

March 4, 2024

Via Electronic Mail

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

Re: **Notice of Exempt Modification – Facility Modification
1050 Buckley Highway, Union, Connecticut**

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains an existing wireless telecommunications facility at the above-referenced property address (the “Property”). The facility consists of antennas on an existing tower and related equipment on the ground, near the base of the tower. The tower was approved by the Town of Union (“Town”) in June of 1997. Cellco’s shared use of the tower was approved by the Siting Council (“Council”) in August of 1997. A copy of the Town’s tower approval and Council’s approval are included in Attachment 1.

Cellco now intends to modify its facility by adding three (3) new antennas and installing six (6) new remote radio heads (“RRHs”) on its existing antenna platform and antenna mounts. A set of project plans showing Cellco’s proposed facility modifications and the specifications for Cellco’s new antennas and RRHs are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 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 Union’s Chief Elected Official and Land Use Officer. A copy of this letter is being sent to the owner of the Property.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco’s new antennas and RRHs will be installed at the same height on the tower.

Melanie A. Bachman, Esq.

March 4, 2024

Page 2

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Included in Attachment 3 is a Calculated Radio Frequency Emissions Report demonstrating that the proposed modified facility will comply with the FCC safety standards. The modified facility will be capable of providing Cellco's 5G wireless service.

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

6. According to the attached Structural Analysis Report ("SA") and Antenna Mount Analysis Report ("MA"), the existing tower, tower foundation and antenna mounts, with certain modifications, can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

David Eaton, First Selectman
Lee Ann Fitzgerald, Planning and Zoning Chair
Wayne and Kathy Lee Kemp
Aleksy Tyurin

ATTACHMENT 1

Copy Distribution:

White - Planning & Zoning Commission
Yellow - Building Inspector
Blue - Assessor
Green - Applicant

ZP # NO 505
Date 6-4-97

TOWN OF UNION, CONNECTICUT

ZONING PERMIT

This is to certify that the Planning and Zoning Commission of the Town of Union, Connecticut, acting upon the application of WAYNE KEMP presently residing at 1050 BUCKLEY HIGHWAY do hereby approve and grant said applicant a Zoning Permit for:

RADIO TOWER
sized 158 feet high

to be located at the following location: 1050 BUCKLEY HIGHWAY.

Be it understood that the requirements of the Zoning Regulations of the Town of Union Connecticut be fulfilled and that before occupancy of said structure or use of such building an Occupancy/Use Permit must be obtained from the Building Inspector and the Planning & Zoning Commission.

This document is not a Building Permit but is an approval from the Zoning Board that what you propose to do complies with the Town of Union Zoning Regulations.

A BUILDING PERMIT MUST BE OBTAINED BEFORE CONSTRUCTION BEGINS. PLEASE BE SURE TO CONTACT THE BUILDING INSPECTOR BEFORE PROCEEDING WITH ANY CONSTRUCTION.

PLANNING AND ZONING COMMISSION
TOWN OF UNION, CONNECTICUT

James D. Gough
Chairman
Diane Williams
Secretary

PLANNING AND ZONING COMMISSION
TOWN OF UNION, CONNECTICUT
Mail Address: 1024 Buckley Highway, Union, CT 06076

SPECIAL PERMIT

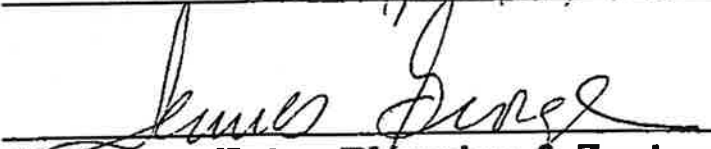
Description of Premises: 1050 Buckley Highway
Union CT

Nature of Special Permit: To permit the construction
of a telecommunications
facility

Applicable Regulation(s): Union PZ Section 3.11

Owners of Record: WAYNE & KATHY KEMP

Date Issued: June 4, 1997


Chairman Union Planning & Zoning

Copy Distribution:

White - Planning & Zoning Commission
Yellow - Building Inspector
Blue - Assessor
Green - Applicant

OP# 9719
Date 9-16-98

TOWN OF UNION, CONNECTICUT
OCCUPANCY/USE PERMIT

This is to certify that the Planning and Zoning Commission and/or the Building Official of the Town of Union, Connecticut, have inspected the

158' RADIO TOWER
(sized) located at 1050 BUCKLEY HWY
and permitted under Zoning Permit No. 503 issued to
WAYNE KEMP of 1050 BUCKLEY HWY

and the location and use of this structure and premises complies with the provisions of The Town of Union Zoning Regulations and substantially complies with the Connecticut Building Code.

Inspected for Connecticut Building Code Compliance

by Edward F. Staveski

Date 9-16-98

Use Group

Type of Construction

Live load 1st floor

Live load 2nd floor

Fire Grading

Inspection for Zoning Compliance by:

James Dwyer

Date Inspected 11/4/98

PLANNING AND ZONING COMMISSION
TOWN OF UNION, CONNECTICUT

James Dwyer
Chairman

Joseph Kratochvil
(Acct.) Secretary

TELEPHONE TOWER
RADIO TOWER



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

10 Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

August 22, 1997

Sandy M. Carter
Bell Atlantic NYNEX Mobile
20 Alexander Drive
P.O. Box 5029
Wallingford, CT 06492

Re: Bell Atlantic NYNEX Mobile notice of intent to modify an existing telecommunications facility located at 1050 Buckley Highway in Union, Connecticut.

Dear Ms. Carter:

At a public meeting held on August 20, 1997, the Connecticut Siting Council (Council) ruled that the proposed use of this tower would not cause a significant change or alteration in the physical and environmental characteristics of the site, and pursuant to Section 16-50j-72 (c) would constitute a regulatory exemption.

The proposed modifications are to be implemented as specified in your notice dated August 1, 1997. The modifications are in compliance with the exception criteria in Section 16-50j-72 (c) of the Regulations of Connecticut State Agencies as changes to an existing non-facility site that have received all municipal zoning approvals and building permits that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequency now used on this tower. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Science and Technology, Bulletin No. 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/ss

c: Honorable Albert L. Goodhall, First Selectman, Town of Union

ATTACHMENT 2



20 ALEXANDER DRIVE, 2nd FLOOR
WALLINGFORD, CT 06492

UNION W CT
1050 BUCKLEY HIGHWAY
UNION, CT 06076
TOLLAND COUNTY

PROJECT TYPE: UPGRADE TO EXISTING WIRELESS TELECOMMUNICATIONS
INSTALLATION ON EXISTING 173'± SELF-SUPPORT TOWER

SUPPORTING DOCUMENTS

RADIO FREQUENCY (RF) DESIGN DATE: 10/21/24
ANTENNA MOUNTING STRUCTURAL ANALYSIS DATE: 09/10/24 (BY COLLIER ENGINEERING & DESIGN)
ANTENNA SUPPORT STRUCTURE SELF-SUPPORT TOWER STRUCTURAL ANALYSIS DATE: 10/22/24
RF AND STRUCTURAL AND ARCHITECTURAL PROFESSIONAL COMPLETION



20 ALEXANDER DRIVE, 2ND FLOOR
WALLINGFORD, CT 06492
(203) 741-7208



SBA COMMUNICATIONS CORP.
124 JAMES ROAD, SUITE 125
WALLINGFORD, CT 06492
(203) 251-0720



CHAPPELL ENGINEERING
ASSOCIATES, LLC
307 BUCKLEY HIGHWAY
SUITE 101
WALLINGFORD, CT 06492
(203) 741-7208
www.chappell-engineering.com



DESIGNED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV	DATE	DESCRIPTION	BY
1	02/24/24	ISSUED FOR CONSTRUCTION	JMT
2	02/24/24	ISSUED FOR CONSTRUCTION	JMT

PROJECT NAME & LOCATION

UNION W CT
1050 BUCKLEY HIGHWAY
UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

1050 BUCKLEY HIGHWAY

UNION, CT 06076

SHEET INDEX

DWG.	DESCRIPTION	REV.
T01	TITLE SHEET	1
G001	GENERAL NOTES	1
A01	SITE PLAN	1
A02	COMPOUND PLAN	1
A03	TOWER ELEVATIONS	1
A04	ANTENNA PLANS & SITE DETAILS	1
IF01	IF DATA	1
RF02	RF FLOORING DIAGRAM	1
RF03	RF COLOR CODE SPECIFICATIONS	1
ED1	GROUNDING NOTES & DETAILS	1

DO NOT SCALE DRAWINGS

ALL PLANS, ELEVATIONS, AND CONSTRUCTIONS AT THE PROPOSED PROJECT SITE SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE FIELD CONDITIONS AND REPORTING ANY DISCREPANCIES IMMEDIATELY PRIOR TO PROCEEDING WITH THE PROPOSED WORK. THE CONTRACTOR SHALL BECOME THE RESPONSIBILITY OF THE PREVAILING CONTRACTOR RESPONSIBLE FOR CONSTRUCTION.

PROJECT DESCRIPTION

- THIS IS AN UNMANNED AIRCRAFT SYSTEM (UAS) SYSTEM AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF PROVIDING REMOTE SENSING TELECOMMUNICATIONS SERVICE.
- THIS FACILITY DOES NOT HAVE A FLARE OR OTHER MEANS OF WARNING TO THE PUBLIC.
- NO WASTE WATER IS OR WILL BE GENERATED AT THIS LOCATION.
- NO SOLID WASTE IS OR WILL BE GENERATED AT THIS LOCATION.

SCOPE OF WORK

- REMARKS:
- 3 ANTENNAS
 - 0 TOWERS

VICINITY MAP

SCALE: 1"=100'



DRIVING DIRECTIONS

FROM WALLINGFORD, TAKE CT 98 EAST, TAKE RIGHT TURN ON THE 101 NORTH RAMP TOWARD HARTFORD, MERGE ONTO 101 NORTH, USE LEFT 2 LANES TO TAKE EXIT 20 FOR US 5 NORTH, TURN RIGHT ONTO 101 EAST TOWARD EAST HARTFORD, TAKE EXIT 20 FOR CT 100 TOWARD UNION, TURN RIGHT ONTO CT 100 EAST TOWARD UNION, CONTINUE ONTO CT 171 WEST/BUCKLEY HIGHWAY, THE SITE IS LOCATED ON THE LEFT HAND SIDE.

SITE INFORMATION

VERIZON LOCATION CODE: 407006
UNION W CT
SBA SITE NAME: CT24306A
UNION 4, CT
SBA SLOPPY NUMBER: 24306A_V1
MAG LOCATION ID: 600340105
PLATE PROJECT ID: 107204
SITE ADDRESS: 1050 BUCKLEY HIGHWAY
UNION, CT 06076
PROPERTY OWNER: NAVIGATOR PROPERTIES LLC
P.O. BOX 1100
WALLINGFORD, CT 06492
TOWER OWNER: SBA TOWERS & LLC
8601 CONGRESS AVENUE
BUCKINGHAM, FL 33487
PHONE: 904 240 9520
TOLLAND, CT
N/A
SELF-SUPPORT TOWER
173'±
130'±
967'±
1,017'±
CENTER OF EXISTING MONOPOLE
N 41° 08' 07.00" E 158.97' (RAD 10)
W 72° 46' 08.33" E 174.1544' (RAD 18)
CHAPPELL ENGINEERING ASSOCIATES, LLC
307 BUCKLEY HIGHWAY
SUITE 101
WALLINGFORD, CT 06492
ZONING DISTRICT: N/A
STRUCTURE TYPE: SELF-SUPPORT TOWER
STRUCTURE HEIGHT: 173'±
GROUND ELEVATION: 967'±
TOTAL MSL: 1,017'±
SITE CONTROL POINT: CENTER OF EXISTING MONOPOLE
ARCHITECT/ENGINEER: CHAPPELL ENGINEERING ASSOCIATES, LLC

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES AT THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
 - ELECTRICAL CODE: 2000 NATIONAL ELECTRICAL CODE
 - BUILDING CODE: 2002 CONNECTICUT STATE BUILDING CODE
 - STRUCTURAL CODE: 2001 CONNECTICUT STATE BUILDING CODE
 - STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS

AT LEAST 72 HOURS PRIOR TO
CONSTRUCTION, THE CONTRACTOR
IS REQUIRED TO CALL 811



AT LEAST 72 HOURS PRIOR TO
CONSTRUCTION, THE CONTRACTOR
IS REQUIRED TO CALL 811

AT LEAST 72 HOURS PRIOR TO
CONSTRUCTION, THE CONTRACTOR
IS REQUIRED TO CALL 811



20 ALBANY ROAD, 2ND FLOOR
WILMINGTON, CT 06097
(203) 741-7338



SBA COMMUNICATIONS CORP.
175 MAIN STREET, SUITE 105
WILMINGTON, MA 01897
(508) 251-0720



CHAPPELL
ENGINEERING
ASSOCIATES, LLC
P.O. BOX 600
501 SOUTH EAST ROAD, SUITE 101
WILMINGTON, MA 01897
(508) 683-1234
www.chappell-engineering.com



DESIGNED BY: JAF
APPROVED BY: JAF

PROJECT NAME: R. J. JARVIS
UNION WCT
1550 BUCKLEY HIGHWAY
UNION, CT 06096

FOR LOCATION CODE: 407990
BIO LOCATION ID: 00000000000000000000
DATE PROJECT ID: 1/1/2020

SHEET TITLE
SITE PLAN

SHEET NUMBER
A01

SUBMITTALS	
NO.	DESCRIPTION
1	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
2	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
3	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
4	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
5	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
6	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
7	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
8	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
9	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION
10	1550 BUCKLEY HIGHWAY FOR CONSTRUCTION





SPECIAL PRE-CONSTRUCTION WORK NOTE: FISH-ARMED TOWER STRUCTURAL ANALYSIS: SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SEA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FLOORING OR REDCANTON.



20 LUDLOW DRIVE, 2ND FLOOR
WILMINGTON, CT 06402
(203) 741-7338



SBA COMMUNICATIONS CORP.
125 FARMERS ROAD, SUITE 105
WILMINGTON, CT 06401
(203) 251-4723



CHAPMAN ENGINEERING, LLC
301 SOUTH MAIN STREET, SUITE 101
WILMINGTON, CT 06401
(203) 741-7338



CHECKED BY: JMF

APPROVED BY: JMF

SUBMITTALS	
REV	DESCRIPTION
1	REVISION FOR COMMENTS
2	REVISION FOR COMMENTS

PROJECT NAME: JMWCT
1000 BUCKLEY HIGHWAY
WILMINGTON, CT 06401

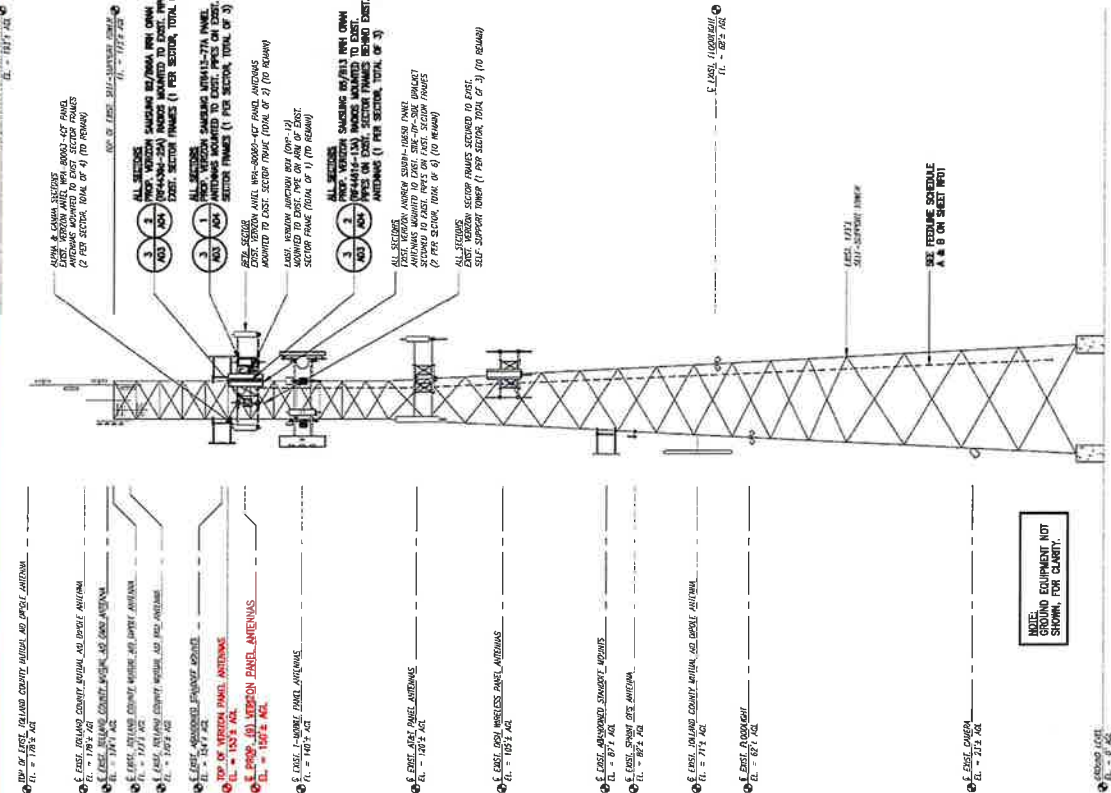
VIEW LOCATION CODE: 00000000
VIEW LOCATION ID: 00000000
VIEW PROJECT ID: 00000000

SHEET TITLE
TOWER ELEVATION & ANTENNA PLANS

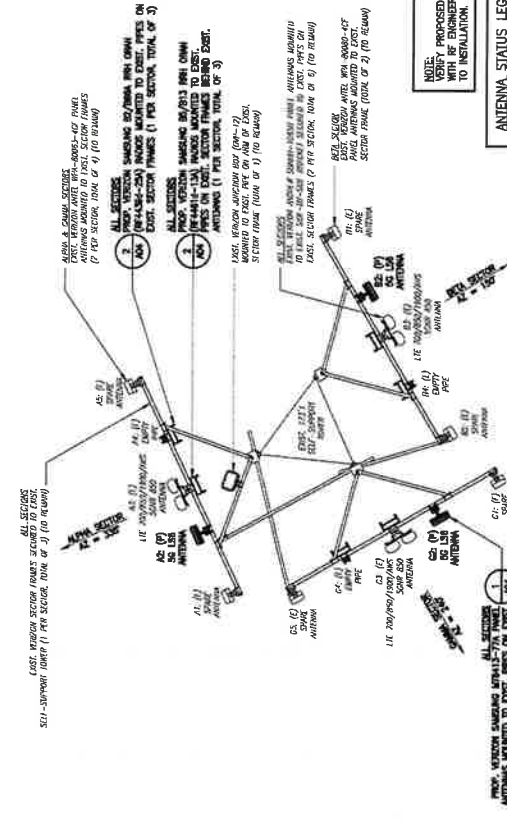
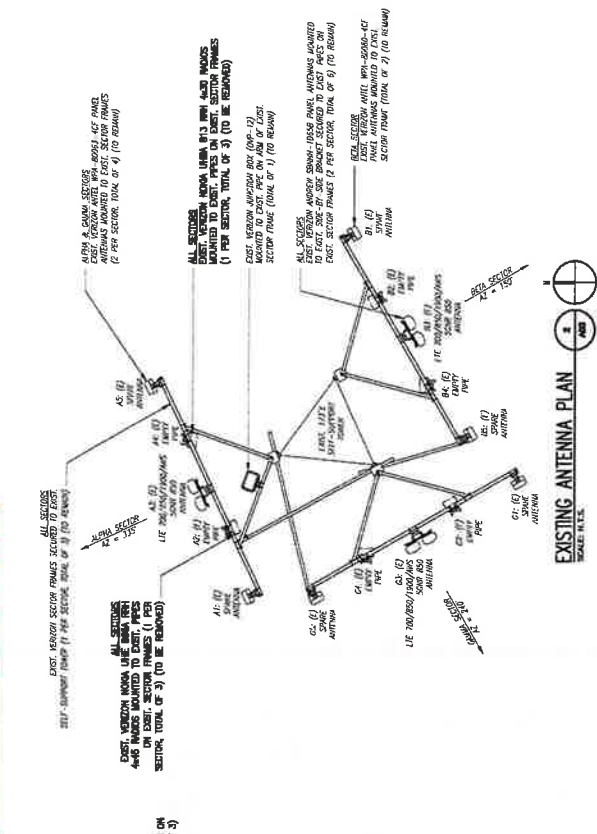
SHEET NUMBER
A03

RAD CENTER NOTE:
VERIZON ANTENNA AND MOUNT RAD CENTER SHOWN IN ELEVATION ARE ACCORDING TO STRUCTURAL ANALYSIS DONE BY OTHERS AND MAY DIFFER FROM RAD CENTER ON PIDS PROVIDED BY VERIZON.

SPECIAL PRE-CONSTRUCTION WORK NOTE: (SBA-PROVIDED) TOWER STRUCTURAL ANALYSIS, SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS, GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL EQUIPMENT, TOWER-MOUNTED EQUIPMENT FOR RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL REDEFINE BUILDINGS OR RELOCATION.



TOWER ELEVATION
SCALE: 1" = 10'-0"
0 10'-0" 20'-0" 30'-0"



ANTENNA STATUS LEGEND:
EMPTY - EMPTY PIPE
(E) - EXISTING
(P) - PROPOSED
(F) - FUTURE



20 ALEXANDER DRIVE, 2ND FLOOR
SUITE 200
ROSELAND, NJ 07068
(201) 741-7238



800 COMMUNICATIONS CORP.
134 RANKINS ROAD, SUITE 105
ROSELAND, NJ 07068
(201) 741-7238



CHAPPELL
ENGINEERING
ASSOCIATES, LLC
P.O. BOX 1000
200 RANKINS ROAD, SUITE 105
ROSELAND, NJ 07068
(201) 741-7238
www.chappell-engineering.com



DESIGNED BY: JMT

APPROVED BY: JMT

SUBMITTALS	
REV	DATE
1	02/26/2014
2	02/26/2014
3	02/26/2014
4	02/26/2014
5	02/26/2014
6	02/26/2014
7	02/26/2014
8	02/26/2014
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95	02/26/2014
96	02/26/2014
97	02/26/2014
98	02/26/2014
99	02/26/2014
100	02/26/2014

PROJECT NAME & LOCATION

UNION WCT
1000 HUNTERSLEY HIGHWAY
UNION, CT 06070

VIEW LOCATION CODE

400000

MODE LOCATION ID

0000000000

FILE PROJECT ID

1000000000

SHEET TITLE

SITE DETAILS

SHEET NUMBER

A04

1000000000



SAMSUNG MT6413-77A ANTENNA

DIMENSIONS: 10.0" x 10.0" x 1.0"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

SECTORS: ALPHA, BETA, GAMMA

SCALE: N.T.S.

1

1000



SAMSUNG RF4430H-25A 32/38MA RADIO

DIMENSIONS: 10.0" x 10.0" x 1.0"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

SECTORS: ALPHA, BETA, GAMMA

SCALE: N.T.S.

2

1000



SAMSUNG RF4411A-13A 85/813 RADIO

DIMENSIONS: 10.0" x 10.0" x 1.0"

QUANTITY: 1 PER SECTOR, TOTAL OF 3

SECTORS: ALPHA, BETA, GAMMA

SCALE: N.T.S.

3

1000

[illegible]

FEEDLINE SCHEDULE			
SCHEDULE	FEEDLINES	LOCATION	ROUTED PER STRUCTURAL ANALYSIS
A	FEEDLINE IN FRANK: (1) 1" x 1" x 10' GABLE FOR JOE ARTHUR (2) 1" x 1" x 10' TOWER FOR JOE (3) 6" x 12" U HEMIS GABLES FEEDLINE IS BE RADIUS: JOE		
B	FEEDLINE: NONE		

NOTE:
LISTING VESSEL EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. NOTES AND FEEDLINE
LISTING DIFFERENCES MAY APPEAR.



20 ALDEN DRIVE, 2ND FLOOR
NEW BRITAIN, CT 06053
(860) 741-7238



SBA COMMUNICATIONS CORP.
134 SHAWNEE ROAD, SUITE 105
NEW BRITAIN, CT 06053
(860) 251-0720



CHAPPELL CONSULTING
ASSOCIATES, LLC
P.O. BOX 1000
201 WILSON AVENUE, SUITE 101
NEW BRITAIN, CT 06053
(860) 481-7500
www.chapellconsulting.com



CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV	DATE	DESCRIPTION	BY
1	10/24/20	ISSUED FOR CONSTRUCTION	CE
2	10/24/20	ISSUED FOR REVISION	CE

PROJECT NAME & ADDRESS

UNION W CT

1000 BUCKLEY HIGHWAY
UNION, CT 06077

TYPE LOCATION CODE

MAP LOCATION ID

PLANT PROJECT ID

SHEET TITLE

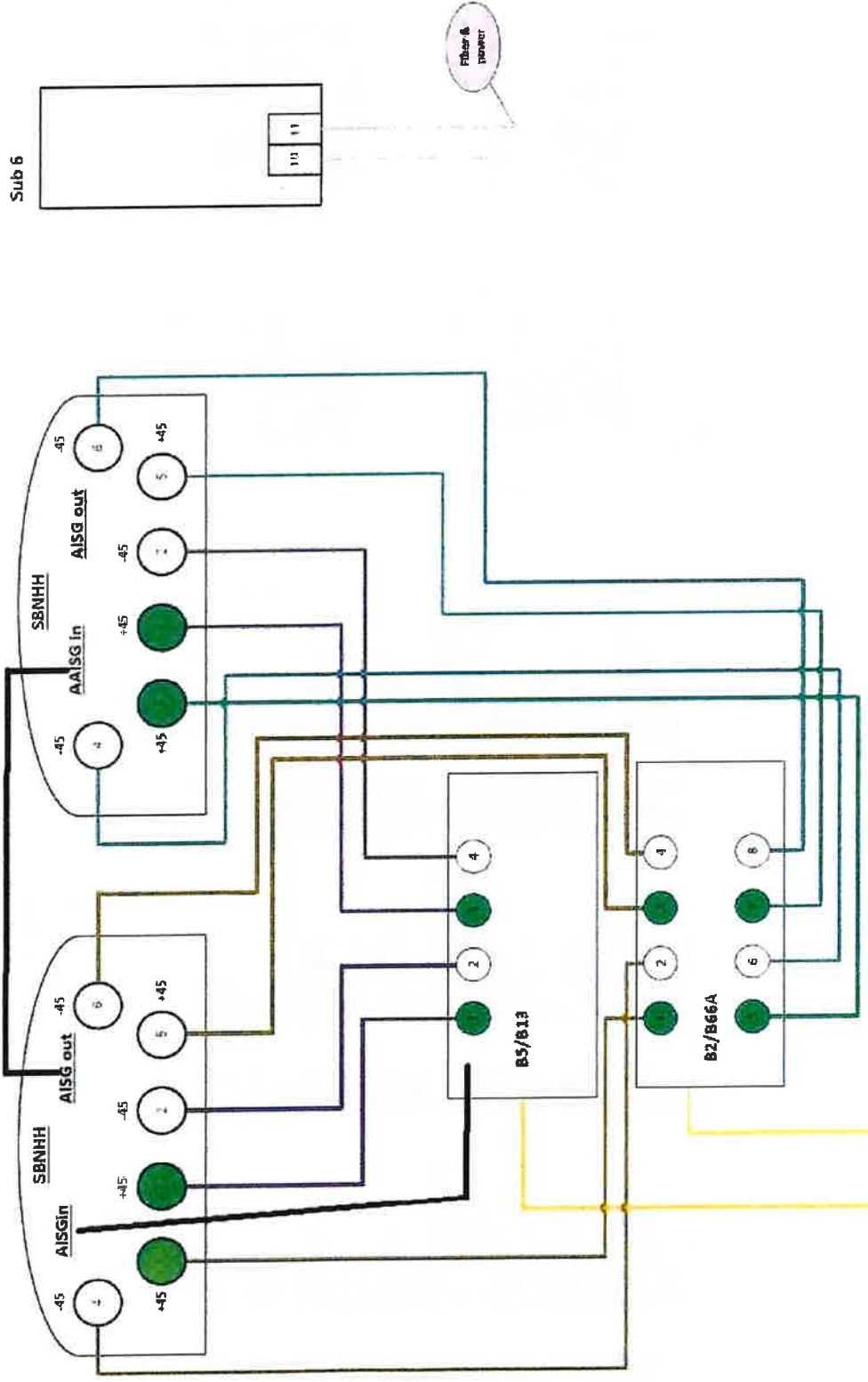
RF PLUMBING DIAGRAM

SHEET NUMBER

RF02

RF PLUMBING DIAGRAM
SCALE: N.T.S.

1
OF 1





20 ALDEN STREET, 2ND FLOOR
WALLINGFORD, CT 06492
(203) 741-7338



201 COMMUNICATIONS CENTER
201 COMMUNICATIONS CENTER
WALLINGFORD, CT 06492
(203) 741-7338



201 COMMUNICATIONS CENTER
201 COMMUNICATIONS CENTER
WALLINGFORD, CT 06492
(203) 741-7338



DESIGNED BY: JAF

APPROVED BY: JAF

REV	DATE	DESCRIPTION	BY
1	10/20/20	ISSUED FOR CONSTRUCTION	JAF
2	10/20/20	ISSUED FOR RFP	JAF

PROJECT NAME & ADDRESS
UNION WCT
1570 HICKLEY HIGHWAY
UNION, CT 06076

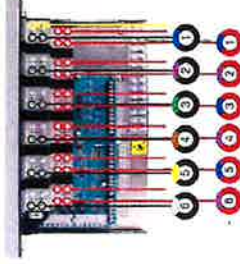
FOR LOCATION CODE:
BIDD LOCATION TO:
DATE PROJECT IS:
10/20/20

RECOLOR CODE
SPECIFICATIONS

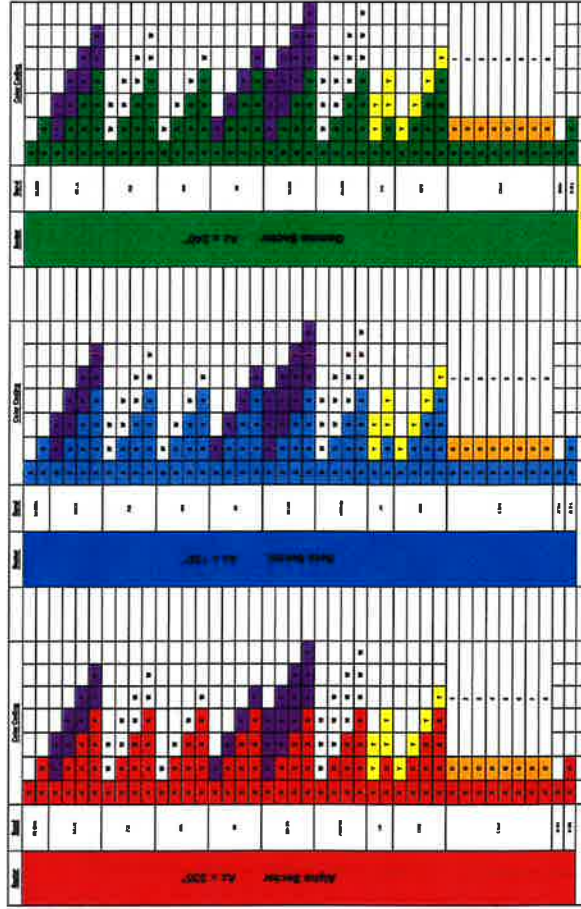
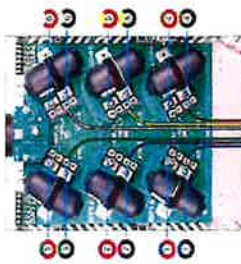
SHEET NUMBER
RIF03

Hybrid Cable on Towers

Sector	Identification Color	-48V	RTN
700 Alpha	Blue	Blue	Blue
AWS Alpha	Yellow	Yellow	Yellow
PCS Alpha	Green	Green	Green
850 Alpha	Orange	Orange	Orange
Spare	Yellow	Yellow	Yellow
Spare	White	White	White



Sector	Identification Color	-48V	RTN
700 Beta	Blue	Blue	Blue
AWS Beta	Yellow	Yellow	Yellow
PCS Beta	Green	Green	Green
850 Beta	Orange	Orange	Orange
Spare	Yellow	Yellow	Yellow
Spare	White	White	White



CABLE NOTE:
SEE FEEDLINE SCHEDULE A & B ON SHEET RFI01
FOR EXISTING & PROPOSED CABLE QUANTITIES.

LINE COLOR CODE SPECIFICATIONS
SCALE N.T.S.

HYBRID CABLE COLOR CODE SPECIFICATIONS
SCALE N.T.S.

[illegible]

C-band 64T64R

Gen 2

SAMSUNG

Gen 2 : Higher conducted power radio with reduced size/volume/weight vs Gen 1 and also SOC embedded for flexibility to support new features



※ Preliminary Design: External appearance and mechanical design can be subject to change

Gen 2. 64T64R C-band MMU Dimensions		
Size (WxHxD)	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)	
Weight	26kg (57.3 lb)	

Item	Gen 2 64T64R (MT6413-77A)
Air Technology	NR-n77/TDD
Frequency	3700 ~ 3980 MHz
IBW	200 MHz
OBW	200 MHz
Carrier Bandwidth	200MHz ready/400/60/80/100 MHz
# of Carriers	2 carriers
Layer	DL : 16L, UL : 16RX (8L)
RF Chain	64T64R
Antenna Configuration	4V16H with 192 AE
ERP	80.5 dBm @320W (55 dBm + 25.5 dB)
Conductive Power Spectrum Analyzer	320W
RX Sensitivity	TX/RX support
Modulation	Typical -97.8dBm @1Rx, 18.36MHz with 30KHz, 51RBs
Function Split	DL 256QAM support, (DL 1024QAM with 1~2dB power back-off)
Input Power	DL/UL option 7-2x
Power Consumption	-48 VDC (-38 VDC to -57 VDC)
Size (WHD)	1,287W (100% load, room temp.)
Volume	400 x 734 x 140 mm (15.75 x 28.90 x 5.51 inch)
Weight	26kg (57.3 lb)
Operating Temperature	-40°C ~ 55°C (w/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 38.104
	FCC 47 CFR 27.53 : < -13dBm/MHz
	< -40 dBm/MHz @ above 4 GHz
	< -50 dBm /MHz @ 4,040 ~ 4,050 MHz
	< -60 dBm /MHz @ above 4,050 MHz
Optic Interface	15km, 4 ports (25Gbps x 4), SFP28, single mode, Bi-di (Option: Duplex)
Mounting Options	Pole, wall
NB-IoT	Not support
External Alarm	4RX
Fronthaul Interface	eCPRI

SAMSUNG

AWS/PCS MACRO RADIO

DUAL-BAND AND HIGH POWER
FOR MACRO COVERAGE

Samsung's future proof dual-band radio is designed to help effectively increase the coverage areas in wireless networks. This AWS/PCS 4T4R dual-band radio has 4Tx/4Rx to 2Tx/2Rx RF chains options and a total output power of 320W, making it ideal for macro sites.

Model Code RF4439d-25A



Homepage
samsungnetworks.com

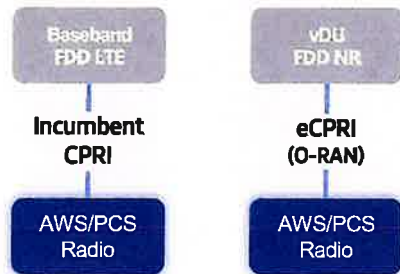


Youtube
www.youtube.com/samsung5g

Points of Differentiation

Continuous Migration

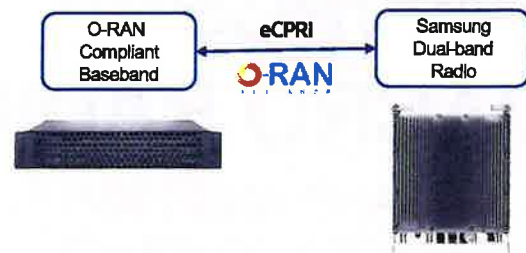
Samsung's AWS/PCS macro radio can support each incumbent CPRI interface as well as advanced eCPRI interfaces. This feature provides installable options for both legacy LTE networks and added NR networks.



O-RAN Compliant

A standardized O-RAN radio can help in implementing cost-effective networks, which are capable of sending more data without compromising additional investments.

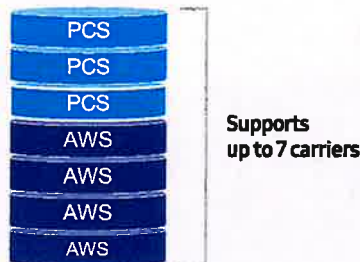
Samsung's state-of-the-art O-RAN technology will help accelerate the effort toward constructing a solid O-RAN ecosystem.



Optimum Spectrum Utilization

The number of required carriers varies according to site (region). Supporting many carriers is essential for using all frequencies that the operator has available.

The new AWS/PCS dual-band radio can support up to 3 carriers in the PCS (1.9GHz) band and 4 carriers in the AWS (2.1GHz) band, respectively.



Brand New Features in a Compact Size

Samsung's AWS/PCS macro radio offers several features, such as dual connectivity for baseband for both CDU and vDU, O-RAN capability, more carriers and an enlarged PCS spectrum, combined into an incumbent radio volume of 36.8L.



- + - 2 FH connectivity
- O-RAN capability
- More carriers and spectrum

Same as an incumbent radio volume

Technical Specifications

Item	Specification
Tech	LTE / NR
Brand	B25(PCS), B66(AWS)
Frequency Band	DL: 1930 – 1995MHz, UL: 1850 – 1915MHz DL: 2110 – 2200MHz, UL: 1710 – 1780MHz
RF Power	(B25) 4 × 40W or 2 × 60W (B66) 4 × 60W or 2 × 80W
IBW/OBW	(B25) 65MHz / 30MHz (B66) DL 90MHz, UL 70MHz / 60MHz
Installation	Pole, Wall
Size/Weight	14.96 x 14.96 x 10.04inch (36.8L) / 74.7lb

700/850 4T4R Macro 320W ORU - New Filter (RF4461d-13A)

SAMSUNG

Specifications

Item	Specification
Air Interface	LTE NR(HW resource ready)
Band	Band13 (700MHz)
Frequency	DL: 746~756MHz UL: 777~787MHz
IBW	10MHz
OBW	10MHz
Carrier Bandwidth	LTE/NR 5*/10MHz
# of carriers	2C*
Total # of carriers	4C + B13 (SDL) 1C
RF Chain	4T4R/2T4R/2T2R/1T2R 2T2R-2T2R bi-sector Total : 320W
RF Output Power	4 x 40W or 2 x 60W
Spectrum Analyzer	TX/RX Support
RX Sensitivity	Typ. -104.5dBm @1Rx (25RBs 5MHz)
Modulation	256QAM support, (1024QAM with 1~2dB power back-off)
Input Power	-48VDC (-38VDC to -57VDC)
Power Consumption	1.165 Watt @ 100% RF load, room temperature
Size (WHD)	380 x 380 x 260 mm (14.96 x 14.96 x 10.23 inch)
Volume	37.5 L
Weight (w/o Solar Shield & finger guard)	35.9 kg (79.1 lb)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (Without solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 FCC 47 CFR 27.53 c), f)
CPRI Cascade	3GPP 36.104 FCC 47 CFR 22.917
Optic Interface	-69 dBm/100 kHz per path @ 896 ~901MHz
RET & TMA Interface	Not supported
Bias-T	AISG 3.0
Mounting Options	4 ports (2 ports per band)
NB-IoT	Pole, wall
PIM Cancellation	25A-268 or 268-218 or 468
# of antenna port	Support
External Alarm	4
Fronthaul Interface	Opt. 8 CPRI / Opt. 7-2x selectable (not simultaneous support)
CPRI compression	Not Support



* 5MHz supporting in B13(700MHz) depends on 3Gpp std. and UE capability.
External filters in Interferer and victim sides for Mexican boarder to support 5MHz service need to be considered
** Finger guard is not needed

ATTACHMENT 3



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
(603) 644-2800

support@csquaredsystems.com

Calculated Radio Frequency Emissions Report



Union West CT
1050 Buckley Hwy, Union, CT 06076

January 12, 2024

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of Verizon's antenna arrays to be mounted at 151.9' on an existing lattice tower located at 1050 Buckley Hwy in Union, CT. The coordinates of the tower are 41° 59' 57.24" N, 72° 09' 8.17" W.

Verizon is proposing the following:

- 1) Install three (3) c-band antennas, one (1) per sector to support its 5G network.
- 2) Retain six (6) multi-band antennas, two (2) per sector to support its commercial LTE and 5G network.

This report considers the planned antenna configuration for Verizon¹ as well as existing antenna configuration for AT&T², DISH³, Sprint⁴, T-Mobile⁵ and Tolland County Mutual Aid⁶ to derive the resulting % MPE of its proposed modification.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to Verizon's Radio Frequency Design Sheet updated 09/18/2023.

² As referenced to DISH's Connecticut Siting Council Tower Share Application – 1050 Buckley Hwy, Union, Connecticut, dated February 6, 2023.

³ As referenced to DISH's Connecticut Siting Council Tower Share Application – 1050 Buckley Hwy, Union, Connecticut, dated February 6, 2023.

⁴ As referenced to DISH's Connecticut Siting Council Tower Share Application – 1050 Buckley Hwy, Union, Connecticut, dated February 6, 2023.

