



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

July 2, 2020

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

RE: Notice of Exempt Modification for AT&T - 876346
23 Holland Road, Union, CT 06076
Latitude: 42° 1' 45.94" / Longitude: -72° 8' 23.54"

Dear Ms. Bachman:

AT&T currently maintains eight (8) antennas at the 137-foot mount on the existing 150-foot Monopole Tower, located at 23 Holland Road, Union, CT. The property is owned by Transportation Alliance Bank and the Tower is owned by Crown Castle. AT&T now intends to add three (3) antennas to their configuration for a total of eleven (11) antennas. The new antennas will be installed at the 137-ft level of the tower. AT&T is also proposing tower mount modifications as shown on the enclosed Mount Analysis.

The facility was approved by the Town of Union Planning and Zoning Commission on June 4, 1997 by way of a Special Permit allowing the construction of the telecommunications facility. Diligent effort to obtain the full approval were not successful and therefore conditions of approval of unknown at this time.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to David Eaton, First Selectman for the Town of Union, Mathieu Silbermann, Planning & Zoning Commission Chair, Transportation Alliance Bank the property owner and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

The Foundation for a Wireless World.

CrownCastle.com

Melanie A. Bachman

Page 2

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Anne Marie Zsamba.
Sincerely,

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

Attachments

cc:

The Honorable David D. Eaton, First Selectman (*via email only to firstselectman@unionct.org*)
Union Town Hall
1043 Buckley Highway
Union, CT 06076

Mathieu Silbermann, Planning & Zoning Commission Chair (*via email only to pzc@unionconnecticut.org*)
Union Town Hall
1043 Buckley Highway
Union, CT 06076

Transportation Alliance Bank
DBA TAB Bank
4185 Harrison Blvd Suite 200P
Odgen, UT 84403

Crown Castle, Tower Owner

ORIGIN ID: ONHA (585) 445-5896
RICHARD ZAJAC
CROWN CASTLE
629 KAYLEIGH DR

SHIP DATE: 02 JUL 20
ACTWGT: 1.00 LB
CAD: 104924194/INET4220

WEBSTER, NY 14580
UNITED STATES US

BILL SENDER

TO TRANSPORTATION ALLIANCE BANK

DBA TAB BANK

4185 HARRISON BLVD, SUITE 200 P

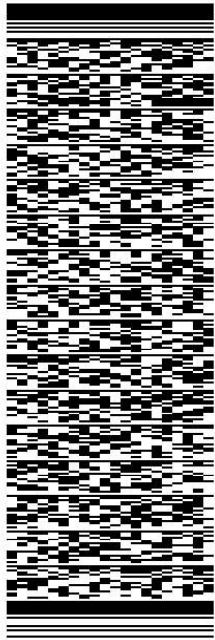
ODGEN UT 84403

REF: 1734.7890

(201) 236-9224
INV:
PO:

DEPT:

56BJ217B7/FE4A

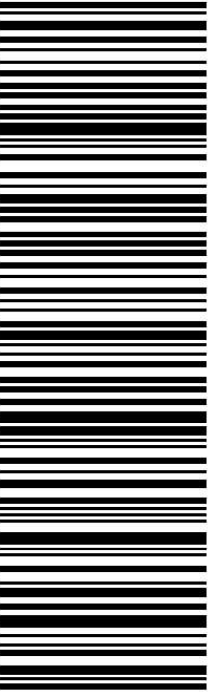


J201120042401uu

TRK# 7708 5993 3315
0201

FRI - 03 JUL 10:30A
PRIORITY OVERNIGHT

XH OGD A 84403
UT-US SLC



After printing this label:

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

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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

From: [Zsamba, Anne Marie](#)
To: ["firstselectman@unionct.org"](mailto:firstselectman@unionct.org)
Subject: Notice of Exempt Modification - AT&T - 23 Holland Rd, Union
Date: Thursday, July 2, 2020 12:24:00 PM
Attachments: [EM-AT&T-23_HOLLAND ROAD UNION-876346-CTV1094_notice.pdf](#)

Dear First Selectman Eaton:

Attached please find AT&T's exempt modification application that is being submitted to the Connecticut Siting Council, today July 2, 2020.

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

Best,
Anne Marie Zsamba

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

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

From: [Zsamba, Anne Marie](#)
To: ["pzc@unionconnecticut.org"](mailto:pzc@unionconnecticut.org)
Subject: Notice of Exempt Modification - AT&T - 23 Holland Rd, Union
Date: Thursday, July 2, 2020 12:23:00 PM
Attachments: [EM-AT&T-23_HOLLAND ROAD UNION-876346-CTV1094_notice.pdf](#)

Dear Mr. Silbermann:

Attached please find AT&T's exempt modification application that is being submitted to the Connecticut Siting Council, today July 2, 2020.

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

Best,
Anne Marie Zsamba

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

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

Exhibit A

Original Facility Approval

VOL 40 PAGE 38

PLANNING AND ZONING COMMISSION

TOWN OF UNION, CONNECTICUT

Mail Address: 1024 Buckley Highway, Union, CT 06076

SPECIAL PERMITDescription of Premises:23 Holland Rd
Union CTNature of Special Permit:To PERMIT THE CONSTRUCTION
OF A TELECOMMUNICATIONS
FACILITYApplicable Regulation(s):

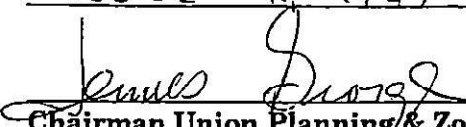
PEZ REG SECTION 3.11

Owners of Record:

LUCILLE GOODHALL

Date Issued:

JUNE 4, 1997


Chairman Union Planning & Zoning

RECEIVED June 10, 1997
AT 10:45A M. AND
RECORDED IN UNION LAND RECORDS
VOL 40 PAGE 38
Hedi Braduch TOWN CLERK

Exhibit B

Property Card

23 HOLLAND RD

Location	23 HOLLAND RD	Mblu	11/ 05/ 002/ /
Acct#	00022000	Owner	TRANSPORTATION ALLIANCE BANK INC
Assessment	\$80,780	Appraisal	\$115,390
PID	364	Building Count	1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$0	\$115,390	\$115,390
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$0	\$80,780	\$80,780

Owner of Record

Owner	TRANSPORTATION ALLIANCE BANK INC	Sale Price	\$300,000
Co-Owner		Certificate	
Address	DBA TAB BANK	Book & Page	66/232
	4185 HARRISON BLVD SUITE 200 P	Sale Date	05/29/2018
	OGDEN, UT 84403	Instrument	13

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
TRANSPORTATION ALLIANCE BANK INC	\$300,000		66/232	13	05/29/2018
NEW ENGLAND LAND & LUMBER CORP	\$500,000		51/206	24	04/27/2005
UNION FUEL ASSOCIATES, LLC	\$245,000		40/68	00	07/01/1997
GOODHALL	\$0		0/0		01/01/1900

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0

Replacement Cost: \$0

Building Percent Good:

Replacement Cost

Less Depreciation: \$0

Building Attributes	
Field	Description
Style	Vacant Land
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

 Building Photo (<http://images.vgsi.com/photos/UnionCTPhotos//84>)

Building Layout

(ParcelSketch.ashx?pid=364&bid=364)

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	3900
Description	DEVEL LAND
Zone	CI
Neighborhood	12
Alt Land Appr	No

Land Line Valuation

Size (Acres)	7.85
Frontage	0
Depth	0
Assessed Value	\$80,780
Appraised Value	\$115,390

Category

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$0	\$115,390	\$115,390
2017	\$0	\$125,770	\$125,770
2013	\$0	\$125,770	\$125,770

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$0	\$80,780	\$80,780
2017	\$0	\$88,040	\$88,040
2013	\$0	\$88,040	\$88,040



Exhibit C

Construction Drawings

BUSINESS UNIT #: 876346
SITE ADDRESS: 23 HOLLAND ROAD
 UNION, CT 06076
COUNTY: TOLLAND
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'-0"



ISSUED FOR:				
REV	DATE	BY	DESCRIPTION	DESIGN
A	05/06/20	DAB	PRELIMINARY	1.0A
B	05/21/20	DAB	PRELIMINARY	1.0B
C	05/28/20	DAB	PRELIMINARY	1.0C
D	06/19/20	SL	CONSTRUCTION	1.0

6/19/2020 1:32:14 PM EDT

APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2018 STATE BUILDING CODE 2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE 2015 ASHRAE W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE 2017 NEC W/ CT AMENDMENTS

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS	POWER ENGINEERING PROFESSIONALS
DATED	MAY 22, 2020
MOUNTAIN ANALYSIS	INTERNO ENGINEERING PLLC
DATED	MAY 11, 2020
RETS REVISION	none
DATED	06/09/2020
ORDER ID:	517663
REVISION 0:	

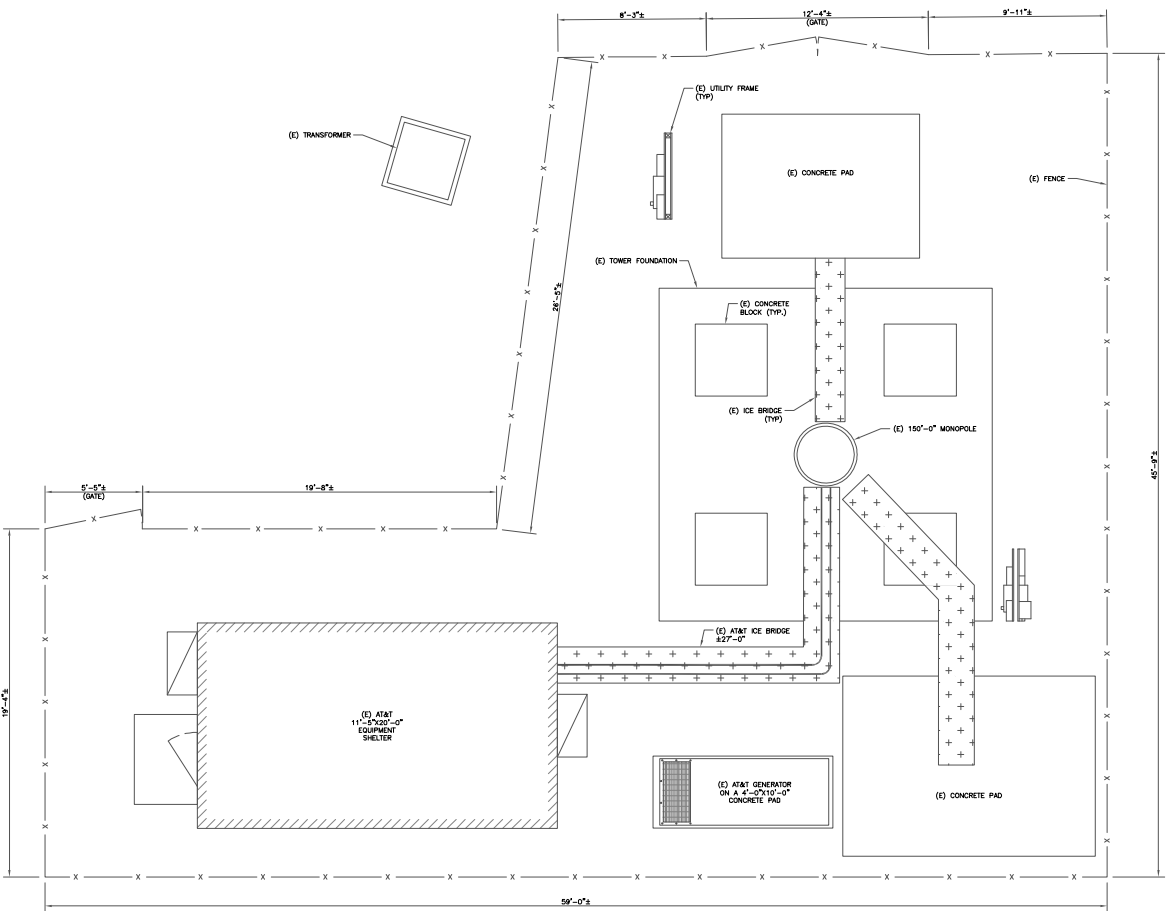
NOTE:

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

INSTALLER NOTE:

NO PROPOSED LOADING TO BE ADDED
UNTIL MOUNTAIN MODIFICATIONS ARE
DESIGNED BY INTERNO ENGINEERS, PLLC
DATED MAY 11, 2020.

SHEET NUMBER: T-1	REVISION: 0
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1 SITE PLAN
SCALE: 3/16"=1'-0" (FULL SIZE)
3/16"=1'-0" (11x17)



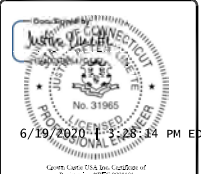
AT&T SITE NUMBER: CTV1094

BU #: 876346
UNION

23 HOLLAND ROAD
UNION, CT 06076

EXISTING 150'-0" MONOPOLE

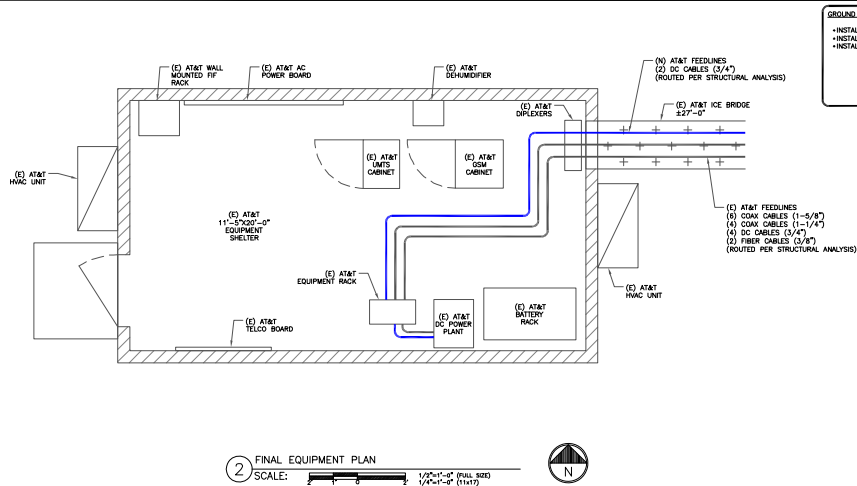
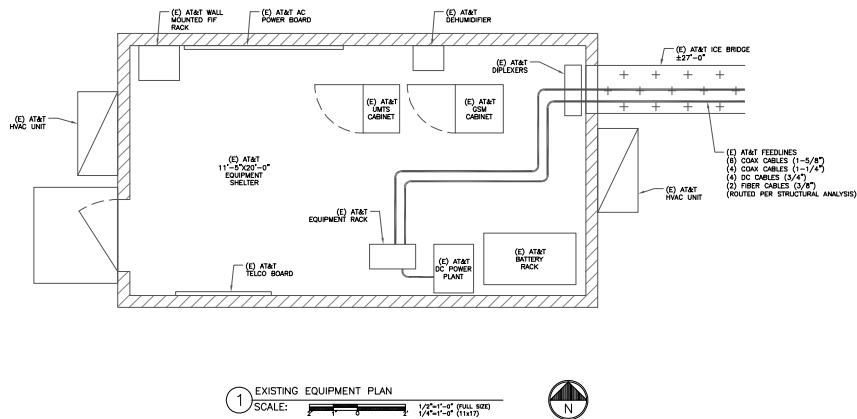
ISSUED FOR:				
REV.	DATE	BY	DESCRIPTION	REV. FOR
1	05/06/20	DAW	REVISED	16A
2	05/22/20	DAW	REVISED	12B
3	05/28/20	DAW	REVISED	12B
4	06/19/20	DAW	CONSTRUCTION	7



Grant Lyle DSA Inc. Location of
Inspection #100-000000

IT IS A VIOLATION OF LAW FOR ANY PERSON,
CONTRACTOR OR ANY OTHER PERSON,
TO ALTER OR MODIFY THE DESIGN OR
CONSTRUCTION OF ANY STRUCTURE
WITHOUT THE WRITTEN CONSENT OF
THE DESIGNER.

SHEET NUMBER: C-1.1
REVISION: 0



GROUND SCOPE OF WORK:
-INSTALL (1) 6630
-INSTALL (1) 6601
-INSTALL 3M03 + GLE



AT&T SITE NUMBER: CTV1094

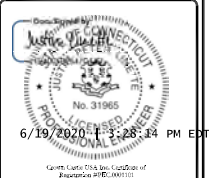
BU #: 876346
UNION

23 HOLLAND ROAD
UNION, CT 06076

EXISTING 150'-0" MONOPOLE

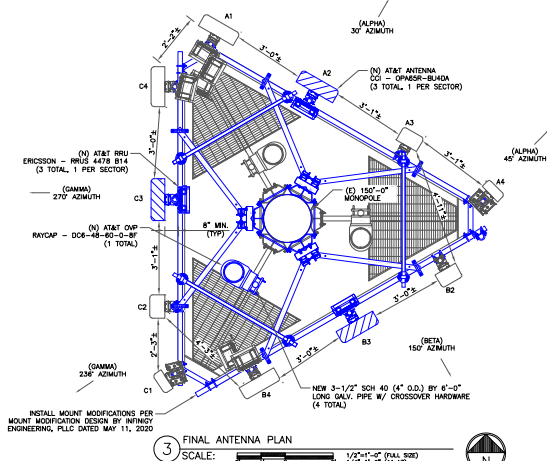
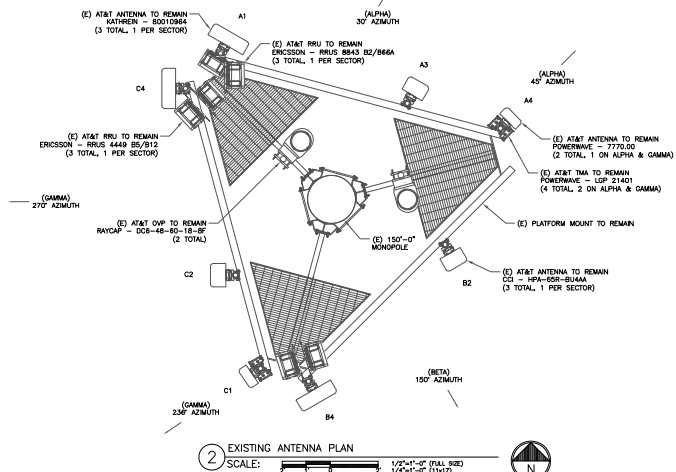
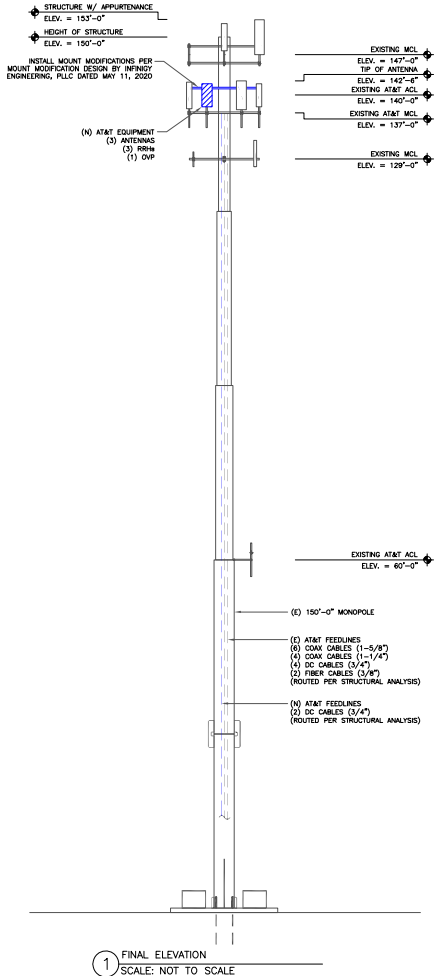
ISSUED FOR:

REV.	DATE	BY	DESCRIPTION	REV. FOR
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2	05/22/20	DAW	REVISED	1.2B
3	05/28/20	DAW	REVISED	1.2B
4	06/19/20	DAW	CONSTRUCTION	2



IT IS A VIOLATION OF LAW FOR ANY PERSON, COMPANY OR FIRM TO REPRODUCE OR TRANSMIT THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN WITHOUT THE WRITTEN PERMISSION OF AT&T INTELLECTUAL PROPERTY.

