5.18	0.21
			Max. Mx	8	-27.05	-510.84	-2.52
			Max. My	14	-27.04	-3.28	-511.42
			Max. Vy	20	-21.61	508.05	0.22
			Max. Vx	14	21.73	-3.28	-511.42
			Max. Torque	16			2.58
L10	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.52	-5.33	0.50
			Max. Mx	8	-28.30	-619.95	-3.35
			Max. My	14	-28.28	-4.10	-621.10
			Max. Vy	20	-22.06	617.20	0.94
			Max. Vx	14	22.16	-4.10	-621.10
			Max. Torque	16			1.81
L11	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.71	-5.50	0.82
			Max. Mx	8	-29.68	-731.39	-4.18
			Max. My	14	-29.66	-4.94	-733.06
			Max. Vy	20	-22.55	728.68	1.67
			Max. Vx	14	22.65	-4.94	-733.06
			Max. Torque	16			1.81
L12	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.89	-5.67	1.14
			Max. Mx	8	-31.06	-845.27	-5.00
			Max. My	14	-31.05	-5.77	-847.43
			Max. Vy	20	-23.03	842.59	2.40
			Max. Vx	14	23.12	-5.77	-847.43
			Max. Torque	16			1.81
L13	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.07	-5.83	1.46

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-32.45	-961.50	-5.83
			Max. My	14	-32.44	-6.60	-964.14
			Max. Vy	20	-23.49	958.85	3.14
			Max. Vx	14	23.58	-6.60	-964.14
			Max. Torque	16			1.81
L14	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.63	-6.06	1.74
			Max. Mx	8	-34.12	-1080.79	-6.59
			Max. My	14	-34.11	-7.34	-1083.97
			Max. Vy	20	-24.05	1078.27	3.85
			Max. Vx	14	24.14	-7.34	-1083.97
			Max. Torque	16			1.81
L15	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.01	-6.24	2.09
			Max. Mx	8	-35.66	-1202.20	-7.36
			Max. My	14	-35.65	-8.12	-1205.90
			Max. Vy	20	-24.55	1199.71	4.54
			Max. Vx	14	24.65	-8.12	-1205.90
			Max. Torque	16			1.74
L16	115 - 112.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.18	-6.32	2.26
			Max. Mx	8	-36.38	-1259.65	-7.72
			Max. My	14	-36.36	-8.49	-1263.58
			Max. Vy	20	-24.79	1257.17	4.86
			Max. Vx	14	24.88	-8.49	-1263.58
			Max. Torque	16			1.74
L17	112.67 - 112.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.32	-6.33	2.28
			Max. Mx	8	-36.48	-1265.84	-7.76
			Max. My	14	-36.46	-8.53	-1269.80
			Max. Vy	20	-24.81	1263.37	4.89
			Max. Vx	14	24.91	-8.53	-1269.80
			Max. Torque	16			1.74
L18	112.42 - 107.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.59	-6.48	2.62
			Max. Mx	8	-38.66	-1391.81	-8.51
			Max. My	14	-38.64	-9.29	-1396.24
			Max. Vy	20	-25.45	1389.37	5.56
			Max. Vx	14	25.54	-9.29	-1396.24
			Max. Torque	16			1.74
L19	107.42 - 103.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.02	-6.60	2.89
			Max. Mx	8	-40.22	-1496.70	-9.11
			Max. My	14	-40.19	-9.90	-1502.31
			Max. Vy	20	-25.88	1494.29	6.08
			Max. Vx	14	26.35	-9.90	-1502.31
			Max. Torque	16			1.74
L20	103.33 - 103.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.17	-6.61	2.91
			Max. Mx	8	-40.32	-1503.17	-9.15
			Max. My	14	-40.29	-9.93	-1508.90
			Max. Vy	20	-25.92	1500.76	6.12
			Max. Vx	14	26.40	-9.93	-1508.90
			Max. Torque	16			1.74
L21	103.08 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.01	-6.69	3.11
			Max. Mx	8	-41.49	-1583.45	-9.60
			Max. My	14	-41.46	-10.39	-1591.09
			Max. Vy	20	-26.24	1581.06	6.51
			Max. Vx	14	27.00	-10.39	-1591.09
			Max. Torque	16			1.74
L22	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.26	-6.85	2.80
			Max. Mx	8	-43.67	-1716.10	-10.80
			Max. My	14	-43.64	-11.13	-1727.98

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-26.81	1713.73	6.69
			Max. Vx	14	27.56	-11.13	-1727.98
			Max. Torque	16			1.81
L23	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.73	-7.01	3.16
			Max. Mx	8	-46.00	-1852.30	-11.57
			Max. My	14	-45.97	-11.92	-1867.99
			Max. Vy	20	-27.45	1849.96	7.38
			Max. Vx	14	28.21	-11.92	-1867.99
			Max. Torque	16			1.81
L24	90 - 89.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.06	-7.02	3.20
			Max. Mx	8	-46.21	-1866.03	-11.64
			Max. My	14	-46.18	-12.00	-1882.11
			Max. Vy	20	-27.50	1863.69	7.45
			Max. Vx	14	28.31	-12.00	-1882.11
			Max. Torque	16			1.81
L25	89.5 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.23	-7.03	3.22
			Max. Mx	8	-46.33	-1872.91	-11.68
			Max. My	14	-46.30	-12.04	-1889.19
			Max. Vy	20	-27.53	1870.57	7.48
			Max. Vx	14	28.36	-12.04	-1889.19
			Max. Torque	16			1.81
L26	89.25 - 85.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.88	-7.15	3.49
			Max. Mx	8	-48.07	-1976.86	-12.26
			Max. My	14	-48.03	-12.63	-1996.99
			Max. Vy	20	-27.95	1974.54	8.00
			Max. Vx	14	29.16	-12.63	-1996.99
			Max. Torque	16			1.81
L27	85.5 - 85.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.08	-7.16	3.51
			Max. Mx	8	-48.21	-1983.85	-12.30
			Max. My	14	-48.16	-12.67	-2004.29
			Max. Vy	20	-27.99	1981.53	8.04
			Max. Vx	14	29.21	-12.67	-2004.29
			Max. Torque	16			1.81
L28	85.25 - 84	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.05	-7.19	3.60
			Max. Mx	8	-48.85	-2018.99	-12.49
			Max. My	14	-48.81	-12.86	-2040.96
			Max. Vy	20	-28.26	2016.68	8.21
			Max. Vx	14	29.48	-12.86	-2040.96
			Max. Torque	16			1.81
L29	84 - 83.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.22	-7.20	3.62
			Max. Mx	8	-48.97	-2026.06	-12.53
			Max. My	14	-48.92	-12.90	-2048.33
			Max. Vy	20	-28.31	2023.74	8.24
			Max. Vx	14	29.53	-12.90	-2048.33
			Max. Torque	16			1.81
L30	83.75 - 82.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.10	-7.24	3.70
			Max. Mx	8	-49.52	-2061.59	-12.72
			Max. My	14	-49.48	-13.10	-2085.40
			Max. Vy	20	-28.57	2059.28	8.42
			Max. Vx	14	29.80	-13.10	-2085.40
			Max. Torque	16			1.81
L31	82.5 - 82.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.26	-7.25	3.72
			Max. Mx	8	-49.62	-2068.73	-12.76
			Max. My	14	-49.58	-13.14	-2092.85
			Max. Vy	20	-28.61	2066.42	8.45
			Max. Vx	14	29.85	-13.14	-2092.85
			Max. Torque	16			1.81
L32	82.25 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.63	-7.32	3.88
			Max. Mx	8	-50.51	-2133.33	-13.11

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-50.47	-13.49	-2160.22
			Max. Vy	20	-28.84	2131.04	8.76
			Max. Vx	14	30.07	-13.49	-2160.22
			Max. Torque	16			1.81
L33	80 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.48	-7.44	4.26
			Max. Mx	8	-53.97	-2281.74	-13.82
			Max. My	14	-53.93	-14.22	-2314.84
			Max. Vy	20	-29.86	2279.50	9.42
			Max. Vx	14	31.10	-14.22	-2314.84
			Max. Torque	16			1.81
L34	75 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-99.89	-7.60	4.61
			Max. Mx	8	-56.42	-2432.11	-14.55
			Max. My	14	-56.38	-14.96	-2471.42
			Max. Vy	20	-30.33	2429.90	10.07
			Max. Vx	14	31.56	-14.96	-2471.42
			Max. Torque	18			1.70
L35	70 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.29	-7.75	4.97
			Max. Mx	8	-58.88	-2584.78	-15.28
			Max. My	14	-58.84	-15.71	-2630.29
			Max. Vy	20	-30.78	2582.60	10.72
			Max. Vx	14	32.01	-15.71	-2630.29
			Max. Torque	18			1.70
L36	65 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-106.68	-7.90	5.32
			Max. Mx	8	-61.33	-2739.64	-16.00
			Max. My	14	-61.30	-16.45	-2791.34
			Max. Vy	20	-31.20	2737.48	11.37
			Max. Vx	14	32.44	-16.45	-2791.34
			Max. Torque	18			1.70
L37	60 - 58.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-109.70	-7.95	5.42
			Max. Mx	8	-63.67	-2787.26	-16.22
			Max. My	14	-63.64	-16.67	-2840.82
			Max. Vy	20	-31.83	2785.11	11.57
			Max. Vx	14	33.07	-16.67	-2840.82
			Max. Torque	18			1.70
L38	58.5 - 58.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-109.87	-7.96	5.44
			Max. Mx	8	-63.81	-2795.21	-16.25
			Max. My	14	-63.78	-16.71	-2849.09
			Max. Vy	20	-31.85	2793.06	11.60
			Max. Vx	14	33.08	-16.71	-2849.09
			Max. Torque	18			1.70
L39	58.25 - 53.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.36	-8.10	5.79
			Max. Mx	8	-66.46	-2955.38	-16.98
			Max. My	14	-66.43	-17.45	-3015.46
			Max. Vy	20	-32.26	2953.26	12.25
			Max. Vx	14	33.49	-17.45	-3015.46
			Max. Torque	18			1.70
L40	53.25 - 48.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-116.89	-8.25	6.14
			Max. Mx	8	-69.12	-3117.51	-17.70
			Max. My	14	-69.10	-18.18	-3183.78
			Max. Vy	20	-32.64	3115.41	12.90
			Max. Vx	14	33.87	-18.18	-3183.78
			Max. Torque	18			1.70
L41	48.25 - 48	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-117.10	-8.26	6.16
			Max. Mx	8	-69.28	-3125.67	-17.73
			Max. My	14	-69.26	-18.22	-3192.24
			Max. Vy	20	-32.65	3123.57	12.93
			Max. Vx	14	33.88	-18.22	-3192.24
			Max. Torque	18			1.70

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L42	48 - 43	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-121.19	-8.41	6.50
			Max. Mx	8	-72.43	-3289.79	-18.45
			Max. My	14	-72.41	-18.96	-3362.55
			Max. Vy	20	-33.04	3287.72	13.58
			Max. Vx	14	34.27	-18.96	-3362.55
			Max. Torque	18			1.70
L43	43 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-123.64	-8.50	6.70
			Max. Mx	8	-74.33	-3389.17	-18.88
			Max. My	14	-74.30	-19.40	-3465.62
			Max. Vy	20	-33.25	3387.11	13.97
			Max. Vx	14	34.48	-19.40	-3465.62
			Max. Torque	18			1.70
L44	40 - 35	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-130.54	-8.65	7.04
			Max. Mx	8	-79.61	-3560.12	-19.60
			Max. My	14	-79.59	-20.13	-3642.71
			Max. Vy	20	-34.38	3558.09	14.61
			Max. Vx	14	35.60	-20.13	-3642.71
			Max. Torque	18			1.70
L45	35 - 32.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-133.01	-8.73	7.24
			Max. Mx	8	-81.45	-3661.06	-20.02
			Max. My	14	-81.43	-20.56	-3747.23
			Max. Vy	20	-34.80	3659.04	14.99
			Max. Vx	14	36.03	-20.56	-3747.23
			Max. Torque	18			1.70
L46	32.08 - 31.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-133.26	-8.74	7.25
			Max. Mx	8	-81.65	-3669.75	-20.05
			Max. My	14	-81.63	-20.60	-3756.23
			Max. Vy	20	-34.82	3667.74	15.02
			Max. Vx	14	36.06	-20.60	-3756.23
			Max. Torque	18			1.70
L47	31.83 - 28.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-136.26	-8.83	7.46
			Max. Mx	8	-83.98	-3777.64	-20.49
			Max. My	14	-83.97	-21.05	-3867.94
			Max. Vy	20	-35.27	3775.64	15.42
			Max. Vx	14	36.51	-21.05	-3867.94
			Max. Torque	18			1.70
L48	28.75 - 28.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-136.48	-8.84	7.47
			Max. Mx	8	-84.15	-3786.45	-20.53
			Max. My	14	-84.13	-21.08	-3877.06
			Max. Vy	20	-35.29	3784.46	15.45
			Max. Vx	14	36.54	-21.08	-3877.06
			Max. Torque	18			1.70
L49	28.5 - 23.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-140.77	-8.98	7.80
			Max. Mx	8	-87.47	-3963.58	-21.24
			Max. My	14	-87.45	-21.81	-4061.36
			Max. Vy	20	-35.60	3961.62	16.09
			Max. Vx	14	37.21	-21.81	-4061.36
			Max. Torque	18			1.70
L50	23.5 - 18.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-149.07	-9.12	8.13
			Max. Mx	8	-94.19	-4143.36	-21.95
			Max. My	14	-94.18	-22.54	-4249.22
			Max. Vy	20	-36.67	4141.42	16.73
			Max. Vx	14	38.29	-22.54	-4249.22
			Max. Torque	18			1.70
L51	18.5 - 13.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-153.70	-9.26	8.44
			Max. Mx	8	-97.98	-4327.29	-22.65
			Max. My	14	-97.97	-23.26	-4441.22

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-36.94	4325.38	17.37
			Max. Vx	14	38.55	-23.26	-4441.22
			Max. Torque	18			1.70
L52	13.5 - 8.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-158.20	-9.57	8.70
			Max. Mx	8	-101.73	-4512.58	-23.36
			Max. My	14	-101.72	-24.04	-4634.48
			Max. Vy	20	-37.20	4510.57	18.00
			Max. Vx	14	38.80	-24.04	-4634.48
			Max. Torque	18			1.70
L53	8.5 - 3.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-162.36	-9.67	8.76
			Max. Mx	8	-105.36	-4699.02	-24.08
			Max. My	14	-105.36	-24.76	-4828.96
			Max. Vy	20	-37.43	4697.02	18.62
			Max. Vx	14	39.03	-24.76	-4828.96
			Max. Torque	18			1.70
L54	3.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-165.17	-9.67	8.76
			Max. Mx	8	-107.89	-4830.17	-24.60
			Max. My	14	-107.89	-25.24	-4965.76
			Max. Vy	20	-37.58	4828.24	19.03
			Max. Vx	14	39.18	-25.24	-4965.76
			Max. Torque	18			1.70

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	165.17	-0.00	0.00
	Max. H_x	20	107.90	37.56	0.12
	Max. H_z	2	107.90	0.14	37.90
	Max. M_x	2	4863.96	0.14	37.90
	Max. M_z	8	4830.17	-37.55	-0.15
	Max. Torsion	18	1.70	32.63	-18.85
	Min. Vert	5	80.93	-18.56	32.41
	Min. H_x	8	107.90	-37.55	-0.15
	Min. H_z	14	107.90	-0.14	-39.16
	Min. M_x	14	-4965.76	-0.14	-39.16
	Min. M_z	20	-4828.24	37.56	0.12
	Min. Torsion	6	-1.62	-33.67	19.44

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	89.92	0.00	0.00	-0.14	-2.12	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	107.90	-0.14	-37.90	-4863.96	20.43	1.10
0.9 Dead+1.0 Wind 0 deg - No Ice	80.93	-0.14	-37.90	-4823.44	20.92	1.08
1.2 Dead+1.0 Wind 30 deg - No Ice	107.90	18.56	-32.41	-4170.54	-2387.71	1.55
0.9 Dead+1.0 Wind 30 deg - No Ice	80.93	18.56	-32.41	-4135.71	-2367.12	1.53
1.2 Dead+1.0 Wind 60 deg - No Ice	107.90	33.67	-19.44	-2458.95	-4264.91	1.62
0.9 Dead+1.0 Wind 60 deg - No Ice	80.93	33.67	-19.44	-2438.58	-4228.95	1.60

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 90 deg - No Ice	107.90	37.55	0.15	24.60	-4830.17	1.27
0.9 Dead+1.0 Wind 90 deg - No Ice	80.93	37.55	0.15	24.41	-4789.22	1.26
1.2 Dead+1.0 Wind 120 deg - No Ice	107.90	32.73	19.07	2452.61	-4203.14	0.57
0.9 Dead+1.0 Wind 120 deg - No Ice	80.93	32.73	19.07	2432.21	-4167.47	0.57
1.2 Dead+1.0 Wind 150 deg - No Ice	107.90	18.90	32.75	4221.42	-2440.81	-0.40
0.9 Dead+1.0 Wind 150 deg - No Ice	80.93	18.90	32.75	4186.23	-2419.76	-0.39
1.2 Dead+1.0 Wind 180 deg - No Ice	107.90	0.14	39.16	4965.76	-25.24	-1.22
0.9 Dead+1.0 Wind 180 deg - No Ice	80.93	0.14	39.16	4924.70	-24.35	-1.20
1.2 Dead+1.0 Wind 210 deg - No Ice	107.90	-18.57	32.43	4175.30	2384.67	-1.69
0.9 Dead+1.0 Wind 210 deg - No Ice	80.93	-18.57	32.43	4140.49	2365.44	-1.68
1.2 Dead+1.0 Wind 240 deg - No Ice	107.90	-32.63	18.85	2415.41	4182.61	-1.70
0.9 Dead+1.0 Wind 240 deg - No Ice	80.93	-32.63	18.85	2395.35	4148.46	-1.68
1.2 Dead+1.0 Wind 270 deg - No Ice	107.90	-37.56	-0.12	-19.03	4828.24	-1.35
0.9 Dead+1.0 Wind 270 deg - No Ice	80.93	-37.56	-0.12	-18.83	4788.64	-1.35
1.2 Dead+1.0 Wind 300 deg - No Ice	107.90	-33.80	-19.66	-2494.39	4281.39	-0.67
0.9 Dead+1.0 Wind 300 deg - No Ice	80.93	-33.80	-19.66	-2473.72	4246.64	-0.67
1.2 Dead+1.0 Wind 330 deg - No Ice	107.90	-18.88	-32.71	-4214.01	2432.20	0.23
0.9 Dead+1.0 Wind 330 deg - No Ice	80.93	-18.88	-32.71	-4178.82	2412.57	0.22
1.2 Dead+1.0 Ice+1.0 Temp	165.17	0.00	-0.00	-8.76	-9.67	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	165.17	-0.03	-11.38	-1477.47	-5.25	0.55
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	165.17	5.65	-9.84	-1278.26	-738.77	0.68
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	165.17	9.83	-5.67	-739.25	-1276.63	0.63
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	165.17	11.34	0.03	-3.88	-1473.79	0.41
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	165.17	9.84	5.71	729.48	-1280.37	0.09
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	165.17	5.70	9.87	1265.74	-746.92	-0.28
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	165.17	0.03	11.40	1461.49	-14.82	-0.57
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	165.17	-5.65	9.84	1261.22	719.10	-0.70
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	165.17	-9.82	5.67	721.73	1257.12	-0.64
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	165.17	-11.35	-0.02	-12.98	1454.37	-0.44
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	165.17	-9.85	-5.71	-746.60	1260.99	-0.12
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	165.17	-5.70	-9.86	-1282.17	725.99	0.25
Dead+Wind 0 deg - Service	89.92	-0.03	-8.92	-1139.26	3.20	0.26
Dead+Wind 30 deg - Service	89.92	4.37	-7.63	-976.84	-560.79	0.36
Dead+Wind 60 deg - Service	89.92	7.93	-4.58	-576.01	-1000.48	0.38
Dead+Wind 90 deg - Service	89.92	8.84	0.03	5.66	-1132.82	0.30
Dead+Wind 120 deg - Service	89.92	7.71	4.49	574.32	-985.98	0.13
Dead+Wind 150 deg - Service	89.92	4.45	7.71	988.57	-573.23	-0.09

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
Dead+Wind 180 deg - Service	89.92	0.03	9.22	1162.95	-7.50	-0.28
Dead+Wind 210 deg - Service	89.92	-4.37	7.64	977.76	556.90	-0.39
Dead+Wind 240 deg - Service	89.92	-7.68	4.44	565.61	978.00	-0.40
Dead+Wind 270 deg - Service	89.92	-8.84	-0.03	-4.55	1129.19	-0.32
Dead+Wind 300 deg - Service	89.92	-7.96	-4.63	-584.32	1001.17	-0.16
Dead+Wind 330 deg - Service	89.92	-4.45	-7.70	-987.03	568.04	0.05

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-89.92	0.00	0.00	89.92	0.00	0.000%
2	-0.14	-107.90	-37.90	0.14	107.90	37.90	0.000%
3	-0.14	-80.93	-37.90	0.14	80.93	37.90	0.000%
4	18.56	-107.90	-32.41	-18.56	107.90	32.41	0.000%
5	18.56	-80.93	-32.41	-18.56	80.93	32.41	0.000%
6	33.67	-107.90	-19.44	-33.67	107.90	19.44	0.000%
7	33.67	-80.93	-19.44	-33.67	80.93	19.44	0.000%
8	37.55	-107.90	0.15	-37.55	107.90	-0.15	0.000%
9	37.55	-80.93	0.15	-37.55	80.93	-0.15	0.000%
10	32.73	-107.90	19.07	-32.73	107.90	-19.07	0.000%
11	32.73	-80.93	19.07	-32.73	80.93	-19.07	0.000%
12	18.90	-107.90	32.75	-18.90	107.90	-32.75	0.000%
13	18.90	-80.93	32.75	-18.90	80.93	-32.75	0.000%
14	0.14	-107.90	39.16	-0.14	107.90	-39.16	0.000%
15	0.14	-80.93	39.16	-0.14	80.93	-39.16	0.000%
16	-18.57	-107.90	32.43	18.57	107.90	-32.43	0.000%
17	-18.57	-80.93	32.43	18.57	80.93	-32.43	0.000%
18	-32.63	-107.90	18.85	32.63	107.90	-18.85	0.000%
19	-32.63	-80.93	18.85	32.63	80.93	-18.85	0.000%
20	-37.56	-107.90	-0.12	37.56	107.90	0.12	0.000%
21	-37.56	-80.93	-0.12	37.56	80.93	0.12	0.000%
22	-33.80	-107.90	-19.66	33.80	107.90	19.66	0.000%
23	-33.80	-80.93	-19.66	33.80	80.93	19.66	0.000%
24	-18.88	-107.90	-32.71	18.88	107.90	32.71	0.000%
25	-18.88	-80.93	-32.71	18.88	80.93	32.71	0.000%
26	0.00	-165.17	0.00	-0.00	165.17	0.00	0.000%
27	-0.03	-165.17	-11.38	0.03	165.17	11.38	0.000%
28	5.65	-165.17	-9.84	-5.65	165.17	9.84	0.000%
29	9.83	-165.17	-5.67	-9.83	165.17	5.67	0.000%
30	11.34	-165.17	0.03	-11.34	165.17	-0.03	0.000%
31	9.84	-165.17	5.71	-9.84	165.17	-5.71	0.000%
32	5.70	-165.17	9.87	-5.70	165.17	-9.87	0.000%
33	0.03	-165.17	11.40	-0.03	165.17	-11.40	0.000%
34	-5.65	-165.17	9.84	5.65	165.17	-9.84	0.000%
35	-9.82	-165.17	5.67	9.82	165.17	-5.67	0.000%
36	-11.35	-165.17	-0.02	11.35	165.17	0.02	0.000%
37	-9.85	-165.17	-5.71	9.85	165.17	5.71	0.000%
38	-5.70	-165.17	-9.86	5.70	165.17	9.86	0.000%
39	-0.03	-89.92	-8.92	0.03	89.92	8.92	0.000%
40	4.37	-89.92	-7.63	-4.37	89.92	7.63	0.000%
41	7.93	-89.92	-4.58	-7.93	89.92	4.58	0.000%
42	8.84	-89.92	0.03	-8.84	89.92	-0.03	0.000%
43	7.71	-89.92	4.49	-7.71	89.92	-4.49	0.000%
44	4.45	-89.92	7.71	-4.45	89.92	-7.71	0.000%
45	0.03	-89.92	9.22	-0.03	89.92	-9.22	0.000%
46	-4.37	-89.92	7.64	4.37	89.92	-7.64	0.000%
47	-7.68	-89.92	4.44	7.68	89.92	-4.44	0.000%
48	-8.84	-89.92	-0.03	8.84	89.92	0.03	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
49	-7.96	-89.92	-4.63	7.96	89.92	4.63	0.000%
50	-4.45	-89.92	-7.70	4.45	89.92	7.70	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00013880
3	Yes	5	0.00000001	0.00005862
4	Yes	6	0.00000001	0.00007399
5	Yes	5	0.00000001	0.00093617
6	Yes	6	0.00000001	0.00007234
7	Yes	5	0.00000001	0.00091151
8	Yes	5	0.00000001	0.00016674
9	Yes	5	0.00000001	0.00007609
10	Yes	6	0.00000001	0.00007505
11	Yes	5	0.00000001	0.00094824
12	Yes	6	0.00000001	0.00007548
13	Yes	5	0.00000001	0.00095346
14	Yes	5	0.00000001	0.00016887
15	Yes	5	0.00000001	0.00007634
16	Yes	6	0.00000001	0.00006936
17	Yes	5	0.00000001	0.00087646
18	Yes	6	0.00000001	0.00007485
19	Yes	5	0.00000001	0.00094754
20	Yes	5	0.00000001	0.00014675
21	Yes	5	0.00000001	0.00006421
22	Yes	6	0.00000001	0.00007525
23	Yes	5	0.00000001	0.00094911
24	Yes	6	0.00000001	0.00007383
25	Yes	5	0.00000001	0.00093339
26	Yes	4	0.00000001	0.00036622
27	Yes	6	0.00000001	0.00025664
28	Yes	6	0.00000001	0.00026993
29	Yes	6	0.00000001	0.00026973
30	Yes	6	0.00000001	0.00025727
31	Yes	6	0.00000001	0.00026956
32	Yes	6	0.00000001	0.00026895
33	Yes	6	0.00000001	0.00025396
34	Yes	6	0.00000001	0.00026332
35	Yes	6	0.00000001	0.00026290
36	Yes	6	0.00000001	0.00025165
37	Yes	6	0.00000001	0.00026609
38	Yes	6	0.00000001	0.00026749
39	Yes	4	0.00000001	0.00057517
40	Yes	5	0.00000001	0.00003637
41	Yes	5	0.00000001	0.00003482
42	Yes	4	0.00000001	0.00057854
43	Yes	5	0.00000001	0.00003621
44	Yes	5	0.00000001	0.00003635
45	Yes	4	0.00000001	0.00058781
46	Yes	4	0.00000001	0.00098042
47	Yes	5	0.00000001	0.00003657
48	Yes	4	0.00000001	0.00057480
49	Yes	5	0.00000001	0.00003571
50	Yes	5	0.00000001	0.00003524

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 185	13.237	45	0.5700	0.0015
L2	185 - 180	12.641	45	0.5696	0.0015
L3	180 - 175	12.045	45	0.5677	0.0014
L4	175 - 170	11.452	45	0.5653	0.0013
L5	170 - 165	10.862	45	0.5613	0.0012
L6	165 - 160	10.277	45	0.5551	0.0010
L7	160 - 155	9.700	45	0.5458	0.0009
L8	155 - 150	9.133	45	0.5374	0.0008
L9	150 - 145	8.576	45	0.5263	0.0007
L10	145 - 140	8.032	45	0.5120	0.0006
L11	140 - 135	7.505	45	0.4942	0.0005
L12	135 - 130	6.994	45	0.4801	0.0005
L13	130 - 125	6.500	45	0.4635	0.0004
L14	125 - 120	6.024	45	0.4446	0.0004
L15	120 - 115	5.570	45	0.4232	0.0004
L16	115 - 112.67	5.135	45	0.4064	0.0003
L17	112.67 - 112.42	4.939	45	0.3980	0.0003
L18	112.42 - 107.42	4.918	45	0.3973	0.0003
L19	107.42 - 103.33	4.510	45	0.3822	0.0003
L20	103.33 - 103.08	4.188	45	0.3687	0.0003
L21	103.08 - 100	4.169	45	0.3679	0.0003
L22	100 - 95	3.935	45	0.3571	0.0003
L23	95 - 90	3.568	45	0.3430	0.0002
L24	90 - 89.5	3.217	45	0.3278	0.0002
L25	89.5 - 89.25	3.183	45	0.3262	0.0002
L26	89.25 - 85.5	3.166	45	0.3255	0.0002
L27	85.5 - 85.25	2.914	45	0.3150	0.0002
L28	85.25 - 84	2.898	45	0.3143	0.0002
L29	84 - 83.75	2.816	45	0.3111	0.0002
L30	83.75 - 82.5	2.800	45	0.3103	0.0002
L31	82.5 - 82.25	2.719	45	0.3064	0.0002
L32	82.25 - 80	2.703	45	0.3055	0.0002
L33	80 - 75	2.561	45	0.2969	0.0002
L34	75 - 70	2.258	45	0.2812	0.0002
L35	70 - 65	1.972	45	0.2644	0.0002
L36	65 - 60	1.705	45	0.2465	0.0001
L37	60 - 58.5	1.456	45	0.2275	0.0001
L38	58.5 - 58.25	1.386	45	0.2226	0.0001
L39	58.25 - 53.25	1.374	45	0.2216	0.0001
L40	53.25 - 48.25	1.152	45	0.2027	0.0001
L41	48.25 - 48	0.950	45	0.1826	0.0001
L42	48 - 43	0.941	45	0.1818	0.0001
L43	43 - 40	0.759	45	0.1645	0.0001
L44	40 - 35	0.659	45	0.1537	0.0001
L45	35 - 32.08	0.508	45	0.1350	0.0001
L46	32.08 - 31.83	0.429	45	0.1237	0.0001
L47	31.83 - 28.75	0.422	45	0.1229	0.0001
L48	28.75 - 28.5	0.346	45	0.1128	0.0001
L49	28.5 - 23.5	0.340	45	0.1118	0.0001
L50	23.5 - 18.5	0.234	45	0.0919	0.0000
L51	18.5 - 13.5	0.147	45	0.0739	0.0000
L52	13.5 - 8.5	0.079	45	0.0550	0.0000
L53	8.5 - 3.5	0.032	45	0.0354	0.0000
L54	3.5 - 0	0.005	45	0.0149	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.00	Platform Mount [LP 403-1]	45	12.999	0.5700	0.0016	257257
187.00	SP2-5.8	45	12.879	0.5699	0.0016	257257
185.00	Side Arm Mount [SO 102-3]	45	12.641	0.5696	0.0016	257257
184.00	Side Arm Mount [SO 701-1]	45	12.521	0.5693	0.0016	213701
179.00	Platform Mount [LP 403-1]	45	11.926	0.5672	0.0015	119381

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
170.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	45	10.862	0.5613	0.0012	56590
162.00	Platform Mount [LP 403-1]	45	9.930	0.5495	0.0010	33021
150.00	Platform Mount [LP 403-1]	45	8.576	0.5263	0.0007	22397
125.00	Side Arm Mount [SO 901-1]	45	6.024	0.4446	0.0004	14057
110.00	Side Arm Mount [SO 901-1]	45	4.719	0.3902	0.0003	18274
100.00	Side Arm Mount [SO 901-1]	45	3.935	0.3571	0.0003	18118
95.00	Side Arm Mount [SO 901-1]	45	3.568	0.3430	0.0003	19482
80.00	Side Arm Mount [SO 901-1]	45	2.561	0.2969	0.0002	17057
60.00	Jump Plate 120" x 6.5" x 1.25"	45	1.456	0.2275	0.0001	15623
40.00	(2) Jump Plate 120" x 6" x 1"	45	0.659	0.1537	0.0001	15701
20.00	(2) Jump Plate 120" x 6.5" x 1.25"	45	0.171	0.0792	0.0000	15560

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 185	56.560	14	2.4344	0.0063
L2	185 - 180	54.012	14	2.4329	0.0062
L3	180 - 175	51.469	14	2.4247	0.0060
L4	175 - 170	48.935	14	2.4147	0.0055
L5	170 - 165	46.415	14	2.3980	0.0049
L6	165 - 160	43.917	14	2.3717	0.0042
L7	160 - 155	41.454	14	2.3325	0.0036
L8	155 - 150	39.029	14	2.2969	0.0032
L9	150 - 145	36.648	14	2.2498	0.0028
L10	145 - 140	34.324	14	2.1885	0.0025
L11	140 - 135	32.071	14	2.1127	0.0023
L12	135 - 130	29.890	14	2.0522	0.0021
L13	130 - 125	27.778	14	1.9815	0.0019
L14	125 - 120	25.744	14	1.9005	0.0017
L15	120 - 115	23.802	14	1.8090	0.0015
L16	115 - 112.67	21.944	14	1.7373	0.0014
L17	112.67 - 112.42	21.106	14	1.7012	0.0013
L18	112.42 - 107.42	21.017	14	1.6982	0.0013
L19	107.42 - 103.33	19.272	14	1.6335	0.0012
L20	103.33 - 103.08	17.897	14	1.5761	0.0012
L21	103.08 - 100	17.815	14	1.5724	0.0012
L22	100 - 95	16.815	14	1.5261	0.0011
L23	95 - 90	15.248	14	1.4661	0.0010
L24	90 - 89.5	13.747	14	1.4011	0.0009
L25	89.5 - 89.25	13.600	14	1.3943	0.0009
L26	89.25 - 85.5	13.527	14	1.3914	0.0009
L27	85.5 - 85.25	12.452	14	1.3462	0.0009
L28	85.25 - 84	12.382	14	1.3435	0.0009
L29	84 - 83.75	12.032	14	1.3298	0.0009
L30	83.75 - 82.5	11.963	14	1.3264	0.0008
L31	82.5 - 82.25	11.618	14	1.3095	0.0008
L32	82.25 - 80	11.549	14	1.3055	0.0008
L33	80 - 75	10.942	14	1.2690	0.0008
L34	75 - 70	9.648	14	1.2019	0.0007
L35	70 - 65	8.427	14	1.1300	0.0007
L36	65 - 60	7.284	14	1.0535	0.0006
L37	60 - 58.5	6.223	14	0.9721	0.0005
L38	58.5 - 58.25	5.921	14	0.9511	0.0005
L39	58.25 - 53.25	5.871	14	0.9472	0.0005
L40	53.25 - 48.25	4.921	14	0.8660	0.0005
L41	48.25 - 48	4.059	14	0.7802	0.0004
L42	48 - 43	4.018	14	0.7766	0.0004
L43	43 - 40	3.243	14	0.7029	0.0004
L44	40 - 35	2.816	14	0.6568	0.0003
L45	35 - 32.08	2.170	14	0.5769	0.0003
L46	32.08 - 31.83	1.832	14	0.5283	0.0003