⁵ As referenced to T-Mobile's Connecticut Siting Council Notice of Exempt Modification – 1050 Buckley Hwy, Union, Connecticut, dated January 17, 2023

⁶ As referenced to DISH's Connecticut Siting Council Tower Share Application – 1050 Buckley Hwy, Union, Connecticut, dated February 6, 2023.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

$R = \text{Radial Distance} = \sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 335°	700	160	14.9	4944	SBNHH-1D65B	68	0	6.07	151.9
		850	160	14.7	4722		65.5			
		1900	160	18.2	10571		66.2			
		2100	240	18.6	17386		63			
		3700	320	25.5	113540	MT6413-77A	-	0	-	151.9
	Beta / 150°	700	160	14.9	4944	SBNHH-1D65B	68	0	6.07	151.9
		850	160	14.7	4722		65.5			
		1900	160	18.2	10571		66.2			
		2100	240	18.6	17386		63			
		3700	320	25.5	113540	MT6413-77A	-	0	-	151.9
	Gamma / 240°	700	160	14.9	4944	SBNHH-1D65B	68	0	6.07	151.9
		850	160	14.7	4722		65.5			
		1900	160	18.2	10571		66.2			
		2100	240	18.6	17386		63			
		3700	320	25.5	113540	MT6413-77A	-	0	-	151.9

Table 1: Proposed Antenna Inventory⁷⁸

⁷ Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 09/18/2023.

⁸ Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

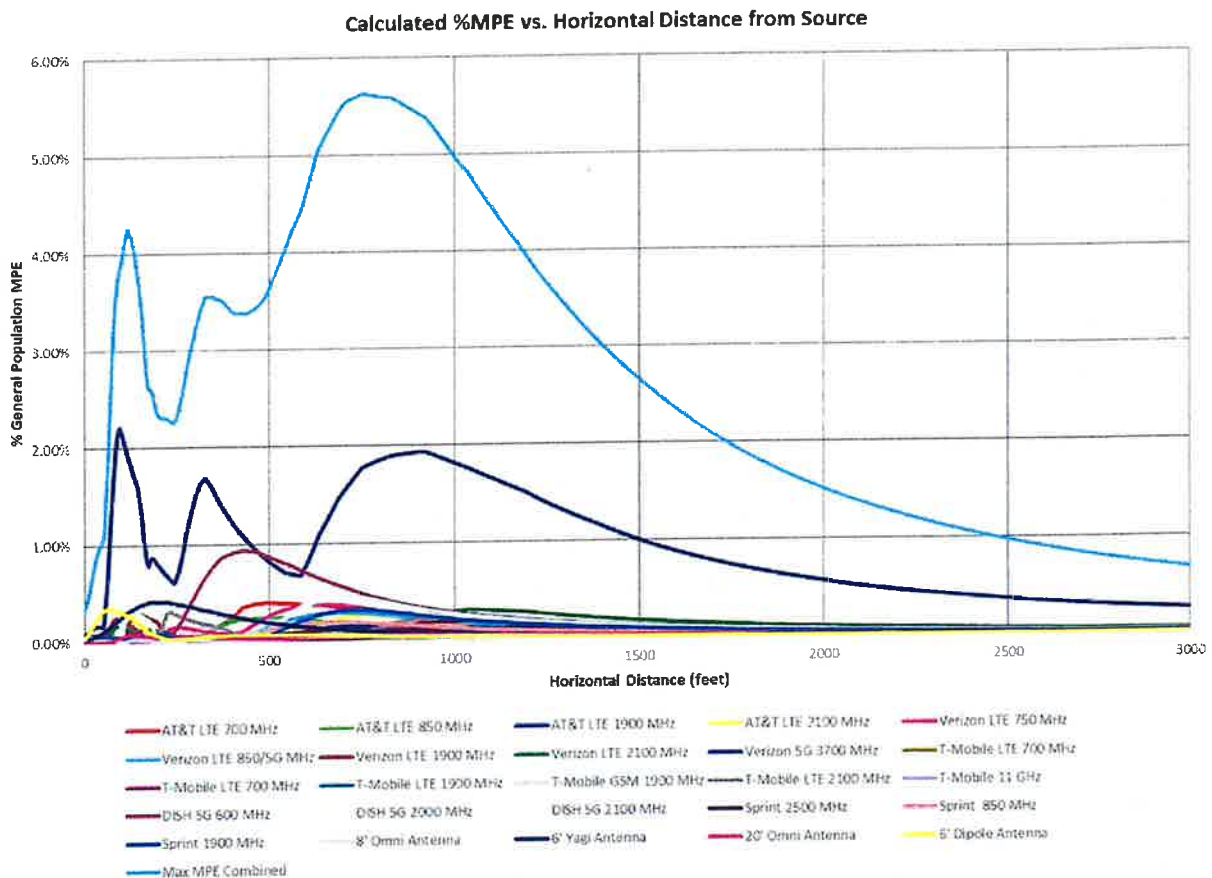


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (5.63% of the General Population limit) is calculated to occur at a horizontal distance of 751 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 751 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm ²)	Limit (mW/cm ²)	% MPE
AT&T LTE 1900 MHz *	1	160.0	120.0	751	0.001374	1.000	0.14%
AT&T LTE 2100 MHz *	1	160.0	120.0	751	0.002418	1.000	0.24%
AT&T LTE 700 MHz *	1	160.0	120.0	751	0.001342	0.467	0.29%
AT&T LTE 850 MHz *	1	160.0	120.0	751	0.000878	0.567	0.15%
DISH 5G 2000 MHz	4	40.0	105.0	751	0.003726	1.000	0.37%
DISH 5G 2100 MHz	4	40.0	105.0	751	0.004376	1.000	0.44%
DISH 5G 600 MHz	4	61.5	105.0	751	0.001919	0.400	0.48%
Sprint 850 MHz	2	50.0	130.0	751	0.000998	0.567	0.18%
Sprint 1900 MHz	4	45.0	130.0	751	0.003087	1.000	0.31%
Sprint 2500 MHz	8	20.0	130.0	751	0.000235	1.000	0.02%
T-Mobile 11 GHz	1	0.6	140.0	751	0.000008	1.000	0.00%
T-Mobile GSM 1900 MHz	1	10.0	140.0	751	0.000007	1.000	0.00%
T-Mobile LTE 1900 MHz	1	160.0	140.0	751	0.000114	1.000	0.01%
T-Mobile LTE 2100 MHz	1	160.0	140.0	751	0.000784	1.000	0.08%
T-Mobile LTE 700 MHz	1	40.0	140.0	751	0.000415	0.400	0.10%
T-Mobile LTE 700 MHz	1	40.0	140.0	751	0.000532	0.467	0.11%
Tolland County Mutual Aid *	1	100.0	174.0	751	0.000123	0.300	0.04%
Tolland County Mutual Aid *	1	100.0	170.0	751	0.000188	0.200	0.09%
Tolland County Mutual Aid *	1	100.0	178.0	751	0.000083	0.200	0.04%
Tolland County Mutual Aid *	1	100.0	173.0	751	0.000130	0.300	0.04%
Verizon 5G 3700 MHz	1	320.0	151.9	751	0.017759	1.000	1.78%
Verizon LTE 1900 MHz	1	160.0	151.9	751	0.000500	1.000	0.05%
Verizon LTE 2100 MHz	1	240.0	151.9	751	0.000432	1.000	0.04%
Verizon LTE 750 MHz	1	160.0	151.9	751	0.001682	0.500	0.34%
Verizon LTE 850/5G MHz	1	160.0	151.9	751	0.001545	0.567	0.27%
Total							5.63%

Table 2: Maximum Percent of General Population Exposure Values⁹¹⁰

⁹ In the case where antenna pattern data was unavailable from the manufacturer, generic antenna pattern was used based on the frequency, bandwidth and gain of the antenna.

¹⁰ * Reasonable assumptions were made when antenna model, frequency, power, and height information was unavailable.

6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **5.63%** of the FCC limit (General Population/Uncontrolled). This maximum cumulative percent of MPE value is calculated to occur 751 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Report Prepared By: Ram Acharya
RF Engineer
C Squared Systems, LLC

January 11, 2024
Date



Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

January 12, 2024
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure¹¹

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

(B) Limits for General Population/Uncontrolled Exposure¹²

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

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

Table 3: FCC Limits for Maximum Permissible Exposure

¹¹ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

¹² General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

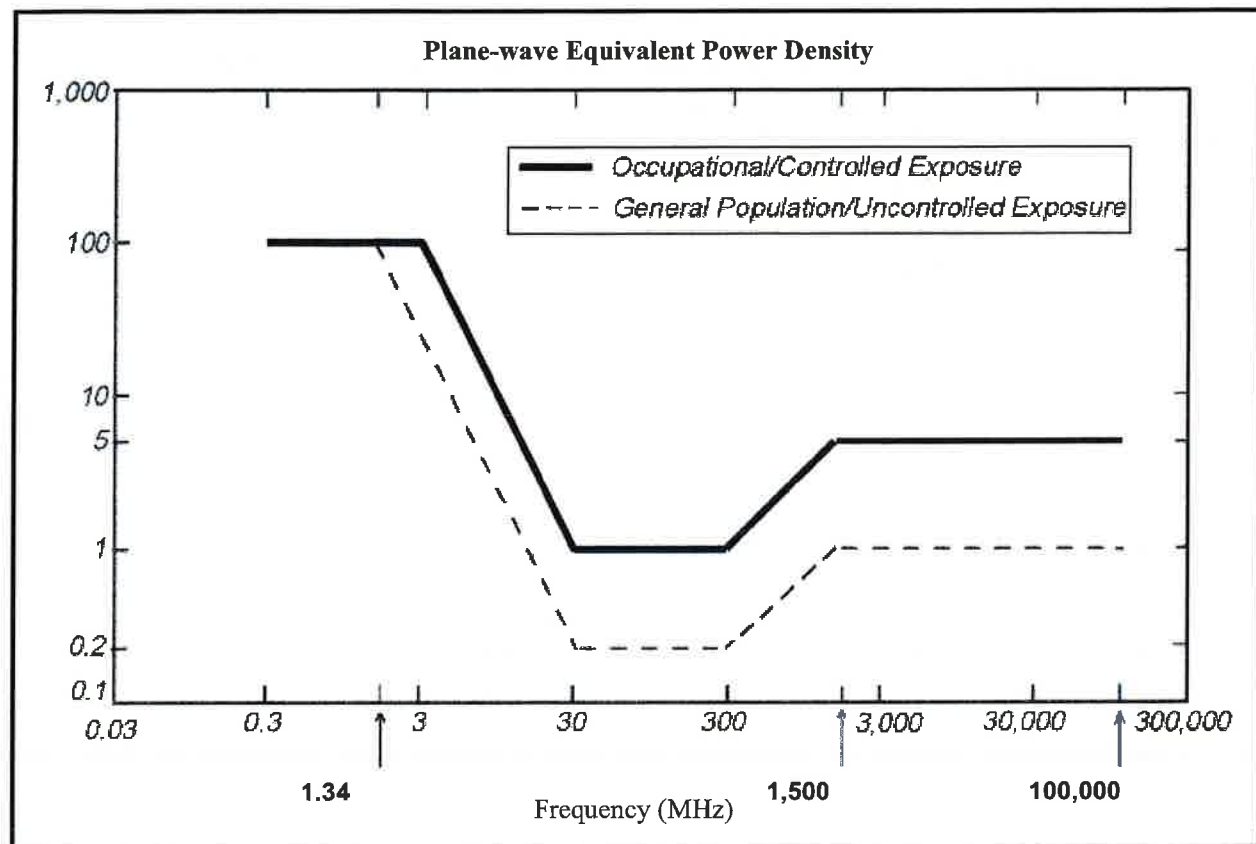
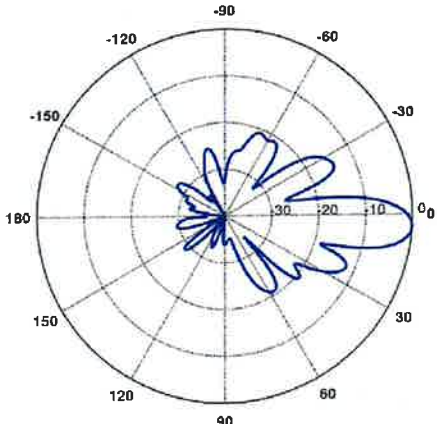
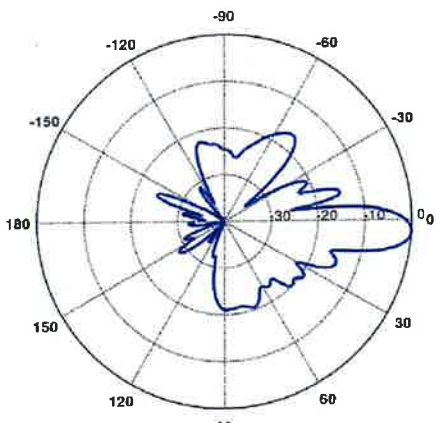


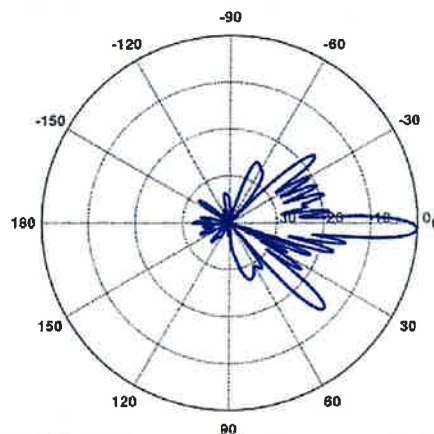
Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns

750 MHz Manufacturer: COMMSCOPE Model #: SBNHH-1D65B Frequency Band: 698-806 MHz Gain: 14.9 dBi Vertical Beamwidth: 12.1° Horizontal Beamwidth: 68.0° Polarization: ±45° Dimensions (L x W x D): 72.87" x 7.08" x 11.85"	
885 MHz Manufacturer: COMMSCOPE Model #: SBNHH-1D65B Frequency Band: 806-896 MHz Gain: 14.7 dBi Vertical Beamwidth: 10.7° Horizontal Beamwidth: 65.5° Polarization: ±45° Dimensions (L x W x D): 72.87" x 7.08" x 11.85"	

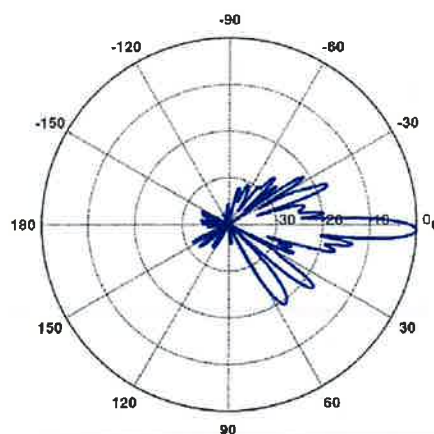
1900 MHz

Manufacturer: COMMSCOPE
 Model #: SBNHH-1D65B
 Frequency Band: 1850-1990 MHz
 Gain: 18.2 dBi
 Vertical Beamwidth: 5.2°
 Horizontal Beamwidth: 66.2°
 Polarization: ±45°
 Dimensions (L x W x D): 72.87" x 7.08" x 11.85"



2100 MHz

Manufacturer: COMMSCOPE
 Model #: SBNHH-1D65B
 Frequency Band: 1920-2200 MHz
 Gain: 18.6 dBi
 Vertical Beamwidth: 5°
 Horizontal Beamwidth: 63°
 Polarization: ±45°
 Dimensions (L x W x D): 72.87" x 7.08" x 11.85"



ATTACHMENT 4



SBA Communications Corporation
8051 Congress Avenue
Boca Raton, FL 33487-1307

T + 561.995.7670
F + 561.995.7626

sbasite.com

Structural Analysis Report

Client: Verizon

Client Site ID / Name: 5000243135 / Union W CT
Application #: 246220, v3

SBA Site ID / Name: CT24369-A / Union 4 CT

168' **Modified** Self Supporting Tower

1050 Buckley Highway
Union, CT 06076

Lat: 41.999167, Long: -72.152369

Project number: CT24369-VZW-022224

Analysis Results

Tower	90.9%	Pass
Foundation	90.0%	Pass

Change in tower stress due to mount modification / replacement	0%
--	----

Prepared by:

Daniel Yohannes
Structural Engineer II
214-570-8110 ext 2626
dyohannes@sbasite.com

Reviewed by:

Anantha (Shan) Shanubhogue, P.E.
Senior Manager, Structural Engineering
561-981-7390
SShanubhogue@sbasite.com

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Introduction

The purpose of this report is to summarize the analysis results on the 168' Modified Self Supporting Tower to support the proposed antennas and transmissions lines in addition to those currently installed.

Table 1 List of Documents Used

Item	Document
Tower Mapping	TEP, Project # 263470.515260, dated 5/5/2021
Foundation Mapping	TEP, Project # 263470.515260, dated 5/5/2021
Geotechnical report	Dr. Clarence Welti, P.E., P.C., dated 5/24/2002
Bring Log Review	GPD, Project # 2021778.24369.01, dated 10/29/2021
Modification drawings	Unkown (Mapped)
Carrier MA	Colliers, Project # 21777251 (Rev.1), dated 02/01/2024
Latest SA Report	GPD, Project # 2022778.24369.04, dated 10/7/2022

Analysis Criteria

Table 2 Code Related Data

Jurisdiction (State/County/City)	Connecticut / Tolland / Union
Governing Codes	ANSI/TIA-222-H , 2021 IBC, 2022 CSBC
Ultimate Wind Speed (3-Sec gust)	118 mph
Wind Speed with Ice (3-Sec gust)	50 mph
Service Wind Speed (3-Sec gust)	60 mph
Ice Thickness	1.5
Risk category	II
Exposure Category	B
Topographic Category	1
Crest Height	0 ft.
Ground Elevation	996.51 ft.
Seismic Parameter S_s	0.178
Seismic Parameter S_1	0.055

This structural analysis is based upon the tower being classified as a Risk category II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Appurtenance Loading

Existing Loading:

Table 3 Existing Appurtenances

Mount Elev. (ft)	CL Elev. (ft)	Type	Qty	Manufacturer	Model	Feed Line Size	Mount Type Qty.	Carrier
168	178	Dipole	1		20' Dipole	(1) 1-5/8" (1) 1-1/4" (1) 7/8" (1) 7/8"	Direct	Tolland County
	174	Omni	1		8' Omni			
	173	Dipole	1		6' Dipole			
	170	Yagi	1		6' Yagi			
154	154						(3) Standoffs	Abandoned
150	150	Panel	6	Commscope	SBNHH-1D65B	(12) 1-5/8" (2) 1-1/4" Hybrid	(3) Sector Frames	Verizon
		Panel	4	Antel	WPA-80063/4CF			
		Panel	2	Antel	WPA-80080/4CF			
		RRU	3	Samsung	RFV01U-D2A			
		RRU	3	Samsung	RFV01U-D1A			
		OVP	2	RFS	DB-B1-6C-12AB-0Z			
140	140	Panel	3	RFS	APX16DWV-16DWVS-E-A20	(6) 1-5/8" (3) 1-1/4" Hybrid (2) 0.325" DC Power (2) 1/2" Fiber	(3) Standoffs	T-Mobile
		Panel	3	RFS	APXVAALL24_43-U-NA20			
		TMA	3		Twin Style 1A-PCS			
		RRU	3	Ericsson	4449 B71 + B12			
		RRU	3	Ericsson	4415 B66A			
		Dish	1	Commscope	VHLP2-11W/A			
		ODU	2	Ceragon	RFU-D			
120	120	Panel	3	Powerwave	7770	(6) 1-1/4" (1) 3" Conduit (2) 3/4" DC Power (1) 5/16" Fiber	(3) Sector Frames	AT&T
		Panel	1	Commscope	SBNH-1D6565C			
		Panel	1	KMW	AM-X-CW-16-65-00T-RET			
		Panel	1	Powerwave	P65-17-XLH-RR			
		TMA	6	Powerwave	LGP21401			
		Diplexer	6		782 10250			
		RRU	6	Ericsson	RRU 11			
		RRU	3	Ericsson	RRUS 11-700			
		OVP	1	Raycap	DC6-48-60-18-8F			
105	105	Panel	3	JMA Wireless	MX08FRO665-21	(1) 1.6" Hybrid	(3) Sector Frames	Dish Wireless
		RRU	3	Fujitsu	TA08025-B605			
		RRU	3	Fujitsu	TA08025-B604			
		OVP	1	Raycap	RDIDC-9181-PF-48			
93	93	Dipole	1		Dipole	(1) 3/8"	Direct	Unkown
87	87						(1) T-Frame	Abandoned
82	82	GPS	1		GPS	(1) 1/2"	Direct	Unkown
71	71	Dipole	1		12' Dipole	(1) 3/8"	Direct	Tolland County

Proposed Loading:

Information pertaining to proposed antennas and transmission lines were based upon the Application #: 246220, v3 from Verizon and is listed in Table 4.

Table 4 Proposed Appurtenances

Mount Elev. (ft)	CL Elev. (ft)	Type	Qty	Manufacturer	Model	Feed Line Size	Mount Type Qty.	Carrier
150	151.9	Panel	3	Samsung	MT6413 77A	(12) 1-5/8" (2) 1-1/4" Hybrid	(3) Sector Frames (3) Dual Antenna Mount [Commscope BSAMNT-SBS-1-2]	Verizon
	150	Panel	6	Commscope	SBNHH-1D65B			
		Panel	4	Antel	WPA-80063/4CF			
		Panel	2	Antel	WPA-80080/4CF			
		RRU	3	Samsung	B2/B66A RRH ORAN (RF4439d-25A)			
		RRU	3	Samsung	B5/B13 RRH ORAN (RF4461d-13A)			
		OVP	2	RFS	DB-B1-6C-12AB-0Z			

Analysis Results

Tower

The results of the structural analysis are shown below in table 5. Additional information for the tower analysis is provided within the Appendix.

Table 5 Tower Analysis Summary

Structural Component	% capacity	Analysis Result
Leg	90.9	Pass
Diagonal	75.8	Pass
Secondary Horizontal	33.5	Pass
Top girt	6.6	Pass
Bolt	75.8	Pass
Anchor Bolt	56.2	Pass

Foundation

The results of the foundation analysis are shown below in table 6. Additional information for the foundation analysis is provided within the Appendix.

Table 6 Foundation Analysis Summary

Structural Component	Max Usage (%)	Analysis Result
Foundation	90.0	Pass

Conclusions

Based on the analysis results, the existing tower and foundation were found to be sufficient to safely support the equipment listed in this analysis. No modification to the tower and foundation is needed at this time.

Installation Requirements

This analysis was performed under the assumption that the carrier will place the proposed equipment and feed lines at the installation height listed in Table 4 and in accordance with the coax layout shown. TMAs and RRUs are to be installed on existing mounts behind tenant's antennas unless otherwise noted. No equipment is to be installed directly in the climbing path. All equipment is to be installed per mount manufacturer specifications. In case site conditions do not allow for the required installation parameters to be met the carrier must notify SBA Communications Corporation engineers for approval of an alternative placement.

Assumptions and Limitations

Assumptions

This analysis was completed based on the following assumptions:

- Tower and foundation were built in accordance to manufacturer specifications.
- Tower and foundation has been properly maintained in accordance with the manufacturer's specifications
- All existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion
- Welds and bolts are assumed able to carry their intended original design loads.
- The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Table 3 and 4.
- This analysis may be affected if any assumptions are not valid or have been made in error. SBA should be notified to determine the effect on the structural integrity of the tower.

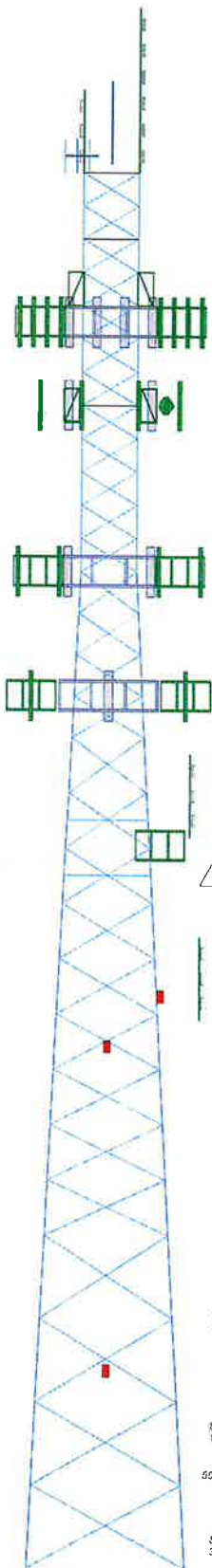
Limitations

The computer generated analysis performed by the tower software is limited to theoretical capacities of the towers structural members and does not account for any missing or damaged members or connections. The tower and foundation are assumed to have been properly designed, fabricated, installed and maintained, barring any conflicting findings from the most recent inspection.

SBA Communications Corporation has used its due diligence to verify the information provided to perform this analysis. It is unreasonable to perform a more detailed inspection of a tower and its components. This report is not a condition assessment of the tower or foundation.

Appendix

100 0 f
140 0 f
130 0 f
137 0 f
120 0 f
125 0 f
120 0 f
115 0 f
100 0 f
105 0 f
100 0 f
95 0 f
90 0 f
85 0 f
80 0 f
75 0 f
70 0 f
65 0 f
60 0 f
55 0 f
50 0 f
45 0 f
40 0 f
35 0 f
30 0 f
25 0 f
20 0 f
15 0 f
10 0 f
5 0 f
0 0 f

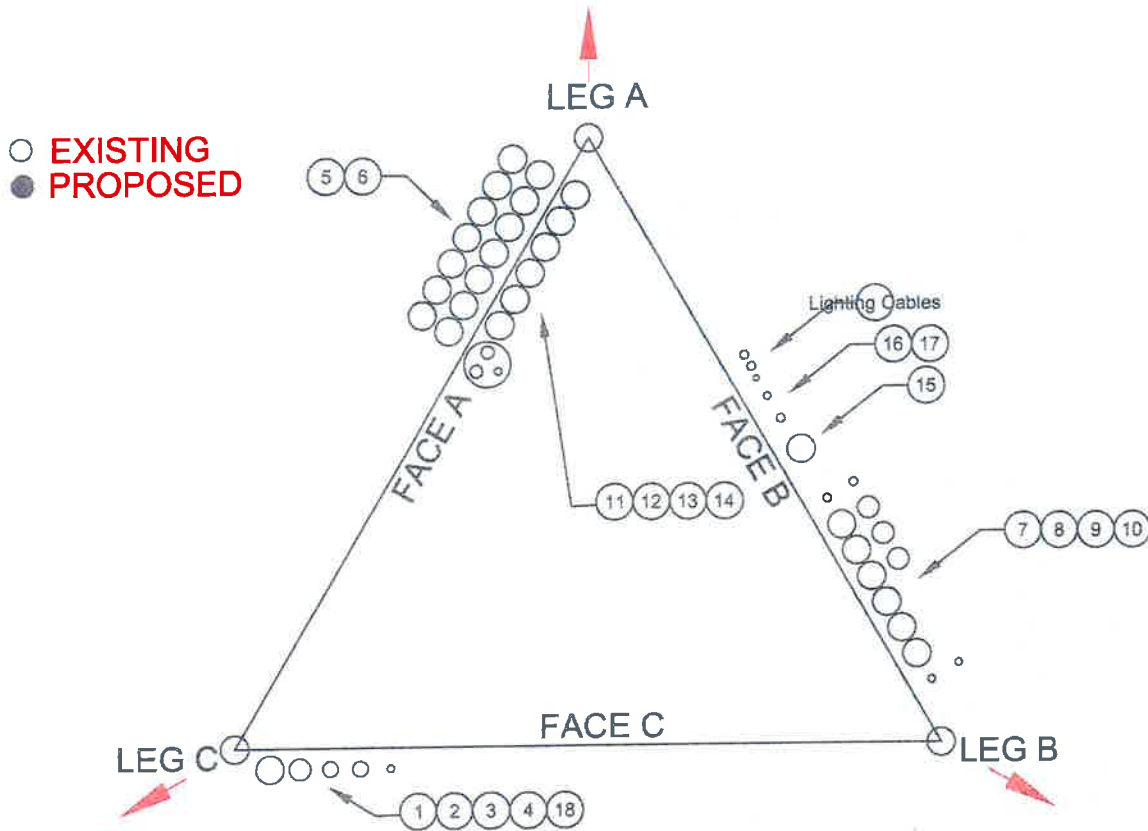


CTIONS - 170 mg/ml

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 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: 90.9%

COAX LAYOUT



(1)

CT24369-A					
#	CARRIER	SIZE	QTY.	ELEVATION	NOTES
1	Tolland County	1-5/8"	1	168	
2		1-1/4"	1		
3		7/8"	1		
4		7/8"	1		
5	Verizon	1-5/8"	12	150	
6		1-1/4"	2		Hybrid
7	T-Mobile	1-5/8"	6	140	
8		1-1/4"	3		Hybrid
9		0.325"	2		DC Power
10		1/2"	2		Fiber
11	AT&T	1-1/4"	6	120	
12		3"	1		Conduit
13		3/4"	2		DC Power
14		5/16"	1		Fiber
15	Dish Wireless	1.6"	1	105	Hybrid
16	Unkown	3/8"	1	93	
17		1/2"	1	82	
18	Tolland County	3/8"	1	71	

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Tower Input Data

The main tower is a 3x free standing tower with an overall height of 168.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 6.67 ft at the top and 19.00 ft at the base.

This tower is designed using the TIA-222-H standard.

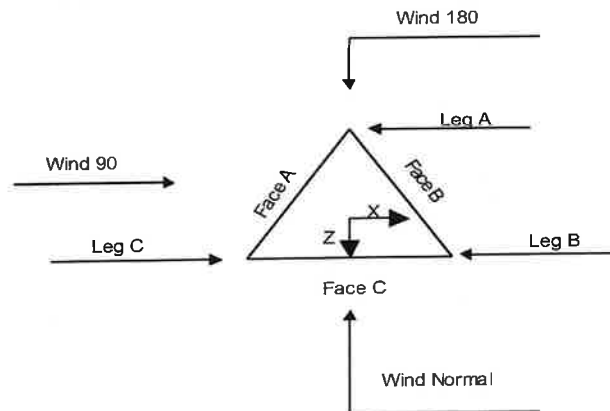
The following design criteria apply:

1. Tower is located in Tolland County, Connecticut.
2. Tower base elevation above sea level: 996.51 ft.
3. Basic wind speed of 118 mph.
4. Risk Category II.
5. Exposure Category B.
6. Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7. Topographic Category: 1.
8. Crest Height: 0.00 ft.
9. Nominal ice thickness of 1.5000 in.
10. Ice thickness is considered to increase with height.
11. Ice density of 56 pcf.
12. A wind speed of 50 mph is used in combination with ice.
13. Temperature drop of 50 °F.
14. Deflections calculated using a wind speed of 60 mph.
15. Pressures are calculated at each section.
16. Stress ratio used in tower member design is 1.
17. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile ✓ Include Bolts In Member Capacity ✓ Leg Bolts Are At Top Of Section ✓ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) ✓ SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform | <ul style="list-style-type: none"> Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r ✓ Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurtenances Alternative Appurt. EPA Calculation ✓ Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs Use ASCE 10 X-Brace Ly Rules | <ul style="list-style-type: none"> ✓ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA ✓ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque ✓ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|---|---|---|

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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	168.00-160.00			6.67	1	8.00
T2	160.00-140.00			6.67	1	20.00
T3	140.00-136.00			6.67	1	4.00
T4	136.00-132.00			6.67	1	4.00
T5	132.00-128.00			6.67	1	4.00
T6	128.00-124.00			6.67	1	4.00
T7	124.00-120.00			6.67	1	4.00
T8	120.00-115.00			6.67	1	5.00
T9	115.00-110.00			7.18	1	5.00
T10	110.00-105.00			7.70	1	5.00
T11	105.00-100.00			8.21	1	5.00
T12	100.00-93.33			8.73	1	6.67
T13	93.33-86.67			9.41	1	6.67
T14	86.67-80.00			10.10	1	6.67
T15	80.00-73.33			10.78	1	6.67
T16	73.33-66.67			11.47	1	6.67
T17	66.67-60.00			12.15	1	6.67
T18	60.00-40.00			12.84	1	20.00
T19	40.00-20.00			14.89	1	20.00
T20	20.00-0.00			16.95	1	20.00

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Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	168.00-160.00	4.00	X Brace	No	No	0.0000	0.0000
T2	160.00-140.00	4.00	X Brace	No	No	0.0000	0.0000
T3	140.00-136.00	4.00	X Brace	No	No	0.0000	0.0000
T4	136.00-132.00	4.00	X Brace	No	No	0.0000	0.0000
T5	132.00-128.00	4.00	X Brace	No	No	0.0000	0.0000
T6	128.00-124.00	4.00	X Brace	No	No	0.0000	0.0000
T7	124.00-120.00	4.00	X Brace	No	No	0.0000	0.0000
T8	120.00-115.00	5.00	X Brace	No	No	0.0000	0.0000
T9	115.00-110.00	5.00	X Brace	No	No	0.0000	0.0000
T10	110.00-105.00	5.00	X Brace	No	No	0.0000	0.0000
T11	105.00-100.00	5.00	X Brace	No	No	0.0000	0.0000
T12	100.00-93.33	6.67	X Brace	No	No	0.0000	0.0000
T13	93.33-86.67	6.67	X Brace	No	Yes	0.0000	0.0000
T14	86.67-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T15	80.00-73.33	6.67	X Brace	No	No	0.0000	0.0000
T16	73.33-66.67	6.67	X Brace	No	No	0.0000	0.0000
T17	66.67-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T18	60.00-40.00	6.67	X Brace	No	No	0.0000	0.0000
T19	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T20	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 168.00-160.00	Pipe	P2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T2 160.00-140.00	Pipe	P2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 140.00-136.00	Pipe	P2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 136.00-132.00	Pipe	P2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T5 132.00-128.00	Pipe	P2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T6 128.00-124.00	Pipe	P2.5 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T7 124.00-120.00	Arbitrary Shape	P 2-1/2 STD w/ Split P 3 X-STR [CT24369 T7]	A53-B-35 (35 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T8 120.00-115.00	Arbitrary Shape	P 3 STD w/ Split P 3-1/2 STD [CT24369 T8]	A53-B-35 (35 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T9 115.00-110.00	Arbitrary Shape	P 3 STD w/ Split P 3-1/2 STD [CT24369 T9]	A53-B-35 (35 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T10 110.00-105.00	Arbitrary Shape	P 3 STD w/ Split P 3-1/2 STD [CT24369 T10]	A53-B-35 (35 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)

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<i>Tower Elevation ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
T11 105.00-100.00	Arbitrary Shape	P 3 STD w/ Split P 3-1/2 STD [CT24369 T11]	A53-B-35 (35 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T12 100.00-93.33	Pipe	P3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T13 93.33-86.67	Pipe	P3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T14 86.67-80.00	Pipe	P3.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T15 80.00-73.33	Pipe	P4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T16 73.33-66.67	Pipe	P4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T17 66.67-60.00	Pipe	P4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T18 60.00-40.00	Pipe	P5 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T19 40.00-20.00	Pipe	P6 X-STR	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T20 20.00-0.00	Pipe	P6 X-STR	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T1 168.00-160.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 160.00-140.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T3 140.00-136.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation ft</i>	<i>Secondary Horizontal Type</i>	<i>Secondary Horizontal Size</i>	<i>Secondary Horizontal Grade</i>	<i>Inner Bracing Type</i>	<i>Inner Bracing Size</i>	<i>Inner Bracing Grade</i>
T13 93.33-86.67	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T14 86.67-80.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T17 66.67-60.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

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Tower Section Geometry (cont'd)

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 in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
T1 168.00-160.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 160.00-140.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 140.00-136.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 136.00-132.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 132.00-128.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 128.00-124.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 124.00-120.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 120.00-115.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 115.00-110.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 110.00-105.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 105.00-100.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T12 100.00-93.33	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T13 93.33-86.67	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T14 86.67-80.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T15 80.00-73.33	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T16 73.33-66.67	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T17 66.67-60.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T18 60.00-40.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T19 40.00-20.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T20 20.00-0.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry (cont'd)

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Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 168.00-160.00	Yes	Yes	1	1	1	1	1	1	1	1
T2 160.00-140.00	Yes	Yes	1	1	1	1	1	1	1	1
T3 140.00-136.00	Yes	Yes	1	1	1	1	1	1	1	1
T4 136.00-132.00	Yes	Yes	1	1	1	1	1	1	1	1
T5 132.00-128.00	Yes	Yes	1	1	1	1	1	1	1	1
T6 128.00-124.00	Yes	Yes	1	1	1	1	1	1	1	1
T7 124.00-120.00	Yes	Yes	1	1	1	1	1	1	1	1
T8 120.00-115.00	Yes	Yes	1	1	1	1	1	1	1	1
T9 115.00-110.00	Yes	Yes	1	1	1	1	1	1	1	1
T10 110.00-105.00	Yes	Yes	1	1	1	1	1	1	1	1
T11 105.00-100.00	Yes	Yes	1	1	1	1	1	1	1	1
T12 100.00-93.33	Yes	Yes	1	1	1	1	1	1	1	1
T13 93.33-86.67	Yes	Yes	1	1	1	1	1	1	0.5	1
T14 86.67-80.00	Yes	Yes	1	1	1	1	1	1	0.5	1
T15 80.00-73.33	Yes	Yes	1	1	1	1	1	1	1	1
T16 73.33-66.67	Yes	Yes	1	1	1	1	1	1	1	1
T17 66.67-60.00	Yes	Yes	1	1	1	1	1	1	0.5	1
T18 60.00-40.00	Yes	Yes	1	1	1	1	1	1	1	1
T19 40.00-20.00	Yes	Yes	1	1	1	1	1	1	1	1
T20 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

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Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 168.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-136.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 136.00-132.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 132.00-128.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 128.00-124.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 124.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 120.00-115.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 115.00-110.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-105.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 105.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 100.00-93.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 93.33-86.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 86.67-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 80.00-73.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 73.33-66.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 66.67-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T20 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub- Diagonal		Redundant Sub- Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 168.00-160.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)

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Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub- Diagonal		Redundant Sub- Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T2 160.00- 140.00	0.0000	0.75 (3)	0.0000	0.75 (3)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)							0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
T3 140.00- 136.00	0.0000	0.75 (4)	0.0000	0.75 (4)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)							0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T4 136.00- 132.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)							0.0000	0.75 (1)	0.0000	0.75 (1)
T5 132.00- 128.00	0.0000	0.75 (2)	0.0000	0.75 (2)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)							0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
T6 128.00- 124.00	0.0000	0.75 (3)	0.0000	0.75 (3)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)							0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
T7 124.00- 120.00	0.0000	0.75 (4)	0.0000	0.75 (4)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)							0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)

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0.0000	0.75 (3)	0.0000	0.75 (3)				0.0000	0.75 (3)	0.0000	0.75 (3)
0.0000	0.75 (4)	0.0000	0.75 (4)				0.0000	0.75 (4)	0.0000	0.75 (4)

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 168.00-160.00	Flange	0.6250 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 160.00-140.00	Flange	0.6250 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 140.00-136.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 136.00-132.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 132.00-128.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 128.00-124.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 124.00-120.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 120.00-115.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 115.00-110.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 110.00-105.00	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 105.00-100.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	1
T12 100.00-93.33	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 93.33-86.67	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T14 86.67-80.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T15 80.00-73.33	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 73.33-66.67	Flange	0.7500 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	1
T17 66.67-60.00	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T18 60.00-40.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T19 40.00-20.00	Flange	1.0000 A325N	6	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T20 20.00-0.00	Flange	0.7500 A325N	0	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
3/8" ***	B	No	No	Ar (CaAa)	93.00 - 5.00	0.0000	0.18	1	1	0.5000	0.4400		0.01
1/2" ***	B	No	No	Ar (CaAa)	82.00 - 5.00	0.0000	0.17	1	1	0.5000	0.6500		0.16
3/8" ***	B	No	No	Ar (CaAa)	71.00 - 5.00	0.0000	0.3	1	1	0.5000	0.4400		0.01
1/2"	B	No	No	Ar (CaAa)	62.00 - 8.00	0.0000	0.1	2	2	0.5000	0.6300		0.15
1/2"	B	No	No	Ar (CaAa)	68.00 - 62.00	0.0000	0.1	1	1	0.5000	0.6300		0.15
1/4"	B	No	No	Ar (CaAa)	23.00 - 8.00	1.0000	0.12	1	1	0.5000	0.3500		0.06

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	168.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	9.020	0.000	0.10
T2	160.00-140.00	A	0.000	0.000	31.260	0.000	0.24
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	22.550	0.000	0.25
T3	140.00-136.00	A	0.000	0.000	12.504	0.000	0.10
		B	0.000	0.000	8.980	0.000	0.08
		C	0.000	0.000	4.510	0.000	0.05
T4	136.00-132.00	A	0.000	0.000	12.504	0.000	0.10
		B	0.000	0.000	8.980	0.000	0.08
		C	0.000	0.000	4.510	0.000	0.05
T5	132.00-128.00	A	0.000	0.000	12.504	0.000	0.10
		B	0.000	0.000	8.980	0.000	0.08
		C	0.000	0.000	4.510	0.000	0.05
T6	128.00-124.00	A	0.000	0.000	12.504	0.000	0.10
		B	0.000	0.000	8.980	0.000	0.08
		C	0.000	0.000	4.510	0.000	0.05
T7	124.00-120.00	A	0.000	0.000	12.504	0.000	0.10
		B	0.000	0.000	8.980	0.000	0.08
		C	0.000	0.000	4.510	0.000	0.05
T8	120.00-115.00	A	0.000	0.000	25.186	0.000	0.22
		B	0.000	0.000	11.225	0.000	0.10
		C	0.000	0.000	5.638	0.000	0.06
T9	115.00-110.00	A	0.000	0.000	25.186	0.000	0.22
		B	0.000	0.000	11.225	0.000	0.10
		C	0.000	0.000	5.638	0.000	0.06
T10	110.00-105.00	A	0.000	0.000	25.186	0.000	0.22
		B	0.000	0.000	11.225	0.000	0.10
		C	0.000	0.000	5.638	0.000	0.06
T11	105.00-100.00	A	0.000	0.000	25.186	0.000	0.22
		B	0.000	0.000	12.025	0.000	0.11
		C	0.000	0.000	5.638	0.000	0.06
T12	100.00-93.33	A	0.000	0.000	33.582	0.000	0.30
		B	0.000	0.000	16.033	0.000	0.14
		C	0.000	0.000	7.517	0.000	0.08