SHEET NUMBER: C-1.2
REVISION: 0



575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

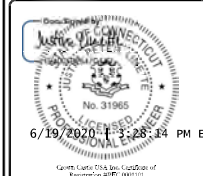


**CROWN
CASTLE**
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

AT&T SITE NUMBER: CTV1094

BU #: 876346
UNION
23 HOLLAND ROAD
UNION, CT 06076
EXISTING 150'-0" MONOPOLE

ISSUED FOR:				
REV	DATE	BY	DESCRIPTION	DESIGN
A	05/06/20	DAB	FINAL DESIGN	1.0A
B	05/21/20	DAB	FINAL DESIGN	1.0B
C	05/28/20	DAB	FINAL DESIGN	1.0C
D	06/19/20	SJ	CONSTRUCTION	1.0



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

SHEET NUMBER: C-2	REVISION: 0
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FINAL EQUIPMENT SCHEDULE (VERIFY WITH CURRENT RFDS)																		
ALPHA																		
POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
A1	LTE/SG	(E) KATHREIN 80010984	30°	140°-0°	1	(E) RRUS 4449 B5/B12	TOWER	-	-	-	-	-	-	-	-	-	-	-
					1	(E) RRUS 8843 B2/B66A	TOWER	-	-	-	-	-	-	-	-	-	-	-
A2	LTE	(N) CD OPMSR-BU4D	30°	140°-0°	1	(N) RRUS-447B B14	TOWER	-	-	-	-	-	-	-	-	-	-	-
A3	LTE	(E) CD HPA-BSR-BU4M	30°	140°-0°	-	-	-	-	-	-	-	-	1	(E) DC6-48-60-18-BF	2	(E) DC	3/4"	190°-0"
														1	(E) FIBER	3/8"	190°-0"	
														2	(E) COAX	1-5/8"	190°-0"	
A4	UMTS	(E) POWERWAVE TECH. 7770.00	45°	140°-0°	-	-	-	2	(E)	GROUND	2	(E)	-	-	2	(E) COAX	1-1/4"	190°-0"
BETA																		
B1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	LTE	(E) CD HPA-BSR-BU4M	150°	140°-0°	-	-	-	-	-	-	-	-	-	-	2	(E) COAX	1-5/8"	190°-0"
B3	LTE	(N) CD OPMSR-BU4D	150°	140°-0°	1	(N) RRUS-447B B14	TOWER	-	-	-	-	-	1	(N) DC6-48-60-0-BF	2	(N) DC	3/4"	190°-0"
B4	LTE/SG	(E) KATHREIN 80010984	30°	140°-0°	1	(E) RRUS 4449 B5/B12	TOWER	-	-	-	-	-	-	-	-	-	-	-
					1	(E) RRUS 8843 B2/B66A	TOWER	-	-	-	-	-	-	-	-	-	-	-
GAMMA																		
C1	UMTS	(E) POWERWAVE TECH. 7770.00	230°	140°-0°	-	-	-	2	(E)	GROUND	2	(E)	-	-	2	(E) COAX	1-1/4"	190°-0"
C2	LTE	(E) CD HPA-BSR-BU4M	270°	140°-0°	-	-	-	-	-	-	-	-	-	-	2	(E) COAX	1-5/8"	190°-0"
C3	LTE	(N) CD OPMSR-BU4D	270°	140°-0°	1	(N) RRUS-447B B14	TOWER	-	-	-	-	-	1	(E) DC6-48-60-18-BF	2	(E) DC	3/4"	190°-0"
														1	(E) FIBER	3/8"	190°-0"	
C4	LTE/SG	(E) KATHREIN 80010984	270°	140°-0°	1	(E) RRUS 4449 B5/B12	TOWER	-	-	-	-	-	-	-	-	-	-	-
					1	(E) RRUS 8843 B2/B66A	TOWER	-	-	-	-	-	-	-	-	-	-	-

NOTE:
(E) - EXISTING
(N) - NEW

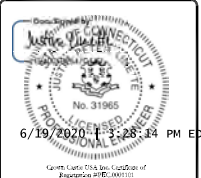
1 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE



AT&T SITE NUMBER: CTV1094

BU #: 876346
UNION
23 HOLLAND ROAD
UNION, CT 06076
EXISTING 150'-0" MONOPOLE

ISSUED FOR:				
REV.	DATE	BY	DESCRIPTION	REV. FOR
1	05/06/20	DAN	REVISED	16A
2	05/22/20	DAN	REVISED	12B
3	05/28/20	DAN	REVISED	12B
4	06/19/20	SL	CONSTRUCTION	5

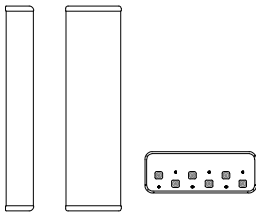


6/19/2020 1:3:28:14 PM EDT

Justin D. Fisher, P.E.
Professional Engineer
No. 31965
State of Connecticut
Exp. 06/19/2022

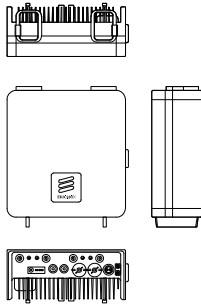
IF A VARIATION OR LATE REVISION IS REQUIRED, THE ENGINEER MUST BE NOTIFIED BY E-MAIL TO THE PROJECT MANAGER.

SHEET NUMBER: C-3
REVISION: 0



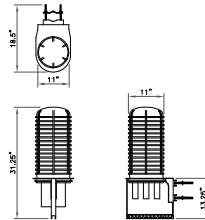
CCI ANTENNAS - OPA65R-BU4D
WEIGHT (WITHOUT MOUNTING HARDWARE): 95.7 LBS
SIZE (HxWxD): 86.0x20.7x7.7 IN.
MOUNTING HARDWARE: 5/16" NIMC-14
RATED WIND VELOCITY: >150.0 MPH

1 CCI ANTENNAS - OPA65R-BU4D
SCALE: NOT TO SCALE



ERICSSON - RADIO 4478 B14
WEIGHT: 60.0 LBS
SIZE (HxWxD): 15.0x13.0x8.0 IN.

2 ERICSSON - RADIO 4478 B14
SCALE: NOT TO SCALE



RAYCAP - DC6-48-60-0-BF
WEIGHT (WITHOUT MOUNTING HARDWARE): 20.0 LBS
SIZE (HxWxD): 31.25x11.0x11.0 IN.

3 RAYCAP - DC6-48-60-0-BF
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE



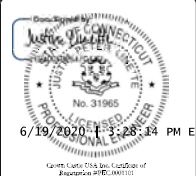
AT&T SITE NUMBER: CTV1094

BU #: 876346
UNION

23 HOLLAND ROAD
UNION, CT 06076

EXISTING 150'-0" MONOPOLE

ISSUED FOR:				
REV.	DATE	BY	DESCRIPTION	DATE
1	05/06/20	DAW	REVISED	5/6/20
2	05/22/20	DAW	REVISED	5/22/20
3	05/28/20	DAW	REVISED	5/28/20
4	06/19/20	DAW	CONSTRUCTION	6/19/20

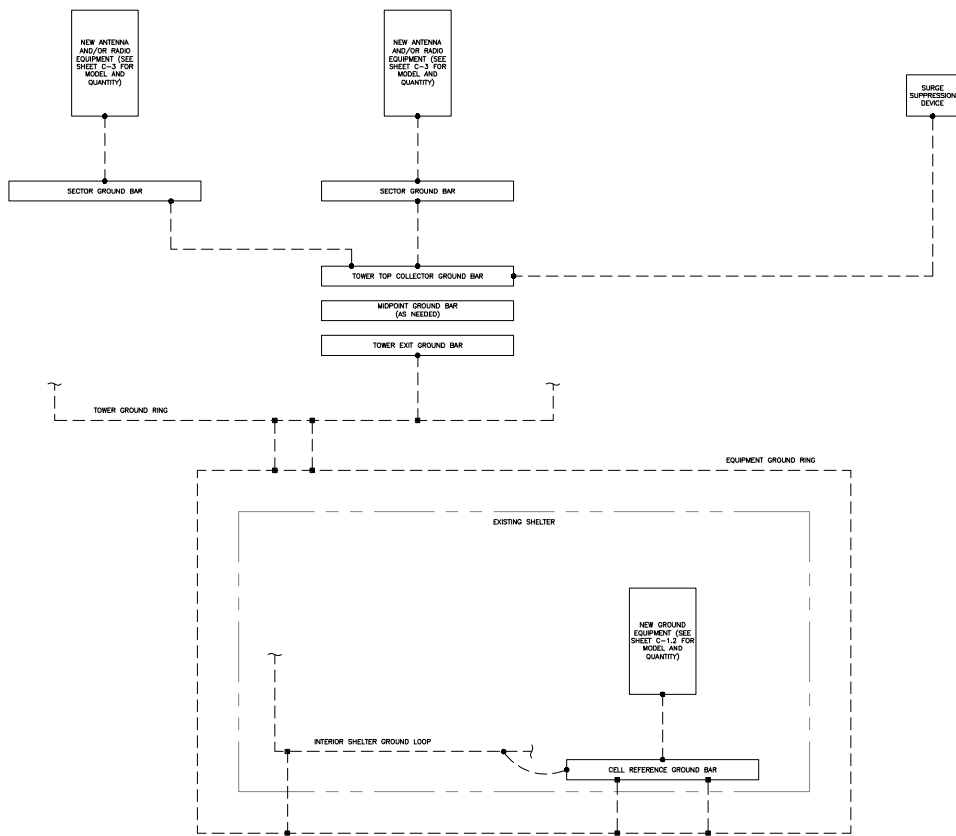


6/19/2020 1:32:14 PM EDT

Notary Public for the State of Connecticut
Registration # 31965

REPLACEMENT OR LATE FEE APPLICABLE.
CONTRACTS ARE SUBJECT TO THE TERMS AND
CONDITIONS OF THE CONTRACTS.
NO AT&T OR CROWN CASTLE EQUIPMENT
IS TO BE USED ON THIS SITE.

SHEET NUMBER: C-4
REVISION: 0



1 GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

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

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

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

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

DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITION, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICES CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR PER 19-PR300 SECTION 1.6 AND 19-PR416 FIGURE 1-11.

175 MOROSCO DRIVE
ATLANTA, GA 30326-4300

3 CORPORATE PARK DRIVE, SUITE 101
CLAYTON PARK, NJ 08065

AT&T SITE NUMBER: CTV1094

BU #: 876346
UNION

23 HOLLAND ROAD
UNION, CT 06076

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

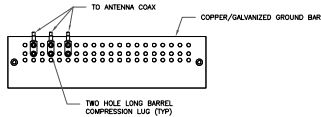
REV	DATE	DESCRIPTION	BY	CHK
A	05/06/20	ISSN	REDESIGN	1.6A
B	05/22/20	ISSN	REDESIGN	1.2B
C	05/28/20	ISSN	REDESIGN	1.2B
D	06/19/20	ISSN	CONSTRUCTION	2

6/19/2020 1:32:24 PM EDT

Justin D. Fisher
Professional Engineer
No. 31965
State of Connecticut

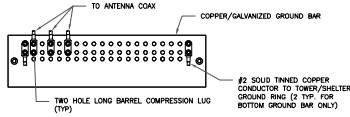
REVISIONS OR LATE FOR ANY REASON, CONSTRUCTION SHALL BE STOPPED IMMEDIATELY AND THE PROJECT SHALL BE STOPPED IMMEDIATELY.

SHEET NUMBER: **G-1** REVISION: **0**



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

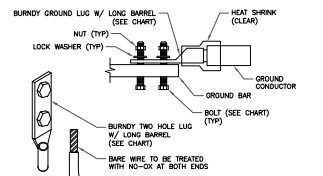
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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

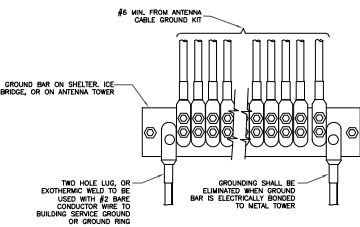
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YAGC-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YAGC-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YAGC-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YAGB-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YAGB-2N	1/2" - 16 NC SS 2 BOLT

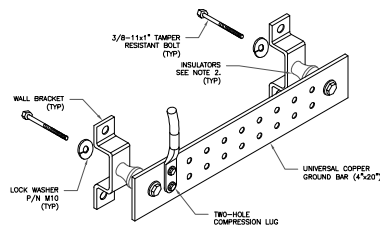


- NOTES:
1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE

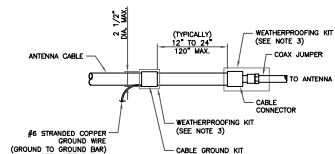


4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



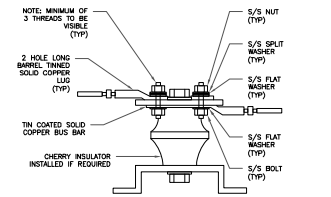
- NOTES:
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER PER THE GROUNDING DOWN CONDUCTOR POLICY GAG-SID-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAG-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
 2. OMT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTER.

5 GROUND BAR DETAIL
SCALE: NOT TO SCALE

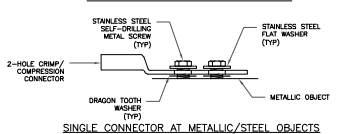
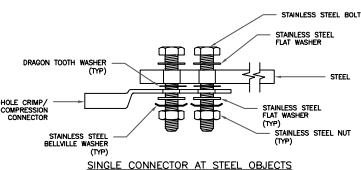
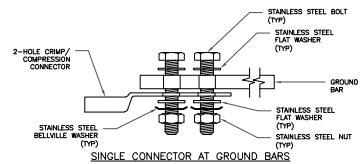


- NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
 3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

175 MOROSCO DRIVE
ATLANTA, GA 30326-0300

3 CORPORATE PARK DRIVE, SUITE 101
CLAYTON PARK, NJ 07065

AT&T SITE NUMBER: CTV1094
BU #: 876346
UNION
23 HOLLAND ROAD
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EXISTING 150'-0" MONOPOLE

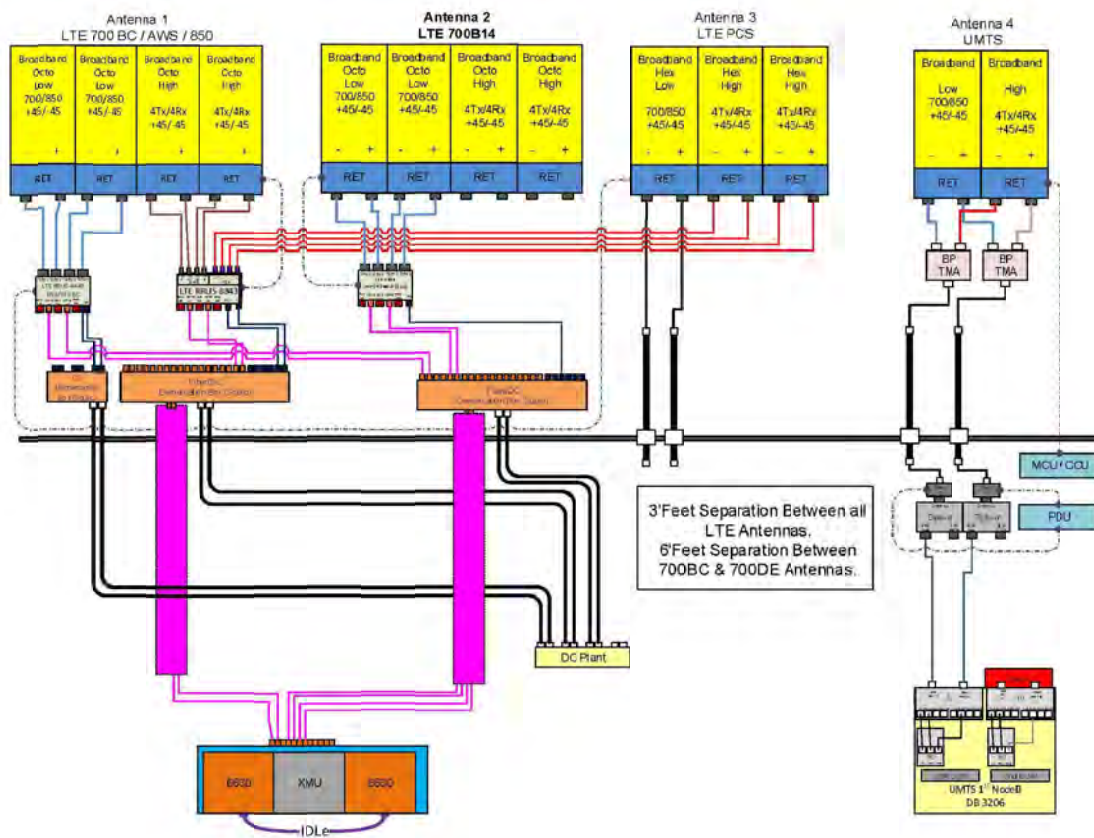
ISSUED FOR:				
REV.	DATE	BY	DESCRIPTION	REV. FOR
1	05/06/20	DAW	REDESIGN	1.6A
2	05/22/20	DAW	REDESIGN	1.2B
3	05/26/20	DAW	REDESIGN	1.2B
4	06/19/20	DAW	CONSTRUCTION	2

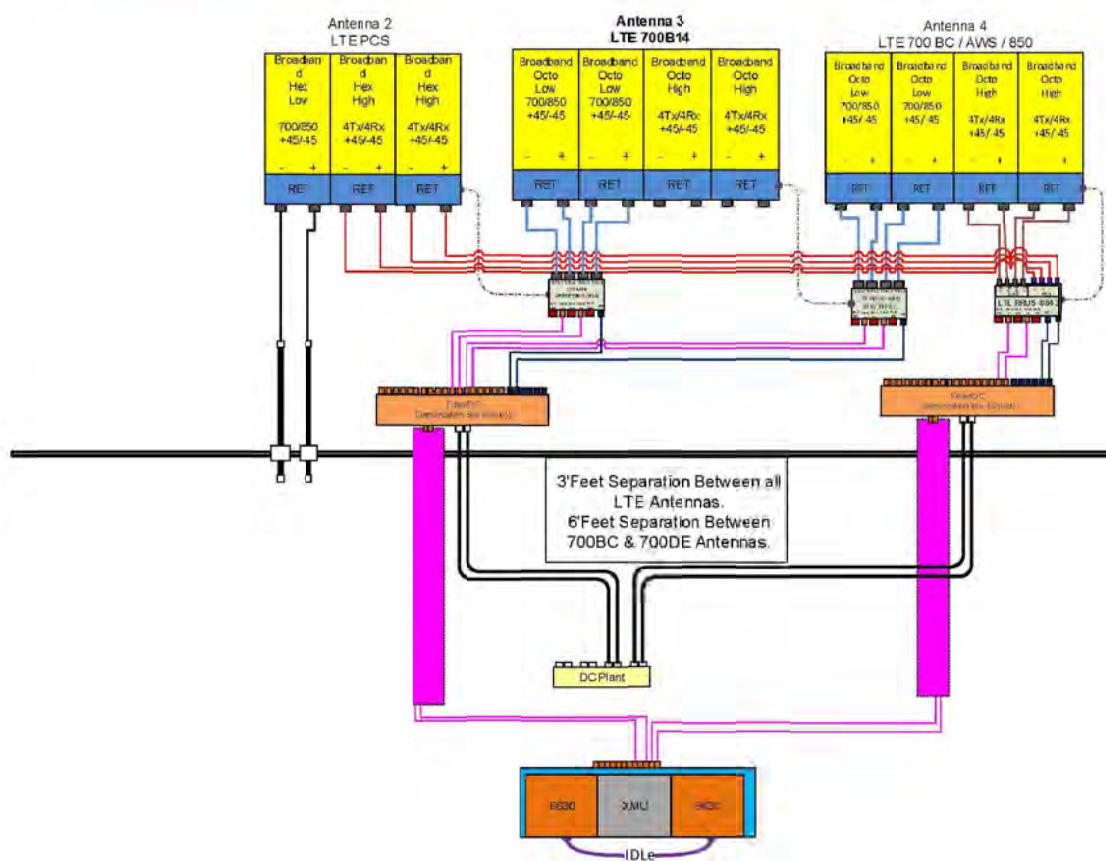
6/19/2020 1:32:28 PM EDT
Justin D. Butler
Professional Engineer
State of Georgia
License No. 31965