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L47	31.83 - 28.75	1.804	14	0.5249	0.0003
L48	28.75 - 28.5	1.479	14	0.4819	0.0002
L49	28.5 - 23.5	1.454	14	0.4778	0.0002
L50	23.5 - 18.5	0.998	14	0.3925	0.0002
L51	18.5 - 13.5	0.627	14	0.3155	0.0001
L52	13.5 - 8.5	0.339	14	0.2351	0.0001
L53	8.5 - 3.5	0.136	14	0.1511	0.0001
L54	3.5 - 0	0.023	14	0.0635	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.00	Platform Mount [LP 403-1]	14	55.541	2.4343	0.0069	62069
187.00	SP2-5.8	14	55.031	2.4341	0.0069	62069
185.00	Side Arm Mount [SO 102-3]	14	54.012	2.4329	0.0068	62069
184.00	Side Arm Mount [SO 701-1]	14	53.503	2.4317	0.0068	51633
179.00	Platform Mount [LP 403-1]	14	50.961	2.4229	0.0065	28984
170.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	14	46.415	2.3980	0.0054	13609
162.00	Platform Mount [LP 403-1]	14	42.435	2.3484	0.0042	7875
150.00	Platform Mount [LP 403-1]	14	36.648	2.2498	0.0031	5295
125.00	Side Arm Mount [SO 901-1]	14	25.744	1.9005	0.0018	3304
110.00	Side Arm Mount [SO 901-1]	14	20.164	1.6678	0.0014	4288
100.00	Side Arm Mount [SO 901-1]	14	16.815	1.5261	0.0012	4250
95.00	Side Arm Mount [SO 901-1]	14	15.248	1.4661	0.0011	4570
80.00	Side Arm Mount [SO 901-1]	14	10.942	1.2690	0.0008	3993
60.00	Jump Plate 120" x 6.5" x 1.25"	14	6.223	0.9721	0.0006	3656
40.00	(2) Jump Plate 120" x 6" x 1"	14	2.816	0.6568	0.0003	3674
20.00	(2) Jump Plate 120" x 6.5" x 1.25"	14	0.730	0.3383	0.0002	3642

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	190 - 185 (1)	P30x0.375	5.00	0.00	0.0	34.9011	-3.44	1311.06	0.003
L2	185 - 180 (2)	P30x0.375	5.00	0.00	0.0	34.9011	-4.72	1311.06	0.004
L3	180 - 175 (3)	P36x0.375	5.00	0.00	0.0	41.9697	-7.76	1490.10	0.005
L4	175 - 170 (4)	P36x0.375	5.00	0.00	0.0	41.9697	-8.68	1490.10	0.006
L5	170 - 165 (5)	P36x0.375	5.00	0.00	0.0	41.9697	-14.12	1490.10	0.009
L6	165 - 160 (6)	P36x0.375	5.00	0.00	0.0	41.9697	-19.98	1490.10	0.013
L7	160 - 155 (7)	P42x0.375	5.00	0.00	0.0	49.0383	-21.16	1668.87	0.013
L8	155 - 150 (8)	P42x0.375	5.00	0.00	0.0	49.0383	-22.35	1668.87	0.013
L9	150 - 145 (9)	P42x0.375	5.00	0.00	0.0	49.0383	-27.03	1668.87	0.016

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L10	145 - 140 (10)	P42x0.375	5.00	0.00	0.0	49.0383	-28.28	1668.87	0.017
L11	140 - 135 (11)	P48x0.375	5.00	0.00	0.0	56.1069	-29.66	1847.49	0.016
L12	135 - 130 (12)	P48x0.375	5.00	0.00	0.0	56.1069	-31.04	1847.49	0.017
L13	130 - 125 (13)	P48x0.375	5.00	0.00	0.0	56.1069	-32.44	1847.49	0.018
L14	125 - 120 (14)	P48x0.375	5.00	0.00	0.0	56.1069	-34.11	1847.49	0.018
L15	120 - 115 (15)	P54x0.375	5.00	0.00	0.0	63.1755	-35.64	2026.00	0.018
L16	115 - 112.67 (16)	P54x0.375	2.33	0.00	0.0	63.1755	-36.36	2026.00	0.018
L17	112.67 - 112.42 (17)	P54x0.4875	0.25	0.00	0.0	81.9558	-36.46	2797.17	0.013
L18	112.42 - 107.42 (18)	P54x0.4875	5.00	0.00	0.0	81.9558	-38.64	2797.17	0.014
L19	107.42 - 103.33 (19)	P54x0.4875	4.09	0.00	0.0	81.9558	-40.20	2797.17	0.014
L20	103.33 - 103.08 (20)	P54x0.4875	0.25	0.00	0.0	81.9558	-40.30	2797.17	0.014
L21	103.08 - 100 (21)	P54x0.4875	3.08	0.00	0.0	81.9558	-41.48	2797.17	0.015
L22	100 - 95 (22)	P60x0.475	5.00	0.00	0.0	88.8266	-43.65	2934.04	0.015
L23	95 - 90 (23)	P60x0.475	5.00	0.00	0.0	88.8266	-45.99	2934.04	0.016
L24	90 - 89.5 (24)	P60x0.475	0.50	0.00	0.0	88.8266	-46.20	2934.04	0.016
L25	89.5 - 89.25 (25)	P60x0.55625	0.25	0.00	0.0	103.8790	-46.32	3570.37	0.013
L26	89.25 - 85.5 (26)	P60x0.55625	3.75	0.00	0.0	103.8790	-48.06	3570.37	0.013
L27	85.5 - 85.25 (27)	P60x0.6375	0.25	0.00	0.0	118.8890	-48.19	4245.55	0.011
L28	85.25 - 84 (28)	P60x0.6375	1.25	0.00	0.0	118.8890	-48.84	4245.55	0.012
L29	84 - 83.75 (29)	P60x0.525	0.25	0.00	0.0	98.0943	-48.95	3321.02	0.015
L30	83.75 - 82.5 (30)	P60x0.525	1.25	0.00	0.0	98.0943	-49.48	3321.02	0.015
L31	82.5 - 82.25 (31)	P60x0.45	0.25	0.00	0.0	84.1868	-49.58	2746.08	0.018
L32	82.25 - 80 (32)	P60x0.45	2.25	0.00	0.0	84.1868	-50.47	2746.08	0.018
L33	80 - 75 (33)	P60x0.575	5.00	0.00	0.0	107.3460	-53.93	3722.74	0.014
L34	75 - 70 (34)	P60x0.575	5.00	0.00	0.0	107.3460	-56.38	3722.74	0.015
L35	70 - 65 (35)	P60x0.575	5.00	0.00	0.0	107.3460	-58.84	3722.74	0.016
L36	65 - 60 (36)	P60x0.575	5.00	0.00	0.0	107.3460	-61.30	3722.74	0.016
L37	60 - 58.5 (37)	P60x0.7	1.50	0.00	0.0	130.4080	-63.64	4791.24	0.013
L38	58.5 - 58.25 (38)	P60x0.625	0.25	0.00	0.0	116.5830	-63.78	4139.15	0.015
L39	58.25 - 53.25 (39)	P60x0.625	5.00	0.00	0.0	116.5830	-66.43	4139.15	0.016
L40	53.25 - 48.25 (40)	P60x0.625	5.00	0.00	0.0	116.5830	-69.10	4139.15	0.017
L41	48.25 - 48 (41)	P60x0.775	0.25	0.00	0.0	144.1970	-69.26	5450.65	0.013
L42	48 - 43 (42)	P60x0.775	5.00	0.00	0.0	144.1970	-72.41	5450.65	0.013
L43	43 - 40 (43)	P60x0.775	3.00	0.00	0.0	144.1970	-74.30	5450.65	0.014
L44	40 - 35 (44)	P60x0.775	5.00	0.00	0.0	144.19	-79.59	5450.65	0.015

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L45	35 - 32.08 (45)	P60x0.775	2.92	0.00	0.0	144.19 70	-81.43	5450.65	0.015
L46	32.08 - 31.83 (46)	P60x0.9625	0.25	0.00	0.0	178.51 70	-81.63	6747.93	0.012
L47	31.83 - 28.75 (47)	P60x0.9625	3.08	0.00	0.0	178.51 70	-83.97	6747.93	0.012
L48	28.75 - 28.5 (48)	P60x0.8125	0.25	0.00	0.0	151.07 90	-84.13	5710.78	0.015
L49	28.5 - 23.5 (49)	P60x0.8125	5.00	0.00	0.0	151.07 90	-87.45	5710.78	0.015
L50	23.5 - 18.5 (50)	P60x0.95	5.00	0.00	0.0	176.23 50	-94.18	6661.70	0.014
L51	18.5 - 13.5 (51)	P60x0.95	5.00	0.00	0.0	176.23 50	-97.97	6661.70	0.015
L52	13.5 - 8.5 (52)	P60x0.95	5.00	0.00	0.0	176.23 50	-101.72	6661.70	0.015
L53	8.5 - 3.5 (53)	P60x0.95	5.00	0.00	0.0	176.23 50	-105.36	6661.70	0.016
L54	3.5 - 0 (54)	P60x0.95	3.50	0.00	0.0	176.23 50	-107.89	6661.70	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	190 - 185 (1)	P30x0.375	10.91	947.86	0.012	0.00	947.86	0.000
L2	185 - 180 (2)	P30x0.375	31.77	947.86	0.034	0.00	947.86	0.000
L3	180 - 175 (3)	P36x0.375	62.49	1338.81	0.047	0.00	1338.81	0.000
L4	175 - 170 (4)	P36x0.375	94.88	1338.81	0.071	0.00	1338.81	0.000
L5	170 - 165 (5)	P36x0.375	151.60	1338.81	0.113	0.00	1338.81	0.000
L6	165 - 160 (6)	P36x0.375	223.97	1338.81	0.167	0.00	1338.81	0.000
L7	160 - 155 (7)	P42x0.375	309.90	1796.56	0.172	0.00	1796.56	0.000
L8	155 - 150 (8)	P42x0.375	398.20	1796.56	0.222	0.00	1796.56	0.000
L9	150 - 145 (9)	P42x0.375	514.83	1796.56	0.287	0.00	1796.56	0.000
L10	145 - 140 (10)	P42x0.375	625.57	1796.56	0.348	0.00	1796.56	0.000
L11	140 - 135 (11)	P48x0.375	738.62	2321.11	0.318	0.00	2321.11	0.000
L12	135 - 130 (12)	P48x0.375	854.08	2321.11	0.368	0.00	2321.11	0.000
L13	130 - 125 (13)	P48x0.375	971.88	2321.11	0.419	0.00	2321.11	0.000
L14	125 - 120 (14)	P48x0.375	1092.73	2321.11	0.471	0.00	2321.11	0.000
L15	120 - 115 (15)	P54x0.375	1215.69	2912.46	0.417	0.00	2912.46	0.000
L16	115 - 112.67 (16)	P54x0.375	1273.85	2912.46	0.437	0.00	2912.46	0.000
L17	112.67 - 112.42 (17)	P54x0.4875	1280.13	3864.47	0.331	0.00	3864.47	0.000
L18	112.42 - 107.42 (18)	P54x0.4875	1407.60	3864.47	0.364	0.00	3864.47	0.000
L19	107.42 - 103.33 (19)	P54x0.4875	1513.71	3864.47	0.392	0.00	3864.47	0.000
L20	103.33 - 103.08 (20)	P54x0.4875	1520.25	3864.47	0.393	0.00	3864.47	0.000
L21	103.08 - 100 (21)	P54x0.4875	1601.43	3864.47	0.414	0.00	3864.47	0.000
L22	100 - 95 (22)	P60x0.475	1735.91	4598.57	0.377	0.00	4598.57	0.000
L23	95 - 90 (23)	P60x0.475	1873.58	4598.57	0.407	0.00	4598.57	0.000
L24	90 - 89.5 (24)	P60x0.475	1887.46	4598.57	0.410	0.00	4598.57	0.000
L25	89.5 - 89.25 (25)	P60x0.55625	1894.41	5456.53	0.347	0.00	5456.53	0.000
L26	89.25 - 85.5 (26)	P60x0.55625	1999.45	5456.53	0.366	0.00	5456.53	0.000
L27	85.5 - 85.25 (27)	P60x0.6375	2006.51	6334.56	0.317	0.00	6334.56	0.000
L28	85.25 - 84 (28)	P60x0.6375	2042.02	6334.56	0.322	0.00	6334.56	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 $\frac{M_{uy}}{\phi M_{ny}}$
L29	84 - 83.75 (29)	P60x0.525	2049.15	5124.16	0.400	0.00	5124.16	0.000
L30	83.75 - 82.5 (30)	P60x0.525	2085.44	5124.16	0.407	0.00	5124.16	0.000
L31	82.5 - 82.25 (31)	P60x0.45	2092.89	4338.67	0.482	0.00	4338.67	0.000
L32	82.25 - 80 (32)	P60x0.45	2160.27	4338.67	0.498	0.00	4338.67	0.000
L33	80 - 75 (33)	P60x0.575	2314.88	5657.38	0.409	0.00	5657.38	0.000
L34	75 - 70 (34)	P60x0.575	2471.46	5657.38	0.437	0.00	5657.38	0.000
L35	70 - 65 (35)	P60x0.575	2630.33	5657.38	0.465	0.00	5657.38	0.000
L36	65 - 60 (36)	P60x0.575	2791.39	5657.38	0.493	0.00	5657.38	0.000
L37	60 - 58.5 (37)	P60x0.7	2840.88	7023.43	0.404	0.00	7023.43	0.000
L38	58.5 - 58.25 (38)	P60x0.625	2849.13	6198.18	0.460	0.00	6198.18	0.000
L39	58.25 - 53.25 (39)	P60x0.625	3015.51	6198.18	0.487	0.00	6198.18	0.000
L40	53.25 - 48.25 (40)	P60x0.625	3183.83	6198.18	0.514	0.00	6198.18	0.000
L41	48.25 - 48 (41)	P60x0.775	3192.30	7865.35	0.406	0.00	7865.35	0.000
L42	48 - 43 (42)	P60x0.775	3362.61	7865.35	0.428	0.00	7865.35	0.000
L43	43 - 40 (43)	P60x0.775	3465.68	7865.35	0.441	0.00	7865.35	0.000
L44	40 - 35 (44)	P60x0.775	3642.77	7865.35	0.463	0.00	7865.35	0.000
L45	35 - 32.08 (45)	P60x0.775	3747.28	7865.35	0.476	0.00	7865.35	0.000
L46	32.08 - 31.83 (46)	P60x0.9625	3756.29	10041.58	0.374	0.00	10041.58	0.000
L47	31.83 - 28.75 (47)	P60x0.9625	3867.99	10041.58	0.385	0.00	10041.58	0.000
L48	28.75 - 28.5 (48)	P60x0.8125	3877.12	8292.48	0.468	0.00	8292.48	0.000
L49	28.5 - 23.5 (49)	P60x0.8125	4061.42	8292.48	0.490	0.00	8292.48	0.000
L50	23.5 - 18.5 (50)	P60x0.95	4249.28	9893.33	0.430	0.00	9893.33	0.000
L51	18.5 - 13.5 (51)	P60x0.95	4441.27	9893.33	0.449	0.00	9893.33	0.000
L52	13.5 - 8.5 (52)	P60x0.95	4634.54	9893.33	0.468	0.00	9893.33	0.000
L53	8.5 - 3.5 (53)	P60x0.95	4829.02	9893.33	0.488	0.00	9893.33	0.000
L54	3.5 - 0 (54)	P60x0.95	4965.82	9893.33	0.502	0.00	9893.33	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	190 - 185 (1)	P30x0.375	2.80	395.78	0.007	0.33	994.73	0.000
L2	185 - 180 (2)	P30x0.375	4.01	395.78	0.010	0.59	994.73	0.001
L3	180 - 175 (3)	P36x0.375	6.26	454.19	0.014	1.83	1094.28	0.002
L4	175 - 170 (4)	P36x0.375	6.67	454.19	0.015	1.83	1094.28	0.002
L5	170 - 165 (5)	P36x0.375	11.47	454.19	0.025	1.76	1094.28	0.002
L6	165 - 160 (6)	P36x0.375	16.95	454.19	0.037	1.81	1094.28	0.002
L7	160 - 155 (7)	P42x0.375	17.43	421.13	0.041	1.81	1185.51	0.002
L8	155 - 150 (8)	P42x0.375	17.90	421.13	0.042	1.81	1185.51	0.002
L9	150 - 145 (9)	P42x0.375	21.93	421.13	0.052	0.57	1185.51	0.000
L10	145 - 140 (10)	P42x0.375	22.37	421.13	0.053	0.57	1185.51	0.000
L11	140 - 135 (11)	P48x0.375	22.86	394.81	0.058	0.57	1270.83	0.000
L12	135 - 130 (12)	P48x0.375	23.34	394.81	0.059	0.57	1270.83	0.000
L13	130 - 125 (13)	P48x0.375	23.80	394.81	0.060	0.57	1270.83	0.000
L14	125 - 120 (14)	P48x0.375	24.35	394.81	0.062	0.53	1270.83	0.000
L15	120 - 115 (15)	P54x0.375	24.85	406.96	0.061	0.53	1474.98	0.000
L16	115 - 112.67 (16)	P54x0.375	25.09	406.96	0.062	0.53	1474.98	0.000
L17	112.67 -	P54x0.4875	25.11	732.85	0.034	0.53	2650.55	0.000

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 $\frac{T_u}{\phi T_n}$
	112.42 (17)							
L18	112.42 - 107.42 (18)	P54x0.4875	25.74	732.85	0.035	0.53	2650.55	0.000
L19	107.42 - 103.33 (19)	P54x0.4875	26.16	732.85	0.036	0.53	2650.55	0.000
L20	103.33 - 103.08 (20)	P54x0.4875	26.21	732.85	0.036	0.53	2650.55	0.000
L21	103.08 - 100 (21)	P54x0.4875	26.52	732.85	0.036	0.53	2650.55	0.000
L22	100 - 95 (22)	P60x0.475	27.09	710.49	0.038	0.46	2858.41	0.000
L23	95 - 90 (23)	P60x0.475	27.73	710.49	0.039	0.46	2858.41	0.000
L24	90 - 89.5 (24)	P60x0.475	27.79	710.49	0.039	0.46	2858.41	0.000
L25	89.5 - 89.25 (25)	P60x0.55625	27.81	1012.19	0.027	0.46	4066.63	0.000
L26	89.25 - 85.5 (26)	P60x0.55625	28.23	1012.19	0.028	0.46	4066.63	0.000
L27	85.5 - 85.25 (27)	P60x0.6375	28.28	1348.20	0.021	0.46	5511.49	0.000
L28	85.25 - 84 (28)	P60x0.6375	28.54	1348.20	0.021	0.46	5511.49	0.000
L29	84 - 83.75 (29)	P60x0.525	28.59	889.19	0.032	0.46	3574.31	0.000
L30	83.75 - 82.5 (30)	P60x0.525	29.80	889.19	0.034	1.32	3574.31	0.000
L31	82.5 - 82.25 (31)	P60x0.45	29.85	629.38	0.047	1.32	2533.13	0.001
L32	82.25 - 80 (32)	P60x0.45	30.07	629.38	0.048	1.32	2533.13	0.001
L33	80 - 75 (33)	P60x0.575	31.10	1090.24	0.029	1.22	4378.80	0.000
L34	75 - 70 (34)	P60x0.575	31.57	1090.24	0.029	1.22	4378.80	0.000
L35	70 - 65 (35)	P60x0.575	32.01	1090.24	0.029	1.22	4378.80	0.000
L36	65 - 60 (36)	P60x0.575	32.44	1090.24	0.030	1.22	4378.80	0.000
L37	60 - 58.5 (37)	P60x0.7	33.07	1478.82	0.022	1.22	6788.03	0.000
L38	58.5 - 58.25 (38)	P60x0.625	33.08	1314.11	0.025	1.22	5273.53	0.000
L39	58.25 - 53.25 (39)	P60x0.625	33.49	1314.11	0.025	1.22	5273.53	0.000
L40	53.25 - 48.25 (40)	P60x0.625	33.87	1314.11	0.026	1.22	5273.53	0.000
L41	48.25 - 48 (41)	P60x0.775	33.88	1635.20	0.021	1.22	8514.42	0.000
L42	48 - 43 (42)	P60x0.775	34.27	1635.20	0.021	1.22	8514.42	0.000
L43	43 - 40 (43)	P60x0.775	34.48	1635.20	0.021	1.22	8514.42	0.000
L44	40 - 35 (44)	P60x0.775	35.60	1635.20	0.022	1.22	8514.42	0.000
L45	35 - 32.08 (45)	P60x0.775	36.03	1635.20	0.022	1.22	8514.42	0.000
L46	32.08 - 31.83 (46)	P60x0.9625	36.06	2024.38	0.018	1.22	10507.50	0.000
L47	31.83 - 28.75 (47)	P60x0.9625	36.51	2024.38	0.018	1.22	10507.50	0.000
L48	28.75 - 28.5 (48)	P60x0.8125	36.54	1713.23	0.021	1.22	8915.08	0.000
L49	28.5 - 23.5 (49)	P60x0.8125	37.21	1713.23	0.022	1.22	8915.08	0.000
L50	23.5 - 18.5 (50)	P60x0.95	38.29	1998.51	0.019	1.22	10375.42	0.000
L51	18.5 - 13.5 (51)	P60x0.95	38.55	1998.51	0.019	1.22	10375.42	0.000
L52	13.5 - 8.5 (52)	P60x0.95	38.80	1998.51	0.019	1.22	10375.42	0.000
L53	8.5 - 3.5 (53)	P60x0.95	39.03	1998.51	0.020	1.22	10375.42	0.000
L54	3.5 - 0 (54)	P60x0.95	39.18	1998.51	0.020	1.22	10375.42	0.000

Pole Interaction Design Data

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
L1	190 - 185 (1)	0.003	0.012	0.000	0.007	0.000	0.014	1.050	4.8.2
L2	185 - 180 (2)	0.004	0.034	0.000	0.010	0.001	0.037	1.050	4.8.2
L3	180 - 175 (3)	0.005	0.047	0.000	0.014	0.002	0.052	1.050	4.8.2
L4	175 - 170 (4)	0.006	0.071	0.000	0.015	0.002	0.077	1.050	4.8.2
L5	170 - 165 (5)	0.009	0.113	0.000	0.025	0.002	0.123	1.050	4.8.2
L6	165 - 160 (6)	0.013	0.167	0.000	0.037	0.002	0.182	1.050	4.8.2
L7	160 - 155 (7)	0.013	0.172	0.000	0.041	0.002	0.187	1.050	4.8.2
L8	155 - 150 (8)	0.013	0.222	0.000	0.042	0.002	0.237	1.050	4.8.2
L9	150 - 145 (9)	0.016	0.287	0.000	0.052	0.000	0.306	1.050	4.8.2
L10	145 - 140 (10)	0.017	0.348	0.000	0.053	0.000	0.368	1.050	4.8.2
L11	140 - 135 (11)	0.016	0.318	0.000	0.058	0.000	0.338	1.050	4.8.2
L12	135 - 130 (12)	0.017	0.368	0.000	0.059	0.000	0.388	1.050	4.8.2
L13	130 - 125 (13)	0.018	0.419	0.000	0.060	0.000	0.440	1.050	4.8.2
L14	125 - 120 (14)	0.018	0.471	0.000	0.062	0.000	0.493	1.050	4.8.2
L15	120 - 115 (15)	0.018	0.417	0.000	0.061	0.000	0.439	1.050	4.8.2
L16	115 - 112.67 (16)	0.018	0.437	0.000	0.062	0.000	0.459	1.050	4.8.2
L17	112.67 - 112.42 (17)	0.013	0.331	0.000	0.034	0.000	0.345	1.050	4.8.2
L18	112.42 - 107.42 (18)	0.014	0.364	0.000	0.035	0.000	0.379	1.050	4.8.2
L19	107.42 - 103.33 (19)	0.014	0.392	0.000	0.036	0.000	0.407	1.050	4.8.2
L20	103.33 - 103.08 (20)	0.014	0.393	0.000	0.036	0.000	0.409	1.050	4.8.2
L21	103.08 - 100 (21)	0.015	0.414	0.000	0.036	0.000	0.431	1.050	4.8.2
L22	100 - 95 (22)	0.015	0.377	0.000	0.038	0.000	0.394	1.050	4.8.2
L23	95 - 90 (23)	0.016	0.407	0.000	0.039	0.000	0.425	1.050	4.8.2
L24	90 - 89.5 (24)	0.016	0.410	0.000	0.039	0.000	0.428	1.050	4.8.2
L25	89.5 - 89.25 (25)	0.013	0.347	0.000	0.027	0.000	0.361	1.050	4.8.2
L26	89.25 - 85.5 (26)	0.013	0.366	0.000	0.028	0.000	0.381	1.050	4.8.2
L27	85.5 - 85.25 (27)	0.011	0.317	0.000	0.021	0.000	0.329	1.050	4.8.2
L28	85.25 - 84 (28)	0.012	0.322	0.000	0.021	0.000	0.334	1.050	4.8.2
L29	84 - 83.75 (29)	0.015	0.400	0.000	0.032	0.000	0.416	1.050	4.8.2
L30	83.75 - 82.5 (30)	0.015	0.407	0.000	0.034	0.000	0.423	1.050	4.8.2
L31	82.5 - 82.25 (31)	0.018	0.482	0.000	0.047	0.001	0.503	1.050	4.8.2
L32	82.25 - 80 (32)	0.018	0.498	0.000	0.048	0.001	0.519	1.050	4.8.2
L33	80 - 75 (33)	0.014	0.409	0.000	0.029	0.000	0.424	1.050	4.8.2
L34	75 - 70 (34)	0.015	0.437	0.000	0.029	0.000	0.453	1.050	4.8.2
L35	70 - 65 (35)	0.016	0.465	0.000	0.029	0.000	0.482	1.050	4.8.2
L36	65 - 60 (36)	0.016	0.493	0.000	0.030	0.000	0.511	1.050	4.8.2
L37	60 - 58.5 (37)	0.013	0.404	0.000	0.022	0.000	0.418	1.050	4.8.2
L38	58.5 - 58.25 (38)	0.015	0.460	0.000	0.025	0.000	0.476	1.050	4.8.2
L39	58.25 - 53.25 (39)	0.016	0.487	0.000	0.025	0.000	0.503	1.050	4.8.2
L40	53.25 - 48.25 (40)	0.017	0.514	0.000	0.026	0.000	0.531	1.050	4.8.2
L41	48.25 - 48 (41)	0.013	0.406	0.000	0.021	0.000	0.419	1.050	4.8.2
L42	48 - 43 (42)	0.013	0.428	0.000	0.021	0.000	0.441	1.050	4.8.2
L43	43 - 40 (43)	0.014	0.441	0.000	0.021	0.000	0.455	1.050	4.8.2
L44	40 - 35 (44)	0.015	0.463	0.000	0.022	0.000	0.478	1.050	4.8.2
L45	35 - 32.08 (45)	0.015	0.476	0.000	0.022	0.000	0.492	1.050	4.8.2
L46	32.08 - 31.83 (46)	0.012	0.374	0.000	0.018	0.000	0.386	1.050	4.8.2
L47	31.83 - 28.75 (47)	0.012	0.385	0.000	0.018	0.000	0.398	1.050	4.8.2
L48	28.75 - 28.5	0.015	0.468	0.000	0.021	0.000	0.483	1.050	4.8.2

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
	(48)								
L49	28.5 - 23.5	0.015	0.490	0.000	0.022	0.000	0.506	1.050	4.8.2
	(49)								
L50	23.5 - 18.5	0.014	0.430	0.000	0.019	0.000	0.444	1.050	4.8.2
	(50)								
L51	18.5 - 13.5	0.015	0.449	0.000	0.019	0.000	0.464	1.050	4.8.2
	(51)								
L52	13.5 - 8.5 (52)	0.015	0.468	0.000	0.019	0.000	0.484	1.050	4.8.2
L53	8.5 - 3.5 (53)	0.016	0.488	0.000	0.020	0.000	0.504	1.050	4.8.2
L54	3.5 - 0 (54)	0.016	0.502	0.000	0.020	0.000	0.519	1.050	4.8.2

Section Capacity Table

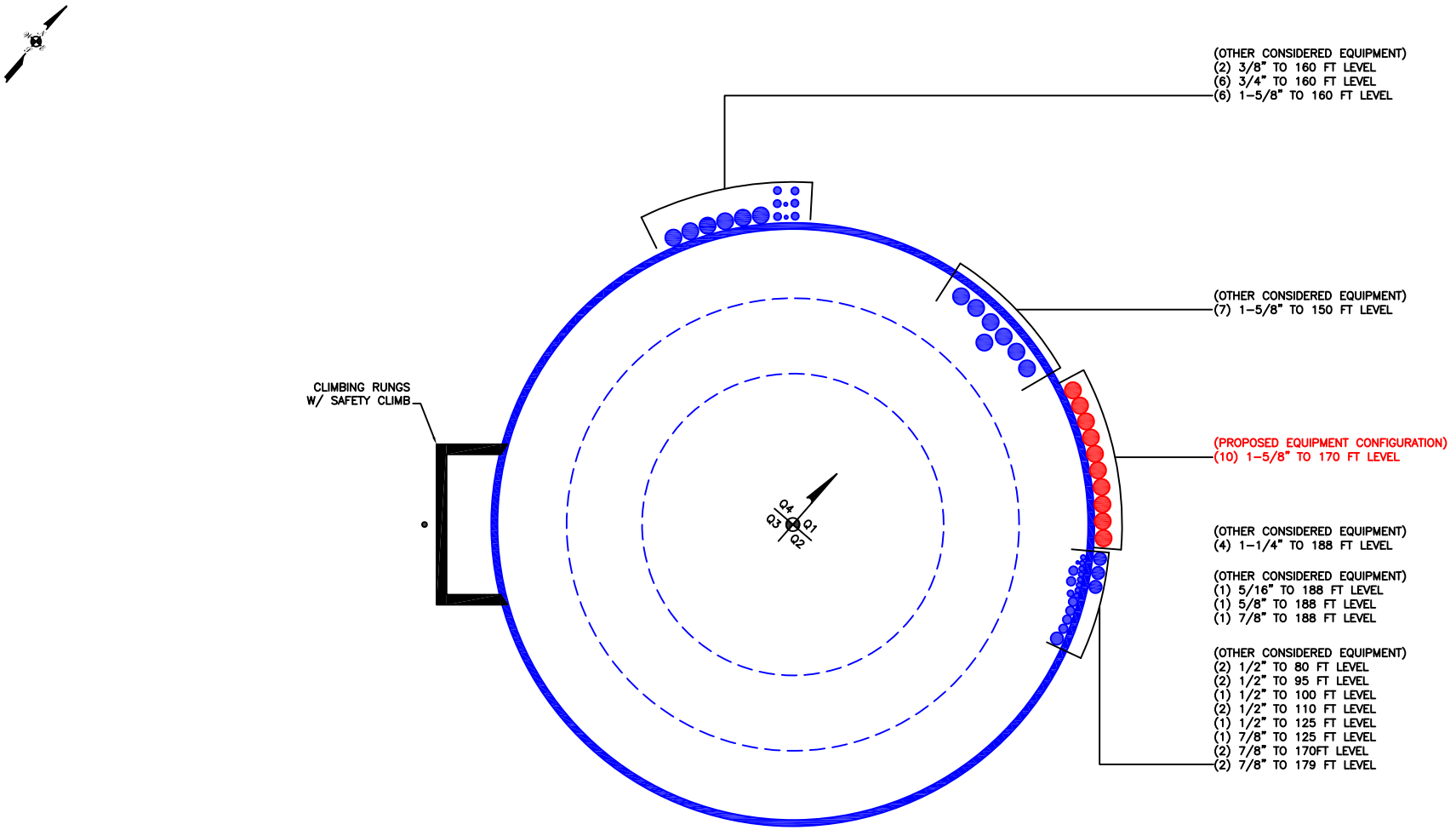
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	190 - 185	Pole	P30x0.375	1	-3.44	1376.61	1.4	Pass
L2	185 - 180	Pole	P30x0.375	2	-4.72	1376.61	3.5	Pass
L3	180 - 175	Pole	P36x0.375	3	-7.76	1564.60	5.0	Pass
L4	175 - 170	Pole	P36x0.375	4	-8.68	1564.60	7.3	Pass
L5	170 - 165	Pole	P36x0.375	5	-14.12	1564.60	11.8	Pass
L6	165 - 160	Pole	P36x0.375	6	-19.98	1564.60	17.4	Pass
L7	160 - 155	Pole	P42x0.375	7	-21.16	1752.31	17.8	Pass
L8	155 - 150	Pole	P42x0.375	8	-22.35	1752.31	22.6	Pass
L9	150 - 145	Pole	P42x0.375	9	-27.03	1752.31	29.1	Pass
L10	145 - 140	Pole	P42x0.375	10	-28.28	1752.31	35.0	Pass
L11	140 - 135	Pole	P48x0.375	11	-29.66	1939.86	32.2	Pass
L12	135 - 130	Pole	P48x0.375	12	-31.04	1939.86	37.0	Pass
L13	130 - 125	Pole	P48x0.375	13	-32.44	1939.86	41.9	Pass
L14	125 - 120	Pole	P48x0.375	14	-34.11	1939.86	47.0	Pass
L15	120 - 115	Pole	P54x0.375	15	-35.64	2127.30	41.8	Pass
L16	115 - 112.67	Pole	P54x0.375	16	-36.36	2127.30	43.7	Pass
L17	112.67 - 112.42	Pole	P54x0.4875	17	-36.46	2937.03	32.9	Pass
L18	112.42 - 107.42	Pole	P54x0.4875	18	-38.64	2937.03	36.1	Pass
L19	107.42 - 103.33	Pole	P54x0.4875	19	-40.20	2937.03	38.8	Pass
L20	103.33 - 103.08	Pole	P54x0.4875	20	-40.30	2937.03	39.0	Pass
L21	103.08 - 100	Pole	P54x0.4875	21	-41.48	2937.03	41.0	Pass
L22	100 - 95	Pole	P60x0.475	22	-43.65	3080.74	37.5	Pass
L23	95 - 90	Pole	P60x0.475	23	-45.99	3080.74	40.4	Pass
L24	90 - 89.5	Pole	P60x0.475	24	-46.20	3080.74	40.7	Pass
L25	89.5 - 89.25	Pole	P60x0.55625	25	-46.32	3748.89	34.4	Pass
L26	89.25 - 85.5	Pole	P60x0.55625	26	-48.06	3748.89	36.3	Pass
L27	85.5 - 85.25	Pole	P60x0.6375	27	-48.19	4457.83	31.3	Pass
L28	85.25 - 84	Pole	P60x0.6375	28	-48.84	4457.83	31.8	Pass
L29	84 - 83.75	Pole	P60x0.525	29	-48.95	3487.07	39.6	Pass
L30	83.75 - 82.5	Pole	P60x0.525	30	-49.48	3487.07	40.3	Pass
L31	82.5 - 82.25	Pole	P60x0.45	31	-49.58	2883.38	47.9	Pass
L32	82.25 - 80	Pole	P60x0.45	32	-50.47	2883.38	49.4	Pass
L33	80 - 75	Pole	P60x0.575	33	-53.93	3908.88	40.4	Pass
L34	75 - 70	Pole	P60x0.575	34	-56.38	3908.88	43.1	Pass
L35	70 - 65	Pole	P60x0.575	35	-58.84	3908.88	45.9	Pass
L36	65 - 60	Pole	P60x0.575	36	-61.30	3908.88	48.6	Pass
L37	60 - 58.5	Pole	P60x0.7	37	-63.64	5030.80	39.8	Pass
L38	58.5 - 58.25	Pole	P60x0.625	38	-63.78	4346.11	45.3	Pass
L39	58.25 - 53.25	Pole	P60x0.625	39	-66.43	4346.11	47.9	Pass
L40	53.25 - 48.25	Pole	P60x0.625	40	-69.10	4346.11	50.6	Pass
L41	48.25 - 48	Pole	P60x0.775	41	-69.26	5723.18	39.9	Pass
L42	48 - 43	Pole	P60x0.775	42	-72.41	5723.18	42.0	Pass
L43	43 - 40	Pole	P60x0.775	43	-74.30	5723.18	43.3	Pass
L44	40 - 35	Pole	P60x0.775	44	-79.59	5723.18	45.5	Pass
L45	35 - 32.08	Pole	P60x0.775	45	-81.43	5723.18	46.8	Pass
L46	32.08 - 31.83	Pole	P60x0.9625	46	-81.63	7085.33	36.8	Pass
L47	31.83 - 28.75	Pole	P60x0.9625	47	-83.97	7085.33	37.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L48	28.75 - 28.5	Pole	P60x0.8125	48	-84.13	5996.32	46.0	Pass
L49	28.5 - 23.5	Pole	P60x0.8125	49	-87.45	5996.32	48.1	Pass
L50	23.5 - 18.5	Pole	P60x0.95	50	-94.18	6994.78	42.3	Pass
L51	18.5 - 13.5	Pole	P60x0.95	51	-97.97	6994.78	44.2	Pass
L52	13.5 - 8.5	Pole	P60x0.95	52	-101.72	6994.78	46.1	Pass
L53	8.5 - 3.5	Pole	P60x0.95	53	-105.36	6994.78	48.0	Pass
L54	3.5 - 0	Pole	P60x0.95	54	-107.89	6994.78	49.4	Pass
							Summary	
						Pole (L40)	50.6	Pass
						RATING =	**50.6**	**Pass**