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T13	93.33-86.67	A	0.000	0.000	33.582	0.000	0.30
		B	0.000	0.000	16.312	0.000	0.14
		C	0.000	0.000	7.517	0.000	0.08
T14	86.67-80.00	A	0.000	0.000	33.582	0.000	0.30
		B	0.000	0.000	16.457	0.000	0.14
		C	0.000	0.000	7.517	0.000	0.08
T15	80.00-73.33	A	0.000	0.000	33.582	0.000	0.30
		B	0.000	0.000	16.760	0.000	0.14
		C	0.000	0.000	7.517	0.000	0.08
T16	73.33-66.67	A	0.000	0.000	33.582	0.000	0.30
		B	0.000	0.000	17.035	0.000	0.14
		C	0.000	0.000	7.517	0.000	0.08
T17	66.67-60.00	A	0.000	0.000	33.582	0.000	0.30
		B	0.000	0.000	17.599	0.000	0.14
		C	0.000	0.000	7.517	0.000	0.08
T18	60.00-40.00	A	0.000	0.000	100.745	0.000	0.89
		B	0.000	0.000	53.680	0.000	0.44
		C	0.000	0.000	22.550	0.000	0.25
T19	40.00-20.00	A	0.000	0.000	100.745	0.000	0.89
		B	0.000	0.000	53.785	0.000	0.44
		C	0.000	0.000	22.550	0.000	0.25
T20	20.00-0.00	A	0.000	0.000	75.649	0.000	0.67
		B	0.000	0.000	40.392	0.000	0.33
		C	0.000	0.000	17.100	0.000	0.19

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} In Face ft ²	C_{AA} Out Face ft ²	Weight K
T1	168.00-160.00	A	1.761	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	28.742	0.000	0.48
T2	160.00-140.00	A	1.745	0.000	0.000	42.986	0.000	0.86
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	71.416	0.000	1.18
T3	140.00-136.00	A	1.731	0.000	0.000	17.143	0.000	0.34
		B		0.000	0.000	23.695	0.000	0.36
		C		0.000	0.000	14.202	0.000	0.23
T4	136.00-132.00	A	1.726	0.000	0.000	17.126	0.000	0.34
		B		0.000	0.000	23.664	0.000	0.36
		C		0.000	0.000	14.174	0.000	0.23
T5	132.00-128.00	A	1.720	0.000	0.000	17.107	0.000	0.34
		B		0.000	0.000	23.631	0.000	0.36
		C		0.000	0.000	14.144	0.000	0.23
T6	128.00-124.00	A	1.715	0.000	0.000	17.088	0.000	0.34
		B		0.000	0.000	23.598	0.000	0.36
		C		0.000	0.000	14.114	0.000	0.23
T7	124.00-120.00	A	1.710	0.000	0.000	17.069	0.000	0.34
		B		0.000	0.000	23.563	0.000	0.35
		C		0.000	0.000	14.083	0.000	0.23
T8	120.00-115.00	A	1.703	0.000	0.000	44.831	0.000	0.81
		B		0.000	0.000	29.404	0.000	0.44
		C		0.000	0.000	17.559	0.000	0.29

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
T9	115.00-110.00	A	1.696	0.000	0.000	44.752	0.000	0.81
		B		0.000	0.000	29.347	0.000	0.44
		C		0.000	0.000	17.508	0.000	0.28
T10	110.00-105.00	A	1.688	0.000	0.000	44.670	0.000	0.81
		B		0.000	0.000	29.287	0.000	0.44
		C		0.000	0.000	17.454	0.000	0.28
T11	105.00-100.00	A	1.680	0.000	0.000	44.584	0.000	0.80
		B		0.000	0.000	31.705	0.000	0.47
		C		0.000	0.000	17.398	0.000	0.28
T12	100.00-93.33	A	1.670	0.000	0.000	59.305	0.000	1.06
		B		0.000	0.000	42.158	0.000	0.63
		C		0.000	0.000	23.105	0.000	0.37
T13	93.33-86.67	A	1.658	0.000	0.000	59.135	0.000	1.06
		B		0.000	0.000	44.398	0.000	0.65
		C		0.000	0.000	22.994	0.000	0.37
T14	86.67-80.00	A	1.646	0.000	0.000	58.953	0.000	1.05
		B		0.000	0.000	45.146	0.000	0.65
		C		0.000	0.000	22.876	0.000	0.37
T15	80.00-73.33	A	1.632	0.000	0.000	58.758	0.000	1.04
		B		0.000	0.000	46.789	0.000	0.67
		C		0.000	0.000	22.748	0.000	0.36
T16	73.33-66.67	A	1.617	0.000	0.000	58.547	0.000	1.04
		B		0.000	0.000	48.631	0.000	0.69
		C		0.000	0.000	22.610	0.000	0.36
T17	66.67-60.00	A	1.601	0.000	0.000	58.317	0.000	1.03
		B		0.000	0.000	51.951	0.000	0.72
		C		0.000	0.000	22.460	0.000	0.35
T18	60.00-40.00	A	1.564	0.000	0.000	173.348	0.000	3.02
		B		0.000	0.000	159.973	0.000	2.12
		C		0.000	0.000	66.332	0.000	1.03
T19	40.00-20.00	A	1.486	0.000	0.000	170.016	0.000	2.90
		B		0.000	0.000	156.762	0.000	2.02
		C		0.000	0.000	64.152	0.000	0.97
T20	20.00-0.00	A	1.331	0.000	0.000	124.245	0.000	2.01
		B		0.000	0.000	113.803	0.000	1.38
		C		0.000	0.000	47.185	0.000	0.67

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
T1	168.00-160.00	-5.1786	4.0761	-9.2116	7.1528
T2	160.00-140.00	-5.7371	-3.0028	-9.7439	1.6146
T3	140.00-136.00	0.7906	-3.1721	-0.1532	0.6006
T4	136.00-132.00	0.8890	-3.4735	-0.1787	0.6912
T5	132.00-128.00	0.8890	-3.4735	-0.1766	0.6858
T6	128.00-124.00	0.8890	-3.4735	-0.1745	0.6801
T7	124.00-120.00	0.8704	-3.4029	-0.1708	0.6687
T8	120.00-115.00	0.3325	-8.3709	-0.6357	-4.5073
T9	115.00-110.00	0.3338	-8.8614	-0.6919	-4.7951
T10	110.00-105.00	0.3352	-9.3401	-0.7459	-5.0769
T11	105.00-100.00	0.9347	-9.6253	0.1241	-5.1726

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Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T12	100.00-93.33	0.9595	-10.1006	0.1155	-5.5546
T13	93.33-86.67	1.0595	-9.9639	0.7495	-5.4857
T14	86.67-80.00	1.1722	-10.4322	1.0288	-5.7587
T15	80.00-73.33	1.4975	-11.5692	1.6845	-6.3298
T16	73.33-66.67	1.7399	-12.0179	2.4796	-6.4338
T17	66.67-60.00	1.9174	-11.5060	3.2428	-6.2398
T18	60.00-40.00	2.2137	-12.5689	3.8100	-7.0723
T19	40.00-20.00	2.5074	-14.2174	4.4058	-8.2624
T20	20.00-0.00	2.1518	-12.9802	3.9909	-7.9662

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	Safety Line 3/8	160.00 - 168.00	0.6000	0.5611
T1	5	Climbing Pegs	160.00 - 168.00	0.6000	0.5611
T1	7	1-5/8"	160.00 - 168.00	0.6000	0.5611
T1	8	1-1/4"	160.00 - 168.00	0.6000	0.5611
T1	9	7/8"	160.00 - 168.00	0.6000	0.5611
T1	10	7/8"	160.00 - 168.00	0.6000	0.5611
T1	11	Feedline Ladder (Af)	160.00 - 168.00	0.6000	0.5611
T2	1	Safety Line 3/8	140.00 - 160.00	0.6000	0.5940
T2	5	Climbing Pegs	140.00 - 160.00	0.6000	0.5940
T2	7	1-5/8"	140.00 - 160.00	0.6000	0.5940
T2	8	1-1/4"	140.00 - 160.00	0.6000	0.5940
T2	9	7/8"	140.00 - 160.00	0.6000	0.5940
T2	10	7/8"	140.00 - 160.00	0.6000	0.5940
T2	11	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.5940
T2	13	1-5/8"	140.00 - 150.00	0.6000	0.5940
T2	14	1-1/4" Hybrid	140.00 - 150.00	0.6000	0.5940
T2	15	Feedline Ladder (Af)	140.00 - 150.00	0.6000	0.5940
T3	1	Safety Line 3/8	136.00 - 140.00	0.6000	0.5146

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T3	5	Climbing Pegs	136.00 - 140.00	0.6000	0.5146
T3	7	1-5/8"	136.00 - 140.00	0.6000	0.5146
T3	8	1-1/4"	136.00 - 140.00	0.6000	0.5146
T3	9	7/8"	136.00 - 140.00	0.6000	0.5146
T3	10	7/8"	136.00 - 140.00	0.6000	0.5146
T3	11	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.5146
T3	13	1-5/8"	136.00 - 140.00	0.6000	0.5146
T3	14	1-1/4" Hybrid	136.00 - 140.00	0.6000	0.5146
T3	15	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.5146
T3	17	1-5/8"	136.00 - 140.00	0.6000	0.5146
T3	18	1-1/4" Hybrid	136.00 - 140.00	0.6000	0.5146
T3	19	0.325" DC Power	136.00 - 140.00	0.6000	0.5146
T3	20	1/2" Fiber	136.00 - 140.00	0.6000	0.5146
T3	21	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.5146
T4	1	Safety Line 3/8	132.00 - 136.00	0.6000	0.6000
T4	5	Climbing Pegs	132.00 - 136.00	0.6000	0.6000
T4	7	1-5/8"	132.00 - 136.00	0.6000	0.6000
T4	8	1-1/4"	132.00 - 136.00	0.6000	0.6000
T4	9	7/8"	132.00 - 136.00	0.6000	0.6000
T4	10	7/8"	132.00 - 136.00	0.6000	0.6000
T4	11	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.6000
T4	13	1-5/8"	132.00 - 136.00	0.6000	0.6000
T4	14	1-1/4" Hybrid	132.00 - 136.00	0.6000	0.6000
T4	15	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.6000
T4	17	1-5/8"	132.00 - 136.00	0.6000	0.6000
T4	18	1-1/4" Hybrid	132.00 - 136.00	0.6000	0.6000
T4	19	0.325" DC Power	132.00 - 136.00	0.6000	0.6000
T4	20	1/2" Fiber	132.00 - 136.00	0.6000	0.6000
T4	21	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T5	1	Safety Line 3/8	128.00 - 132.00	0.6000	0.6000
T5	5	Climbing Pegs	128.00 - 132.00	0.6000	0.6000
T5	7	1-5/8"	128.00 - 132.00	0.6000	0.6000
T5	8	1-1/4"	128.00 - 132.00	0.6000	0.6000
T5	9	7/8"	128.00 - 132.00	0.6000	0.6000
T5	10	7/8"	128.00 - 132.00	0.6000	0.6000
T5	11	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.6000
T5	13	1-5/8"	128.00 - 132.00	0.6000	0.6000
T5	14	1-1/4" Hybrid	128.00 - 132.00	0.6000	0.6000
T5	15	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.6000
T5	17	1-5/8"	128.00 - 132.00	0.6000	0.6000
T5	18	1-1/4" Hybrid	128.00 - 132.00	0.6000	0.6000
T5	19	0.325" DC Power	128.00 - 132.00	0.6000	0.6000
T5	20	1/2" Fiber	128.00 - 132.00	0.6000	0.6000
T5	21	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.6000
T6	1	Safety Line 3/8	124.00 - 128.00	0.6000	0.6000
T6	5	Climbing Pegs	124.00 - 128.00	0.6000	0.6000
T6	7	1-5/8"	124.00 - 128.00	0.6000	0.6000
T6	8	1-1/4"	124.00 - 128.00	0.6000	0.6000
T6	9	7/8"	124.00 - 128.00	0.6000	0.6000
T6	10	7/8"	124.00 - 128.00	0.6000	0.6000
T6	11	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.6000
T6	13	1-5/8"	124.00 - 128.00	0.6000	0.6000
T6	14	1-1/4" Hybrid	124.00 - 128.00	0.6000	0.6000
T6	15	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.6000
T6	17	1-5/8"	124.00 - 128.00	0.6000	0.6000
T6	18	1-1/4" Hybrid	124.00 - 128.00	0.6000	0.6000
T6	19	0.325" DC Power	124.00 - 128.00	0.6000	0.6000
T6	20	1/2" Fiber	124.00 - 128.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T6	21	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.6000
T7	1	Safety Line 3/8	120.00 - 124.00	0.6000	0.6000
T7	5	Climbing Pegs	120.00 - 124.00	0.6000	0.6000
T7	7	1-5/8"	120.00 - 124.00	0.6000	0.6000
T7	8	1-1/4"	120.00 - 124.00	0.6000	0.6000
T7	9	7/8"	120.00 - 124.00	0.6000	0.6000
T7	10	7/8"	120.00 - 124.00	0.6000	0.6000
T7	11	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.6000
T7	13	1-5/8"	120.00 - 124.00	0.6000	0.6000
T7	14	1-1/4" Hybrid	120.00 - 124.00	0.6000	0.6000
T7	15	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.6000
T7	17	1-5/8"	120.00 - 124.00	0.6000	0.6000
T7	18	1-1/4" Hybrid	120.00 - 124.00	0.6000	0.6000
T7	19	0.325" DC Power	120.00 - 124.00	0.6000	0.6000
T7	20	1/2" Fiber	120.00 - 124.00	0.6000	0.6000
T7	21	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.6000
T8	1	Safety Line 3/8	115.00 - 120.00	0.6000	0.6000
T8	5	Climbing Pegs	115.00 - 120.00	0.6000	0.6000
T8	7	1-5/8"	115.00 - 120.00	0.6000	0.6000
T8	8	1-1/4"	115.00 - 120.00	0.6000	0.6000
T8	9	7/8"	115.00 - 120.00	0.6000	0.6000
T8	10	7/8"	115.00 - 120.00	0.6000	0.6000
T8	11	Feedline Ladder (Af)	115.00 - 120.00	0.6000	0.6000
T8	13	1-5/8"	115.00 - 120.00	0.6000	0.6000
T8	14	1-1/4" Hybrid	115.00 - 120.00	0.6000	0.6000
T8	15	Feedline Ladder (Af)	115.00 - 120.00	0.6000	0.6000
T8	17	1-5/8"	115.00 - 120.00	0.6000	0.6000
T8	18	1-1/4" Hybrid	115.00 - 120.00	0.6000	0.6000
T8	19	0.325" DC Power	115.00 - 120.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T8	20	1/2" Fiber	115.00 - 120.00	0.6000	0.6000
T8	21	Feedline Ladder (Af)	115.00 - 120.00	0.6000	0.6000
T8	23	1-1/4"	115.00 - 120.00	0.6000	0.6000
T8	24	3" Conduit	115.00 - 120.00	0.6000	0.6000
T8	25	3/4" DC Power	115.00 - 120.00	0.0000	0.0000
T8	26	5/16" Fiber	115.00 - 120.00	0.0000	0.0000
T8	27	Feedline Ladder (Af)	115.00 - 120.00	0.6000	0.6000
T9	1	Safety Line 3/8	110.00 - 115.00	0.6000	0.6000
T9	5	Climbing Pegs	110.00 - 115.00	0.6000	0.6000
T9	7	1-5/8"	110.00 - 115.00	0.6000	0.6000
T9	8	1-1/4"	110.00 - 115.00	0.6000	0.6000
T9	9	7/8"	110.00 - 115.00	0.6000	0.6000
T9	10	7/8"	110.00 - 115.00	0.6000	0.6000
T9	11	Feedline Ladder (Af)	110.00 - 115.00	0.6000	0.6000
T9	13	1-5/8"	110.00 - 115.00	0.6000	0.6000
T9	14	1-1/4" Hybrid	110.00 - 115.00	0.6000	0.6000
T9	15	Feedline Ladder (Af)	110.00 - 115.00	0.6000	0.6000
T9	17	1-5/8"	110.00 - 115.00	0.6000	0.6000
T9	18	1-1/4" Hybrid	110.00 - 115.00	0.6000	0.6000
T9	19	0.325" DC Power	110.00 - 115.00	0.6000	0.6000
T9	20	1/2" Fiber	110.00 - 115.00	0.6000	0.6000
T9	21	Feedline Ladder (Af)	110.00 - 115.00	0.6000	0.6000
T9	23	1-1/4"	110.00 - 115.00	0.6000	0.6000
T9	24	3" Conduit	110.00 - 115.00	0.6000	0.6000
T9	25	3/4" DC Power	110.00 - 115.00	0.0000	0.0000
T9	26	5/16" Fiber	110.00 - 115.00	0.0000	0.0000
T9	27	Feedline Ladder (Af)	110.00 - 115.00	0.6000	0.6000
T10	1	Safety Line 3/8	105.00 - 110.00	0.6000	0.6000
T10	5	Climbing Pegs	105.00 - 110.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T10	7	1-5/8"	105.00 - 110.00	0.6000	0.6000
T10	8	1-1/4"	105.00 - 110.00	0.6000	0.6000
T10	9	7/8"	105.00 - 110.00	0.6000	0.6000
T10	10	7/8"	105.00 - 110.00	0.6000	0.6000
T10	11	Feedline Ladder (Af)	105.00 - 110.00	0.6000	0.6000
T10	13	1-5/8"	105.00 - 110.00	0.6000	0.6000
T10	14	1-1/4" Hybrid	105.00 - 110.00	0.6000	0.6000
T10	15	Feedline Ladder (Af)	105.00 - 110.00	0.6000	0.6000
T10	17	1-5/8"	105.00 - 110.00	0.6000	0.6000
T10	18	1-1/4" Hybrid	105.00 - 110.00	0.6000	0.6000
T10	19	0.325" DC Power	105.00 - 110.00	0.6000	0.6000
T10	20	1/2" Fiber	105.00 - 110.00	0.6000	0.6000
T10	21	Feedline Ladder (Af)	105.00 - 110.00	0.6000	0.6000
T10	23	1-1/4"	105.00 - 110.00	0.6000	0.6000
T10	24	3" Conduit	105.00 - 110.00	0.6000	0.6000
T10	25	3/4" DC Power	105.00 - 110.00	0.0000	0.0000
T10	26	5/16" Fiber	105.00 - 110.00	0.0000	0.0000
T10	27	Feedline Ladder (Af)	105.00 - 110.00	0.6000	0.6000
T11	1	Safety Line 3/8	100.00 - 105.00	0.6000	0.6000
T11	5	Climbing Pegs	100.00 - 105.00	0.6000	0.6000
T11	7	1-5/8"	100.00 - 105.00	0.6000	0.6000
T11	8	1-1/4"	100.00 - 105.00	0.6000	0.6000
T11	9	7/8"	100.00 - 105.00	0.6000	0.6000
T11	10	7/8"	100.00 - 105.00	0.6000	0.6000
T11	11	Feedline Ladder (Af)	100.00 - 105.00	0.6000	0.6000
T11	13	1-5/8"	100.00 - 105.00	0.6000	0.6000
T11	14	1-1/4" Hybrid	100.00 - 105.00	0.6000	0.6000
T11	15	Feedline Ladder (Af)	100.00 - 105.00	0.6000	0.6000
T11	17	1-5/8"	100.00 - 105.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T11	18	1-1/4" Hybrid	100.00 - 105.00	0.6000	0.6000
T11	19	0.325" DC Power	100.00 - 105.00	0.6000	0.6000
T11	20	1/2" Fiber	100.00 - 105.00	0.6000	0.6000
T11	21	Feedline Ladder (Af)	100.00 - 105.00	0.6000	0.6000
T11	23	1-1/4"	100.00 - 105.00	0.6000	0.6000
T11	24	3" Conduit	100.00 - 105.00	0.6000	0.6000
T11	25	3/4" DC Power	100.00 - 105.00	0.0000	0.0000
T11	26	5/16" Fiber	100.00 - 105.00	0.0000	0.0000
T11	27	Feedline Ladder (Af)	100.00 - 105.00	0.6000	0.6000
T11	29	1.6" Hybrid	100.00 - 105.00	0.6000	0.6000
T12	1	Safety Line 3/8	93.33 - 100.00	0.6000	0.6000
T12	5	Climbing Pegs	93.33 - 100.00	0.6000	0.6000
T12	7	1-5/8"	93.33 - 100.00	0.6000	0.6000
T12	8	1-1/4"	93.33 - 100.00	0.6000	0.6000
T12	9	7/8"	93.33 - 100.00	0.6000	0.6000
T12	10	7/8"	93.33 - 100.00	0.6000	0.6000
T12	11	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T12	13	1-5/8"	93.33 - 100.00	0.6000	0.6000
T12	14	1-1/4" Hybrid	93.33 - 100.00	0.6000	0.6000
T12	15	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T12	17	1-5/8"	93.33 - 100.00	0.6000	0.6000
T12	18	1-1/4" Hybrid	93.33 - 100.00	0.6000	0.6000
T12	19	0.325" DC Power	93.33 - 100.00	0.6000	0.6000
T12	20	1/2" Fiber	93.33 - 100.00	0.6000	0.6000
T12	21	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T12	23	1-1/4"	93.33 - 100.00	0.6000	0.6000
T12	24	3" Conduit	93.33 - 100.00	0.6000	0.6000
T12	25	3/4" DC Power	93.33 - 100.00	0.0000	0.0000
T12	26	5/16" Fiber	93.33 - 100.00	0.0000	0.0000
T12	27	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T12	29	1.6" Hybrid	93.33 - 100.00	0.6000	0.6000
T13	1	Safety Line 3/8	86.67 - 93.33	0.6000	0.6000
T13	5	Climbing Pegs	86.67 - 93.33	0.6000	0.6000
T13	7	1-5/8"	86.67 - 93.33	0.6000	0.6000
T13	8	1-1/4"	86.67 - 93.33	0.6000	0.6000
T13	9	7/8"	86.67 - 93.33	0.6000	0.6000
T13	10	7/8"	86.67 - 93.33	0.6000	0.6000
T13	11	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T13	13	1-5/8"	86.67 - 93.33	0.6000	0.6000
T13	14	1-1/4" Hybrid	86.67 - 93.33	0.6000	0.6000
T13	15	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T13	17	1-5/8"	86.67 - 93.33	0.6000	0.6000
T13	18	1-1/4" Hybrid	86.67 - 93.33	0.6000	0.6000
T13	19	0.325" DC Power	86.67 - 93.33	0.6000	0.6000
T13	20	1/2" Fiber	86.67 - 93.33	0.6000	0.6000
T13	21	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T13	23	1-1/4"	86.67 - 93.33	0.6000	0.6000
T13	24	3" Conduit	86.67 - 93.33	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T13	25	3/4" DC Power	86.67 - 93.33	0.0000	0.0000
T13	26	5/16" Fiber	86.67 - 93.33	0.0000	0.0000
T13	27	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T13	29	1.6" Hybrid	86.67 - 93.33	0.6000	0.6000
T13	31	3/8"	86.67 - 93.00	0.6000	0.6000
T14	1	Safety Line 3/8	80.00 - 86.67	0.6000	0.6000
T14	5	Climbing Pegs	80.00 - 86.67	0.6000	0.6000
T14	7	1-5/8"	80.00 - 86.67	0.6000	0.6000
T14	8	1-1/4"	80.00 - 86.67	0.6000	0.6000
T14	9	7/8"	80.00 - 86.67	0.6000	0.6000
T14	10	7/8"	80.00 - 86.67	0.6000	0.6000
T14	11	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T14	13	1-5/8"	80.00 - 86.67	0.6000	0.6000
T14	14	1-1/4" Hybrid	80.00 - 86.67	0.6000	0.6000
T14	15	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T14	17	1-5/8"	80.00 - 86.67	0.6000	0.6000
T14	18	1-1/4" Hybrid	80.00 - 86.67	0.6000	0.6000
T14	19	0.325" DC Power	80.00 - 86.67	0.6000	0.6000
T14	20	1/2" Fiber	80.00 - 86.67	0.6000	0.6000
T14	21	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T14	23	1-1/4"	80.00 - 86.67	0.6000	0.6000
T14	24	3" Conduit	80.00 - 86.67	0.6000	0.6000
T14	25	3/4" DC Power	80.00 - 86.67	0.0000	0.0000
T14	26	5/16" Fiber	80.00 - 86.67	0.0000	0.0000
T14	27	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T14	29	1.6" Hybrid	80.00 - 86.67	0.6000	0.6000
T14	31	3/8"	80.00 - 86.67	0.6000	0.6000
T14	33	1/2"	80.00 - 82.00	0.6000	0.6000
T15	1	Safety Line 3/8	73.33 - 80.00	0.6000	0.6000
T15	5	Climbing Pegs	73.33 - 80.00	0.6000	0.6000
T15	7	1-5/8"	73.33 - 80.00	0.6000	0.6000
T15	8	1-1/4"	73.33 - 80.00	0.6000	0.6000
T15	9	7/8"	73.33 - 80.00	0.6000	0.6000
T15	10	7/8"	73.33 - 80.00	0.6000	0.6000
T15	11	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T15	13	1-5/8"	73.33 - 80.00	0.6000	0.6000
T15	14	1-1/4" Hybrid	73.33 - 80.00	0.6000	0.6000
T15	15	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T15	17	1-5/8"	73.33 - 80.00	0.6000	0.6000
T15	18	1-1/4" Hybrid	73.33 - 80.00	0.6000	0.6000
T15	19	0.325" DC Power	73.33 - 80.00	0.6000	0.6000
T15	20	1/2" Fiber	73.33 - 80.00	0.6000	0.6000
T15	21	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T15	23	1-1/4"	73.33 - 80.00	0.6000	0.6000
T15	24	3" Conduit	73.33 - 80.00	0.6000	0.6000
T15	25	3/4" DC Power	73.33 - 80.00	0.0000	0.0000
T15	26	5/16" Fiber	73.33 - 80.00	0.0000	0.0000
T15	27	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T15	29	1.6" Hybrid	73.33 - 80.00	0.6000	0.6000
T15	31	3/8"	73.33 - 80.00	0.6000	0.6000
T15	33	1/2"	73.33 - 80.00	0.6000	0.6000
T16	1	Safety Line 3/8	66.67 - 73.33	0.6000	0.6000
T16	5	Climbing Pegs	66.67 - 73.33	0.6000	0.6000
T16	7	1-5/8"	66.67 - 73.33	0.6000	0.6000
T16	8	1-1/4"	66.67 - 73.33	0.6000	0.6000
T16	9	7/8"	66.67 - 73.33	0.6000	0.6000
T16	10	7/8"	66.67 - 73.33	0.6000	0.6000
T16	11	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T16	13	1-5/8"	66.67 - 73.33	0.6000	0.6000
T16	14	1-1/4" Hybrid	66.67 - 73.33	0.6000	0.6000
T16	15	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T16	17	1-5/8"	66.67 - 73.33	0.6000	0.6000
T16	18	1-1/4" Hybrid	66.67 - 73.33	0.6000	0.6000
T16	19	0.325" DC Power	66.67 - 73.33	0.6000	0.6000
T16	20	1/2" Fiber	66.67 - 73.33	0.6000	0.6000
T16	21	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T16	23	1-1/4"	66.67 - 73.33	0.6000	0.6000
T16	24	3" Conduit	66.67 - 73.33	0.6000	0.6000
T16	25	3/4" DC Power	66.67 - 73.33	0.0000	0.0000
T16	26	5/16" Fiber	66.67 - 73.33	0.0000	0.0000
T16	27	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T16	29	1.6" Hybrid	66.67 - 73.33	0.6000	0.6000
T16	31	3/8"	66.67 - 73.33	0.6000	0.6000
T16	33	1/2"	66.67 - 73.33	0.6000	0.6000
T16	35	3/8"	66.67 - 71.00	0.6000	0.6000
T16	38	1/2"	66.67 - 68.00	0.6000	0.6000
T17	1	Safety Line 3/8	60.00 - 66.67	0.6000	0.6000
T17	5	Climbing Pegs	60.00 - 66.67	0.6000	0.6000
T17	7	1-5/8"	60.00 - 66.67	0.6000	0.6000
T17	8	1-1/4"	60.00 - 66.67	0.6000	0.6000
T17	9	7/8"	60.00 - 66.67	0.6000	0.6000
T17	10	7/8"	60.00 - 66.67	0.6000	0.6000
T17	11	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T17	13	1-5/8"	60.00 - 66.67	0.6000	0.6000
T17	14	1-1/4" Hybrid	60.00 - 66.67	0.6000	0.6000
T17	15	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T17	17	1-5/8"	60.00 - 66.67	0.6000	0.6000
T17	18	1-1/4" Hybrid	60.00 - 66.67	0.6000	0.6000
T17	19	0.325" DC Power	60.00 - 66.67	0.6000	0.6000
T17	20	1/2" Fiber	60.00 - 66.67	0.6000	0.6000
T17	21	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T17	23	1-1/4"	60.00 - 66.67	0.6000	0.6000
T17	24	3" Conduit	60.00 - 66.67	0.6000	0.6000
T17	25	3/4" DC Power	60.00 - 66.67	0.0000	0.0000
T17	26	5/16" Fiber	60.00 - 66.67	0.0000	0.0000
T17	27	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T17	29	1.6" Hybrid	60.00 - 66.67	0.6000	0.6000
T17	31	3/8"	60.00 - 66.67	0.6000	0.6000
T17	33	1/2"	60.00 - 66.67	0.6000	0.6000
T17	35	3/8"	60.00 - 66.67	0.6000	0.6000
T17	37	1/2"	60.00 - 62.00	0.6000	0.6000
T17	38	1/2"	62.00 - 66.67	0.6000	0.6000
T18	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T18	5	Climbing Pegs	40.00 - 60.00	0.6000	0.6000
T18	7	1-5/8"	40.00 - 60.00	0.6000	0.6000
T18	8	1-1/4"	40.00 - 60.00	0.6000	0.6000
T18	9	7/8"	40.00 - 60.00	0.6000	0.6000
T18	10	7/8"	40.00 - 60.00	0.6000	0.6000
T18	11	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T18	13	1-5/8"	40.00 - 60.00	0.6000	0.6000
T18	14	1-1/4" Hybrid	40.00 - 60.00	0.6000	0.6000
T18	15	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T18	17	1-5/8"	40.00 - 60.00	0.6000	0.6000
T18	18	1-1/4" Hybrid	40.00 - 60.00	0.6000	0.6000
T18	19	0.325" DC Power	40.00 - 60.00	0.6000	0.6000
T18	20	1/2" Fiber	40.00 - 60.00	0.6000	0.6000

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T18	21	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T18	23	1-1/4"	40.00 - 60.00	0.6000	0.6000
T18	24	3" Conduit	40.00 - 60.00	0.6000	0.6000
T18	25	3/4" DC Power	40.00 - 60.00	0.0000	0.0000
T18	26	5/16" Fiber	40.00 - 60.00	0.0000	0.0000
T18	27	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T18	29	1.6" Hybrid	40.00 - 60.00	0.6000	0.6000
T18	31	3/8"	40.00 - 60.00	0.6000	0.6000
T18	33	1/2"	40.00 - 60.00	0.6000	0.6000
T18	35	3/8"	40.00 - 60.00	0.6000	0.6000
T18	37	1/2"	40.00 - 60.00	0.6000	0.6000
T19	1	Safety Line 3/8"	20.00 - 40.00	0.6000	0.6000
T19	5	Climbing Pegs	20.00 - 40.00	0.6000	0.6000
T19	7	1-5/8"	20.00 - 40.00	0.6000	0.6000
T19	8	1-1/4"	20.00 - 40.00	0.6000	0.6000
T19	9	7/8"	20.00 - 40.00	0.6000	0.6000
T19	10	7/8"	20.00 - 40.00	0.6000	0.6000
T19	11	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T19	13	1-5/8"	20.00 - 40.00	0.6000	0.6000
T19	14	1-1/4" Hybrid	20.00 - 40.00	0.6000	0.6000
T19	15	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T19	17	1-5/8"	20.00 - 40.00	0.6000	0.6000
T19	18	1-1/4" Hybrid	20.00 - 40.00	0.6000	0.6000
T19	19	0.325" DC Power	20.00 - 40.00	0.6000	0.6000
T19	20	1/2" Fiber	20.00 - 40.00	0.6000	0.6000
T19	21	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T19	23	1-1/4"	20.00 - 40.00	0.6000	0.6000
T19	24	3" Conduit	20.00 - 40.00	0.6000	0.6000
T19	25	3/4" DC Power	20.00 - 40.00	0.0000	0.0000
T19	26	5/16" Fiber	20.00 - 40.00	0.0000	0.0000
T19	27	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T19	29	1.6" Hybrid	20.00 - 40.00	0.6000	0.6000
T19	31	3/8"	20.00 - 40.00	0.6000	0.6000
T19	33	1/2"	20.00 - 40.00	0.6000	0.6000
T19	35	3/8"	20.00 - 40.00	0.6000	0.6000
T19	37	1/2"	20.00 - 40.00	0.6000	0.6000
T19	39	1/4"	20.00 - 23.00	0.6000	0.6000
T20	1	Safety Line 3/8"	2.00 - 20.00	0.6000	0.6000
T20	3	Climbing Pegs	0.00 - 6.00	0.6000	0.6000
T20	4	Climbing Pegs	0.00 - 6.00	0.6000	0.6000
T20	5	Climbing Pegs	0.00 - 20.00	0.6000	0.6000
T20	7	1-5/8"	5.00 - 20.00	0.6000	0.6000
T20	8	1-1/4"	5.00 - 20.00	0.6000	0.6000
T20	9	7/8"	5.00 - 20.00	0.6000	0.6000
T20	10	7/8"	5.00 - 20.00	0.6000	0.6000
T20	11	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.6000
T20	13	1-5/8"	5.00 - 20.00	0.6000	0.6000
T20	14	1-1/4" Hybrid	5.00 - 20.00	0.6000	0.6000
T20	15	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.6000
T20	17	1-5/8"	5.00 - 20.00	0.6000	0.6000
T20	18	1-1/4" Hybrid	5.00 - 20.00	0.6000	0.6000
T20	19	0.325" DC Power	5.00 - 20.00	0.6000	0.6000
T20	20	1/2" Fiber	5.00 - 20.00	0.6000	0.6000
T20	21	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.6000
T20	23	1-1/4"	5.00 - 20.00	0.6000	0.6000
T20	24	3" Conduit	5.00 - 20.00	0.6000	0.6000
T20	25	3/4" DC Power	5.00 - 20.00	0.0000	0.0000
T20	26	5/16" Fiber	5.00 - 20.00	0.0000	0.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T20	27	Feedline Ladder (Af)	5.00 - 20.00	0.6000	0.6000
T20	29	1.6" Hybrid	5.00 - 20.00	0.6000	0.6000
T20	31	3/8"	5.00 - 20.00	0.6000	0.6000
T20	33	1/2"	5.00 - 20.00	0.6000	0.6000
T20	35	3/8"	5.00 - 20.00	0.6000	0.6000
T20	37	1/2"	8.00 - 20.00	0.6000	0.6000
T20	39	1/4"	8.00 - 20.00	0.6000	0.6000

User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E _v	E _{lx}	E _{ly}	E _h
	ft	ft	°	K	K	K	K
Seismic Load @168	168.00	0.00	0.0000	0.03	0.00	0.00	0.10
Seismic Load @160	160.00	0.00	0.0000	0.24	0.00	0.00	1.16
Seismic Load @140	140.00	0.00	0.0000	0.08	0.00	0.00	0.28
Seismic Load @136	136.00	0.00	0.0000	0.02	0.00	0.00	0.04
Seismic Load @132	132.00	0.00	0.0000	0.02	0.00	0.00	0.04
Seismic Load @128	128.00	0.00	0.0000	0.02	0.00	0.00	0.04
Seismic Load @124	124.00	0.00	0.0000	0.02	0.00	0.00	0.05
Seismic Load @120	120.00	0.00	0.0000	0.12	0.00	0.00	0.36
Seismic Load @115	115.00	0.00	0.0000	0.03	0.00	0.00	0.07
Seismic Load @110	110.00	0.00	0.0000	0.03	0.00	0.00	0.06
Seismic Load @105	105.00	0.00	0.0000	0.09	0.00	0.00	0.00
Seismic Load @100	100.00	0.00	0.0000	0.04	0.00	0.00	0.00
Seismic Load @93.33	93.33	0.00	0.0000	0.05	0.00	0.00	0.00
Seismic Load @86.67	86.67	0.00	0.0000	0.04	0.00	0.00	0.00
Seismic Load @80	80.00	0.00	0.0000	0.04	0.00	0.00	0.00
Seismic Load @73.33	73.33	0.00	0.0000	0.05	0.00	0.00	0.00
Seismic Load @66.67	66.67	0.00	0.0000	0.05	0.00	0.00	0.00
Seismic Load @60	60.00	0.00	0.0000	0.16	0.00	0.00	0.00
Seismic Load @40	40.00	0.00	0.0000	0.18	0.00	0.00	0.00
Seismic Load @20	20.00	0.00	0.0000	0.17	0.00	0.00	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Vert ft	°	ft	ft ²	ft ²	K
20' Dipole	B	From Leg	0.00	0.0000	168.00	No Ice	4.00	0.04
			0.00			1/2" Ice	6.03	0.07
			10.00			1" Ice	8.07	0.11

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
8' Omni	A	From Leg	0.00 0.00 6.00	0.0000	168.00	2" Ice 12.20 No Ice 1.60 1/2" Ice 2.42 1" Ice 3.24	12.20 1.60 2.42 3.24	0.24 0.02 0.03 0.05
4' x 2" Mount Pipe	A	From Leg	0.00 0.00 2.00	0.0000	168.00	2" Ice 4.23 No Ice 0.79 1/2" Ice 1.03 1" Ice 1.28	4.23 0.79 1.03 1.28	0.10 0.03 0.04 0.04
6' Dipole	C	From Leg	0.00 0.00 5.00	0.0000	168.00	2" Ice 1.81 No Ice 1.77 1/2" Ice 2.13 1" Ice 2.50	1.81 1.77 2.13 2.50	0.07 0.01 0.03 0.04
6' Yagi	A	From Face	0.00 0.00 2.00	0.0000	168.00	2" Ice 3.27 No Ice 1.20 1/2" Ice 1.80 1" Ice 2.17	3.27 1.20 1.80 2.17	0.09 0.03 0.04 0.05
3' x 2" Mount Pipe	A	From Face	0.00 0.00 2.00	0.0000	168.00	2" Ice 2.93 No Ice 0.58 1/2" Ice 0.77 1" Ice 0.97	2.93 0.58 0.77 0.97	0.09 0.01 0.02 0.02
*****						2" Ice 1.39	1.39	0.05
Standoffs	A	From Leg	1.00 0.00 0.00	0.0000	154.00	No Ice 0.81 1/2" Ice 1.30 1" Ice 1.79	3.31 5.00 6.69	0.06 0.08 0.11
Standoffs	B	From Leg	1.00 0.00 0.00	0.0000	154.00	2" Ice 2.77 No Ice 0.81 1/2" Ice 1.30 1" Ice 1.79	10.07 3.31 5.00 6.69	0.17 0.06 0.08 0.11
Standoffs	C	From Leg	1.00 0.00 0.00	0.0000	154.00	2" Ice 2.77 No Ice 0.81 1/2" Ice 1.30 1" Ice 1.79	10.07 3.31 5.00 6.69	0.17 0.06 0.08 0.11
*****						2" Ice 2.77	10.07	0.17
(2) SBNHH-1D65B (72" x 11.85" x 7.1") w/ mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	150.00	No Ice 8.53 1/2" Ice 9.19 1" Ice 9.85	7.24 8.49 9.75	0.08 0.15 0.21
(2) SBNHH-1D65B (72" x 11.85" x 7.1") w/ mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	150.00	2" Ice 11.17 No Ice 8.53 1/2" Ice 9.19 1" Ice 9.85	12.25 7.24 8.49 9.75	0.35 0.08 0.15 0.21
(2) SBNHH-1D65B (72" x 11.85" x 7.1") w/ mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	150.00	2" Ice 11.17 No Ice 8.53 1/2" Ice 9.19 1" Ice 9.85	12.25 7.24 8.49 9.75	0.35 0.08 0.15 0.21
(2) WPA-80063/4CF (47.4" x 11.8" x 3.9") w/ mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	150.00	2" Ice 11.17 No Ice 5.88 1/2" Ice 6.62 1" Ice 7.35	12.25 3.92 5.01 6.11	0.35 0.04 0.09 0.13
(2) WPA-80063/4CF (47.4" x 11.8" x 3.9") w/ mount pipe	B	From Leg	3.00 0.00	0.0000	150.00	2" Ice 8.81 No Ice 5.88 1/2" Ice 6.62	8.30 3.92 5.01	0.22 0.04 0.09