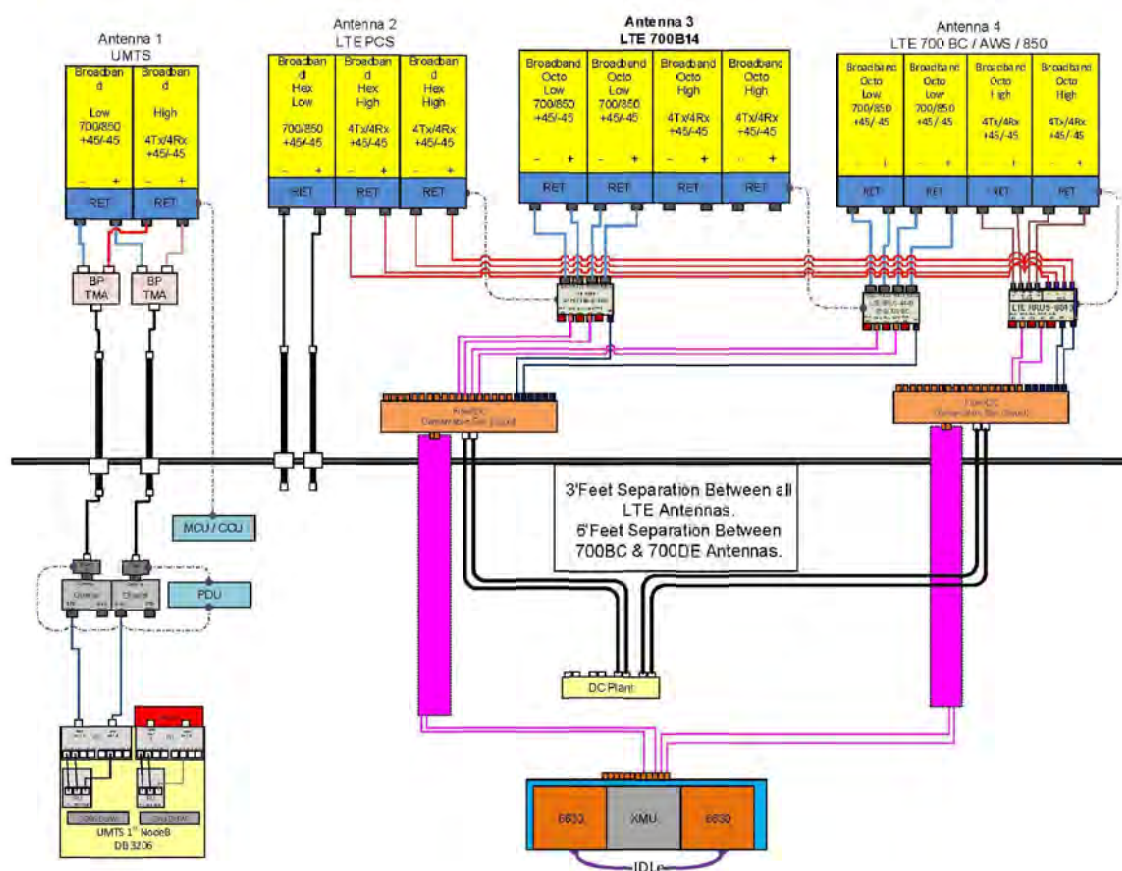
STANDARDIZATION OR LATE FOR APPROVAL
CONNECTIONS ARE A MUST TO USE THE STANDARD
OR AT A CONNECTIONS MANUFACTURER
TO AVOID TWO CONNECTIONS

SHEET NUMBER: **G-2** REVISION: **0**

Diagram - Sector	A	Diagram File Name - 5GMR_FINAL_CT10M_A_LTE5C_R1.2.vsd	
Roll Site Name -	CTV1094	Location Name -	UNION NORTH
		Market -	CONNECTICUT
		Cluster -	NEW ENGLAND
Comments: Important Note: For detailed info to antenna wiring refer to the latest field notice - Antenna_Radio Connection Treeing Playbook 4.0. Etc.			







GENERAL NOTES:

1. THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF APPLICABLE LOCAL/STATE/COUNTY/CITY BUILDING CODES, AS WELL AS AISC/AIA-222 STANDARDS, AIA/AIA-2109 STANDARDS, AISC, AISC, AISC, AND/OR THE LATEST VERSION OF THE INTERNATIONAL BUILDING CODE, UNLESS NOTED OTHERWISE IN THE CORRESPONDING STRUCTURAL REPORT.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN SIMILAR CONSTRUCTION.
4. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. IF OBSTRUCTIONS ARE FOUND, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD PRIOR TO CONTINUING WORK.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SUBMITTED TO THE ENGINEER OF RECORD PRIOR TO CONTINUING WORK. ANY CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND/OR CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHIELDING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE DURING CONSTRUCTION. 10-1019-A-2011 IS AN APPROPRIATE REFERENCE FOR THOSE DESIGN MEETING TA STANDARDS. THE ENGINEER OF RECORD MAY PROVIDE FORMAL BRACING PLANS AT THE REQUEST AND CONVEYANCE OF THE CONTRACTOR.
7. INSTALLATION SHALL NOT INTERFERE WITH ANY EXISTING ACCESS TO OR FROM ANY EXISTING OR PROPOSED OPERATIONAL AND SAFETY EQUIPMENT.
8. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINITY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES, AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMAINS, SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZINC GALVALUME COAT GALVANIZING COMPOUND PER ASTM A790 AND MANUFACTURER'S RECOMMENDATIONS.
3. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
4. ALL EXISTING STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
5. ALL STEEL MEMBERS AND CONNECTIONS SHALL MEET THE FOLLOWING GRADES:
 - ANGLES, CHANNELS, PLATES AND BARS TO BE A36, Fy=36 KSI, U.S.G.
 - W SHAPES TO BE A500, Fy=50 KSI, U.S.G.
 - RECTANGULAR PIPES TO BE A500, GRADE B, Fy=45 KSI, U.S.G.
 - ROUND PIPES TO BE A500, GRADE B, Fy=45 KSI, U.S.G.
 - STEEL PIPES TO BE A500, GRADE B, Fy=45 KSI, U.S.G.
 - BOLTS TO BE A325-X, Fy=70 KSI, U.S.G.
 - U-BOLTS AND LAG BOLTS TO BE A307 OR A, Fy=60 KSI, U.S.G.
6. ALL WELDING SHALL BE DONE USING EPOK ELECTRODES, U.S.G.
7. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION.
8. ALL HULL ANCHORS TO BE CARBON STEEL, U.S.G.
 - MECHANICAL ANCHORS: HITEC BOLT-TITE, U.S.G.
 - CMI BLOCK ANCHORS: Kwikrete - HY20, U.S.G.
 - CONCRETE WELDING ADHESIVE - HITEC, U.S.G.
 - CONCRETE REPAIR ADHESIVE - HITEC, U.S.G.
9. ALL STUDS TO BE WELDED CAPACITOR DISCHARGE 1/4"-20 LOW CARBON STEEL COPPER-FLASH AT 55 KSI UTS/50 KSI YIELD, U.S.G.
10. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
11. MINIMUM EDGE DISTANCES SHALL CONFORM TO AISC TABLE J4.4.
12. REMOVAL/REPLACEMENT OF STRUCTURAL MEMBERS SHALL BE DONE ONE MEMBER AT A TIME. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STRUCTURAL INTEGRITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

CONCRETE CONSTRUCTION NOTES:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO AIA-318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.
2. EXISTING CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH NEW PROPOSED CONCRETE SHOULD BE WIRE BRUSHED CLEAN AND TREATED WITH APPROPRIATE MECHANICAL SCRATCH COAT AND REPAIR MATERIALS OR APPROPRIATE CHEMICAL METHODS SUCH AS THE APPLICATION OF A BONDING AGENT, EX. SAKRETT OR EQUIVALENT, TO ENSURE A QUALITY BOND BETWEEN EXISTING AND PROPOSED CONCRETE SURFACES.

FIBER REINFORCED POLYMER (FRP) NOTES:

1. FRP PLATES, SHAPES, BOLTS AND NUTS (STUD/NUT ASSEMBLIES) SHALL CONFORM TO ASTM D638, 635, 790, PLATES AND SHAPES TO BE F1 = 5.35 KSI LW (SAFETY FACTOR OF 8), 845 KSI CW (SAFETY FACTOR OF 8) MIN.
2. IF FIELD FABRICATION IS REQUIRED, ALL CUT EDGES AND DRILLED HOLES TO BE SEALED USING VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
3. ALL FASTENERS TO BE 1/2" DIA FRP THREADED ROD WITH FIBER REINFORCED THERMOPLASTIC NUT, SPACED AT 12 INCHES ON CENTER MAXIMUM, U.S.G., FOR PANELS AND AS DESIGNED FOR STRUCTURAL MEMBERS.
4. THE COLOR AND SURFACE PATTERN OF EXPOSED FRP PANELS SHALL MATCH THE EXTERIOR OF THE EXISTING BUILDING, U.S.G.
5. STUD/NUT ASSEMBLIES SHOULD BE LUBRICATED FOR INSTALLATION.
6. EXPOSURE BEARING SURFACES OF THE NUTS ARE FINISHED TO THE SURFACES BEING FASTENED.
7. TORQUE BOLTS ACCORDING TO THE FOLLOWING TABLE:

INSTALLATION TORQUE TABLE		
SIZE	ULTIMATE TENSILE STRENGTH	RECOMMENDED MAXIMUM INSTALLATION TORQUE
1/8-16 UNC	8 FT-LBS	4 FT-LBS
1/2-13 UNC	18 FT-LBS	8 FT-LBS
1/8-11 UNC	38 FT-LBS	16 FT-LBS
3/4-10 UNC	50 FT-LBS	24 FT-LBS
1-8 UNC	115 FT-LBS	50 FT-LBS

8. WHEN TIGHTENING FRP STUD/NUT ASSEMBLIES, WRENCHES MUST MAKE FULL CONTACT WITH ALL NUT EDGES. A STANDARD SIX POINT SOCKET IS RECOMMENDED.
9. STUD/NUT ASSEMBLIES SHOULD BE BONDED BY APPLYING BONDING AGENT TO ENTIRE NUT AND EXPOSED STUD.
10. ALL FRP MATERIALS TO BE PROVIDED BY FIBERGLASS COMPOSITE STRUCTURES, DALLAS TX, OR APPROVED EQUAL.
11. ALL FRP SHAPES TO BE DYNFORM FULTRUD STRUCTURAL SHAPES.
12. ALL FRP PLATES TO BE FIBERGLASS MOULDED FRP PLATE.
13. ALL FRP PANELS TO BE FIBERGLASS CLADDING PANEL.
14. EACH FRP PANEL TO BE IDENTIFIED WITH LABEL/STAMP AND FIBERGLASS COMPOSITE STRUCTURAL LABEL.
15. FRP MATERIAL TO BE CLASSIFIED AS CCI OR BETTER, AND HAVE MAXIMUM FLAME SPREAD OF 50.
16. ALL DESIGN AND CONSTRUCTION TO BE COMPLETED IN ACCORDANCE WITH LOS ANGELES RESEARCH REPORT R022056, DATED FEBRUARY 1, 2016.
17. SPECIAL INSPECTIONS MUST BE PROVIDED FOR ALL FRP INSTALLMENTS. SEE SPECIAL INSPECTION SECTION, THIS SET.

RATIO OF EDGE DISTANCE TO FRP FASTENER DIAMETER

	RANGE	RECOMMENDED
EDGE DISTANCE - CL* BOLT TO END	2.0-4.0	3.0
EDGE DISTANCE - CL* BOLT TO SIDE	1.5-3.5	2.5
BOLT PITCH - CL* TO CL*	4.0-5.0	5.0

WOOD CONSTRUCTION NOTES:

1. ALL EXISTING WOOD SHAPES ARE ASSUMED TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN.
2. ALL PROPOSED WOOD SHAPES ARE TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN. U.S.G.
3. ALL EXISTING AND PROPOSED GLUED LAMINATED TIMBERS ARE TO BE 24F-1.8C DOUGLAS FIR BALANCED WITH A REFERENCE DESIGN BENDING VALUE OF 2400 PSI MIN. U.S.G.

MASONRY CONSTRUCTION NOTES:

1. ALL BRICK TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
 - FOR INTERIOR/FAÇADE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 100 PSI SHALL BE USED FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 150 PSI.
 - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
2. ALL CMU TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
 - FOR INTERIOR/FAÇADE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 64 PSI SHALL BE USED FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 84 PSI SHALL BE USED FOR UNGRADED BLOCKS, AND 128 PSI FOR FULLY DRAINED BLOCKS.
 - FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 84 PSI SHALL BE USED FOR UNGRADED BLOCKS, AND 163 PSI FOR FULLY DRAINED BLOCKS.
 - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.

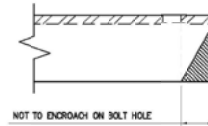
TOWER PLUMB & TENSION NOTES:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETANGERING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETANGERING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTRALS AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS FOR LATTICE STRUCTURES.
4. THE TWIST BETWEEN ANY TWO ELEVATIONS THROUGHOUT THE HEIGHT OF A LATTICE STRUCTURE SHALL NOT EXCEED 0.1 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE LATTICE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.

SPECIAL INSPECTIONS NOTES:

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER AND APPROVED BY THE JURISDICTION, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH THE FOLLOWING BUILDING CODE, APPLICABLE SECTION(S) AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
 - a. STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELDS ONLY).
 - b. HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 AND/OR A490 BOLTS) TO BE TIGHTENED PER TURN-OF-THE-NUT METHOD.
 - c. MECHANICAL AND EPOK ANCHORAGES.
 - d. FIBER REINFORCED POLYMER.
 - THE SPECIAL INSPECTOR MUST VERIFY THAT THE FRP MATERIAL SPECIFIED ON THE APPROVED DESIGN DOCUMENTS IS BEING INSTALLED.
 - THE SPECIAL INSPECTOR MUST VERIFY THAT ALL CUT EDGES AND DRILLED HOLES ARE PROPERLY SEALED USING A VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
 - THE SPECIAL INSPECTOR MUST VERIFY THAT THE STRUCTURE IS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN DOCUMENTS.
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT THE SPECIAL INSPECTIONS.

MAXIMUM ALLOWABLE ANGLE CLIP

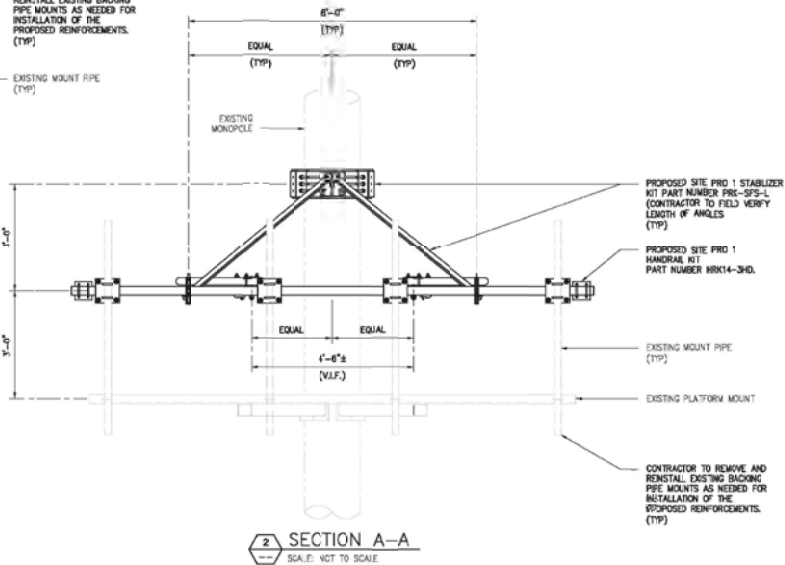
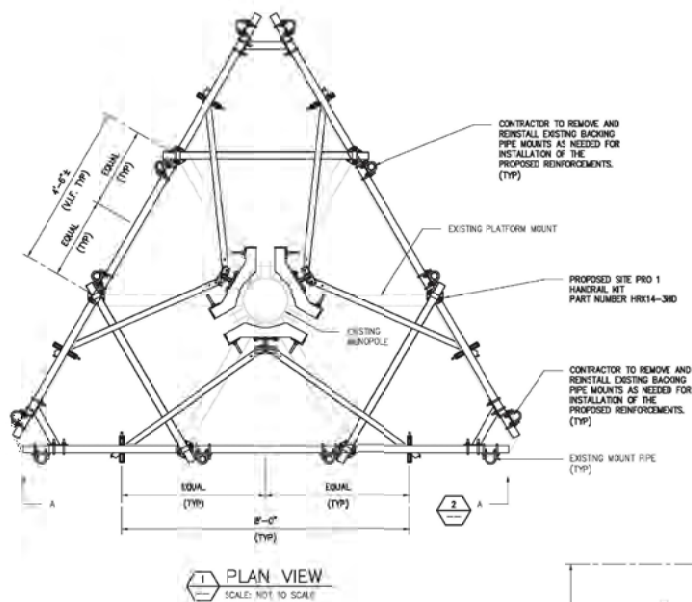


INFINITY ENGINEERING PLLC
10000 WILLOW CREEK DRIVE
SUITE 100
DALLAS, TEXAS 75243
(214) 343-1111
www.infinityeng.com

at&t

PROFESSIONAL ENGINEER
No. 738,573-2008
JAMES A. STEVENS
05/11/2020
STATE OF TEXAS
I hereby certify that I am a duly licensed Professional Engineer in the State of Texas, and that I am qualified to perform the services described in the scope of work.