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

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 160 FT LEVEL
(6) 3/4" TO 160 FT LEVEL
(6) 1-5/8" TO 160 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(7) 1-5/8" TO 150 FT LEVEL
CLIMBING RUNGS
W/ SAFETY CLIMB
(PROPOSED EQUIPMENT CONFIGURATION)
(10) 1-5/8" TO 170 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(4) 1-1/4" TO 188 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 5/16" TO 188 FT LEVEL
(1) 5/8" TO 188 FT LEVEL
(1) 7/8" TO 188 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 80 FT LEVEL
(2) 1/2" TO 95 FT LEVEL
(1) 1/2" TO 100 FT LEVEL
(2) 1/2" TO 110 FT LEVEL
(1) 1/2" TO 125 FT LEVEL
(1) 7/8" TO 125 FT LEVEL
(2) 7/8" TO 170FT LEVEL
(2) 7/8" TO 179 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 829046

Work Order: 1890172

Copyright © 2019 Crown Castle

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	190	10		0	30	30	0.375		A53-B-42
2	180	20		0	36.00	36	0.375		A53-B-42
3	160	20		0	42.00	42	0.375		A53-B-42
4	140	20		0	48.00	48	0.375		A53-B-42
5	120	20		0	54.00	54	0.375		A53-B-42
6	100	20		0	60.00	60	0.375		A53-B-42
7	80	20		0	60.00	60	0.5		A53-B-42
8	60	20		0	60.00	60	0.625		A53-B-42
9	40	20		0	60.00	60	0.625		A53-B-42
10	20	20		0	60.00	60	0.75		A53-B-42

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	0	32.08	plate	MS-850 (1.1875")	3	0	120	240															
2	28.75	48.25	plate	MS-650 (1.1875")	3	24	144	264															
3	58.5	85.5	plate	MS-450 (1.1875")	3	0	120	240															
4	84	103.33	plate	MS-600 (1.1875")	3	21	141	261															
5	103.33	112.67	plate	MS-600 (1.1875")	3				0	120	240												
6	82.5	89.5	plate	MS-450 (1.1875")	3							90	210	330									
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	8.5	1.25	10.625	0.625	45.000	45.000	17.250	9.063	1.1875	A572-65
2	6.5	1.25	8.125	0.625	33.000	33.000	19.250	6.563	1.1875	A572-65
3	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65
4	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
5	6	1	6	0.5	24.000	24.000	16.375	4.750	1.1875	A572-65
6	4.5	1	4.5	0.5	18.000	18.000	20.625	3.250	1.1875	A572-65

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	190 - 185	5		0	30.000	30.000	0.375	A53-B-42	1.000
2	185 - 180	5	0	0	30.000	30.000	0.375	A53-B-42	1.000
3	180 - 175	5		0	36.000	36.000	0.375	A53-B-42	1.000
4	175 - 170	5		0	36.000	36.000	0.375	A53-B-42	1.000
5	170 - 165	5		0	36.000	36.000	0.375	A53-B-42	1.000
6	165 - 160	5	0	0	36.000	36.000	0.375	A53-B-42	1.000
7	160 - 155	5		0	42.000	42.000	0.375	A53-B-42	1.000
8	155 - 150	5		0	42.000	42.000	0.375	A53-B-42	1.000
9	150 - 145	5		0	42.000	42.000	0.375	A53-B-42	1.000
10	145 - 140	5	0	0	42.000	42.000	0.375	A53-B-42	1.000
11	140 - 135	5		0	48.000	48.000	0.375	A53-B-42	1.000
12	135 - 130	5		0	48.000	48.000	0.375	A53-B-42	1.000
13	130 - 125	5		0	48.000	48.000	0.375	A53-B-42	1.000
14	125 - 120	5	0	0	48.000	48.000	0.375	A53-B-42	1.000
15	120 - 115	5		0	54.000	54.000	0.375	A53-B-42	1.000
16	115 - 112.67	2.33		0	54.000	54.000	0.375	A53-B-42	1.000
17	112.67 - 112.42	0.25		0	54.000	54.000	0.4875	A53-B-42	0.990
18	112.42 - 107.42	5		0	54.000	54.000	0.4875	A53-B-42	0.990
19	107.42 - 103.33	4.09		0	54.000	54.000	0.4875	A53-B-42	0.990
20	103.33 - 103.08	0.25		0	54.000	54.000	0.4875	A53-B-42	0.990
21	103.08 - 100	3.08	0	0	54.000	54.000	0.4875	A53-B-42	0.990
22	100 - 95	5		0	60.000	60.000	0.475	A53-B-42	0.993
23	95 - 90	5		0	60.000	60.000	0.475	A53-B-42	0.993
24	90 - 89.5	0.5		0	60.000	60.000	0.475	A53-B-42	0.993
25	89.5 - 89.25	0.25		0	60.000	60.000	0.55625	A53-B-42	0.979
26	89.25 - 85.5	3.75		0	60.000	60.000	0.55625	A53-B-42	0.979
27	85.5 - 85.25	0.25		0	60.000	60.000	0.6375	A53-B-42	0.969
28	85.25 - 84	1.25		0	60.000	60.000	0.6375	A53-B-42	0.969
29	84 - 83.75	0.25		0	60.000	60.000	0.525	A53-B-42	0.991
30	83.75 - 82.5	1.25		0	60.000	60.000	0.525	A53-B-42	0.991
31	82.5 - 82.25	0.25		0	60.000	60.000	0.45	A53-B-42	0.995
32	82.25 - 80	2.25	0	0	60.000	60.000	0.45	A53-B-42	0.995
33	80 - 75	5		0	60.000	60.000	0.575	A53-B-42	0.996
34	75 - 70	5		0	60.000	60.000	0.575	A53-B-42	0.996
35	70 - 65	5		0	60.000	60.000	0.575	A53-B-42	0.996
36	65 - 60	5	0	0	60.000	60.000	0.575	A53-B-42	0.996
37	60 - 58.5	1.5		0	60.000	60.000	0.7	A53-B-42	0.998
38	58.5 - 58.25	0.25		0	60.000	60.000	0.625	A53-B-42	1.000
39	58.25 - 53.25	5		0	60.000	60.000	0.625	A53-B-42	1.000
40	53.25 - 48.25	5		0	60.000	60.000	0.625	A53-B-42	1.000
41	48.25 - 48	0.25		0	60.000	60.000	0.775	A53-B-42	0.978
42	48 - 43	5		0	60.000	60.000	0.775	A53-B-42	0.978
43	43 - 40	3	0	0	60.000	60.000	0.775	A53-B-42	0.978
44	40 - 35	5		0	60.000	60.000	0.775	A53-B-42	0.978
45	35 - 32.08	2.92		0	60.000	60.000	0.775	A53-B-42	0.978
46	32.08 - 31.83	0.25		0	60.000	60.000	0.9625	A53-B-42	0.968
47	31.83 - 28.75	3.08		0	60.000	60.000	0.9625	A53-B-42	0.968
48	28.75 - 28.5	0.25		0	60.000	60.000	0.8125	A53-B-42	0.983
49	28.5 - 23.5	5	0	0	60.000	60.000	0.8125	A53-B-42	0.983
50	23.5 - 18.5	5		0	60.000	60.000	0.95	A53-B-42	0.973
51	18.5 - 13.5	5		0	60.000	60.000	0.95	A53-B-42	0.973
52	13.5 - 8.5	5		0	60.000	60.000	0.95	A53-B-42	0.973
53	8.5 - 3.5	5		0	60.000	60.000	0.95	A53-B-42	0.973
54	3.5 - 0	3.5		0	60.000	60.000	0.95	A53-B-42	0.973

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	190 - 185	3.44	10.91	2.78
2	185 - 180	4.72	31.77	4.01
3	180 - 175	7.76	62.49	6.26
4	175 - 170	8.68	94.88	6.67
5	170 - 165	14.12	151.61	11.47
6	165 - 160	19.98	223.97	16.95
7	160 - 155	21.16	309.90	17.43
8	155 - 150	22.35	398.20	17.90
9	150 - 145	27.03	514.83	21.93
10	145 - 140	28.28	625.57	22.37
11	140 - 135	29.66	738.62	22.86
12	135 - 130	31.04	854.08	23.34
13	130 - 125	32.44	971.89	23.80
14	125 - 120	34.11	1092.73	24.35
15	120 - 115	35.64	1215.69	24.85
16	115 - 112.67	36.36	1273.85	25.09
17	112.67 - 112.42	36.46	1280.12	25.11
18	112.42 - 107.42	38.64	1407.60	25.74
19	107.42 - 103.33	40.20	1513.71	26.16
20	103.33 - 103.08	40.30	1520.25	26.21
21	103.08 - 100	41.48	1601.43	26.52
22	100 - 95	43.65	1735.90	27.09
23	95 - 90	45.99	1873.58	27.74
24	90 - 89.5	46.20	1887.46	27.79
25	89.5 - 89.25	46.32	1894.41	27.81
26	89.25 - 85.5	48.06	1999.45	28.23
27	85.5 - 85.25	48.19	2006.51	28.28
28	85.25 - 84	48.84	2042.01	28.54
29	84 - 83.75	48.95	2049.15	28.59
30	83.75 - 82.5	49.48	2085.44	29.80
31	82.5 - 82.25	49.58	2092.89	29.85
32	82.25 - 80	50.47	2160.27	30.07
33	80 - 75	53.93	2314.88	31.10
34	75 - 70	56.38	2471.46	31.57
35	70 - 65	58.84	2630.33	32.01
36	65 - 60	61.30	2791.39	32.44
37	60 - 58.5	63.64	2840.87	33.07
38	58.5 - 58.25	63.78	2849.14	33.08
39	58.25 - 53.25	66.43	3015.51	33.49
40	53.25 - 48.25	69.10	3183.83	33.87
41	48.25 - 48	69.26	3192.30	33.88
42	48 - 43	72.41	3362.60	34.27
43	43 - 40	74.30	3465.67	34.48
44	40 - 35	79.59	3642.76	35.60
45	35 - 32.08	81.43	3747.28	36.03
46	32.08 - 31.83	81.63	3756.29	36.06
47	31.83 - 28.75	83.97	3867.99	36.51
48	28.75 - 28.5	84.13	3877.12	36.54
49	28.5 - 23.5	87.45	4061.42	37.21
50	23.5 - 18.5	94.18	4249.28	38.29
51	18.5 - 13.5	97.97	4441.28	38.55
52	13.5 - 8.5	101.72	4634.55	38.80
53	8.5 - 3.5	105.36	4829.02	39.03
54	3.5 - 0	107.89	4965.82	39.18

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
190 - 185	Pole	TP30x30x0.375	Pole	1.3%	Pass
185 - 180	Pole	TP30x30x0.375	Pole	3.5%	Pass
180 - 175	Pole	TP36x36x0.375	Pole	4.9%	Pass
175 - 170	Pole	TP36x36x0.375	Pole	7.3%	Pass
170 - 165	Pole	TP36x36x0.375	Pole	11.7%	Pass
165 - 160	Pole	TP36x36x0.375	Pole	17.3%	Pass
160 - 155	Pole	TP42x42x0.375	Pole	17.7%	Pass
155 - 150	Pole	TP42x42x0.375	Pole	22.4%	Pass
150 - 145	Pole	TP42x42x0.375	Pole	28.9%	Pass
145 - 140	Pole	TP42x42x0.375	Pole	34.8%	Pass
140 - 135	Pole	TP48x48x0.375	Pole	31.9%	Pass
135 - 130	Pole	TP48x48x0.375	Pole	36.7%	Pass
130 - 125	Pole	TP48x48x0.375	Pole	41.6%	Pass
125 - 120	Pole	TP48x48x0.375	Pole	46.7%	Pass
120 - 115	Pole	TP54x54x0.375	Pole	41.5%	Pass
115 - 112.67	Pole	TP54x54x0.375	Pole	43.4%	Pass
112.67 - 112.42	Pole + Reinf.	TP54x54x0.4875	Pole	33.4%	Pass
112.42 - 107.42	Pole + Reinf.	TP54x54x0.4875	Pole	36.7%	Pass
107.42 - 103.33	Pole + Reinf.	TP54x54x0.4875	Pole	39.4%	Pass
103.33 - 103.08	Pole + Reinf.	TP54x54x0.4875	Pole	39.6%	Pass
103.08 - 100	Pole + Reinf.	TP54x54x0.4875	Pole	41.6%	Pass
100 - 95	Pole + Reinf.	TP60x60x0.475	Pole	37.9%	Pass
95 - 90	Pole + Reinf.	TP60x60x0.475	Pole	40.8%	Pass
90 - 89.5	Pole + Reinf.	TP60x60x0.475	Pole	41.1%	Pass
89.5 - 89.25	Pole + Reinf.	TP60x60x0.5563	Pole	35.6%	Pass
89.25 - 85.5	Pole + Reinf.	TP60x60x0.5563	Pole	37.5%	Pass
85.5 - 85.25	Pole + Reinf.	TP60x60x0.6375	Pole	33.1%	Pass
85.25 - 84	Pole + Reinf.	TP60x60x0.6375	Pole	33.7%	Pass
84 - 83.75	Pole + Reinf.	TP60x60x0.525	Pole	40.4%	Pass
83.75 - 82.5	Pole + Reinf.	TP60x60x0.525	Pole	41.1%	Pass
82.5 - 82.25	Pole + Reinf.	TP60x60x0.45	Pole	48.2%	Pass
82.25 - 80	Pole + Reinf.	TP60x60x0.45	Pole	49.7%	Pass
80 - 75	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	40.9%	Pass
75 - 70	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	43.6%	Pass
70 - 65	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	46.4%	Pass
65 - 60	Pole + Reinf.	TP60x60x0.575	Reinf. 3 Compression	49.2%	Pass
60 - 58.5	Pole + Reinf.	TP60x60x0.7	Reinf. 3 Compression	41.3%	Pass
58.5 - 58.25	Pole	TP60x60x0.625	Pole	45.3%	Pass
58.25 - 53.25	Pole	TP60x60x0.625	Pole	47.9%	Pass
53.25 - 48.25	Pole	TP60x60x0.625	Pole	50.5%	Pass
48.25 - 48	Pole + Reinf.	TP60x60x0.775	Pole	41.3%	Pass
48 - 43	Pole + Reinf.	TP60x60x0.775	Pole	43.5%	Pass
43 - 40	Pole + Reinf.	TP60x60x0.775	Pole	44.9%	Pass
40 - 35	Pole + Reinf.	TP60x60x0.775	Pole	47.2%	Pass
35 - 32.08	Pole + Reinf.	TP60x60x0.775	Pole	48.5%	Pass
32.08 - 31.83	Pole + Reinf.	TP60x60x0.9625	Pole	39.2%	Pass
31.83 - 28.75	Pole + Reinf.	TP60x60x0.9625	Pole	40.4%	Pass
28.75 - 28.5	Pole + Reinf.	TP60x60x0.8125	Pole	47.5%	Pass
28.5 - 23.5	Pole + Reinf.	TP60x60x0.8125	Pole	49.7%	Pass
23.5 - 18.5	Pole + Reinf.	TP60x60x0.95	Pole	44.2%	Pass
18.5 - 13.5	Pole + Reinf.	TP60x60x0.95	Pole	46.2%	Pass
13.5 - 8.5	Pole + Reinf.	TP60x60x0.95	Pole	48.2%	Pass
8.5 - 3.5	Pole + Reinf.	TP60x60x0.95	Pole	50.2%	Pass
3.5 - 0	Pole + Reinf.	TP60x60x0.95	Pole	51.6%	Pass
				Summary	
			Pole	51.6%	Pass
			Reinforcement	49.2%	Pass
			Overall	51.6%	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
190 - 185	3829	n/a	3829	34.90	n/a	34.90	1.3%						
185 - 180	3829	n/a	3829	34.90	n/a	34.90	3.5%						
180 - 175	6659	n/a	6659	41.97	n/a	41.97	4.9%						
175 - 170	6659	n/a	6659	41.97	n/a	41.97	7.3%						
170 - 165	6659	n/a	6659	41.97	n/a	41.97	11.7%						
165 - 160	6659	n/a	6659	41.97	n/a	41.97	17.3%						
160 - 155	10622	n/a	10622	49.04	n/a	49.04	17.7%						
155 - 150	10622	n/a	10622	49.04	n/a	49.04	22.4%						
150 - 145	10622	n/a	10622	49.04	n/a	49.04	28.9%						
145 - 140	10622	n/a	10622	49.04	n/a	49.04	34.8%						
140 - 135	15908	n/a	15908	56.11	n/a	56.11	31.9%						
135 - 130	15908	n/a	15908	56.11	n/a	56.11	36.7%						
130 - 125	15908	n/a	15908	56.11	n/a	56.11	41.6%						
125 - 120	15908	n/a	15908	56.11	n/a	56.11	46.7%						
120 - 115	22710	n/a	22710	63.18	n/a	63.18	41.5%						
115 - 112.67	22710	n/a	22710	63.18	n/a	63.18	43.4%						
112.67 - 112.42	22710	6834	29544	63.18	18.00	81.18	33.4%					29.9%	
112.42 - 107.42	22710	6834	29544	63.18	18.00	81.18	36.7%					32.8%	
107.42 - 103.33	22710	6834	29544	63.18	18.00	81.18	39.4%					35.3%	
103.33 - 103.08	22710	6834	29544	63.18	18.00	81.18	39.6%				35.4%		
103.08 - 100	22710	6834	29544	63.18	18.00	81.18	41.6%				37.3%		
100 - 95	31217	8400	39617	70.24	18.00	88.24	37.9%				33.5%		
95 - 90	31217	8400	39617	70.24	18.00	88.24	40.8%				36.2%		
90 - 89.5	31217	8400	39617	70.24	18.00	88.24	41.1%				36.4%		
89.5 - 89.25	31217	14691	45908	70.24	31.50	101.74	35.6%				31.5%		34.8%
89.25 - 85.5	31217	14691	45908	70.24	31.50	101.74	37.5%				33.2%		36.7%
85.5 - 85.25	31217	20982	52199	70.24	45.00	115.24	33.1%			32.3%	29.3%		32.3%
85.25 - 84	31217	20982	52199	70.24	45.00	115.24	33.7%			32.9%	29.8%		32.9%
84 - 83.75	31217	12582	43799	70.24	27.00	97.24	40.4%			39.4%			39.4%
83.75 - 82.5	31217	12582	43799	70.24	27.00	97.24	41.1%			40.1%			40.1%
82.5 - 82.25	31217	6291	37508	70.24	13.50	83.74	48.2%			47.1%			
82.25 - 80	31217	6291	37508	70.24	13.50	83.74	49.7%			48.6%			
80 - 75	41363	6291	47654	93.46	13.50	106.96	40.8%			40.9%			
75 - 70	41363	6291	47654	93.46	13.50	106.96	43.5%			43.6%			
70 - 65	41363	6291	47654	93.46	13.50	106.96	46.3%			46.4%			
65 - 60	41363	6291	47654	93.46	13.50	106.96	49.1%			49.2%			
60 - 58.5	51381	6291	57672	116.58	13.50	130.08	40.2%			41.3%			
58.5 - 58.25	51381	n/a	51381	116.58	n/a	116.58	45.3%						
58.25 - 53.25	51381	n/a	51381	116.58	n/a	116.58	47.9%						
53.25 - 48.25	51381	n/a	51381	116.58	n/a	116.58	50.5%						
48.25 - 48	51381	11475	62856	116.58	24.38	140.96	41.3%		37.9%				
48 - 43	51381	11475	62856	116.58	24.38	140.96	43.5%		39.9%				
43 - 40	51381	11475	62856	116.58	24.38	140.96	44.9%		41.2%				
40 - 35	51381	11475	62856	116.58	24.38	140.96	47.2%		43.3%				
35 - 32.08	51381	11475	62856	116.58	24.38	140.96	48.5%		44.5%				
32.08 - 31.83	51381	26521	77901	116.58	56.25	172.83	39.2%	35.5%	35.9%				
31.83 - 28.75	51381	26521	77901	116.58	56.25	172.83	40.4%	35.3%	37.0%				
28.75 - 28.5	51381	15046	66426	116.58	31.88	148.46	47.5%	41.5%					
28.5 - 23.5	51381	15046	66426	116.58	31.88	148.46	49.7%	43.5%					
23.5 - 18.5	61271	15046	76317	139.60	31.88	171.48	44.2%	39.6%					
18.5 - 13.5	61271	15046	76317	139.60	31.88	171.48	46.2%	41.4%					
13.5 - 8.5	61271	15046	76317	139.60	31.88	171.48	48.2%	43.2%					
8.5 - 3.5	61271	15046	76317	139.60	31.88	171.48	50.2%	45.0%					
3.5 - 0	61271	15046	76317	139.60	31.88	171.48	51.6%	47.9%					

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

Monopole Flange Plate Connection

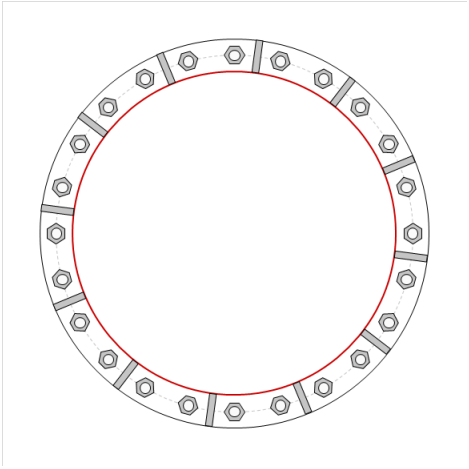
Elevation = 180 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

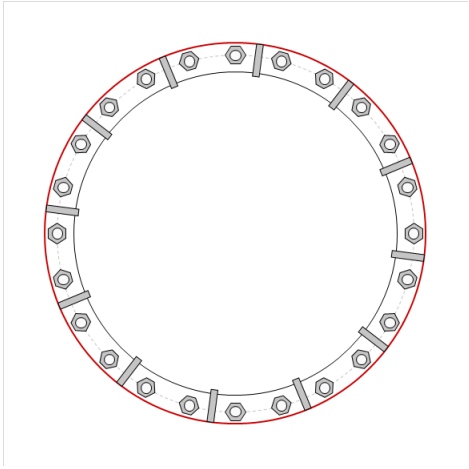
Applied Loads	
Moment (kip-ft)	31.77
Axial Force (kips)	4.72
Shear Force (kips)	4.01

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(24) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 33" BC

Top Plate Data

36" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

30" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(12) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(12) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

30" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

36" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	1.73	
Allowable (kips)	54.54	
Stress Rating:	**3.0%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Top Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Bottom Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Top Pole Capacity

Punching Shear:	**Pirod OK**

Bottom Pole Capacity

Punching Shear:	**Pirod OK**

Monopole Flange Plate Connection

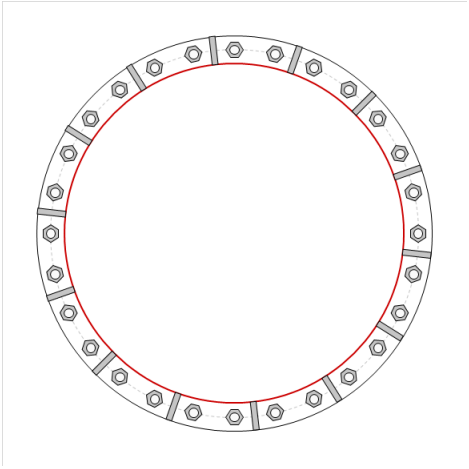
Elevation = 160 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

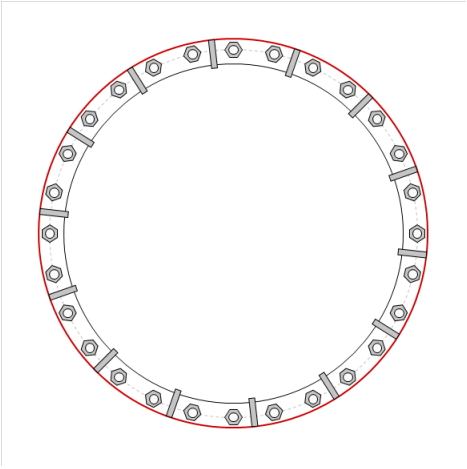
Applied Loads	
Moment (kip-ft)	223.97
Axial Force (kips)	19.98
Shear Force (kips)	16.95

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(28) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 39" BC

Top Plate Data

42" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

36" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(14) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(14) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

36" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

42" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	9.13	
Allowable (kips)	54.53	
Stress Rating:	**15.9%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Top Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Bottom Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Top Pole Capacity

Punching Shear:	**Pirod OK**

Bottom Pole Capacity

Punching Shear:	**Pirod OK**

Monopole Flange Plate Connection

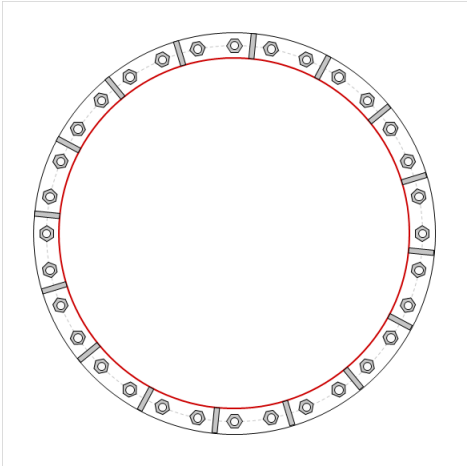
Elevation = 140 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

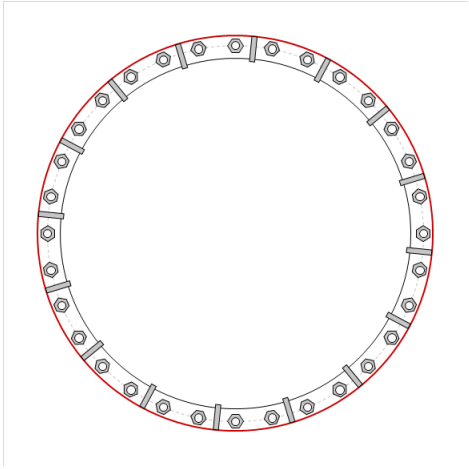
Applied Loads	
Moment (kip-ft)	625.57
Axial Force (kips)	28.28
Shear Force (kips)	22.37

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(32) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 45" BC

Top Plate Data

48" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

42" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(16) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(16) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

42" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

48" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	19.96	
Allowable (kips)	54.53	
Stress Rating:	**34.9%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Top Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Bottom Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Top Pole Capacity

Punching Shear:	**Pirod OK**

Bottom Pole Capacity

Punching Shear:	**Pirod OK**

Monopole Flange Plate Connection

Elevation = 120 ft.

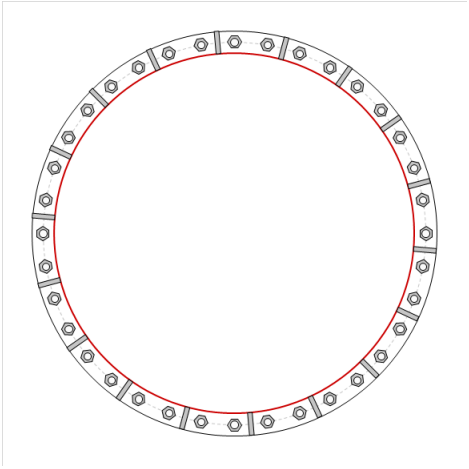
BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1

TIA-222 Revision	H

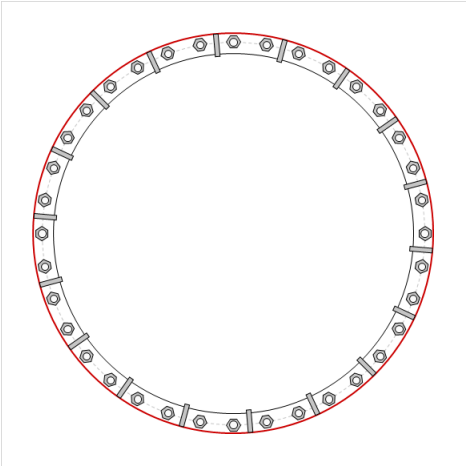
Applied Loads	
Moment (kip-ft)	1092.73
Axial Force (kips)	34.11
Shear Force (kips)	24.35

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(36) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 51" BC

Top Plate Data

54" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

48" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(18) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(18) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

48" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

54" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	27.62	
Allowable (kips)	54.53	
Stress Rating:	**48.2%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Top Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Bottom Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Top Pole Capacity

Punching Shear:	**Pirod OK**

Bottom Pole Capacity

Punching Shear:	**Pirod OK**

Monopole Flange Plate Connection

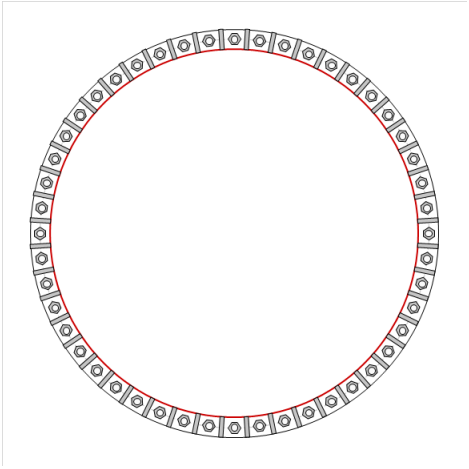
Elevation = 100 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

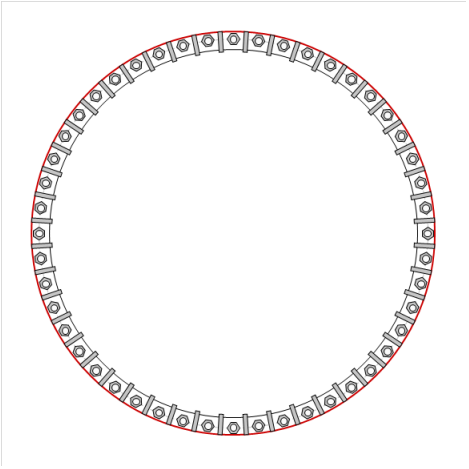
Applied Loads	
Moment (kip-ft)	1601.43
Axial Force (kips)	41.48
Shear Force (kips)	26.52

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(48) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 57" BC

Top Plate Data

60" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

54" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(48) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(48) 5"H x 3"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

54" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

60" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	27.23	
Allowable (kips)	54.53	
Stress Rating:	**47.6%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Bottom Plate Capacity

Max Stress (ksi):	-
Allowable Stress (ksi):	-
Stress Rating:	**Pirod OK**
Tension Side Stress Rating:	**Pirod OK**

Top Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Bottom Stiffener Capacity

Horizontal Weld:	**Pirod OK**
Vertical Weld:	**Pirod OK**
Plate Flexure+Shear:	**Pirod OK**
Plate Tension+Shear:	**Pirod OK**
Plate Compression:	**Pirod OK**

Top Pole Capacity

Punching Shear:	**Pirod OK**

Bottom Pole Capacity

Punching Shear:	**Pirod OK**

Monopole Flange Plate Connection

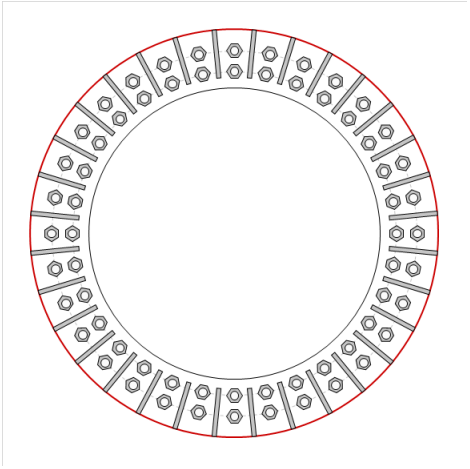
Elevation = 80 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

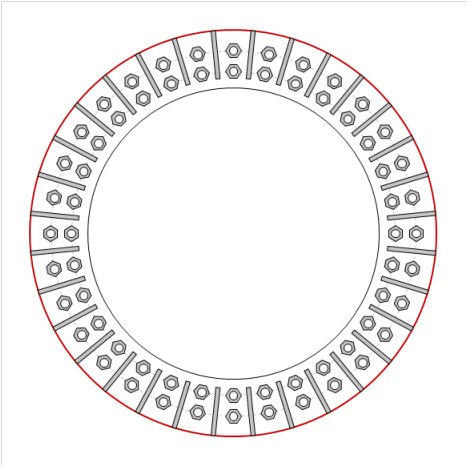
Applied Loads	
Moment (kip-ft)	1720.18
Axial Force (kips)	50.47
Shear Force (kips)	30.07

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 47" BC

Top Plate Data
42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data
42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data
(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data
(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data
60" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data
60" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	26.46	
Allowable (kips)	76.31	
Stress Rating:	**33.0%**	Pass

Top Plate Capacity

Max Stress (ksi):	14.39	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**42.3%**	Pass
Tension Side Stress Rating:	**N/A**	

Bottom Plate Capacity

Max Stress (ksi):	14.39	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**42.3%**	Pass
Tension Side Stress Rating:	**N/A**	

Top Stiffener Capacity

Horizontal Weld:	**30.1%**	Pass
Vertical Weld:	**26.3%**	Pass
Plate Flexure+Shear:	**21.1%**	Pass
Plate Tension+Shear:	**25.2%**	Pass
Plate Compression:	**52.1%**	Pass

Bottom Stiffener Capacity

Horizontal Weld:	**26.6%**	Pass
Vertical Weld:	**23.2%**	Pass
Plate Flexure+Shear:	**18.0%**	Pass
Plate Tension+Shear:	**21.8%**	Pass
Plate Compression:	**45.9%**	Pass

Top Pole Capacity

Punching Shear:	**17.0%**	Pass

Bottom Pole Capacity

Punching Shear:	**11.2%**	Pass

Bolted Bridge Stiffeners Reinforcement Check

TIA Rev. H

Description:

This sheet is for the analysis of a reinforced flange connection using existing bolted bridge stiffeners.