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1" Ice	7.35	6.11	0.13
						2" Ice	8.81	8.30	0.22
						No Ice	5.67	4.15	0.04
(2) WPA-80080/4CF (47.4" x 11.2" x 4.5") w/ mount pipe	C	From Leg	3.00	0.0000	150.00	1/2" Ice	6.40	5.25	0.08
			0.00			1" Ice	7.13	6.35	0.13
			0.00			2" Ice	8.58	8.55	0.22
MT6413 77A (15.75" x 28.9" x 5.51") w/ mount pipe	A	From Leg	3.00	0.0000	150.00	No Ice	5.38	2.63	0.09
			0.00			1/2" Ice	6.27	3.55	0.12
			1.90			1" Ice	7.16	4.47	0.16
						2" Ice	8.94	6.31	0.24
MT6413 77A (15.75" x 28.9" x 5.51") w/ mount pipe	B	From Leg	3.00	0.0000	150.00	No Ice	5.38	2.63	0.09
			0.00			1/2" Ice	6.27	3.55	0.12
			1.90			1" Ice	7.16	4.47	0.16
						2" Ice	8.94	6.31	0.24
MT6413 77A (15.75" x 28.9" x 5.51") w/ mount pipe	C	From Leg	3.00	0.0000	150.00	No Ice	5.38	2.63	0.09
			0.00			1/2" Ice	6.27	3.55	0.12
			1.90			1" Ice	7.16	4.47	0.16
						2" Ice	8.94	6.31	0.24
B2/B66A RRH ORAN (RF4439d-25A) (15" x 15" x 10.04")	A	From Leg	3.00	0.0000	150.00	No Ice	1.88	1.26	0.07
			0.00			1/2" Ice	2.03	1.38	0.09
			0.00			1" Ice	2.18	1.51	0.10
						2" Ice	2.48	1.76	0.13
B2/B66A RRH ORAN (RF4439d-25A) (15" x 15" x 10.04")	B	From Leg	3.00	0.0000	150.00	No Ice	1.88	1.26	0.07
			0.00			1/2" Ice	2.03	1.38	0.09
			0.00			1" Ice	2.18	1.51	0.10
						2" Ice	2.48	1.76	0.13
B2/B66A RRH ORAN (RF4439d-25A) (15" x 15" x 10.04")	C	From Leg	3.00	0.0000	150.00	No Ice	1.88	1.26	0.07
			0.00			1/2" Ice	2.03	1.38	0.09
			0.00			1" Ice	2.18	1.51	0.10
						2" Ice	2.48	1.76	0.13
B5/B13 RRH ORAN (RF4461d-13A) (14.96" x 14.96" x 9.06")	A	From Leg	3.00	0.0000	150.00	No Ice	1.87	1.13	0.08
			0.00			1/2" Ice	2.02	1.25	0.09
			0.00			1" Ice	2.17	1.37	0.11
						2" Ice	2.47	1.62	0.13
B5/B13 RRH ORAN (RF4461d-13A) (14.96" x 14.96" x 9.06")	B	From Leg	3.00	0.0000	150.00	No Ice	1.87	1.13	0.08
			0.00			1/2" Ice	2.02	1.25	0.09
			0.00			1" Ice	2.17	1.37	0.11
						2" Ice	2.47	1.62	0.13
B5/B13 RRH ORAN (RF4461d-13A) (14.96" x 14.96" x 9.06")	C	From Leg	3.00	0.0000	150.00	No Ice	1.87	1.13	0.08
			0.00			1/2" Ice	2.02	1.25	0.09
			0.00			1" Ice	2.17	1.37	0.11
						2" Ice	2.47	1.62	0.13
DB-B1-6C-12AB-0Z (24" x 24" x 10")	B	From Leg	3.00	0.0000	150.00	No Ice	4.80	2.00	0.04
			0.00			1/2" Ice	5.04	2.17	0.08
			0.00			1" Ice	5.28	2.34	0.11
						2" Ice	5.75	2.68	0.17
DB-B1-6C-12AB-0Z (24" x 24" x 10")	C	From Leg	3.00	0.0000	150.00	No Ice	4.80	2.00	0.04
			0.00			1/2" Ice	5.04	2.17	0.08
			0.00			1" Ice	5.28	2.34	0.11
						2" Ice	5.75	2.68	0.17
Dual Antenna Mount	A	From Leg	1.50	0.0000	150.00	No Ice	0.22	0.30	0.07
			0.00			1/2" Ice	0.26	0.35	0.09
			0.00			1" Ice	0.30	0.40	0.10

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
Dual Antenna Mount	B	From Leg	1.50 0.00 0.00	0.0000	150.00	2" Ice 0.38 No Ice 0.22 1/2" Ice 0.26 1" Ice 0.30	0.50 0.30 0.35 0.40	0.14 0.07 0.09 0.10
Dual Antenna Mount	C	From Leg	1.50 0.00 0.00	0.0000	150.00	2" Ice 0.38 No Ice 0.22 1/2" Ice 0.26 1" Ice 0.30	0.50 0.30 0.35 0.40	0.14 0.07 0.09 0.10
Sector Frames	A	From Leg	1.50 0.00 0.00	0.0000	150.00	2" Ice 0.38 No Ice 26.00 1/2" Ice 37.20 1" Ice 48.40	0.50 16.00 23.90 31.80	0.14 0.99 1.23 1.48
Sector Frames	B	From Leg	1.50 0.00 0.00	0.0000	150.00	2" Ice 70.80 No Ice 26.00 1/2" Ice 37.20 1" Ice 48.40	47.60 16.00 23.90 31.80	1.97 0.99 1.23 1.48
Sector Frames	C	From Leg	1.50 0.00 0.00	0.0000	150.00	2" Ice 70.80 No Ice 26.00 1/2" Ice 37.20 1" Ice 48.40	47.60 16.00 23.90 31.80	1.97 0.99 1.23 1.48
*****						2" Ice 70.80	47.60	1.97
APX16DWV-16DWVS-E-A20 (55.9" x 13" x 3.15") w/ mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 7.25 1/2" Ice 7.97 1" Ice 8.68 2" Ice 10.11	4.05 5.19 6.33 8.61	0.07 0.12 0.18 0.28
APX16DWV-16DWVS-E-A20 (55.9" x 13" x 3.15") w/ mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 7.25 1/2" Ice 7.97 1" Ice 8.68 2" Ice 10.11	4.05 5.19 6.33 8.61	0.07 0.12 0.18 0.28
APX16DWV-16DWVS-E-A20 (55.9" x 13" x 3.15") w/ mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 7.25 1/2" Ice 7.97 1" Ice 8.68 2" Ice 10.11	4.05 5.19 6.33 8.61	0.07 0.12 0.18 0.28
APXVAALL24_43-U-NA20 (95.9" x 24" x 8.5") w/ mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 20.24 1/2" Ice 20.90 1" Ice 21.56 2" Ice 22.87	10.63 12.03 13.43 16.22	0.15 0.29 0.43 0.72
APXVAALL24_43-U-NA20 (95.9" x 24" x 8.5") w/ mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 20.24 1/2" Ice 20.90 1" Ice 21.56 2" Ice 22.87	10.63 12.03 13.43 16.22	0.15 0.29 0.43 0.72
APXVAALL24_43-U-NA20 (95.9" x 24" x 8.5") w/ mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 20.24 1/2" Ice 20.90 1" Ice 21.56 2" Ice 22.87	10.63 12.03 13.43 16.22	0.15 0.29 0.43 0.72
Twin Style 1A-PCS (14" x 7" x 2.7")	A	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 0.82 1/2" Ice 0.92 1" Ice 1.03 2" Ice 1.24	0.35 0.44 0.54 0.73	0.02 0.02 0.03 0.04
Twin Style 1A-PCS (14" x 7" x 2.7")	B	From Leg	3.00 0.00 0.00	0.0000	140.00	No Ice 0.82 1/2" Ice 0.92 1" Ice 1.03	0.35 0.44 0.54	0.02 0.02 0.03

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Twin Style 1A-PCS (14" x 7" x 2.7")	C	From Leg	3.00	0.0000	140.00	2" Ice	1.24	0.73	0.04
			0.00			No Ice	0.82	0.35	0.02
			0.00			1/2" Ice	0.92	0.44	0.02
			0.00			1" Ice	1.03	0.54	0.03
4449 B71 + B12 (13.1" x 14.9" x 9.2")	A	From Leg	3.00	0.0000	140.00	2" Ice	1.24	0.73	0.04
			0.00			No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.77	1.12	0.09
			0.00			1" Ice	1.91	1.23	0.10
4449 B71 + B12 (13.1" x 14.9" x 9.2")	B	From Leg	3.00	0.0000	140.00	2" Ice	2.19	1.46	0.12
			0.00			No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.77	1.12	0.09
			0.00			1" Ice	1.91	1.23	0.10
4449 B71 + B12 (13.1" x 14.9" x 9.2")	C	From Leg	3.00	0.0000	140.00	2" Ice	2.19	1.46	0.12
			0.00			No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.77	1.12	0.09
			0.00			1" Ice	1.91	1.23	0.10
4415 B66A (16.5" x 13.4" x 6.2")	A	From Leg	3.00	0.0000	140.00	2" Ice	2.19	1.46	0.12
			0.00			No Ice	1.63	1.00	0.07
			0.00			1/2" Ice	1.77	1.12	0.09
			0.00			1" Ice	1.91	1.23	0.10
4415 B66A (16.5" x 13.4" x 6.2")	B	From Leg	3.00	0.0000	140.00	2" Ice	2.19	1.46	0.12
			0.00			No Ice	1.84	0.86	0.05
			0.00			1/2" Ice	1.99	0.99	0.06
			0.00			1" Ice	2.14	1.11	0.07
4415 B66A (16.5" x 13.4" x 6.2")	C	From Leg	3.00	0.0000	140.00	2" Ice	2.44	1.37	0.10
			0.00			No Ice	1.84	0.86	0.05
			0.00			1/2" Ice	1.99	0.99	0.06
			0.00			1" Ice	2.14	1.11	0.07
(2) RFU-D (9.05" x 9.17" x 3.85")	B	From Leg	3.00	0.0000	140.00	2" Ice	2.44	1.37	0.10
			0.00			No Ice	0.69	0.29	0.01
			0.00			1/2" Ice	0.79	0.36	0.02
			0.00			1" Ice	0.88	0.43	0.02
Dish Mount Pipe	B	From Leg	3.00	0.0000	140.00	2" Ice	1.07	0.56	0.03
			0.00			No Ice	1.21	1.21	0.04
			0.00			1/2" Ice	1.58	1.58	0.06
			0.00			1" Ice	1.84	1.84	0.07
Standoffs	A	From Leg	1.50	0.0000	140.00	2" Ice	2.40	2.40	0.11
			0.00			No Ice	3.56	14.50	0.15
			0.00			1/2" Ice	4.62	17.75	0.22
			0.00			1" Ice	5.67	21.00	0.30
Standoffs	B	From Leg	1.50	0.0000	140.00	2" Ice	7.78	27.49	0.45
			0.00			No Ice	3.56	14.50	0.15
			0.00			1/2" Ice	4.62	17.75	0.22
			0.00			1" Ice	5.67	21.00	0.30
Standoffs	C	From Leg	1.50	0.0000	140.00	2" Ice	7.78	27.49	0.45
			0.00			No Ice	3.56	14.50	0.15
			0.00			1/2" Ice	4.62	17.75	0.22
			0.00			1" Ice	5.67	21.00	0.30

7770 (55" x 11" x 5") w/ mount pipe	A	From Leg	3.00	0.0000	120.00	No Ice	6.32	4.83	0.06
			0.00			1/2" Ice	7.03	5.97	0.11
			0.00			1" Ice	7.73	7.12	0.15

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
7770 (55" x 11" x 5") w/ mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 9.14 No Ice 6.32 1/2" Ice 7.03 1" Ice 7.73	9.41 4.83 5.97 7.12	0.25 0.06 0.11 0.15
7770 (55" x 11" x 5") w/ mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 9.14 No Ice 6.32 1/2" Ice 7.03 1" Ice 7.73	9.41 4.83 5.97 7.12	0.25 0.06 0.11 0.15
SBNH-1D6565C (96.4" x 11.9" x 7.1") w/ mount pipe	A	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 9.14 No Ice 11.91 1/2" Ice 12.73 1" Ice 13.54	9.41 10.07 11.66 13.25	0.25 0.10 0.19 0.28
AM-X-CW-16-65-00T-RET (72" x 11.8" x 5.9") w/ mount pipe	B	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 15.17 No Ice 8.50 1/2" Ice 9.16 1" Ice 9.82	16.44 6.54 7.79 9.03	0.45 0.07 0.14 0.20
P65-17-XLH-RR (96" x 12" x 6") w/ mount pipe	C	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 11.14 No Ice 11.47 1/2" Ice 12.08 1" Ice 12.70	11.53 8.70 10.08 11.47	0.33 0.10 0.18 0.26
(2) 21401 (14" x 7" x 2.7")	A	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 13.93 No Ice 0.82 1/2" Ice 0.92 1" Ice 1.03	14.23 0.35 0.44 0.54	0.43 0.02 0.02 0.03
(2) 21401 (14" x 7" x 2.7")	B	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 1.24 No Ice 0.82 1/2" Ice 0.92 1" Ice 1.03	0.73 0.35 0.44 0.54	0.04 0.02 0.02 0.03
(2) 21401 (14" x 7" x 2.7")	C	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 1.24 No Ice 0.82 1/2" Ice 0.92 1" Ice 1.03	0.73 0.35 0.44 0.54	0.04 0.02 0.02 0.03
(2) 782 10250 (11" x 4.9" x 2.5")	A	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 1.24 No Ice 0.45 1/2" Ice 0.53 1" Ice 0.61	0.73 0.25 0.32 0.40	0.04 0.01 0.01 0.01
(2) 782 10250 (11" x 4.9" x 2.5")	B	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 0.78 No Ice 0.45 1/2" Ice 0.53 1" Ice 0.61	0.56 0.25 0.32 0.40	0.02 0.01 0.01 0.01
(2) 782 10250 (11" x 4.9" x 2.5")	C	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 0.78 No Ice 0.45 1/2" Ice 0.53 1" Ice 0.61	0.56 0.25 0.32 0.40	0.02 0.01 0.01 0.01
(2) RRU 11 (17" x 17.8" x 9.2")	A	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 0.78 No Ice 2.52 1/2" Ice 2.70 1" Ice 2.87	0.56 1.30 1.44 1.57	0.02 0.05 0.07 0.09
(2) RRU 11 (17" x 17.8" x 9.2")	B	From Leg	3.00 0.00 0.00	0.0000	120.00	2" Ice 3.22 No Ice 2.52 1/2" Ice 2.70 1" Ice 2.87	1.83 1.30 1.44 1.57	0.13 0.05 0.07 0.09
						2" Ice 3.22	1.83	0.13

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) RRU 11 (17" x 17.8" x 9.2")	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.52 2.70 2.87 3.22	1.30 1.44 1.57 1.83	0.05 0.07 0.09 0.13
RRUS 11-700 (17" x 17.8" x 7.2")	A	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.52 2.70 2.87 3.22	1.02 1.14 1.27 1.51	0.06 0.07 0.09 0.12
RRUS 11-700 (17" x 17.8" x 7.2")	B	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.52 2.70 2.87 3.22	1.02 1.14 1.27 1.51	0.06 0.07 0.09 0.12
RRUS 11-700 (17" x 17.8" x 7.2")	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.52 2.70 2.87 3.22	1.02 1.14 1.27 1.51	0.06 0.07 0.09 0.12
DC6-48-60-18-8F (24" x 11" x 18.5")	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.38 2.55 2.90	3.70 3.91 4.12 4.55	0.03 0.06 0.09 0.14
(2) Empty Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.56 5.22	1.90 2.73 3.56 5.22	0.07 0.08 0.10 0.13
(2) Empty Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.56 5.22	1.90 2.73 3.56 5.22	0.07 0.08 0.10 0.13
(2) Empty Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.56 5.22	1.90 2.73 3.56 5.22	0.07 0.08 0.10 0.13
Sector Frames	A	From Leg	1.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.72 13.66 17.62 25.54	7.05 9.87 12.69 18.33	0.28 0.40 0.52 0.76
Sector Frames	B	From Leg	1.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.72 13.66 17.62 25.54	7.05 9.87 12.69 18.33	0.28 0.40 0.52 0.76
Sector Frames	C	From Leg	1.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.72 13.66 17.62 25.54	7.05 9.87 12.69 18.33	0.28 0.40 0.52 0.76

MX08FRO665-21 (72" x 20" x 8")	A	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.49 12.99 13.50 14.50	5.87 6.32 6.78 7.70	0.06 0.15 0.23 0.39
MX08FRO665-21 (72" x 20" x 8")	B	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.49 12.99 13.50 14.50	5.87 6.32 6.78 7.70	0.06 0.15 0.23 0.39

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
MX08FRO665-21 (72" x 20" x 8")	C	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.49 12.99 13.50 14.50	5.87 6.32 6.78 7.70	0.06 0.15 0.23 0.39
TA08025-B605 (15.75" x 14.96" x 9.05")	A	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.12 2.27 2.58	1.19 1.31 1.44 1.69	0.07 0.09 0.10 0.13
TA08025-B605 (15.75" x 14.96" x 9.05")	B	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.12 2.27 2.58	1.19 1.31 1.44 1.69	0.07 0.09 0.10 0.13
TA08025-B605 (15.75" x 14.96" x 9.05")	C	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.12 2.27 2.58	1.19 1.31 1.44 1.69	0.07 0.09 0.10 0.13
TA08025-B604 (15.75" x 14.96" x 7.87")	A	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.12 2.27 2.58	1.03 1.15 1.27 1.51	0.06 0.08 0.09 0.12
TA08025-B604 (15.75" x 14.96" x 7.87")	B	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.12 2.27 2.58	1.03 1.15 1.27 1.51	0.06 0.08 0.09 0.12
TA08025-B604 (15.75" x 14.96" x 7.87")	C	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.12 2.27 2.58	1.03 1.15 1.27 1.51	0.06 0.08 0.09 0.12
RDIDC-9181-PF-48 (16.57" x 14.57" x 8.15")	C	From Leg	3.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.01 2.17 2.32 2.64	1.13 1.25 1.38 1.63	0.02 0.04 0.05 0.08
Sector Frames + (3) Mount Pipes	A	From Leg	1.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	10.60 16.40 22.20 33.80	8.10 12.60 17.10 26.10	0.35 0.44 0.53 0.70
Sector Frames + (3) Mount Pipes	B	From Leg	1.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	10.60 16.40 22.20 33.80	8.10 12.60 17.10 26.10	0.35 0.44 0.53 0.70
Sector Frames + (3) Mount Pipes	C	From Leg	1.50 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice 2" Ice	10.60 16.40 22.20 33.80	8.10 12.60 17.10 26.10	0.35 0.44 0.53 0.70
***** Dipole	B	From Leg	6.00 0.00 0.00	0.0000	93.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 3.62 4.87 7.35	2.40 3.62 4.87 7.35	0.03 0.04 0.07 0.15
***** (2) Empty Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.56	1.90 2.73 3.56	0.07 0.08 0.10

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<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_AA₁ Front ft²</i>	<i>C_AA₁ Side ft²</i>	<i>Weight K</i>
T-Frame	B	From Leg	1.50 0.00 0.00	0.0000	87.00	2" Ice 5.22 No Ice 3.09 1/2" Ice 3.86 1" Ice 4.64 2" Ice 6.18	5.22 0.01 0.04 0.07 0.13	0.13 0.16 0.25 0.34 0.52
***** GPS	B	From Leg	0.00 0.00 0.00	0.0000	82.00	No Ice 0.12 1/2" Ice 0.21 1" Ice 0.28 2" Ice 0.44	0.12 0.21 0.28 0.44	0.00 0.00 0.01 0.02
***** 12' Dipole	B	From Leg	6.00 0.00 0.00	0.0000	71.00	No Ice 2.40 1/2" Ice 3.62 1" Ice 4.87 2" Ice 7.35	2.40 3.62 4.87 7.35	0.03 0.04 0.07 0.15
*** Flood Light	B	From Leg	0.50 0.00 0.00	0.0000	68.00	No Ice 1.50 1/2" Ice 1.65 1" Ice 1.81 2" Ice 2.16	0.75 0.87 1.00 1.28	0.02 0.03 0.05 0.08
Flood Light	A	From Leg	0.50 0.00 0.00	0.0000	62.00	No Ice 1.50 1/2" Ice 1.65 1" Ice 1.81 2" Ice 2.16	0.75 0.87 1.00 1.28	0.02 0.03 0.05 0.08
Camera	A	From Leg	0.50 0.00 0.00	0.0000	23.00	No Ice 0.11 1/2" Ice 0.16 1" Ice 0.21 2" Ice 0.34	0.05 0.08 0.12 0.22	0.00 0.00 0.01 0.01
*** L3x3x3/16 - (7") Ineffective Mod	A	From Face	0.00 0.00 0.00	0.0000	102.50	No Ice 2.10 1/2" Ice 2.59 1" Ice 3.08 2" Ice 4.09	0.07 0.11 0.16 0.27	0.03 0.05 0.07 0.14
L3x3x3/16 - (7") Ineffective Mod	B	From Face	0.00 0.00 0.00	0.0000	102.50	No Ice 2.10 1/2" Ice 2.59 1" Ice 3.08 2" Ice 4.09	0.07 0.11 0.16 0.27	0.03 0.05 0.07 0.14
L3x3x3/16 - (7") Ineffective Mod	C	From Face	0.00 0.00 0.00	0.0000	102.50	No Ice 2.10 1/2" Ice 2.59 1" Ice 3.08 2" Ice 4.09	0.07 0.11 0.16 0.27	0.03 0.05 0.07 0.14
L3x3x3/16 - (11.5') Ineffective Mod	A	From Face	0.00 0.00 0.00	0.0000	70.00	No Ice 3.45 1/2" Ice 4.24 1" Ice 5.03 2" Ice 6.64	0.01 0.03 0.06 0.14	0.04 0.06 0.09 0.18
L3x3x3/16 - (11.5') Ineffective Mod	B	From Face	0.00 0.00 0.00	0.0000	70.00	No Ice 3.45 1/2" Ice 4.24 1" Ice 5.03 2" Ice 6.64	0.01 0.03 0.06 0.14	0.04 0.06 0.09 0.18
L3x3x3/16 - (11.5') Ineffective Mod	C	From Face	0.00 0.00 0.00	0.0000	70.00	No Ice 3.45 1/2" Ice 4.24 1" Ice 5.03 2" Ice 6.64	0.01 0.03 0.06 0.14	0.04 0.06 0.09 0.18

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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft	°	°	ft	ft	ft ²	K
VHLP2-11W/A	B	Paraboloid w/Radome	From Leg	3.00 0.00 0.00	-5.0000		140.00	2.17	No Ice 3.44 1/2" Ice 3.72 1" Ice 4.00 2" Ice 4.55	0.05 0.06 0.08 0.13

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp

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Comb. No.	Description
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
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	168 - 160	4.957	43	0.2654	0.0189
T2	160 - 140	4.512	43	0.2650	0.0190
T3	140 - 136	3.403	43	0.2562	0.0186
T4	136 - 132	3.184	43	0.2505	0.0179
T5	132 - 128	2.972	43	0.2424	0.0172
T6	128 - 124	2.767	43	0.2320	0.0165
T7	124 - 120	2.572	43	0.2191	0.0157
T8	120 - 115	2.387	43	0.2109	0.0149
T9	115 - 110	2.163	43	0.2009	0.0138

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T10	110 - 105	1.952	43	0.1903	0.0127
T11	105 - 100	1.752	43	0.1792	0.0118
T12	100 - 93.3333	1.562	43	0.1677	0.0112
T13	93.3333 - 86.6667	1.331	43	0.1522	0.0105
T14	86.6667 - 80	1.122	43	0.1362	0.0096
T15	80 - 73.3333	0.934	43	0.1196	0.0087
T16	73.3333 - 66.6667	0.771	43	0.1055	0.0079
T17	66.6667 - 60	0.626	43	0.0912	0.0071
T18	60 - 40	0.502	43	0.0769	0.0062
T19	40 - 20	0.225	43	0.0456	0.0038
T20	20 - 0	0.065	43	0.0227	0.0019

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.00	20' Dipole	43	4.957	0.2654	0.0189	Inf
160.00	Seismic Load @160	43	4.512	0.2650	0.0190	Inf
154.00	Standoffs	43	4.178	0.2644	0.0191	493209
150.00	(2) SBNHH-1D65B (72" x 11.85" x 7.1") w/ mount pipe	43	3.956	0.2635	0.0192	276892
140.00	VHLP2-11W/A	43	3.403	0.2562	0.0186	73810
136.00	Seismic Load @136	43	3.184	0.2505	0.0179	31847
132.00	Seismic Load @132	43	2.972	0.2424	0.0172	26259
128.00	Seismic Load @128	43	2.767	0.2320	0.0165	20936
124.00	Seismic Load @124	43	2.572	0.2191	0.0157	18855
120.00	7770 (55" x 11" x 5") w/ mount pipe	43	2.387	0.2109	0.0149	34373
115.00	Seismic Load @115	43	2.163	0.2009	0.0138	22521
110.00	Seismic Load @110	43	1.952	0.1903	0.0127	27862
105.00	MX08FRO665-21 (72" x 20" x 8")	43	1.752	0.1792	0.0118	30729
102.50	L3x3x3/16 - (7') Ineffective Mod	43	1.656	0.1735	0.0115	25052
100.00	Seismic Load @100	43	1.562	0.1677	0.0112	21332
93.33	Seismic Load @93.33	43	1.331	0.1522	0.0105	23752
93.00	Dipole	43	1.320	0.1514	0.0104	23936
87.00	(2) Empty Mount Pipe	43	1.132	0.1370	0.0096	24894
86.67	Seismic Load @86.67	43	1.122	0.1362	0.0096	24782
82.00	GPS	43	0.988	0.1244	0.0089	22120
80.00	Seismic Load @80	43	0.934	0.1196	0.0087	21985
73.33	Seismic Load @73.33	43	0.771	0.1055	0.0079	29016
71.00	12' Dipole	43	0.718	0.1006	0.0076	28384
70.00	L3x3x3/16 - (11.5') Ineffective Mod	43	0.696	0.0985	0.0075	27488
68.00	Flood Light	43	0.654	0.0942	0.0072	25917
66.67	Seismic Load @66.67	43	0.626	0.0913	0.0071	25556
62.00	Flood Light	43	0.537	0.0811	0.0064	29063
60.00	Seismic Load @60	43	0.502	0.0769	0.0062	31324
40.00	Seismic Load @40	43	0.225	0.0456	0.0038	42895
23.00	Camera	43	0.082	0.0261	0.0022	42163
20.00	Seismic Load @20	43	0.065	0.0227	0.0019	43679

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Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	168 - 160	19.213	11	1.0299	0.0729
T2	160 - 140	17.486	11	1.0283	0.0732
T3	140 - 136	13.183	11	0.9930	0.0719
T4	136 - 132	12.337	11	0.9705	0.0692
T5	132 - 128	11.515	11	0.9393	0.0664
T6	128 - 124	10.722	11	0.8991	0.0635
T7	124 - 120	9.963	11	0.8491	0.0606
T8	120 - 115	9.246	11	0.8177	0.0577
T9	115 - 110	8.378	11	0.7785	0.0532
T10	110 - 105	7.562	11	0.7375	0.0492
T11	105 - 100	6.787	11	0.6946	0.0457
T12	100 - 93.3333	6.051	11	0.6496	0.0434
T13	93.3333 - 86.6667	5.154	11	0.5892	0.0405
T14	86.6667 - 80	4.344	11	0.5270	0.0371
T15	80 - 73.3333	3.620	11	0.4632	0.0335
T16	73.3333 - 66.6667	2.986	11	0.4087	0.0305
T17	66.6667 - 60	2.426	11	0.3535	0.0273
T18	60 - 40	1.945	11	0.2981	0.0239
T19	40 - 20	0.870	11	0.1768	0.0147
T20	20 - 0	0.251	11	0.0882	0.0074

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.00	20' Dipole	11	19.213	1.0299	0.0729	624822
160.00	Seismic Load @160	11	17.486	1.0283	0.0732	627562
154.00	Standoffs	11	16.190	1.0258	0.0739	145061
150.00	(2) SBNHH-1D65B (72" x 11.85" x 7.1") w/ mount pipe	11	15.327	1.0216	0.0742	78470
140.00	VHLP2-11W/A	11	13.183	0.9930	0.0719	19725
136.00	Seismic Load @136	11	12.337	0.9705	0.0692	8226
132.00	Seismic Load @132	11	11.515	0.9393	0.0664	6787
128.00	Seismic Load @128	11	10.722	0.8991	0.0635	5413
124.00	Seismic Load @124	11	9.963	0.8491	0.0606	4873
120.00	7770 (55" x 11" x 5") w/ mount pipe	11	9.246	0.8177	0.0577	8861
115.00	Seismic Load @115	11	8.378	0.7785	0.0532	5799
110.00	Seismic Load @110	11	7.562	0.7375	0.0492	7165
105.00	MX08FRO665-21 (72" x 20" x 8")	11	6.787	0.6946	0.0457	7898
102.50	L3x3x3/16 - (7") Ineffective Mod	11	6.413	0.6722	0.0445	6440
100.00	Seismic Load @100	11	6.051	0.6496	0.0434	5485
93.33	Seismic Load @93.33	11	5.153	0.5891	0.0405	6114
93.00	Dipole	11	5.111	0.5861	0.0403	6162
87.00	(2) Empty Mount Pipe	11	4.383	0.5303	0.0373	6431
86.67	Seismic Load @86.67	11	4.345	0.5271	0.0371	6404
82.00	GPS	11	3.827	0.4816	0.0345	5734
80.00	Seismic Load @80	11	3.620	0.4632	0.0335	5701

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
73.33	Seismic Load @73.33	11	2.986	0.4087	0.0305	7492
71.00	12' Dipole	11	2.782	0.3898	0.0294	7332
70.00	L3x3x3/16 - (11.5') Ineffective Mod	11	2.697	0.3815	0.0289	7105
68.00	Flood Light	11	2.532	0.3648	0.0280	6706
66.67	Seismic Load @66.67	11	2.426	0.3536	0.0273	6615
62.00	Flood Light	11	2.081	0.3142	0.0249	7513
60.00	Seismic Load @60	11	1.945	0.2981	0.0239	8090
40.00	Seismic Load @40	11	0.870	0.1768	0.0147	11065
23.00	Camera	11	0.316	0.1011	0.0084	10859
20.00	Seismic Load @20	11	0.251	0.0882	0.0074	11247

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	168	Leg	A325N	0.6250	4	0.18	20.34	0.009	1	Bolt Tension
		Diagonal	A325N	0.6250	1	0.33	6.53	0.051	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.05	6.53	0.008	1	Member Block Shear
T2	160	Leg	A325N	0.6250	4	2.57	20.34	0.127	1	Bolt Tension
		Diagonal	A325N	0.6250	1	2.79	6.53	0.428	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.27	6.53	0.041	1	Member Block Shear
T3	140	Diagonal	A325N	0.6250	1	4.12	6.53	0.631	1	Member Block Shear
		Top Girt	A325N	0.6250	1	0.38	6.53	0.059	1	Member Block Shear
T4	136	Diagonal	A325N	0.6250	1	4.43	6.53	0.680	1	Member Block Shear
T5	132	Diagonal	A325N	0.6250	1	4.54	6.53	0.696	1	Member Block Shear
T6	128	Diagonal	A325N	0.6250	1	4.81	6.53	0.737	1	Member Block Shear
T7	124	Leg	A325N	0.7500	4	11.13	30.10	0.370	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.94	6.53	0.758	1	Member Block Shear
T8	120	Diagonal	A325N	0.6250	1	4.28	6.53	0.655	1	Member Block Shear
T9	115	Diagonal	A325N	0.6250	1	4.39	6.53	0.673	1	Member Block Shear
T10	110	Diagonal	A325N	0.6250	1	4.13	6.53	0.632	1	Member Block Shear
T11	105	Leg	A325N	0.8750	4	18.54	41.56	0.446	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4.70	6.53	0.720	1	Member Block Shear
T12	100	Diagonal	A325N	0.6250	1	5.02	8.48	0.592	1	Member Bearing
T13	93.3333	Diagonal	A325N	0.6250	1	5.13	8.48	0.604	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	2	0.94	6.17	0.152	1	Member Block Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T14	86.6667	Leg	A325N	0.8750	4	24.86	41.56	0.598	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5.09	8.48	0.601	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	2	1.02	6.17	0.166	1	Member Block Shear
T15	80	Diagonal	A325N	0.6250	1	5.13	11.31	0.453	1	Member Bearing
T16	73.3333	Diagonal	A325N	0.6250	1	5.21	11.31	0.461	1	Member Bearing
T17	66.6667	Leg	A325N	0.8750	4	31.00	41.56	0.746	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5.27	11.31	0.466	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	2	1.27	6.17	0.205	1	Member Block Shear
T18	60	Leg	A325N	1.0000	4	36.67	54.52	0.673	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5.52	11.31	0.488	1	Member Bearing
T19	40	Leg	A325N	1.0000	6	27.59	54.52	0.506	1	Bolt Tension
		Diagonal	A325N	0.7500	1	6.24	14.36	0.435	1	Member Bearing
T20	20	Diagonal	A325N	0.7500	1	6.44	14.36	0.449	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	168 - 160	P2.5 STD	8.00	4.00	50.7 K=1.00	1.7040	-1.45	63.56	0.023 ¹
T2	160 - 140	P2.5 STD	20.00	4.00	50.7 K=1.00	1.7040	-15.54	63.56	0.245 ¹
T3	140 - 136	P2.5 STD	4.00	4.00	50.7 K=1.00	1.7040	-22.09	63.56	0.348 ¹
T4	136 - 132	P2.5 STD	4.00	4.00	50.7 K=1.00	1.7040	-29.76	63.56	0.468 ¹
T5	132 - 128	P2.5 STD	4.00	4.00	50.7 K=1.00	1.7040	-37.23	63.56	0.586 ¹
T6	128 - 124	P2.5 STD	4.00	4.00	50.7 K=1.00	1.7040	-45.67	63.56	0.719 ¹
T7	124 - 120	P 2-1/2 STD w/ Split P 3 X-STR [CT24369 T7]	4.00	4.00	52.2 K=1.00	3.2120	-53.73	88.02	0.611 ¹
T8	120 - 115	P 3 STD w/ Split P 3-1/2 STD [CT24369 T8]	5.01	5.01	52.7 K=1.00	3.5682	-62.96	97.49	0.646 ¹
T9	115 - 110	P 3 STD w/ Split P 3-1/2 STD [CT24369 T9]	5.01	5.01	52.7 K=1.00	3.5682	-72.39	97.49	0.743 ¹
T10	110 - 105	P 3 STD w/ Split P 3-1/2 STD [CT24369 T10]	5.01	5.01	52.7 K=1.00	3.5682	-79.56	97.49	0.816 ¹
T11	105 - 100	P 3 STD w/ Split P 3-1/2 STD [CT24369 T11]	5.01	5.01	52.7 K=1.00	3.5682	-88.61	97.49	0.909 ¹
T12	100 - 93.3333	P3.5 X-STR	6.68	6.68	61.3 K=1.00	3.6784	-97.65	125.72	0.777 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T13	93.3333 - 86.6667	P3.5 X-STR	6.68	3.46	31.7 K=1.00	3.6784	-108.23	153.77	0.704 ¹
T14	86.6667 - 80	P3.5 X-STR	6.68	3.45	31.7 K=1.00	3.6784	-117.92	153.82	0.767 ¹
T15	80 - 73.3333	P4 X-STR	6.68	6.68	54.3 K=1.00	4.4074	-128.03	159.91	0.801 ¹
T16	73.3333 - 66.6667	P4 X-STR	6.68	6.68	54.3 K=1.00	4.4074	-137.36	159.91	0.859 ¹
T17	66.6667 - 60	P4 X-STR	6.68	3.43	27.9 K=1.00	4.4074	-146.10	187.38	0.780 ¹
T18	60 - 40	P5 X-STR	20.04	6.68	43.6 K=1.00	6.1114	-172.76	239.35	0.722 ¹
T19	40 - 20	P6 X-STR	20.04	10.02	54.8 K=1.00	8.4049	-195.44	303.74	0.643 ¹
T20	20 - 0	P6 X-STR	20.04	10.02	54.8 K=1.00	8.4049	-218.71	303.74	0.720 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	168 - 160	L2x2x3/16	7.78	3.63	112.9 K=1.02	0.7150	-0.35	15.42	0.022 ¹
T2	160 - 140	L2x2x3/16	7.78	3.63	112.9 K=1.02	0.7150	-2.76	15.42	0.179 ¹
T3	140 - 136	L2x2x3/16	7.78	3.63	112.9 K=1.02	0.7150	-4.23	15.42	0.274 ¹
T4	136 - 132	L2x2x3/16	7.78	3.63	112.9 K=1.02	0.7150	-4.35	15.42	0.282 ¹
T5	132 - 128	L2x2x3/16	7.78	3.63	112.9 K=1.02	0.7150	-4.63	15.42	0.300 ¹
T6	128 - 124	L2x2x3/16	7.78	3.63	112.9 K=1.02	0.7150	-4.72	15.42	0.306 ¹
T7	124 - 120	L2x2x3/16	7.78	3.60	112.2 K=1.02	0.7150	-5.07	15.55	0.326 ¹
T8	120 - 115	L2x2x3/16	8.54	4.11	125.0 K=1.00	0.7150	-4.51	13.09	0.345 ¹
T9	115 - 110	L2x2x3/16	8.97	4.32	131.5 K=1.00	0.7150	-4.24	11.84	0.358 ¹
T10	110 - 105	L2x2x3/16	9.40	4.53	138.1 K=1.00	0.7150	-4.27	10.73	0.398 ¹
T11	105 - 100	L2x2x3/16	9.84	4.75	144.8 K=1.00	0.7150	-4.65	9.76	0.476 ¹
T12	100 - 93.3333	L2 1/2x2 1/2x3/16	11.26	5.51	133.5 K=1.00	0.9020	-5.10	14.48	0.353 ¹
T13	93.3333 - 86.6667	L2 1/2x2 1/2x3/16	11.81	5.79	140.3 K=1.00	0.9020	-5.24	13.11	0.399 ¹
T14	86.6667 - 80	L2 1/2x2 1/2x3/16	12.39	6.07	147.2 K=1.00	0.9020	-5.29	11.91	0.444 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T15	80 - 73.3333	L2 1/2x2 1/2x1/4	12.97	6.34	155.0 K=1.00	1.1900	-5.11	14.18	0.360 ¹
T16	73.3333 - 66.6667	L2 1/2x2 1/2x1/4	13.56	6.64	162.2 K=1.00	1.1900	-5.25	12.95	0.406 ¹
T17	66.6667 - 60	L2 1/2x2 1/2x1/4	14.16	6.94	169.5 K=1.00	1.1900	-5.50	11.85	0.465 ¹
T18	60 - 40	L3x3x1/4	16.00	7.81	158.3 K=1.00	1.4400	-5.54	16.44	0.337 ¹
T19	40 - 20	L3 1/2x3 1/2x1/4	19.24	9.45	163.4 K=1.00	1.6900	-6.48	18.11	0.357 ¹
T20	20 - 0	L3 1/2x3 1/2x1/4	21.02	10.34	178.8 K=1.00	1.6900	-7.05	15.13	0.466 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T13	93.3333 - 86.6667	L2x2x3/16	9.74	4.51	133.2 K=0.97	0.7150	-1.88	11.54	0.163 ¹
T14	86.6667 - 80	L2x2x3/16	10.43	4.85	141.1 K=0.96	0.7150	-2.05	10.28	0.199 ¹
T17	66.6667 - 60	L2x2x3/16	12.48	5.86	164.5 K=0.92	0.7150	-2.53	7.56	0.335 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	168 - 160	L2x2x3/16	6.67	6.19	188.6 K=1.00	0.7150	-0.08	5.76	0.014 ¹
T2	160 - 140	L2x2x3/16	6.67	6.19	188.6 K=1.00	0.7150	-0.27	5.76	0.047 ¹
T3	140 - 136	L2x2x3/16	6.67	6.19	188.6 K=1.00	0.7150	-0.38	5.76	0.066 ¹