1. OWNER: **UNION**
2. PROJECT: **876348**
3. DRAWING: **0**
4. SHEET: **GENERAL NOTES**
5. DATE: **05/11/2020**
6. DRAWING TITLE: **GENERAL NOTES**
7. DRAWING NUMBER: **S-1**



NOTES:

1. VARIOUS EXISTING CONDITIONS AND PROPOSED MODIFICATIONS NOT SHOWN FOR CLARITY.
2. ALL SITE PRO 1 PARTS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. CONTRACTOR TO FIELD VERIFY REQUIRED LENGTHS OF ALL PROPOSED REINFORCEMENT KIT PIPES & ANGLES AND TIE & DRILL IN SITE AS NECESSARY.
4. REMOVAL/REPLACEMENT OF STRUCTURAL MEMBERS SHALL BE DONE ONE MEMBER AT A TIME. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STRUCTURAL INTEGRITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

INFINIGY
ENGINEERING PLLC
11000 LANTANA BLVD, SUITE 200
FORT LAUDERDALE, FL 33308
(954) 371-1100



DATE	BY	DESCRIPTION
05/11/2020	John A. Stevens	Final Design

UNION
878348
10 WILLOW CREEK
SUITE 200, FORT LAUDERDALE, FL 33308

Prepared For:
CROWN CASTLE

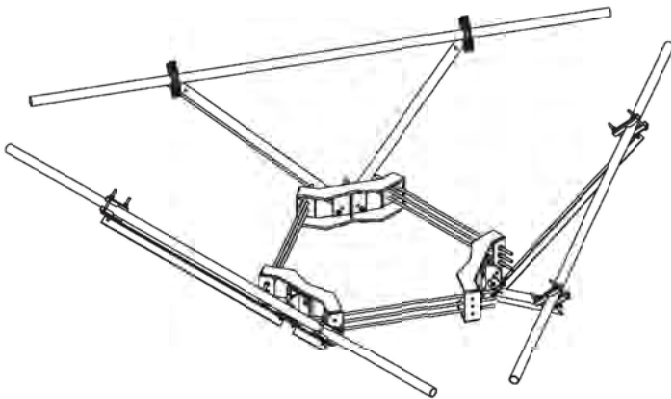
Drawing Title:
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Drawing Number:
MOUNT MODIFICATION DETAILS

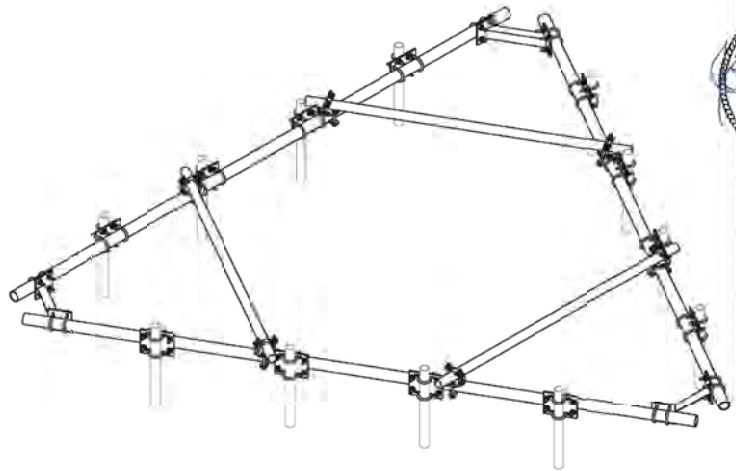
Drawing Location:
S-2

NOTES:

1. VARIOUS EXISTING CONDITIONS AND PROPOSED MODIFICATIONS NOT SHOWN FOR CLARITY.
2. ALL SITE PRO 1 PARTS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. CONTRACTOR TO FIELD VERIFY REQUIRED LENGTHS OF PROPOSED REINFORCEMENT RTT ANGLES AND TRIM ON SITE AS NECESSARY.



1 SITE PRO 1 P/N PRK-SFS-L
SCALE: NOT TO SCALE



1 SITE PRO 1 P/N HRK14-3HD
SCALE: NOT TO SCALE

INFINIGY
ENGINEERING PLLC
1000 W. 10TH AVENUE, SUITE 100
DENVER, CO 80202
303.733.1111



1	DATE OF REVISION	05/11/2020
2	BY	JOHN A. STEPHENS
3	CHKD BY	JOHN A. STEPHENS
4	APP'D BY	JOHN A. STEPHENS
5	REVISION	

UNION
876348
10 W. 10TH AVENUE, SUITE 100
DENVER, CO 80202 (303) 733-1111

Prepared For:
CROWN CASTLE

Drawing Title:
0

Drawing Title:
REQUIRED PARTS

Drawing Location:
S-3



Certificate Of Completion

Envelope Id: DD0CE6B5A941409BA9889BB9FF388309	Status: Completed	
Subject: Please DocuSign: CTV1094_876346_UNION_AT&T LTE 5C FCD_REV 0_06.19.2020.pdf		
Source Envelope:		
Document Pages: 15	Signatures: 9	Envelope Originator:
Certificate Pages: 3	Initials: 0	Whitney Sealover
AutoNav: Enabled		2000 Corporate Drive
Enveloped Stamping: Enabled		Canonsburg, PA 15317
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		IP Address: 162.220.42.50

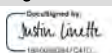
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justin.linette@crowncastle.com
Crown Castle International Corp.
Security Level: Email, Account Authentication (None)

Signature



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Accepted: 9/20/2018 7:12:49 AM
ID: 5006cfc0-7b26-47be-9523-588826283226

In Person Signer Events	Signature	Timestamp
Editor Delivery Events	Status	Timestamp
Agent Delivery Events	Status	Timestamp
Intermediary Delivery Events	Status	Timestamp
Certified Delivery Events	Status	Timestamp
Carbon Copy Events	Status	Timestamp
Witness Events	Signature	Timestamp
Notary Events	Signature	Timestamp
Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	6/19/2020 3:04:31 PM
Certified Delivered	Security Checked	6/19/2020 3:23:58 PM
Signing Complete	Security Checked	6/19/2020 3:28:14 PM
Completed	Security Checked	6/19/2020 3:28:14 PM
Payment Events	Status	Timestamps
Electronic Record and Signature Disclosure		

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You may contact us to let us know of any changes related to contacting you electronically, to request paper copies of documents for execution and other documents and records from us, and to withdraw your prior consent to receive documents for execution and other documents and records electronically as follows:

To contact us by phone call: 724-416-2000

To contact us by email, send messages to: esignature@CrownCastle.com

To contact us by paper mail, send correspondence to

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317

To advise Crown Castle and DocuSign of your new e-mail address

To let us know of a change to the e-mail address where we should send documents for execution and other documents and records to you, you must send an email message to esignature@CrownCastle.com and state your previous e-mail address and your new e-mail address.

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Browsers:	Internet Explorer® 11 (Windows only); Windows Edge Current Version; Mozilla Firefox Current Version; Safari™ (Mac OS only) 6.2 or above; Google Chrome Current Version; Note : Pre-release (e.g., beta) versions of operating systems and browsers are not supported.
Mobile Signing:	Apple iOS 7.0 or above; Android 4.0 or above
PDF Reader:	Acrobat® Reader or similar software may be required to view and print PDF files
Screen Resolution:	1024 x 768

Enabled Security Settings:	Allow per session cookies
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Exhibit D

Structural Analysis Report

Date: **May 22, 2020**

Chanh dara Ratsavong
Crown Castle
6325 Ardrey Kell Rd., Suite 600
Charlotte, NC 28277



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:

AT&T Mobility Co-Locate

Carrier Site Number:

CTV1094

Carrier Site Name:

Union North

Crown Castle Designation:

Crown Castle BU Number:

876346

Crown Castle Site Name:

Union

Crown Castle JDE Job Number:

605414

Crown Castle Work Order Number:

1854627

Crown Castle Order Number:

517063 Rev. 0

Engineering Firm Designation:

TEP Project Number:

25727.416208

Site Data:

23 Holland Road, Union, Tolland County, CT 06076

Latitude 42° 1' 45.94", Longitude -72° 8' 23.54"

150 Foot - Monopole Tower

Dear Chanh dara Ratsavong,

Tower Engineering Professionals is pleased to submit this "**Structural Analysis Report**" to determine the structural integrity of the above-mentioned tower.

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

LC5: Proposed Equipment Configuration

***Sufficient Capacity**

***The structure has sufficient capacity once the loading changes, described in the Recommendations section of this report, are completed.**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Adam N. Howe, E.I. / JSC

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

05/22/2020

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6) APPENDIX B

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7) APPENDIX C

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1) INTRODUCTION

This tower is a 150-ft monopole tower designed by Rohn. The tower has been modified per reinforcement drawings prepared by FDH Engineering, Inc. in June of 2012. The bypass stiffeners and anchor bracket modifications in this design were determined to be ineffective and were not considered structurally in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
Risk Category: II
Wind Speed: 125 mph
Exposure Category: C
Topographic Factor: 1.0
Ice Thickness: 2.0 in
Wind Speed with Ice: 50 mph
Service Wind Speed: 60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137.0	140.0	3	Kathrein	80010964 w/ Mount Pipe	4 8 2 6	1-1/4 1-5/8 3/8 3/4
		3	CCI Antennas	HPA65R-BU4A w/ Mount Pipe		
		2	Powerwave Technologies	7770.00 w/ Mount Pipe		
		3	CCI Antennas	OPA65R-BU4D w/ Mount Pipe		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 8843 B2/B66A		
		2	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC6-48-60-18-8C		
		6	Powerwave Technologies	LGP21401		
		3	Ericsson	RRUS 4478 B14		
	137.0	1	Tower Mounts	Platform Mount [LP 1201-1]		
		1	Site Pro 1	HRK14-3HD Support Rail Kit		
		1	Site Pro 1	PRK-SFS-L Stabilizer Kit		
60.0	61.0	1	Lucent	KS24019-L112A	1	1/2
	60.0	1	Tower Mounts	Side Arm Mount [SO 701-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
147.0	150.0	2	Nokia	FZHN	8 1	1-1/4 7/8
	147.0	2	RFS Celwave	APXVTM14-ALU-I20 w/ Mount Pipe		
		2	Commscope	NNVV-65B-Rw w/ Mount Pipe		
		4	Decibel	DB980H90E-M w/ Mount Pipe		
		4	Alcatel Lucent	RRH2X50-800		
		2	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		1	Tower Mounts	Platform Mount [LP 502-1]		
129.0	130.0	3	Kathrein	800 10504 w/ Mount Pipe	6 1	1-5/8 3/8
		3	Kathrein	860 10118		
	129.0	1	Tower Mounts	T-Arm Mount [TA 602-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	FDH Engineering	1855010	CCISites
Tower Foundation Drawings	Rohn	1447038	CCISites
Tower Manufacturer Drawings	Rohn	1406212	CCISites
Tower Reinforcement Drawings	FDH Engineering, Inc.	3252388	CCISites
Post-Modification Inspection	Tower Engineering Professionals	3716688	CCISites

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

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

3.2) Assumptions

- 1) The tower and structures were maintained in accordance with the TIA-222 standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and the referenced drawings.
- 3) Per photos from CCISites, the (3) Alcatel Lucent PCS 1900MHz 4x45W-65MHz's at the 147-ft elevation are installed directly behind the panel antennas and oriented such that they are completely shielded from the front, but not the sides.
- 4) Base and flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)^{1,2}

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP24x24x0.25	Pole	2.9%	Pass
145 - 140	Pole	TP24x24x0.25	Pole	8.1%	Pass
140 - 135	Pole	TP24x24x0.25	Pole	19.8%	Pass
135 - 130	Pole	TP24x24x0.25	Pole	32.7%	Pass
130 - 125	Pole	TP24x24x0.25	Pole	47.4%	Pass
125 - 120	Pole	TP24x24x0.25	Pole	62.5%	Pass
120 - 115	Pole	TP30x30x0.375	Pole	32.8%	Pass
115 - 110	Pole	TP30x30x0.375	Pole	39.6%	Pass
110 - 105	Pole	TP30x30x0.375	Pole	46.5%	Pass
105 - 100	Pole	TP30x30x0.375	Pole	53.7%	Pass
100 - 95	Pole	TP30x30x0.375	Pole	61.1%	Pass
95 - 90	Pole	TP30x30x0.375	Pole	68.6%	Pass
90 - 85	Pole	TP36x36x0.375	Pole	54.3%	Pass
85 - 80	Pole	TP36x36x0.375	Pole	59.9%	Pass
80 - 75	Pole	TP36x36x0.375	Pole	65.7%	Pass
75 - 70	Pole	TP36x36x0.375	Pole	71.7%	Pass
70 - 65	Pole	TP36x36x0.375	Pole	77.8%	Pass
65 - 60	Pole	TP36x36x0.375	Pole	84.0%	Pass
60 - 55	Pole	TP42x42x0.375	Pole	67.6%	Pass
55 - 50	Pole	TP42x42x0.375	Pole	72.5%	Pass
50 - 45	Pole	TP42x42x0.375	Pole	77.5%	Pass
45 - 40.25	Pole	TP42x42x0.375	Pole	82.3%	Pass
40.25 - 40	Pole	TP42x42x0.375	Pole	82.6%	Pass
40 - 35	Pole	TP42x42x0.375	Pole	87.8%	Pass
35 - 30	Pole	TP42x42x0.375	Pole	93.1%	Pass
30 - 29.75	Pole	TP42x42x0.5	Pole	68.1%	Pass
29.75 - 24.75	Pole	TP42x42x0.5	Pole	72.1%	Pass
24.75 - 19.75	Pole	TP42x42x0.5	Pole	76.2%	Pass
19.75 - 14.75	Pole	TP42x42x0.5	Pole	80.3%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
14.75 - 9.75	Pole	TP42x42x0.5	Pole	84.5%	Pass
9.75 - 7.92	Pole	TP42x42x0.5	Pole	86.0%	Pass
7.92 - 7.67	Pole	TP42x42x0.5	Pole	86.2%	Pass
7.67 - 2.67	Pole	TP42x42x0.5	Pole	90.5%	Pass
2.67 - 0	Pole	TP42x42x0.5	Pole	92.8%	Pass
				Summary	
			Pole	93.1%	Pass
			Reinforcement	0.0%	Pass
			Overall	93.1%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2,3	Flange Connection	120.0	24.1	Pass
1,2,3	Flange Connection	90.0	41.2	Pass
1,2,3	Flange Connection	60.0	55.4	Pass
1,2,3	Flange Connection	30.0	82.4	Pass
1,2,3	Anchor Rods	-	99.1	Pass
1,2,3	Base Plate	-	99.1	Pass
1,2	Base Foundation Soil Interaction	-	84.1	Pass
1,2	Base Foundation Structural	-	27.1	Pass

Structure Rating (max from all components) =	99.1%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
- 2) Rating per TIA-222-H Section 15.5
- 3) Base/Flange plates are assumed to have the same capacity as their respective splice bolts or shaft.

4.1) Recommendations

- 1) The tower and its foundation have sufficient capacity to carry the proposed load configuration. In order for the results of this analysis to be considered valid, the loading modification, as follows, must be completed.

Loading Changes:

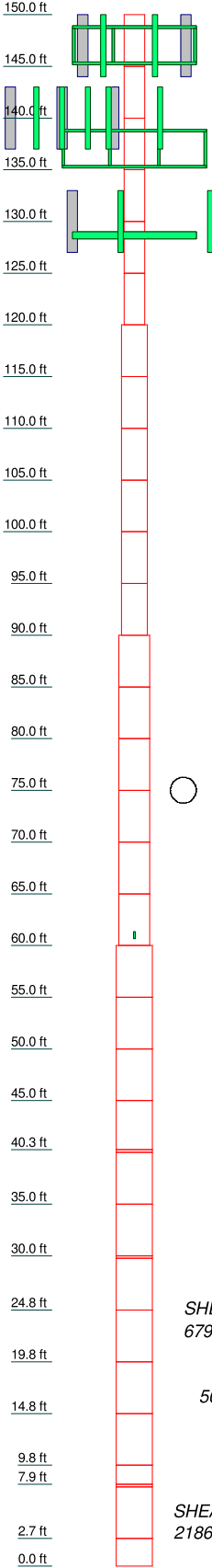
- a) The (3) proposed Ericsson RRUS 4478 B14 TME's at the 137-ft level must be installed directly behind the (3) proposed CCI Antennas OPA65R-BU4D antennas, completely shielding the TME's from the wind from the front.
- b) The (3) existing Ericsson RRUS 4449 B5/B12 TME's at the 137-ft level must be positioned to be directly behind the (3) existing Kathrein 80010964 antennas, completely shielding the TME's from the wind from the front.

No structural modifications are required at this time provided that the above-listed changes are completed.

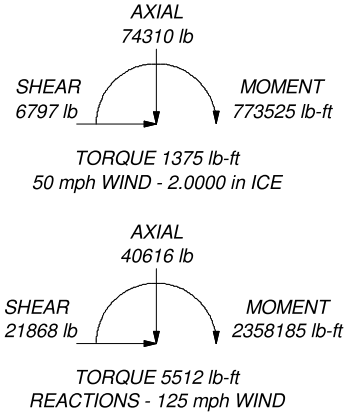
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Size																																		
Length (ft)																																		
Grade																																		
Weight (lb)																																		



ALL REACTIONS
ARE FACTORED



TORQUE 5512 lb-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 93.1%



Tower Engineering Professionals

Tower Engineering Professionals

326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: **Union (BU 876346)**

Project: **TEP No. 25727.416208**

Client: Crown Castle	Drawn by: anhowe	App'd:
Code: TIA-222-H	Date: 05/22/20	Scale: NTS
Path: C:\Users\anhowe\Desktop\SA's\Union\TSA Check\Main Run\876346_1854627_LC5.er		Dwg No. E-1

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Union (BU 876346)	Page 1 of 20
	Project TEP No. 25727.416208	Date 12:56:14 05/22/20
	Client Crown Castle	Designed by anhowe

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

Tower is located in Tolland County, Connecticut.
 Tower base elevation above sea level: 840.00 ft.
 Basic wind speed of 125 mph.
 Risk Category II.
 Exposure Category C.
 Simplified Topographic Factor Procedure for wind speed-up calculations is used.
 Topographic Category: 1.
 Crest Height: 0.00 ft.
 Nominal ice thickness of 2.0000 in.
 Ice thickness is considered to increase with height.
 Ice density of 56 pcf.
 A wind speed of 50 mph is used in combination with ice.
 Temperature drop of 50 °F.
 Deflections calculated using a wind speed of 60 mph.
 TOWER RATING: 97.9%.
 A non-linear (P-delta) analysis was used.
 Pressures are calculated at each section.
 Stress ratio used in pole design is 1.05.
 Tower analysis based on target reliabilities in accordance with Annex S.
 Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
 Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Union (BU 876346)	Page 2 of 20
	Project TEP No. 25727.416208	Date 12:56:14 05/22/20
	Client Crown Castle	Designed by anhowe

Pole Section Geometry

<i>Section</i>	<i>Elevation</i> <i>ft</i>	<i>Section Length</i> <i>ft</i>	<i>Pole Size</i>	<i>Pole Grade</i>	<i>Socket Length</i> <i>ft</i>
L1	150.00-145.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L2	145.00-140.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L3	140.00-135.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L4	135.00-130.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L5	130.00-125.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L6	125.00-120.00	5.00	P24x0.25	A53-B-42 (42 ksi)	
L7	120.00-115.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L8	115.00-110.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L9	110.00-105.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L10	105.00-100.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L11	100.00-95.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L12	95.00-90.00	5.00	P30x0.375	A53-B-42 (42 ksi)	
L13	90.00-85.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L14	85.00-80.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L15	80.00-75.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L16	75.00-70.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L17	70.00-65.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L18	65.00-60.00	5.00	P36x0.375	A53-B-42 (42 ksi)	
L19	60.00-55.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L20	55.00-50.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L21	50.00-45.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L22	45.00-40.25	4.75	P42x0.375	A53-B-42 (42 ksi)	
L23	40.25-40.00	0.25	P42x0.375	A53-B-42 (42 ksi)	
L24	40.00-35.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L25	35.00-30.00	5.00	P42x0.375	A53-B-42 (42 ksi)	
L26	30.00-29.75	0.25	P42x0.5	A53-B-42 (42 ksi)	
L27	29.75-24.75	5.00	P42x0.5	A53-B-42 (42 ksi)	
L28	24.75-19.75	5.00	P42x0.5	A53-B-42 (42 ksi)	
L29	19.75-14.75	5.00	P42x0.5	A53-B-42 (42 ksi)	

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Union (BU 876346)	Page 6 of 20
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	Client	Crown Castle	Designed by anhowe