Assumptions / Notes:

1. For analysis purposes, load is distributed between flange bolts and existing bridge stiffeners.
2. The plastification of the pole is not considered.
3. All shear and axial loads are taken by the flange bolts.

1. PARAMETERS

Flange Elevation: 80'- 0"

1.1 tnxTower Reactions

Apply TIA-222-H Section 15.5? No / Yes

Moment: $M := 2160.27kip \cdot ft$

Axial Load: $P := 50.47kip$

Shear Load: $V := 30.07kip$

1.2 Shaft Properties at the Flange

Upper Shaft Diameter: $D_{shaft1} := 60in$

Upper Shaft Thickness: $t_1 := 0375in$

Lower Shaft Diameter: $D_{shaft2} := 60in$

Lower Shaft Thickness: $t_2 := 0.5in$

Shaft Grade: $Fy_{shaft} := 42ksi$ $Fu_{shaft} := 60ksi$

1.3 Existing Bridge Stiffener Properties

(Verify existing bolted connection for reduced moment.)

Number of Existing Bridge Stiffeners: $N_{exist} := 3$

Existing Bridge Stiffener Grade: $Fy_{Ex} := 65ksi$ $Fu_{Ex} := 80ksi$

Diameter to the centroid of Existing Bridge Stiffeners: $BC_{exist} := 61in$

Thickness of Existing Bridge Stiffeners: $t_{exist} := 1in$

Width of Existing Bridge Stiffeners: $w_{exist} := 4.5in$

Gross Area of One Existing Bridge Stiffener: $A_{g_exist} := w_{exist} \cdot t_{exist} = 4.5 \cdot in^2$

Moment of Inertia of Existing Bridge Stiffeners: $I_{exist} := \frac{N_{exist} \cdot BC_{exist}^2 \cdot A_{g_exist}}{8} = 6279.19 \cdot in^4$

Radius of Gyration about x-axis: $r_{x2} := \frac{t_{exist}}{\sqrt{12}} = 0.29 \cdot in$

1.4 Flange Bolt Properties

Number of Flange Bolts: $N_{bolts} := 64$

Diameter of Flange Bolts: 1-1/4"

Bolt Circle of Flange Bolts: $BC_{bolts} := 50in$

Gross Area of One Flange Bolt: $A_{g_bolts} := \frac{\pi}{4} \cdot D_{bolts}^{2} = 1.23 \cdot in^{2}$

Moment of Inertia of Flange Bolts: $I_{bolts} := \frac{N_{bolts} \cdot BC_{bolts}^{2} \cdot A_{g_bolts}}{8} = 24543.69 \cdot in^{4}$

1.5 Division of Forces

Total Gross Area: $A_{g_total} := N_{exist} \cdot A_{g_exist} + N_{bolts} \cdot A_{g_bolts} = 92.04 \cdot in^{2}$

Total Moment of Inertia: $I_{total} := I_{exist} + I_{bolts} = 30822.88 \cdot in^{4}$

1.6 Reactions to Existing Bridge Stiffeners

Moment Reaction to Existing Bridge Stiffeners: $M_{exist} := M \cdot \left(\frac{I_{exist}}{I_{total}} \right) = 440.09 \cdot kip \cdot ft$

Axial Reaction to Existing Bridge Stiffeners: $P_{exist} := 0kip$

Shear Reaction to Existing Bridge Stiffeners: $V_{exist} := 0kip$

1.7 Reactions to Flange Bolts

(It is assumed that all shear and axial loads are taken by the flange bolts)

Moment Reaction to Flange Bolts: $M_{bolts} := M \cdot \left(\frac{I_{bolts}}{I_{total}} \right) = 1720.18 \cdot kip \cdot ft$

Axial Reaction to Flange Bolts: $P_{bolts} := P = 50.47 \cdot kip$

Shear Reaction to Flange Bolts: $V_{bolts} := V = 30.07 \cdot kip$

Check Flange Connection in CCIplate with these Reactions

2. Existing Bridge Stiffener Checks

2.1 Maximum Axial Forces in Single Existing Bridge Stiffener

Outer Radius of Bolt Circle:

$$C := \frac{BC_{exist}}{2} = 30.5 \cdot in$$

Critical Compression Bending Stress:

$$P_{comp} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} + \frac{P_{exist}}{N_{exist}} = 115.43 \cdot kip$$

Critical Tension Bending Stress:

$$P_{tens} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} - \frac{P_{exist}}{N_{exist}} = 115.43 \cdot kip$$

2.2 Available Compression Strength

[AISC 15th Edition E3-1]

Resistance Factor:

$$\phi_c := 0.9$$

Unbraced Length:

$$L_u := 20.625in$$

Effective Length Factor:

$$K := 1.0$$

Effective Length of Member:

$$L_c := K \cdot L_u = 20.63 \cdot in$$

[AISC 15th Edition E3-2]

Strength of Bridge Stiffener:

$$Fy_{Ex} = 65 \cdot ksi \qquad Fu_{Ex} = 80 \cdot ksi$$

Elastic Buckling Stress:
[AISC 15th Ed., Eq. E3-4]

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{L_c}{r_{x2}}\right)^2} = 56.07 \cdot ksi$$

Determination of Crticial Stress:
[AISC 15th Ed., Eqs. E3-2 and E3-3]

$$F_{cr} := \begin{cases} \left(0.658^{\frac{Fy_{Ex}}{F_e}} \cdot Fy_{Ex}\right) & \text{if } 4.71 \cdot \sqrt{\frac{E}{Fy_{Ex}}} \geq \frac{L_c}{r_{x2}} \\ \left(0.877 \cdot F_e\right) & \text{otherwise} \end{cases}$$

$$F_{cr} = 40.01 \cdot ksi$$

Allowable Compressive Strength:
[AISC 15th Ed., Eqs. J4-6 and E3-1]

$$\phi P_n := \begin{cases} \left(\phi_c \cdot Fy_{Ex} \cdot A_{g_exist}\right) & \text{if } \frac{L_c}{r_{x2}} \leq 25 \\ \left(\phi_c \cdot F_{cr} \cdot A_{g_exist}\right) & \text{otherwise} \end{cases}$$

$$\phi P_n = 162.05 \cdot kip$$

Check Compressive Strength:

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{comp}}{\phi P_n} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$Capacity_{comp} = 67.84 \cdot \%$

2.3 Available Tension Strength

Gross Section Yield [AISC 15th Edition Ch. D2]

Available Tension Yield Strength:

$$\phi P_{ty} := 0.9 \cdot Fy_{Ex} \cdot A_{g_exist} = 263.25 \cdot kip$$

Net Section Fracture

Bolt Hole Diameter:

$BH := 1.1875in$

Thickness:

$T := t_{exist} = 1 \cdot in$

Net Area:

$$A_{net} := A_{g_exist} - \left(BH + \frac{1}{16}in\right) \cdot T = 3.25 \cdot in^2$$

Net Area Limitation:

$$A_e := A_{net} = 3.25 \cdot in^2$$

Available Fractile Strength:

$$\phi P_{tr} := 0.75 \cdot Fu_{Ex} \cdot A_e = 195 \cdot kip$$

Tension Check

Controlling Mode of Failure:

$$Check_{mode} := \begin{cases} \text{"Fracture Controls"} & \text{if } \frac{P_{tens}}{\phi P_{tr}} > \frac{P_{tens}}{\phi P_{ty}} \\ \text{"Yield Controls"} & \text{otherwise} \end{cases}$$

$Check_{mode} = \text{"Fracture Controls"}$

$$\phi P_{nt} := \begin{cases} \phi P_{tr} & \text{if } Check_{mode} = \text{"Fracture Controls"} \\ \phi P_{ty} & \text{otherwise} \end{cases}$$

Controlling Tension Mode Check:

$$Check_{tension} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{tens}}{\phi P_{nt}} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{tension} = \text{"OK"}$

$Capacity_{tension} = 56.38 \cdot \%$

SUMMARY

tnxTower Reactions: $M = 2160.27 \cdot kip \cdot ft$ $P = 50.47 \cdot kip$ $V = 30.07 \cdot kip$

Flange Bolts:

Diameter of Flange Bolts: $D_{bolts} = 1\frac{1}{4} \cdot in$

Bolt Circle of Flange Bolts: $BC_{bolts} = 50 \cdot in$

Loads to Flange Bolts: $M_{bolts} = 1720.18\ ft \cdot kip$ $P = 50.47 \cdot kip$ $V = 30.07 \cdot kip$

See CCIPlate for Flange Bolt and Plate Capacities

Existing Jump Plates:

Moment to Proposed Bridge Stiffeners: $M_{exist} = 440.09\ ft \cdot kip$

Number of Existing Bridge Stiffeners: $N_{exist} = 3$

Thickness: $t_{exist} = 1 \cdot in$

Width: $w_{exist} = 4.5 \cdot in$

Controlling Capacity of Existing Bridge Stiffeners: $Capacity_{exist} = 67.8 \cdot \%$

Monopole Flange Plate Connection

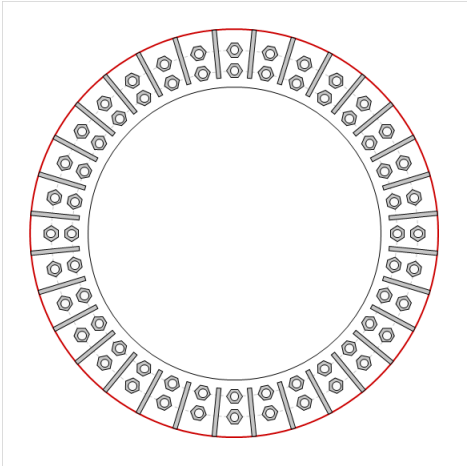
Elevation = 60 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

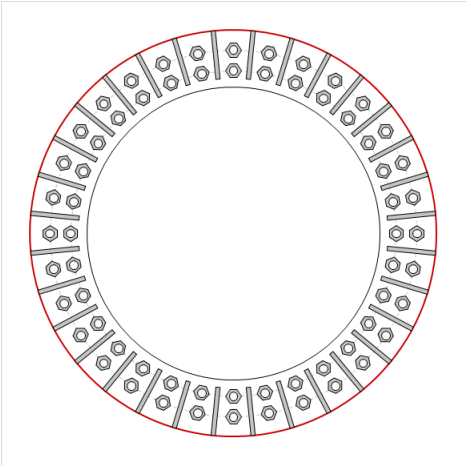
Applied Loads	
Moment (kip-ft)	1904.45
Axial Force (kips)	61.30
Shear Force (kips)	32.44

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 47" BC

Top Plate Data

42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

60" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

60" x 0.625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	29.21	
Allowable (kips)	76.30	
Stress Rating:	**36.5%**	Pass

Top Plate Capacity

Max Stress (ksi):	15.97	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**47.0%**	Pass
Tension Side Stress Rating:	**N/A**	

Bottom Plate Capacity

Max Stress (ksi):	15.97	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**47.0%**	Pass
Tension Side Stress Rating:	**N/A**	

Top Stiffener Capacity

Horizontal Weld:	**29.5%**	Pass
Vertical Weld:	**25.8%**	Pass
Plate Flexure+Shear:	**20.5%**	Pass
Plate Tension+Shear:	**24.6%**	Pass
Plate Compression:	**51.0%**	Pass

Bottom Stiffener Capacity

Horizontal Weld:	**26.4%**	Pass
Vertical Weld:	**23.0%**	Pass
Plate Flexure+Shear:	**17.9%**	Pass
Plate Tension+Shear:	**21.7%**	Pass
Plate Compression:	**45.6%**	Pass

Top Pole Capacity

Punching Shear:	**12.5%**	Pass

Bottom Pole Capacity

Punching Shear:	**8.9%**	Pass

Bolted Bridge Stiffeners Reinforcement Check

TIA Rev. H

Description:

This sheet is for the analysis of a reinforced flange connection using existing bolted bridge stiffeners.

Assumptions / Notes:

1. For analysis purposes, load is distributed between flange bolts and existing bridge stiffeners.
2. The plastification of the pole is not considered.
3. All shear and axial loads are taken by the flange bolts.

1. PARAMETERS

Flange Elevation: 60'- 0"

1.1 tnxTower Reactions

Apply TIA-222-H Section 15.5? No / Yes

Moment: $M := 2791.39kip \cdot ft$

Axial Load: $P := 61.3kip$

Shear Load: $V := 32.44kip$

1.2 Shaft Properties at the Flange

Upper Shaft Diameter: $D_{shaft1} := 60in$

Upper Shaft Thickness: $t_1 := 0.5in$

Lower Shaft Diameter: $D_{shaft2} := 60in$

Lower Shaft Thickness: $t_2 := 0.625in$

Shaft Grade: $Fy_{shaft} := 42ksi$ $Fu_{shaft} := 60ksi$

1.3 Existing Bridge Stiffener Properties

(Verify existing bolted connection for reduced moment.)

Number of Existing Bridge Stiffeners: $N_{exist} := 3$

Existing Bridge Stiffener Grade: $Fy_{Ex} := 65ksi$ $Fu_{Ex} := 80ksi$

Diameter to the centroid of Existing Bridge Stiffeners: $BC_{exist} := 61.25in$

Thickness of Existing Bridge Stiffeners: $t_{exist} := 1.25in$

Width of Existing Bridge Stiffeners: $w_{exist} := 6.5in$

Gross Area of One Existing Bridge Stiffener: $A_{g_exist} := w_{exist} \cdot t_{exist} = 8.13 \cdot in^2$

Moment of Inertia of Existing Bridge Stiffeners: $I_{exist} := \frac{N_{exist} \cdot BC_{exist}^2 \cdot A_{g_exist}}{8} = 11430.54 \cdot in^4$

Radius of Gyration about x-axis: $r_{x2} := \frac{t_{exist}}{\sqrt{12}} = 0.36 \cdot in$

1.4 Flange Bolt Properties

Number of Flange Bolts: $N_{bolts} := 64$

Diameter of Flange Bolts: 1-1/4"

Bolt Circle of Flange Bolts: $BC_{bolts} := 50in$

Gross Area of One Flange Bolt: $A_{g_bolts} := \frac{\pi}{4} \cdot D_{bolts}^{2} = 1.23 \cdot in^{2}$

Moment of Inertia of Flange Bolts: $I_{bolts} := \frac{N_{bolts} \cdot BC_{bolts}^{2} \cdot A_{g_bolts}}{8} = 24543.69 \cdot in^{4}$

1.5 Division of Forces

Total Gross Area: $A_{g_total} := N_{exist} \cdot A_{g_exist} + N_{bolts} \cdot A_{g_bolts} = 102.91 \cdot in^{2}$

Total Moment of Inertia: $I_{total} := I_{exist} + I_{bolts} = 35974.23 \cdot in^{4}$

1.6 Reactions to Existing Bridge Stiffeners

Moment Reaction to Existing Bridge Stiffeners: $M_{exist} := M \cdot \left(\frac{I_{exist}}{I_{total}} \right) = 886.94 \cdot kip \cdot ft$

Axial Reaction to Existing Bridge Stiffeners: $P_{exist} := 0kip$

Shear Reaction to Existing Bridge Stiffeners: $V_{exist} := 0kip$

1.7 Reactions to Flange Bolts

(It is assumed that all shear and axial loads are taken by the flange bolts)

Moment Reaction to Flange Bolts: $M_{bolts} := M \cdot \left(\frac{I_{bolts}}{I_{total}} \right) = 1904.45 \cdot kip \cdot ft$

Axial Reaction to Flange Bolts: $P_{bolts} := P = 61.3 \cdot kip$

Shear Reaction to Flange Bolts: $V_{bolts} := V = 32.44 \cdot kip$

Check Flange Connection in CCIplate with these Reactions

2. Existing Bridge Stiffener Checks

2.1 Maximum Axial Forces in Single Existing Bridge Stiffener

Outer Radius of Bolt Circle:

$$C := \frac{BC_{exist}}{2} = 30.63 \cdot in$$

Critical Compression Bending Stress:

$$P_{comp} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} + \frac{P_{exist}}{N_{exist}} = 231.69 \cdot kip$$

Critical Tension Bending Stress:

$$P_{tens} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} - \frac{P_{exist}}{N_{exist}} = 231.69 \cdot kip$$

2.2 Available Compression Strength

[AISC 15th Edition E3-1]

Resistance Factor:

$$\phi_c := 0.9$$

Unbraced Length:

$$L_u := 19.25 in$$

Effective Length Factor:

$$K := 1.0$$

Effective Length of Member:

$$L_c := K \cdot L_u = 19.25 \cdot in$$

[AISC 15th Edition E3-2]

Strength of Bridge Stiffener:

$$Fy_{Ex} = 65 \cdot ksi \qquad Fu_{Ex} = 80 \cdot ksi$$

Elastic Buckling Stress:
[AISC 15th Ed., Eq. E3-4]

$$F_e := \frac{\pi^2 \cdot 29000 ksi}{\left(\frac{L_c}{r_{x2}}\right)^2} = 100.57 \cdot ksi$$

Determination of Crticial Stress:
[AISC 15th Ed., Eqs. E3-2 and E3-3]

$$F_{cr} := \begin{cases} \left(0.658^{\frac{Fy_{Ex}}{F_e}} \cdot Fy_{Ex}\right) & \text{if } 4.71 \cdot \sqrt{\frac{E}{Fy_{Ex}}} \geq \frac{L_c}{r_{x2}} \\ \left(0.877 \cdot F_e\right) & \text{otherwise} \end{cases}$$

$$F_{cr} = 49.59 \cdot ksi$$

Allowable Compressive Strength:
[AISC 15th Ed., Eqs. J4-6 and E3-1]

$$\phi P_n := \begin{cases} \left(\phi_c \cdot Fy_{Ex} \cdot A_{g_exist}\right) & \text{if } \frac{L_c}{r_{x2}} \leq 25 \\ \left(\phi_c \cdot F_{cr} \cdot A_{g_exist}\right) & \text{otherwise} \end{cases}$$

$$\phi P_n = 362.66 \cdot kip$$

Check Compressive Strength:

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{comp}}{\phi P_n} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$Capacity_{comp} = 60.84 \cdot \%$

2.3 Available Tension Strength

Gross Section Yield [AISC 15th Edition Ch. D2]

Available Tension Yield Strength:

$$\phi P_{ty} := 0.9 \cdot Fy_{Ex} \cdot A_{g_exist} = 475.31 \cdot kip$$

Net Section Fracture

Bolt Hole Diameter:

$BH := 1.1875in$

Thickness:

$T := t_{exist} = 1.25 \cdot in$

Net Area:

$$A_{net} := A_{g_exist} - \left(BH + \frac{1}{16}in\right) \cdot T = 6.56 \cdot in^2$$

Net Area Limitation:

$$A_e := A_{net} = 6.56 \cdot in^2$$

Available Fractile Strength:

$$\phi P_{tr} := 0.75 \cdot Fu_{Ex} \cdot A_e = 393.75 \cdot kip$$

Tension Check

Controlling Mode of Failure:

$$Check_{mode} := \begin{cases} \text{"Fracture Controls"} & \text{if } \frac{P_{tens}}{\phi P_{tr}} > \frac{P_{tens}}{\phi P_{ty}} \\ \text{"Yield Controls"} & \text{otherwise} \end{cases}$$

$Check_{mode} = \text{"Fracture Controls"}$

$$\phi P_{nt} := \begin{cases} \phi P_{tr} & \text{if } Check_{mode} = \text{"Fracture Controls"} \\ \phi P_{ty} & \text{otherwise} \end{cases}$$

Controlling Tension Mode Check:

$$Check_{tension} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{tens}}{\phi P_{nt}} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{tension} = \text{"OK"}$

$Capacity_{tension} = 56.04 \cdot \%$

SUMMARY

tnxTower Reactions: $M = 2791.39 \cdot kip \cdot ft$ $P = 61.3 \cdot kip$ $V = 32.44 \cdot kip$

Flange Bolts:

Diameter of Flange Bolts: $D_{bolts} = 1\frac{1}{4} \cdot in$

Bolt Circle of Flange Bolts: $BC_{bolts} = 50 \cdot in$

Loads to Flange Bolts: $M_{bolts} = 1904.45\ ft \cdot kip$ $P = 61.3 \cdot kip$ $V = 32.44 \cdot kip$

See CCIPlate for Flange Bolt and Plate Capacities

Existing Jump Plates:

Moment to Proposed Bridge Stiffeners: $M_{exist} = 886.94\ ft \cdot kip$

Number of Existing Bridge Stiffeners: $N_{exist} = 3$

Thickness: $t_{exist} = 1.25 \cdot in$

Width: $w_{exist} = 6.5 \cdot in$

Controlling Capacity of Existing Bridge Stiffeners: $Capacity_{exist} = 60.8 \cdot \%$

Monopole Flange Plate Connection

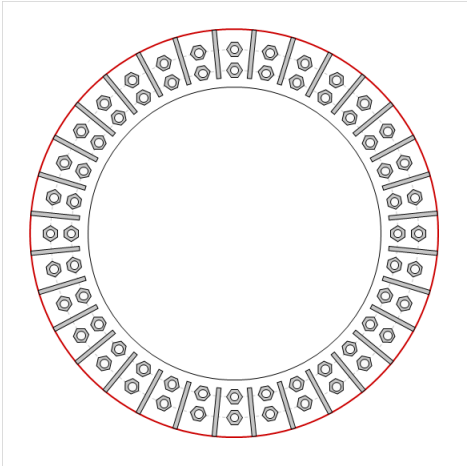
Elevation = 40 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

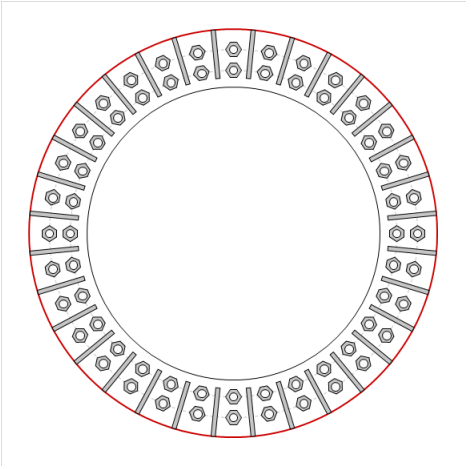
Applied Loads	
Moment (kip-ft)	2060.16
Axial Force (kips)	74.30
Shear Force (kips)	34.48

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 47" BC

Top Plate Data
42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data
42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data
(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data
(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data
60" x 0.625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data
60" x 0.625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	31.47	
Allowable (kips)	76.30	
Stress Rating:	**39.3%**	Pass

Top Plate Capacity

Max Stress (ksi):	17.35	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**51.0%**	Pass
Tension Side Stress Rating:	**N/A**	

Bottom Plate Capacity

Max Stress (ksi):	17.35	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**51.0%**	Pass
Tension Side Stress Rating:	**N/A**	

Top Stiffener Capacity

Horizontal Weld:	**28.7%**	Pass
Vertical Weld:	**25.0%**	Pass
Plate Flexure+Shear:	**19.8%**	Pass
Plate Tension+Shear:	**23.8%**	Pass
Plate Compression:	**49.6%**	Pass

Bottom Stiffener Capacity

Horizontal Weld:	**28.7%**	Pass
Vertical Weld:	**25.0%**	Pass
Plate Flexure+Shear:	**19.8%**	Pass
Plate Tension+Shear:	**23.8%**	Pass
Plate Compression:	**49.6%**	Pass

Top Pole Capacity

Punching Shear:	**9.7%**	Pass

Bottom Pole Capacity

Punching Shear:	**9.7%**	Pass

Bolted Bridge Stiffeners Reinforcement Check

TIA Rev. H

Description:

This sheet is for the analysis of a reinforced flange connection using existing bolted bridge stiffeners.

Assumptions / Notes:

1. For analysis purposes, load is distributed between flange bolts and existing bridge stiffeners.
2. The plastification of the pole is not considered.
3. All shear and axial loads are taken by the flange bolts.

1. PARAMETERS

Flange Elevation: 40'- 0"

1.1 tnxTower Reactions

Apply TIA-222-H Section 15.5? No / Yes

Moment: $M := 3465.67\,kip\cdot ft$

Axial Load: $P := 74.3\,kip$

Shear Load: $V := 34.48\,kip$

1.2 Shaft Properties at the Flange

Upper Shaft Diameter: $D_{shaft1} := 60\,in$

Upper Shaft Thickness: $t_1 := 0.625\,in$

Lower Shaft Diameter: $D_{shaft2} := 60\,in$

Lower Shaft Thickness: $t_2 := 0.625\,in$

Shaft Grade: $Fy_{shaft} := 42\,ksi$ $Fu_{shaft} := 60\,ksi$

1.3 Existing Bridge Stiffener Properties

(Verify existing bolted connection for reduced moment.)

Number of Existing Bridge Stiffeners: $N_{exist} := 6$

Existing Bridge Stiffener Grade: $Fy_{Ex} := 65\,ksi$ $Fu_{Ex} := 80\,ksi$

Diameter to the centroid of Existing Bridge Stiffeners: $BC_{exist} := 61\,in$

Thickness of Existing Bridge Stiffeners: $t_{exist} := 1\,in$

Width of Existing Bridge Stiffeners: $w_{exist} := 6\,in$

Gross Area of One Existing Bridge Stiffener: $A_{g_exist} := w_{exist}\cdot t_{exist} = 6\cdot in^2$

Moment of Inertia of Existing Bridge Stiffeners: $I_{exist} := \frac{N_{exist}\cdot BC_{exist}^{2}\cdot A_{g_exist}}{8} = 16744.5\cdot in^4$

Radius of Gyration about x-axis: $r_{x2} := \frac{t_{exist}}{\sqrt{12}} = 0.29\cdot in$

1.4 Flange Bolt Properties

Number of Flange Bolts: $N_{bolts} := 64$

Diameter of Flange Bolts: 1-1/4"

Bolt Circle of Flange Bolts: $BC_{bolts} := 50in$

Gross Area of One Flange Bolt: $A_{g_bolts} := \frac{\pi}{4} \cdot D_{bolts}^{2} = 1.23 \cdot in^{2}$

Moment of Inertia of Flange Bolts: $I_{bolts} := \frac{N_{bolts} \cdot BC_{bolts}^{2} \cdot A_{g_bolts}}{8} = 24543.69 \cdot in^{4}$

1.5 Division of Forces

Total Gross Area: $A_{g_total} := N_{exist} \cdot A_{g_exist} + N_{bolts} \cdot A_{g_bolts} = 114.54 \cdot in^{2}$

Total Moment of Inertia: $I_{total} := I_{exist} + I_{bolts} = 41288.19 \cdot in^{4}$

1.6 Reactions to Existing Bridge Stiffeners

Moment Reaction to Existing Bridge Stiffeners: $M_{exist} := M \cdot \left(\frac{I_{exist}}{I_{total}} \right) = 1405.51 \cdot kip \cdot ft$

Axial Reaction to Existing Bridge Stiffeners: $P_{exist} := 0kip$

Shear Reaction to Existing Bridge Stiffeners: $V_{exist} := 0kip$

1.7 Reactions to Flange Bolts

(It is assumed that all shear and axial loads are taken by the flange bolts)

Moment Reaction to Flange Bolts: $M_{bolts} := M \cdot \left(\frac{I_{bolts}}{I_{total}} \right) = 2060.16 \cdot kip \cdot ft$

Axial Reaction to Flange Bolts: $P_{bolts} := P = 74.3 \cdot kip$

Shear Reaction to Flange Bolts: $V_{bolts} := V = 34.48 \cdot kip$

Check Flange Connection in CCIplate with these Reactions

2. Existing Bridge Stiffener Checks

2.1 Maximum Axial Forces in Single Existing Bridge Stiffener

Outer Radius of Bolt Circle:

$$C := \frac{BC_{exist}}{2} = 30.5 \cdot in$$

Critical Compression Bending Stress:

$$P_{comp} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} + \frac{P_{exist}}{N_{exist}} = 184.33 \cdot kip$$

Critical Tension Bending Stress:

$$P_{tens} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} - \frac{P_{exist}}{N_{exist}} = 184.33 \cdot kip$$

2.2 Available Compression Strength

[AISC 15th Edition E3-1]

Resistance Factor:

$$\phi_c := 0.9$$

Unbraced Length:

$$L_u := 16.375in$$

Effective Length Factor:

$$K := 1.0$$

Effective Length of Member:

$$L_c := K \cdot L_u = 16.38 \cdot in$$

[AISC 15th Edition E3-2]

Strength of Bridge Stiffener:

$$Fy_{Ex} = 65 \cdot ksi \qquad Fu_{Ex} = 80 \cdot ksi$$

Elastic Buckling Stress:
[AISC 15th Ed., Eq. E3-4]

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{L_c}{r_{x2}}\right)^2} = 88.95 \cdot ksi$$

Determination of Crticial Stress:
[AISC 15th Ed., Eqs. E3-2 and E3-3]

$$F_{cr} := \begin{cases} \left(0.658^{\frac{Fy_{Ex}}{F_e}} \cdot Fy_{Ex}\right) & \text{if } 4.71 \cdot \sqrt{\frac{E}{Fy_{Ex}}} \geq \frac{L_c}{r_{x2}} \\ \left(0.877 \cdot F_e\right) & \text{otherwise} \end{cases}$$

$$F_{cr} = 47.87 \cdot ksi$$

Allowable Compressive Strength:
[AISC 15th Ed., Eqs. J4-6 and E3-1]

$$\phi P_n := \begin{cases} \left(\phi_c \cdot Fy_{Ex} \cdot A_{g_exist}\right) & \text{if } \frac{L_c}{r_{x2}} \leq 25 \\ \left(\phi_c \cdot F_{cr} \cdot A_{g_exist}\right) & \text{otherwise} \end{cases}$$

$$\phi P_n = 258.51 \cdot kip$$

Check Compressive Strength:

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{comp}}{\phi P_n} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$Capacity_{comp} = 67.91 \cdot \%$

2.3 Available Tension Strength

Gross Section Yield [AISC 15th Edition Ch. D2]

Available Tension Yield Strength:

$$\phi P_{ty} := 0.9 \cdot Fy_{Ex} \cdot A_{g_exist} = 351 \cdot kip$$

Net Section Fracture

Bolt Hole Diameter:

$BH := 1.1875in$

Thickness:

$T := t_{exist} = 1 \cdot in$

Net Area:

$$A_{net} := A_{g_exist} - \left(BH + \frac{1}{16}in\right) \cdot T = 4.75 \cdot in^2$$

Net Area Limitation:

$$A_e := A_{net} = 4.75 \cdot in^2$$

Available Fractile Strength:

$$\phi P_{tr} := 0.75 \cdot Fu_{Ex} \cdot A_e = 285 \cdot kip$$

Tension Check

Controlling Mode of Failure:

$$Check_{mode} := \begin{cases} \text{"Fracture Controls"} & \text{if } \frac{P_{tens}}{\phi P_{tr}} > \frac{P_{tens}}{\phi P_{ty}} \\ \text{"Yield Controls"} & \text{otherwise} \end{cases}$$

$Check_{mode} = \text{"Fracture Controls"}$

$$\phi P_{nt} := \begin{cases} \phi P_{tr} & \text{if } Check_{mode} = \text{"Fracture Controls"} \\ \phi P_{ty} & \text{otherwise} \end{cases}$$

Controlling Tension Mode Check:

$$Check_{tension} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{tens}}{\phi P_{nt}} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{tension} = \text{"OK"}$

$Capacity_{tension} = 61.6 \cdot \%$

SUMMARY

tnxTower Reactions: $M = 3465.67 \cdot kip \cdot ft$ $P = 74.3 \cdot kip$ $V = 34.48 \cdot kip$

Flange Bolts:

Diameter of Flange Bolts: $D_{bolts} = 1\frac{1}{4} \cdot in$

Bolt Circle of Flange Bolts: $BC_{bolts} = 50 \cdot in$

Loads to Flange Bolts: $M_{bolts} = 2060.16\ ft \cdot kip$ $P = 74.3 \cdot kip$ $V = 34.48 \cdot kip$

See CCIPlate for Flange Bolt and Plate Capacities

Existing Jump Plates:

Moment to Proposed Bridge Stiffeners: $M_{exist} = 1405.51\ ft \cdot kip$

Number of Existing Bridge Stiffeners: $N_{exist} = 6$

Thickness: $t_{exist} = 1 \cdot in$

Width: $w_{exist} = 6 \cdot in$

Controlling Capacity of Existing Bridge Stiffeners: $Capacity_{exist} = 67.9 \cdot \%$

Monopole Flange Plate Connection

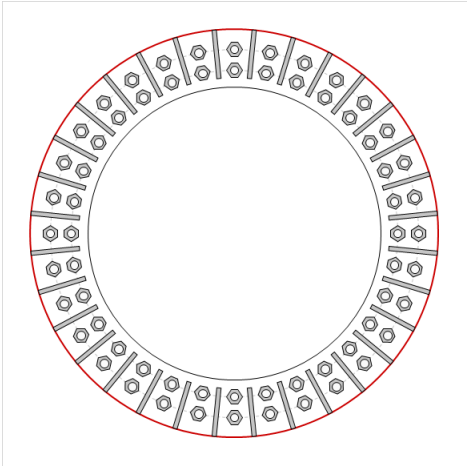
Elevation = 20 ft.

BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1
TIA-222 Revision	H

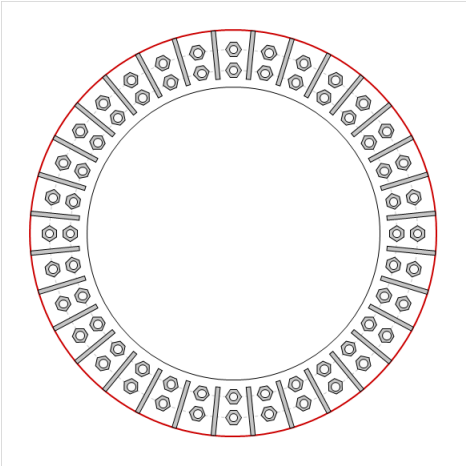
Applied Loads	
Moment (kip-ft)	2200.05
Axial Force (kips)	94.18
Shear Force (kips)	38.29

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 47" BC

Top Plate Data

42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

42.25" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Bottom Stiffener Data

(32) 10"H x 7"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Top Pole Data

60" x 0.625" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

60" x 0.75" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	33.38	
Allowable (kips)	76.30	
Stress Rating:	**41.7%**	Pass

Top Plate Capacity

Max Stress (ksi):	18.65	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**54.8%**	Pass
Tension Side Stress Rating:	**N/A**	

Bottom Plate Capacity

Max Stress (ksi):	18.65	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**54.8%**	Pass
Tension Side Stress Rating:	**N/A**	

Top Stiffener Capacity

Horizontal Weld:	**30.9%**	Pass
Vertical Weld:	**27.0%**	Pass
Plate Flexure+Shear:	**21.7%**	Pass
Plate Tension+Shear:	**25.9%**	Pass
Plate Compression:	**53.4%**	Pass

Bottom Stiffener Capacity

Horizontal Weld:	**27.9%**	Pass
Vertical Weld:	**24.4%**	Pass
Plate Flexure+Shear:	**19.2%**	Pass
Plate Tension+Shear:	**23.1%**	Pass
Plate Compression:	**48.3%**	Pass

Top Pole Capacity

Punching Shear:	**10.4%**	Pass

Bottom Pole Capacity

Punching Shear:	**7.9%**	Pass

Bolted Bridge Stiffeners Reinforcement Check

TIA Rev. H

Description:

This sheet is for the analysis of a reinforced flange connection using existing bolted bridge stiffeners.