¹ P_u / φP_n controls

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Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	
T1	168 - 160	P2.5 STD	8.00	4.00	50.7	1.7040	0.72	76.68	0.009 ¹
T2	160 - 140	P2.5 STD	20.00	4.00	50.7	1.7040	10.29	76.68	0.134 ¹
T3	140 - 136	P2.5 STD	4.00	4.00	50.7	1.7040	15.71	76.68	0.205 ¹
T4	136 - 132	P2.5 STD	4.00	4.00	50.7	1.7040	22.06	76.68	0.288 ¹
T5	132 - 128	P2.5 STD	4.00	4.00	50.7	1.7040	29.16	76.68	0.380 ¹
T6	128 - 124	P2.5 STD	4.00	4.00	50.7	1.7040	36.86	76.68	0.481 ¹
T7	124 - 120	P 2-1/2 STD w/ Split P 3 X-STR [CT24369 T7]	4.00	4.00	52.2	3.2120	44.51	101.18	0.440 ¹
T8	120 - 115	P 3 STD w/ Split P 3-1/2 STD [CT24369 T8]	5.01	5.01	52.7	3.5682	52.28	112.40	0.465 ¹
T9	115 - 110	P 3 STD w/ Split P 3-1/2 STD [CT24369 T9]	5.01	5.01	52.7	3.5682	59.94	112.40	0.533 ¹
T10	110 - 105	P 3 STD w/ Split P 3-1/2 STD [CT24369 T10]	5.01	5.01	52.7	3.5682	66.75	112.40	0.594 ¹
T11	105 - 100	P 3 STD w/ Split P 3-1/2 STD [CT24369 T11]	5.01	5.01	52.7	3.5682	74.16	112.40	0.660 ¹
T12	100 - 93.3333	P3.5 X-STR	6.68	6.68	61.3	3.6784	82.03	165.53	0.496 ¹
T13	93.3333 - 86.6667	P3.5 X-STR	6.68	3.22	29.6	3.6784	91.13	165.53	0.551 ¹
T14	86.6667 - 80	P3.5 X-STR	6.68	3.23	29.7	3.6784	99.50	165.53	0.601 ¹
T15	80 - 73.3333	P4 X-STR	6.68	6.68	54.3	4.4074	108.32	198.34	0.546 ¹
T16	73.3333 - 66.6667	P4 X-STR	6.68	6.68	54.3	4.4074	116.47	198.34	0.587 ¹
T17	66.6667 - 60	P4 X-STR	6.68	3.25	26.4	4.4074	124.08	198.34	0.626 ¹
T18	60 - 40	P5 X-STR	20.04	6.68	43.6	6.1114	146.70	275.01	0.533 ¹
T19	40 - 20	P6 X-STR	20.04	10.02	54.8	8.4049	165.54	378.22	0.438 ¹
T20	20 - 0	P6 X-STR	20.04	10.02	54.8	8.4049	184.60	378.22	0.488 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	K	K	
T1	168 - 160	L2x2x3/16	7.78	3.63	72.9	0.4308	0.33	18.74	0.018 ¹
T2	160 - 140	L2x2x3/16	7.78	3.63	72.9	0.4308	2.79	18.74	0.149 ¹
T3	140 - 136	L2x2x3/16	7.78	3.63	72.9	0.4308	4.12	18.74	0.220 ¹
T4	136 - 132	L2x2x3/16	7.78	3.63	72.9	0.4308	4.43	18.74	0.237 ¹
T5	132 - 128	L2x2x3/16	7.78	3.63	72.9	0.4308	4.54	18.74	0.242 ¹
T6	128 - 124	L2x2x3/16	7.78	3.63	72.9	0.4308	4.81	18.74	0.257 ¹
T7	124 - 120	L2x2x3/16	7.78	3.60	72.3	0.4308	4.94	18.74	0.264 ¹
T8	120 - 115	L2x2x3/16	8.54	4.11	82.2	0.4308	4.28	18.74	0.228 ¹
T9	115 - 110	L2x2x3/16	8.97	4.32	86.3	0.4308	4.39	18.74	0.234 ¹
T10	110 - 105	L2x2x3/16	9.40	4.53	90.5	0.4308	4.13	18.74	0.220 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T11	105 - 100	L2x2x3/16	9.84	4.75	94.8	0.4308	4.70	18.74	0.251 ¹
T12	100 - 93.3333	L2 1/2x2 1/2x3/16	11.26	5.51	86.9	0.5710	5.02	24.84	0.202 ¹
T13	93.3333 - 86.6667	L2 1/2x2 1/2x3/16	11.81	5.79	91.2	0.5710	5.13	24.84	0.206 ¹
T14	86.6667 - 80	L2 1/2x2 1/2x3/16	12.39	6.07	95.6	0.5710	5.09	24.84	0.205 ¹
T15	80 - 73.3333	L2 1/2x2 1/2x1/4	12.97	6.34	100.9	0.7519	5.13	32.71	0.157 ¹
T16	73.3333 - 66.6667	L2 1/2x2 1/2x1/4	13.56	6.64	105.5	0.7519	5.21	32.71	0.159 ¹
T17	66.6667 - 60	L2 1/2x2 1/2x1/4	14.16	6.94	110.2	0.7519	5.27	32.71	0.161 ¹
T18	60 - 40	L3x3x1/4	16.00	7.81	102.4	0.9394	5.52	40.86	0.135 ¹
T19	40 - 20	L3 1/2x3 1/2x1/4	19.24	9.45	105.6	1.1034	6.24	48.00	0.130 ¹
T20	20 - 0	L3 1/2x3 1/2x1/4	21.02	10.34	115.5	1.1034	6.44	48.00	0.134 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T13	93.3333 - 86.6667	L2x2x3/16	9.74	4.51	183.0	0.4308	1.88	18.74	0.100 ¹
T14	86.6667 - 80	L2x2x3/16	10.43	4.85	196.3	0.4308	2.05	18.74	0.109 ¹
T17	66.6667 - 60	L2x2x3/16	12.48	5.86	235.5	0.4308	2.53	18.74	0.135 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	168 - 160	L2x2x3/16	6.67	6.19	125.1	0.4308	0.05	18.74	0.003 ¹
T2	160 - 140	L2x2x3/16	6.67	6.19	125.1	0.4308	0.27	18.74	0.014 ¹
T3	140 - 136	L2x2x3/16	6.67	6.19	125.1	0.4308	0.38	18.74	0.020 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	168 - 160	Leg	P2.5 STD	1	-1.45	63.56	2.3	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T2	160 - 140	Leg	P2.5 STD	19	-15.54	63.56	24.5	Pass
T3	140 - 136	Leg	P2.5 STD	56	-22.09	63.56	34.8	Pass
T4	136 - 132	Leg	P2.5 STD	68	-29.76	63.56	46.8	Pass
T5	132 - 128	Leg	P2.5 STD	77	-37.23	63.56	58.6	Pass
T6	128 - 124	Leg	P2.5 STD	86	-45.67	63.56	71.9	Pass
T7	124 - 120	Leg	P 2-1/2 STD w/ Split P 3 X-STR [CT24369 T7]	95	-53.73	88.02	61.1	Pass
T8	120 - 115	Leg	P 3 STD w/ Split P 3-1/2 STD [CT24369 T8]	104	-62.96	97.49	64.6	Pass
T9	115 - 110	Leg	P 3 STD w/ Split P 3-1/2 STD [CT24369 T9]	113	-72.39	97.49	74.3	Pass
T10	110 - 105	Leg	P 3 STD w/ Split P 3-1/2 STD [CT24369 T10]	122	-79.56	97.49	81.6	Pass
T11	105 - 100	Leg	P 3 STD w/ Split P 3-1/2 STD [CT24369 T11]	131	-88.61	97.49	90.9	Pass
T12	100 - 93.3333	Leg	P3.5 X-STR	140	-97.65	125.72	77.7	Pass
T13	93.3333 - 86.6667	Leg	P3.5 X-STR	149	-108.23	153.77	70.4	Pass
T14	86.6667 - 80	Leg	P3.5 X-STR	161	-117.92	153.82	76.7	Pass
T15	80 - 73.3333	Leg	P4 X-STR	173	-128.03	159.91	80.1	Pass
T16	73.3333 - 66.6667	Leg	P4 X-STR	182	-137.36	159.91	85.9	Pass
T17	66.6667 - 60	Leg	P4 X-STR	191	-146.10	187.38	78.0	Pass
T18	60 - 40	Leg	P5 X-STR	203	-172.76	239.35	72.2	Pass
T19	40 - 20	Leg	P6 X-STR	224	-195.44	303.74	64.3	Pass
T20	20 - 0	Leg	P6 X-STR	239	-218.71	303.74	72.0	Pass
T1	168 - 160	Diagonal	L2x2x3/16	8	-0.35	15.42	2.2	Pass
T2	160 - 140	Diagonal	L2x2x3/16	25	-2.76	15.42	5.1 (b) 17.9	Pass
T3	140 - 136	Diagonal	L2x2x3/16	61	-4.23	15.42	42.8 (b) 27.4	Pass
T4	136 - 132	Diagonal	L2x2x3/16	70	-4.35	15.42	63.1 (b) 28.2	Pass
T5	132 - 128	Diagonal	L2x2x3/16	79	-4.63	15.42	68.0 (b) 30.0	Pass
T6	128 - 124	Diagonal	L2x2x3/16	88	-4.72	15.42	69.6 (b) 30.6	Pass
T7	124 - 120	Diagonal	L2x2x3/16	97	-5.07	15.55	73.7 (b) 32.6	Pass
T8	120 - 115	Diagonal	L2x2x3/16	106	-4.51	13.09	75.8 (b) 34.5	Pass
T9	115 - 110	Diagonal	L2x2x3/16	115	-4.24	11.84	65.5 (b) 35.8	Pass
T10	110 - 105	Diagonal	L2x2x3/16	124	-4.27	10.73	67.3 (b) 39.8	Pass
T11	105 - 100	Diagonal	L2x2x3/16	133	-4.65	9.76	63.2 (b) 47.6	Pass
T12	100 - 93.3333	Diagonal	L2 1/2x2 1/2x3/16	142	-5.10	14.48	72.0 (b) 35.3	Pass
T13	93.3333 - 86.6667	Diagonal	L2 1/2x2 1/2x3/16	153	-5.24	13.11	59.2 (b) 39.9	Pass
T14	86.6667 - 80	Diagonal	L2 1/2x2 1/2x3/16	165	-5.29	11.91	60.4 (b) 44.4	Pass
T15	80 - 73.3333	Diagonal	L2 1/2x2 1/2x1/4	177	-5.11	14.18	60.1 (b) 36.0	Pass
T16	73.3333 - 66.6667	Diagonal	L2 1/2x2 1/2x1/4	186	-5.25	12.95	45.3 (b) 40.6 46.1 (b)	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T17	66.6667 - 60	Diagonal	L2 1/2x2 1/2x1/4	195	-5.50	11.85	46.5	Pass
							46.6 (b)	
T18	60 - 40	Diagonal	L3x3x1/4	207	-5.54	16.44	33.7	Pass
							48.8 (b)	
T19	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	228	-6.48	18.11	35.7	Pass
							43.5 (b)	
T20	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	243	-7.05	15.13	46.6	Pass
T13	93.3333 - 86.6667	Secondary Horizontal	L2x2x3/16	157	-1.88	11.54	16.3	Pass
T14	86.6667 - 80	Secondary Horizontal	L2x2x3/16	169	-2.05	10.28	19.9	Pass
T17	66.6667 - 60	Secondary Horizontal	L2x2x3/16	199	-2.53	7.56	33.5	Pass
T1	168 - 160	Top Girt	L2x2x3/16	4	-0.08	5.76	1.4	Pass
T2	160 - 140	Top Girt	L2x2x3/16	24	-0.27	5.76	4.7	Pass
T3	140 - 136	Top Girt	L2x2x3/16	58	-0.38	5.76	6.6	Pass
							Summary	
							Leg (T11)	Pass
							Diagonal (T7)	Pass
							Secondary Horizontal (T17)	Pass
							Top Girt (T3)	Pass
							Bolt Checks	Pass
							RATING =	90.9



Built-Up Member Analysis

Date 2/27/2024

Project No	CT74369-V2W-022224
T/A Code	H
No of modified sections	5
Mod Type	Pipe & Split Pipe

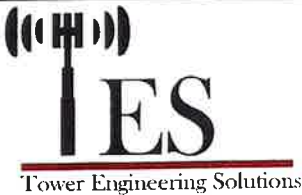
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Existing Member		Modification Member			Built-Up Member					Alternate termination provided?	Compression (k)	Tension (k)			
Section	Pipe	F _y (ksi)	Split Pipe	F _y (ksi)	Intermediate Connector Type	K	L _u (in)	a (in)	Mod for Stiffness Only?				Termination Weld Type	Weld Size (1/16 in)	Weld Length - One side (in)
T7	P 2-1/2 STD	50	P 3 X-STR	35	Welds	1	48	12	No	Fillet	3	6	0	N/A	44.51
T8	P 3 STD	50	P 3-1/2 STD	35	Welds	1	60	12	No	Fillet	3	6	0	N/A	52.28
T9	P 3 STD	50	P 3-1/2 STD	35	Welds	1	60	12	No	Fillet	3	6	0	N/A	59.94
T10	P 3 STD	50	P 3-1/2 STD	35	Welds	1	60	12	No	Fillet	3	6	0	N/A	66.75
T11	P 3 STD	50	P 3-1/2 STD	35	Welds	1	60	12	No	Fillet	3	6	0	N/A	74.16

Section	Modified Member	Mod effective?	Mod Fit	Termination Weld Adequate?	TNX Input			Capacity Summary				
					KL/r	K	F _y (ksi)	Buckling ϕP_n (k)	Crushing ϕP_n (k)	Tension ϕP_n (k)	Controlling	Rating
T7	P 2-1/2 STD w/ Split P 3 X-STR	Yes	Yes	Yes	52.00	1.00	35	88.01	N/A	N/A	Buckling	61.0%
T8	P 3 STD w/ Split P 3-1/2 STD	Yes	Yes	Yes	53.00	1.00	35	97.54	N/A	N/A	Buckling	64.6%
T9	P 3 STD w/ Split P 3-1/2 STD	Yes	Yes	Yes	53.00	1.00	35	97.54	N/A	N/A	Buckling	74.2%
T10	P 3 STD w/ Split P 3-1/2 STD	Yes	Yes	Yes	53.00	1.0000	35	97.54	N/A	N/A	Buckling	81.6%
T11	P 3 STD w/ Split P 3-1/2 STD	Yes	Yes	Yes	53.00	1.0000	35	97.54	N/A	N/A	Buckling	90.8%

Self Support Anchor Bolt Check**Project Information**SBA Project # : CT24369-VZW-022224Code : H**Leg Reaction**Uplift(kips): 189 Shear (kips) : 20Comp(kips): 225 Shear (kips) : 23**Grout**☒ 5,000 psi Grout Present☒ Use Section 15.7 exemption**Strength Reduction Factors**Tension : 0.75Compression : 0.90Shear : 0.75Flexure : 0.9**Bolt Capacity :** 56.2% Pass**Bolt Information**Quantity : 6Diameter (in) : 1Assumed lar (in) : 3Bolt Fy (ksi) : 109Bolt Fu (AISC Table 2-6) (ksi): 125Bolt Grade Info: Assumed# of threads (AISC Table 7-17) : 8

[illegible]

	Self Supporting Tower Footing Design		Date 2/27/2024	
	Customer Name:		TIA Standard:	TIA-222-H
	Site Name:		Structure Height (Ft.):	168
	Site Number:	CT24369-VZW-022224	Engineer Name:	D. Yohannes
	Engr. Number:		Engineer Login ID:	

Foundation Info Obtained from:

Structure Type:

Analysis or Design?

Base Reactions (Factored):

Axial Load (Kips):	225.0	Shear Force (Kips):	23.0
Uplift Force (Kips):	189.0	Moment (Kips-ft):	0.0

Foundation Geometries:

Pad Base w/ toe or in Rock-Yes/No ?	No	Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	Round 3.000	Depth of Base BG (ft.):	12.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	7.25	Width of Pad (ft.):	7.25

Final Length of pad (ft)	7.3	Final width of pad (ft):	7.3
--------------------------	-----	--------------------------	-----

Consider ties in concrete shear strength ?:

Yes

Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	12	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	6	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	8	Qty. of Rebar in Pad (W):	8	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	8	Qty. of Rebar in Pad (W):	8	

Soil Design Parameters:

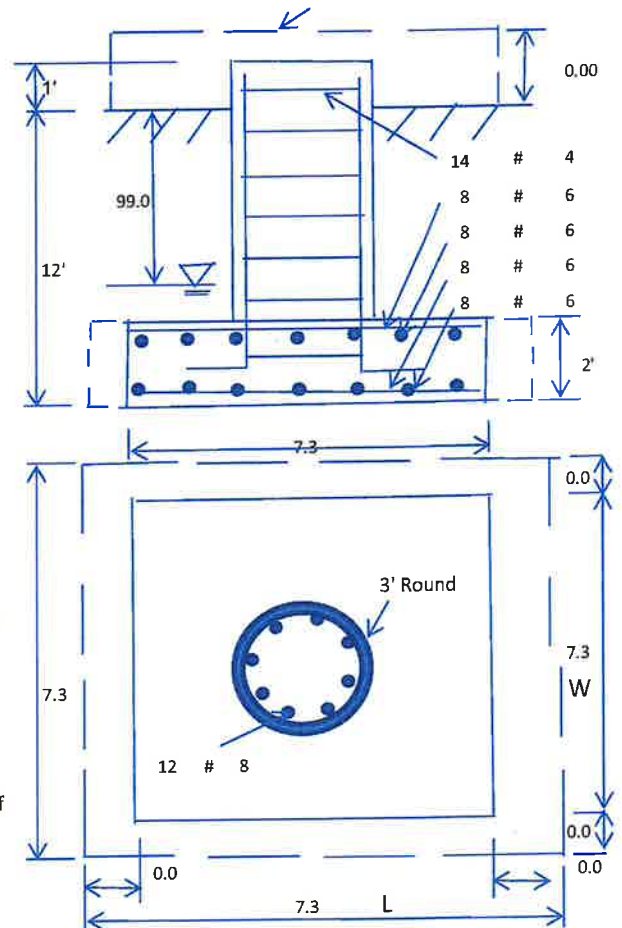
Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	62.6	Pcf	
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:
Ultimate Bearing Pressure (psf):	15000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:
					34
					25

Foundation Analysis and Design:

Uplift Strength Reduction Factor A:	0.75	Uplift Strength Reduction Factor B:	0.9
Compression Strength Reduction Factor:	0.75		
Total Dry Soil Volume (cu. Ft.):	1887.94	Total Dry Soil Weight (Kips):	235.99
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	235.99	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	182.88	Total Dry Concrete Weight (Kips):	27.43
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	27.43	Total Vertical Load on Base (Kips):	488.42

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	7682.95	<	Allowable Factored Soil Bearing (psf):	11250	0.68	OK!
Calculated Foundation Allowable Axial Capacity (Kips):	591.3	>	Design Factored Axial Load (Kips):	232	0.39	OK!
Calculated Foundation Uplift Capacity (Kips):	210.21	>	Design Factored Uplift Load (Kips):	189	0.90	OK!



Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):

0.90

Strength reduction factor (Shear):

0.75

Strength reduction factor (Axial compression):

0.65

Wind Load Factor on Concrete Design:

1.00

Load/
Capacity
Ratio**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):

0.79

Tie / Stirrup Area (sq. in./each):

0.20

Calculated Moment Capacity (Mn, Kips-Ft):

397.0

>

Design Factored Moment (Mu, Kips-Ft):

253.0

0.64

OK!

Calculated Shear Capacity (Kips):

89.4

>

Design Factored Shear (Kips):

23.0

0.26

OK!

Calculated Tension Capacity (Tn, Kips):

511.9

>

Design Factored Tension (Tu Kips):

189.0

0.37

OK!

Calculated Compression Capacity (Pn, Kips):

1337.1

>

Design Factored Axial Load (Pu Kips):

225.0

0.17

OK!

Moment & Axial Strength Combination:

0.64

OK!

Check Tie Spacing (Design/Required):

1

OK!

Pier Reinforcement Ratio:

0.009

(2) Concrete Pad:

One-Way Design Shear Capacity (L-Dir. Kips):

147.4

>

One-Way Factored Shear (L-Dir Kips):

12.9

0.09

OK!

One-Way Design Shear Capacity (W-Dir. Kips):

147.4

>

One-Way Factored Shear (W-Dir Kips):

12.9

0.09

OK!

Two-Way Design Shear Capacity (Kips):

602.9

>

Two-Way Factored Shear (Kips):

149.3

0.25

OK!

Lower Steel Pad Reinforcement Ratio (L-Direct.):

0.0020

Lower Steel Pad Reinf. Ratio (W-Direct.):

0.0020

OK!

Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):

319.2

>

Moment at Bottom (L-Direct. K-Ft):

71.8

0.22

OK!

Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):

319.2

>

Moment at Bottom (W-Dir. Kips-Ft):

71.8

0.22

OK!

Upper Steel Pad Reinforcement Ratio (L-Direct.):

0.0020

Upper Steel Reinf. Ratio (W-Direct.):

0.0020

OK!

Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):

319.2

>

Moment at the top (L-Dir Kips-Ft):

22.8

0.07

OK!

Upper Steel Pad Moment Capacity (W-Dir. Kips-ft):

319.2

>

Moment at the top (W-Dir Kips-Ft):

22.8

0.07

OK!



Colliers Engineering & Design, Architecture, Landscape Architecture,
Surveying, CT P.C.
1055 Washington Boulevard
Stamford, CT 06901
203.324.0800
peter.albano@collierseng.com

Antenna Mount Analysis Report with Hardware Upgrades and PMI Requirements

Mount ReAnalysis-VZW

SMART Tool Project #: 10217729
Colliers Engineering & Design Project #: 21777251 (Rev.1)

February 1, 2024

Site Information

Site ID: 5000243135-VZW / UNION W CT
Site Name: UNION W CT
Carrier Name: Verizon Wireless
Address: 1050 Buckley Hwy
Union, Connecticut 06076
Tolland County
Latitude: 41.99923333°
Longitude: -72.15226944°

Structure Information

Tower Type: Self Support
Mount Type: 16.92-Ft Sector Frame

FUZE ID # 16272054

Analysis Results

Sector Frame: 71.4% Pass w/ Hardware Upgrades*

* Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.

***Contractor PMI Requirements:

Included at the end of this MA report
Available & Submitted via portal at <https://pmi.vzwsmart.com>
For additional questions and support, please reach out to:
pmisupport@colliersengineering.com

Report Prepared By: Selene Chen



Executive Summary:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	Verizon RFDS, Site ID: 325009, dated September 18, 2023
Mount Mapping Report	Roaming Networks Inc., Site ID: SBAI: CT244369, VZW: 467906, dated March 30, 2021

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H 2022 Connecticut State Building Code (CSBC), Effective October 1, 2022
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT} : 120 mph Ice Wind Speed (3-sec. Gust): 50 mph Design Ice Thickness: 1.50 in Risk Category: II Exposure Category: B Topographic Category: 1 Topographic Feature Considered: N/A Topographic Method: N/A Ground Elevation Factor, K_e : 0.965
Seismic Parameters:	S_s : 0.178 g S_1 : 0.055 g
Maintenance Parameters:	Wind Speed (3-sec. Gust): 30 mph Maintenance Load, L_v : 250 lbs. Maintenance Load, L_m : 500 lbs.
Analysis Software:	RISA-3D (V17)

Final Loading Configuration:

The following equipment has been considered for the analysis of the mounts:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
150.90	151.90	6	Andrew	SBNHH-1D65B	Retained
		4	Antel	WPA-80063-4CF	
		2	Antel	WPA-80080/4CF	
		1	-	GPS	
		3	Samsung	MT6413-77A	Added
		3	Samsung	RF4461d-13A	
		3	Samsung	RF4439d-25A	
		2	RFS	DB-B1-6C-12AB-0Z	

It is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required unless replacing an existing OVP.

Model Number	Ports	AKA
DB-B1-6C-12AB-0Z	6	OVP-6
RVZDC-6627-PF-48	12	OVP-12

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Colliers Engineering & Design and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Colliers Engineering & Design to verify deviation will not adversely impact the analysis.
2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
4. 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.
5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Colliers Engineering & Design is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.
7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
 - o Channel, Solid Round, Angle, Plate ASTM A36 (Gr. 36)
 - o HSS (Rectangular) ASTM 500 (Gr. B-46)
 - o Pipe ASTM A53 (Gr. B-35)
 - o Threaded Rod F1554 (Gr. 36)
 - o Bolts ASTM A325

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Colliers Engineering & Design.

Analysis Results:

Component	Utilization %	Pass/Fail
Standoff Plate	71.4 %	Pass
Face Horizontal	25.7 %	Pass
Standoff Horizontal	33.9 %	Pass
Standoff Vertical	56.8 %	Pass
Standoff Diagonal	31.6 %	Pass
Plate	67.7 %	Pass
Antenna Pipe	39.3 %	Pass
Tie Back	13.9 %	Pass
Connection Check	40.3 %	Pass

Structure Rating – (Controlling Utilization of all Components)	71.4%*
--	--------

* Results valid after hardware upgrades noted in the PMI Requirements are installed.

Mount Connection Envelope Reactions:

Connection Description	Elev. AGL (Ft)	Node Label	Envelope Wind Reactions				Envelope Wind + Ice Reactions			
			Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)	Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)
Sector A Top Standoff	152.6	N4	556	2518	0.170	0.000	1755	4026	0.530	0.000
Sector A Bottom Standoff	149.2	N65	464	2340	0.151	0.000	1430	4003	0.451	0.000

Notes:

- Axial loads act along the axis of the tower leg
- Lateral reactions act perpendicular to the tower leg
- Moment loads introduce bending moment to the tower leg
- Torsion loads introduce twisting moment to the tower leg
- Batch solutions by individual load cases are included at the end of this document

BASELINE mount weight per SBA agreement: 2958.12 lbs

Increase in mount weight due to Verizon loading change per SBA agreement: no changes

The weights listed above include 3 sector.

Mount Steel (EPA)a per ANSI/TIA-222-H Section 2.6.11.2:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	26.0	16.0	34.2	24.3
0.5	37.2	23.9	48.9	35.7
1	47.7	31.2	62.9	46.4

Notes:

- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 1 sector(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mounts will be **SUFFICIENT** for the final loading configuration shown in attachment 2 upon the completion of the requirements listed below.

- Contractor shall install (1) of the proposed OVPs to the existing OVP pipe on the Alpha sector in place of the existing (to be removed) OVP.
- Contractor shall install (1) of the proposed OVPs to a new 48" long PIPE 2 SCH 40 OVP pipe on the Beta or Gamma sector. Match the installation location of the proposed pipe along the standoff to the existing configuration of the Alpha sector.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

1. Contractor Required Post Installation Inspection (PMI) Report Deliverables
2. Antenna Placement Diagrams
3. Mount Photos
4. Mount Mapping Report (for reference only)
5. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – **Passing Mount Analysis**

Passing Mount Analysis requires a PMI due to a modification in loading.

Electronic pdf version of this can be downloaded at <https://pmi.vzwsmart.com>.

For additional questions and support, please reach out to pmisupport@colliersengineering.com

MDG #: 5000243135

SMART Project #: 10217729

Fuze Project ID: 16272054

Purpose – to provide SMART Tool structural vendor the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.

Base Requirements:

- If installation will cause damage to the structure, the climbing facility, or safety climb if present or any installed system, SMART Tool vendor to be notified prior to install. Any special photos outside of the standard requirements will be indicated on the drawings.
- Provide “as built mount drawings” showing contractor’s name, contact information, preparer’s signature, and date. Any deviations from the drawings (Proposed modification) shall be shown. NOTE: If loading is different than what is conveyed in the passing mount analysis (MA) contact the SMART Tool vendor immediately.
- Each photo should be time and date stamped
- Photos should be high resolution.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope. If there is conflict, contact the SMART Tool engineer for recommendations.
- The PMI can be accessed at the following portal: <https://pmi.vzwsmart.com>

Photo Requirements:

- **Photos taken at ground level**
 - Photo of Gate Signs showing the tower owner, site name, and number.
 - Overall tower structure after installation.
 - Photos of the mount after installation; if the mounts are at different rad elevations, pictures must be provided for all elevations that equipment was installed.
- **Photos taken at Mount Elevation**
 - Photos showing the safety climb wire rope above and below the mount prior to installation.
 - Photos showing the climbing facility and safety climb if present.
 - Photos showing each individual sector after installation. Each entire sector shall be in one photo to show the interconnection of members.

- These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
- Photos that show the model number of each antenna and piece of equipment installed per sector.

Antenna & equipment placement and Geometry Confirmation:

- The contractor shall certify that the antenna & equipment placement and geometry is in accordance with the sketch and table as included in the mount analysis and noted below.

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the sketch and table included in this form and with the mount analysis provided.

OR

☐ The contractor notes that the equipment on the mount is not in accordance with the sketch and has noted the differences below and provided photo documentation of any alterations.

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue:

-Contractor shall install (1) of the proposed OVPs to the existing OVP pipe on the Alpha sector in place of the existing (to be removed) OVP.
 -Contractor shall install (1) of the proposed OVPs to a new 48" long PIPE 2 SCH 40 OVP pipe on the Beta or Gamma sector. Match the installation location of the proposed pipe along the standoff to the existing configuration of the Alpha sector.

Response:

Special Instruction Confirmation:

- ☐ The contractor has read and acknowledges the above special instructions.
- ☐ All hardware listed in the Special Instructions above (if applicable) has been properly installed, and the existing hardware was inspected.
- ☐ The material utilized was as specified in the SMART Tool engineering vendor Special Instructions above (if applicable) and included in the material certification folder is a packing list or invoice for these materials.

OR

☐ The material utilized was approved by a SMART Tool engineering vendor as an "equivalent" and this approval is included as part of the contractor submission.

Comments:

--

Contractor certifies that the climbing facility / safety climb was not damaged prior to starting work:

☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

☐ Yes ☐ No

Contractor to certify the condition of the safety climb and verify no damage when leaving the site:

☐ Safety Climb in Good Condition ☐ Safety Climb Damaged

Certifying Individual:

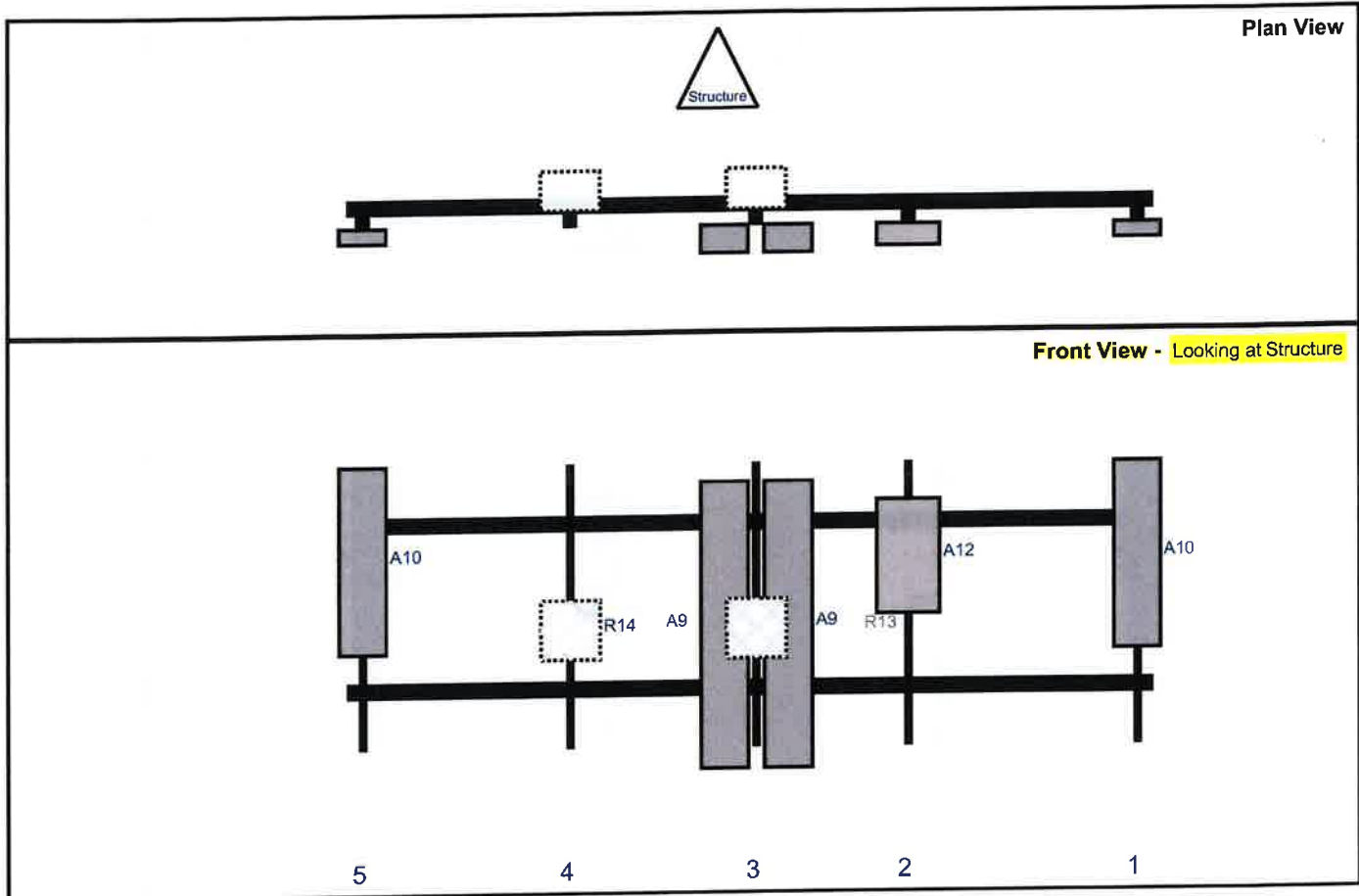
Company:	
Employee Name:	
Contact Phone:	
Email:	
Date:	

Sector: **A**
 Structure Type: Self Support
 Mount Elev: 150.90

10217729

1/30/2024

Page: 1



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A10	WPA-80063-4CF	47.4	11.8	199	1	a	Front	24	0	Retained	03/30/2021
A12	MT6413-77A	28.9	15.8	141	2	a	Front	24	0	Added	
A9	SBNHH-1D65B	72.6	11.9	103	3	a	Front	41.04	8	Retained	03/30/2021
A9	SBNHH-1D65B	72.6	11.9	103	3	b	Front	41.04	-8	Retained	03/30/2021
R13	RF4461d-13A	15	15	103	3	a	Behind	42	0	Added	
R14	RF4439d-25A	15	15	56	4	a	Behind	42	0	Added	
A10	WPA-80063-4CF	47.4	11.8	4	5	a	Front	24	0	Retained	03/30/2021
MP4A	GPS	12	9		Member					Retained	03/30/2021
OVP	DB-B1-6C-12AB-0Z	28.9	15.7		Member					Added	

Sector: B

1/30/2024

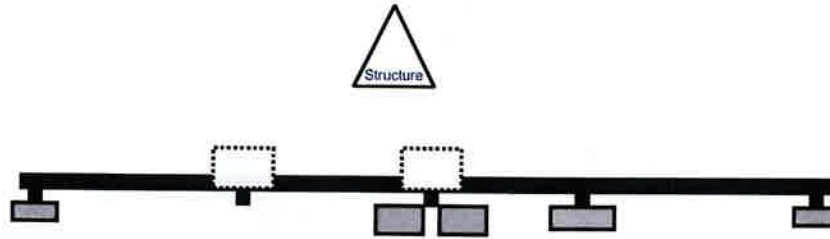
Structure Type: Self Support

10217729

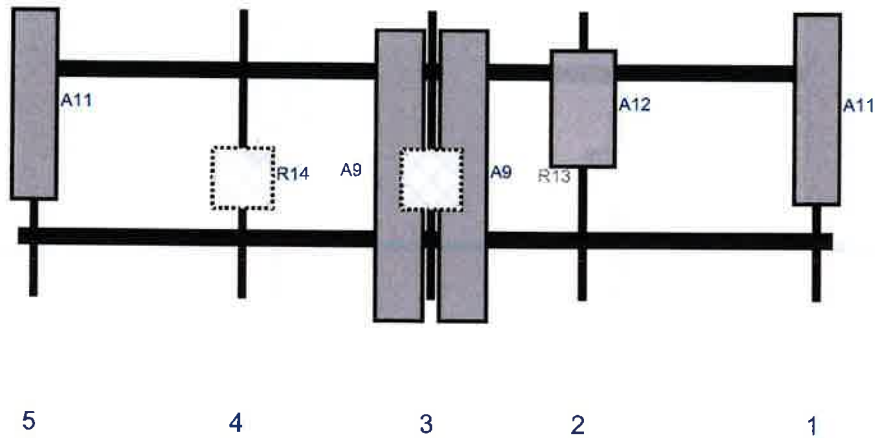
Mount Elev: 150.90

Page: 2

Plan View



Front View - Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Fm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A11	WPA-80080/4CF	47.4	11.2	199	1	a	Front	24	0	Retained	03/30/2021
A12	MT6413-77A	28.9	15.8	141	2	a	Front	24	0	Added	
A9	SBNHH-1D65B	72.6	11.9	103	3	a	Front	41.04	8	Retained	03/30/2021
A9	SBNHH-1D65B	72.6	11.9	103	3	b	Front	41.04	-8	Retained	03/30/2021
R13	RF4461d-13A	15	15	103	3	a	Behind	42	0	Added	
R14	RF4439d-25A	15	15	56	4	a	Behind	42	0	Added	
A11	WPA-80080/4CF	47.4	11.2	4	5	c	Front	24	0	Retained	03/30/2021

Sector: C

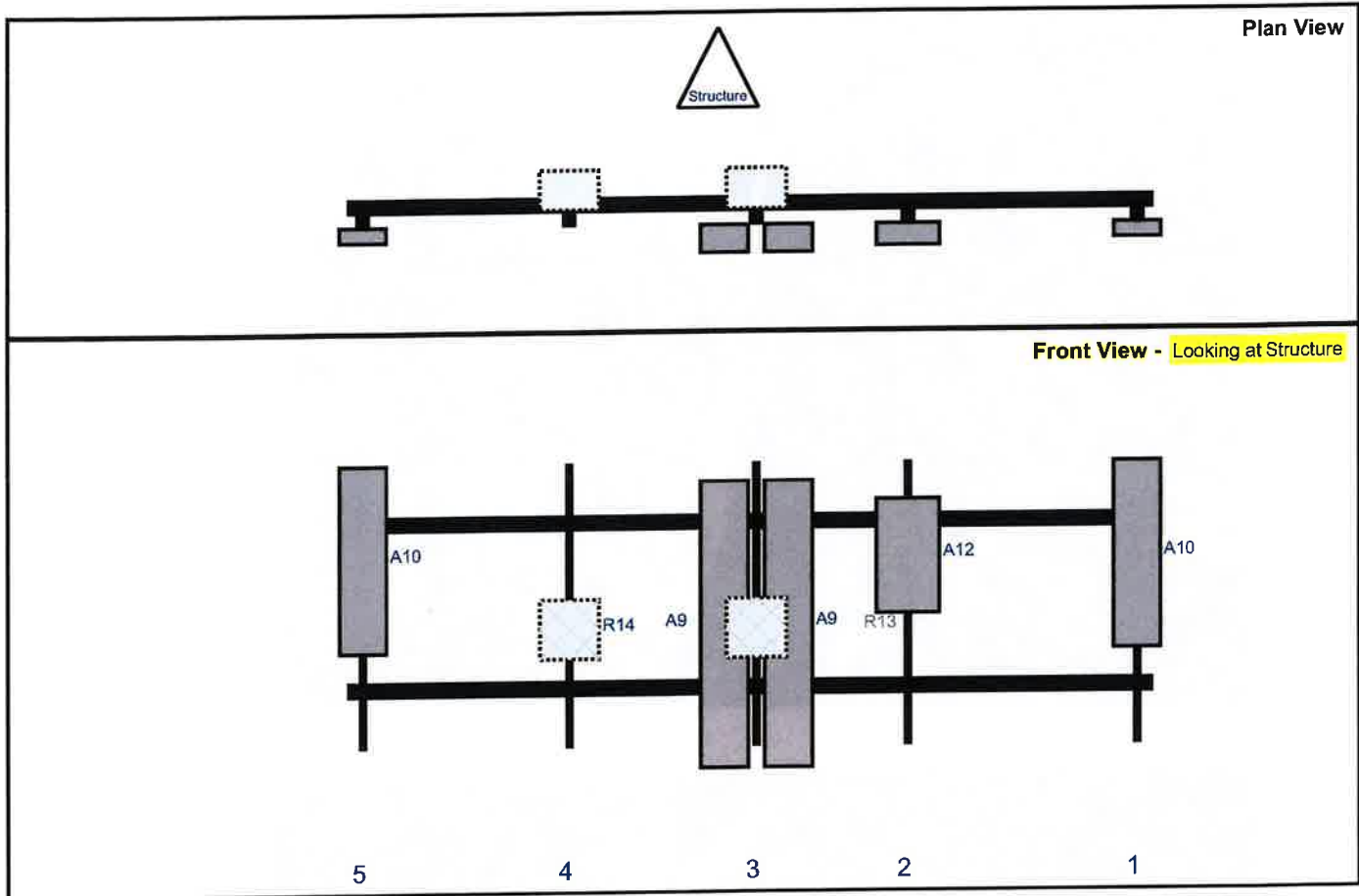
1/30/2024

Structure Type: Self Support

10217729

Mount Elev: 150.90

Page: 3



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A10	WPA-80063-4CF	47.4	11.8	199	1	a	Front	24	0	Retained	03/30/2021
A12	MT6413-77A	28.9	15.8	141	2	a	Front	24	0	Added	
A9	SBNHH-1D65B	72.6	11.9	103	3	a	Front	41.04	8	Retained	03/30/2021
A9	SBNHH-1D65B	72.6	11.9	103	3	b	Front	41.04	-8	Retained	03/30/2021
R13	RF4461d-13A	15	15	103	3	a	Behind	42	0	Added	
R14	RF4439d-25A	15	15	56	4	a	Behind	42	0	Added	
A10	WPA-80063-4CF	47.4	11.8	4	5	a	Front	24	0	Retained	03/30/2021



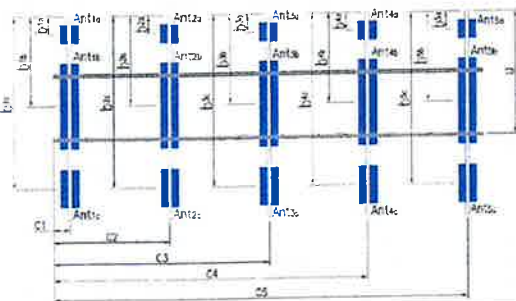
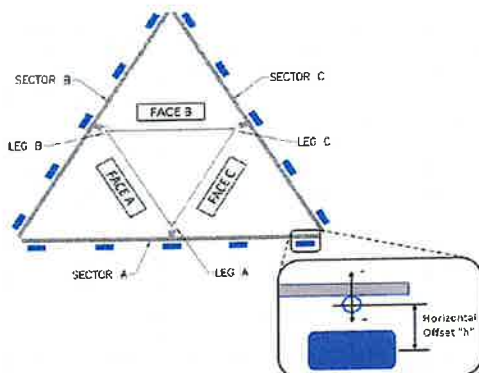
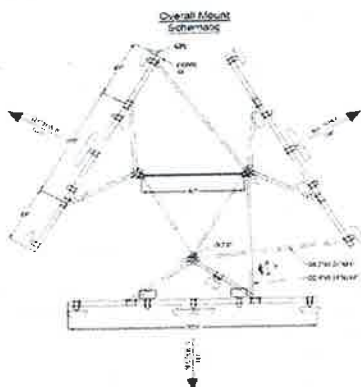


1999

121982

Mapping Date:	30-03-2
Tower Type:	Self Supp
Tower Height (Ft.):	N/A
Mount Elevation (Ft.):	150,41

& COMPANY	Mapping Contractor:	Roaming Networks Inc.	Mount Elevation (F.T.):	
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Antenna Layout (Looking Out From Tower)

Mount Pipe Configuration and Geometries [Unit = Inches]

Mount Pipe Configuration and Geometries [Unit = Inches]							
Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "y"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "y"	Horizontal Offset "C1, C2, C3, etc."
A1	PIPE 2.36"Ø X 0.14" X 60" LONG	57.00	4.00	C1	PIPE 2.36"Ø X 0.14" X 60" LONG	57.00	4.00
A2	PIPE 2.36"Ø X 0.14" X 72" LONG	57.00	62.00	C2	PIPE 2.36"Ø X 0.14" X 72" LONG	57.00	62.00
A3	PIPE 2.36"Ø X 0.14" X 84" LONG	64.00	100.00	C3	PIPE 2.36"Ø X 0.14" X 84" LONG	64.00	100.00
A4	PIPE 2.36"Ø X 0.14" X 72" LONG	57.00	147.00	C4	PIPE 2.36"Ø X 0.14" X 72" LONG	57.00	147.00
A5	PIPE 2.36"Ø X 0.14" X 60" LONG	57.00	199.00	C5	PIPE 2.36"Ø X 0.14" X 60" LONG	57.00	199.00
A6				C6			
B1	PIPE 2.36"Ø X 0.14" X 60" LONG	57.00	4.00	D1			
B2	PIPE 2.36"Ø X 0.14" X 72" LONG	57.00	62.00	D2			
B3	PIPE 2.36"Ø X 0.14" X 84" LONG	64.00	100.00	D3			
B4	PIPE 2.36"Ø X 0.14" X 72" LONG	57.00	147.00	D4			
B5	PIPE 2.36"Ø X 0.14" X 60" LONG	57.00	199.00	D5			
B6				D6			

Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See "Mount Elev Ref" tab for details.		21.00
--	--	-------

Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.):	0.8
---	-----

Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.):	2,8
--	-----

Please enter additional information or comments below.