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	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 lb
L1	150.00-145.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.000	0.000	11
L2	145.00-140.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.000	0.000	27
L3	140.00-135.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	1.902	0.000	58
L4	135.00-130.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	104
L5	130.00-125.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	124
L6	125.00-120.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L7	120.00-115.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L8	115.00-110.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L9	110.00-105.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L10	105.00-100.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L11	100.00-95.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L12	95.00-90.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L13	90.00-85.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L14	85.00-80.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L15	80.00-75.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L16	75.00-70.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L17	70.00-65.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L18	65.00-60.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	4.755	0.000	129
L19	60.00-55.00	A	0.000	0.000	0.188	0.000	1
		B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
L20	55.00-50.00	A	0.000	0.000	0.188	0.000	1

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i>	<i>A_F</i>	<i>C_AA_A In Face</i>	<i>C_AA_A Out Face</i>	<i>Weight</i>
			<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>lb</i>
L21	50.00-45.00	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
		A	0.000	0.000	0.188	0.000	1
L22	45.00-40.25	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
		A	0.000	0.000	0.653	0.000	13
L23	40.25-40.00	B	0.000	0.000	0.475	0.000	12
		C	0.000	0.000	5.289	0.000	135
		A	0.000	0.000	0.134	0.000	3
L24	40.00-35.00	B	0.000	0.000	0.125	0.000	3
		C	0.000	0.000	0.378	0.000	10
		A	0.000	0.000	2.688	0.000	65
L25	35.00-30.00	B	0.000	0.000	2.500	0.000	64
		C	0.000	0.000	7.567	0.000	193
		A	0.000	0.000	2.587	0.000	62
L26	30.00-29.75	B	0.000	0.000	2.400	0.000	61
		C	0.000	0.000	7.468	0.000	191
		A	0.000	0.000	0.009	0.000	0
L27	29.75-24.75	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	0.253	0.000	6
		A	0.000	0.000	0.188	0.000	1
L28	24.75-19.75	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
		A	0.000	0.000	0.188	0.000	1
L29	19.75-14.75	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
		A	0.000	0.000	0.188	0.000	1
L30	14.75-9.75	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
		A	0.000	0.000	0.188	0.000	1
L31	9.75-7.92	B	0.000	0.000	0.000	0.000	0
		C	0.000	0.000	5.067	0.000	130
		A	0.000	0.000	0.510	0.000	12
L32	7.92-7.67	B	0.000	0.000	0.442	0.000	11
		C	0.000	0.000	2.300	0.000	59
		A	0.000	0.000	0.134	0.000	3
L33	7.67-2.67	B	0.000	0.000	0.125	0.000	3
		C	0.000	0.000	0.378	0.000	10
		A	0.000	0.000	2.688	0.000	65
L34	2.67-0.00	B	0.000	0.000	2.500	0.000	64
		C	0.000	0.000	7.567	0.000	193
		A	0.000	0.000	1.433	0.000	35
		B	0.000	0.000	1.333	0.000	34
		C	0.000	0.000	4.036	0.000	103

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R</i>	<i>A_F</i>	<i>C_AA_A In Face</i>	<i>C_AA_A Out Face</i>	<i>Weight</i>
				<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>ft²</i>	<i>lb</i>
L1	150.00-145.00	A	1.975	0.000	0.000	2.162	0.000	29
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.000	0.000	11
L2	145.00-140.00	A	1.968	0.000	0.000	2.155	0.000	29
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.000	0.000	27
L3	140.00-135.00	A	1.961	0.000	0.000	2.148	0.000	29
		B		0.000	0.000	0.000	0.000	0

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R ft²</i>	<i>A_F ft²</i>	<i>C_AA_A In Face ft²</i>	<i>C_AA_A Out Face ft²</i>	<i>Weight lb</i>
L4	135.00-130.00	C		0.000	0.000	4.338	0.000	112
		A	1.954	0.000	0.000	2.141	0.000	29
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.828	0.000	240
L5	130.00-125.00	A	1.946	0.000	0.000	2.134	0.000	29
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.809	0.000	259
L6	125.00-120.00	A	1.938	0.000	0.000	2.126	0.000	28
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.789	0.000	264
L7	120.00-115.00	A	1.930	0.000	0.000	2.118	0.000	28
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.769	0.000	263
L8	115.00-110.00	A	1.922	0.000	0.000	2.109	0.000	28
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.748	0.000	262
L9	110.00-105.00	A	1.913	0.000	0.000	2.101	0.000	28
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.727	0.000	261
L10	105.00-100.00	A	1.904	0.000	0.000	2.092	0.000	28
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.704	0.000	261
L11	100.00-95.00	A	1.895	0.000	0.000	2.082	0.000	27
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.680	0.000	260
L12	95.00-90.00	A	1.885	0.000	0.000	2.072	0.000	27
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.655	0.000	259
L13	90.00-85.00	A	1.874	0.000	0.000	2.062	0.000	27
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.629	0.000	258
L14	85.00-80.00	A	1.863	0.000	0.000	2.051	0.000	27
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.602	0.000	257
L15	80.00-75.00	A	1.852	0.000	0.000	2.039	0.000	26
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.573	0.000	256
L16	75.00-70.00	A	1.839	0.000	0.000	2.027	0.000	26
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.542	0.000	255
L17	70.00-65.00	A	1.826	0.000	0.000	2.014	0.000	26
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.509	0.000	254
L18	65.00-60.00	A	1.812	0.000	0.000	2.000	0.000	25
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	10.474	0.000	252
L19	60.00-55.00	A	1.797	0.000	0.000	1.985	0.000	25
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	12.546	0.000	278
L20	55.00-50.00	A	1.781	0.000	0.000	1.968	0.000	25
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	12.489	0.000	277
L21	50.00-45.00	A	1.763	0.000	0.000	1.951	0.000	24
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	12.427	0.000	275
L22	45.00-40.25	A	1.744	0.000	0.000	2.604	0.000	44
		B		0.000	0.000	0.769	0.000	22
		C		0.000	0.000	12.512	0.000	281
L23	40.25-40.00	A	1.734	0.000	0.000	0.298	0.000	7
		B		0.000	0.000	0.202	0.000	6
		C		0.000	0.000	0.818	0.000	19

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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 lb
L24	40.00-35.00	A	1.722	0.000	0.000	5.947	0.000	137
		B		0.000	0.000	4.037	0.000	114
		C		0.000	0.000	16.320	0.000	384
L25	35.00-30.00	A	1.697	0.000	0.000	5.749	0.000	131
		B		0.000	0.000	3.864	0.000	109
		C		0.000	0.000	16.061	0.000	376
L26	30.00-29.75	A	1.683	0.000	0.000	0.094	0.000	1
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	0.607	0.000	13
L27	29.75-24.75	A	1.668	0.000	0.000	1.855	0.000	22
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	12.093	0.000	264
L28	24.75-19.75	A	1.634	0.000	0.000	1.822	0.000	21
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	11.976	0.000	261
L29	19.75-14.75	A	1.593	0.000	0.000	1.781	0.000	20
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	11.833	0.000	256
L30	14.75-9.75	A	1.540	0.000	0.000	1.727	0.000	19
		B		0.000	0.000	0.000	0.000	0
		C		0.000	0.000	11.645	0.000	251
L31	9.75-7.92	A	1.490	0.000	0.000	1.250	0.000	25
		B		0.000	0.000	0.635	0.000	19
		C		0.000	0.000	4.841	0.000	109
L32	7.92-7.67	A	1.472	0.000	0.000	0.262	0.000	6
		B		0.000	0.000	0.179	0.000	5
		C		0.000	0.000	0.750	0.000	17
L33	7.67-2.67	A	1.412	0.000	0.000	5.156	0.000	118
		B		0.000	0.000	3.556	0.000	102
		C		0.000	0.000	14.755	0.000	340
L34	2.67-0.00	A	1.233	0.000	0.000	2.606	0.000	58
		B		0.000	0.000	1.848	0.000	51
		C		0.000	0.000	7.487	0.000	169

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	150.00-145.00	-0.3693	0.0000	-1.6330	0.0000
L2	145.00-140.00	-0.3693	0.0000	-1.6292	0.0000
L3	140.00-135.00	-0.2825	3.0309	-1.1333	2.4040
L4	135.00-130.00	-0.2088	5.6017	-0.7780	4.1328
L5	130.00-125.00	-0.2088	5.6017	-0.7765	4.1321
L6	125.00-120.00	-0.2088	5.6017	-0.7749	4.1315
L7	120.00-115.00	-0.2289	6.0728	-0.8841	4.6783
L8	115.00-110.00	-0.2289	6.0728	-0.8821	4.6768
L9	110.00-105.00	-0.2289	6.0728	-0.8799	4.6752
L10	105.00-100.00	-0.2289	6.0728	-0.8776	4.6736
L11	100.00-95.00	-0.2289	6.0728	-0.8753	4.6719
L12	95.00-90.00	-0.2289	6.0728	-0.8728	4.6701
L13	90.00-85.00	-0.2446	6.4426	-0.9618	5.1269
L14	85.00-80.00	-0.2446	6.4426	-0.9586	5.1238
L15	80.00-75.00	-0.2446	6.4426	-0.9551	5.1206
L16	75.00-70.00	-0.2446	6.4426	-0.9515	5.1171
L17	70.00-65.00	-0.2446	6.4426	-0.9476	5.1134
L18	65.00-60.00	-0.2446	6.4426	-0.9434	5.1094

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L19	60.00-55.00	-0.2522	7.0296	-0.9654	6.2574
L20	55.00-50.00	-0.2522	7.0296	-0.9604	6.2478
L21	50.00-45.00	-0.2522	7.0296	-0.9548	6.2373
L22	45.00-40.25	-0.2302	6.4185	-0.8983	5.8941
L23	40.25-40.00	-0.1708	4.7625	-0.7377	4.8525
L24	40.00-35.00	-0.1708	4.7625	-0.7347	4.8462
L25	35.00-30.00	-0.1731	4.8247	-0.7348	4.8760
L26	30.00-29.75	-0.2522	7.0296	-0.9294	6.1893
L27	29.75-24.75	-0.2522	7.0296	-0.9245	6.1799
L28	24.75-19.75	-0.2522	7.0296	-0.9135	6.1592
L29	19.75-14.75	-0.2522	7.0296	-0.8999	6.1334
L30	14.75-9.75	-0.2522	7.0296	-0.8819	6.0992
L31	9.75-7.92	-0.2051	5.7181	-0.7678	5.3859
L32	7.92-7.67	-0.1708	4.7625	-0.6798	4.7950
L33	7.67-2.67	-0.1708	4.7625	-0.6627	4.7604
L34	2.67-0.00	-0.1708	4.7625	-0.6089	4.6510

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	2	Safety Line 3/8	145.00 - 150.00	1.0000	1.0000
L2	2	Safety Line 3/8	140.00 - 145.00	1.0000	1.0000
L3	2	Safety Line 3/8	135.00 - 140.00	1.0000	1.0000
L3	8	CR 50 1873(1-5/8)	135.00 - 137.00	1.0000	1.0000
L3	9	WR-VG86ST-BRD(3/4)	135.00 - 137.00	1.0000	1.0000
L4	2	Safety Line 3/8	130.00 - 135.00	1.0000	1.0000
L4	8	CR 50 1873(1-5/8)	130.00 - 135.00	1.0000	1.0000
L4	9	WR-VG86ST-BRD(3/4)	130.00 - 135.00	1.0000	1.0000
L5	2	Safety Line 3/8	125.00 - 130.00	1.0000	1.0000
L5	8	CR 50 1873(1-5/8)	125.00 - 130.00	1.0000	1.0000
L5	9	WR-VG86ST-BRD(3/4)	125.00 - 130.00	1.0000	1.0000
L6	2	Safety Line 3/8	120.00 - 125.00	1.0000	1.0000
L6	8	CR 50 1873(1-5/8)	120.00 - 125.00	1.0000	1.0000
L6	9	WR-VG86ST-BRD(3/4)	120.00 - 125.00	1.0000	1.0000
L7	2	Safety Line 3/8	115.00 - 120.00	1.0000	1.0000
L7	8	CR 50 1873(1-5/8)	115.00 -	1.0000	1.0000

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	Client	Crown Castle	Designed by	anhowe

<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>
L7	9	WR-VG86ST-BRD(3/4)	120.00 115.00 - 120.00	1.0000	1.0000
L8	2	Safety Line 3/8	110.00 - 115.00	1.0000	1.0000
L8	8	CR 50 1873(1-5/8)	110.00 - 115.00	1.0000	1.0000
L8	9	WR-VG86ST-BRD(3/4)	110.00 - 115.00	1.0000	1.0000
L9	2	Safety Line 3/8	105.00 - 110.00	1.0000	1.0000
L9	8	CR 50 1873(1-5/8)	105.00 - 110.00	1.0000	1.0000
L9	9	WR-VG86ST-BRD(3/4)	105.00 - 110.00	1.0000	1.0000
L10	2	Safety Line 3/8	100.00 - 105.00	1.0000	1.0000
L10	8	CR 50 1873(1-5/8)	100.00 - 105.00	1.0000	1.0000
L10	9	WR-VG86ST-BRD(3/4)	100.00 - 105.00	1.0000	1.0000
L11	2	Safety Line 3/8	95.00 - 100.00	1.0000	1.0000
L11	8	CR 50 1873(1-5/8)	95.00 - 100.00	1.0000	1.0000
L11	9	WR-VG86ST-BRD(3/4)	95.00 - 100.00	1.0000	1.0000
L12	2	Safety Line 3/8	90.00 - 95.00	1.0000	1.0000
L12	8	CR 50 1873(1-5/8)	90.00 - 95.00	1.0000	1.0000
L12	9	WR-VG86ST-BRD(3/4)	90.00 - 95.00	1.0000	1.0000
L13	2	Safety Line 3/8	85.00 - 90.00	1.0000	1.0000
L13	8	CR 50 1873(1-5/8)	85.00 - 90.00	1.0000	1.0000
L13	9	WR-VG86ST-BRD(3/4)	85.00 - 90.00	1.0000	1.0000
L14	2	Safety Line 3/8	80.00 - 85.00	1.0000	1.0000
L14	8	CR 50 1873(1-5/8)	80.00 - 85.00	1.0000	1.0000
L14	9	WR-VG86ST-BRD(3/4)	80.00 - 85.00	1.0000	1.0000
L15	2	Safety Line 3/8	75.00 - 80.00	1.0000	1.0000
L15	8	CR 50 1873(1-5/8)	75.00 - 80.00	1.0000	1.0000
L15	9	WR-VG86ST-BRD(3/4)	75.00 - 80.00	1.0000	1.0000
L16	2	Safety Line 3/8	70.00 - 75.00	1.0000	1.0000
L16	8	CR 50 1873(1-5/8)	70.00 - 75.00	1.0000	1.0000
L16	9	WR-VG86ST-BRD(3/4)	70.00 - 75.00	1.0000	1.0000
L17	2	Safety Line 3/8	65.00 - 70.00	1.0000	1.0000
L17	8	CR 50 1873(1-5/8)	65.00 - 70.00	1.0000	1.0000
L17	9	WR-VG86ST-BRD(3/4)	65.00 - 70.00	1.0000	1.0000
L18	2	Safety Line 3/8	60.00 - 65.00	1.0000	1.0000
L18	8	CR 50 1873(1-5/8)	60.00 - 65.00	1.0000	1.0000
L18	9	WR-VG86ST-BRD(3/4)	60.00 - 65.00	1.0000	1.0000
L19	2	Safety Line 3/8	55.00 - 60.00	1.0000	1.0000
L19	8	CR 50 1873(1-5/8)	55.00 - 60.00	1.0000	1.0000
L19	9	WR-VG86ST-BRD(3/4)	55.00 - 60.00	1.0000	1.0000
L19	19	LDF4-50A(1/2)	55.00 - 60.00	1.0000	1.0000
L20	2	Safety Line 3/8	50.00 - 55.00	1.0000	1.0000
L20	8	CR 50 1873(1-5/8)	50.00 - 55.00	1.0000	1.0000
L20	9	WR-VG86ST-BRD(3/4)	50.00 - 55.00	1.0000	1.0000
L20	19	LDF4-50A(1/2)	50.00 - 55.00	1.0000	1.0000
L21	2	Safety Line 3/8	45.00 - 50.00	1.0000	1.0000
L21	8	CR 50 1873(1-5/8)	45.00 - 50.00	1.0000	1.0000
L21	9	WR-VG86ST-BRD(3/4)	45.00 - 50.00	1.0000	1.0000
L21	19	LDF4-50A(1/2)	45.00 - 50.00	1.0000	1.0000
L22	2	Safety Line 3/8	40.25 - 45.00	1.0000	1.0000
L22	8	CR 50 1873(1-5/8)	40.25 - 45.00	1.0000	1.0000
L22	9	WR-VG86ST-BRD(3/4)	40.25 - 45.00	1.0000	1.0000
L22	19	LDF4-50A(1/2)	40.25 - 45.00	1.0000	1.0000
L22	25	PL 1.25" x 3"	40.25 - 41.20	1.0000	1.0000

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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>
L22	26	PL 1.25" x 3"	40.25 - 41.20	1.0000	1.0000
L22	27	PL 1.25" x 3"	40.25 - 41.20	1.0000	1.0000
L23	2	Safety Line 3/8	40.00 - 40.25	1.0000	1.0000
L23	8	CR 50 1873(1-5/8)	40.00 - 40.25	1.0000	1.0000
L23	9	WR-VG86ST-BRD(3/4)	40.00 - 40.25	1.0000	1.0000
L23	19	LDF4-50A(1/2)	40.00 - 40.25	1.0000	1.0000
L23	25	PL 1.25" x 3"	40.00 - 40.25	1.0000	1.0000
L23	26	PL 1.25" x 3"	40.00 - 40.25	1.0000	1.0000
L23	27	PL 1.25" x 3"	40.00 - 40.25	1.0000	1.0000
L24	2	Safety Line 3/8	35.00 - 40.00	1.0000	1.0000
L24	8	CR 50 1873(1-5/8)	35.00 - 40.00	1.0000	1.0000
L24	9	WR-VG86ST-BRD(3/4)	35.00 - 40.00	1.0000	1.0000
L24	19	LDF4-50A(1/2)	35.00 - 40.00	1.0000	1.0000
L24	25	PL 1.25" x 3"	35.00 - 40.00	1.0000	1.0000
L24	26	PL 1.25" x 3"	35.00 - 40.00	1.0000	1.0000
L24	27	PL 1.25" x 3"	35.00 - 40.00	1.0000	1.0000
L25	2	Safety Line 3/8	30.00 - 35.00	1.0000	1.0000
L25	8	CR 50 1873(1-5/8)	30.00 - 35.00	1.0000	1.0000
L25	9	WR-VG86ST-BRD(3/4)	30.00 - 35.00	1.0000	1.0000
L25	19	LDF4-50A(1/2)	30.00 - 35.00	1.0000	1.0000
L25	25	PL 1.25" x 3"	30.20 - 35.00	1.0000	1.0000
L25	26	PL 1.25" x 3"	30.20 - 35.00	1.0000	1.0000
L25	27	PL 1.25" x 3"	30.20 - 35.00	1.0000	1.0000
L26	2	Safety Line 3/8	29.75 - 30.00	1.0000	1.0000
L26	8	CR 50 1873(1-5/8)	29.75 - 30.00	1.0000	1.0000
L26	9	WR-VG86ST-BRD(3/4)	29.75 - 30.00	1.0000	1.0000
L26	19	LDF4-50A(1/2)	29.75 - 30.00	1.0000	1.0000
L27	2	Safety Line 3/8	24.75 - 29.75	1.0000	1.0000
L27	8	CR 50 1873(1-5/8)	24.75 - 29.75	1.0000	1.0000
L27	9	WR-VG86ST-BRD(3/4)	24.75 - 29.75	1.0000	1.0000
L27	19	LDF4-50A(1/2)	24.75 - 29.75	1.0000	1.0000
L28	2	Safety Line 3/8	19.75 - 24.75	1.0000	1.0000
L28	8	CR 50 1873(1-5/8)	19.75 - 24.75	1.0000	1.0000
L28	9	WR-VG86ST-BRD(3/4)	19.75 - 24.75	1.0000	1.0000
L28	19	LDF4-50A(1/2)	19.75 - 24.75	1.0000	1.0000
L29	2	Safety Line 3/8	14.75 - 19.75	1.0000	1.0000
L29	8	CR 50 1873(1-5/8)	14.75 - 19.75	1.0000	1.0000
L29	9	WR-VG86ST-BRD(3/4)	14.75 - 19.75	1.0000	1.0000
L29	19	LDF4-50A(1/2)	14.75 - 19.75	1.0000	1.0000
L30	2	Safety Line 3/8	9.75 - 14.75	1.0000	1.0000
L30	8	CR 50 1873(1-5/8)	9.75 - 14.75	1.0000	1.0000
L30	9	WR-VG86ST-BRD(3/4)	9.75 - 14.75	1.0000	1.0000
L30	19	LDF4-50A(1/2)	9.75 - 14.75	1.0000	1.0000
L31	2	Safety Line 3/8	7.92 - 9.75	1.0000	1.0000
L31	8	CR 50 1873(1-5/8)	7.92 - 9.75	1.0000	1.0000
L31	9	WR-VG86ST-BRD(3/4)	7.92 - 9.75	1.0000	1.0000
L31	19	LDF4-50A(1/2)	7.92 - 9.75	1.0000	1.0000
L31	21	PL 1.25" x 3"	7.92 - 8.80	1.0000	1.0000
L31	22	PL 1.25" x 3"	7.92 - 8.80	1.0000	1.0000
L31	23	PL 1.25" x 3"	7.92 - 8.80	1.0000	1.0000
L32	2	Safety Line 3/8	7.67 - 7.92	1.0000	1.0000
L32	8	CR 50 1873(1-5/8)	7.67 - 7.92	1.0000	1.0000
L32	9	WR-VG86ST-BRD(3/4)	7.67 - 7.92	1.0000	1.0000
L32	19	LDF4-50A(1/2)	7.67 - 7.92	1.0000	1.0000
L32	21	PL 1.25" x 3"	7.67 - 7.92	1.0000	1.0000
L32	22	PL 1.25" x 3"	7.67 - 7.92	1.0000	1.0000
L32	23	PL 1.25" x 3"	7.67 - 7.92	1.0000	1.0000
L33	2	Safety Line 3/8	2.67 - 7.67	1.0000	1.0000
L33	8	CR 50 1873(1-5/8)	2.67 - 7.67	1.0000	1.0000
L33	9	WR-VG86ST-BRD(3/4)	2.67 - 7.67	1.0000	1.0000
L33	19	LDF4-50A(1/2)	2.67 - 7.67	1.0000	1.0000
L33	21	PL 1.25" x 3"	2.67 - 7.67	1.0000	1.0000