Assumptions / Notes:

1. For analysis purposes, load is distributed between flange bolts and existing bridge stiffeners.
2. The plastification of the pole is not considered.
3. All shear and axial loads are taken by the flange bolts.

1. PARAMETERS

Flange Elevation: 20'- 0"

1.1 tnxTower Reactions

Apply TIA-222-H Section 15.5? No / Yes

Moment: $M := 4249.28\,kip\cdot ft$

Axial Load: $P := 94.18\,kip$

Shear Load: $V := 38.29\,kip$

1.2 Shaft Properties at the Flange

Upper Shaft Diameter: $D_{shaft1} := 60\,in$

Upper Shaft Thickness: $t_1 := 0.625\,in$

Lower Shaft Diameter: $D_{shaft2} := 60\,in$

Lower Shaft Thickness: $t_2 := 0.75\,in$

Shaft Grade: $Fy_{shaft} := 42\,ksi$ $Fu_{shaft} := 60\,ksi$

1.3 Existing Bridge Stiffener Properties

(Verify existing bolted connection for reduced moment.)

Number of Existing Bridge Stiffeners: $N_{exist} := 6$

Existing Bridge Stiffener Grade: $Fy_{Ex} := 65\,ksi$ $Fu_{Ex} := 80\,ksi$

Diameter to the centroid of Existing Bridge Stiffeners: $BC_{exist} := 61.25\,in$

Thickness of Existing Bridge Stiffeners: $t_{exist} := 1.25\,in$

Width of Existing Bridge Stiffeners: $w_{exist} := 6.5\,in$

Gross Area of One Existing Bridge Stiffener: $A_{g_exist} := w_{exist}\cdot t_{exist} = 8.13\cdot in^2$

Moment of Inertia of Existing Bridge Stiffeners: $I_{exist} := \frac{N_{exist}\cdot BC_{exist}^{2}\cdot A_{g_exist}}{8} = 22861.08\cdot in^4$

Radius of Gyration about x-axis: $r_{x2} := \frac{t_{exist}}{\sqrt{12}} = 0.36\cdot in$

1.4 Flange Bolt Properties

Number of Flange Bolts: $N_{bolts} := 64$

Diameter of Flange Bolts: 1-1/4"

Bolt Circle of Flange Bolts: $BC_{bolts} := 50in$

Gross Area of One Flange Bolt: $A_{g_bolts} := \frac{\pi}{4} \cdot D_{bolts}^{2} = 1.23 \cdot in^{2}$

Moment of Inertia of Flange Bolts: $I_{bolts} := \frac{N_{bolts} \cdot BC_{bolts}^{2} \cdot A_{g_bolts}}{8} = 24543.69 \cdot in^{4}$

1.5 Division of Forces

Total Gross Area: $A_{g_total} := N_{exist} \cdot A_{g_exist} + N_{bolts} \cdot A_{g_bolts} = 127.29 \cdot in^{2}$

Total Moment of Inertia: $I_{total} := I_{exist} + I_{bolts} = 47404.78 \cdot in^{4}$

1.6 Reactions to Existing Bridge Stiffeners

Moment Reaction to Existing Bridge Stiffeners: $M_{exist} := M \cdot \left(\frac{I_{exist}}{I_{total}} \right) = 2049.23 \cdot kip \cdot ft$

Axial Reaction to Existing Bridge Stiffeners: $P_{exist} := 0kip$

Shear Reaction to Existing Bridge Stiffeners: $V_{exist} := 0kip$

1.7 Reactions to Flange Bolts

(It is assumed that all shear and axial loads are taken by the flange bolts)

Moment Reaction to Flange Bolts: $M_{bolts} := M \cdot \left(\frac{I_{bolts}}{I_{total}} \right) = 2200.05 \cdot kip \cdot ft$

Axial Reaction to Flange Bolts: $P_{bolts} := P = 94.18 \cdot kip$

Shear Reaction to Flange Bolts: $V_{bolts} := V = 38.29 \cdot kip$

Check Flange Connection in CCIplate with these Reactions

2. Existing Bridge Stiffener Checks

2.1 Maximum Axial Forces in Single Existing Bridge Stiffener

Outer Radius of Bolt Circle:

$$C := \frac{BC_{exist}}{2} = 30.63 \cdot in$$

Critical Compression Bending Stress:

$$P_{comp} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} + \frac{P_{exist}}{N_{exist}} = 267.65 \cdot kip$$

Critical Tension Bending Stress:

$$P_{tens} := \frac{M_{exist} \cdot C}{I_{exist}} \cdot A_{g_exist} - \frac{P_{exist}}{N_{exist}} = 267.65 \cdot kip$$

2.2 Available Compression Strength

[AISC 15th Edition E3-1]

Resistance Factor:

$$\phi_c := 0.9$$

Unbraced Length:

$$L_u := 19.25in$$

Effective Length Factor:

$$K := 1.0$$

Effective Length of Member:

$$L_c := K \cdot L_u = 19.25 \cdot in$$

[AISC 15th Edition E3-2]

Strength of Bridge Stiffener:

$$Fy_{Ex} = 65 \cdot ksi \qquad Fu_{Ex} = 80 \cdot ksi$$

Elastic Buckling Stress:
[AISC 15th Ed., Eq. E3-4]

$$F_e := \frac{\pi^2 \cdot 29000ksi}{\left(\frac{L_c}{r_{x2}}\right)^2} = 100.57 \cdot ksi$$

Determination of Crticial Stress:
[AISC 15th Ed., Eqs. E3-2 and E3-3]

$$F_{cr} := \begin{cases} \left(0.658^{\frac{Fy_{Ex}}{F_e}} \cdot Fy_{Ex}\right) & \text{if } 4.71 \cdot \sqrt{\frac{E}{Fy_{Ex}}} \geq \frac{L_c}{r_{x2}} \\ \left(0.877 \cdot F_e\right) & \text{otherwise} \end{cases}$$

$$F_{cr} = 49.59 \cdot ksi$$

Allowable Compressive Strength:
[AISC 15th Ed., Eqs. J4-6 and E3-1]

$$\phi P_n := \begin{cases} \left(\phi_c \cdot Fy_{Ex} \cdot A_{g_exist}\right) & \text{if } \frac{L_c}{r_{x2}} \leq 25 \\ \left(\phi_c \cdot F_{cr} \cdot A_{g_exist}\right) & \text{otherwise} \end{cases}$$

$$\phi P_n = 362.66 \cdot kip$$

Check Compressive Strength:

$$Check_{comp} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{comp}}{\phi P_n} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{comp} = \text{"OK"}$

$Capacity_{comp} = 70.29 \cdot \%$

2.3 Available Tension Strength

Gross Section Yield [AISC 15th Edition Ch. D2]

Available Tension Yield Strength:

$$\phi P_{ty} := 0.9 \cdot Fy_{Ex} \cdot A_{g_exist} = 475.31 \cdot kip$$

Net Section Fracture

Bolt Hole Diameter:

$BH := 1.1875in$

Thickness:

$T := t_{exist} = 1.25 \cdot in$

Net Area:

$$A_{net} := A_{g_exist} - \left(BH + \frac{1}{16}in\right) \cdot T = 6.56 \cdot in^2$$

Net Area Limitation:

$$A_e := A_{net} = 6.56 \cdot in^2$$

Available Fractile Strength:

$$\phi P_{tr} := 0.75 \cdot Fu_{Ex} \cdot A_e = 393.75 \cdot kip$$

Tension Check

Controlling Mode of Failure:

$$Check_{mode} := \begin{cases} \text{"Fracture Controls"} & \text{if } \frac{P_{tens}}{\phi P_{tr}} > \frac{P_{tens}}{\phi P_{ty}} \\ \text{"Yield Controls"} & \text{otherwise} \end{cases}$$

$Check_{mode} = \text{"Fracture Controls"}$

$$\phi P_{nt} := \begin{cases} \phi P_{tr} & \text{if } Check_{mode} = \text{"Fracture Controls"} \\ \phi P_{ty} & \text{otherwise} \end{cases}$$

Controlling Tension Mode Check:

$$Check_{tension} := \begin{cases} \text{"OK"} & \text{if } \frac{P_{tens}}{\phi P_{nt}} \le 100\% \\ \text{"N/G"} & \text{otherwise} \end{cases}$$

$Check_{tension} = \text{"OK"}$

$Capacity_{tension} = 64.74 \cdot \%$

SUMMARY

tnxTower Reactions: $M = 4249.28 \cdot kip \cdot ft$ $P = 94.18 \cdot kip$ $V = 38.29 \cdot kip$

Flange Bolts:

Diameter of Flange Bolts: $D_{bolts} = 1\frac{1}{4} \cdot in$

Bolt Circle of Flange Bolts: $BC_{bolts} = 50 \cdot in$

Loads to Flange Bolts: $M_{bolts} = 2200.05\ ft \cdot kip$ $P = 94.18 \cdot kip$ $V = 38.29 \cdot kip$

See CCIPlate for Flange Bolt and Plate Capacities

Existing Jump Plates:

Moment to Proposed Bridge Stiffeners: $M_{exist} = 2049.23\ ft \cdot kip$

Number of Existing Bridge Stiffeners: $N_{exist} = 6$

Thickness: $t_{exist} = 1.25 \cdot in$

Width: $w_{exist} = 6.5 \cdot in$

Controlling Capacity of Existing Bridge Stiffeners: $Capacity_{exist} = 70.3 \cdot \%$

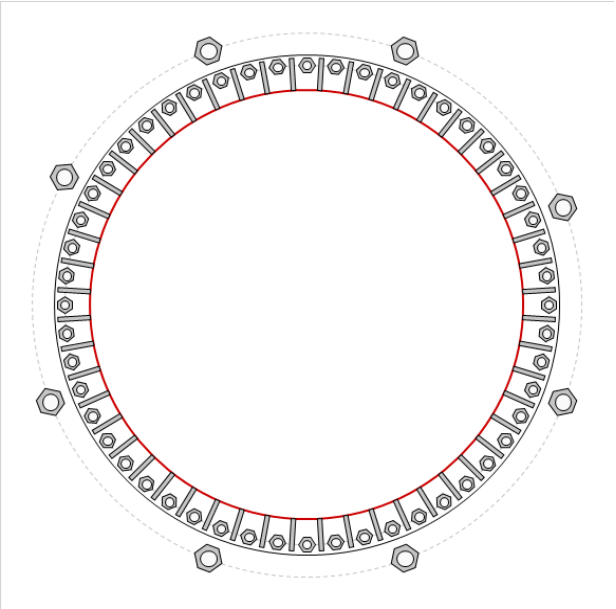
Monopole Base Plate Connection

Site Info	
BU #	829046
Site Name	Weston/ Rt-57/ Norfield
Order #	494413, Rev 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.25

Applied Loads	
Moment (kip-ft)	4965.82
Axial Force (kips)	107.89
Shear Force (kips)	39.18

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (52) 1-1/4" ø bolts (A687 N; Fy=105 ksi, Fu=125 ksi) on 67" BC

GROUP 2: (8) 2-1/4" ø bolts (F1554-105 N; Fy=105 ksi, Fu=125 ksi) on 76" BC

pos. (deg): 21, 69, 111, 152, 201, 249, 291, 339

Base Plate Data

70" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Stiffener Data

(52) 8"H x 4.5"W x 0.625"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.375" fillet
vert. weld: 0.375" fillet

Pole Data

60" x 0.75" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

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

GROUP 1:		
Pu_c = 43.86	ϕPn_c = 115.97	**Stress Rating**
Vu = 0.75	ϕVn = 52.19	**36.0%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 158.87	ϕPn_c = 375.74	**Stress Rating**
Vu = 0	ϕVn = 169.08	**40.3%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	3.9	(Shear)
Allowable Stress (ksi):	21.6	
Stress Rating:	**17.2%**	**Pass**

Stiffener Summary

Horizontal Weld:	**37.1%**	**Pass**
Vertical Weld:	**23.9%**	**Pass**
Plate Flexure+Shear:	**18.2%**	**Pass**
Plate Tension+Shear:	**31.7%**	**Pass**
Plate Compression:	**48.4%**	**Pass**

Pole Summary

Punching Shear:	**7.0%**	**Pass**

Monopole Base Reaction Comparison Test

BU # :	829046
Site Name:	Weston/ Rt-57/ Norfield R
Order Number:	494413, Rev 1
Design TIA:	TIA-222-F
Current TIA:	TIA-222-H
Component:	Monopole Base
Reference Doc ID:	7340070

TIA-222-F Compared To TIA-222-H

MONOPOLE BASE FOUNDATION REACTION COMPARISON

REACTIONS	DESIGN REACTIONS	*MODIFIED DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
MOMENT (kip-ft)	5224.2	7052.7	4966.0	67.1%
SHEAR (kips)	39.1	52.8	39.0	70.4%

Deisgn loads from: CCIsites Doc #7340070

Although the shear capacity is at 70.4%, the moment reaction is the governing criteria for a monopole drilled pier foundation. Therefore, the overall capacity for this foundation is 67.1%.

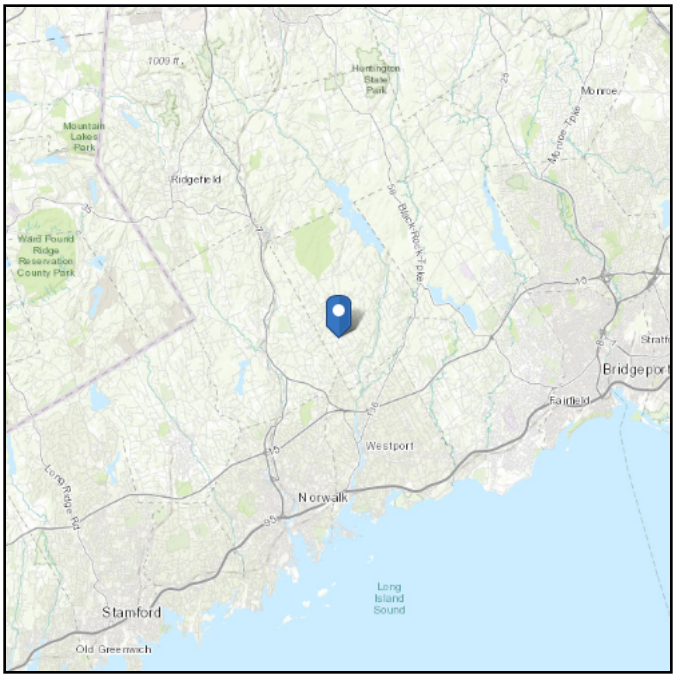
*Design loads were multiplied by 1.35 for comparison as allowed by TIA-222-H, Section 15.6.

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	321.79 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.202333
Soil Class:	D - Stiff Soil	**Longitude:**	-73.379611





Wind

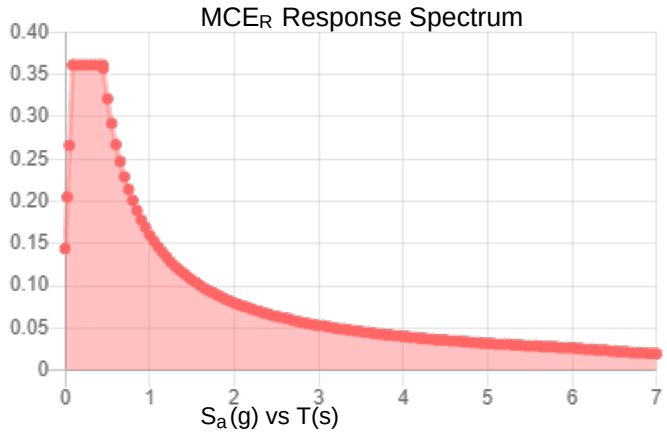
Seismic

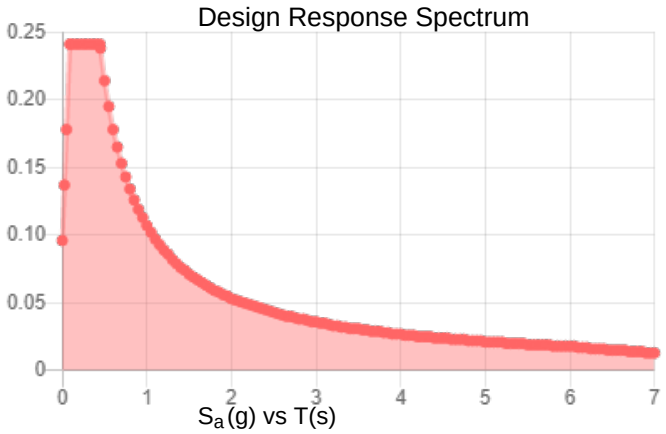
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.226	S_{DS} :	0.241
S_1 :	0.067	S_{D1} :	0.107
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.126
S_{MS} :	0.361	PGA_M :	0.195
S_{M1} :	0.16	F_{PGA} :	1.548
		I_e :	1

Seismic Design Category B





Data Accessed: Thu Oct 08 2020

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:	Thu Oct 08 2020

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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Exhibit E

Mount Analysis

Date: October 7, 2020

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
btwo@btgrp.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CT11118C
	Carrier Site Name:	Weston/Rt-57/ Norfield R
Crown Castle Designation:	**Crown Castle BU Number:**	829046
	Crown Castle Site Name:	Weston/ Rt-57/ Norfield R
	Crown Castle JDE Job Number:	576570
	Crown Castle Order Number:	494413, Rev.1
Engineering Firm Designation:	**B+T Group Report Designation:**	136353.007.01
Site Data:	**56 Norfield Rd. (Town Hall), Weston, CT, Fairfield County, 06883. Latitude 41° 12' 8.40" Longitude -73° 22' 46.60"**	
Structure Information:	**Tower Height & Type:**	**190 ft. Monopole**
	Mount Elevation:	**170 ft.**
	Mount Type:	**16.3 ft. Platform Mount**

Dear Ms. 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:

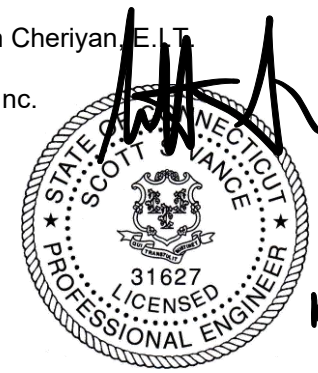
Platform Mount **Sufficient Capacity**

***See Section 4.1 of this report for the structural modifications required for the mount to support the loading listed in Table 1**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code (2015 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Tharun Cheriyan, E.I.T.

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2021



Scott S. Vance, P.E. 10/7/20

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Equipment Configuration

3) ANALYSIS PROCEDURE
Table 2 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 3 - Mount Component Stresses vs. Capacity
4.1) Recommendations

5) APPENDIX A
Wire Frame and Rendered Models

6) APPENDIX B
Software Input Calculations

7) APPENDIX C
Software Analysis Output

8) APPENDIX D
Additional Calculations

1) INTRODUCTION

This is an existing 16.3' Platform Mount, mapped by B+T Group.

2) ANALYSIS CRITERIA

Building Code:	2018 Connecticut State (2015 IBC)
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.226
Seismic S_1:	0.067
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb.
Man Live Load at Mount Pipes:	500 lb.

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
170	170	3	Ericsson	AIR 32 B2A/B66AA	16.3 ft. Platform Mount
		3	Ericsson	AIR6449 B41_T-MOBILE	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Commscope	SDX1926Q-43	
		3	Ericsson	KRY 112 144/1	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	
		3	Ericsson	RRUS 4415 B25	

3) ANALYSIS PROCEDURE

Table 2 – Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	Date: 05/30/2019	Crown Castle
RFDS		Date: 09/23/2020	Crown Castle
Mount Mapping	B+T Group	Date: 06/26/2019	On File
Previous MA	B+T Group	Date: 07/05/2019	On File

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

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

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft.)	% Capacity	Pass / Fail
1,2	Main Horizontals	1	170	48.3	Pass
	Support Tubes	9	170	48.2	Pass
	Support Rods	41	170	11.0	Pass
	Mount Pipes	80	170	65.5	Pass
	Connection Plates	6	170	25.3	Pass
	Support Rails	98	170	40.3	Pass
	Connection Angles	101	170	26.8	Pass
	Platform to Ring Mount Check	--	170	59.7	Pass

Structure Rating (max from all components) =	**65.5%**

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) Capacities listed are based on recommendations listed in Sec.4.1 being installed.

4.1) Recommendations

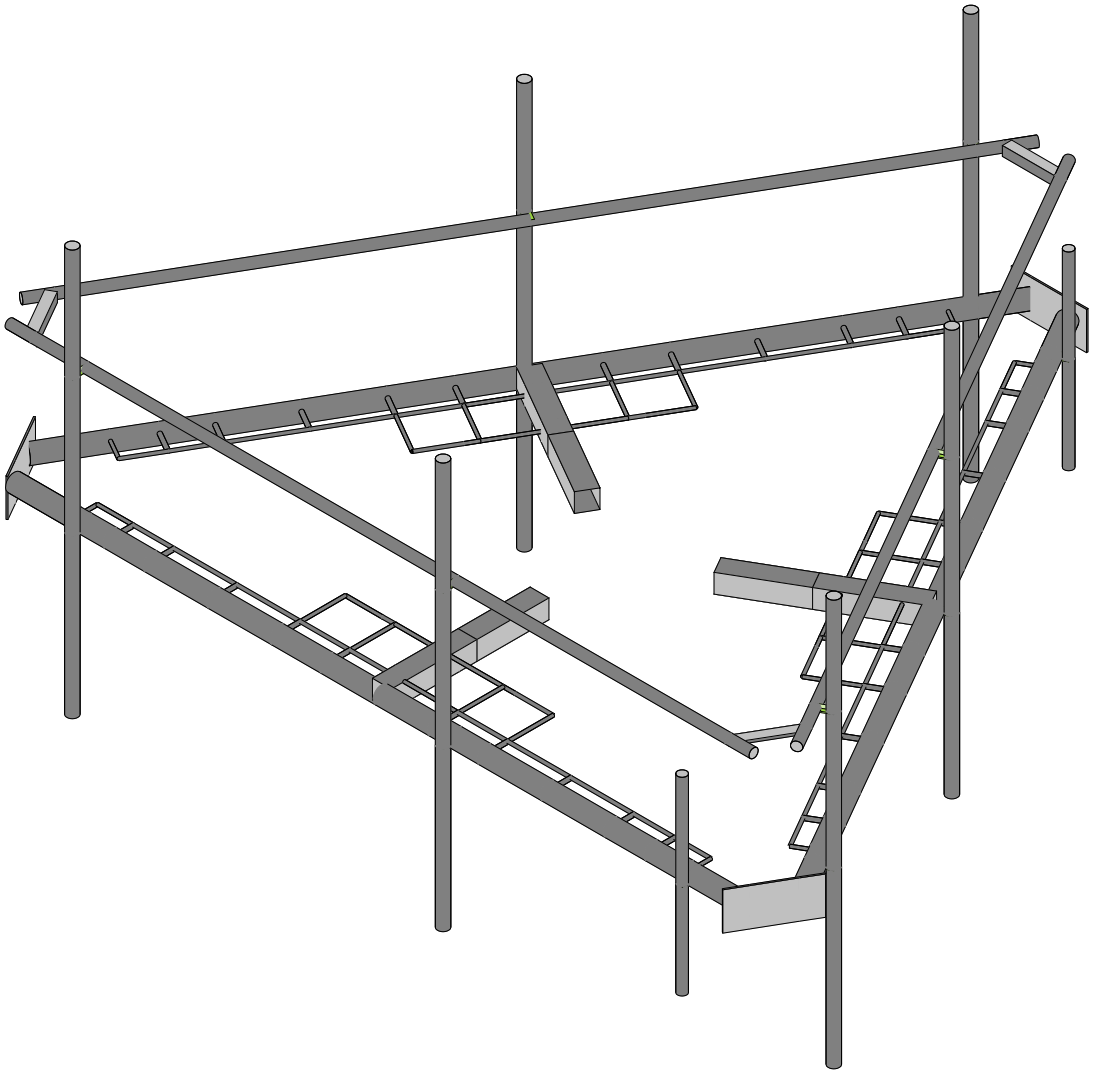
The mount has sufficient capacity to carry the proposed loading configuration. For the results of the analysis to be considered valid, the loading modification listed below must be completed.

- Install (3) new support rail pipes 2” Std. x 16’-6” long (3’ above main horizontals), connected to each other using new support rail connection angles, SitePro1 Part# AHCP and connected to mount pipes using SitePro1 Part# SCX1-K.

No other structural modifications are required at this time.

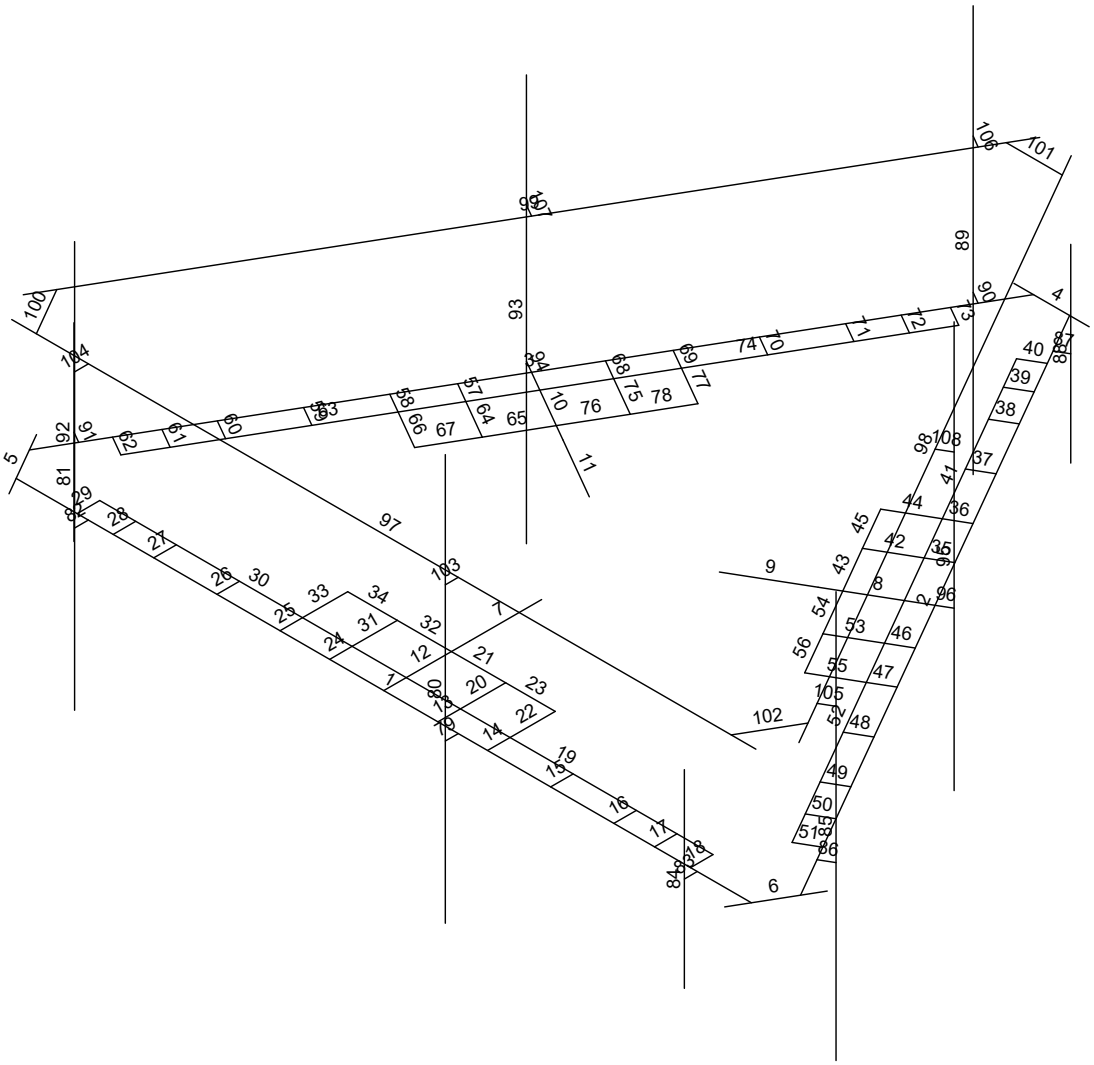
APPENDIX A

WIRE FRAME AND RENDERED MODELS



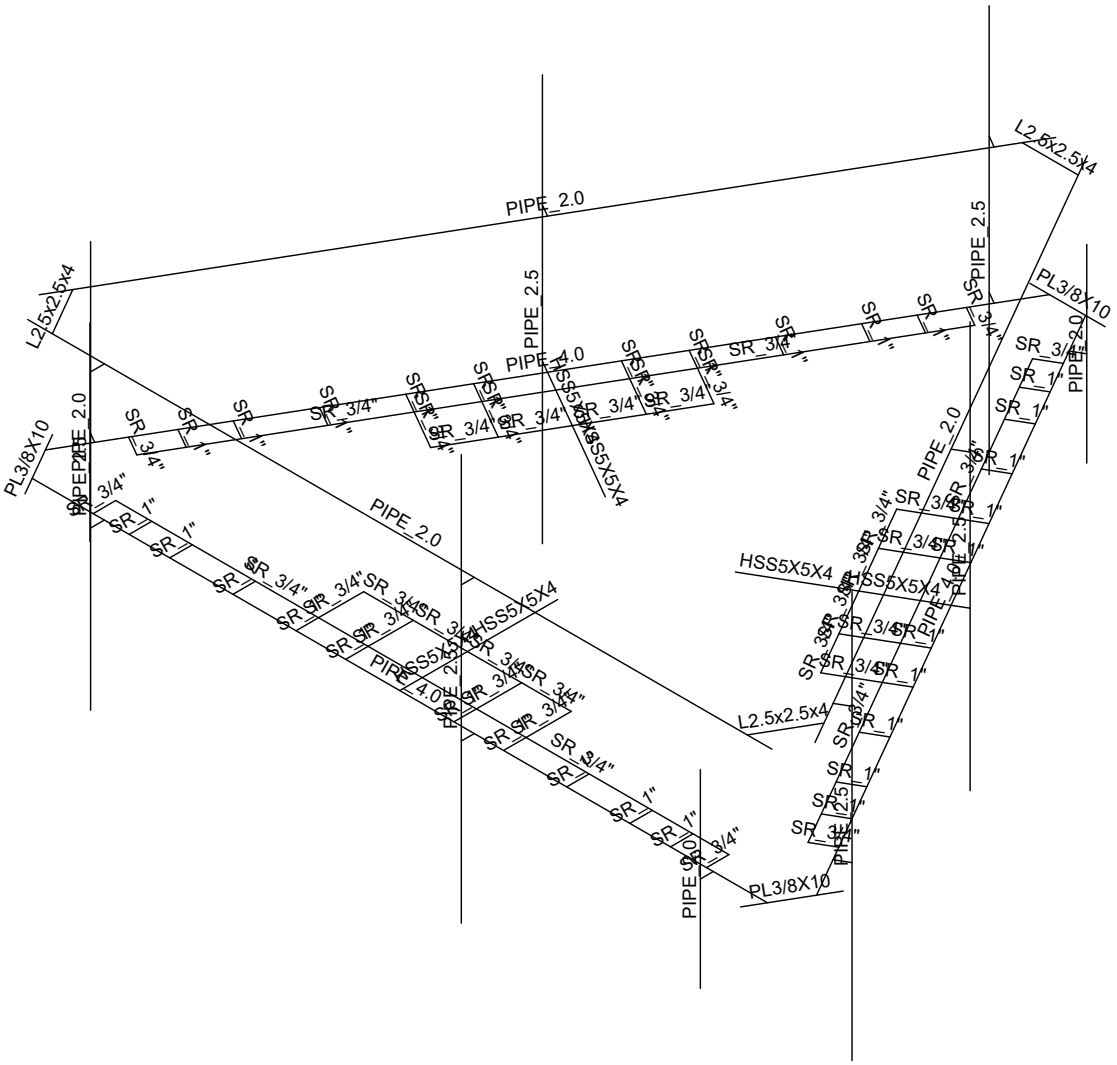
Envelope Only Solution

B+T Group	829046 - Weston/ Rt-57/ Norfield R	SK - 5
AS		Oct 2, 2020 at 4:10 PM
136353.007.01		136353_007_01_Weston Rt-57 No...



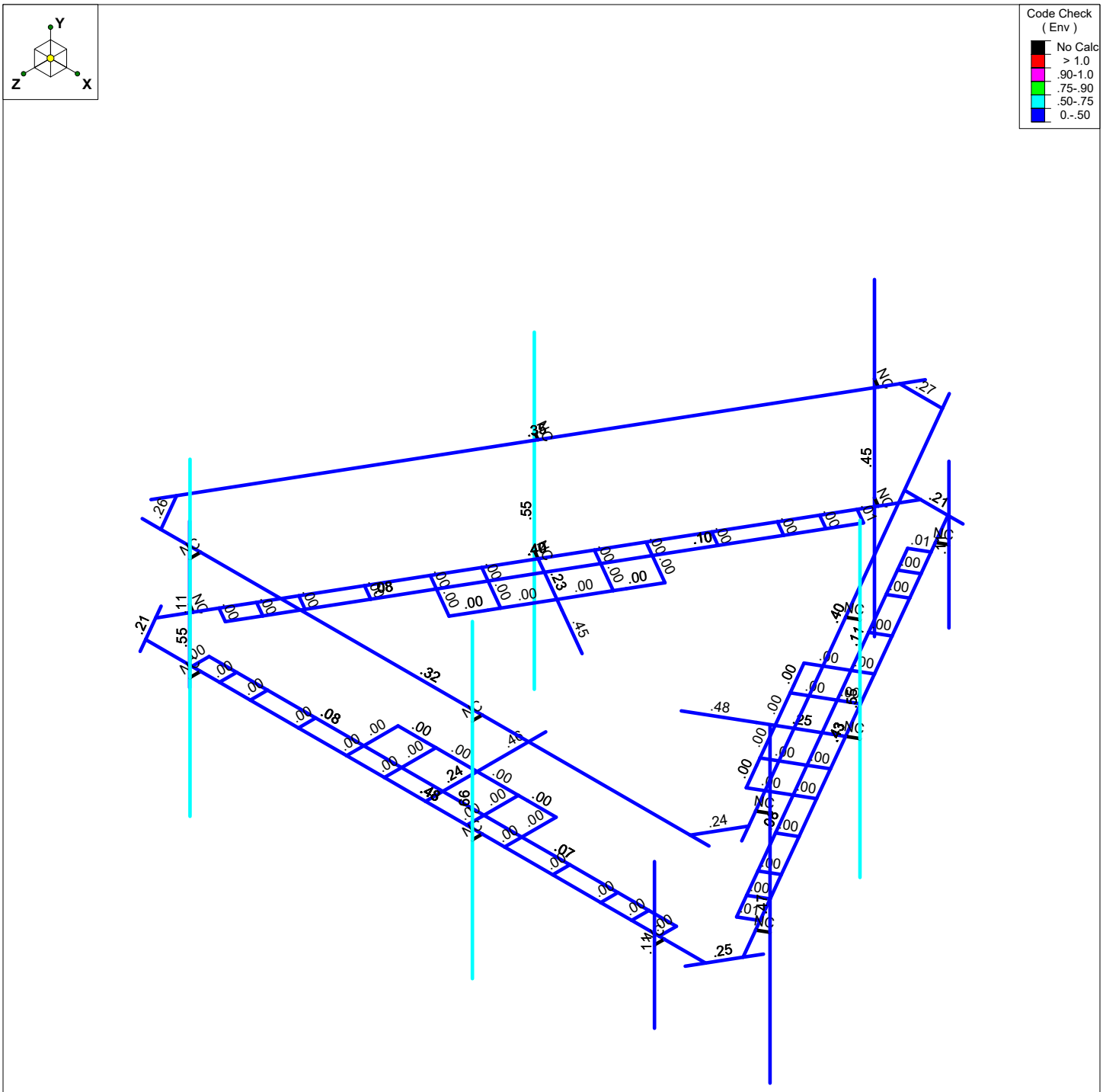
Envelope Only Solution

B+T Group	829046 - Weston/ Rt-57/ Norfield R	SK - 1
AS		Oct 2, 2020 at 4:09 PM
136353.007.01		136353_007_01_Weston Rt-57 No...