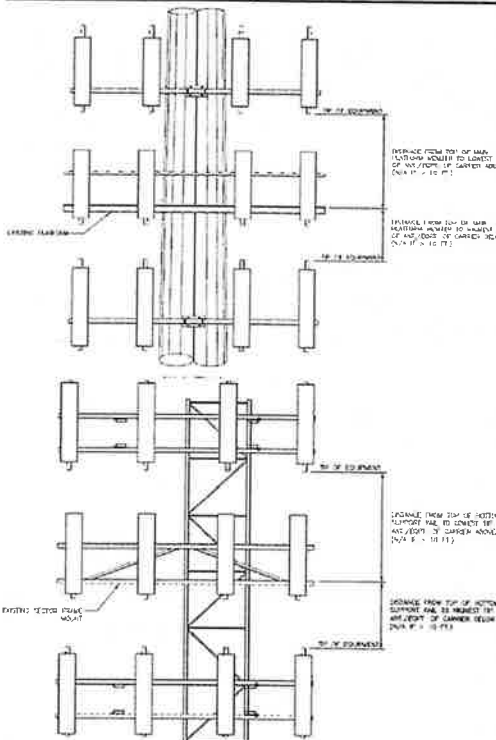
Tower Face Width at Mount Elev. (ft.):	6,8	Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	2,8
--	-----	---	-----

[illegible]

Mount Azimuth (Degree) for Each Sector				Tower Leg Azimuth (Degree) for Each Sector				Sector B									
Sector A:	0,00	Deg	Leg A:		Deg	Ant _{1a}	N/A	6,00	8,00	48,50		151,41	24,00	10,00	160,00	258	
Sector B:	120,00	Deg	Leg B:		Deg	Ant _{1b}											
Sector C:	240,00	Deg	Leg C:		Deg	Ant _{1c}											
Sector D:		Deg	Leg D:		Deg	Ant _{2a}	B13 RRH 4x30	12,00	9,00	21,60						258	
Climbing Facility Information						Ant _{2b}											
Location:		Deg	On Leg A			Ant _{2c}	2x SBNHH-1D65B	11,85	7,09	72,87		150,577	41,00	10,00	160,00	258	
Climbing Facility	Corrosion Type:	Good condition.				Ant _{3a}											
	Access:	Climbing path was obstructed.				Ant _{3b}											
	Condition:	Good condition.				Ant _{3c}											
						Ant _{4a}	B66A RRH4x45	11,80	7,20	25,80		153,41				259	
						Ant _{4b}											
						Ant _{4c}											
						Ant _{5a}	N/A	6,00	8,00	48,50		151,243	26,00	10,00	160,00	259	
						Ant _{5b}											
						Ant _{5c}						#REF!					
						Ant on Standoff											
						Ant on Standoff											
						Ant on Tower											
						Ant on Tower											
Sector C																	
						Ant _{1a}	N/A	6,00	8,00	48,50		151,41	24,00	10,00	244,00	277	
						Ant _{1b}											
						Ant _{1c}											
						Ant _{2a}	B13 RRH 4x30	12,00	9,00	21,60		153,41				277	
						Ant _{2b}											
						Ant _{2c}											
						Ant _{3a}	2x SBNHH-1D65B	11,85	7,09	72,87		150,577	41,00	10,00	244,00	277	
						Ant _{3b}											
						Ant _{3c}											
						Ant _{4a}	B66A RRH4x45	11,80	7,20	25,80		153,41				278	
						Ant _{4b}											
						Ant _{4c}											
						Ant _{5a}	N/A	6,00	8,00	48,50		151,243	26,00	10,00	244,00	278	
						Ant _{5b}											
						Ant _{5c}											
						Ant on Standoff											
						Ant on Standoff											
						Ant on Tower											
						Ant on Tower											
Sector D																	
						Ant _{1a}											
						Ant _{1b}											
						Ant _{1c}											
						Ant _{2a}											
						Ant _{2b}											
						Ant _{2c}											
						Ant _{3a}											
						Ant _{3b}											
						Ant _{3c}											
						Ant _{4a}											
						Ant _{4b}											
						Ant _{4c}											
						Ant _{5a}											
						Ant _{5b}											
						Ant _{5c}											
						Ant on Standoff											
						Ant on Standoff											
						Ant on Tower											
						Ant on Tower											

Technical drawing of a tower structure with four legs and multiple antenna arrays. The drawing includes dimensions and labels for various components.

Labels: 30' X 30' EQUIPMENT,



Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #

1		
2		
3		
4		
5		
6		
7		
8		

Mapping Notes

1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

Standard Conditions

1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.

Antenna Mount Mapping Form (PATENT PENDING)

FCC #

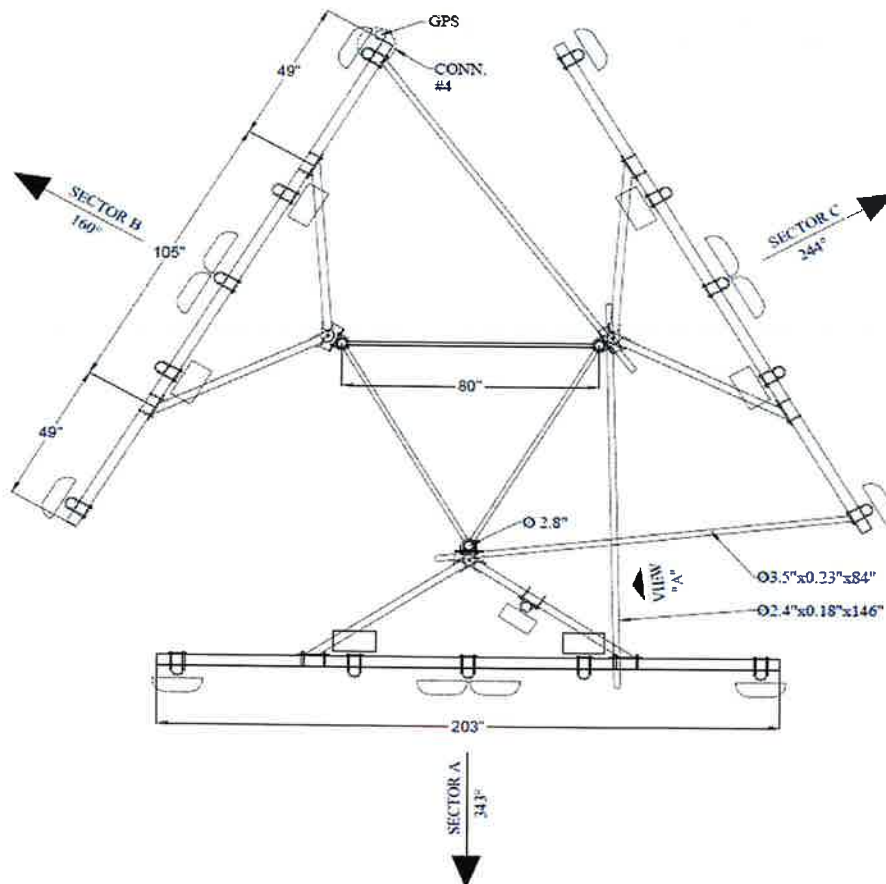
1219825

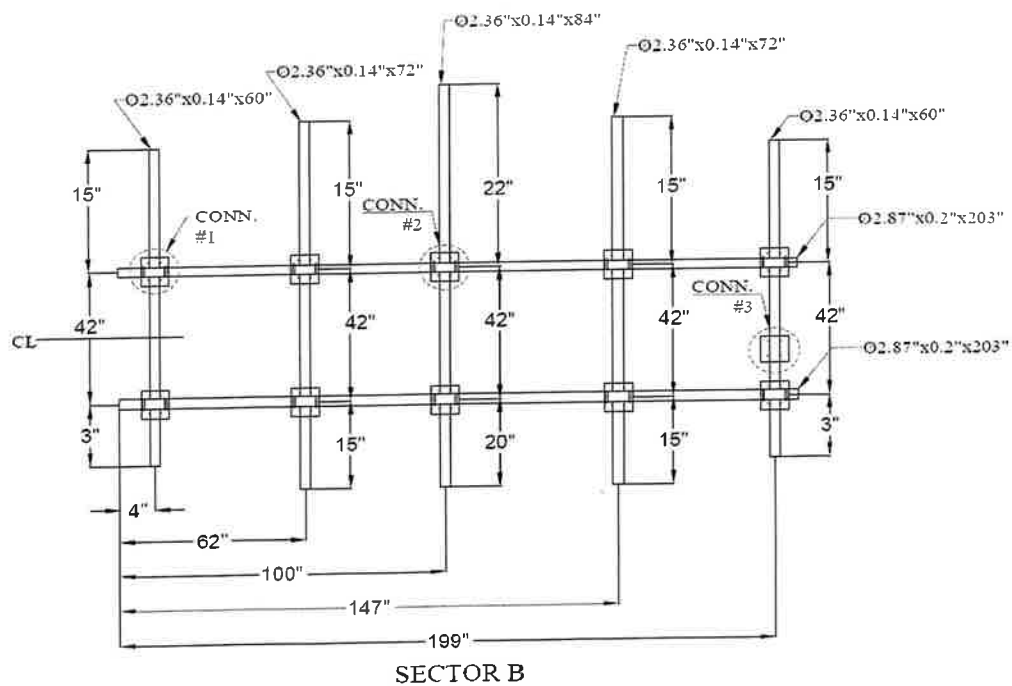
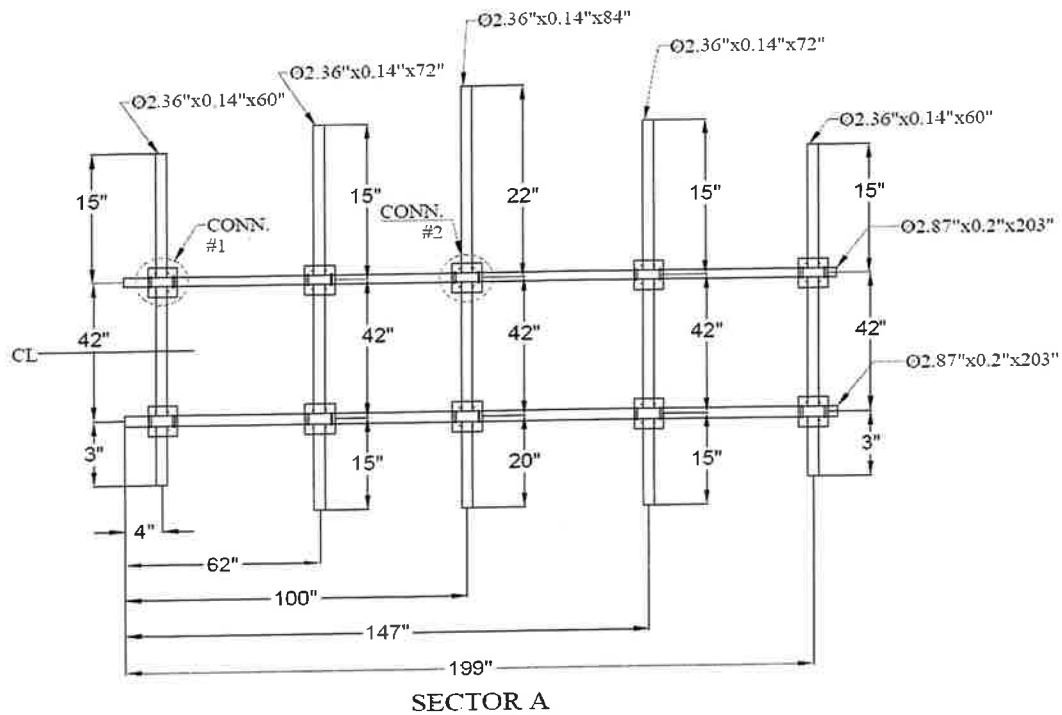
Tower Owner:	SBA	Mapping Date:	30-03-21
Site Name:	VZW:UNION W CT	Tower Type:	Self Support
Site Number or ID:	SBA:CT24369, VZW:467906	Tower Height (FL):	N/A
Mapping Contractor:	Roaming Networks Inc.	Mount Elevation (FL):	150.41

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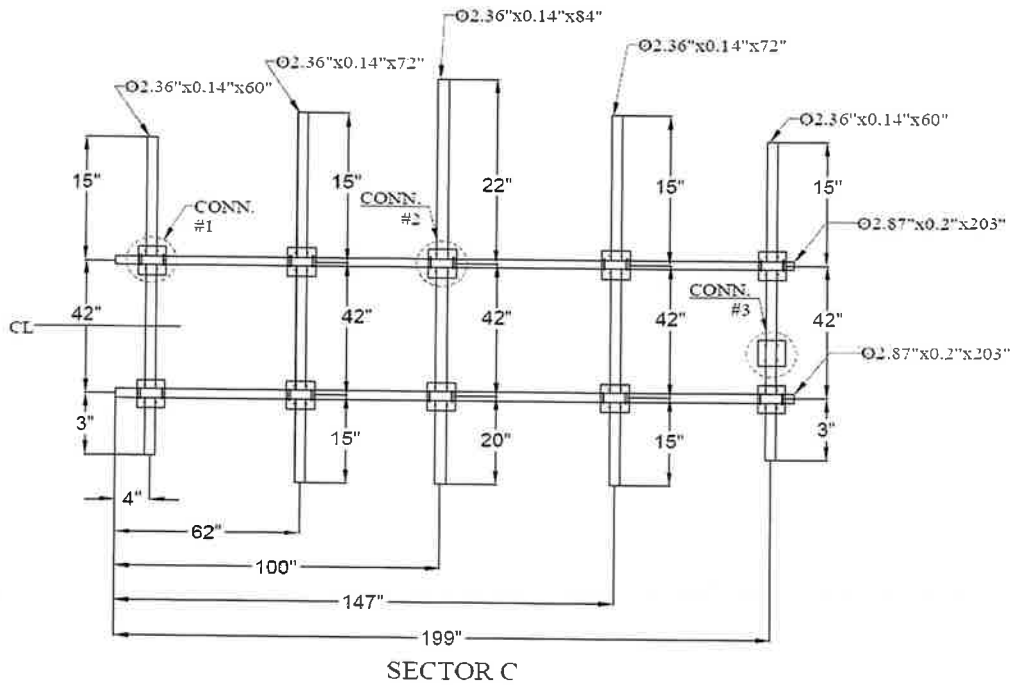
Please Insert Sketches of the Antenna Mount

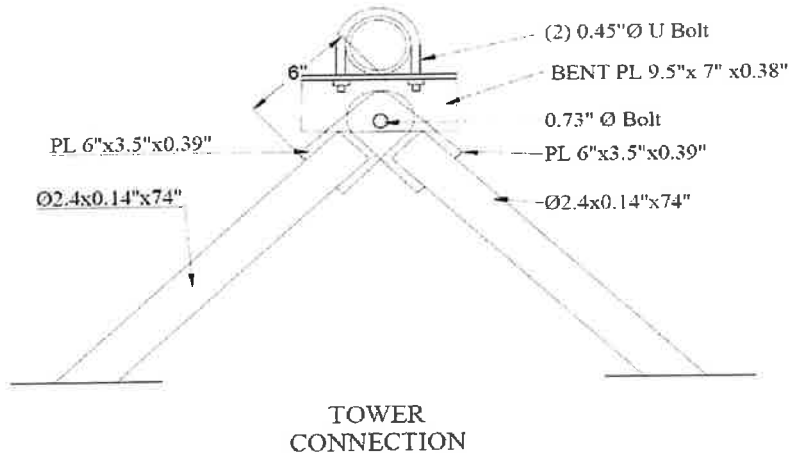
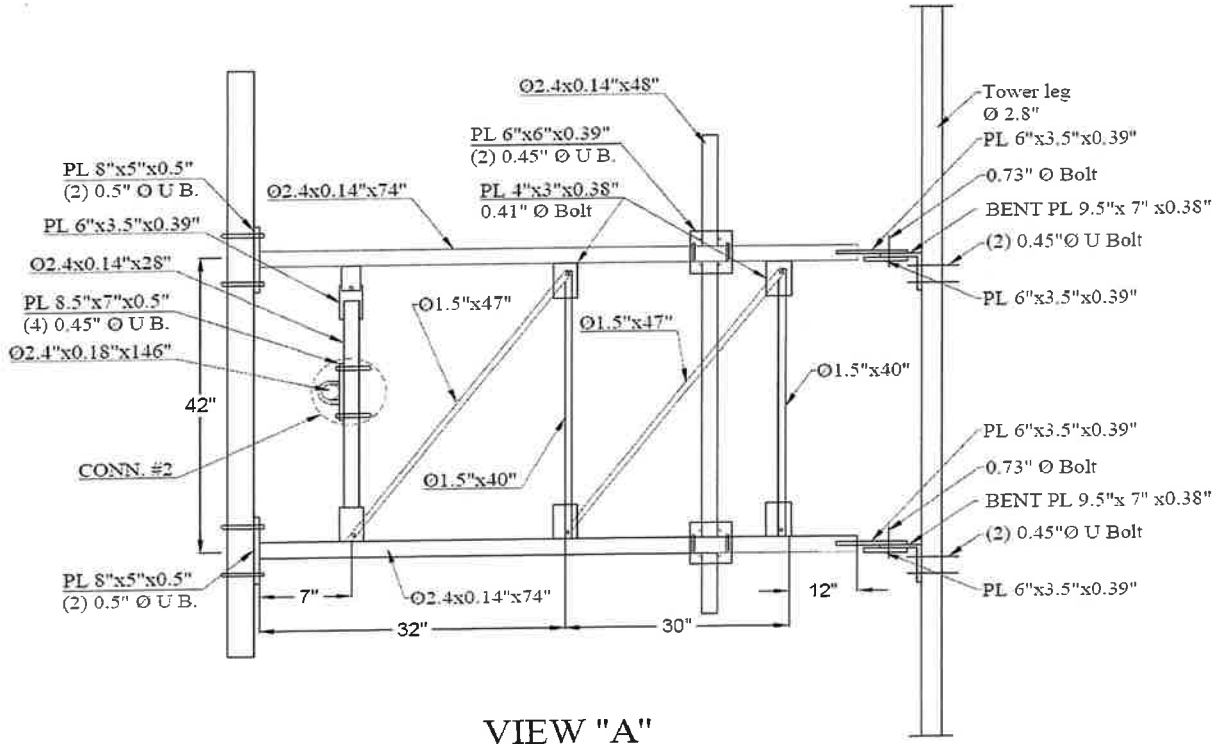
Overall Mount Schematic

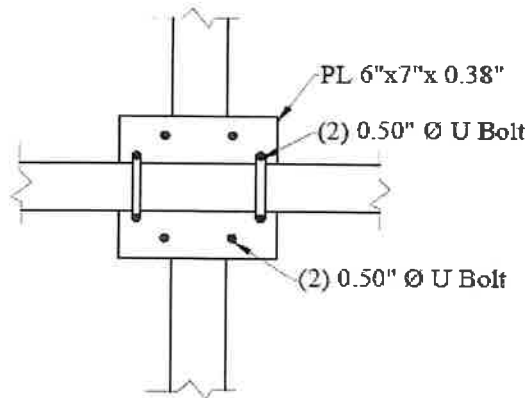




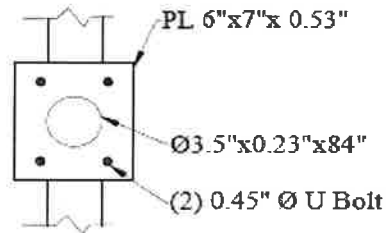
Please Insert Sketches of the Antenna Mount, cont'd



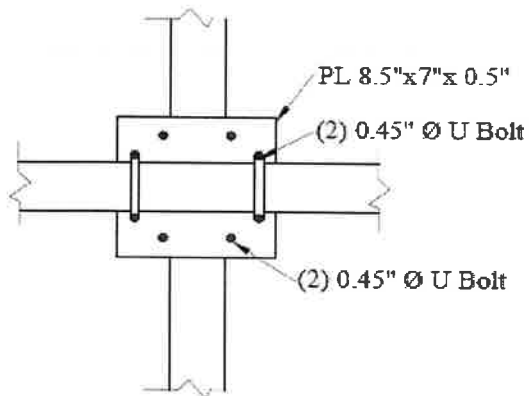




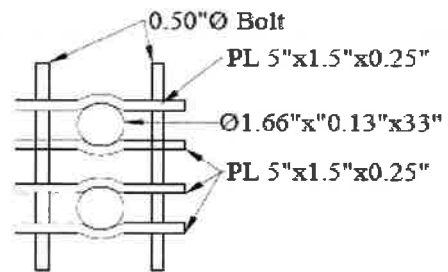
CONN.
#1



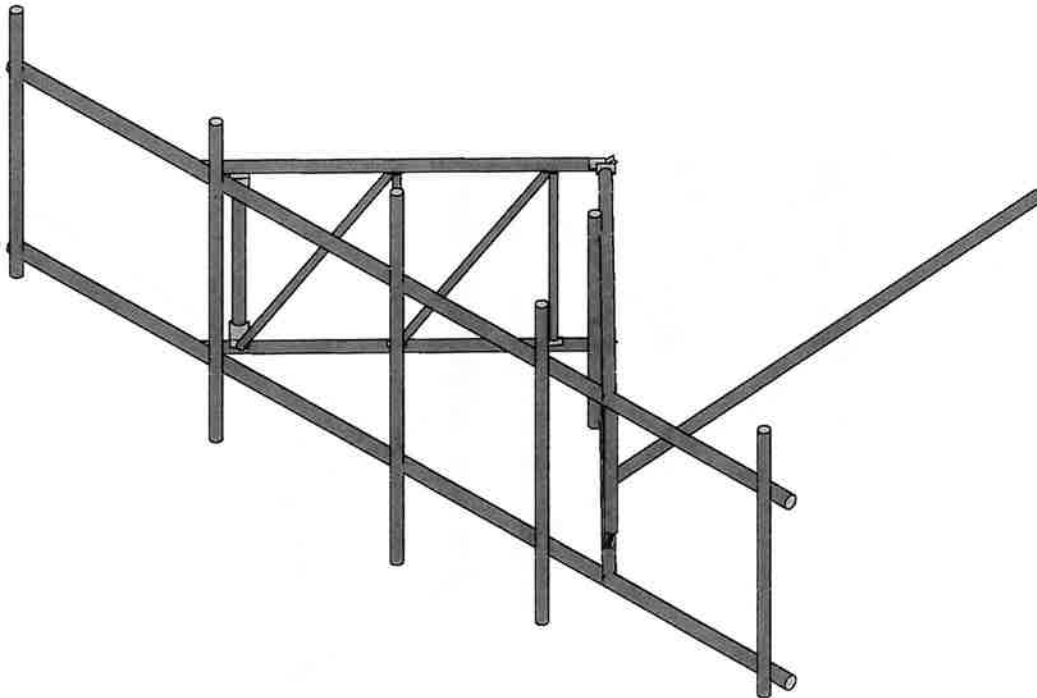
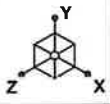
CONN.
#3



CONN.
#2

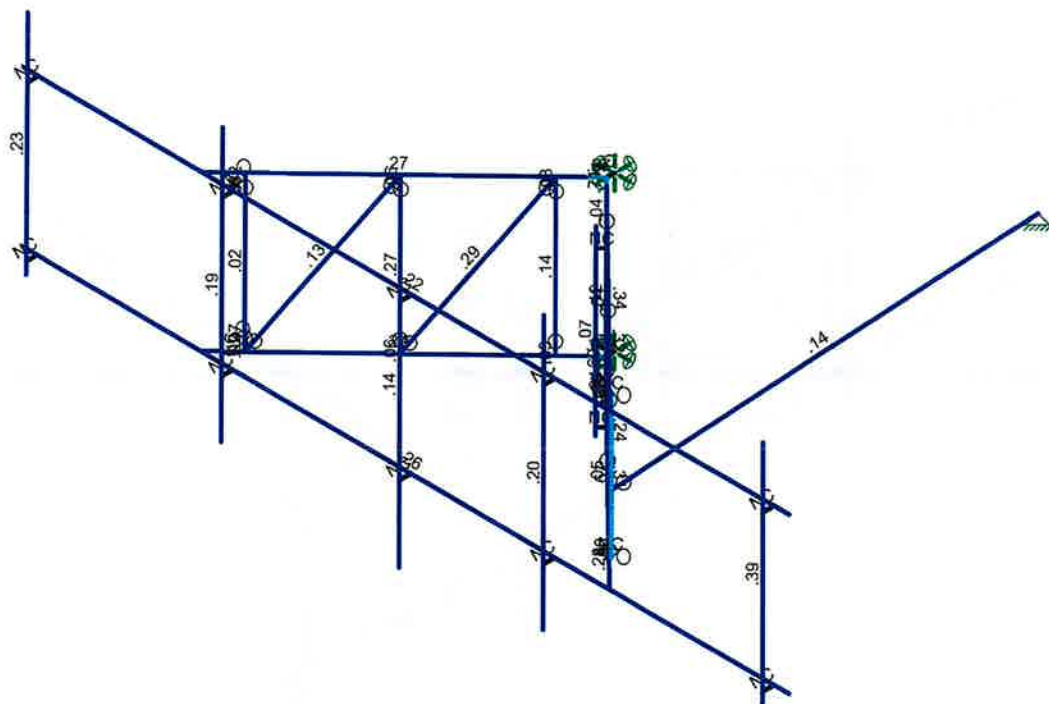
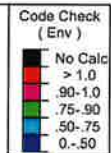
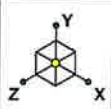


CONN.
#4



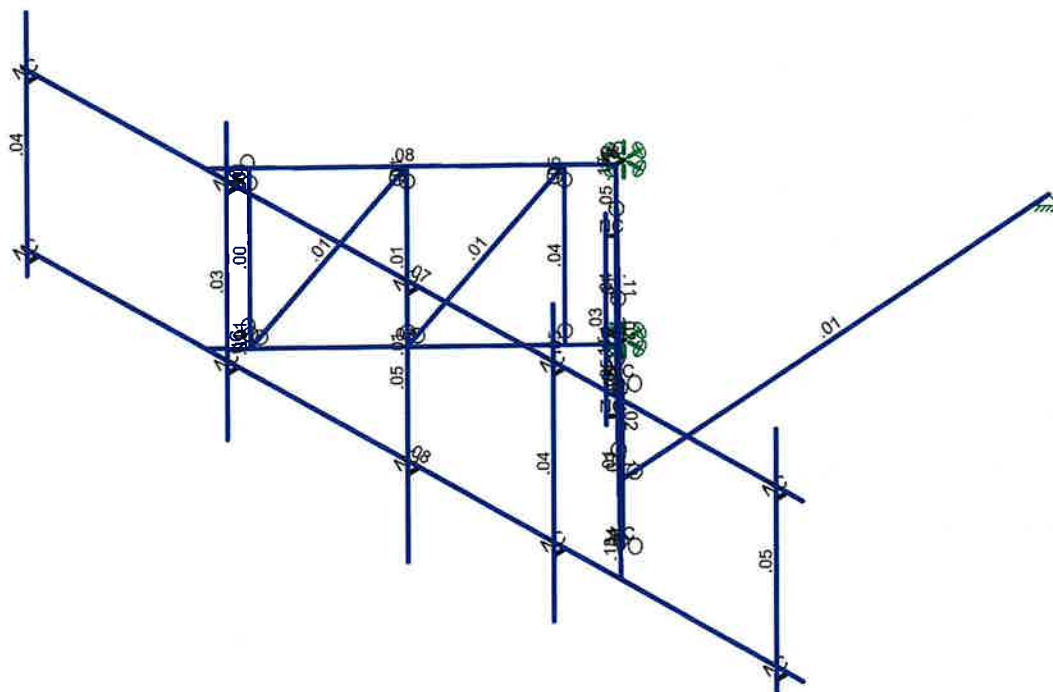
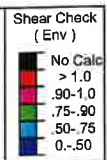
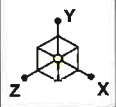
Envelope Only Solution

Colliers Engineering & De...	5000243135-VZW_MT_LOT_SectorA_H	SK - 1
VRD		Jan 30, 2024 at 11:45 AM
Project No. 10217729		5000243135-VZW_MT_LOT_A_H....



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Colliers Engineering & De...	5000243135-VZW_MT_LOT_SectorA_H	SK - 2
VRD		Jan 30, 2024 at 11:45 AM
Project No. 10217729		5000243135-VZW_MT_LOT_A_H....



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Colliers Engineering & De...

VRD

Project No. 10217729

5000243135-VZW_MT_LOT_SectorA_H

SK - 3

Jan 30, 2024 at 11:46 AM

5000243135-VZW_MT_LOT_A_H....

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...)	Surface(...)
52	Structure Wo (330 Deg)	None						86	
53	Structure Wi (0 Deg)	None						86	
54	Structure Wi (30 Deg)	None						86	
55	Structure Wi (60 Deg)	None						86	
56	Structure Wi (90 Deg)	None						86	
57	Structure Wi (120 Deg)	None						86	
58	Structure Wi (150 Deg)	None						86	
59	Structure Wi (180 Deg)	None						86	
60	Structure Wi (210 Deg)	None						86	
61	Structure Wi (240 Deg)	None						86	
62	Structure Wi (270 Deg)	None						86	
63	Structure Wi (300 Deg)	None						86	
64	Structure Wi (330 Deg)	None						86	
65	Structure Wm (0 Deg)	None						86	
66	Structure Wm (30 Deg)	None						86	
67	Structure Wm (60 Deg)	None						86	
68	Structure Wm (90 Deg)	None						86	
69	Structure Wm (120 Deg)	None						86	
70	Structure Wm (150 Deg)	None						86	
71	Structure Wm (180 Deg)	None						86	
72	Structure Wm (210 Deg)	None						86	
73	Structure Wm (240 Deg)	None						86	
74	Structure Wm (270 Deg)	None						86	
75	Structure Wm (300 Deg)	None						86	
76	Structure Wm (330 Deg)	None						86	
77	Lm1	None					1		
78	Lm2	None					1		
79	Lv1	None					1		
80	Lv2	None					1		
81	Antenna Ev	None					42		
82	Antenna Eh (0 Deg)	None					28		
83	Antenna Eh (90 Deg)	None					28		
84	Structure Ev	ELY		-.038					
85	Structure Eh (0 Deg)	ELZ			-.095				
86	Structure Eh (90 Deg)	ELX	.095						

Load Combinations

	Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
1	1.2D+1.0Wo (0 Deg)	Yes	Y	1	1.2	39	1.2	3	1	41	1								
2	1.2D+1.0Wo (30 Deg)	Yes	Y	1	1.2	39	1.2	4	1	42	1								
3	1.2D+1.0Wo (60 Deg)	Yes	Y	1	1.2	39	1.2	5	1	43	1								
4	1.2D+1.0Wo (90 Deg)	Yes	Y	1	1.2	39	1.2	6	1	44	1								
5	1.2D+1.0Wo (120 Deg)	Yes	Y	1	1.2	39	1.2	7	1	45	1								
6	1.2D+1.0Wo (150 Deg)	Yes	Y	1	1.2	39	1.2	8	1	46	1								
7	1.2D+1.0Wo (180 Deg)	Yes	Y	1	1.2	39	1.2	9	1	47	1								
8	1.2D+1.0Wo (210 Deg)	Yes	Y	1	1.2	39	1.2	10	1	48	1								
9	1.2D+1.0Wo (240 Deg)	Yes	Y	1	1.2	39	1.2	11	1	49	1								
10	1.2D+1.0Wo (270 Deg)	Yes	Y	1	1.2	39	1.2	12	1	50	1								
11	1.2D+1.0Wo (300 Deg)	Yes	Y	1	1.2	39	1.2	13	1	51	1								
12	1.2D+1.0Wo (330 Deg)	Yes	Y	1	1.2	39	1.2	14	1	52	1								

Load Combinations (Continued)

[illegible]

Load Combinations (Continued)

[illegible]

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Antenna Pipe	PIPE 2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
2	Standoff Horizontal	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
3	Standoff Vertical	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
4	Standoff Diagonal	1.5 w 0.06 th	Beam	Pipe	A53 Gr. B	Typical	.271	.07	.07	.141
5	Face Horizontal	PIPE 2.5	Beam	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
6	Tie Back	PIPE 2.0	Beam	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
7	Standoff Plate	PL3/8x3.5_HRA_HRB	Beam	RECT	A36 Gr.36	Typical	1.125	.013	.844	.049
8	Mount Angle	L4X3X6	Beam	Single Angle	A36 Gr.36	Typical	2.49	1.89	3.94	.123
9	Antenna Pipe (pos2)	PIPE 3.0	Column	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
10	Plate	PL3/8X3.5	Beam	RECT	A36 Gr.36	Typical	1.313	.015	1.34	.057
11	TES Plate	PL3/8x5_HRC	Beam	RECT	A36 Gr.36	Typical	3	.035	16	.136
12	TES Standoff Plate	PL3/8x5_HRC	Beam	RECT	A36 Gr.36	Typical	3	.035	16	.136

Hot Rolled Steel Properties

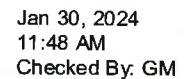
	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
5	A500 Gr. B 42	29000	11154	.3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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M2	N1	N4			RIGID	None	None	RIGID	Typical
2	M5	N1	N17A		90	Standoff Plate	Beam	RECT	A36 Gr.36	Typical
3	M6	N1	N18		90	Standoff Plate	Beam	RECT	A36 Gr.36	Typical
4	M7	N11A	N12			Face Horizontal	Beam	Pipe	A53 Gr. B	Typical
5	M8	N5	N19		90	Standoff Plate	Beam	RECT	A36 Gr.36	Typical
6	M9	N5	N20		90	Standoff Plate	Beam	RECT	A36 Gr.36	Typical
7	M10	N16	N17			Face Horizontal	Beam	Pipe	A53 Gr. B	Typical
8	M11	N17A	N57			Standoff Horiz...	Beam	Pipe	A53 Gr. B	Typical
9	M349	N18	N59			Standoff Horiz...	Beam	Pipe	A53 Gr. B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M2						Yes	** NA **			None
2	M5						Yes	Default			None
3	M6						Yes	Default			None
4	M7						Yes	Default			None
5	M8						Yes	Default			None
6	M9						Yes	Default			None
7	M10						Yes	Default			None
8	M11						Yes				None
9	M349						Yes				None
10	M13						Yes				None
11	M14						Yes				None
12	M46A						Yes	** NA **			None
13	M34A	OOOOXO					Yes	Default			None
14	M36						Yes	Default			None
15	M30	OOOOOX					Yes	Default			None
16	M31		OOOOOO				Yes	Default			None
17	M32		OOOOOO				Yes	Default			None
18	M33	OOOOOX					Yes	Default			None
19	M34						Yes				None
20	M35A						Yes				None
21	M36A	BenPIN	BenPIN				Yes	Default			None
22	M37	BenPIN	BenPIN				Yes	Default			None
23	M29		OOOOOO				Yes				None
24	M30A	OOOOOX					Yes				None
25	M31A	OOOOOX					Yes				None
26	M32A		OOOOOO				Yes				None
27	M34B						Yes				None
28	M35B						Yes				None
29	M36B	BenPIN	BenPIN				Yes	Default			None
30	M37A	BenPIN	BenPIN				Yes	Default			None
31	M53						Yes	Default			None
32	M54	OOOXOO					Yes	** NA **			None
33	M54A	OOOOXO					Yes	Default			None
34	M55						Yes	Default			None
35	M56	OOOXOO					Yes	** NA **			None
36	M54B	OOOOXO					Yes	Default			None
37	M55A						Yes	Default			None
38	M56A						Yes	Default			None
39	M57	OOOXOO					Yes	** NA **			None
40	M58	OOOOXO					Yes	Default			None
41	M59						Yes	Default			None
42	M60	OOOXOO					Yes	** NA **			None
43	M44						Yes	** NA **			None
44	M45						Yes	** NA **			None
45	M46						Yes	** NA **			None
46	M47						Yes	** NA **			None
47	M48						Yes	** NA **			None
48	M49						Yes	** NA **			None
49	M50						Yes	** NA **			None
50	M51						Yes	** NA **			None
51	M52A						Yes	** NA **			None



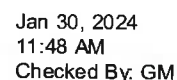
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Member Point Loads (BLC 1 : Antenna D) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
38	MP4A	My	.037	3.5
39	MP4A	Mz	0	3.5
40	MP4A	Y	-10	.5
41	MP4A	My	0	.5
42	MP4A	Mz	0	.5

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	Y	-121.116	1
2	OVP	My	0	1
3	OVP	Mz	0	1
4	MP3A	Y	-97.425	1.42
5	MP3A	My	-.073	1.42
6	MP3A	Mz	.065	1.42
7	MP3A	Y	-97.425	5.42
8	MP3A	My	-.073	5.42
9	MP3A	Mz	.065	5.42
10	MP3A	Y	-97.425	1.42
11	MP3A	My	-.073	1.42
12	MP3A	Mz	-.065	1.42
13	MP3A	Y	-97.425	5.42
14	MP3A	My	-.073	5.42
15	MP3A	Mz	-.065	5.42
16	MP1A	Y	-54.875	1
17	MP1A	My	-.041	1
18	MP1A	Mz	0	1
19	MP1A	Y	-54.875	3
20	MP1A	My	-.041	3
21	MP1A	Mz	0	3
22	MP5A	Y	-54.875	1
23	MP5A	My	-.041	1
24	MP5A	Mz	0	1
25	MP5A	Y	-54.875	3
26	MP5A	My	-.041	3
27	MP5A	Mz	0	3
28	MP2A	Y	-47.908	1.5
29	MP2A	My	-.04	1.5
30	MP2A	Mz	0	1.5
31	MP2A	Y	-47.908	2.5
32	MP2A	My	-.04	2.5
33	MP2A	Mz	0	2.5
34	MP3A	Y	-73.304	3.5
35	MP3A	My	.037	3.5
36	MP3A	Mz	0	3.5
37	MP4A	Y	-72.563	3.5
38	MP4A	My	.036	3.5
39	MP4A	Mz	0	3.5
40	MP4A	Y	-21.337	.5
41	MP4A	My	0	.5
42	MP4A	Mz	0	.5



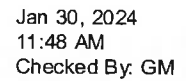
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	OVP	X	63.893	1
2	OVP	Z	-110.665	1
3	OVP	Mx	0	1
4	MP3A	X	39.93	1.42
5	MP3A	Z	-69.161	1.42
6	MP3A	Mx	-.076	1.42

Member Point Loads (BLC 4 : Antenna Wo (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP3A	X	39.93	5.42
8	MP3A	Z	-69.161	5.42
9	MP3A	Mx	-.076	5.42
10	MP3A	X	39.93	1.42
11	MP3A	Z	-69.161	1.42
12	MP3A	Mx	.016	1.42
13	MP3A	X	39.93	5.42
14	MP3A	Z	-69.161	5.42
15	MP3A	Mx	.016	5.42
16	MP1A	X	35.51	1
17	MP1A	Z	-61.505	1
18	MP1A	Mx	-.027	1
19	MP1A	X	35.51	3
20	MP1A	Z	-61.505	3
21	MP1A	Mx	-.027	3
22	MP5A	X	35.51	1
23	MP5A	Z	-61.505	1
24	MP5A	Mx	-.027	1
25	MP5A	X	35.51	3
26	MP5A	Z	-61.505	3
27	MP5A	Mx	-.027	3
28	MP2A	X	22.373	1.5
29	MP2A	Z	-38.752	1.5
30	MP2A	Mx	-.019	1.5
31	MP2A	X	22.373	2.5
32	MP2A	Z	-38.752	2.5
33	MP2A	Mx	-.019	2.5
34	MP3A	X	29.092	3.5
35	MP3A	Z	-50.389	3.5
36	MP3A	Mx	.015	3.5
37	MP4A	X	24.043	3.5
38	MP4A	Z	-41.643	3.5
39	MP4A	Mx	.012	3.5
40	MP4A	X	16.85	.5
41	MP4A	Z	-29.185	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 5 : Antenna Wo (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	OVP	X	98.61	1
2	OVP	Z	-56.932	1
3	OVP	Mx	0	1
4	MP3A	X	46.18	1.42
5	MP3A	Z	-26.662	1.42
6	MP3A	Mx	-.052	1.42
7	MP3A	X	46.18	5.42
8	MP3A	Z	-26.662	5.42
9	MP3A	Mx	-.052	5.42
10	MP3A	X	46.18	1.42
11	MP3A	Z	-26.662	1.42
12	MP3A	Mx	-.017	1.42