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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>
L33	22	PL 1.25" x 3"	2.67 - 7.67	1.0000	1.0000
L33	23	PL 1.25" x 3"	2.67 - 7.67	1.0000	1.0000
L34	2	Safety Line 3/8	0.00 - 2.67	1.0000	1.0000
L34	8	CR 50 1873(1-5/8)	0.00 - 2.67	1.0000	1.0000
L34	9	WR-VG86ST-BRD(3/4)	0.00 - 2.67	1.0000	1.0000
L34	19	LDF4-50A(1/2)	0.00 - 2.67	1.0000	1.0000
L34	21	PL 1.25" x 3"	0.00 - 2.67	1.0000	1.0000
L34	22	PL 1.25" x 3"	0.00 - 2.67	1.0000	1.0000
L34	23	PL 1.25" x 3"	0.00 - 2.67	1.0000	1.0000

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i> <i>ft ft ft</i>	<i>Azimuth Adjustment</i> <i>°</i>	<i>Placement</i> <i>ft</i>	<i>C_AA_A Front</i> <i>ft²</i>	<i>C_AA_A Side</i> <i>ft²</i>	<i>Weight</i> <i>lb</i>
2.4" Dia x 8-ft Mount Pipe	A	From Leg	0.00 0.00 4.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	29 44 63 119

** 147 **								
NNVV-65B-R4 w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 0.00	30.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	110 197 296 529
NNVV-65B-R4 w/ Mount Pipe	C	From Centroid-Le g	4.00 -6.00 0.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.55 8.04 8.53 9.56	110 197 296 529
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Centroid-Le g	4.00 7.00 0.00	30.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	77 127 185 331
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Centroid-Le g	4.00 6.00 0.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	77 127 185 331
DB980H90E-M w/ Mount Pipe	A	From Centroid-Le g	4.00 -6.00 0.00	0.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.50 4.95 5.87	30 66 109 216
DB980H90E-M w/ Mount Pipe	B	From Centroid-Le g	4.00 -6.00 0.00	-30.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.50 4.95 5.87	30 66 109 216
DB980H90E-M w/ Mount Pipe	B	From Centroid-Le g	4.00 7.00 0.00	80.0000	147.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.50 4.95 5.87	30 66 109 216
DB980H90E-M w/ Mount Pipe	C	From Centroid-Le	4.00 7.00	-40.0000	147.00	No Ice 1/2" Ice	4.04 4.50	30 66

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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 lb
		g	0.00			1" Ice 4.95	5.22	109
						2" Ice 5.87	6.74	216
(2) RRH2X50-800	A	From	4.00	30.0000	147.00	No Ice 2.13	1.77	53
		Centroid-Le	6.00			1/2" Ice 2.32	1.95	74
		g	0.00			1" Ice 2.51	2.13	98
						2" Ice 2.92	2.51	157
(2) RRH2X50-800	C	From	4.00	0.0000	147.00	No Ice 2.13	1.77	53
		Centroid-Le	0.00			1/2" Ice 2.32	1.95	74
		g	0.00			1" Ice 2.51	2.13	98
						2" Ice 2.92	2.51	157
PCS 1900MHz	A	From	4.00	30.0000	147.00	No Ice 0.00	2.24	60
4x45W-65MHz		Centroid-Le	0.00			1/2" Ice 0.00	2.44	83
		g	0.00			1" Ice 0.00	2.65	110
						2" Ice 0.00	3.09	173
PCS 1900MHz	C	From	4.00	0.0000	147.00	No Ice 0.00	2.24	60
4x45W-65MHz		Centroid-Le	-6.00			1/2" Ice 0.00	2.44	83
		g	0.00			1" Ice 0.00	2.65	110
						2" Ice 0.00	3.09	173
FZHN	A	From	4.00	30.0000	147.00	No Ice 2.02	0.61	44
		Centroid-Le	7.00			1/2" Ice 2.20	0.71	58
		g	3.00			1" Ice 2.38	0.83	75
						2" Ice 2.77	1.09	116
FZHN	C	From	4.00	-40.0000	147.00	No Ice 2.02	0.61	44
		Centroid-Le	7.00			1/2" Ice 2.20	0.71	58
		g	3.00			1" Ice 2.38	0.83	75
						2" Ice 2.77	1.09	116
(3) 2.4" Dia x 6-ft Pipe	A	From	4.00	0.0000	147.00	No Ice 1.43	1.43	22
		Centroid-Le	0.00			1/2" Ice 1.93	1.93	33
		g	0.00			1" Ice 2.30	2.30	48
						2" Ice 3.06	3.06	90
2.4" Dia x 6-ft Pipe	B	From	4.00	0.0000	147.00	No Ice 1.43	1.43	22
		Centroid-Le	0.00			1/2" Ice 1.93	1.93	33
		g	0.00			1" Ice 2.30	2.30	48
						2" Ice 3.06	3.06	90
2.4" Dia x 6-ft Pipe	C	From	4.00	0.0000	147.00	No Ice 1.43	1.43	22
		Centroid-Le	0.00			1/2" Ice 1.93	1.93	33
		g	0.00			1" Ice 2.30	2.30	48
						2" Ice 3.06	3.06	90
Platform Mount [LP 502-1]	C	None		0.0000	147.00	No Ice 18.28	18.28	925
						1/2" Ice 23.54	23.54	1435
						1" Ice 28.53	28.53	2070
						2" Ice 38.85	38.85	3714
** 137 **								
80010964 w/ Mount Pipe	A	From	4.00	30.0000	137.00	No Ice 8.61	4.10	116
		Centroid-Le	-7.00			1/2" Ice 9.18	4.59	186
		g	3.00			1" Ice 9.77	5.10	265
						2" Ice 10.98	6.16	453
80010964 w/ Mount Pipe	B	From	4.00	30.0000	137.00	No Ice 8.61	4.10	116
		Centroid-Le	7.00			1/2" Ice 9.18	4.59	186
		g	3.00			1" Ice 9.77	5.10	265
						2" Ice 10.98	6.16	453
80010964 w/ Mount Pipe	C	From	4.00	30.0000	137.00	No Ice 8.61	4.10	116
		Centroid-Le	7.00			1/2" Ice 9.18	4.59	186
		g	3.00			1" Ice 9.77	5.10	265
						2" Ice 10.98	6.16	453
HPA65R-BU4A w/ Mount Pipe	A	From	4.00	30.0000	137.00	No Ice 3.83	3.30	62
		Centroid-Le	3.00			1/2" Ice 4.23	3.68	106

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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_{AA} Front ft²</i>	<i>C_{AA} Side ft²</i>	<i>Weight lb</i>
		g	3.00			1" Ice 4.64	4.08	158
						2" Ice 5.50	4.92	287
HPA65R-BU4A w/ Mount Pipe	B	From Centroid-Le g	4.00 -3.00 3.00	30.0000	137.00	No Ice 3.83	3.30	62
						1/2" Ice 4.23	3.68	106
						1" Ice 4.64	4.08	158
						2" Ice 5.50	4.92	287
HPA65R-BU4A w/ Mount Pipe	C	From Centroid-Le g	4.00 -3.00 3.00	30.0000	137.00	No Ice 3.83	3.30	62
						1/2" Ice 4.23	3.68	106
						1" Ice 4.64	4.08	158
						2" Ice 5.50	4.92	287
7770.00 w/ Mount Pipe	A	From Centroid-Le g	4.00 7.00 3.00	45.0000	137.00	No Ice 5.75	4.25	55
						1/2" Ice 6.18	5.01	103
						1" Ice 6.61	5.71	157
						2" Ice 7.49	7.16	287
7770.00 w/ Mount Pipe	C	From Centroid-Le g	4.00 -7.00 3.00	-4.0000	137.00	No Ice 5.75	4.25	55
						1/2" Ice 6.18	5.01	103
						1" Ice 6.61	5.71	157
						2" Ice 7.49	7.16	287
OPA65R-BU4D w/ Mount Pipe	A	From Centroid-Le g	4.00 -3.00 3.00	30.0000	137.00	No Ice 8.10	4.03	81
						1/2" Ice 8.65	4.50	142
						1" Ice 9.21	4.98	212
						2" Ice 10.39	5.98	380
OPA65R-BU4D w/ Mount Pipe	B	From Centroid-Le g	4.00 3.00 3.00	30.0000	137.00	No Ice 8.10	4.03	81
						1/2" Ice 8.65	4.50	142
						1" Ice 9.21	4.98	212
						2" Ice 10.39	5.98	380
OPA65R-BU4D w/ Mount Pipe	C	From Centroid-Le g	4.00 3.00 3.00	30.0000	137.00	No Ice 8.10	4.03	81
						1/2" Ice 8.65	4.50	142
						1" Ice 9.21	4.98	212
						2" Ice 10.39	5.98	380
RRUS 4449 B5/B12	A	From Centroid-Le g	4.00 -7.00 3.00	30.0000	137.00	No Ice 0.00	1.41	71
						1/2" Ice 0.00	1.56	90
						1" Ice 0.00	1.73	111
						2" Ice 0.00	2.07	163
RRUS 4449 B5/B12	B	From Centroid-Le g	4.00 7.00 3.00	30.0000	137.00	No Ice 0.00	1.41	71
						1/2" Ice 0.00	1.56	90
						1" Ice 0.00	1.73	111
						2" Ice 0.00	2.07	163
RRUS 4449 B5/B12	C	From Centroid-Le g	4.00 7.00 3.00	30.0000	137.00	No Ice 0.00	1.41	71
						1/2" Ice 0.00	1.56	90
						1" Ice 0.00	1.73	111
						2" Ice 0.00	2.07	163
RRUS 8843 B2/B66A	A	From Centroid-Le g	4.00 -7.00 3.00	30.0000	137.00	No Ice 1.64	1.35	72
						1/2" Ice 1.80	1.50	90
						1" Ice 1.97	1.65	110
						2" Ice 2.32	1.99	159
RRUS 8843 B2/B66A	B	From Centroid-Le g	4.00 7.00 3.00	30.0000	137.00	No Ice 1.64	1.35	72
						1/2" Ice 1.80	1.50	90
						1" Ice 1.97	1.65	110
						2" Ice 2.32	1.99	159
RRUS 8843 B2/B66A	C	From Centroid-Le g	4.00 7.00 3.00	30.0000	137.00	No Ice 1.64	1.35	72
						1/2" Ice 1.80	1.50	90
						1" Ice 1.97	1.65	110
						2" Ice 2.32	1.99	159
(2) DC6-48-60-18-8F	A	From Centroid-Le g	4.00 -2.00 3.00	30.0000	137.00	No Ice 1.21	1.21	33
						1/2" Ice 1.89	1.89	55
						1" Ice 2.11	2.11	80

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Union (BU 876346)	Page	16 of 20
	Project	TEP No. 25727.416208	Date	12:56:14 05/22/20
	Client	Crown Castle	Designed by	anhowe

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 lb
DC6-48-60-18-8C	A	From Centroid-Le g	4.00 -7.00 3.00	30.0000	137.00	2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	2.57 1.14 1.79 2.00 2.45	2.57 1.14 1.79 2.00 2.45	138 26 47 70 125
(3) LGP21401	A	From Centroid-Le g	4.00 7.00 3.00	45.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	14 21 30 55
(3) LGP21401	C	From Centroid-Le g	4.00 -7.00 3.00	-4.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	14 21 30 55
RRUS 4478 B14	A	From Centroid-Le g	4.00 -3.00 3.00	30.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.06 1.20 1.34 1.66	60 76 94 140
RRUS 4478 B14	B	From Centroid-Le g	4.00 3.00 3.00	30.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.06 1.20 1.34 1.66	60 76 94 140
RRUS 4478 B14	C	From Centroid-Le g	4.00 3.00 3.00	30.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.06 1.20 1.34 1.66	60 76 94 140
2.4" Dia x 6-ft Pipe	B	From Centroid-Le g	4.00 -7.00 0.00	0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.93 2.30 3.06	1.43 1.93 2.30 3.06	22 33 48 90
Platform Mount [LP 1201-1_KCKR-HR-1]	C	None		0.0000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	37.61 45.62 53.59 69.65	37.61 45.62 53.59 69.65	2631 3478 4462 6848
** 129 **									
800 10504 w/ Mount Pipe	A	From Leg	4.00 -6.00 1.00	30.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.69 3.12 3.56 4.49	2.26 2.68 3.12 4.03	38 67 105 206
800 10504 w/ Mount Pipe	B	From Leg	4.00 -6.00 1.00	30.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.69 3.12 3.56 4.49	2.26 2.68 3.12 4.03	38 67 105 206
800 10504 w/ Mount Pipe	C	From Leg	4.00 -6.00 1.00	30.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.69 3.12 3.56 4.49	2.26 2.68 3.12 4.03	38 67 105 206
860 10118	A	From Leg	4.00 -6.00 1.00	30.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.15 0.21 0.27 0.42	0.13 0.18 0.24 0.39	1 3 5 14
860 10118	B	From Leg	4.00 -6.00 1.00	30.0000	129.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.15 0.21 0.27 0.42	0.13 0.18 0.24 0.39	1 3 5 14
860 10118	C	From Leg	4.00 -6.00 1.00	30.0000	129.00	No Ice 1/2" Ice 1" Ice	0.15 0.21 0.27	0.13 0.18 0.24	1 3 5

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Union (BU 876346)	Page	17 of 20
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	Client	Crown Castle	Designed by	anhowe

<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_AA_A Front ft²</i>	<i>C_AA_A Side ft²</i>	<i>Weight lb</i>
2.4" Dia x 6-ft Pipe	A	From Leg	4.00 6.00 0.00	0.0000	129.00	2" Ice 0.42 No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30 2" Ice 3.06	0.39 1.43 1.93 2.30 3.06	14 22 33 48 90
2.4" Dia x 6-ft Pipe	B	From Leg	4.00 6.00 0.00	0.0000	129.00	2" Ice 1.43 No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30 2" Ice 3.06	1.43 1.43 1.93 2.30 3.06	22 33 48 90
2.4" Dia x 6-ft Pipe	C	From Leg	4.00 6.00 0.00	0.0000	129.00	2" Ice 1.43 No Ice 1.43 1/2" Ice 1.93 1" Ice 2.30 2" Ice 3.06	1.43 1.43 1.93 2.30 3.06	22 33 48 90
T-Arm Mount [TA 602-3]	C	None		0.0000	129.00	No Ice 13.40 1/2" Ice 16.44 1" Ice 19.70 2" Ice 25.86	13.40 16.44 19.70 25.86	774 1004 1292 2053
** 60 **								
KS24019-L112A	C	From Face	3.00 0.00 1.00	10.0000	60.00	No Ice 0.08 1/2" Ice 0.13 1" Ice 0.19 2" Ice 0.35	0.08 0.13 0.19 0.35	5 6 8 15
Side Arm Mount [SO 701-1]	C	From Face	1.50 0.00 0.00	0.0000	60.00	No Ice 0.85 1/2" Ice 1.14 1" Ice 1.43 2" Ice 2.01	1.67 2.34 3.01 4.35	65 79 93 121

Bridge Stiffener (56" x 12" x 1")	A	From Leg	0.50 0.00 0.00	0.0000	30.00	No Ice 0.78 1/2" Ice 1.31 1" Ice 1.84 2" Ice 2.54	6.05 6.42 6.80 7.57	190 216 247 324
Bridge Stiffener (56" x 12" x 1")	C	From Face	0.50 0.00 0.00	0.0000	30.00	No Ice 0.78 1/2" Ice 1.31 1" Ice 1.84 2" Ice 2.54	6.05 6.42 6.80 7.57	190 216 247 324
Bridge Stiffener (56" x 12" x 1")	B	From Leg	0.50 0.00 0.00	0.0000	30.00	No Ice 0.78 1/2" Ice 1.31 1" Ice 1.84 2" Ice 2.54	6.05 6.42 6.80 7.57	190 216 247 324
Bridge Stiffener (56" x 12" x 1")	C	From Leg	0.50 0.00 0.00	0.0000	30.00	No Ice 0.78 1/2" Ice 1.31 1" Ice 1.84 2" Ice 2.54	6.05 6.42 6.80 7.57	190 216 247 324

*								

Compression Checks

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Union (BU 876346)	Page	18 of 20
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Pole Design Data