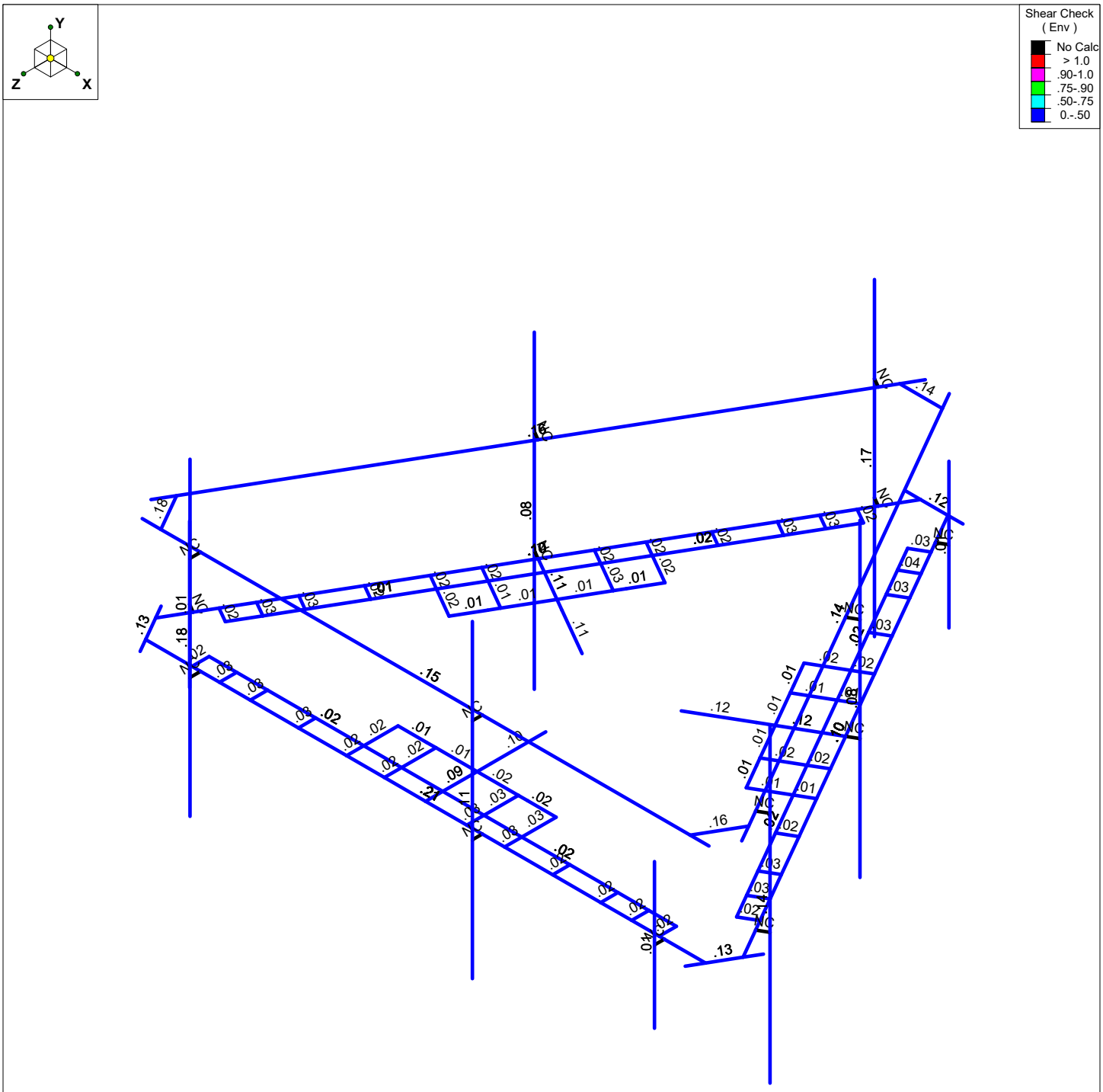
Envelope Only Solution

B+T Group	829046 - Weston/ Rt-57/ Norfield R	SK - 2
AS		Oct 2, 2020 at 4:10 PM
136353.007.01		136353_007_01_Weston Rt-57 No...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	829046 - Weston/ Rt-57/ Norfield R	SK - 3
AS		Oct 2, 2020 at 4:10 PM
136353.007.01		136353_007_01_Weston Rt-57 No...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	829046 - Weston/ Rt-57/ Norfield R	SK - 4
AS		Oct 2, 2020 at 4:10 PM
136353.007.01		136353_007_01_Weston Rt-57 No...

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	MF-H1	PIPE_4.0	Beam	Pipe	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
2	F1-S1	HSS5X5X4	Beam	Tube	A500 Gr.B Rect	Typical	4.3	16	16	25.8
3	F1-SR1	SR_1"	Beam	BAR	A36 Gr.36	Typical	.785	.049	.049	.098
4	F1-SR2	SR_3/4"	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
5	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	MF-P2	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
7	F1-C1	PL3/8X10	Beam	RECT	A36 Gr.36	Typical	3.8	.046	31.667	.179
8	Support Rails	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
9	F1-CA1	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	1	2	3			MF-H1	Beam	Pipe	A53 Gr.B	Typical
2	2	4	5			MF-H1	Beam	Pipe	A53 Gr.B	Typical
3	3	6	7			MF-H1	Beam	Pipe	A53 Gr.B	Typical
4	4	8	9			F1-C1	Beam	RECT	A36 Gr.36	Typical
5	5	10	11			F1-C1	Beam	RECT	A36 Gr.36	Typical
6	6	12	13			F1-C1	Beam	RECT	A36 Gr.36	Typical
7	7	22	14			F1-S1	Beam	Tube	A500 Gr.B...	Typical
8	8	15	16			F1-S1	Beam	Tube	A500 Gr.B...	Typical
9	9	16	17			F1-S1	Beam	Tube	A500 Gr.B...	Typical
10	10	18	19			F1-S1	Beam	Tube	A500 Gr.B...	Typical
11	11	19	20			F1-S1	Beam	Tube	A500 Gr.B...	Typical
12	12	21	22			F1-S1	Beam	Tube	A500 Gr.B...	Typical
13	13	23	32			F1-SR1	Beam	BAR	A36 Gr.36	Typical
14	14	33	24			F1-SR1	Beam	BAR	A36 Gr.36	Typical
15	15	25	26			F1-SR1	Beam	BAR	A36 Gr.36	Typical
16	16	27	28			F1-SR1	Beam	BAR	A36 Gr.36	Typical
17	17	144	29			F1-SR1	Beam	BAR	A36 Gr.36	Typical
18	18	31	30			F1-SR2	Beam	BAR	A36 Gr.36	Typical
19	19	31	45			F1-SR2	Beam	BAR	A36 Gr.36	Typical
20	20	32	35			F1-SR2	Beam	BAR	A36 Gr.36	Typical
21	21	35	47			F1-SR2	Beam	BAR	A36 Gr.36	Typical
22	22	33	34			F1-SR2	Beam	BAR	A36 Gr.36	Typical
23	23	34	35			F1-SR2	Beam	BAR	A36 Gr.36	Typical
24	24	36	46			F1-SR1	Beam	BAR	A36 Gr.36	Typical
25	25	48	37			F1-SR1	Beam	BAR	A36 Gr.36	Typical
26	26	38	39			F1-SR1	Beam	BAR	A36 Gr.36	Typical
27	27	40	41			F1-SR1	Beam	BAR	A36 Gr.36	Typical
28	28	139	42			F1-SR1	Beam	BAR	A36 Gr.36	Typical
29	29	44	43			F1-SR2	Beam	BAR	A36 Gr.36	Typical
30	30	44	45			F1-SR2	Beam	BAR	A36 Gr.36	Typical
31	31	46	50			F1-SR2	Beam	BAR	A36 Gr.36	Typical
32	32	50	47			F1-SR2	Beam	BAR	A36 Gr.36	Typical
33	33	48	49			F1-SR2	Beam	BAR	A36 Gr.36	Typical
34	34	49	50			F1-SR2	Beam	BAR	A36 Gr.36	Typical
35	35	51	60			F1-SR1	Beam	BAR	A36 Gr.36	Typical
36	36	61	52			F1-SR1	Beam	BAR	A36 Gr.36	Typical
37	37	53	54			F1-SR1	Beam	BAR	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
38	38	55	56			F1-SR1	Beam	BAR	A36 Gr.36	Typical
39	39	136	57			F1-SR1	Beam	BAR	A36 Gr.36	Typical
40	40	59	58			F1-SR2	Beam	BAR	A36 Gr.36	Typical
41	41	59	73			F1-SR2	Beam	BAR	A36 Gr.36	Typical
42	42	60	63			F1-SR2	Beam	BAR	A36 Gr.36	Typical
43	43	63	75			F1-SR2	Beam	BAR	A36 Gr.36	Typical
44	44	61	62			F1-SR2	Beam	BAR	A36 Gr.36	Typical
45	45	62	63			F1-SR2	Beam	BAR	A36 Gr.36	Typical
46	46	64	74			F1-SR1	Beam	BAR	A36 Gr.36	Typical
47	47	76	65			F1-SR1	Beam	BAR	A36 Gr.36	Typical
48	48	66	67			F1-SR1	Beam	BAR	A36 Gr.36	Typical
49	49	68	69			F1-SR1	Beam	BAR	A36 Gr.36	Typical
50	50	143	70			F1-SR1	Beam	BAR	A36 Gr.36	Typical
51	51	72	71			F1-SR2	Beam	BAR	A36 Gr.36	Typical
52	52	72	73			F1-SR2	Beam	BAR	A36 Gr.36	Typical
53	53	74	78			F1-SR2	Beam	BAR	A36 Gr.36	Typical
54	54	78	75			F1-SR2	Beam	BAR	A36 Gr.36	Typical
55	55	76	77			F1-SR2	Beam	BAR	A36 Gr.36	Typical
56	56	77	78			F1-SR2	Beam	BAR	A36 Gr.36	Typical
57	57	79	88			F1-SR1	Beam	BAR	A36 Gr.36	Typical
58	58	89	80			F1-SR1	Beam	BAR	A36 Gr.36	Typical
59	59	81	82			F1-SR1	Beam	BAR	A36 Gr.36	Typical
60	60	83	84			F1-SR1	Beam	BAR	A36 Gr.36	Typical
61	61	140	85			F1-SR1	Beam	BAR	A36 Gr.36	Typical
62	62	87	86			F1-SR2	Beam	BAR	A36 Gr.36	Typical
63	63	87	101			F1-SR2	Beam	BAR	A36 Gr.36	Typical
64	64	88	91			F1-SR2	Beam	BAR	A36 Gr.36	Typical
65	65	91	103			F1-SR2	Beam	BAR	A36 Gr.36	Typical
66	66	89	90			F1-SR2	Beam	BAR	A36 Gr.36	Typical
67	67	90	91			F1-SR2	Beam	BAR	A36 Gr.36	Typical
68	68	92	102			F1-SR1	Beam	BAR	A36 Gr.36	Typical
69	69	104	93			F1-SR1	Beam	BAR	A36 Gr.36	Typical
70	70	94	95			F1-SR1	Beam	BAR	A36 Gr.36	Typical
71	71	96	97			F1-SR1	Beam	BAR	A36 Gr.36	Typical
72	72	135	98			F1-SR1	Beam	BAR	A36 Gr.36	Typical
73	73	100	99			F1-SR2	Beam	BAR	A36 Gr.36	Typical
74	74	100	101			F1-SR2	Beam	BAR	A36 Gr.36	Typical
75	75	102	106			F1-SR2	Beam	BAR	A36 Gr.36	Typical
76	76	106	103			F1-SR2	Beam	BAR	A36 Gr.36	Typical
77	77	104	105			F1-SR2	Beam	BAR	A36 Gr.36	Typical
78	78	105	106			F1-SR2	Beam	BAR	A36 Gr.36	Typical
79	79	107	108			RIGID	None	None	RIGID	Typical
80	80	109	110			MF-P2	Column	Pipe	A53 Gr.B	Typical
81	81	111	112			MF-P2	Column	Pipe	A53 Gr.B	Typical
82	82	113	114			RIGID	None	None	RIGID	Typical
83	83	115	116			RIGID	None	None	RIGID	Typical
84	84	117	118			MF-P1	Column	Pipe	A53 Gr.B	Typical
85	85	119	120			MF-P2	Column	Pipe	A53 Gr.B	Typical
86	86	121	122			RIGID	None	None	RIGID	Typical
87	87	123	124			RIGID	None	None	RIGID	Typical
88	88	125	126			MF-P1	Column	Pipe	A53 Gr.B	Typical
89	89	127	128			MF-P2	Column	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
90	90	129	130			RIGID	None	None	RIGID	Typical
91	91	131	132			RIGID	None	None	RIGID	Typical
92	92	133	134			MF-P1	Column	Pipe	A53 Gr.B	Typical
93	93	147	148			MF-P2	Column	Pipe	A53 Gr.B	Typical
94	94	18	149			RIGID	None	None	RIGID	Typical
95	95	150	151			MF-P2	Column	Pipe	A53 Gr.B	Typical
96	96	15	152			RIGID	None	None	RIGID	Typical
97	97	153	154			Support Rails	Beam	Pipe	A53 Gr.B	Typical
98	98	155	156			Support Rails	Beam	Pipe	A53 Gr.B	Typical
99	99	157	158			Support Rails	Beam	Pipe	A53 Gr.B	Typical
100	100	161	159		90	F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
101	101	164	160		90	F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
102	102	163	162		90	F1-CA1	Beam	Single Angle	A36 Gr.36	Typical
103	103	165	166			RIGID	None	None	RIGID	Typical
104	104	167	168			RIGID	None	None	RIGID	Typical
105	105	171	172			RIGID	None	None	RIGID	Typical
106	106	173	174			RIGID	None	None	RIGID	Typical
107	107	170	175			RIGID	None	None	RIGID	Typical
108	108	169	176			RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead	DL		-1			60		6	
2	0 Wind - No Ice	WLZ					60	93		
3	90 Wind - No Ice	WLX					60	93		
4	0 Wind - Ice	WLZ					60	93		
5	90 Wind - Ice	WLX					60	93		
6	0 Wind - Service	WLZ					60	93		
7	90 Wind - Service	WLX					60	93		
8	Ice	OL1					60	93	6	
9	0 Seismic	ELZ					60	93		
10	90 Seismic	ELX					60	93		
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			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
29	Maint LL 15	LL					1			
30	Maint LL 18	LL								
31	BLC 1 Transient Area...	None						54		
32	BLC 8 Transient Area...	None						54		

Load Combinations

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
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	.866	3	.5																
4	1.2 D + 1.0 - 60 W	Yes	Y		1	1.2	3	.866	2	.5																
5	1.2 D + 1.0 - 90 W	Yes	Y		1	1.2	3	1																		
6	1.2 D + 1.0 - 120 W	Yes	Y		1	1.2	3	.866	2	-.5																
7	1.2 D + 1.0 - 150 W	Yes	Y		1	1.2	2	-.866	3	.5																
8	1.2 D + 1.0 - 180 W	Yes	Y		1	1.2	2	-1																		
9	1.2 D + 1.0 - 210 W	Yes	Y		1	1.2	2	-.866	3	-.5																
10	1.2 D + 1.0 - 240 W	Yes	Y		1	1.2	3	-.866	2	-.5																
11	1.2 D + 1.0 - 270 W	Yes	Y		1	1.2	3	-1																		
12	1.2 D + 1.0 - 300 W	Yes	Y		1	1.2	3	-.866	2	.5																
13	1.2 D + 1.0 - 330 W	Yes	Y		1	1.2	2	.866	3	-.5																
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y		1	1.2	4	1			8	1														
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y		1	1.2	4	.866	5	.5	8	1														
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y		1	1.2	5	.866	4	.5	8	1														
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y		1	1.2	5	1			8	1														
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y		1	1.2	5	.866	4	-.5	8	1														
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y		1	1.2	4	-.866	5	.5	8	1														
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y		1	1.2	4	-1			8	1														
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y		1	1.2	4	-.866	5	-.5	8	1														
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y		1	1.2	5	-.866	4	-.5	8	1														
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y		1	1.2	5	-1			8	1														
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y		1	1.2	5	-.866	4	.5	8	1														
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y		1	1.2	4	.866	5	-.5	8	1														
26	1.2 D + 1.0 E - 0	Yes	Y		1	1.2	9	1																		
27	1.2 D + 1.0 E - 30	Yes	Y		1	1.2	9	.866	10	.5																
28	1.2 D + 1.0 E - 60	Yes	Y		1	1.2	10	.866	9	.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	.866	9	-.5																
31	1.2 D + 1.0 E - 150	Yes	Y		1	1.2	9	-.866	10	.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	-.866	10	-.5																
34	1.2 D + 1.0 E - 240	Yes	Y		1	1.2	10	-.866	9	-.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	-.866	9	.5																
37	1.2 D + 1.0 E - 330	Yes	Y		1	1.2	9	.866	10	-.5																
38	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	6	1			11	1.5														
39	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	6	.866	7	.5	11	1.5														
40	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	7	.866	6	.5	11	1.5														
41	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	7	1			11	1.5														
42	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	7	.866	6	-.5	11	1.5														
43	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	6	-.866	7	.5	11	1.5														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...	B...	Fac...
44	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	6	-1			11	1.5														
45	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	6	-.866	7	-.5	11	1.5														
46	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	7	-.866	6	-.5	11	1.5														
47	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	7	-1			11	1.5														
48	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	7	-.866	6	.5	11	1.5														
49	1.2 D + 1.5 LL a + Service -...	Yes	Y		1	1.2	6	.866	7	-.5	11	1.5														
50	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	6	1			12	1.5														
51	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	6	.866	7	.5	12	1.5														
52	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	7	.866	6	.5	12	1.5														
53	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	7	1			12	1.5														
54	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	7	.866	6	-.5	12	1.5														
55	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	6	-.866	7	.5	12	1.5														
56	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	6	-1			12	1.5														
57	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	6	-.866	7	-.5	12	1.5														
58	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	7	-.866	6	-.5	12	1.5														
59	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	7	-1			12	1.5														
60	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	7	-.866	6	.5	12	1.5														
61	1.2 D + 1.5 LL b + Service -...	Yes	Y		1	1.2	6	.866	7	-.5	12	1.5														
62	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	6	1			13	1.5														
63	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	6	.866	7	.5	13	1.5														
64	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	7	.866	6	.5	13	1.5														
65	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	7	1			13	1.5														
66	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	7	.866	6	-.5	13	1.5														
67	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	6	-.866	7	.5	13	1.5														
68	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	6	-1			13	1.5														
69	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	6	-.866	7	-.5	13	1.5														
70	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	7	-.866	6	-.5	13	1.5														
71	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	7	-1			13	1.5														
72	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	7	-.866	6	.5	13	1.5														
73	1.2 D + 1.5 LL c + Service -...	Yes	Y		1	1.2	6	.866	7	-.5	13	1.5														
74	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	6	1			14	1.5														
75	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	6	.866	7	.5	14	1.5														
76	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	7	.866	6	.5	14	1.5														
77	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	7	1			14	1.5														
78	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	7	.866	6	-.5	14	1.5														
79	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	6	-.866	7	.5	14	1.5														
80	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	6	-1			14	1.5														
81	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	6	-.866	7	-.5	14	1.5														
82	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	7	-.866	6	-.5	14	1.5														
83	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	7	-1			14	1.5														
84	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	7	-.866	6	.5	14	1.5														
85	1.2 D + 1.5 LL d + Service -...	Yes	Y		1	1.2	6	.866	7	-.5	14	1.5														
86	1.2 D + 1.5 LL Maint (1)	Yes	Y		1	1.2					15	1.5														
87	1.2 D + 1.5 LL Maint (2)	Yes	Y		1	1.2					16	1.5														
88	1.2 D + 1.5 LL Maint (3)	Yes	Y		1	1.2					17	1.5														
89	1.2 D + 1.5 LL Maint (4)	Yes	Y		1	1.2					18	1.5														
90	1.2 D + 1.5 LL Maint (5)	Yes	Y		1	1.2					19	1.5														
91	1.2 D + 1.5 LL Maint (6)	Yes	Y		1	1.2					20	1.5														
92	1.2 D + 1.5 LL Maint (7)	Yes	Y		1	1.2					21	1.5														
93	1.2 D + 1.5 LL Maint (8)	Yes	Y		1	1.2					22	1.5														
94	1.2 D + 1.5 LL Maint (9)	Yes	Y		1	1.2					23	1.5														
95	1.2 D + 1.5 LL Maint (10)	Yes	Y		1	1.2					24	1.5														

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac..	B...	Fac...
96	1.2 D + 1.5 LL Maint (11)	Yes	Y		1	1.2					25	1.5																
97	1.2 D + 1.5 LL Maint (12)	Yes	Y		1	1.2					26	1.5																
98	1.2 D + 1.5 LL Maint (13)	Yes	Y		1	1.2					27	1.5																
99	1.2 D + 1.5 LL Maint (14)	Yes	Y		1	1.2					28	1.5																
100	1.2 D + 1.5 LL Maint (15)	Yes	Y		1	1.2					29	1.5																

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	113	L	Y	-.5
2	121	L	Y	-.5
3	129	L	Y	-.5

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	107	L	Y	-.5
2	15	L	Y	-.5
3	18	L	Y	-.5

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

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	115	L	Y	-.5
2	123	L	Y	-.5
3	131	L	Y	-.5

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	Y	-.057	%5
2	84	Y	-.057	%65
3	84	Y	0	0
4	84	Y	0	0
5	84	Y	0	0
6	80	Y	-.075	%5
7	80	Y	-.075	%90
8	80	Y	-.073	%45
9	80	Y	-.044	%15
10	80	Y	-.006	%85
11	81	Y	-.066	%5
12	81	Y	-.066	%55
13	81	Y	0	0
14	81	Y	0	0
15	81	Y	0	0
16	92	Y	-.057	%5
17	92	Y	-.057	%65
18	92	Y	0	0
19	92	Y	0	0
20	92	Y	0	0
21	93	Y	-.075	%5
22	93	Y	-.075	%95

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
23	93	Y	-.073	%45
24	93	Y	-.044	%20
25	93	Y	-.006	%85
26	89	Y	-.066	%5
27	89	Y	-.066	%55
28	89	Y	0	0
29	89	Y	0	0
30	89	Y	0	0
31	88	Y	-.057	%5
32	88	Y	-.057	%65
33	88	Y	0	0
34	88	Y	0	0
35	88	Y	0	0
36	95	Y	-.075	%5
37	95	Y	-.075	%95
38	95	Y	-.073	%45
39	95	Y	-.044	%20
40	95	Y	-.006	%85
41	85	Y	-.066	%5
42	85	Y	-.066	%55
43	85	Y	0	0
44	85	Y	0	0
45	85	Y	0	0
46	80	Y	-.011	%75
47	80	Y	0	0
48	80	Y	0	0
49	80	Y	0	0
50	80	Y	0	0
51	93	Y	-.011	%75
52	93	Y	0	0
53	93	Y	0	0
54	93	Y	0	0
55	93	Y	0	0
56	95	Y	-.011	%75
57	95	Y	0	0
58	95	Y	0	0
59	95	Y	0	0
60	95	Y	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	Z	-.101	%5
2	84	Z	-.101	%65
3	84	Z	0	0
4	84	Z	0	0
5	84	Z	0	0
6	80	Z	-.363	%5
7	80	Z	-.363	%90
8	80	Z	-.071	%45
9	80	Z	-.059	%15
10	80	Z	-.009	%85

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
11	81	Z	-.117	%5
12	81	Z	-.117	%55
13	81	Z	0	0
14	81	Z	0	0
15	81	Z	0	0
16	92	Z	-.101	%5
17	92	Z	-.101	%65
18	92	Z	0	0
19	92	Z	0	0
20	92	Z	0	0
21	93	Z	-.363	%5
22	93	Z	-.363	%95
23	93	Z	-.071	%45
24	93	Z	-.059	%20
25	93	Z	-.009	%85
26	89	Z	-.117	%5
27	89	Z	-.117	%55
28	89	Z	0	0
29	89	Z	0	0
30	89	Z	0	0
31	88	Z	-.101	%5
32	88	Z	-.101	%65
33	88	Z	0	0
34	88	Z	0	0
35	88	Z	0	0
36	95	Z	-.363	%5
37	95	Z	-.363	%95
38	95	Z	-.071	%45
39	95	Z	-.059	%20
40	95	Z	-.009	%85
41	85	Z	-.117	%5
42	85	Z	-.117	%55
43	85	Z	0	0
44	85	Z	0	0
45	85	Z	0	0
46	80	Z	-.013	%75
47	80	Z	0	0
48	80	Z	0	0
49	80	Z	0	0
50	80	Z	0	0
51	93	Z	-.013	%75
52	93	Z	0	0
53	93	Z	0	0
54	93	Z	0	0
55	93	Z	0	0
56	95	Z	-.013	%75
57	95	Z	0	0
58	95	Z	0	0
59	95	Z	0	0
60	95	Z	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	X	-.042	%5
2	84	X	-.042	%65
3	84	X	0	0
4	84	X	0	0
5	84	X	0	0
6	80	X	-.128	%5
7	80	X	-.128	%90
8	80	X	-.057	%45
9	80	X	-.024	%15
10	80	X	-.004	%85
11	81	X	-.079	%5
12	81	X	-.079	%55
13	81	X	0	0
14	81	X	0	0
15	81	X	0	0
16	92	X	-.042	%5
17	92	X	-.042	%65
18	92	X	0	0
19	92	X	0	0
20	92	X	0	0
21	93	X	-.128	%5
22	93	X	-.128	%95
23	93	X	-.057	%45
24	93	X	-.024	%20
25	93	X	-.004	%85
26	89	X	-.079	%5
27	89	X	-.079	%55
28	89	X	0	0
29	89	X	0	0
30	89	X	0	0
31	88	X	-.042	%5
32	88	X	-.042	%65
33	88	X	0	0
34	88	X	0	0
35	88	X	0	0
36	95	X	-.128	%5
37	95	X	-.128	%95
38	95	X	-.057	%45
39	95	X	-.024	%20
40	95	X	-.004	%85
41	85	X	-.079	%5
42	85	X	-.079	%55
43	85	X	0	0
44	85	X	0	0
45	85	X	0	0
46	80	X	-.006	%75
47	80	X	0	0
48	80	X	0	0
49	80	X	0	0
50	80	X	0	0
51	93	X	-.006	%75
52	93	X	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
53	93	X	0	0
54	93	X	0	0
55	93	X	0	0
56	95	X	-.006	%75
57	95	X	0	0
58	95	X	0	0
59	95	X	0	0
60	95	X	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	Z	-.018	%5
2	84	Z	-.018	%65
3	84	Z	0	0
4	84	Z	0	0
5	84	Z	0	0
6	80	Z	-.063	%5
7	80	Z	-.063	%90
8	80	Z	-.012	%45
9	80	Z	-.01	%15
10	80	Z	-.002	%85
11	81	Z	-.02	%5
12	81	Z	-.02	%55
13	81	Z	0	0
14	81	Z	0	0
15	81	Z	0	0
16	92	Z	-.018	%5
17	92	Z	-.018	%65
18	92	Z	0	0
19	92	Z	0	0
20	92	Z	0	0
21	93	Z	-.063	%5
22	93	Z	-.063	%95
23	93	Z	-.012	%45
24	93	Z	-.01	%20
25	93	Z	-.002	%85
26	89	Z	-.02	%5
27	89	Z	-.02	%55
28	89	Z	0	0
29	89	Z	0	0
30	89	Z	0	0
31	88	Z	-.018	%5
32	88	Z	-.018	%65
33	88	Z	0	0
34	88	Z	0	0
35	88	Z	0	0
36	95	Z	-.063	%5
37	95	Z	-.063	%95
38	95	Z	-.012	%45
39	95	Z	-.01	%20
40	95	Z	-.002	%85

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
41	85	Z	-.02	%5
42	85	Z	-.02	%55
43	85	Z	0	0
44	85	Z	0	0
45	85	Z	0	0
46	80	Z	-.002	%75
47	80	Z	0	0
48	80	Z	0	0
49	80	Z	0	0
50	80	Z	0	0
51	93	Z	-.002	%75
52	93	Z	0	0
53	93	Z	0	0
54	93	Z	0	0
55	93	Z	0	0
56	95	Z	-.002	%75
57	95	Z	0	0
58	95	Z	0	0
59	95	Z	0	0
60	95	Z	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	X	-.007	%5
2	84	X	-.007	%65
3	84	X	0	0
4	84	X	0	0
5	84	X	0	0
6	80	X	-.022	%5
7	80	X	-.022	%90
8	80	X	-.01	%45
9	80	X	-.004	%15
10	80	X	-.0006	%85
11	81	X	-.014	%5
12	81	X	-.014	%55
13	81	X	0	0
14	81	X	0	0
15	81	X	0	0
16	92	X	-.007	%5
17	92	X	-.007	%65
18	92	X	0	0
19	92	X	0	0
20	92	X	0	0
21	93	X	-.022	%5
22	93	X	-.022	%95
23	93	X	-.01	%45
24	93	X	-.004	%20
25	93	X	-.0006	%85
26	89	X	-.014	%5
27	89	X	-.014	%55
28	89	X	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
29	89	X	0	0
30	89	X	0	0
31	88	X	-.007	%5
32	88	X	-.007	%65
33	88	X	0	0
34	88	X	0	0
35	88	X	0	0
36	95	X	-.022	%5
37	95	X	-.022	%95
38	95	X	-.01	%45
39	95	X	-.004	%20
40	95	X	-.0006	%85
41	85	X	-.014	%5
42	85	X	-.014	%55
43	85	X	0	0
44	85	X	0	0
45	85	X	0	0
46	80	X	-.001	%75
47	80	X	0	0
48	80	X	0	0
49	80	X	0	0
50	80	X	0	0
51	93	X	-.001	%75
52	93	X	0	0
53	93	X	0	0
54	93	X	0	0
55	93	X	0	0
56	95	X	-.001	%75
57	95	X	0	0
58	95	X	0	0
59	95	X	0	0
60	95	X	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	Z	-.006	%5
2	84	Z	-.006	%65
3	84	Z	0	0
4	84	Z	0	0
5	84	Z	0	0
6	80	Z	-.023	%5
7	80	Z	-.023	%90
8	80	Z	-.004	%45
9	80	Z	-.004	%15
10	80	Z	-.0005	%85
11	81	Z	-.007	%5
12	81	Z	-.007	%55
13	81	Z	0	0
14	81	Z	0	0
15	81	Z	0	0
16	92	Z	-.006	%5

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
17	92	Z	-.006	%65
18	92	Z	0	0
19	92	Z	0	0
20	92	Z	0	0
21	93	Z	-.023	%5
22	93	Z	-.023	%95
23	93	Z	-.004	%45
24	93	Z	-.004	%20
25	93	Z	-.0005	%85
26	89	Z	-.007	%5
27	89	Z	-.007	%55
28	89	Z	0	0
29	89	Z	0	0
30	89	Z	0	0
31	88	Z	-.006	%5
32	88	Z	-.006	%65
33	88	Z	0	0
34	88	Z	0	0
35	88	Z	0	0
36	95	Z	-.023	%5
37	95	Z	-.023	%95
38	95	Z	-.004	%45
39	95	Z	-.004	%20
40	95	Z	-.0005	%85
41	85	Z	-.007	%5
42	85	Z	-.007	%55
43	85	Z	0	0
44	85	Z	0	0
45	85	Z	0	0
46	80	Z	-.0008	%75
47	80	Z	0	0
48	80	Z	0	0
49	80	Z	0	0
50	80	Z	0	0
51	93	Z	-.0008	%75
52	93	Z	0	0
53	93	Z	0	0
54	93	Z	0	0
55	93	Z	0	0
56	95	Z	-.0008	%75
57	95	Z	0	0
58	95	Z	0	0
59	95	Z	0	0
60	95	Z	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	X	-.003	%5
2	84	X	-.003	%65
3	84	X	0	0
4	84	X	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
5	84	X	0	0
6	80	X	-.008	%5
7	80	X	-.008	%90
8	80	X	-.004	%45
9	80	X	-.002	%15
10	80	X	-.0002	%85
11	81	X	-.005	%5
12	81	X	-.005	%55
13	81	X	0	0
14	81	X	0	0
15	81	X	0	0
16	92	X	-.003	%5
17	92	X	-.003	%65
18	92	X	0	0
19	92	X	0	0
20	92	X	0	0
21	93	X	-.008	%5
22	93	X	-.008	%95
23	93	X	-.004	%45
24	93	X	-.002	%20
25	93	X	-.0002	%85
26	89	X	-.005	%5
27	89	X	-.005	%55
28	89	X	0	0
29	89	X	0	0
30	89	X	0	0
31	88	X	-.003	%5
32	88	X	-.003	%65
33	88	X	0	0
34	88	X	0	0
35	88	X	0	0
36	95	X	-.008	%5
37	95	X	-.008	%95
38	95	X	-.004	%45
39	95	X	-.002	%20
40	95	X	-.0002	%85
41	85	X	-.005	%5
42	85	X	-.005	%55
43	85	X	0	0
44	85	X	0	0
45	85	X	0	0
46	80	X	-.0004	%75
47	80	X	0	0
48	80	X	0	0
49	80	X	0	0
50	80	X	0	0
51	93	X	-.0004	%75
52	93	X	0	0
53	93	X	0	0
54	93	X	0	0
55	93	X	0	0
56	95	X	-.0004	%75