RISA-3D Version 17.0.4 [\\...\\...\\RISA\\5000243135-VZW_MT_LOT_A_H.r3d] Page 11

Member Point Loads (BLC 6 : Antenna Wo (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
19	MP1A	X	34.104	3
20	MP1A	Z	0	3
21	MP1A	Mx	-.026	3
22	MP5A	X	34.104	1
23	MP5A	Z	0	1
24	MP5A	Mx	-.026	1
25	MP5A	X	34.104	3
26	MP5A	Z	0	3
27	MP5A	Mx	-.026	3
28	MP2A	X	18.761	1.5
29	MP2A	Z	0	1.5
30	MP2A	Mx	-.016	1.5
31	MP2A	X	18.761	2.5
32	MP2A	Z	0	2.5
33	MP2A	Mx	-.016	2.5
34	MP3A	X	43.099	3.5
35	MP3A	Z	0	3.5
36	MP3A	Mx	.022	3.5
37	MP4A	X	35.155	3.5
38	MP4A	Z	0	3.5
39	MP4A	Mx	.018	3.5
40	MP4A	X	22.697	.5
41	MP4A	Z	0	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 7 : Antenna Wo (120 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	73.725	1
2	OVP	Z	42.565	1
3	OVP	Mx	0	1
4	MP3A	X	46.18	1.42
5	MP3A	Z	26.662	1.42
6	MP3A	Mx	-.017	1.42
7	MP3A	X	46.18	5.42
8	MP3A	Z	26.662	5.42
9	MP3A	Mx	-.017	5.42
10	MP3A	X	46.18	1.42
11	MP3A	Z	26.662	1.42
12	MP3A	Mx	-.052	1.42
13	MP3A	X	46.18	5.42
14	MP3A	Z	26.662	5.42
15	MP3A	Mx	-.052	5.42
16	MP1A	X	40.192	1
17	MP1A	Z	23.205	1
18	MP1A	Mx	-.03	1
19	MP1A	X	40.192	3
20	MP1A	Z	23.205	3
21	MP1A	Mx	-.03	3
22	MP5A	X	40.192	1
23	MP5A	Z	23.205	1
24	MP5A	Mx	-.03	1



Company : Colliers Engineering & Design
 Designer : VRD
 Job Number : Project No. 10217729
 Model Name : 5000243135-VZW_MT_LOT_SectorA_H

Jan 30, 2024
 11:48 AM
 Checked By: GM

Member Point Loads (BLC 7 : Antenna Wo (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
25	MP5A	X	40.192	3
26	MP5A	Z	23.205	3
27	MP5A	Mx	-.03	3
28	MP2A	X	23.749	1.5
29	MP2A	Z	13.711	1.5
30	MP2A	Mx	-.02	1.5
31	MP2A	X	23.749	2.5
32	MP2A	Z	13.711	2.5
33	MP2A	Mx	-.02	2.5
34	MP3A	X	41.679	3.5
35	MP3A	Z	24.064	3.5
36	MP3A	Mx	.021	3.5
37	MP4A	X	34.178	3.5
38	MP4A	Z	19.733	3.5
39	MP4A	Mx	.017	3.5
40	MP4A	X	17.654	.5
41	MP4A	Z	10.192	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 8 : Antenna Wo (150 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	49.525	1
2	OVP	Z	85.781	1
3	OVP	Mx	0	1
4	MP3A	X	39.93	1.42
5	MP3A	Z	69.161	1.42
6	MP3A	Mx	.016	1.42
7	MP3A	X	39.93	5.42
8	MP3A	Z	69.161	5.42
9	MP3A	Mx	.016	5.42
10	MP3A	X	39.93	1.42
11	MP3A	Z	69.161	1.42
12	MP3A	Mx	-.076	1.42
13	MP3A	X	39.93	5.42
14	MP3A	Z	69.161	5.42
15	MP3A	Mx	-.076	5.42
16	MP1A	X	35.51	1
17	MP1A	Z	61.505	1
18	MP1A	Mx	-.027	1
19	MP1A	X	35.51	3
20	MP1A	Z	61.505	3
21	MP1A	Mx	-.027	3
22	MP5A	X	35.51	1
23	MP5A	Z	61.505	1
24	MP5A	Mx	-.027	1
25	MP5A	X	35.51	3
26	MP5A	Z	61.505	3
27	MP5A	Mx	-.027	3
28	MP2A	X	22.373	1.5
29	MP2A	Z	38.752	1.5
30	MP2A	Mx	-.019	1.5

Member Point Loads (BLC 9 : Antenna Wo (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
37	MP4A	X	0	3.5
38	MP4A	Z	52.395	3.5
39	MP4A	Mx	0	3.5
40	MP4A	X	0	.5
41	MP4A	Z	31.388	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 10 : Antenna Wo (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-63.893	1
2	OVP	Z	110.665	1
3	OVP	Mx	0	1
4	MP3A	X	-39.93	1.42
5	MP3A	Z	69.161	1.42
6	MP3A	Mx	.076	1.42
7	MP3A	X	-39.93	5.42
8	MP3A	Z	69.161	5.42
9	MP3A	Mx	.076	5.42
10	MP3A	X	-39.93	1.42
11	MP3A	Z	69.161	1.42
12	MP3A	Mx	-.016	1.42
13	MP3A	X	-39.93	5.42
14	MP3A	Z	69.161	5.42
15	MP3A	Mx	-.016	5.42
16	MP1A	X	-35.51	1
17	MP1A	Z	61.505	1
18	MP1A	Mx	.027	1
19	MP1A	X	-35.51	3
20	MP1A	Z	61.505	3
21	MP1A	Mx	.027	3
22	MP5A	X	-35.51	1
23	MP5A	Z	61.505	1
24	MP5A	Mx	.027	1
25	MP5A	X	-35.51	3
26	MP5A	Z	61.505	3
27	MP5A	Mx	.027	3
28	MP2A	X	-22.373	1.5
29	MP2A	Z	38.752	1.5
30	MP2A	Mx	.019	1.5
31	MP2A	X	-22.373	2.5
32	MP2A	Z	38.752	2.5
33	MP2A	Mx	.019	2.5
34	MP3A	X	-29.092	3.5
35	MP3A	Z	50.389	3.5
36	MP3A	Mx	-.015	3.5
37	MP4A	X	-24.043	3.5
38	MP4A	Z	41.643	3.5
39	MP4A	Mx	-.012	3.5
40	MP4A	X	-16.85	.5
41	MP4A	Z	29.185	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 11 : Antenna Wo (240 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [ft, %]
1	OVP	X	-98.61	1
2	OVP	Z	56.932	1
3	OVP	Mx	0	1
4	MP3A	X	-46.18	1.42
5	MP3A	Z	26.662	1.42
6	MP3A	Mx	.052	1.42
7	MP3A	X	-46.18	5.42
8	MP3A	Z	26.662	5.42
9	MP3A	Mx	.052	5.42
10	MP3A	X	-46.18	1.42
11	MP3A	Z	26.662	1.42
12	MP3A	Mx	.017	1.42
13	MP3A	X	-46.18	5.42
14	MP3A	Z	26.662	5.42
15	MP3A	Mx	.017	5.42
16	MP1A	X	-40.192	1
17	MP1A	Z	23.205	1
18	MP1A	Mx	.03	1
19	MP1A	X	-40.192	3
20	MP1A	Z	23.205	3
21	MP1A	Mx	.03	3
22	MP5A	X	-40.192	1
23	MP5A	Z	23.205	1
24	MP5A	Mx	.03	1
25	MP5A	X	-40.192	3
26	MP5A	Z	23.205	3
27	MP5A	Mx	.03	3
28	MP2A	X	-23.749	1.5
29	MP2A	Z	13.711	1.5
30	MP2A	Mx	.02	1.5
31	MP2A	X	-23.749	2.5
32	MP2A	Z	13.711	2.5
33	MP2A	Mx	.02	2.5
34	MP3A	X	-41.679	3.5
35	MP3A	Z	24.064	3.5
36	MP3A	Mx	-.021	3.5
37	MP4A	X	-34.178	3.5
38	MP4A	Z	19.733	3.5
39	MP4A	Mx	-.017	3.5
40	MP4A	X	-25.422	.5
41	MP4A	Z	14.677	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 12: Antenna Wo (270 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [ft, %]
1	OVP	X	-92.537	1
2	OVP	Z	0	1
3	OVP	Mx	0	1
4	MP3A	X	-40.057	1.42
5	MP3A	Z	0	1.42
6	MP3A	Mx	.03	1.42

Member Point Loads (BLC 12 : Antenna Wo (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP3A	X	-40.057	5.42
8	MP3A	Z	0	5.42
9	MP3A	Mx	.03	5.42
10	MP3A	X	-40.057	1.42
11	MP3A	Z	0	1.42
12	MP3A	Mx	.03	1.42
13	MP3A	X	-40.057	5.42
14	MP3A	Z	0	5.42
15	MP3A	Mx	.03	5.42
16	MP1A	X	-34.104	1
17	MP1A	Z	0	1
18	MP1A	Mx	.026	1
19	MP1A	X	-34.104	3
20	MP1A	Z	0	3
21	MP1A	Mx	.026	3
22	MP5A	X	-34.104	1
23	MP5A	Z	0	1
24	MP5A	Mx	.026	1
25	MP5A	X	-34.104	3
26	MP5A	Z	0	3
27	MP5A	Mx	.026	3
28	MP2A	X	-18.761	1.5
29	MP2A	Z	0	1.5
30	MP2A	Mx	.016	1.5
31	MP2A	X	-18.761	2.5
32	MP2A	Z	0	2.5
33	MP2A	Mx	.016	2.5
34	MP3A	X	-43.099	3.5
35	MP3A	Z	0	3.5
36	MP3A	Mx	-.022	3.5
37	MP4A	X	-35.155	3.5
38	MP4A	Z	0	3.5
39	MP4A	Mx	-.018	3.5
40	MP4A	X	-22.697	.5
41	MP4A	Z	0	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 13 : Antenna Wo (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	OVP	X	-73.725	1
2	OVP	Z	-42.565	1
3	OVP	Mx	0	1
4	MP3A	X	-46.18	1.42
5	MP3A	Z	-26.662	1.42
6	MP3A	Mx	.017	1.42
7	MP3A	X	-46.18	5.42
8	MP3A	Z	-26.662	5.42
9	MP3A	Mx	.017	5.42
10	MP3A	X	-46.18	1.42
11	MP3A	Z	-26.662	1.42
12	MP3A	Mx	.052	1.42

Member Point Loads (BLC 13 : Antenna Wo (300 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
13	MP3A	X	-46.18	5.42
14	MP3A	Z	-26.662	5.42
15	MP3A	Mx	.052	5.42
16	MP1A	X	-40.192	1
17	MP1A	Z	-23.205	1
18	MP1A	Mx	.03	1
19	MP1A	X	-40.192	3
20	MP1A	Z	-23.205	3
21	MP1A	Mx	.03	3
22	MP5A	X	-40.192	1
23	MP5A	Z	-23.205	1
24	MP5A	Mx	.03	1
25	MP5A	X	-40.192	3
26	MP5A	Z	-23.205	3
27	MP5A	Mx	.03	3
28	MP2A	X	-23.749	1.5
29	MP2A	Z	-13.711	1.5
30	MP2A	Mx	.02	1.5
31	MP2A	X	-23.749	2.5
32	MP2A	Z	-13.711	2.5
33	MP2A	Mx	.02	2.5
34	MP3A	X	-41.679	3.5
35	MP3A	Z	-24.064	3.5
36	MP3A	Mx	-.021	3.5
37	MP4A	X	-34.178	3.5
38	MP4A	Z	-19.733	3.5
39	MP4A	Mx	-.017	3.5
40	MP4A	X	-17.654	.5
41	MP4A	Z	-10.192	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 14 : Antenna Wo (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-49.525	1
2	OVP	Z	-85.781	1
3	OVP	Mx	0	1
4	MP3A	X	-39.93	1.42
5	MP3A	Z	-69.161	1.42
6	MP3A	Mx	-.016	1.42
7	MP3A	X	-39.93	5.42
8	MP3A	Z	-69.161	5.42
9	MP3A	Mx	-.016	5.42
10	MP3A	X	-39.93	1.42
11	MP3A	Z	-69.161	1.42
12	MP3A	Mx	.076	1.42
13	MP3A	X	-39.93	5.42
14	MP3A	Z	-69.161	5.42
15	MP3A	Mx	.076	5.42
16	MP1A	X	-35.51	1
17	MP1A	Z	-61.505	1
18	MP1A	Mx	.027	1

Member Point Loads (BLC 14 : Antenna Wo (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
19	MP1A	X	-35.51	3
20	MP1A	Z	-61.505	3
21	MP1A	Mx	.027	3
22	MP5A	X	-35.51	1
23	MP5A	Z	-61.505	1
24	MP5A	Mx	.027	1
25	MP5A	X	-35.51	3
26	MP5A	Z	-61.505	3
27	MP5A	Mx	.027	3
28	MP2A	X	-22.373	1.5
29	MP2A	Z	-38.752	1.5
30	MP2A	Mx	.019	1.5
31	MP2A	X	-22.373	2.5
32	MP2A	Z	-38.752	2.5
33	MP2A	Mx	.019	2.5
34	MP3A	X	-29.092	3.5
35	MP3A	Z	-50.389	3.5
36	MP3A	Mx	-.015	3.5
37	MP4A	X	-24.043	3.5
38	MP4A	Z	-41.643	3.5
39	MP4A	Mx	-.012	3.5
40	MP4A	X	-12.365	.5
41	MP4A	Z	-21.417	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 15 : Antenna Wi (0 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	0	1
2	OVP	Z	-25.522	1
3	OVP	Mx	0	1
4	MP3A	X	0	1.42
5	MP3A	Z	-27.761	1.42
6	MP3A	Mx	-.019	1.42
7	MP3A	X	0	5.42
8	MP3A	Z	-27.761	5.42
9	MP3A	Mx	-.019	5.42
10	MP3A	X	0	1.42
11	MP3A	Z	-27.761	1.42
12	MP3A	Mx	.019	1.42
13	MP3A	X	0	5.42
14	MP3A	Z	-27.761	5.42
15	MP3A	Mx	.019	5.42
16	MP1A	X	0	1
17	MP1A	Z	-17.301	1
18	MP1A	Mx	0	1
19	MP1A	X	0	3
20	MP1A	Z	-17.301	3
21	MP1A	Mx	0	3
22	MP5A	X	0	1
23	MP5A	Z	-17.301	1
24	MP5A	Mx	0	1

Member Point Loads (BLC 15 : Antenna Wi (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
25	MP5A	X	0	3
26	MP5A	Z	-17.301	3
27	MP5A	Mx	0	3
28	MP2A	X	0	1.5
29	MP2A	Z	-13.566	1.5
30	MP2A	Mx	0	1.5
31	MP2A	X	0	2.5
32	MP2A	Z	-13.566	2.5
33	MP2A	Mx	0	2.5
34	MP3A	X	0	3.5
35	MP3A	Z	-14.341	3.5
36	MP3A	Mx	0	3.5
37	MP4A	X	0	3.5
38	MP4A	Z	-14.341	3.5
39	MP4A	Mx	0	3.5
40	MP4A	X	0	.5
41	MP4A	Z	-7.354	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 16 : Antenna Wi (30 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	13.46	1
2	OVP	Z	-23.313	1
3	OVP	Mx	0	1
4	MP3A	X	12.852	1.42
5	MP3A	Z	-22.26	1.42
6	MP3A	Mx	-.024	1.42
7	MP3A	X	12.852	5.42
8	MP3A	Z	-22.26	5.42
9	MP3A	Mx	-.024	5.42
10	MP3A	X	12.852	1.42
11	MP3A	Z	-22.26	1.42
12	MP3A	Mx	.005	1.42
13	MP3A	X	12.852	5.42
14	MP3A	Z	-22.26	5.42
15	MP3A	Mx	.005	5.42
16	MP1A	X	7.534	1
17	MP1A	Z	-13.048	1
18	MP1A	Mx	-.006	1
19	MP1A	X	7.534	3
20	MP1A	Z	-13.048	3
21	MP1A	Mx	-.006	3
22	MP5A	X	7.534	1
23	MP5A	Z	-13.048	1
24	MP5A	Mx	-.006	1
25	MP5A	X	7.534	3
26	MP5A	Z	-13.048	3
27	MP5A	Mx	-.006	3
28	MP2A	X	5.837	1.5
29	MP2A	Z	-10.11	1.5
30	MP2A	Mx	-.005	1.5

Member Point Loads (BLC 16 : Antenna Wi (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
31	MP2A	X	5.837	2.5
32	MP2A	Z	-10.11	2.5
33	MP2A	Mx	-.005	2.5
34	MP3A	X	6.67	3.5
35	MP3A	Z	-11.553	3.5
36	MP3A	Mx	.003	3.5
37	MP4A	X	6.65	3.5
38	MP4A	Z	-11.517	3.5
39	MP4A	Mx	.003	3.5
40	MP4A	X	3.853	.5
41	MP4A	Z	-6.674	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 17 : Antenna Wi (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	21.039	1
2	OVP	Z	-12.147	1
3	OVP	Mx	0	1
4	MP3A	X	18.695	1.42
5	MP3A	Z	-10.794	1.42
6	MP3A	Mx	-.021	1.42
7	MP3A	X	18.695	5.42
8	MP3A	Z	-10.794	5.42
9	MP3A	Mx	-.021	5.42
10	MP3A	X	18.695	1.42
11	MP3A	Z	-10.794	1.42
12	MP3A	Mx	-.007	1.42
13	MP3A	X	18.695	5.42
14	MP3A	Z	-10.794	5.42
15	MP3A	Mx	-.007	5.42
16	MP1A	X	9.178	1
17	MP1A	Z	-5.299	1
18	MP1A	Mx	-.007	1
19	MP1A	X	9.178	3
20	MP1A	Z	-5.299	3
21	MP1A	Mx	-.007	3
22	MP5A	X	9.178	1
23	MP5A	Z	-5.299	1
24	MP5A	Mx	-.007	1
25	MP5A	X	9.178	3
26	MP5A	Z	-5.299	3
27	MP5A	Mx	-.007	3
28	MP2A	X	6.834	1.5
29	MP2A	Z	-3.945	1.5
30	MP2A	Mx	-.006	1.5
31	MP2A	X	6.834	2.5
32	MP2A	Z	-3.945	2.5
33	MP2A	Mx	-.006	2.5
34	MP3A	X	9.822	3.5
35	MP3A	Z	-5.671	3.5
36	MP3A	Mx	.005	3.5

Member Point Loads (BLC 17 : Antenna Wi (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft, %]
37	MP4A	X	9.713	3.5
38	MP4A	Z	-5.608	3.5
39	MP4A	Mx	.005	3.5
40	MP4A	X	6.101	.5
41	MP4A	Z	-3.522	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 18 : Antenna Wi (90 Deg))

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft, %]
1	OVP	X	20.27	1
2	OVP	Z	0	1
3	OVP	Mx	0	1
4	MP3A	X	19.53	1.42
5	MP3A	Z	0	1.42
6	MP3A	Mx	-.015	1.42
7	MP3A	X	19.53	5.42
8	MP3A	Z	0	5.42
9	MP3A	Mx	-.015	5.42
10	MP3A	X	19.53	1.42
11	MP3A	Z	0	1.42
12	MP3A	Mx	-.015	1.42
13	MP3A	X	19.53	5.42
14	MP3A	Z	0	5.42
15	MP3A	Mx	-.015	5.42
16	MP1A	X	8.364	1
17	MP1A	Z	0	1
18	MP1A	Mx	-.006	1
19	MP1A	X	8.364	3
20	MP1A	Z	0	3
21	MP1A	Mx	-.006	3
22	MP5A	X	8.364	1
23	MP5A	Z	0	1
24	MP5A	Mx	-.006	1
25	MP5A	X	8.364	3
26	MP5A	Z	0	3
27	MP5A	Mx	-.006	3
28	MP2A	X	5.999	1.5
29	MP2A	Z	0	1.5
30	MP2A	Mx	-.005	1.5
31	MP2A	X	5.999	2.5
32	MP2A	Z	0	2.5
33	MP2A	Mx	-.005	2.5
34	MP3A	X	10.341	3.5
35	MP3A	Z	0	3.5
36	MP3A	Mx	.005	3.5
37	MP4A	X	10.175	3.5
38	MP4A	Z	0	3.5
39	MP4A	Mx	.005	3.5
40	MP4A	X	6.03	.5
41	MP4A	Z	0	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 19 : Antenna Wi (120 Deg))

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft, %]
1	OVP	X	16.345	1
2	OVP	Z	9.437	1
3	OVP	Mx	0	1
4	MP3A	X	18.695	1.42
5	MP3A	Z	10.794	1.42
6	MP3A	Mx	-.007	1.42
7	MP3A	X	18.695	5.42
8	MP3A	Z	10.794	5.42
9	MP3A	Mx	-.007	5.42
10	MP3A	X	18.695	1.42
11	MP3A	Z	10.794	1.42
12	MP3A	Mx	-.021	1.42
13	MP3A	X	18.695	5.42
14	MP3A	Z	10.794	5.42
15	MP3A	Mx	-.021	5.42
16	MP1A	X	9.178	1
17	MP1A	Z	5.299	1
18	MP1A	Mx	-.007	1
19	MP1A	X	9.178	3
20	MP1A	Z	5.299	3
21	MP1A	Mx	-.007	3
22	MP5A	X	9.178	1
23	MP5A	Z	5.299	1
24	MP5A	Mx	-.007	1
25	MP5A	X	9.178	3
26	MP5A	Z	5.299	3
27	MP5A	Mx	-.007	3
28	MP2A	X	6.834	1.5
29	MP2A	Z	3.945	1.5
30	MP2A	Mx	-.006	1.5
31	MP2A	X	6.834	2.5
32	MP2A	Z	3.945	2.5
33	MP2A	Mx	-.006	2.5
34	MP3A	X	9.822	3.5
35	MP3A	Z	5.671	3.5
36	MP3A	Mx	.005	3.5
37	MP4A	X	9.713	3.5
38	MP4A	Z	5.608	3.5
39	MP4A	Mx	.005	3.5
40	MP4A	X	4.917	.5
41	MP4A	Z	2.839	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 20 : Antenna Wi (150 Deg))

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft, %]
1	OVP	X	10.75	1
2	OVP	Z	18.619	1
3	OVP	Mx	0	1
4	MP3A	X	12.852	1.42
5	MP3A	Z	22.26	1.42
6	MP3A	Mx	.005	1.42

Member Point Loads (BLC 20 : Antenna Wi (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP3A	X	12.852	5.42
8	MP3A	Z	22.26	5.42
9	MP3A	Mx	.005	5.42
10	MP3A	X	12.852	1.42
11	MP3A	Z	22.26	1.42
12	MP3A	Mx	-.024	1.42
13	MP3A	X	12.852	5.42
14	MP3A	Z	22.26	5.42
15	MP3A	Mx	-.024	5.42
16	MP1A	X	7.534	1
17	MP1A	Z	13.048	1
18	MP1A	Mx	-.006	1
19	MP1A	X	7.534	3
20	MP1A	Z	13.048	3
21	MP1A	Mx	-.006	3
22	MP5A	X	7.534	1
23	MP5A	Z	13.048	1
24	MP5A	Mx	-.006	1
25	MP5A	X	7.534	3
26	MP5A	Z	13.048	3
27	MP5A	Mx	-.006	3
28	MP2A	X	5.837	1.5
29	MP2A	Z	10.11	1.5
30	MP2A	Mx	-.005	1.5
31	MP2A	X	5.837	2.5
32	MP2A	Z	10.11	2.5
33	MP2A	Mx	-.005	2.5
34	MP3A	X	6.67	3.5
35	MP3A	Z	11.553	3.5
36	MP3A	Mx	.003	3.5
37	MP4A	X	6.65	3.5
38	MP4A	Z	11.517	3.5
39	MP4A	Mx	.003	3.5
40	MP4A	X	3.17	.5
41	MP4A	Z	5.491	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 21 : Antenna Wi (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	OVP	X	0	1
2	OVP	Z	25.522	1
3	OVP	Mx	0	1
4	MP3A	X	0	1.42
5	MP3A	Z	27.761	1.42
6	MP3A	Mx	.019	1.42
7	MP3A	X	0	5.42
8	MP3A	Z	27.761	5.42
9	MP3A	Mx	.019	5.42
10	MP3A	X	0	1.42
11	MP3A	Z	27.761	1.42
12	MP3A	Mx	-.019	1.42



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Member Point Loads (BLC 21 : Antenna Wi (180 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
13	MP3A	X	0	5.42
14	MP3A	Z	27.761	5.42
15	MP3A	Mx	-.019	5.42
16	MP1A	X	0	1
17	MP1A	Z	17.301	1
18	MP1A	Mx	0	1
19	MP1A	X	0	3
20	MP1A	Z	17.301	3
21	MP1A	Mx	0	3
22	MP5A	X	0	1
23	MP5A	Z	17.301	1
24	MP5A	Mx	0	1
25	MP5A	X	0	3
26	MP5A	Z	17.301	3
27	MP5A	Mx	0	3
28	MP2A	X	0	1.5
29	MP2A	Z	13.566	1.5
30	MP2A	Mx	0	1.5
31	MP2A	X	0	2.5
32	MP2A	Z	13.566	2.5
33	MP2A	Mx	0	2.5
34	MP3A	X	0	3.5
35	MP3A	Z	14.341	3.5
36	MP3A	Mx	0	3.5
37	MP4A	X	0	3.5
38	MP4A	Z	14.341	3.5
39	MP4A	Mx	0	3.5
40	MP4A	X	0	.5
41	MP4A	Z	7.354	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 22 : Antenna Wi (210 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-13.46	1
2	OVP	Z	23.313	1
3	OVP	Mx	0	1
4	MP3A	X	-12.852	1.42
5	MP3A	Z	22.26	1.42
6	MP3A	Mx	.024	1.42
7	MP3A	X	-12.852	5.42
8	MP3A	Z	22.26	5.42
9	MP3A	Mx	.024	5.42
10	MP3A	X	-12.852	1.42
11	MP3A	Z	22.26	1.42
12	MP3A	Mx	-.005	1.42
13	MP3A	X	-12.852	5.42
14	MP3A	Z	22.26	5.42
15	MP3A	Mx	-.005	5.42
16	MP1A	X	-7.534	1
17	MP1A	Z	13.048	1
18	MP1A	Mx	.006	1

Member Point Loads (BLC 22 : Antenna Wi (210 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [ft, %]
19	MP1A	X	-7.534	3
20	MP1A	Z	13.048	3
21	MP1A	Mx	.006	3
22	MP5A	X	-7.534	1
23	MP5A	Z	13.048	1
24	MP5A	Mx	.006	1
25	MP5A	X	-7.534	3
26	MP5A	Z	13.048	3
27	MP5A	Mx	.006	3
28	MP2A	X	-5.837	1.5
29	MP2A	Z	10.11	1.5
30	MP2A	Mx	.005	1.5
31	MP2A	X	-5.837	2.5
32	MP2A	Z	10.11	2.5
33	MP2A	Mx	.005	2.5
34	MP3A	X	-6.67	3.5
35	MP3A	Z	11.553	3.5
36	MP3A	Mx	-.003	3.5
37	MP4A	X	-6.65	3.5
38	MP4A	Z	11.517	3.5
39	MP4A	Mx	-.003	3.5
40	MP4A	X	-3.853	.5
41	MP4A	Z	6.674	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 23 : Antenna Wi (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-21.039	1
2	OVP	Z	12.147	1
3	OVP	Mx	0	1
4	MP3A	X	-18.695	1.42
5	MP3A	Z	10.794	1.42
6	MP3A	Mx	.021	1.42
7	MP3A	X	-18.695	5.42
8	MP3A	Z	10.794	5.42
9	MP3A	Mx	.021	5.42
10	MP3A	X	-18.695	1.42
11	MP3A	Z	10.794	1.42
12	MP3A	Mx	.007	1.42
13	MP3A	X	-18.695	5.42
14	MP3A	Z	10.794	5.42
15	MP3A	Mx	.007	5.42
16	MP1A	X	-9.178	1
17	MP1A	Z	5.299	1
18	MP1A	Mx	.007	1
19	MP1A	X	-9.178	3
20	MP1A	Z	5.299	3
21	MP1A	Mx	.007	3
22	MP5A	X	-9.178	1
23	MP5A	Z	5.299	1
24	MP5A	Mx	.007	1



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Member Point Loads (BLC 23 : Antenna Wi (240 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
25	MP5A	X	-9.178	3
26	MP5A	Z	5.299	3
27	MP5A	Mx	.007	3
28	MP2A	X	-6.834	1.5
29	MP2A	Z	3.945	1.5
30	MP2A	Mx	.006	1.5
31	MP2A	X	-6.834	2.5
32	MP2A	Z	3.945	2.5
33	MP2A	Mx	.006	2.5
34	MP3A	X	-9.822	3.5
35	MP3A	Z	5.671	3.5
36	MP3A	Mx	-.005	3.5
37	MP4A	X	-9.713	3.5
38	MP4A	Z	5.608	3.5
39	MP4A	Mx	-.005	3.5
40	MP4A	X	-6.101	.5
41	MP4A	Z	3.522	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 24 : Antenna Wi (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-20.27	1
2	OVP	Z	0	1
3	OVP	Mx	0	1
4	MP3A	X	-19.53	1.42
5	MP3A	Z	0	1.42
6	MP3A	Mx	.015	1.42
7	MP3A	X	-19.53	5.42
8	MP3A	Z	0	5.42
9	MP3A	Mx	.015	5.42
10	MP3A	X	-19.53	1.42
11	MP3A	Z	0	1.42
12	MP3A	Mx	.015	1.42
13	MP3A	X	-19.53	5.42
14	MP3A	Z	0	5.42
15	MP3A	Mx	.015	5.42
16	MP1A	X	-8.364	1
17	MP1A	Z	0	1
18	MP1A	Mx	.006	1
19	MP1A	X	-8.364	3
20	MP1A	Z	0	3
21	MP1A	Mx	.006	3
22	MP5A	X	-8.364	1
23	MP5A	Z	0	1
24	MP5A	Mx	.006	1
25	MP5A	X	-8.364	3
26	MP5A	Z	0	3
27	MP5A	Mx	.006	3
28	MP2A	X	-5.999	1.5
29	MP2A	Z	0	1.5
30	MP2A	Mx	.005	1.5



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Member Point Loads (BLC 24 : Antenna Wi (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
31	MP2A	X	-5.999	2.5
32	MP2A	Z	0	2.5
33	MP2A	Mx	.005	2.5
34	MP3A	X	-10.341	3.5
35	MP3A	Z	0	3.5
36	MP3A	Mx	-.005	3.5
37	MP4A	X	-10.175	3.5
38	MP4A	Z	0	3.5
39	MP4A	Mx	-.005	3.5
40	MP4A	X	-6.03	.5
41	MP4A	Z	0	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 25 : Antenna Wi (300 Deg))

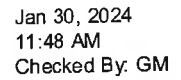
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-16.345	1
2	OVP	Z	-9.437	1
3	OVP	Mx	0	1
4	MP3A	X	-18.695	1.42
5	MP3A	Z	-10.794	1.42
6	MP3A	Mx	.007	1.42
7	MP3A	X	-18.695	5.42
8	MP3A	Z	-10.794	5.42
9	MP3A	Mx	.007	5.42
10	MP3A	X	-18.695	1.42
11	MP3A	Z	-10.794	1.42
12	MP3A	Mx	.021	1.42
13	MP3A	X	-18.695	5.42
14	MP3A	Z	-10.794	5.42
15	MP3A	Mx	.021	5.42
16	MP1A	X	-9.178	1
17	MP1A	Z	-5.299	1
18	MP1A	Mx	.007	1
19	MP1A	X	-9.178	3
20	MP1A	Z	-5.299	3
21	MP1A	Mx	.007	3
22	MP5A	X	-9.178	1
23	MP5A	Z	-5.299	1
24	MP5A	Mx	.007	1
25	MP5A	X	-9.178	3
26	MP5A	Z	-5.299	3
27	MP5A	Mx	.007	3
28	MP2A	X	-6.834	1.5
29	MP2A	Z	-3.945	1.5
30	MP2A	Mx	.006	1.5
31	MP2A	X	-6.834	2.5
32	MP2A	Z	-3.945	2.5
33	MP2A	Mx	.006	2.5
34	MP3A	X	-9.822	3.5
35	MP3A	Z	-5.671	3.5
36	MP3A	Mx	-.005	3.5

Member Point Loads (BLC 25 : Antenna Wi (300 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
37	MP4A	X	-9.713	3.5
38	MP4A	Z	-5.608	3.5
39	MP4A	Mx	-.005	3.5
40	MP4A	X	-4.917	.5
41	MP4A	Z	-2.839	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 26 : Antenna Wi (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-10.75	1
2	OVP	Z	-18.619	1
3	OVP	Mx	0	1
4	MP3A	X	-12.852	1.42
5	MP3A	Z	-22.26	1.42
6	MP3A	Mx	-.005	1.42
7	MP3A	X	-12.852	5.42
8	MP3A	Z	-22.26	5.42
9	MP3A	Mx	-.005	5.42
10	MP3A	X	-12.852	1.42
11	MP3A	Z	-22.26	1.42
12	MP3A	Mx	.024	1.42
13	MP3A	X	-12.852	5.42
14	MP3A	Z	-22.26	5.42
15	MP3A	Mx	.024	5.42
16	MP1A	X	-7.534	1
17	MP1A	Z	-13.048	1
18	MP1A	Mx	.006	1
19	MP1A	X	-7.534	3
20	MP1A	Z	-13.048	3
21	MP1A	Mx	.006	3
22	MP5A	X	-7.534	1
23	MP5A	Z	-13.048	1
24	MP5A	Mx	.006	1
25	MP5A	X	-7.534	3
26	MP5A	Z	-13.048	3
27	MP5A	Mx	.006	3
28	MP2A	X	-5.837	1.5
29	MP2A	Z	-10.11	1.5
30	MP2A	Mx	.005	1.5
31	MP2A	X	-5.837	2.5
32	MP2A	Z	-10.11	2.5
33	MP2A	Mx	.005	2.5
34	MP3A	X	-6.67	3.5
35	MP3A	Z	-11.553	3.5
36	MP3A	Mx	-.003	3.5
37	MP4A	X	-6.65	3.5
38	MP4A	Z	-11.517	3.5
39	MP4A	Mx	-.003	3.5
40	MP4A	X	-3.17	.5
41	MP4A	Z	-5.491	.5
42	MP4A	Mx	0	.5



Member Point Loads (BLC 28 : Antenna Wm (30 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
7	MP3A	X	2.496	5.42
8	MP3A	Z	-4.323	5.42
9	MP3A	Mx	-.005	5.42
10	MP3A	X	2.496	1.42
11	MP3A	Z	-4.323	1.42
12	MP3A	Mx	.001	1.42
13	MP3A	X	2.496	5.42
14	MP3A	Z	-4.323	5.42
15	MP3A	Mx	.001	5.42
16	MP1A	X	2.219	1
17	MP1A	Z	-3.844	1
18	MP1A	Mx	-.002	1
19	MP1A	X	2.219	3
20	MP1A	Z	-3.844	3
21	MP1A	Mx	-.002	3
22	MP5A	X	2.219	1
23	MP5A	Z	-3.844	1
24	MP5A	Mx	-.002	1
25	MP5A	X	2.219	3
26	MP5A	Z	-3.844	3
27	MP5A	Mx	-.002	3
28	MP2A	X	1.398	1.5
29	MP2A	Z	-2.422	1.5
30	MP2A	Mx	-.001	1.5
31	MP2A	X	1.398	2.5
32	MP2A	Z	-2.422	2.5
33	MP2A	Mx	-.001	2.5
34	MP3A	X	1.818	3.5
35	MP3A	Z	-3.149	3.5
36	MP3A	Mx	.000909	3.5
37	MP4A	X	1.503	3.5
38	MP4A	Z	-2.603	3.5
39	MP4A	Mx	.000751	3.5
40	MP4A	X	1.053	.5
41	MP4A	Z	-1.824	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 29 : Antenna Wm (60 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	OVP	X	6.163	1
2	OVP	Z	-3.558	1
3	OVP	Mx	0	1
4	MP3A	X	2.886	1.42
5	MP3A	Z	-1.666	1.42
6	MP3A	Mx	-.003	1.42
7	MP3A	X	2.886	5.42
8	MP3A	Z	-1.666	5.42
9	MP3A	Mx	-.003	5.42
10	MP3A	X	2.886	1.42
11	MP3A	Z	-1.666	1.42
12	MP3A	Mx	-.001	1.42

Member Point Loads (BLC 29 : Antenna Wm (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
13	MP3A	X	2.886	5.42
14	MP3A	Z	-1.666	5.42
15	MP3A	Mx	-.001	5.42
16	MP1A	X	2.512	1
17	MP1A	Z	-1.45	1
18	MP1A	Mx	-.002	1
19	MP1A	X	2.512	3
20	MP1A	Z	-1.45	3
21	MP1A	Mx	-.002	3
22	MP5A	X	2.512	1
23	MP5A	Z	-1.45	1
24	MP5A	Mx	-.002	1
25	MP5A	X	2.512	3
26	MP5A	Z	-1.45	3
27	MP5A	Mx	-.002	3
28	MP2A	X	1.484	1.5
29	MP2A	Z	-.857	1.5
30	MP2A	Mx	-.001	1.5
31	MP2A	X	1.484	2.5
32	MP2A	Z	-.857	2.5
33	MP2A	Mx	-.001	2.5
34	MP3A	X	2.605	3.5
35	MP3A	Z	-1.504	3.5
36	MP3A	Mx	.001	3.5
37	MP4A	X	2.136	3.5
38	MP4A	Z	-1.233	3.5
39	MP4A	Mx	.001	3.5
40	MP4A	X	1.589	.5
41	MP4A	Z	-.917	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 30 : Antenna Wm (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	5.784	1
2	OVP	Z	0	1
3	OVP	Mx	0	1
4	MP3A	X	2.504	1.42
5	MP3A	Z	0	1.42
6	MP3A	Mx	-.002	1.42
7	MP3A	X	2.504	5.42
8	MP3A	Z	0	5.42
9	MP3A	Mx	-.002	5.42
10	MP3A	X	2.504	1.42
11	MP3A	Z	0	1.42
12	MP3A	Mx	-.002	1.42
13	MP3A	X	2.504	5.42
14	MP3A	Z	0	5.42
15	MP3A	Mx	-.002	5.42
16	MP1A	X	2.131	1
17	MP1A	Z	0	1
18	MP1A	Mx	-.002	1

Member Point Loads (BLC 30 : Antenna Wm (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
19	MP1A	X	2.131	3
20	MP1A	Z	0	3
21	MP1A	Mx	-.002	3
22	MP5A	X	2.131	1
23	MP5A	Z	0	1
24	MP5A	Mx	-.002	1
25	MP5A	X	2.131	3
26	MP5A	Z	0	3
27	MP5A	Mx	-.002	3
28	MP2A	X	1.173	1.5
29	MP2A	Z	0	1.5
30	MP2A	Mx	-.000978	1.5
31	MP2A	X	1.173	2.5
32	MP2A	Z	0	2.5
33	MP2A	Mx	-.000978	2.5
34	MP3A	X	2.694	3.5
35	MP3A	Z	0	3.5
36	MP3A	Mx	.001	3.5
37	MP4A	X	2.197	3.5
38	MP4A	Z	0	3.5
39	MP4A	Mx	.001	3.5
40	MP4A	X	1.419	.5
41	MP4A	Z	0	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 31 : Antenna Wm (120 Deg))

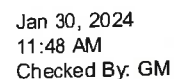
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	4.608	1
2	OVP	Z	2.66	1
3	OVP	Mx	0	1
4	MP3A	X	2.886	1.42
5	MP3A	Z	1.666	1.42
6	MP3A	Mx	-.001	1.42
7	MP3A	X	2.886	5.42
8	MP3A	Z	1.666	5.42
9	MP3A	Mx	-.001	5.42
10	MP3A	X	2.886	1.42
11	MP3A	Z	1.666	1.42
12	MP3A	Mx	-.003	1.42
13	MP3A	X	2.886	5.42
14	MP3A	Z	1.666	5.42
15	MP3A	Mx	-.003	5.42
16	MP1A	X	2.512	1
17	MP1A	Z	1.45	1
18	MP1A	Mx	-.002	1
19	MP1A	X	2.512	3
20	MP1A	Z	1.45	3
21	MP1A	Mx	-.002	3
22	MP5A	X	2.512	1
23	MP5A	Z	1.45	1
24	MP5A	Mx	-.002	1

Member Point Loads (BLC 32 : Antenna Wm (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
31	MP2A	X	1.398	2.5
32	MP2A	Z	2.422	2.5
33	MP2A	Mx	-.001	2.5
34	MP3A	X	1.818	3.5
35	MP3A	Z	3.149	3.5
36	MP3A	Mx	.000909	3.5
37	MP4A	X	1.503	3.5
38	MP4A	Z	2.603	3.5
39	MP4A	Mx	.000751	3.5
40	MP4A	X	.773	.5
41	MP4A	Z	1.339	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 33 : Antenna Wm (180 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	0	1
2	OVP	Z	7.524	1
3	OVP	Mx	0	1
4	MP3A	X	0	1.42
5	MP3A	Z	5.82	1.42
6	MP3A	Mx	.004	1.42
7	MP3A	X	0	5.42
8	MP3A	Z	5.82	5.42
9	MP3A	Mx	.004	5.42
10	MP3A	X	0	1.42
11	MP3A	Z	5.82	1.42
12	MP3A	Mx	-.004	1.42
13	MP3A	X	0	5.42
14	MP3A	Z	5.82	5.42
15	MP3A	Mx	-.004	5.42
16	MP1A	X	0	1
17	MP1A	Z	5.208	1
18	MP1A	Mx	0	1
19	MP1A	X	0	3
20	MP1A	Z	5.208	3
21	MP1A	Mx	0	3
22	MP5A	X	0	1
23	MP5A	Z	5.208	1
24	MP5A	Mx	0	1
25	MP5A	X	0	3
26	MP5A	Z	5.208	3
27	MP5A	Mx	0	3
28	MP2A	X	0	1.5
29	MP2A	Z	3.338	1.5
30	MP2A	Mx	0	1.5
31	MP2A	X	0	2.5
32	MP2A	Z	3.338	2.5
33	MP2A	Mx	0	2.5
34	MP3A	X	0	3.5
35	MP3A	Z	3.951	3.5
36	MP3A	Mx	0	3.5