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	lb	lb	
L1	150 - 145 (1)	P24x0.25	5.00	0.00	0.0	18.6532	-2412	662265	0.004
L2	145 - 140 (2)	P24x0.25	5.00	0.00	0.0	18.6532	-2798	662265	0.004
L3	140 - 135 (3)	P24x0.25	5.00	0.00	0.0	18.6532	-7926	662265	0.012
L4	135 - 130 (4)	P24x0.25	5.00	0.00	0.0	18.6532	-8423	662265	0.013
L5	130 - 125 (5)	P24x0.25	5.00	0.00	0.0	18.6532	-10001	662265	0.015
L6	125 - 120 (6)	P24x0.25	5.00	0.00	0.0	18.6532	-10562	662265	0.016
L7	120 - 115 (7)	P30x0.375	5.00	0.00	0.0	34.9011	-11425	1311060	0.009
L8	115 - 110 (8)	P30x0.375	5.00	0.00	0.0	34.9011	-12292	1311060	0.009
L9	110 - 105 (9)	P30x0.375	5.00	0.00	0.0	34.9011	-13167	1311060	0.010
L10	105 - 100 (10)	P30x0.375	5.00	0.00	0.0	34.9011	-14052	1311060	0.011
L11	100 - 95 (11)	P30x0.375	5.00	0.00	0.0	34.9011	-14945	1311060	0.011
L12	95 - 90 (12)	P30x0.375	5.00	0.00	0.0	34.9011	-15847	1311060	0.012
L13	90 - 85 (13)	P36x0.375	5.00	0.00	0.0	41.9697	-16875	1490100	0.011
L14	85 - 80 (14)	P36x0.375	5.00	0.00	0.0	41.9697	-17907	1490100	0.012
L15	80 - 75 (15)	P36x0.375	5.00	0.00	0.0	41.9697	-18947	1490100	0.013
L16	75 - 70 (16)	P36x0.375	5.00	0.00	0.0	41.9697	-19996	1490100	0.013
L17	70 - 65 (17)	P36x0.375	5.00	0.00	0.0	41.9697	-21053	1490100	0.014
L18	65 - 60 (18)	P36x0.375	5.00	0.00	0.0	41.9697	-22118	1490100	0.015
L19	60 - 55 (19)	P42x0.375	5.00	0.00	0.0	49.0383	-23391	1668870	0.014
L20	55 - 50 (20)	P42x0.375	5.00	0.00	0.0	49.0383	-24586	1668870	0.015
L21	50 - 45 (21)	P42x0.375	5.00	0.00	0.0	49.0383	-25788	1668870	0.015
L22	45 - 40.25 (22)	P42x0.375	4.75	0.00	0.0	49.0383	-26979	1668870	0.016
L23	40.25 - 40 (23)	P42x0.375	0.25	0.00	0.0	49.0383	-27058	1668870	0.016
L24	40 - 35 (24)	P42x0.375	5.00	0.00	0.0	49.0383	-28499	1668870	0.017
L25	35 - 30 (25)	P42x0.375	5.00	0.00	0.0	49.0383	-29944	1668870	0.018
L26	30 - 29.75 (26)	P42x0.5	0.25	0.00	0.0	65.1880	-30929	2410400	0.013
L27	29.75 - 24.75 (27)	P42x0.5	5.00	0.00	0.0	65.1880	-32468	2410400	0.013
L28	24.75 - 19.75 (28)	P42x0.5	5.00	0.00	0.0	65.1880	-34018	2410400	0.014
L29	19.75 - 14.75 (29)	P42x0.5	5.00	0.00	0.0	65.1880	-35574	2410400	0.015
L30	14.75 - 9.75 (30)	P42x0.5	5.00	0.00	0.0	65.1880	-37137	2410400	0.015
L31	9.75 - 7.9167 (31)	P42x0.5	1.83	0.00	0.0	65.1880	-37745	2410400	0.016
L32	7.9167 - 7.6667 (32)	P42x0.5	0.25	0.00	0.0	65.1880	-37848	2410400	0.016
L33	7.6667 - 2.6667 (33)	P42x0.5	5.00	0.00	0.0	65.1880	-39644	2410400	0.016
L34	2.6667 - 0 (34)	P42x0.5	2.67	0.00	0.0	65.1880	-40604	2410400	0.017

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{rx}	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M _{uy}	φM _{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		lb-ft	lb-ft		lb-ft	lb-ft	
L1	150 - 145 (1)	P24x0.25	10583	396683	0.027	0	396683	0.000
L2	145 - 140 (2)	P24x0.25	31899	396683	0.080	0	396683	0.000
L3	140 - 135 (3)	P24x0.25	77526	396683	0.195	0	396683	0.000
L4	135 - 130 (4)	P24x0.25	130578	396683	0.329	0	396683	0.000
L5	130 - 125 (5)	P24x0.25	190749	396683	0.481	0	396683	0.000
L6	125 - 120 (6)	P24x0.25	253453	396683	0.639	0	396683	0.000

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Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{rx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} lb-ft	ϕM_{ry} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L7	120 - 115 (7)	P30x0.375	317983	947858	0.335	0	947858	0.000
L8	115 - 110 (8)	P30x0.375	384611	947858	0.406	0	947858	0.000
L9	110 - 105 (9)	P30x0.375	453273	947858	0.478	0	947858	0.000
L10	105 - 100 (10)	P30x0.375	523898	947858	0.553	0	947858	0.000
L11	100 - 95 (11)	P30x0.375	596412	947858	0.629	0	947858	0.000
L12	95 - 90 (12)	P30x0.375	670608	947858	0.707	0	947858	0.000
L13	90 - 85 (13)	P36x0.375	747041	1338808	0.558	0	1338808	0.000
L14	85 - 80 (14)	P36x0.375	825656	1338808	0.617	0	1338808	0.000
L15	80 - 75 (15)	P36x0.375	906367	1338808	0.677	0	1338808	0.000
L16	75 - 70 (16)	P36x0.375	989092	1338808	0.739	0	1338808	0.000
L17	70 - 65 (17)	P36x0.375	1073733	1338808	0.802	0	1338808	0.000
L18	65 - 60 (18)	P36x0.375	1160183	1338808	0.867	0	1338808	0.000
L19	60 - 55 (19)	P42x0.375	1249108	1796558	0.695	0	1796558	0.000
L20	55 - 50 (20)	P42x0.375	1339950	1796558	0.746	0	1796558	0.000
L21	50 - 45 (21)	P42x0.375	1432817	1796558	0.798	0	1796558	0.000
L22	45 - 40.25 (22)	P42x0.375	1522825	1796558	0.848	0	1796558	0.000
L23	40.25 - 40 (23)	P42x0.375	1527608	1796558	0.850	0	1796558	0.000
L24	40 - 35 (24)	P42x0.375	1624208	1796558	0.904	0	1796558	0.000
L25	35 - 30 (25)	P42x0.375	1722500	1796558	0.959	0	1796558	0.000
L26	30 - 29.75 (26)	P42x0.5	1728025	2463608	0.701	0	2463608	0.000
L27	29.75 - 24.75 (27)	P42x0.5	1830433	2463608	0.743	0	2463608	0.000
L28	24.75 - 19.75 (28)	P42x0.5	1934358	2463608	0.785	0	2463608	0.000
L29	19.75 - 14.75 (29)	P42x0.5	2039817	2463608	0.828	0	2463608	0.000
L30	14.75 - 9.75 (30)	P42x0.5	2146717	2463608	0.871	0	2463608	0.000
L31	9.75 - 7.9167 (31)	P42x0.5	2186192	2463608	0.887	0	2463608	0.000
L32	7.9167 - 7.6667 (32)	P42x0.5	2191583	2463608	0.890	0	2463608	0.000
L33	7.6667 - 2.6667 (33)	P42x0.5	2299983	2463608	0.934	0	2463608	0.000
L34	2.6667 - 0 (34)	P42x0.5	2358183	2463608	0.957	0	2463608	0.000

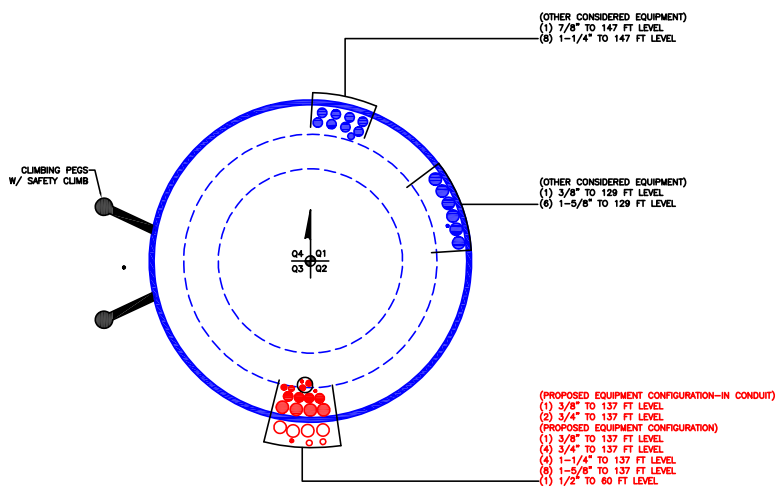
Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 145 (1)	P24x0.25	4090	201861	0.020	1712	324229	0.005
L2	145 - 140 (2)	P24x0.25	4440	201861	0.022	1712	324229	0.005
L3	140 - 135 (3)	P24x0.25	10442	201861	0.052	4184	324229	0.013
L4	135 - 130 (4)	P24x0.25	10780	201861	0.053	4183	324229	0.013
L5	130 - 125 (5)	P24x0.25	12388	201861	0.061	4182	324229	0.013
L6	125 - 120 (6)	P24x0.25	12695	201861	0.063	4181	324229	0.013
L7	120 - 115 (7)	P30x0.375	13118	395779	0.033	4180	994725	0.004
L8	115 - 110 (8)	P30x0.375	13532	395779	0.034	4179	994725	0.004
L9	110 - 105 (9)	P30x0.375	13933	395779	0.035	4178	994725	0.004
L10	105 - 100 (10)	P30x0.375	14319	395779	0.036	4176	994725	0.004
L11	100 - 95 (11)	P30x0.375	14689	395779	0.037	4175	994725	0.004
L12	95 - 90 (12)	P30x0.375	15064	395779	0.038	5609	994725	0.006
L13	90 - 85 (13)	P36x0.375	15506	454187	0.034	5608	1094275	0.005
L14	85 - 80 (14)	P36x0.375	15935	454187	0.035	5606	1094275	0.005
L15	80 - 75 (15)	P36x0.375	16348	454187	0.036	5604	1094275	0.005

<i>tnxTower</i> <i>Tower Engineering Professionals</i> 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Union (BU 876346)	Page	20 of 20
	Project	TEP No. 25727.416208	Date	12:56:14 05/22/20
	Client	Crown Castle	Designed by	anhowe

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L16	75 - 70 (16)	P36x0.375	16741	454187	0.037	5602	1094275	0.005
L17	70 - 65 (17)	P36x0.375	17115	454187	0.038	5601	1094275	0.005
L18	65 - 60 (18)	P36x0.375	17468	454187	0.038	5599	1094275	0.005
L19	60 - 55 (19)	P42x0.375	17956	429271	0.042	5474	1207675	0.005
L20	55 - 50 (20)	P42x0.375	18374	429271	0.043	5473	1207675	0.005
L21	50 - 45 (21)	P42x0.375	18771	429271	0.044	5472	1207675	0.005
L22	45 - 40.25 (22)	P42x0.375	19128	429271	0.045	5471	1207675	0.005
L23	40.25 - 40 (23)	P42x0.375	19140	429271	0.045	5470	1207675	0.005
L24	40 - 35 (24)	P42x0.375	19498	429271	0.045	5469	1207675	0.005
L25	35 - 30 (25)	P42x0.375	19821	429271	0.046	5468	1207675	0.005
L26	30 - 29.75 (26)	P42x0.5	20317	739232	0.027	5468	2419017	0.002
L27	29.75 - 24.75 (27)	P42x0.5	20643	739232	0.028	5204	2419017	0.002
L28	24.75 - 19.75 (28)	P42x0.5	20931	739232	0.028	5204	2419017	0.002
L29	19.75 - 14.75 (29)	P42x0.5	21276	739232	0.029	3490	2419017	0.001
L30	14.75 - 9.75 (30)	P42x0.5	21501	739232	0.029	3490	2419017	0.001
L31	9.75 - 7.9167 (31)	P42x0.5	21591	739232	0.029	3490	2419017	0.001
L32	7.9167 - 7.6667 (32)	P42x0.5	21578	739232	0.029	3490	2419017	0.001
L33	7.6667 - 2.6667 (33)	P42x0.5	21788	739232	0.029	3490	2419017	0.001
L34	2.6667 - 0 (34)	P42x0.5	21890	739232	0.030	3490	2419017	0.001

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C

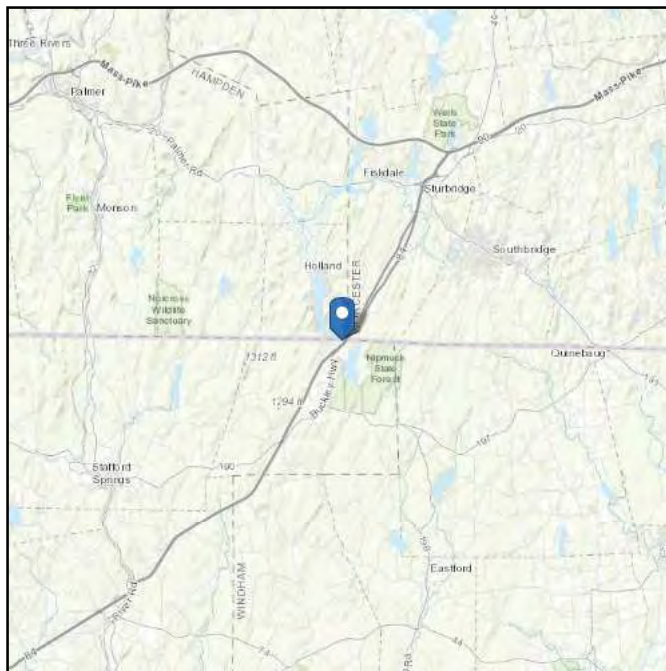
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 840.52 ft (NAVD 88)
Latitude: 42.029428
Longitude: -72.139872



Wind

Results:

Wind Speed:	124 Vmph	125 mph per Jurisdiction Requirements
10-year MRI	77 Vmph	
25-year MRI	87 Vmph	
50-year MRI	94 Vmph	
100-year MRI	101 Vmph	

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

Date Accessed: Fri May 15 2020

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

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

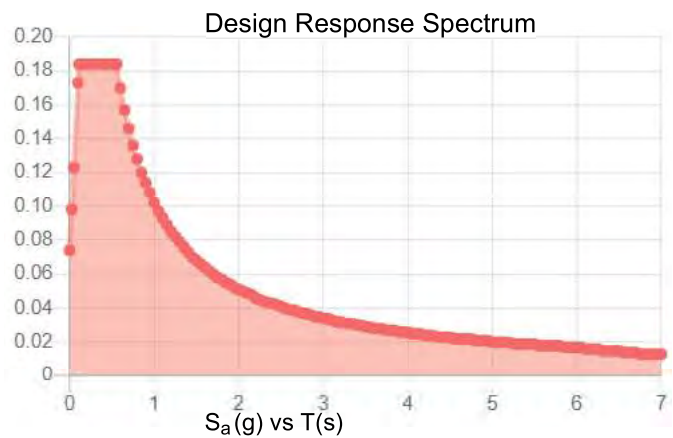
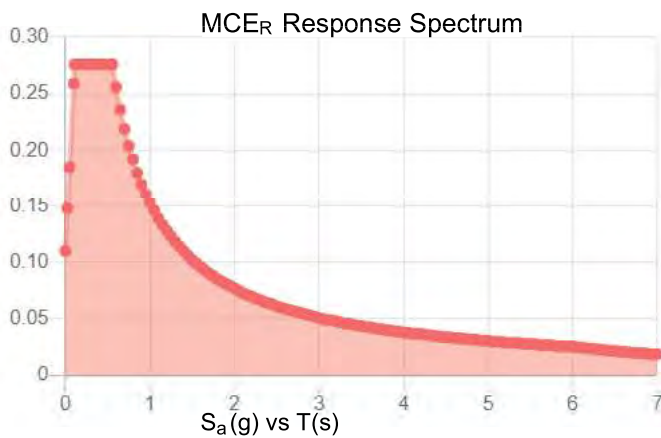
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.172	S_{DS} :	0.184
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.084
S_{MS} :	0.276	PGA_M :	0.135
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Fri May 15 2020

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Fri May 15 2020

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

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

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

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

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



Site BU: 876346
Work Order: 1854627



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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	150	30		0	24	24	0.25		A53-B-42
2	120	30		0	30.00	30	0.375		A53-B-42
3	90	30		0	36.00	36	0.375		A53-B-42
4	60	30		0	42.00	42	0.375		A53-B-42
5	30	30		0	42.00	42	0.5		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	7.9167	plate	PL 3" x 1.25"	3	30	150	270															
2	30	40.25	plate	PL 3" x 1.25"	3	30	150	270															
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _y (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	3	1.25	3.75	0.625	11.000	11.000	24.000	2.109	1.2500	A572-65
2	3	1.25	3.75	0.625	11.000	11.000	24.000	2.109	1.2500	A572-65

TNX Geometry Input

Increment (ft): 5 [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	150 - 145	5		0	24.000	24.000	0.25	A53-B-42	1.000
2	145 - 140	5		0	24.000	24.000	0.25	A53-B-42	1.000
3	140 - 135	5		0	24.000	24.000	0.25	A53-B-42	1.000
4	135 - 130	5		0	24.000	24.000	0.25	A53-B-42	1.000
5	130 - 125	5		0	24.000	24.000	0.25	A53-B-42	1.000
6	125 - 120	5	0	0	24.000	24.000	0.25	A53-B-42	1.000
7	120 - 115	5		0	30.000	30.000	0.375	A53-B-42	1.000
8	115 - 110	5		0	30.000	30.000	0.375	A53-B-42	1.000
9	110 - 105	5		0	30.000	30.000	0.375	A53-B-42	1.000
10	105 - 100	5		0	30.000	30.000	0.375	A53-B-42	1.000
11	100 - 95	5		0	30.000	30.000	0.375	A53-B-42	1.000
12	95 - 90	5	0	0	30.000	30.000	0.375	A53-B-42	1.000
13	90 - 85	5		0	36.000	36.000	0.375	A53-B-42	1.000
14	85 - 80	5		0	36.000	36.000	0.375	A53-B-42	1.000
15	80 - 75	5		0	36.000	36.000	0.375	A53-B-42	1.000
16	75 - 70	5		0	36.000	36.000	0.375	A53-B-42	1.000
17	70 - 65	5		0	36.000	36.000	0.375	A53-B-42	1.000
18	65 - 60	5	0	0	36.000	36.000	0.375	A53-B-42	1.000
19	60 - 55	5		0	42.000	42.000	0.375	A53-B-42	1.000
20	55 - 50	5		0	42.000	42.000	0.375	A53-B-42	1.000
21	50 - 45	5		0	42.000	42.000	0.375	A53-B-42	1.000
22	45 - 40.25	4.75		0	42.000	42.000	0.375	A53-B-42	1.000
23	40.25 - 40	0.25		0	42.000	42.000	0.375	A53-B-42	1.000
24	40 - 35	5		0	42.000	42.000	0.375	A53-B-42	1.000
25	35 - 30	5	0	0	42.000	42.000	0.375	A53-B-42	1.000
26	30 - 29.75	0.25		0	42.000	42.000	0.5	A53-B-42	1.000
27	29.75 - 24.75	5		0	42.000	42.000	0.5	A53-B-42	1.000
28	24.75 - 19.75	5		0	42.000	42.000	0.5	A53-B-42	1.000
29	19.75 - 14.75	5		0	42.000	42.000	0.5	A53-B-42	1.000
30	14.75 - 9.75	5		0	42.000	42.000	0.5	A53-B-42	1.000
31	9.75 - 7.9167	1.8333		0	42.000	42.000	0.5	A53-B-42	1.000
32	7.9167 - 7.6667	0.25		0	42.000	42.000	0.5	A53-B-42	1.000
33	7.6667 - 2.6667	5		0	42.000	42.000	0.5	A53-B-42	1.000
34	2.6667 - 0	2.6667		0	42.000	42.000	0.5	A53-B-42	1.000