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
57	95	X	0	0
58	95	X	0	0
59	95	X	0	0
60	95	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	Y	-.071	%5
2	84	Y	-.071	%65
3	84	Y	0	0
4	84	Y	0	0
5	84	Y	0	0
6	80	Y	-.235	%5
7	80	Y	-.235	%90
8	80	Y	-.06	%45
9	80	Y	-.043	%15
10	80	Y	-.007	%85
11	81	Y	-.088	%5
12	81	Y	-.088	%55
13	81	Y	0	0
14	81	Y	0	0
15	81	Y	0	0
16	92	Y	-.071	%5
17	92	Y	-.071	%65
18	92	Y	0	0
19	92	Y	0	0
20	92	Y	0	0
21	93	Y	-.235	%5
22	93	Y	-.235	%95
23	93	Y	-.06	%45
24	93	Y	-.043	%20
25	93	Y	-.007	%85
26	89	Y	-.088	%5
27	89	Y	-.088	%55
28	89	Y	0	0
29	89	Y	0	0
30	89	Y	0	0
31	88	Y	-.071	%5
32	88	Y	-.071	%65
33	88	Y	0	0
34	88	Y	0	0
35	88	Y	0	0
36	95	Y	-.235	%5
37	95	Y	-.235	%95
38	95	Y	-.06	%45
39	95	Y	-.043	%20
40	95	Y	-.007	%85
41	85	Y	-.088	%5
42	85	Y	-.088	%55
43	85	Y	0	0
44	85	Y	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
45	85	Y	0	0
46	80	Y	-.011	%75
47	80	Y	0	0
48	80	Y	0	0
49	80	Y	0	0
50	80	Y	0	0
51	93	Y	-.011	%75
52	93	Y	0	0
53	93	Y	0	0
54	93	Y	0	0
55	93	Y	0	0
56	95	Y	-.011	%75
57	95	Y	0	0
58	95	Y	0	0
59	95	Y	0	0
60	95	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	Z	-.036	%5
2	84	Z	-.036	%65
3	84	Z	0	0
4	84	Z	0	0
5	84	Z	0	0
6	80	Z	-.047	%5
7	80	Z	-.047	%90
8	80	Z	-.023	%45
9	80	Z	-.014	%15
10	80	Z	-.002	%85
11	81	Z	-.041	%5
12	81	Z	-.041	%55
13	81	Z	0	0
14	81	Z	0	0
15	81	Z	0	0
16	92	Z	-.036	%5
17	92	Z	-.036	%65
18	92	Z	0	0
19	92	Z	0	0
20	92	Z	0	0
21	93	Z	-.047	%5
22	93	Z	-.047	%95
23	93	Z	-.023	%45
24	93	Z	-.014	%20
25	93	Z	-.002	%85
26	89	Z	-.041	%5
27	89	Z	-.041	%55
28	89	Z	0	0
29	89	Z	0	0
30	89	Z	0	0
31	88	Z	-.036	%5
32	88	Z	-.036	%65

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
33	88	Z	0	0
34	88	Z	0	0
35	88	Z	0	0
36	95	Z	-.047	%5
37	95	Z	-.047	%95
38	95	Z	-.023	%45
39	95	Z	-.014	%20
40	95	Z	-.002	%85
41	85	Z	-.041	%5
42	85	Z	-.041	%55
43	85	Z	0	0
44	85	Z	0	0
45	85	Z	0	0
46	80	Z	-.003	%75
47	80	Z	0	0
48	80	Z	0	0
49	80	Z	0	0
50	80	Z	0	0
51	93	Z	-.003	%75
52	93	Z	0	0
53	93	Z	0	0
54	93	Z	0	0
55	93	Z	0	0
56	95	Z	-.003	%75
57	95	Z	0	0
58	95	Z	0	0
59	95	Z	0	0
60	95	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	84	X	-.036	%5
2	84	X	-.036	%65
3	84	X	0	0
4	84	X	0	0
5	84	X	0	0
6	80	X	-.047	%5
7	80	X	-.047	%90
8	80	X	-.023	%45
9	80	X	-.014	%15
10	80	X	-.002	%85
11	81	X	-.041	%5
12	81	X	-.041	%55
13	81	X	0	0
14	81	X	0	0
15	81	X	0	0
16	92	X	-.036	%5
17	92	X	-.036	%65
18	92	X	0	0
19	92	X	0	0
20	92	X	0	0

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

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
21	93	X	-.047	%5
22	93	X	-.047	%95
23	93	X	-.023	%45
24	93	X	-.014	%20
25	93	X	-.002	%85
26	89	X	-.041	%5
27	89	X	-.041	%55
28	89	X	0	0
29	89	X	0	0
30	89	X	0	0
31	88	X	-.036	%5
32	88	X	-.036	%65
33	88	X	0	0
34	88	X	0	0
35	88	X	0	0
36	95	X	-.047	%5
37	95	X	-.047	%95
38	95	X	-.023	%45
39	95	X	-.014	%20
40	95	X	-.002	%85
41	85	X	-.041	%5
42	85	X	-.041	%55
43	85	X	0	0
44	85	X	0	0
45	85	X	0	0
46	80	X	-.003	%75
47	80	X	0	0
48	80	X	0	0
49	80	X	0	0
50	80	X	0	0
51	93	X	-.003	%75
52	93	X	0	0
53	93	X	0	0
54	93	X	0	0
55	93	X	0	0
56	95	X	-.003	%75
57	95	X	0	0
58	95	X	0	0
59	95	X	0	0
60	95	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	97	Y	-.25	%5

Member Point Loads (BLC 16 : Maint LL 2)

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

Member Point Loads (BLC 17 : Maint LL 3)

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 17 : Maint LL 3) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	98	Y	-.25	%5

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	2	Y	-.25	%5

Member Point Loads (BLC 19 : Maint LL 5)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	99	Y	-.25	%5

Member Point Loads (BLC 20 : Maint LL 6)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	3	Y	-.25	%5

Member Point Loads (BLC 21 : Maint LL 7)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	97	Y	-.25	%95

Member Point Loads (BLC 22 : Maint LL 8)

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

Member Point Loads (BLC 23 : Maint LL 9)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	98	Y	-.25	%95

Member Point Loads (BLC 24 : Maint LL 10)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	2	Y	-.25	%95

Member Point Loads (BLC 25 : Maint LL 11)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	99	Y	-.25	%95

Member Point Loads (BLC 26 : Maint LL 12)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	3	Y	-.25	%95

Member Point Loads (BLC 27 : Maint LL 13)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	11	Y	-.25	%50

Member Point Loads (BLC 28 : Maint LL 14)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	7	Y	-.25	%50

Member Point Loads (BLC 29 : Maint LL 15)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	9	Y	-.25	%50

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Z	-.013	-.013	0	0
2	2	Z	-.013	-.013	0	0
3	3	Z	-.013	-.013	0	0
4	4	Z	-.036	-.036	0	0
5	5	Z	-.036	-.036	0	0
6	6	Z	-.036	-.036	0	0
7	7	Z	-.019	-.019	0	0
8	8	Z	-.019	-.019	0	0
9	9	Z	-.019	-.019	0	0
10	10	Z	-.019	-.019	0	0
11	11	Z	-.019	-.019	0	0
12	12	Z	-.019	-.019	0	0
13	13	Z	-.003	-.003	0	0
14	14	Z	-.003	-.003	0	0
15	15	Z	-.003	-.003	0	0
16	16	Z	-.003	-.003	0	0
17	17	Z	-.003	-.003	0	0
18	18	Z	-.002	-.002	0	0
19	19	Z	-.003	-.003	0	0
20	20	Z	-.002	-.002	0	0
21	21	Z	-.002	-.002	0	0
22	22	Z	-.002	-.002	0	0
23	23	Z	-.002	-.002	0	0
24	24	Z	-.003	-.003	0	0
25	25	Z	-.003	-.003	0	0
26	26	Z	-.003	-.003	0	0
27	27	Z	-.003	-.003	0	0
28	28	Z	-.003	-.003	0	0
29	29	Z	-.002	-.002	0	0
30	30	Z	-.003	-.003	0	0
31	31	Z	-.002	-.002	0	0
32	32	Z	-.002	-.002	0	0
33	33	Z	-.002	-.002	0	0
34	34	Z	-.002	-.002	0	0
35	35	Z	-.003	-.003	0	0
36	36	Z	-.003	-.003	0	0
37	37	Z	-.003	-.003	0	0
38	38	Z	-.003	-.003	0	0
39	39	Z	-.003	-.003	0	0
40	40	Z	-.002	-.002	0	0
41	41	Z	-.003	-.003	0	0
42	42	Z	-.002	-.002	0	0
43	43	Z	-.002	-.002	0	0
44	44	Z	-.002	-.002	0	0
45	45	Z	-.002	-.002	0	0
46	46	Z	-.003	-.003	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
47	47	Z	-.003	-.003	0	0
48	48	Z	-.003	-.003	0	0
49	49	Z	-.003	-.003	0	0
50	50	Z	-.003	-.003	0	0
51	51	Z	-.002	-.002	0	0
52	52	Z	-.003	-.003	0	0
53	53	Z	-.002	-.002	0	0
54	54	Z	-.002	-.002	0	0
55	55	Z	-.002	-.002	0	0
56	56	Z	-.002	-.002	0	0
57	57	Z	-.003	-.003	0	0
58	58	Z	-.003	-.003	0	0
59	59	Z	-.003	-.003	0	0
60	60	Z	-.003	-.003	0	0
61	61	Z	-.003	-.003	0	0
62	62	Z	-.002	-.002	0	0
63	63	Z	-.003	-.003	0	0
64	64	Z	-.002	-.002	0	0
65	65	Z	-.002	-.002	0	0
66	66	Z	-.002	-.002	0	0
67	67	Z	-.002	-.002	0	0
68	68	Z	-.003	-.003	0	0
69	69	Z	-.003	-.003	0	0
70	70	Z	-.003	-.003	0	0
71	71	Z	-.003	-.003	0	0
72	72	Z	-.003	-.003	0	0
73	73	Z	-.002	-.002	0	0
74	74	Z	-.003	-.003	0	0
75	75	Z	-.002	-.002	0	0
76	76	Z	-.002	-.002	0	0
77	77	Z	-.002	-.002	0	0
78	78	Z	-.002	-.002	0	0
79	80	Z	-.01	-.01	0	0
80	81	Z	-.01	-.01	0	0
81	84	Z	-.008	-.008	0	0
82	85	Z	-.01	-.01	0	0
83	88	Z	-.008	-.008	0	0
84	89	Z	-.01	-.01	0	0
85	92	Z	-.008	-.008	0	0
86	93	Z	-.01	-.01	0	0
87	95	Z	-.01	-.01	0	0
88	97	Z	-.009	-.009	0	0
89	98	Z	-.009	-.009	0	0
90	99	Z	-.009	-.009	0	0
91	100	Z	-.01	-.01	0	0
92	101	Z	-.01	-.01	0	0
93	102	Z	-.01	-.01	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	X	-.013	-.013	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
2	2	X	-.013	-.013	0	0
3	3	X	-.013	-.013	0	0
4	4	X	-.036	-.036	0	0
5	5	X	-.036	-.036	0	0
6	6	X	-.036	-.036	0	0
7	7	X	-.019	-.019	0	0
8	8	X	-.019	-.019	0	0
9	9	X	-.019	-.019	0	0
10	10	X	-.019	-.019	0	0
11	11	X	-.019	-.019	0	0
12	12	X	-.019	-.019	0	0
13	13	X	-.003	-.003	0	0
14	14	X	-.003	-.003	0	0
15	15	X	-.003	-.003	0	0
16	16	X	-.003	-.003	0	0
17	17	X	-.003	-.003	0	0
18	18	X	-.002	-.002	0	0
19	19	X	-.003	-.003	0	0
20	20	X	-.002	-.002	0	0
21	21	X	-.002	-.002	0	0
22	22	X	-.002	-.002	0	0
23	23	X	-.002	-.002	0	0
24	24	X	-.003	-.003	0	0
25	25	X	-.003	-.003	0	0
26	26	X	-.003	-.003	0	0
27	27	X	-.003	-.003	0	0
28	28	X	-.003	-.003	0	0
29	29	X	-.002	-.002	0	0
30	30	X	-.003	-.003	0	0
31	31	X	-.002	-.002	0	0
32	32	X	-.002	-.002	0	0
33	33	X	-.002	-.002	0	0
34	34	X	-.002	-.002	0	0
35	35	X	-.003	-.003	0	0
36	36	X	-.003	-.003	0	0
37	37	X	-.003	-.003	0	0
38	38	X	-.003	-.003	0	0
39	39	X	-.003	-.003	0	0
40	40	X	-.002	-.002	0	0
41	41	X	-.003	-.003	0	0
42	42	X	-.002	-.002	0	0
43	43	X	-.002	-.002	0	0
44	44	X	-.002	-.002	0	0
45	45	X	-.002	-.002	0	0
46	46	X	-.003	-.003	0	0
47	47	X	-.003	-.003	0	0
48	48	X	-.003	-.003	0	0
49	49	X	-.003	-.003	0	0
50	50	X	-.003	-.003	0	0
51	51	X	-.002	-.002	0	0
52	52	X	-.003	-.003	0	0
53	53	X	-.002	-.002	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
54	54	X	-.002	-.002	0	0
55	55	X	-.002	-.002	0	0
56	56	X	-.002	-.002	0	0
57	57	X	-.003	-.003	0	0
58	58	X	-.003	-.003	0	0
59	59	X	-.003	-.003	0	0
60	60	X	-.003	-.003	0	0
61	61	X	-.003	-.003	0	0
62	62	X	-.002	-.002	0	0
63	63	X	-.003	-.003	0	0
64	64	X	-.002	-.002	0	0
65	65	X	-.002	-.002	0	0
66	66	X	-.002	-.002	0	0
67	67	X	-.002	-.002	0	0
68	68	X	-.003	-.003	0	0
69	69	X	-.003	-.003	0	0
70	70	X	-.003	-.003	0	0
71	71	X	-.003	-.003	0	0
72	72	X	-.003	-.003	0	0
73	73	X	-.002	-.002	0	0
74	74	X	-.003	-.003	0	0
75	75	X	-.002	-.002	0	0
76	76	X	-.002	-.002	0	0
77	77	X	-.002	-.002	0	0
78	78	X	-.002	-.002	0	0
79	80	X	-.01	-.01	0	0
80	81	X	-.01	-.01	0	0
81	84	X	-.008	-.008	0	0
82	85	X	-.01	-.01	0	0
83	88	X	-.008	-.008	0	0
84	89	X	-.01	-.01	0	0
85	92	X	-.008	-.008	0	0
86	93	X	-.01	-.01	0	0
87	95	X	-.01	-.01	0	0
88	97	X	-.009	-.009	0	0
89	98	X	-.009	-.009	0	0
90	99	X	-.009	-.009	0	0
91	100	X	-.01	-.01	0	0
92	101	X	-.01	-.01	0	0
93	102	X	-.01	-.01	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Z	-.003	-.003	0	0
2	2	Z	-.003	-.003	0	0
3	3	Z	-.003	-.003	0	0
4	4	Z	-.01	-.01	0	0
5	5	Z	-.01	-.01	0	0
6	6	Z	-.01	-.01	0	0
7	7	Z	-.006	-.006	0	0
8	8	Z	-.006	-.006	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
9	9	Z	-.006	-.006	0	0
10	10	Z	-.006	-.006	0	0
11	11	Z	-.006	-.006	0	0
12	12	Z	-.006	-.006	0	0
13	13	Z	-.002	-.002	0	0
14	14	Z	-.002	-.002	0	0
15	15	Z	-.002	-.002	0	0
16	16	Z	-.002	-.002	0	0
17	17	Z	-.002	-.002	0	0
18	18	Z	-.003	-.003	0	0
19	19	Z	-.002	-.002	0	0
20	20	Z	-.002	-.002	0	0
21	21	Z	-.002	-.002	0	0
22	22	Z	-.002	-.002	0	0
23	23	Z	-.002	-.002	0	0
24	24	Z	-.002	-.002	0	0
25	25	Z	-.002	-.002	0	0
26	26	Z	-.002	-.002	0	0
27	27	Z	-.002	-.002	0	0
28	28	Z	-.002	-.002	0	0
29	29	Z	-.003	-.003	0	0
30	30	Z	-.002	-.002	0	0
31	31	Z	-.002	-.002	0	0
32	32	Z	-.002	-.002	0	0
33	33	Z	-.002	-.002	0	0
34	34	Z	-.002	-.002	0	0
35	35	Z	-.002	-.002	0	0
36	36	Z	-.002	-.002	0	0
37	37	Z	-.002	-.002	0	0
38	38	Z	-.002	-.002	0	0
39	39	Z	-.002	-.002	0	0
40	40	Z	-.003	-.003	0	0
41	41	Z	-.002	-.002	0	0
42	42	Z	-.002	-.002	0	0
43	43	Z	-.002	-.002	0	0
44	44	Z	-.002	-.002	0	0
45	45	Z	-.002	-.002	0	0
46	46	Z	-.002	-.002	0	0
47	47	Z	-.002	-.002	0	0
48	48	Z	-.002	-.002	0	0
49	49	Z	-.002	-.002	0	0
50	50	Z	-.002	-.002	0	0
51	51	Z	-.003	-.003	0	0
52	52	Z	-.002	-.002	0	0
53	53	Z	-.002	-.002	0	0
54	54	Z	-.002	-.002	0	0
55	55	Z	-.002	-.002	0	0
56	56	Z	-.002	-.002	0	0
57	57	Z	-.002	-.002	0	0
58	58	Z	-.002	-.002	0	0
59	59	Z	-.002	-.002	0	0
60	60	Z	-.002	-.002	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
61	61	Z	-.002	-.002	0	0
62	62	Z	-.003	-.003	0	0
63	63	Z	-.002	-.002	0	0
64	64	Z	-.002	-.002	0	0
65	65	Z	-.002	-.002	0	0
66	66	Z	-.002	-.002	0	0
67	67	Z	-.002	-.002	0	0
68	68	Z	-.002	-.002	0	0
69	69	Z	-.002	-.002	0	0
70	70	Z	-.002	-.002	0	0
71	71	Z	-.002	-.002	0	0
72	72	Z	-.002	-.002	0	0
73	73	Z	-.003	-.003	0	0
74	74	Z	-.002	-.002	0	0
75	75	Z	-.002	-.002	0	0
76	76	Z	-.002	-.002	0	0
77	77	Z	-.002	-.002	0	0
78	78	Z	-.002	-.002	0	0
79	80	Z	-.002	-.002	0	0
80	81	Z	-.002	-.002	0	0
81	84	Z	-.002	-.002	0	0
82	85	Z	-.002	-.002	0	0
83	88	Z	-.002	-.002	0	0
84	89	Z	-.002	-.002	0	0
85	92	Z	-.002	-.002	0	0
86	93	Z	-.002	-.002	0	0
87	95	Z	-.002	-.002	0	0
88	97	Z	-.002	-.002	0	0
89	98	Z	-.002	-.002	0	0
90	99	Z	-.002	-.002	0	0
91	100	Z	-.005	-.005	0	0
92	101	Z	-.005	-.005	0	0
93	102	Z	-.005	-.005	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	X	-.003	-.003	0	0
2	2	X	-.003	-.003	0	0
3	3	X	-.003	-.003	0	0
4	4	X	-.01	-.01	0	0
5	5	X	-.01	-.01	0	0
6	6	X	-.01	-.01	0	0
7	7	X	-.006	-.006	0	0
8	8	X	-.006	-.006	0	0
9	9	X	-.006	-.006	0	0
10	10	X	-.006	-.006	0	0
11	11	X	-.006	-.006	0	0
12	12	X	-.006	-.006	0	0
13	13	X	-.002	-.002	0	0
14	14	X	-.002	-.002	0	0
15	15	X	-.002	-.002	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
16	16	X	-.002	-.002	0	0
17	17	X	-.002	-.002	0	0
18	18	X	-.003	-.003	0	0
19	19	X	-.002	-.002	0	0
20	20	X	-.002	-.002	0	0
21	21	X	-.002	-.002	0	0
22	22	X	-.002	-.002	0	0
23	23	X	-.002	-.002	0	0
24	24	X	-.002	-.002	0	0
25	25	X	-.002	-.002	0	0
26	26	X	-.002	-.002	0	0
27	27	X	-.002	-.002	0	0
28	28	X	-.002	-.002	0	0
29	29	X	-.003	-.003	0	0
30	30	X	-.002	-.002	0	0
31	31	X	-.002	-.002	0	0
32	32	X	-.002	-.002	0	0
33	33	X	-.002	-.002	0	0
34	34	X	-.002	-.002	0	0
35	35	X	-.002	-.002	0	0
36	36	X	-.002	-.002	0	0
37	37	X	-.002	-.002	0	0
38	38	X	-.002	-.002	0	0
39	39	X	-.002	-.002	0	0
40	40	X	-.003	-.003	0	0
41	41	X	-.002	-.002	0	0
42	42	X	-.002	-.002	0	0
43	43	X	-.002	-.002	0	0
44	44	X	-.002	-.002	0	0
45	45	X	-.002	-.002	0	0
46	46	X	-.002	-.002	0	0
47	47	X	-.002	-.002	0	0
48	48	X	-.002	-.002	0	0
49	49	X	-.002	-.002	0	0
50	50	X	-.002	-.002	0	0
51	51	X	-.003	-.003	0	0
52	52	X	-.002	-.002	0	0
53	53	X	-.002	-.002	0	0
54	54	X	-.002	-.002	0	0
55	55	X	-.002	-.002	0	0
56	56	X	-.002	-.002	0	0
57	57	X	-.002	-.002	0	0
58	58	X	-.002	-.002	0	0
59	59	X	-.002	-.002	0	0
60	60	X	-.002	-.002	0	0
61	61	X	-.002	-.002	0	0
62	62	X	-.003	-.003	0	0
63	63	X	-.002	-.002	0	0
64	64	X	-.002	-.002	0	0
65	65	X	-.002	-.002	0	0
66	66	X	-.002	-.002	0	0
67	67	X	-.002	-.002	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
68	68	X	-.002	-.002	0	0
69	69	X	-.002	-.002	0	0
70	70	X	-.002	-.002	0	0
71	71	X	-.002	-.002	0	0
72	72	X	-.002	-.002	0	0
73	73	X	-.003	-.003	0	0
74	74	X	-.002	-.002	0	0
75	75	X	-.002	-.002	0	0
76	76	X	-.002	-.002	0	0
77	77	X	-.002	-.002	0	0
78	78	X	-.002	-.002	0	0
79	80	X	-.002	-.002	0	0
80	81	X	-.002	-.002	0	0
81	84	X	-.002	-.002	0	0
82	85	X	-.002	-.002	0	0
83	88	X	-.002	-.002	0	0
84	89	X	-.002	-.002	0	0
85	92	X	-.002	-.002	0	0
86	93	X	-.002	-.002	0	0
87	95	X	-.002	-.002	0	0
88	97	X	-.002	-.002	0	0
89	98	X	-.002	-.002	0	0
90	99	X	-.002	-.002	0	0
91	100	X	-.005	-.005	0	0
92	101	X	-.005	-.005	0	0
93	102	X	-.005	-.005	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Z	-.0005	-.0005	0	0
2	2	Z	-.0005	-.0005	0	0
3	3	Z	-.0005	-.0005	0	0
4	4	Z	-.002	-.002	0	0
5	5	Z	-.002	-.002	0	0
6	6	Z	-.002	-.002	0	0
7	7	Z	-.001	-.001	0	0
8	8	Z	-.001	-.001	0	0
9	9	Z	-.001	-.001	0	0
10	10	Z	-.001	-.001	0	0
11	11	Z	-.001	-.001	0	0
12	12	Z	-.001	-.001	0	0
13	13	Z	-.0001	-.0001	0	0
14	14	Z	-.0001	-.0001	0	0
15	15	Z	-.0001	-.0001	0	0
16	16	Z	-.0001	-.0001	0	0
17	17	Z	-.0001	-.0001	0	0
18	18	Z	-.0001	-.0001	0	0
19	19	Z	-.0001	-.0001	0	0
20	20	Z	-.0001	-.0001	0	0
21	21	Z	-.0001	-.0001	0	0
22	22	Z	-.0001	-.0001	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
23	23	Z	-.0001	-.0001	0	0
24	24	Z	-.0001	-.0001	0	0
25	25	Z	-.0001	-.0001	0	0
26	26	Z	-.0001	-.0001	0	0
27	27	Z	-.0001	-.0001	0	0
28	28	Z	-.0001	-.0001	0	0
29	29	Z	-.0001	-.0001	0	0
30	30	Z	-.0001	-.0001	0	0
31	31	Z	-.0001	-.0001	0	0
32	32	Z	-.0001	-.0001	0	0
33	33	Z	-.0001	-.0001	0	0
34	34	Z	-.0001	-.0001	0	0
35	35	Z	-.0001	-.0001	0	0
36	36	Z	-.0001	-.0001	0	0
37	37	Z	-.0001	-.0001	0	0
38	38	Z	-.0001	-.0001	0	0
39	39	Z	-.0001	-.0001	0	0
40	40	Z	-.0001	-.0001	0	0
41	41	Z	-.0001	-.0001	0	0
42	42	Z	-.0001	-.0001	0	0
43	43	Z	-.0001	-.0001	0	0
44	44	Z	-.0001	-.0001	0	0
45	45	Z	-.0001	-.0001	0	0
46	46	Z	-.0001	-.0001	0	0
47	47	Z	-.0001	-.0001	0	0
48	48	Z	-.0001	-.0001	0	0
49	49	Z	-.0001	-.0001	0	0
50	50	Z	-.0001	-.0001	0	0
51	51	Z	-.0001	-.0001	0	0
52	52	Z	-.0001	-.0001	0	0
53	53	Z	-.0001	-.0001	0	0
54	54	Z	-.0001	-.0001	0	0
55	55	Z	-.0001	-.0001	0	0
56	56	Z	-.0001	-.0001	0	0
57	57	Z	-.0001	-.0001	0	0
58	58	Z	-.0001	-.0001	0	0
59	59	Z	-.0001	-.0001	0	0
60	60	Z	-.0001	-.0001	0	0
61	61	Z	-.0001	-.0001	0	0
62	62	Z	-.0001	-.0001	0	0
63	63	Z	-.0001	-.0001	0	0
64	64	Z	-.0001	-.0001	0	0
65	65	Z	-.0001	-.0001	0	0
66	66	Z	-.0001	-.0001	0	0
67	67	Z	-.0001	-.0001	0	0
68	68	Z	-.0001	-.0001	0	0
69	69	Z	-.0001	-.0001	0	0
70	70	Z	-.0001	-.0001	0	0
71	71	Z	-.0001	-.0001	0	0
72	72	Z	-.0001	-.0001	0	0
73	73	Z	-.0001	-.0001	0	0
74	74	Z	-.0001	-.0001	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
75	75	Z	-.0001	-.0001	0	0
76	76	Z	-.0001	-.0001	0	0
77	77	Z	-.0001	-.0001	0	0
78	78	Z	-.0001	-.0001	0	0
79	80	Z	-.0003	-.0003	0	0
80	81	Z	-.0003	-.0003	0	0
81	84	Z	-.0003	-.0003	0	0
82	85	Z	-.0003	-.0003	0	0
83	88	Z	-.0003	-.0003	0	0
84	89	Z	-.0003	-.0003	0	0
85	92	Z	-.0003	-.0003	0	0
86	93	Z	-.0003	-.0003	0	0
87	95	Z	-.0003	-.0003	0	0
88	97	Z	-.0003	-.0003	0	0
89	98	Z	-.0003	-.0003	0	0
90	99	Z	-.0003	-.0003	0	0
91	100	Z	-.0006	-.0006	0	0
92	101	Z	-.0006	-.0006	0	0
93	102	Z	-.0006	-.0006	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	X	-.0005	-.0005	0	0
2	2	X	-.0005	-.0005	0	0
3	3	X	-.0005	-.0005	0	0
4	4	X	-.002	-.002	0	0
5	5	X	-.002	-.002	0	0
6	6	X	-.002	-.002	0	0
7	7	X	-.001	-.001	0	0
8	8	X	-.001	-.001	0	0
9	9	X	-.001	-.001	0	0
10	10	X	-.001	-.001	0	0
11	11	X	-.001	-.001	0	0
12	12	X	-.001	-.001	0	0
13	13	X	-.0001	-.0001	0	0
14	14	X	-.0001	-.0001	0	0
15	15	X	-.0001	-.0001	0	0
16	16	X	-.0001	-.0001	0	0
17	17	X	-.0001	-.0001	0	0
18	18	X	-.0001	-.0001	0	0
19	19	X	-.0001	-.0001	0	0
20	20	X	-.0001	-.0001	0	0
21	21	X	-.0001	-.0001	0	0
22	22	X	-.0001	-.0001	0	0
23	23	X	-.0001	-.0001	0	0
24	24	X	-.0001	-.0001	0	0
25	25	X	-.0001	-.0001	0	0
26	26	X	-.0001	-.0001	0	0
27	27	X	-.0001	-.0001	0	0
28	28	X	-.0001	-.0001	0	0
29	29	X	-.0001	-.0001	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
30	30	X	-.0001	-.0001	0	0
31	31	X	-.0001	-.0001	0	0
32	32	X	-.0001	-.0001	0	0
33	33	X	-.0001	-.0001	0	0
34	34	X	-.0001	-.0001	0	0
35	35	X	-.0001	-.0001	0	0
36	36	X	-.0001	-.0001	0	0
37	37	X	-.0001	-.0001	0	0
38	38	X	-.0001	-.0001	0	0
39	39	X	-.0001	-.0001	0	0
40	40	X	-.0001	-.0001	0	0
41	41	X	-.0001	-.0001	0	0
42	42	X	-.0001	-.0001	0	0
43	43	X	-.0001	-.0001	0	0
44	44	X	-.0001	-.0001	0	0
45	45	X	-.0001	-.0001	0	0
46	46	X	-.0001	-.0001	0	0
47	47	X	-.0001	-.0001	0	0
48	48	X	-.0001	-.0001	0	0
49	49	X	-.0001	-.0001	0	0
50	50	X	-.0001	-.0001	0	0
51	51	X	-.0001	-.0001	0	0
52	52	X	-.0001	-.0001	0	0
53	53	X	-.0001	-.0001	0	0
54	54	X	-.0001	-.0001	0	0
55	55	X	-.0001	-.0001	0	0
56	56	X	-.0001	-.0001	0	0
57	57	X	-.0001	-.0001	0	0
58	58	X	-.0001	-.0001	0	0
59	59	X	-.0001	-.0001	0	0
60	60	X	-.0001	-.0001	0	0
61	61	X	-.0001	-.0001	0	0
62	62	X	-.0001	-.0001	0	0
63	63	X	-.0001	-.0001	0	0
64	64	X	-.0001	-.0001	0	0
65	65	X	-.0001	-.0001	0	0
66	66	X	-.0001	-.0001	0	0
67	67	X	-.0001	-.0001	0	0
68	68	X	-.0001	-.0001	0	0
69	69	X	-.0001	-.0001	0	0
70	70	X	-.0001	-.0001	0	0
71	71	X	-.0001	-.0001	0	0
72	72	X	-.0001	-.0001	0	0
73	73	X	-.0001	-.0001	0	0
74	74	X	-.0001	-.0001	0	0
75	75	X	-.0001	-.0001	0	0
76	76	X	-.0001	-.0001	0	0
77	77	X	-.0001	-.0001	0	0
78	78	X	-.0001	-.0001	0	0
79	80	X	-.0003	-.0003	0	0
80	81	X	-.0003	-.0003	0	0
81	84	X	-.0003	-.0003	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
82	85	X	-.0003	-.0003	0	0
83	88	X	-.0003	-.0003	0	0
84	89	X	-.0003	-.0003	0	0
85	92	X	-.0003	-.0003	0	0
86	93	X	-.0003	-.0003	0	0
87	95	X	-.0003	-.0003	0	0
88	97	X	-.0003	-.0003	0	0
89	98	X	-.0003	-.0003	0	0
90	99	X	-.0003	-.0003	0	0
91	100	X	-.0006	-.0006	0	0
92	101	X	-.0006	-.0006	0	0
93	102	X	-.0006	-.0006	0	0

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Y	-.014	-.014	0	0
2	2	Y	-.014	-.014	0	0
3	3	Y	-.014	-.014	0	0
4	4	Y	-.025	-.025	0	0
5	5	Y	-.025	-.025	0	0
6	6	Y	-.025	-.025	0	0
7	7	Y	-.019	-.019	0	0
8	8	Y	-.019	-.019	0	0
9	9	Y	-.019	-.019	0	0
10	10	Y	-.019	-.019	0	0
11	11	Y	-.019	-.019	0	0
12	12	Y	-.019	-.019	0	0
13	13	Y	-.006	-.006	0	0
14	14	Y	-.006	-.006	0	0
15	15	Y	-.006	-.006	0	0
16	16	Y	-.006	-.006	0	0
17	17	Y	-.006	-.006	0	0
18	18	Y	-.005	-.005	0	0
19	19	Y	-.005	-.005	0	0
20	20	Y	-.005	-.005	0	0
21	21	Y	-.005	-.005	0	0
22	22	Y	-.005	-.005	0	0
23	23	Y	-.005	-.005	0	0
24	24	Y	-.006	-.006	0	0
25	25	Y	-.006	-.006	0	0
26	26	Y	-.006	-.006	0	0
27	27	Y	-.006	-.006	0	0
28	28	Y	-.006	-.006	0	0
29	29	Y	-.005	-.005	0	0
30	30	Y	-.005	-.005	0	0
31	31	Y	-.005	-.005	0	0
32	32	Y	-.005	-.005	0	0
33	33	Y	-.005	-.005	0	0
34	34	Y	-.005	-.005	0	0
35	35	Y	-.006	-.006	0	0
36	36	Y	-.006	-.006	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
37	37	Y	-.006	-.006	0	0
38	38	Y	-.006	-.006	0	0
39	39	Y	-.006	-.006	0	0
40	40	Y	-.005	-.005	0	0
41	41	Y	-.005	-.005	0	0
42	42	Y	-.005	-.005	0	0
43	43	Y	-.005	-.005	0	0
44	44	Y	-.005	-.005	0	0
45	45	Y	-.005	-.005	0	0
46	46	Y	-.006	-.006	0	0
47	47	Y	-.006	-.006	0	0
48	48	Y	-.006	-.006	0	0
49	49	Y	-.006	-.006	0	0
50	50	Y	-.006	-.006	0	0
51	51	Y	-.005	-.005	0	0
52	52	Y	-.005	-.005	0	0
53	53	Y	-.005	-.005	0	0
54	54	Y	-.005	-.005	0	0
55	55	Y	-.005	-.005	0	0
56	56	Y	-.005	-.005	0	0
57	57	Y	-.006	-.006	0	0
58	58	Y	-.006	-.006	0	0
59	59	Y	-.006	-.006	0	0
60	60	Y	-.006	-.006	0	0
61	61	Y	-.006	-.006	0	0
62	62	Y	-.005	-.005	0	0
63	63	Y	-.005	-.005	0	0
64	64	Y	-.005	-.005	0	0
65	65	Y	-.005	-.005	0	0
66	66	Y	-.005	-.005	0	0
67	67	Y	-.005	-.005	0	0
68	68	Y	-.006	-.006	0	0
69	69	Y	-.006	-.006	0	0
70	70	Y	-.006	-.006	0	0
71	71	Y	-.006	-.006	0	0
72	72	Y	-.006	-.006	0	0
73	73	Y	-.005	-.005	0	0
74	74	Y	-.005	-.005	0	0
75	75	Y	-.005	-.005	0	0
76	76	Y	-.005	-.005	0	0
77	77	Y	-.005	-.005	0	0
78	78	Y	-.005	-.005	0	0
79	80	Y	-.01	-.01	0	0
80	81	Y	-.01	-.01	0	0
81	84	Y	-.009	-.009	0	0
82	85	Y	-.01	-.01	0	0
83	88	Y	-.009	-.009	0	0
84	89	Y	-.01	-.01	0	0
85	92	Y	-.009	-.009	0	0
86	93	Y	-.01	-.01	0	0
87	95	Y	-.01	-.01	0	0
88	97	Y	-.009	-.009	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
89	98	Y	-.009	-.009	0	0
90	99	Y	-.009	-.009	0	0
91	100	Y	-.011	-.011	0	0
92	101	Y	-.011	-.011	0	0
93	102	Y	-.011	-.011	0	0