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Member Point Loads (BLC 35 : Antenna Wm (240 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-6.163	1
2	OVP	Z	3.558	1
3	OVP	Mx	0	1
4	MP3A	X	-2.886	1.42
5	MP3A	Z	1.666	1.42
6	MP3A	Mx	.003	1.42
7	MP3A	X	-2.886	5.42
8	MP3A	Z	1.666	5.42
9	MP3A	Mx	.003	5.42
10	MP3A	X	-2.886	1.42
11	MP3A	Z	1.666	1.42
12	MP3A	Mx	.001	1.42
13	MP3A	X	-2.886	5.42
14	MP3A	Z	1.666	5.42
15	MP3A	Mx	.001	5.42
16	MP1A	X	-2.512	1
17	MP1A	Z	1.45	1
18	MP1A	Mx	.002	1
19	MP1A	X	-2.512	3
20	MP1A	Z	1.45	3
21	MP1A	Mx	.002	3
22	MP5A	X	-2.512	1
23	MP5A	Z	1.45	1
24	MP5A	Mx	.002	1
25	MP5A	X	-2.512	3
26	MP5A	Z	1.45	3
27	MP5A	Mx	.002	3
28	MP2A	X	-1.484	1.5
29	MP2A	Z	.857	1.5
30	MP2A	Mx	.001	1.5
31	MP2A	X	-1.484	2.5
32	MP2A	Z	.857	2.5
33	MP2A	Mx	.001	2.5
34	MP3A	X	-2.605	3.5
35	MP3A	Z	1.504	3.5
36	MP3A	Mx	-.001	3.5
37	MP4A	X	-2.136	3.5
38	MP4A	Z	1.233	3.5
39	MP4A	Mx	-.001	3.5
40	MP4A	X	-1.589	.5
41	MP4A	Z	.917	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 36 : Antenna Wm (270 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-5.784	1
2	OVP	Z	0	1
3	OVP	Mx	0	1
4	MP3A	X	-2.504	1.42
5	MP3A	Z	0	1.42
6	MP3A	Mx	.002	1.42

Member Point Loads (BLC 36 : Antenna Wm (270 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
7	MP3A	X	-2.504	5.42
8	MP3A	Z	0	5.42
9	MP3A	Mx	.002	5.42
10	MP3A	X	-2.504	1.42
11	MP3A	Z	0	1.42
12	MP3A	Mx	.002	1.42
13	MP3A	X	-2.504	5.42
14	MP3A	Z	0	5.42
15	MP3A	Mx	.002	5.42
16	MP1A	X	-2.131	1
17	MP1A	Z	0	1
18	MP1A	Mx	.002	1
19	MP1A	X	-2.131	3
20	MP1A	Z	0	3
21	MP1A	Mx	.002	3
22	MP5A	X	-2.131	1
23	MP5A	Z	0	1
24	MP5A	Mx	.002	1
25	MP5A	X	-2.131	3
26	MP5A	Z	0	3
27	MP5A	Mx	.002	3
28	MP2A	X	-1.173	1.5
29	MP2A	Z	0	1.5
30	MP2A	Mx	.000978	1.5
31	MP2A	X	-1.173	2.5
32	MP2A	Z	0	2.5
33	MP2A	Mx	.000978	2.5
34	MP3A	X	-2.694	3.5
35	MP3A	Z	0	3.5
36	MP3A	Mx	-.001	3.5
37	MP4A	X	-2.197	3.5
38	MP4A	Z	0	3.5
39	MP4A	Mx	-.001	3.5
40	MP4A	X	-1.419	.5
41	MP4A	Z	0	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 37 : Antenna Wm (300 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	OVP	X	-4.608	1
2	OVP	Z	-2.66	1
3	OVP	Mx	0	1
4	MP3A	X	-2.886	1.42
5	MP3A	Z	-1.666	1.42
6	MP3A	Mx	.001	1.42
7	MP3A	X	-2.886	5.42
8	MP3A	Z	-1.666	5.42
9	MP3A	Mx	.001	5.42
10	MP3A	X	-2.886	1.42
11	MP3A	Z	-1.666	1.42
12	MP3A	Mx	.003	1.42

Member Point Loads (BLC 37 : Antenna Wm (300 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
13	MP3A	X	-2.886	5.42
14	MP3A	Z	-1.666	5.42
15	MP3A	Mx	.003	5.42
16	MP1A	X	-2.512	1
17	MP1A	Z	-1.45	1
18	MP1A	Mx	.002	1
19	MP1A	X	-2.512	3
20	MP1A	Z	-1.45	3
21	MP1A	Mx	.002	3
22	MP5A	X	-2.512	1
23	MP5A	Z	-1.45	1
24	MP5A	Mx	.002	1
25	MP5A	X	-2.512	3
26	MP5A	Z	-1.45	3
27	MP5A	Mx	.002	3
28	MP2A	X	-1.484	1.5
29	MP2A	Z	-.857	1.5
30	MP2A	Mx	.001	1.5
31	MP2A	X	-1.484	2.5
32	MP2A	Z	-.857	2.5
33	MP2A	Mx	.001	2.5
34	MP3A	X	-2.605	3.5
35	MP3A	Z	-1.504	3.5
36	MP3A	Mx	-.001	3.5
37	MP4A	X	-2.136	3.5
38	MP4A	Z	-1.233	3.5
39	MP4A	Mx	-.001	3.5
40	MP4A	X	-1.103	.5
41	MP4A	Z	-.637	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 38 : Antenna Wm (330 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	-3.095	1
2	OVP	Z	-5.361	1
3	OVP	Mx	0	1
4	MP3A	X	-2.496	1.42
5	MP3A	Z	-4.323	1.42
6	MP3A	Mx	-.001	1.42
7	MP3A	X	-2.496	5.42
8	MP3A	Z	-4.323	5.42
9	MP3A	Mx	-.001	5.42
10	MP3A	X	-2.496	1.42
11	MP3A	Z	-4.323	1.42
12	MP3A	Mx	.005	1.42
13	MP3A	X	-2.496	5.42
14	MP3A	Z	-4.323	5.42
15	MP3A	Mx	.005	5.42
16	MP1A	X	-2.219	1
17	MP1A	Z	-3.844	1
18	MP1A	Mx	.002	1

Member Point Loads (BLC 38 : Antenna Wm (330 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
19	MP1A	X	-2.219	3
20	MP1A	Z	-3.844	3
21	MP1A	Mx	.002	3
22	MP5A	X	-2.219	1
23	MP5A	Z	-3.844	1
24	MP5A	Mx	.002	1
25	MP5A	X	-2.219	3
26	MP5A	Z	-3.844	3
27	MP5A	Mx	.002	3
28	MP2A	X	-1.398	1.5
29	MP2A	Z	-2.422	1.5
30	MP2A	Mx	.001	1.5
31	MP2A	X	-1.398	2.5
32	MP2A	Z	-2.422	2.5
33	MP2A	Mx	.001	2.5
34	MP3A	X	-1.818	3.5
35	MP3A	Z	-3.149	3.5
36	MP3A	Mx	-.000909	3.5
37	MP4A	X	-1.503	3.5
38	MP4A	Z	-2.603	3.5
39	MP4A	Mx	-.000751	3.5
40	MP4A	X	-.773	.5
41	MP4A	Z	-1.339	.5
42	MP4A	Mx	0	.5

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	M10	Y	-500	%98

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	M10	Y	-500	%51

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	M10	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	M10	Y	-250	%50

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	Y	-1.215	1
2	OVP	My	0	1
3	OVP	Mz	0	1
4	MP3A	Y	-.759	1.42
5	MP3A	My	-.00057	1.42
6	MP3A	Mz	.000506	1.42

Member Point Loads (BLC 81 : Antenna Ev) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
7	MP3A	Y	-.759	5.42
8	MP3A	My	-.00057	5.42
9	MP3A	Mz	.000506	5.42
10	MP3A	Y	-.759	1.42
11	MP3A	My	-.00057	1.42
12	MP3A	Mz	-.000506	1.42
13	MP3A	Y	-.759	5.42
14	MP3A	My	-.00057	5.42
15	MP3A	Mz	-.000506	5.42
16	MP1A	Y	-.228	1
17	MP1A	My	-.000171	1
18	MP1A	Mz	0	1
19	MP1A	Y	-.228	3
20	MP1A	My	-.000171	3
21	MP1A	Mz	0	3
22	MP5A	Y	-.228	1
23	MP5A	My	-.000171	1
24	MP5A	Mz	0	1
25	MP5A	Y	-.228	3
26	MP5A	My	-.000171	3
27	MP5A	Mz	0	3
28	MP2A	Y	-1.088	1.5
29	MP2A	My	-.000907	1.5
30	MP2A	Mz	0	1.5
31	MP2A	Y	-1.088	2.5
32	MP2A	My	-.000907	2.5
33	MP2A	Mz	0	2.5
34	MP3A	Y	-3.004	3.5
35	MP3A	My	.002	3.5
36	MP3A	Mz	0	3.5
37	MP4A	Y	-2.837	3.5
38	MP4A	My	.001	3.5
39	MP4A	Mz	0	3.5
40	MP4A	Y	-.38	.5
41	MP4A	My	0	.5
42	MP4A	Mz	0	.5

Member Point Loads (BLC 82 : Antenna Eh (0 Deg))

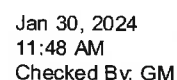
	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	Z	-3.038	1
2	OVP	Mx	0	1
3	MP3A	Z	-1.899	1.42
4	MP3A	Mx	-.001	1.42
5	MP3A	Z	-1.899	5.42
6	MP3A	Mx	-.001	5.42
7	MP3A	Z	-1.899	1.42
8	MP3A	Mx	.001	1.42
9	MP3A	Z	-1.899	5.42
10	MP3A	Mx	.001	5.42
11	MP1A	Z	-.57	1
12	MP1A	Mx	0	1

Member Point Loads (BLC 82 : Antenna Eh (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	MP1A	Z	- .57	3
14	MP1A	Mx	0	3
15	MP5A	Z	- .57	1
16	MP5A	Mx	0	1
17	MP5A	Z	- .57	3
18	MP5A	Mx	0	3
19	MP2A	Z	-2.72	1.5
20	MP2A	Mx	0	1.5
21	MP2A	Z	-2.72	2.5
22	MP2A	Mx	0	2.5
23	MP3A	Z	-7.509	3.5
24	MP3A	Mx	0	3.5
25	MP4A	Z	-7.092	3.5
26	MP4A	Mx	0	3.5
27	MP4A	Z	-.949	.5
28	MP4A	Mx	0	.5

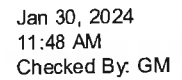
Member Point Loads (BLC 83 : Antenna Eh (90 Deg))

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft, %]
1	OVP	X	3.038	1
2	OVP	Mx	0	1
3	MP3A	X	1.899	1.42
4	MP3A	Mx	-.001	1.42
5	MP3A	X	1.899	5.42
6	MP3A	Mx	-.001	5.42
7	MP3A	X	1.899	1.42
8	MP3A	Mx	-.001	1.42
9	MP3A	X	1.899	5.42
10	MP3A	Mx	-.001	5.42
11	MP1A	X	.57	1
12	MP1A	Mx	-.000427	1
13	MP1A	X	.57	3
14	MP1A	Mx	-.000427	3
15	MP5A	X	.57	1
16	MP5A	Mx	-.000427	1
17	MP5A	X	.57	3
18	MP5A	Mx	-.000427	3
19	MP2A	X	2.72	1.5
20	MP2A	Mx	-.002	1.5
21	MP2A	X	2.72	2.5
22	MP2A	Mx	-.002	2.5
23	MP3A	X	7.509	3.5
24	MP3A	Mx	.004	3.5
25	MP4A	X	7.092	3.5
26	MP4A	Mx	.004	3.5
27	MP4A	X	.949	.5
28	MP4A	Mx	0	.5



Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N4	-4.413	549.546	60.07	-.168	0	.008
2	1	N65	.072	438.228	1842.713	-.133	0	.005
3	1	N89C	4.342	16.75	68.042	0	0	0
4	1	Totals:	.001	1004.524	1970.825			
5	1	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
6	2	N4	-582.417	555.919	-637.854	-.169	0	.019
7	2	N65	-381.454	435.634	1045.323	-.131	0	.019
8	2	N89C	67.319	12.968	1145.381	0	0	0
9	2	Totals:	-896.552	1004.52	1552.85			
10	2	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
11	3	N4	-760.773	553.82	-1262.431	-.168	0	.021
12	3	N65	-503.557	438.597	589.169	-.134	0	.021
13	3	N89C	59.936	12.102	1368.707	0	0	0
14	3	Totals:	-1204.393	1004.52	695.445			
15	3	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
16	4	N4	-717.644	547.892	-1616.174	-.165	0	.018
17	4	N65	-486.384	444.16	417.572	-.138	0	.019
18	4	N89C	37.788	12.468	1198.734	0	0	0
19	4	Totals:	-1166.24	1004.52	.132			
20	4	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
21	5	N4	-728.134	543.056	-2040.184	-.163	0	.018
22	5	N65	-493.785	449.376	120.091	-.141	0	.018
23	5	N89C	57.848	12.088	1248.218	0	0	0
24	5	Totals:	-1164.071	1004.52	-671.876			
25	5	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
26	6	N4	-563.119	536.554	-2454.616	-.161	0	.016
27	6	N65	-370.81	455.026	-49.414	-.145	0	.013
28	6	N89C	60.66	12.941	991.737	0	0	0
29	6	Totals:	-873.268	1004.521	-1512.293			
30	6	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
31	7	N4	-3.859	526.82	-2312.595	-.159	0	.004
32	7	N65	8.171	461.039	409.301	-.149	0	-.002
33	7	N89C	-4.306	16.665	-67.537	0	0	0
34	7	Totals:	.005	1004.524	-1970.832			
35	7	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
36	8	N4	573.205	520.495	-1614.823	-.158	0	-.007
37	8	N65	388.623	463.617	1204.068	-.15	0	-.016
38	8	N89C	-65.27	20.416	-1142.1	0	0	0
39	8	Totals:	896.558	1004.528	-1552.855			
40	8	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
41	9	N4	751.242	522.565	-987.26	-.159	0	-.008
42	9	N65	510.621	460.658	1664.247	-.148	0	-.018
43	9	N89C	-57.464	21.306	-1372.438	0	0	0
44	9	Totals:	1204.399	1004.528	-695.451			
45	9	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			





Company : Colliers Engineering & Design
 Designer : VRD
 Job Number : Project No. 10217729
 Model Name : 5000243135-VZW_MT_LOT_SectorA_H

Jan 30, 2024
 11:48 AM
 Checked By: GM

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
98	20	N89C	-20.618	53.928	-369.969	0	0	0
99	20	Totals:	294.045	3230.013	-509.28			
100	20	COG (ft):	X: .019	Y: -1.462	Z: 3.845			
101	21	N4	146.45	1746.098	-3537.448	-.526	0	.026
102	21	N65	297.684	1429.469	3773.046	-.451	0	.007
103	21	N89C	-18.203	54.447	-481.549	0	0	0
104	21	Totals:	425.932	3230.014	-245.951			
105	21	COG (ft):	X: .019	Y: -1.462	Z: 3.845			
106	22	N4	148.378	1747.5	-3408.334	-.527	0	.026
107	22	N65	301.506	1428.111	3858.366	-.449	0	.008
108	22	N89C	-11.475	54.403	-450.095	0	0	0
109	22	Totals:	438.409	3230.014	-.063			
110	22	COG (ft):	X: .019	Y: -1.462	Z: 3.845			
111	23	N4	140.121	1748.92	-3273.642	-.528	0	.026
112	23	N65	294.781	1426.647	3955.894	-.448	0	.008
113	23	N89C	-18.137	54.447	-441.722	0	0	0
114	23	Totals:	416.766	3230.014	240.53			
115	23	COG (ft):	X: .019	Y: -1.462	Z: 3.845			
116	24	N4	68.593	1750.827	-3167.371	-.529	0	.027
117	24	N65	239.587	1425.232	3996.172	-.447	0	.01
118	24	N89C	-19.427	53.955	-328.79	0	0	0
119	24	Totals:	288.754	3230.014	500.011			
120	24	COG (ft):	X: .019	Y: -1.462	Z: 3.845			
121	25	N4	-1708.253	979.246	-2010.629	-.283	0	.134
122	25	N65	1708.086	751.118	2131.054	-.229	0	.113
123	25	N89C	.173	24.194	2.723	0	0	0
124	25	Totals:	.007	1754.558	123.148			
125	25	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
126	26	N4	-1744.508	979.711	-2053.877	-.283	0	.135
127	26	N65	1684.432	750.947	2080.931	-.229	0	.114
128	26	N89C	4.05	23.9	69.973	0	0	0
129	26	Totals:	-56.027	1754.558	97.026			
130	26	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
131	27	N4	-1755.682	979.603	-2092.867	-.283	0	.135
132	27	N65	1676.84	751.122	2052.165	-.229	0	.114
133	27	N89C	3.576	23.833	84.136	0	0	0
134	27	Totals:	-75.266	1754.558	43.433			
135	27	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
136	28	N4	-1752.983	979.229	-2114.988	-.283	0	.135
137	28	N65	1677.885	751.465	2041.374	-.23	0	.114
138	28	N89C	2.212	23.863	73.593	0	0	0
139	28	Totals:	-72.885	1754.558	-.02			
140	28	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
141	29	N4	-1753.656	978.936	-2141.468	-.282	0	.135
142	29	N65	1677.443	751.787	2022.627	-.23	0	.114
143	29	N89C	3.468	23.835	76.824	0	0	0
144	29	Totals:	-72.746	1754.558	-42.018			
145	29	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
146	30	N4	-1743.326	978.522	-2167.394	-.282	0	.135
147	30	N65	1685.081	752.134	2012.008	-.23	0	.113
148	30	N89C	3.674	23.902	60.837	0	0	0
149	30	Totals:	-54.572	1754.558	-94.549			



Company : Colliers Engineering & Design
 Designer : VRD
 Job Number : Project No. 10217729
 Model Name : 5000243135-VZW_MT_LOT_SectorA_H

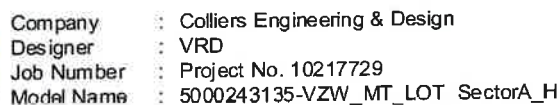
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Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
150	30	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
151	31	N4	-1708.232	977.855	-2158.651	-.282	0	.134
152	31	N65	1708.606	752.509	2041.196	-.23	0	.112
153	31	N89C	-.367	24.194	-5.751	0	0	0
154	31	Totals:	.007	1754.558	-123.205			
155	31	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
156	32	N4	-1671.98	977.39	-2115.403	-.282	0	.134
157	32	N65	1732.256	752.68	2091.309	-.23	0	.112
158	32	N89C	-4.236	24.488	-72.99	0	0	0
159	32	Totals:	56.041	1754.558	-97.084			
160	32	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
161	33	N4	-1660.807	977.498	-2076.402	-.282	0	.133
162	33	N65	1739.848	752.505	2120.091	-.23	0	.111
163	33	N89C	-3.761	24.555	-87.18	0	0	0
164	33	Totals:	75.28	1754.558	-43.491			
165	33	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
166	34	N4	-1663.505	977.871	-2054.279	-.282	0	.134
167	34	N65	1738.803	752.162	2130.889	-.23	0	.112
168	34	N89C	-2.399	24.525	-76.648	0	0	0
169	34	Totals:	72.899	1754.558	-.037			
170	34	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
171	35	N4	-1662.832	978.165	-2027.79	-.283	0	.134
172	35	N65	1739.247	751.84	2149.649	-.23	0	.112
173	35	N89C	-3.655	24.553	-79.899	0	0	0
174	35	Totals:	72.76	1754.558	41.96			
175	35	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
176	36	N4	-1673.159	978.578	-2001.864	-.283	0	.134
177	36	N65	1731.61	751.494	2160.272	-.23	0	.112
178	36	N89C	-3.865	24.487	-63.918	0	0	0
179	36	Totals:	54.586	1754.558	94.491			
180	36	COG (ft):	X: 3.35	Y: -2.334	Z: 4.236			
181	37	N4	-38.193	954.327	-1989.17	-.292	0	.013
182	37	N65	37.93	783.272	2108.132	-.249	0	.004
183	37	N89C	.269	16.954	4.21	0	0	0
184	37	Totals:	.006	1754.553	123.172			
185	37	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
186	38	N4	-74.381	954.73	-2032.751	-.292	0	.014
187	38	N65	14.207	783.122	2058.329	-.249	0	.005
188	38	N89C	4.146	16.701	71.472	0	0	0
189	38	Totals:	-56.028	1754.553	97.05			
190	38	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
191	39	N4	-85.536	954.61	-2071.842	-.292	0	.014
192	39	N65	6.596	783.301	2029.658	-.249	0	.005
193	39	N89C	3.673	16.643	85.642	0	0	0
194	39	Totals:	-75.267	1754.553	43.457			
195	39	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
196	40	N4	-82.84	954.247	-2093.953	-.292	0	.014
197	40	N65	7.645	783.639	2018.855	-.249	0	.005
198	40	N89C	2.309	16.667	75.102	0	0	0
199	40	Totals:	-72.886	1754.553	.004			
200	40	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
201	41	N4	-83.503	953.951	-2120.488	-.292	0	.014

Joint Reactions (Continued)

	LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
202	41	N65	7.191	783.96	2000.158	-.249	0	.005
203	41	N89C	3.565	16.642	78.337	0	0	0
204	41	Totals:	-72.747	1754.553	-41.994			
205	41	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
206	42	N4	-73.184	953.555	-2146.373	-.292	0	.014
207	42	N65	14.84	784.3	1989.497	-.25	0	.005
208	42	N89C	3.77	16.699	62.352	0	0	0
209	42	Totals:	-54.573	1754.553	-94.525			
210	42	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
211	43	N4	-38.152	952.951	-2137.329	-.292	0	.013
212	43	N65	38.429	784.652	2018.393	-.25	0	.004
213	43	N89C	-.271	16.95	-4.245	0	0	0
214	43	Totals:	.006	1754.553	-123.182			
215	43	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
216	44	N4	-1.968	952.549	-2093.749	-.292	0	.012
217	44	N65	62.147	784.802	2068.185	-.25	0	.003
218	44	N89C	-4.14	17.203	-71.496	0	0	0
219	44	Totals:	56.039	1754.554	-97.06			
220	44	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
221	45	N4	9.186	952.668	-2054.646	-.292	0	.012
222	45	N65	69.758	784.624	2096.872	-.25	0	.003
223	45	N89C	-3.665	17.261	-85.693	0	0	0
224	45	Totals:	75.279	1754.554	-43.467			
225	45	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
226	46	N4	6.49	953.031	-2032.533	-.292	0	.013
227	46	N65	68.711	784.286	2107.683	-.25	0	.003
228	46	N89C	-2.304	17.237	-75.163	0	0	0
229	46	Totals:	72.898	1754.554	-.013			
230	46	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
231	47	N4	7.153	953.327	-2005.989	-.292	0	.013
232	47	N65	69.165	783.964	2126.391	-.249	0	.003
233	47	N89C	-3.56	17.263	-78.418	0	0	0
234	47	Totals:	72.758	1754.554	41.984			
235	47	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
236	48	N4	-3.164	953.723	-1980.104	-.292	0	.013
237	48	N65	61.518	783.625	2137.057	-.249	0	.003
238	48	N89C	-3.77	17.206	-62.438	0	0	0
239	48	Totals:	54.584	1754.554	94.515			
240	48	COG (ft):	X: -.049	Y: -2.334	Z: 4.236			
241	49	N4	882.662	732.136	-1592.13	-.22	0	-.062
242	49	N65	-882.691	633.821	1591.597	-.194	0	-.062
243	49	N89C	.034	13.584	.538	0	0	0
244	49	Totals:	.006	1379.541	.005			
245	49	COG (ft):	X: -2.409	Y: -2.039	Z: 4.142			
246	50	N4	-3.32	745.121	-1594.633	-.228	0	.009
247	50	N65	3.324	617.631	1594.628	-.195	0	.002
248	50	N89C	0	16.787	0	0	0	0
249	50	Totals:	.005	1379.539	-.004			
250	50	COG (ft):	X: -.109	Y: -2.039	Z: 4.142			
251	51	N4	-4.822	628.385	-1313.949	-.191	0	.007
252	51	N65	4.825	524.067	1313.934	-.164	0	.002
253	51	N89C	0	19.493	.011	0	0	0



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Joint Reactions (Continued)

LC		Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
254	51	Totals:	.004	1171.945	- .004			
255	51	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
256	52	N4	-4.155	555.624	-1118.769	-.169	0	.007
257	52	N65	4.148	463.422	1196.409	-.145	0	.002
258	52	N89C	.011	17.266	1.822	0	0	0
259	52	Totals:	.004	1036.311	79.462			
260	52	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
261	53	N4	-26.994	555.815	-1142.412	-.169	0	.007
262	53	N65	-14.723	463.399	1165.905	-.145	0	.002
263	53	N89C	1.985	17.097	45.325	0	0	0
264	53	Totals:	-39.732	1036.311	68.818			
265	53	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
266	54	N4	-43.745	555.865	-1171.265	-.169	0	.007
267	54	N65	-28.503	463.481	1134.329	-.145	0	.002
268	54	N89C	3.428	16.965	76.673	0	0	0
269	54	Totals:	-68.819	1036.311	39.738			
270	54	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
271	55	N4	-49.922	555.76	-1197.605	-.169	0	.007
272	55	N65	-33.499	463.645	1110.133	-.145	0	.002
273	55	N89C	3.952	16.906	87.478	0	0	0
274	55	Totals:	-79.469	1036.311	.006			
275	55	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
276	56	N4	-43.865	555.528	-1214.373	-.169	0	.007
277	56	N65	-28.371	463.847	1099.802	-.145	0	.002
278	56	N89C	3.417	16.936	74.844	0	0	0
279	56	Totals:	-68.82	1036.311	-39.728			
280	56	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
281	57	N4	-27.203	555.232	-1217.08	-.169	0	.007
282	57	N65	-14.496	464.033	1106.096	-.146	0	.002
283	57	N89C	1.966	17.046	42.168	0	0	0
284	57	Totals:	-39.733	1036.311	-68.816			
285	57	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
286	58	N4	-4.397	554.95	-1204.998	-.168	0	.006
287	58	N65	4.41	464.153	1127.334	-.146	0	.001
288	58	N89C	-.01	17.208	-1.805	0	0	0
289	58	Totals:	.003	1036.311	-79.469			
290	58	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
291	59	N4	18.44	554.759	-1181.357	-.168	0	.006
292	59	N65	23.28	464.176	1157.831	-.146	0	0
293	59	N89C	-1.981	17.377	-45.3	0	0	0
294	59	Totals:	39.739	1036.312	-68.826			
295	59	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
296	60	N4	35.189	554.709	-1152.497	-.168	0	.006
297	60	N65	37.057	464.094	1189.414	-.146	0	0
298	60	N89C	-3.419	17.509	-76.662	0	0	0
299	60	Totals:	68.826	1036.312	-39.745			
300	60	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
301	61	N4	41.365	554.814	-1126.147	-.169	0	.006
302	61	N65	42.053	463.93	1213.624	-.146	0	0
303	61	N89C	-3.942	17.568	-87.49	0	0	0
304	61	Totals:	79.476	1036.312	-.014			
305	61	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			

Joint Reactions (Continued)

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
306	62	N4	35.31	555.046	-1109.377	-.169	0
307	62	N65	36.926	463.728	1223.962	-.145	0
308	62	N89C	-3.409	17.538	-74.865	0	0
309	62	Totals:	68.827	1036.312	39.721		
310	62	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
311	63	N4	18.65	555.342	-1106.677	-.169	0
312	63	N65	23.053	463.542	1217.661	-.145	0
313	63	N89C	-1.963	17.428	-42.175	0	0
314	63	Totals:	39.74	1036.312	68.809		
315	63	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
316	64	N4	-2.881	386.395	-765.917	-.117	0
317	64	N65	2.873	323.179	843.559	-.101	0
318	64	N89C	.011	12.031	1.82	0	0
319	64	Totals:	.003	721.606	79.463		
320	64	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
321	65	N4	-25.691	386.587	-789.564	-.117	0
322	65	N65	-16.027	323.152	813.061	-.101	0
323	65	N89C	1.985	11.866	45.323	0	0
324	65	Totals:	-39.733	721.605	68.82		
325	65	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
326	66	N4	-42.42	386.636	-818.424	-.117	0
327	66	N65	-29.828	323.231	781.493	-.101	0
328	66	N89C	3.428	11.738	76.67	0	0
329	66	Totals:	-68.82	721.605	39.739		
330	66	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
331	67	N4	-48.587	386.53	-844.772	-.117	0
332	67	N65	-34.835	323.395	757.307	-.101	0
333	67	N89C	3.952	11.68	87.473	0	0
334	67	Totals:	-79.47	721.605	.007		
335	67	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
336	68	N4	-42.536	386.297	-861.547	-.117	0
337	68	N65	-29.701	323.6	746.982	-.101	0
338	68	N89C	3.416	11.709	74.838	0	0
339	68	Totals:	-68.821	721.605	-39.727		
340	68	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
341	69	N4	-25.892	385.999	-864.257	-.117	0
342	69	N65	-15.807	323.79	753.281	-.102	0
343	69	N89C	1.965	11.816	42.161	0	0
344	69	Totals:	-39.734	721.605	-68.815		
345	69	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
346	70	N4	-3.113	385.717	-852.173	-.117	0
347	70	N65	3.126	323.916	774.517	-.102	0
348	70	N89C	-.011	11.973	-1.812	0	0
349	70	Totals:	.002	721.606	-79.468		
350	70	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
351	71	N4	19.696	385.525	-828.528	-.117	0
352	71	N65	22.024	323.943	805.009	-.102	0
353	71	N89C	-1.981	12.138	-45.306	0	0
354	71	Totals:	39.738	721.606	-68.825		
355	71	COG (ft):	X: -.088	Y: -1.525	Z: 3.977		
356	72	N4	36.422	385.476	-799.66	-.117	0
357	72	N65	35.823	323.863	836.583	-.102	0



Company : Colliers Engineering & Design
Designer : VRD
Job Number : Project No. 10217729
Model Name : 5000243135-VZW_MT_LOT SectorA_H

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Joint Reactions (Continued)

LC	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
358 72	N89C	-3.42	12.267	-76.667	0	0	0
359 72	Totals:	68.825	721.606	-39.744			
360 72	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
361 73	N4	42.589	385.582	-773.303	-.117	0	.004
362 73	N65	40.829	323.7	860.783	-.101	0	0
363 73	N89C	-3.942	12.325	-87.493	0	0	0
364 73	Totals:	79.475	721.606	-.012			
365 73	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
366 74	N4	36.539	385.815	-756.526	-.117	0	.004
367 74	N65	35.697	323.495	871.114	-.101	0	0
368 74	N89C	-3.41	12.296	-74.867	0	0	0
369 74	Totals:	68.826	721.606	39.722			
370 74	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			
371 75	N4	19.897	386.113	-753.824	-.117	0	.004
372 75	N65	21.805	323.304	864.809	-.101	0	0
373 75	N89C	-1.963	12.189	-42.176	0	0	0
374 75	Totals:	39.739	721.606	68.81			
375 75	COG (ft):	X: -.088	Y: -1.525	Z: 3.977			

Envelope Joint Reactions

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1 N4 max	882.662	49	1755.436	14	207.815	12	-.117	71	0	75	.135	27
2 N4 min	-1755.682	27	385.476	72	-4015.879	18	-.529	14	0	1	-.062	49
3 N65 max	1739.848	33	1430.185	20	3996.172	24	-.101	65	0	75	.114	27
4 N65 min	-882.691	49	323.152	65	-49.414	6	-.451	20	0	1	-.062	49
5 N89C max	67.319	2	54.447	23	1368.707	3	0	75	0	75	0	75
6 N89C min	-65.27	8	11.68	67	-1372.438	9	0	1	0	1	0	1
7 Totals: max	1204.399	9	3230.014	23	1970.825	1						
8 Totals: min	-1204.393	3	721.605	67	-1970.832	7						

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

Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1 M5	PL3/8x3.5 H...	.571	0	20	.080	0	y	26	34985.705	36450	.284	2.083	1...	H1-1b
2 M6	PL3/8x3.5 H...	.714	0	17	.135	0	y	27	34985.705	36450	.284	1.994	1...	H1-1b
3 M7	PIPE 2.5	.219	12.864	30	.073	4.053		19	7949.06	50715	3.596	3.596	2...	H1-1b
4 M8	PL3/8x3.5 H...	.518	0	24	.087	0	y	29	34985.705	36450	.284	2.083	1...	H1-1b
5 M9	PL3/8x3.5 H...	.601	0	24	.110	.25	y	26	34985.705	36450	.284	1.973	1...	H1-1b
6 M10	PIPE 2.5	.257	12.864	27	.079	4.053		20	7949.06	50715	3.596	3.596	2...	H1-1b
7 M11	PIPE 2.0	.272	.505	20	.083	0		23	20700.436	32130	1.872	1.872	2...	H1-1b
8 M349	PIPE 2.0	.339	.505	17	.108	0		27	20700.436	32130	1.872	1.872	2...	H1-1b
9 M13	PIPE 2.0	.285	.568	24	.076	0		19	20700.436	32130	1.872	1.872	2...	H1-1b
10 M14	PIPE 2.0	.309	.568	23	.110	5.425		33	20700.436	32130	1.872	1.872	1...	H1-1b
11 M34A	PL3/8x3.5 H...	.016	.165	20	.006	0	y	6	35426.776	36450	.284	2.083	2...	H1-1b*
12 M36	PIPE 2.0	.022	1.589	23	.002	2.5		6	29810.292	32130	1.872	1.872	1...	H1-1b
13 M30	PL3/8x3.5 H...	.056	0	19	.007	0	y	27	36078.278	36450	.284	2.083	1...	H1-1b
14 M31	PL3/8x3.5 H...	.057	.125	23	.007	.125	y	27	36078.278	36450	.284	2.083	1...	H1-1b
15 M32	PL3/8x3.5 H...	.026	.125	49	.048	.125	y	27	36078.278	36450	.284	2.083	1	H1-1b
16 M33	PL3/8x3.5 H...	.026	0	49	.048	0	y	27	36078.278	36450	.284	2.083	1	H1-1b
17 M34	1.5 w 0.06 th	.268	3.167	22	.008	3.167		29	6432.166	8550.171	.327	.327	1...	H1-1a



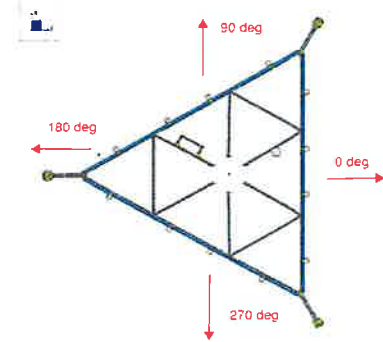
Company : Colliers Engineering & Design
 Designer : VRD
 Job Number : Project No. 10217729
 Model Name : 5000243135-VZW_MT_LOT_SectorA_H

Jan 30, 2024
 11:48 AM
 Checked By: GM

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [...]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
18	M35A	1.5 w 0.06 th	.136	3.167	21	.041	3.167		27	6432.166	8550.171	.327	.327	1...	H1-1b*
19	M36A	1.5 w 0.06 th	.293	2.049	24	.015	0		27	5200.823	8550.171	.327	.327	1...	H1-1a
20	M37	1.5 w 0.06 th	.133	2.092	13	.011	0		11	5200.823	8550.171	.327	.327	1...	H1-1b
21	M29	PL3/8x3.5_H...	.047	.125	15	.007	.125	y	12	36078.278	36450	.284	2.083	1...	H1-1b
22	M30A	PL3/8x3.5_H...	.044	.125	29	.007	0	y	12	36078.278	36450	.284	2.083	1...	H1-1b*
23	M31A	PL3/8x3.5_H...	.035	0	20	.047	0	y	27	36078.278	36450	.284	2.083	1...	H1-1b
24	M32A	PL3/8x3.5_H...	.043	.125	14	.047	.125	y	27	36078.278	36450	.284	2.083	1...	H1-1b
25	M34B	1.5 w 0.06 th	.260	0	36	.008	0		12	6432.166	8550.171	.327	.327	2...	H1-1a
26	M35B	1.5 w 0.06 th	.120	3.167	18	.040	0		26	6432.166	8550.171	.327	.327	1...	H1-1b*
27	M36B	1.5 w 0.06 th	.316	2.049	13	.020	0		3	5200.823	8550.171	.327	.327	1...	H1-1a
28	M37A	1.5 w 0.06 th	.238	2.049	26	.020	4.185		9	5200.823	8550.171	.327	.327	1...	H1-1a
29	M53	PL3/8X3.5	.067	.333	23	.007	.042	y	6	40248.029	42525	.332	3.081	1	H1-1b
30	M54A	PL3/8x3.5_H...	.018	0	20	.007	0	y	6	35426.776	36450	.284	2.083	1...	H1-1b*
31	M55	PL3/8X3.5	.071	.333	23	.006	.042	y	6	40248.029	42525	.332	3.101	1...	H1-1b
32	M54B	PL3/8x3.5_H...	.228	.165	9	.084	0	y	9	35426.776	36450	.284	2.083	1...	H1-1b
33	M55A	PIPE 2.0	.568	1.562	3	.086	1.562		3	29810.292	32130	1.872	1.872	1...	H1-1b
34	M56A	PL3/8X3.5	.553	.333	9	.024	.042	y	11	40248.029	42525	.332	3.101	2...	H1-1b
35	M58	PL3/8x3.5_H...	.281	.165	3	.130	0	y	3	35426.776	36450	.284	2.083	2	H1-1b
36	M59	PL3/8X3.5	.677	.333	9	.042	.042	y	3	40248.029	42525	.332	3.081	1	H1-1b
37	MP5A	PIPE 2.0	.230	4.74	49	.039	4.74		6	23808.54	32130	1.872	1.872	2...	H1-1b
38	MP1A	PIPE 2.0	.393	4.74	33	.055	3.021		26	23808.54	32130	1.872	1.872	2...	H1-1b
39	MP4A	PIPE 2.0	.187	4.75	45	.030	3.438		21	20866.733	32130	1.872	1.872	1...	H1-1b
40	MP2A	PIPE 2.0	.195	4.75	39	.043	1.375		20	20866.733	32130	1.872	1.872	1...	H1-1b
41	MP3A	PIPE 2.0	.137	5.323	27	.054	1.896		9	17855.085	32130	1.872	1.872	2...	H1-1b
42	M59A	PIPE 2.0	.139	9.996	3	.008	0		16	9843.664	32130	1.872	1.872	2...	H1-1b*
43	OVP	PIPE 2.0	.065	3.833	13	.033	.417		29	26521.424	32130	1.872	1.872	1...	H1-1b

Custom Orientation Required

Yes[illegible]

Yes

Parallel

4

3

2

A36

0.5

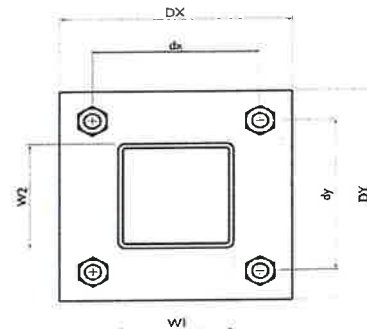
2.6

0.5
1.1

6.4
3.2

3.8
10.3%

40.3%



No

ATTACHMENT 5



12-18-018
114.2 ac

13-18-020
5.4 ac

13-18-021
7.71 ac

13-12-005
19.1 ac

13-18-022
1.9 ac

13-12-004
0.00 ac

13-12-016
5.62 ac

BUCKLEY HWY

171

171

1050 BUCKLEY HIGHWAY

Location 1050 BUCKLEY HIGHWAY

Mblu 13/ 18/ 020/ /

Acct# 00023000

Owner KEMP WAYNE & KATHY LEE

Assessment \$448,160

Appraisal \$640,230

PID 186

Building Count 3

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$403,770	\$236,460	\$640,230
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$282,640	\$165,520	\$448,160

Owner of Record

Owner KEMP WAYNE & KATHY LEE

Sale Price \$135,000

Co-Owner

Certificate

Address 1050 BUCKLEY HWY
UNION, CT 06076

Book & Page 39/384

Sale Date 11/14/1996

Instrument Q

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
KEMP WAYNE & KATHY LEE	\$135,000		39/384	Q	11/14/1996

Building Information

Building 1 : Section 1

Year Built: 1959
Living Area: 1,720
Replacement Cost: \$232,042
Building Percent Good: 64
Replacement Cost
Less Depreciation: \$148,510

Building Attributes

ATTACHMENT 6



Verizon/Union West

Certificate of Mailing — Firm

Name and Address of Sender Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103		TOTAL NO. of Pieces Listed by Sender 3	TOTAL NO. of Pieces Received at Post Office™ 3	Affix Stamp Here Postmark with Date of Receipt.	
Postmaster, per (name of receiving employee) [Signature]		 US POSTAGE quodent CORRECTION \$003.34 ⁹ 03/04/2024 ZIP 06101 043M32206619			
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	David Eaton, First Selectman Town of Union 1043 Buckley Highway Union, CT 06076				
2.	Lee Ann Fitzgerald, Planning and Zoning Chair Town of Union 1043 Buckley Highway Union, CT 06076				
3.	Wayne and Kathy Lee Kemp 1050 Buckley Highway Union, CT 06076				
4.					
5.					
6.					