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Z	-.003	-.003	0	0
2	2	Z	-.003	-.003	0	0
3	3	Z	-.003	-.003	0	0
4	4	Z	-.004	-.004	0	0
5	5	Z	-.004	-.004	0	0
6	6	Z	-.004	-.004	0	0
7	7	Z	-.005	-.005	0	0
8	8	Z	-.005	-.005	0	0
9	9	Z	-.005	-.005	0	0
10	10	Z	-.005	-.005	0	0
11	11	Z	-.005	-.005	0	0
12	12	Z	-.005	-.005	0	0
13	13	Z	-.0008	-.0008	0	0
14	14	Z	-.0008	-.0008	0	0
15	15	Z	-.0008	-.0008	0	0
16	16	Z	-.0008	-.0008	0	0
17	17	Z	-.0008	-.0008	0	0
18	18	Z	-.0007	-.0007	0	0
19	19	Z	-.0007	-.0007	0	0
20	20	Z	-.0007	-.0007	0	0
21	21	Z	-.0007	-.0007	0	0
22	22	Z	-.0007	-.0007	0	0
23	23	Z	-.0007	-.0007	0	0
24	24	Z	-.0008	-.0008	0	0
25	25	Z	-.0008	-.0008	0	0
26	26	Z	-.0008	-.0008	0	0
27	27	Z	-.0008	-.0008	0	0
28	28	Z	-.0008	-.0008	0	0
29	29	Z	-.0007	-.0007	0	0
30	30	Z	-.0007	-.0007	0	0
31	31	Z	-.0007	-.0007	0	0
32	32	Z	-.0007	-.0007	0	0
33	33	Z	-.0007	-.0007	0	0
34	34	Z	-.0007	-.0007	0	0
35	35	Z	-.0008	-.0008	0	0
36	36	Z	-.0008	-.0008	0	0
37	37	Z	-.0008	-.0008	0	0
38	38	Z	-.0008	-.0008	0	0
39	39	Z	-.0008	-.0008	0	0
40	40	Z	-.0007	-.0007	0	0
41	41	Z	-.0007	-.0007	0	0
42	42	Z	-.0007	-.0007	0	0
43	43	Z	-.0007	-.0007	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
44	44	Z	-.0007	-.0007	0	0
45	45	Z	-.0007	-.0007	0	0
46	46	Z	-.0008	-.0008	0	0
47	47	Z	-.0008	-.0008	0	0
48	48	Z	-.0008	-.0008	0	0
49	49	Z	-.0008	-.0008	0	0
50	50	Z	-.0008	-.0008	0	0
51	51	Z	-.0007	-.0007	0	0
52	52	Z	-.0007	-.0007	0	0
53	53	Z	-.0007	-.0007	0	0
54	54	Z	-.0007	-.0007	0	0
55	55	Z	-.0007	-.0007	0	0
56	56	Z	-.0007	-.0007	0	0
57	57	Z	-.0008	-.0008	0	0
58	58	Z	-.0008	-.0008	0	0
59	59	Z	-.0008	-.0008	0	0
60	60	Z	-.0008	-.0008	0	0
61	61	Z	-.0008	-.0008	0	0
62	62	Z	-.0007	-.0007	0	0
63	63	Z	-.0007	-.0007	0	0
64	64	Z	-.0007	-.0007	0	0
65	65	Z	-.0007	-.0007	0	0
66	66	Z	-.0007	-.0007	0	0
67	67	Z	-.0007	-.0007	0	0
68	68	Z	-.0008	-.0008	0	0
69	69	Z	-.0008	-.0008	0	0
70	70	Z	-.0008	-.0008	0	0
71	71	Z	-.0008	-.0008	0	0
72	72	Z	-.0008	-.0008	0	0
73	73	Z	-.0007	-.0007	0	0
74	74	Z	-.0007	-.0007	0	0
75	75	Z	-.0007	-.0007	0	0
76	76	Z	-.0007	-.0007	0	0
77	77	Z	-.0007	-.0007	0	0
78	78	Z	-.0007	-.0007	0	0
79	80	Z	-.002	-.002	0	0
80	81	Z	-.002	-.002	0	0
81	84	Z	-.001	-.001	0	0
82	85	Z	-.002	-.002	0	0
83	88	Z	-.001	-.001	0	0
84	89	Z	-.002	-.002	0	0
85	92	Z	-.001	-.001	0	0
86	93	Z	-.002	-.002	0	0
87	95	Z	-.002	-.002	0	0
88	97	Z	-.001	-.001	0	0
89	98	Z	-.001	-.001	0	0
90	99	Z	-.001	-.001	0	0
91	100	Z	-.001	-.001	0	0
92	101	Z	-.001	-.001	0	0
93	102	Z	-.001	-.001	0	0

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	X	-.003	-.003	0	0
2	2	X	-.003	-.003	0	0
3	3	X	-.003	-.003	0	0
4	4	X	-.004	-.004	0	0
5	5	X	-.004	-.004	0	0
6	6	X	-.004	-.004	0	0
7	7	X	-.005	-.005	0	0
8	8	X	-.005	-.005	0	0
9	9	X	-.005	-.005	0	0
10	10	X	-.005	-.005	0	0
11	11	X	-.005	-.005	0	0
12	12	X	-.005	-.005	0	0
13	13	X	-.0008	-.0008	0	0
14	14	X	-.0008	-.0008	0	0
15	15	X	-.0008	-.0008	0	0
16	16	X	-.0008	-.0008	0	0
17	17	X	-.0008	-.0008	0	0
18	18	X	-.0007	-.0007	0	0
19	19	X	-.0007	-.0007	0	0
20	20	X	-.0007	-.0007	0	0
21	21	X	-.0007	-.0007	0	0
22	22	X	-.0007	-.0007	0	0
23	23	X	-.0007	-.0007	0	0
24	24	X	-.0008	-.0008	0	0
25	25	X	-.0008	-.0008	0	0
26	26	X	-.0008	-.0008	0	0
27	27	X	-.0008	-.0008	0	0
28	28	X	-.0008	-.0008	0	0
29	29	X	-.0007	-.0007	0	0
30	30	X	-.0007	-.0007	0	0
31	31	X	-.0007	-.0007	0	0
32	32	X	-.0007	-.0007	0	0
33	33	X	-.0007	-.0007	0	0
34	34	X	-.0007	-.0007	0	0
35	35	X	-.0008	-.0008	0	0
36	36	X	-.0008	-.0008	0	0
37	37	X	-.0008	-.0008	0	0
38	38	X	-.0008	-.0008	0	0
39	39	X	-.0008	-.0008	0	0
40	40	X	-.0007	-.0007	0	0
41	41	X	-.0007	-.0007	0	0
42	42	X	-.0007	-.0007	0	0
43	43	X	-.0007	-.0007	0	0
44	44	X	-.0007	-.0007	0	0
45	45	X	-.0007	-.0007	0	0
46	46	X	-.0008	-.0008	0	0
47	47	X	-.0008	-.0008	0	0
48	48	X	-.0008	-.0008	0	0
49	49	X	-.0008	-.0008	0	0
50	50	X	-.0008	-.0008	0	0
51	51	X	-.0007	-.0007	0	0
52	52	X	-.0007	-.0007	0	0

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

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
53	53	X	-.0007	-.0007	0	0
54	54	X	-.0007	-.0007	0	0
55	55	X	-.0007	-.0007	0	0
56	56	X	-.0007	-.0007	0	0
57	57	X	-.0008	-.0008	0	0
58	58	X	-.0008	-.0008	0	0
59	59	X	-.0008	-.0008	0	0
60	60	X	-.0008	-.0008	0	0
61	61	X	-.0008	-.0008	0	0
62	62	X	-.0007	-.0007	0	0
63	63	X	-.0007	-.0007	0	0
64	64	X	-.0007	-.0007	0	0
65	65	X	-.0007	-.0007	0	0
66	66	X	-.0007	-.0007	0	0
67	67	X	-.0007	-.0007	0	0
68	68	X	-.0008	-.0008	0	0
69	69	X	-.0008	-.0008	0	0
70	70	X	-.0008	-.0008	0	0
71	71	X	-.0008	-.0008	0	0
72	72	X	-.0008	-.0008	0	0
73	73	X	-.0007	-.0007	0	0
74	74	X	-.0007	-.0007	0	0
75	75	X	-.0007	-.0007	0	0
76	76	X	-.0007	-.0007	0	0
77	77	X	-.0007	-.0007	0	0
78	78	X	-.0007	-.0007	0	0
79	80	X	-.002	-.002	0	0
80	81	X	-.002	-.002	0	0
81	84	X	-.001	-.001	0	0
82	85	X	-.002	-.002	0	0
83	88	X	-.001	-.001	0	0
84	89	X	-.002	-.002	0	0
85	92	X	-.001	-.001	0	0
86	93	X	-.002	-.002	0	0
87	95	X	-.002	-.002	0	0
88	97	X	-.001	-.001	0	0
89	98	X	-.001	-.001	0	0
90	99	X	-.001	-.001	0	0
91	100	X	-.001	-.001	0	0
92	101	X	-.001	-.001	0	0
93	102	X	-.001	-.001	0	0

Member Distributed Loads (BLC 31 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Y	-.0008685	-.015	1.63	2.853
2	1	Y	-.015	-.023	2.853	4.075
3	1	Y	-.023	-.012	4.075	5.298
4	1	Y	-.012	-.0008685	5.298	6.52
5	3	Y	-.0002473	-.006	9.78	10.758
6	3	Y	-.006	-.02	10.758	11.736
7	3	Y	-.02	-.021	11.736	12.714

Member Distributed Loads (BLC 31 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
8	3	Y	-.021	-.013	12.714	13.692
9	3	Y	-.013	-.008	13.692	14.67
10	1	Y	-.0003188	-.008	3.26	4.89
11	1	Y	-.008	-.007	4.89	6.52
12	1	Y	-.007	-.0003188	6.52	8.15
13	3	Y	0	-.004	8.15	9.372
14	3	Y	-.004	-.01	9.372	10.595
15	3	Y	-.01	-.006	10.595	11.817
16	3	Y	-.006	0	11.817	13.04
17	7	Y	-.007	-.007	.394	1.428
18	11	Y	-.006	-.006	.216	1.6
19	2	Y	-.0008686	-.012	9.78	11.002
20	2	Y	-.012	-.023	11.002	12.225
21	2	Y	-.023	-.015	12.225	13.447
22	2	Y	-.015	-.0008686	13.447	14.67
23	3	Y	-.008	-.013	1.63	2.608
24	3	Y	-.013	-.021	2.608	3.586
25	3	Y	-.021	-.02	3.586	4.564
26	3	Y	-.02	-.006	4.564	5.542
27	3	Y	-.006	-.000247	5.542	6.52
28	2	Y	-7.095e-19	-.004	8.15	9.372
29	2	Y	-.004	-.01	9.372	10.595
30	2	Y	-.01	-.006	10.595	11.817
31	2	Y	-.006	-7.095e-19	11.817	13.04
32	3	Y	-.0003188	-.008	3.26	4.89
33	3	Y	-.008	-.007	4.89	6.52
34	3	Y	-.007	-.0003188	6.52	8.15
35	9	Y	-.006	-.006	.216	1.6
36	11	Y	-.007	-.007	.394	1.428
37	1	Y	-.0008686	-.012	9.78	11.003
38	1	Y	-.012	-.023	11.003	12.225
39	1	Y	-.023	-.015	12.225	13.448
40	1	Y	-.015	-.0008686	13.448	14.67
41	2	Y	-.008	-.013	1.63	2.608
42	2	Y	-.013	-.021	2.608	3.586
43	2	Y	-.021	-.02	3.586	4.564
44	2	Y	-.02	-.006	4.564	5.542
45	2	Y	-.006	-.000247	5.542	6.52
46	1	Y	-1.419e-18	-.004	8.15	9.373
47	1	Y	-.004	-.01	9.373	10.595
48	1	Y	-.01	-.006	10.595	11.818
49	1	Y	-.006	-1.419e-18	11.818	13.04
50	2	Y	-.0003188	-.008	3.26	4.89
51	2	Y	-.008	-.007	4.89	6.52
52	2	Y	-.007	-.0003188	6.52	8.15
53	7	Y	-.006	-.006	.216	1.6
54	9	Y	-.007	-.007	.394	1.428

Member Distributed Loads (BLC 32 : BLC 8 Transient Area Loads)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	1	Y	-.0007328	-.013	1.63	2.853

Member Distributed Loads (BLC 32 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
2	1	Y	-.013	-.019	2.853	4.075
3	1	Y	-.019	-.01	4.075	5.298
4	1	Y	-.01	-.0007328	5.298	6.52
5	3	Y	-.0002087	-.005	9.78	10.758
6	3	Y	-.005	-.017	10.758	11.736
7	3	Y	-.017	-.018	11.736	12.714
8	3	Y	-.018	-.011	12.714	13.692
9	3	Y	-.011	-.007	13.692	14.67
10	1	Y	-.000255	-.006	3.26	4.89
11	1	Y	-.006	-.006	4.89	6.52
12	1	Y	-.006	-.000255	6.52	8.15
13	3	Y	-7.095e-19	-.004	8.15	9.372
14	3	Y	-.004	-.008	9.372	10.595
15	3	Y	-.008	-.005	10.595	11.817
16	3	Y	-.005	-7.095e-19	11.817	13.04
17	7	Y	-.006	-.006	.394	1.428
18	11	Y	-.005	-.005	.216	1.6
19	2	Y	-.0006949	-.01	9.78	11.002
20	2	Y	-.01	-.018	11.002	12.225
21	2	Y	-.018	-.012	12.225	13.447
22	2	Y	-.012	-.0006949	13.447	14.67
23	3	Y	-.006	-.01	1.63	2.608
24	3	Y	-.01	-.017	2.608	3.586
25	3	Y	-.017	-.016	3.586	4.564
26	3	Y	-.016	-.005	4.564	5.542
27	3	Y	-.005	-.0001976	5.542	6.52
28	2	Y	0	-.004	8.15	9.372
29	2	Y	-.004	-.008	9.372	10.595
30	2	Y	-.008	-.005	10.595	11.817
31	2	Y	-.005	0	11.817	13.04
32	3	Y	-.000255	-.006	3.26	4.89
33	3	Y	-.006	-.006	4.89	6.52
34	3	Y	-.006	-.000255	6.52	8.15
35	9	Y	-.005	-.005	.216	1.6
36	11	Y	-.006	-.006	.394	1.428
37	1	Y	-.0006949	-.01	9.78	11.003
38	1	Y	-.01	-.018	11.003	12.225
39	1	Y	-.018	-.012	12.225	13.448
40	1	Y	-.012	-.0006949	13.448	14.67
41	2	Y	-.006	-.01	1.63	2.608
42	2	Y	-.01	-.017	2.608	3.586
43	2	Y	-.017	-.016	3.586	4.564
44	2	Y	-.016	-.005	4.564	5.542
45	2	Y	-.005	-.0001976	5.542	6.52
46	1	Y	0	-.004	8.15	9.373
47	1	Y	-.004	-.008	9.373	10.595
48	1	Y	-.008	-.005	10.595	11.818
49	1	Y	-.005	0	11.818	13.04
50	2	Y	-.000255	-.006	3.26	4.89
51	2	Y	-.006	-.006	4.89	6.52
52	2	Y	-.006	-.000255	6.52	8.15
53	7	Y	-.005	-.005	.216	1.6

Member Distributed Loads (BLC 32 : BLC 8 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
54	9	Y	-.006	-.006	.394	1.428

Member Area Loads (BLC 1 : Dead)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	139	140	89	48	Y	Two Way	-.01
2	48	141	142	89	Y	Two Way	-.01
3	135	136	61	104	Y	Two Way	-.01
4	104	137	138	61	Y	Two Way	-.01
5	143	144	33	76	Y	Two Way	-.01
6	76	145	146	33	Y	Two Way	-.01

Member Area Loads (BLC 8 : Ice)

	Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
1	139	140	89	48	Y	Two Way	-.008
2	48	141	142	89	Y	Two Way	-.008
3	135	136	61	104	Y	Two Way	-.008
4	104	137	138	61	Y	Two Way	-.008
5	143	144	33	76	Y	Two Way	-.008
6	76	145	146	33	Y	Two Way	-.008

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	14	max	1.71	5	3.461	20	1.629	2	-1.604	2	4.135	5	1.005	11
2		min	-1.73	11	1.126	2	-1.638	8	-11.56	20	-4.083	11	-.784	96
3	17	max	1.238	4	3.461	25	2.43	2	5.652	14	6.025	9	10.319	24
4		min	-1.261	10	1.164	7	-2.393	8	.339	8	-5.879	3	2.41	6
5	20	max	1.216	6	3.282	16	2.216	2	6.116	14	5.391	13	-1.862	10
6		min	-1.187	11	1.176	10	-2.243	8	.817	8	-5.4	7	-8.956	16
7	Totals:	max	4.107	5	10.052	19	6.275	2						
8		min	-4.107	11	4.271	11	-6.275	8						

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

	Member	Shape	Code Check	Lo...	LC	Shear Check	Loc[ft]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M.....		Eqn
1	1	PIPE_4.0	.483	8.15	21	.208	8.15		8	39.857	93.24	10.631	10.631	...	H1-1b
2	2	PIPE_4.0	.428	8.15	25	.096	8.15		18	39.857	93.24	10.631	10.631	...	H1-1b
3	3	PIPE_4.0	.401	8.15	15	.104	8.15		21	39.857	93.24	10.631	10.631	...	H1-1b
4	4	PL3/8X10	.213	1.2...	11	.124	.434	y	22	25.826	123.12	.975	25.65	...	H1-1b
5	5	PL3/8X10	.212	1.2...	3	.133	1.233	y	2	25.826	123.12	.975	25.65	...	H1-1b
6	6	PL3/8X10	.253	1.2...	7	.127	1.233	y	7	25.826	123.12	.975	25.65	...	H1-1b
7	7	HSS5X5X4	.464	1.6	18	.095	1.6	y	22	176.8...	178.02	26.255	26.255	...	H1-1b
8	8	HSS5X5X4	.245	1.9	22	.116	1.9	z	9	176.3...	178.02	26.255	26.255	...	H1-1b
9	9	HSS5X5X4	.482	1.6	14	.116	1.6	z	9	176.8...	178.02	26.255	26.255	...	H1-1b
10	10	HSS5X5X4	.225	1.9	14	.112	1.9	z	13	176.3...	178.02	26.255	26.255	...	H1-1b
11	11	HSS5X5X4	.445	1.6	14	.113	1.6	z	13	176.8...	178.02	26.255	26.255	...	H1-1b
12	12	HSS5X5X4	.242	1.9	19	.093	1.9	y	22	176.3...	178.02	26.255	26.255	...	H1-1b
13	13	SR_1"	.001	0	3	.033	0		8	24.687	25.447	.424	.424	...	H1-...
14	14	SR_1"	.001	0	9	.027	.5		8	24.687	25.447	.424	.424	...	H1-...
15	15	SR_1"	.000	.5	2	.019	0		9	24.687	25.447	.424	.424	...	H1-...
16	16	SR_1"	.000	0	29	.019	0		10	24.687	25.447	.424	.424	...	H1-...
17	17	SR_1"	.000	0	7	.022	0		11	24.687	25.447	.424	.424	...	H1-...
18	18	SR_3/4"	.004	0	11	.017	0		11	13.563	14.314	.179	.179	...	H1-...
19	19	SR_3/4"	.065	6.8	10	.023	6.8		8	.527	14.314	.179	.179	...	H1-...
20	20	SR_3/4"	.001	0	3	.031	1		2	11.538	14.314	.179	.179	...	H1-...
21	21	SR_3/4"	.004	1.2	10	.020	1.2		8	10.493	14.314	.179	.179	...	H1-...
22	22	SR_3/4"	.001	1	9	.028	0		8	11.538	14.314	.179	.179	...	H1-...
23	23	SR_3/4"	.002	1.1	10	.021	1.1		8	11.027	14.314	.179	.179	...	H1-...
24	24	SR_1"	.001	0	13	.023	0		25	24.687	25.447	.424	.424	...	H1-...
25	25	SR_1"	.001	0	6	.024	0		7	24.687	25.447	.424	.424	...	H1-...
26	26	SR_1"	.000	.5	2	.026	0		7	24.687	25.447	.424	.424	...	H1-...
27	27	SR_1"	.000	.5	25	.027	0		7	24.687	25.447	.424	.424	...	H1-...
28	28	SR_1"	.000	0	9	.026	0		6	24.687	25.447	.424	.424	...	H1-...
29	29	SR_3/4"	.004	0	6	.018	0		6	13.563	14.314	.179	.179	...	H1-...
30	30	SR_3/4"	.084	6.8	7	.018	6.8		25	.527	14.314	.179	.179	...	H1-...
31	31	SR_3/4"	.002	0	13	.024	1		2	11.538	14.314	.179	.179	...	H1-...
32	32	SR_3/4"	.004	1.2	6	.012	1.2		13	10.493	14.314	.179	.179	...	H1-...
33	33	SR_3/4"	.001	1	7	.018	1		7	11.538	14.314	.179	.179	...	H1-...
34	34	SR_3/4"	.002	1.1	6	.015	1.1		13	11.027	14.314	.179	.179	...	H1-...
35	35	SR_1"	.001	0	7	.014	.5		13	24.687	25.447	.424	.424	...	H1-...
36	36	SR_1"	.001	0	2	.025	0		2	24.687	25.447	.424	.424	...	H1-...
37	37	SR_1"	.000	.5	6	.029	0		2	24.687	25.447	.424	.424	...	H1-...
38	38	SR_1"	.000	.5	20	.035	0		2	24.687	25.447	.424	.424	...	H1-...

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

	Member	Shape	Code Check	Lo...	LC	Shear Check	Loc[ft]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M.....		Eqn
39	39	SR_1"	.000	.5	19	.037	0		2	24.687	25.447	.424	.424	...	H1-...
40	40	SR_3/4"	.006	0	2	.029	0		2	13.563	14.314	.179	.179	...	H1-...
41	41	SR_3/4"	.110	6.8	2	.016	1.7		2	.527	14.314	.179	.179	...	H1-...
42	42	SR_3/4"	.002	0	8	.011	1		7	11.538	14.314	.179	.179	...	H1-...
43	43	SR_3/4"	.005	1.2	2	.014	1.2		13	10.493	14.314	.179	.179	...	H1-...
44	44	SR_3/4"	.002	1	2	.022	1		73	11.538	14.314	.179	.179	...	H1-...
45	45	SR_3/4"	.003	1.1	2	.013	1.1		13	11.027	14.314	.179	.179	...	H1-...
46	46	SR_1"	.001	0	5	.021	0		17	24.687	25.447	.424	.424	...	H1-...
47	47	SR_1"	.001	0	9	.015	0		9	24.687	25.447	.424	.424	...	H1-...
48	48	SR_1"	.000	.5	6	.022	0		9	24.687	25.447	.424	.424	...	H1-...
49	49	SR_1"	.000	.5	28	.026	0		9	24.687	25.447	.424	.424	...	H1-...
50	50	SR_1"	.000	0	13	.031	0		9	24.687	25.447	.424	.424	...	H1-...
51	51	SR_3/4"	.005	0	9	.024	0		9	13.563	14.314	.179	.179	...	H1-...
52	52	SR_3/4"	.081	6.8	9	.015	6.8		17	.527	14.314	.179	.179	...	H1-...
53	53	SR_3/4"	.001	0	4	.019	0		18	11.538	14.314	.179	.179	...	H1-...
54	54	SR_3/4"	.004	1.2	9	.011	1.2		11	10.493	14.314	.179	.179	...	H1-...
55	55	SR_3/4"	.001	1	9	.013	1		11	11.538	14.314	.179	.179	...	H1-...
56	56	SR_3/4"	.002	1.1	9	.009	1.1		5	11.027	14.314	.179	.179	...	H1-...
57	57	SR_1"	.001	0	11	.016	.5		7	24.687	25.447	.424	.424	...	H1-...
58	58	SR_1"	.001	0	7	.016	0		5	24.687	25.447	.424	.424	...	H1-...
59	59	SR_1"	.000	.5	11	.022	0		7	24.687	25.447	.424	.424	...	H1-...
60	60	SR_1"	.000	.5	36	.027	0		7	24.687	25.447	.424	.424	...	H1-...
61	61	SR_1"	.000	0	3	.031	0		7	24.687	25.447	.424	.424	...	H1-...
62	62	SR_3/4"	.005	0	7	.022	0		7	13.563	14.314	.179	.179	...	H1-...
63	63	SR_3/4"	.083	6.8	7	.012	1.7		7	.527	14.314	.179	.179	...	H1-...
64	64	SR_3/4"	.001	0	12	.013	0		21	11.538	14.314	.179	.179	...	H1-...
65	65	SR_3/4"	.004	1.2	7	.008	1.2		5	10.493	14.314	.179	.179	...	H1-...
66	66	SR_3/4"	.001	1	7	.021	1		64	11.538	14.314	.179	.179	...	H1-...
67	67	SR_3/4"	.002	1.1	7	.011	1.1		63	11.027	14.314	.179	.179	...	H1-...
68	68	SR_1"	.001	0	9	.023	0		22	24.687	25.447	.424	.424	...	H1-...
69	69	SR_1"	.001	0	2	.021	0		2	24.687	25.447	.424	.424	...	H1-...
70	70	SR_1"	.000	.5	10	.025	0		2	24.687	25.447	.424	.424	...	H1-...
71	71	SR_1"	.000	.5	32	.030	0		2	24.687	25.447	.424	.424	...	H1-...
72	72	SR_1"	.000	0	5	.032	0		2	24.687	25.447	.424	.424	...	H1-...
73	73	SR_3/4"	.005	0	2	.023	0		13	13.563	14.314	.179	.179	...	H1-...
74	74	SR_3/4"	.098	6.8	2	.017	6.8		22	.527	14.314	.179	.179	...	H1-...
75	75	SR_3/4"	.002	0	8	.026	1		21	11.538	14.314	.179	.179	...	H1-...
76	76	SR_3/4"	.005	1.2	2	.013	1.2		2	10.493	14.314	.179	.179	...	H1-...
77	77	SR_3/4"	.002	1	2	.016	1		3	11.538	14.314	.179	.179	...	H1-...
78	78	SR_3/4"	.002	1.1	2	.014	1.1		9	11.027	14.314	.179	.179	...	H1-...
79	80	PIPE_2.5	.655	5.4...	2	.107	5.438		7	26.137	50.715	3.596	3.596	...	H1-1b
80	81	PIPE_2.5	.548	5.4...	23	.176	2.531		20	26.137	50.715	3.596	3.596	...	H1-1b
81	84	PIPE_2.0	.114	2.1	8	.012	2.1		8	26.005	32.13	1.872	1.872	...	H1-1b
82	85	PIPE_2.5	.471	5.1...	15	.143	5.156		25	26.137	50.715	3.596	3.596	...	H1-1b
83	88	PIPE_2.0	.113	2.1	2	.012	2.1		2	26.005	32.13	1.872	1.872	...	H1-1b
84	89	PIPE_2.5	.454	5.4...	20	.166	2.531		16	26.137	50.715	3.596	3.596	...	H1-1b
85	92	PIPE_2.0	.113	2.1	8	.012	2.1		8	26.005	32.13	1.872	1.872	...	H1-1b
86	93	PIPE_2.5	.546	5.4...	2	.081	5.438		2	26.137	50.715	3.596	3.596	...	H1-1b
87	95	PIPE_2.5	.545	5.4...	8	.084	5.438		9	26.137	50.715	3.596	3.596	...	H1-1b
88	97	PIPE_2.0	.322	9.9...	19	.152	1.547		96	3.613	32.13	1.872	1.872	...	H1-1b
89	98	PIPE_2.0	.403	8.25	2	.137	1.031		92	3.613	32.13	1.872	1.872	...	H1-1b
90	99	PIPE_2.0	.352	8.25	7	.159	.859		94	3.613	32.13	1.872	1.872	...	H1-1b

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

	Member	Shape	Code Check	Lo...	LC	Shear Check	Loc[ft]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M.....		Eqn
91	100	L2.5x2.5x4	.258	0	20	.181	0	z	2	36.654	38.556	1.114	2.537	...	H2-1
92	101	L2.5x2.5x4	.268	0	15	.142	1.245	y	22	36.654	38.556	1.114	2.537	...	H2-1
93	102	L2.5x2.5x4	.241	0	21	.163	0	z	7	36.654	38.556	1.114	2.537	...	H2-1

APPENDIX D

ADDITIONAL CALCULATIONS

PROJECT	**136353.007.01**				**KLM**
SUBJECT	**Mount Analysis**				
DATE	**10/07/20**	PAGE	1	OF	1

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

[REF: ANSI/TIA-222-H]

Reactions at Arm connection to Ring Mount

Tension	:	1.638	k
Vertical Shear	:	3.461	k
Horizontal Shear	:	1.73	k
Torsion	:	1.005	k.ft
Moment from Horizontal Forces	:	4.135	k.ft
Moment from Vertical Forces	:	11.56	k.ft

Bolt Parameters

Bolt Grade	:	36	ksi
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in2
Total Number of Bolts	:	4	bolts

Plate Parameters

Plate material	:	36	ksi	Shear Resultant Force	:	3.87	k
Plate height	:	10	in	Force from Horz. Moment	:	6.51	k
Plate weight	:	10	in	Force from Vert. Moment	:	18.19	k
Plate thickness	:	0.75	in				
Bolt edge distance, plate height	:	1.5	in				
Bolt edge distance, plate width	:	1.5	in	Shear Load / Bolt	:	0.97	k
Bolt spacing, Horizontal	:	7	in	Tension Load / Bolt	:	0.41	k
Bolt spacing, Vertical	:	7	in	Resultant from Moments / Bolt	:	9.66	k

Bolt Check

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	48.60%		**OKAY**
Nominal Shear Stress, F_{nv}	:	54.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	12.43	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	11.07%		**OKAY**
Unity Check, Combined	:	59.67%		**OKAY**

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	321.79 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.202333
Soil Class:	D - Stiff Soil	**Longitude:**	-73.379611





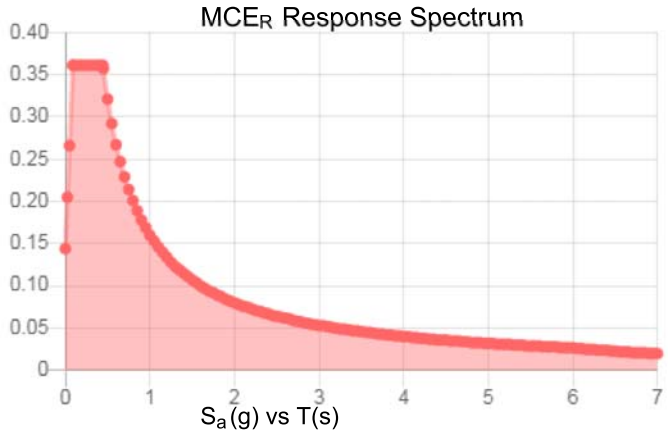
Seismic

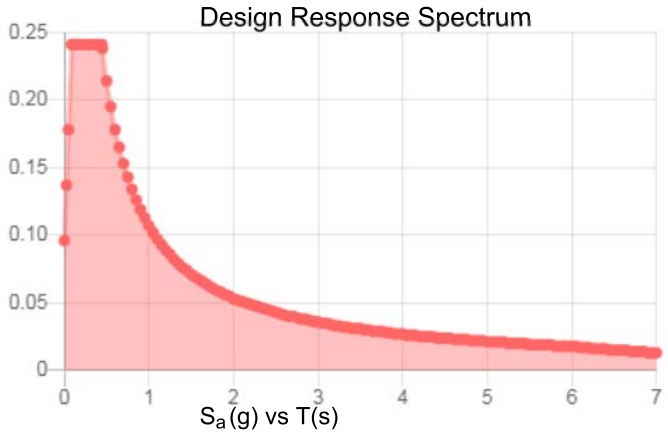
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.226	S_{DS} :	0.241
S_1 :	0.067	S_{D1} :	0.107
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.126
S_{MS} :	0.361	PGA_M :	0.195
S_{M1} :	0.16	F_{PGA} :	1.548
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Oct 02 2020

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:	Fri Oct 02 2020

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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11118C

Weston/ Rt-57/ Norfield R
56 Norfield Road (Town Hall)
Weston, Connecticut 06883

October 27, 2020

EBI Project Number: 6220005556

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**31.88%**

October 27, 2020

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11118C - Weston/ Rt-57/ Norfield R

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **56 Norfield Road (Town Hall)** in **Weston, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 56 Norfield Road (Town Hall) in Weston, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

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

12) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a

very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antenna mounting height centerline of the proposed antennas is 170 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	170 feet	Height (AGL):	170 feet	Height (AGL):	170 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A1 MPE %:	**3.19%**	Antenna B1 MPE %:	**3.19%**	Antenna C1 MPE %:	**3.19%**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 16.45 dBd
Height (AGL):	170 feet	Height (AGL):	170 feet	Height (AGL):	170 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,010.27	ERP (W):	11,010.27	ERP (W):	11,010.27
Antenna A2 MPE %:	**2.08%**	Antenna B2 MPE %:	**2.08%**	Antenna C2 MPE %:	**2.08%**
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	170 feet	Height (AGL):	170 feet	Height (AGL):	170 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A3 MPE %:	**1.60%**	Antenna B3 MPE %:	**1.60%**	Antenna C3 MPE %:	**1.60%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	6.87%
Town	1.11%
Sprint	1.57%
AT&T	3.52%
Verizon	18.81%
Site Total MPE % :	31.88%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	6.87%
T-Mobile Sector B Total:	6.87%
T-Mobile Sector C Total:	6.87%
Site Total MPE % :	31.88%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2500 MHz LTE	2	6412.98	170.0	15.96	2500 MHz LTE	1000	1.60%
T-Mobile 2500 MHz NR	2	6412.98	170.0	15.96	2500 MHz NR	1000	1.60%
T-Mobile 600 MHz LTE	2	591.73	170.0	1.47	600 MHz LTE	400	0.37%
T-Mobile 600 MHz NR	1	1577.94	170.0	1.96	600 MHz NR	400	0.49%
T-Mobile 700 MHz LTE	2	695.22	170.0	1.73	700 MHz LTE	467	0.37%
T-Mobile 1900 MHz LTE	2	2104.51	170.0	5.24	1900 MHz LTE	1000	0.52%
T-Mobile 2100 MHz UMTS	2	1324.71	170.0	3.30	2100 MHz UMTS	1000	0.33%
T-Mobile 1900 MHz GSM	4	1028.30	170.0	5.12	1900 MHz GSM	1000	0.51%
T-Mobile 1900 MHz LTE	2	2056.61	170.0	5.12	1900 MHz LTE	1000	0.51%
T-Mobile 2100 MHz LTE	2	2307.55	170.0	5.74	2100 MHz LTE	1000	0.57%
						Total:	**6.87%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	6.87%
Sector B:	6.87%
Sector C:	6.87%
T-Mobile Maximum MPE % (Sector A):	6.87%
Site Total:	31.88%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **31.88%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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