TNX Section Forces

Increment (ft):		TNX Output		
		5		
	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	150 - 145	2.41	10.58	4.09
2	145 - 140	2.80	31.90	4.44
3	140 - 135	7.93	77.53	10.44
4	135 - 130	8.42	130.58	10.78
5	130 - 125	10.00	190.75	12.39
6	125 - 120	10.56	253.45	12.69
7	120 - 115	11.43	317.98	13.12
8	115 - 110	12.29	384.61	13.53
9	110 - 105	13.17	453.27	13.93
10	105 - 100	14.05	523.90	14.32
11	100 - 95	14.95	596.41	14.69
12	95 - 90	15.85	670.73	15.04
13	90 - 85	16.88	747.04	15.51
14	85 - 80	17.91	825.66	15.94
15	80 - 75	18.95	906.37	16.35
16	75 - 70	20.00	989.09	16.74
17	70 - 65	21.05	1073.73	17.12
18	65 - 60	22.12	1160.19	17.47
19	60 - 55	23.39	1249.11	17.96
20	55 - 50	24.59	1339.95	18.37
21	50 - 45	25.79	1432.82	18.77
22	45 - 40.25	26.98	1522.82	19.13
23	40.25 - 40	27.06	1527.61	19.14
24	40 - 35	28.50	1624.21	19.50
25	35 - 30	29.94	1722.50	19.82
26	30 - 29.75	30.93	1728.02	20.32
27	29.75 - 24.75	32.47	1830.43	20.64
28	24.75 - 19.75	34.02	1934.36	20.93
29	19.75 - 14.75	35.57	2039.81	21.28
30	14.75 - 9.75	37.14	2146.72	21.50
31	9.75 - 7.9167	37.75	2186.19	21.59
32	7.9167 - 7.6667	37.85	2191.59	21.58
33	7.6667 - 2.6667	39.64	2299.98	21.79
34	2.6667 - 0	40.60	2358.19	21.89

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
150 - 145	Pole	TP24x24x0.25	Pole	2.9%	Pass
145 - 140	Pole	TP24x24x0.25	Pole	8.1%	Pass
140 - 135	Pole	TP24x24x0.25	Pole	19.8%	Pass
135 - 130	Pole	TP24x24x0.25	Pole	32.7%	Pass
130 - 125	Pole	TP24x24x0.25	Pole	47.4%	Pass
125 - 120	Pole	TP24x24x0.25	Pole	62.5%	Pass
120 - 115	Pole	TP30x30x0.375	Pole	32.8%	Pass
115 - 110	Pole	TP30x30x0.375	Pole	39.6%	Pass
110 - 105	Pole	TP30x30x0.375	Pole	46.5%	Pass
105 - 100	Pole	TP30x30x0.375	Pole	53.7%	Pass
100 - 95	Pole	TP30x30x0.375	Pole	61.1%	Pass
95 - 90	Pole	TP30x30x0.375	Pole	68.6%	Pass
90 - 85	Pole	TP36x36x0.375	Pole	54.3%	Pass
85 - 80	Pole	TP36x36x0.375	Pole	59.9%	Pass
80 - 75	Pole	TP36x36x0.375	Pole	65.7%	Pass
75 - 70	Pole	TP36x36x0.375	Pole	71.7%	Pass
70 - 65	Pole	TP36x36x0.375	Pole	77.8%	Pass
65 - 60	Pole	TP36x36x0.375	Pole	84.0%	Pass
60 - 55	Pole	TP42x42x0.375	Pole	67.6%	Pass
55 - 50	Pole	TP42x42x0.375	Pole	72.5%	Pass
50 - 45	Pole	TP42x42x0.375	Pole	77.5%	Pass
45 - 40.25	Pole	TP42x42x0.375	Pole	82.3%	Pass
40.25 - 40	Pole	TP42x42x0.375	Pole	82.6%	Pass
40 - 35	Pole	TP42x42x0.375	Pole	87.8%	Pass
35 - 30	Pole	TP42x42x0.375	Pole	93.1%	Pass
30 - 29.75	Pole	TP42x42x0.5	Pole	68.1%	Pass
29.75 - 24.75	Pole	TP42x42x0.5	Pole	72.1%	Pass
24.75 - 19.75	Pole	TP42x42x0.5	Pole	76.2%	Pass
19.75 - 14.75	Pole	TP42x42x0.5	Pole	80.3%	Pass
14.75 - 9.75	Pole	TP42x42x0.5	Pole	84.5%	Pass
9.75 - 7.92	Pole	TP42x42x0.5	Pole	86.0%	Pass
7.92 - 7.67	Pole	TP42x42x0.5	Pole	86.2%	Pass
7.67 - 2.67	Pole	TP42x42x0.5	Pole	90.5%	Pass
2.67 - 0	Pole	TP42x42x0.5	Pole	92.8%	Pass
				Summary	
			Pole	93.1%	Pass
			Reinforcement	0.0%	Pass
			Overall	93.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
150 - 145	1315	n/a	1315	18.65	n/a	18.65	2.9%		
145 - 140	1315	n/a	1315	18.65	n/a	18.65	8.1%		
140 - 135	1315	n/a	1315	18.65	n/a	18.65	19.8%		
135 - 130	1315	n/a	1315	18.65	n/a	18.65	32.7%		
130 - 125	1315	n/a	1315	18.65	n/a	18.65	47.4%		
125 - 120	1315	n/a	1315	18.65	n/a	18.65	62.5%		
120 - 115	3829	n/a	3829	34.90	n/a	34.90	32.8%		
115 - 110	3829	n/a	3829	34.90	n/a	34.90	39.6%		
110 - 105	3829	n/a	3829	34.90	n/a	34.90	46.5%		
105 - 100	3829	n/a	3829	34.90	n/a	34.90	53.7%		
100 - 95	3829	n/a	3829	34.90	n/a	34.90	61.1%		
95 - 90	3829	n/a	3829	34.90	n/a	34.90	68.6%		
90 - 85	6659	n/a	6659	41.97	n/a	41.97	54.3%		
85 - 80	6659	n/a	6659	41.97	n/a	41.97	59.9%		
80 - 75	6659	n/a	6659	41.97	n/a	41.97	65.7%		
75 - 70	6659	n/a	6659	41.97	n/a	41.97	71.7%		
70 - 65	6659	n/a	6659	41.97	n/a	41.97	77.8%		
65 - 60	6659	n/a	6659	41.97	n/a	41.97	84.0%		
60 - 55	10622	n/a	10622	49.04	n/a	49.04	67.6%		
55 - 50	10622	n/a	10622	49.04	n/a	49.04	72.5%		
50 - 45	10622	n/a	10622	49.04	n/a	49.04	77.5%		
45 - 40.25	10622	n/a	10622	49.04	n/a	49.04	82.3%		
40.25 - 40	10622	n/a	10622	49.04	n/a	49.04	82.6%		
40 - 35	10622	n/a	10622	49.04	n/a	49.04	87.8%		
35 - 30	10622	n/a	10622	49.04	n/a	49.04	93.1%		
30 - 29.75	14036	n/a	14036	65.19	n/a	65.19	68.1%		
29.75 - 24.75	14036	n/a	14036	65.19	n/a	65.19	72.1%		
24.75 - 19.75	14036	n/a	14036	65.19	n/a	65.19	76.2%		
19.75 - 14.75	14036	n/a	14036	65.19	n/a	65.19	80.3%		
14.75 - 9.75	14036	n/a	14036	65.19	n/a	65.19	84.5%		
9.75 - 7.92	14036	n/a	14036	65.19	n/a	65.19	86.0%		
7.92 - 7.67	14036	n/a	14036	65.19	n/a	65.19	86.2%		
7.67 - 2.67	14036	n/a	14036	65.19	n/a	65.19	90.5%		
2.67 - 0	14036	n/a	14036	65.19	n/a	65.19	92.8%		

Note: Section capacity checked in 5 degree increments.

Rating per TIA-222-H Section 15.5.

Monopole Flange Plate Connection

Elevation = 120 ft.



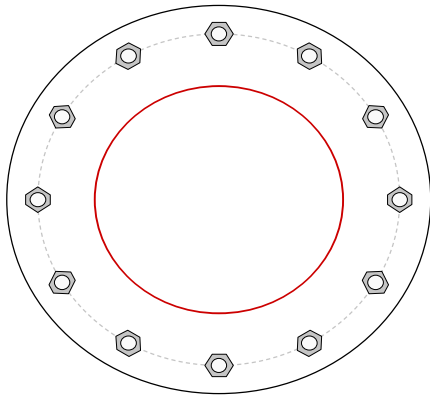
BU #	876346
Site Name	Union
Order #	517063 Rev. 0

TIA-222 Revision	H
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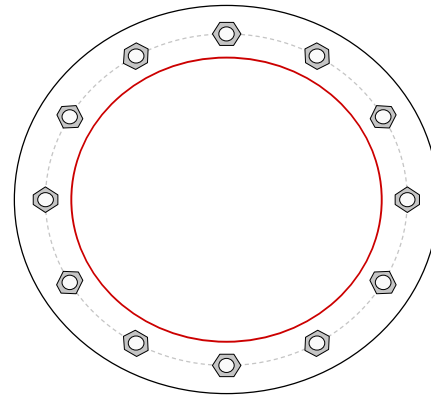
Applied Loads	
Moment (kip-ft)	253.44
Axial Force (kips)	10.56
Shear Force (kips)	12.70

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1-1/2" ϕ bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 35" BC

Top Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

41" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.25" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	28.06
Allowable (kips)	111.02
Stress Rating:	24.1% Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 90 ft.



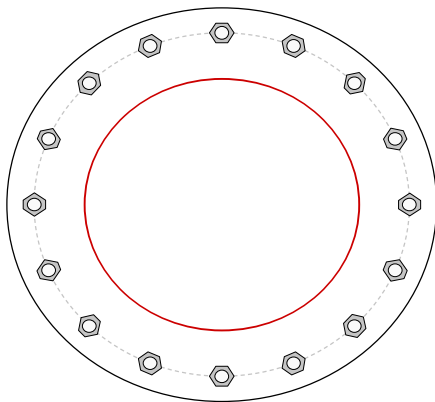
BU #	876346
Site Name	Union
Order #	517063 Rev. 0

TIA-222 Revision	H
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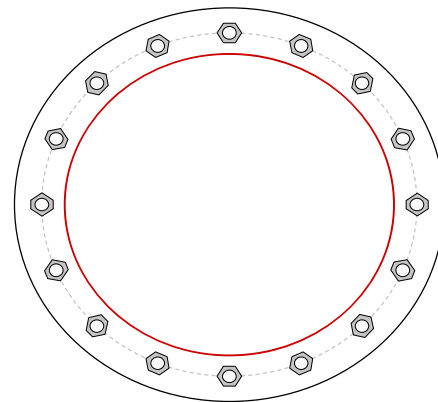
Applied Loads	
Moment (kip-ft)	670.61
Axial Force (kips)	15.85
Shear Force (kips)	15.06

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(16) 1-1/2" ϕ bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 41" BC

Top Plate Data

47" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

47" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	48.05
Allowable (kips)	111.03
Stress Rating:	41.2% Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 60 ft.



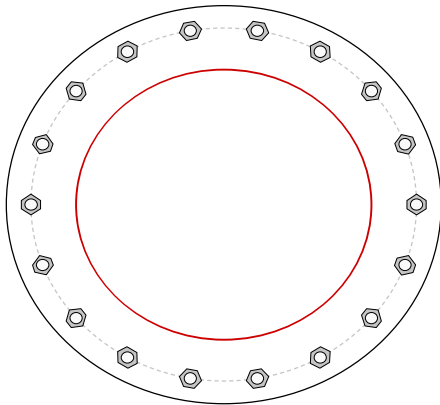
BU #	876346
Site Name	Union
Order #	517063 Rev. 0

TIA-222 Revision	H
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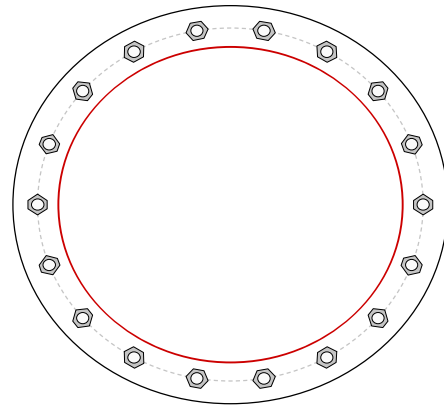
Applied Loads	
Moment (kip-ft)	1160.18
Axial Force (kips)	22.12
Shear Force (kips)	17.47

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(18) 1-1/2" ϕ bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 47" BC

Top Plate Data

53" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

53" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	64.57
Allowable (kips)	111.03
Stress Rating:	55.4% Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 30 ft.



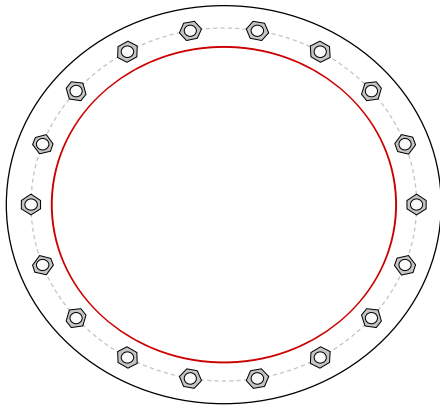
BU #	876346
Site Name	Union
Order #	517063 Rev. 0

TIA-222 Revision	H
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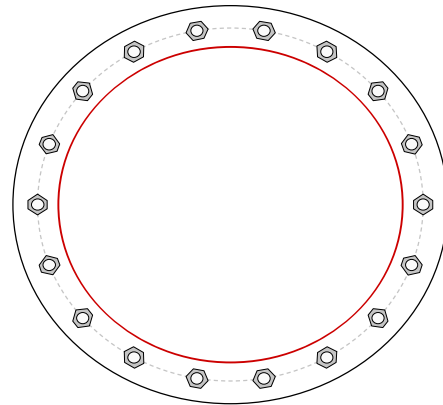
Applied Loads	
Moment (kip-ft)	1722.50
Axial Force (kips)	29.94
Shear Force (kips)	19.82

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(18) 1-1/2" ϕ bolts (A325 N; Fy=81 ksi, Fu=105 ksi) on 47" BC

Top Plate Data

53" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

53" OD x 2" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	96.03
Allowable (kips)	111.02
Stress Rating:	82.4% Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Base Plate Connection

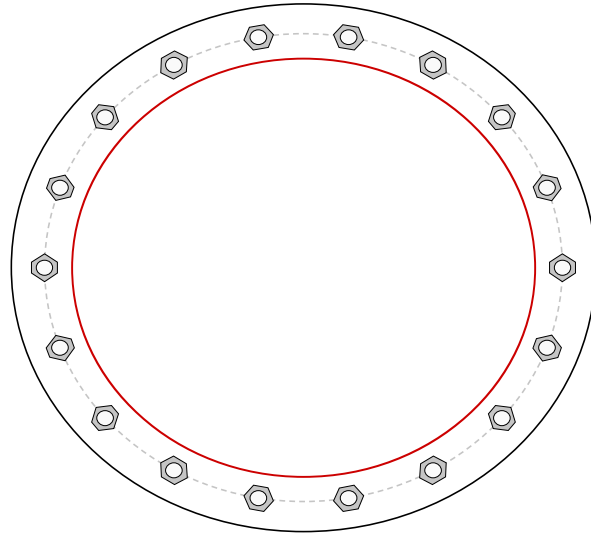


Site Info	
BU #	876346
Site Name	Union
Order #	517063 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{ar} (in)	1.75

Applied Loads	
Moment (kip-ft)	2358.19
Axial Force (kips)	40.62
Shear Force (kips)	21.87

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary (units of kips, kip-in)	
(18) 1-1/2" ϕ bolts (A354-BC N; $F_y=109$ ksi, $F_u=125$ ksi) on 47" BC		$Pu_t = 131.49$	$\phi Pn_t = 132.19$ Stress Rating
Base Plate Data		$Vu = 1.21$	$\phi Vn = 82.83$ 99.1%
53" OD x 2" Plate (A36; $F_y=36$ ksi, $F_u=58$ ksi)		$Mu = 1.38$	$\phi Mn = 55.18$ Pass
Stiffener Data		Base Plate Summary	
N/A		Max Stress (ksi):	-
Pole Data		Allowable Stress (ksi):	-
42" x 0.5" round pole (A53-B-42; $F_y=42$ ksi, $F_u=63$ ksi)		Stress Rating:	Rohn OK

Pier and Pad Foundation



BU # : 876346
 Site Name: Union
 App. Number: 517063 Rev. 0

TIA-222 Revision: H
 Tower Type: Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp} :	40.616	kips
Base Shear, V_{u_comp} :	21.868	kips
Moment, M_u :	2358.185	ft-kips
Tower Height, H :	150	ft
BP Dist. Above Fdn, bp_{dist} :	3.25	in
Bolt Circle / Bearing Plate Width, BC :	47	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	206.46	21.87	10.1%	Pass
Bearing Pressure (ksf)	22.50	5.23	23.2%	Pass
Overturning (kip*ft)	2968.15	2495.32	84.1%	Pass
Pad Flexure (kip*ft)	4739.72	1349.37	27.1%	Pass
Pad Shear - 1-way (kips)	1231.14	151.62	11.7%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	0.0%	Pass
Flexural 2-way (Comp) (kip*ft)	9049.52	0.00	0.0%	Pass

*Rating per TIA-222-H Section 15.5

Soil Rating*:	84.1%
Structural Rating*:	27.1%

Pad Properties		
Depth, D :	5.5	ft
Pad Width, W :	18.5	ft
Pad Thickness, T :	6	ft
Pad Rebar Size (Bottom), Sp :	8	
Pad Rebar Quantity (Bottom), mp :	20	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, F_y :	60	ksi
Concrete Compressive Strength, F'_c :	3	ksi
Dry Concrete Density, δ_c :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	140	pcf
Ultimate Gross Bearing, Q_{ult} :	30.000	ksf
Cohesion, C_u :		ksf
Friction Angle, ϕ :	42	degrees
SPT Blow Count, N_{blows} :	14	
Base Friction, μ :	0.45	
Neglected Depth, N :	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw :	N/A	ft

--Toggle between Gross and Net

Exhibit E

Mount Analysis

Date: **May 11, 2020**

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

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject: **Mount Modification Report**

Carrier Designation: **AT&T Mobility Equipment Change-Out**
Carrier Site Number: CTV1094
Carrier Site Name: Union North
Carrier FA Number: 10035087

Crown Castle Designation: **Crown Castle BU Number:** 876346
Crown Castle Site Name: Union
Crown Castle JDE Job Number: 605414
Crown Castle Order Number: 517063 Rev. 0

Engineering Firm Designation: **Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B

Site Data: **23 Holland Road, Union, Tolland County, CT, 06076**
Latitude 42°01'45.94" Longitude -72°08'23.54"

Structure Information: **Tower Height & Type:** **150.0 ft Monopole**
Mount Elevation: **137.0 ft**
Mount Type: **13.5 ft Platform**

Dear Crown Castle,

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

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

Platform

Sufficient

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

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 118 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jacques S. Grimaldi

Respectfully Submitted by:
John S. Stevens, P.E.
518-690-0790
jstevens@infinigy.com
CT PE License No. 24705



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1) INTRODUCTION

This is an existing 13.5 ft platform.

The mount has been modified per reinforcement drawings prepared by Infinigy Engineering, in May of 2020. Reinforcement consists of the addition of a support rail and a stabilizer kit.

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	118 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.178
Seismic S_1:	0.055
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount Details
137.0	140.0	3	CCI ANTENNAS	HPA65R-BU4A	13.5 ft Platform
		3	CCI ANTENNAS	OPA65R-BU4D	
		2	POWERWAVE	7770.00	
		3	KATHREIN	80010964	
		3	ERICSSON	RRUS 4449 B5/B12	
		3	ERICSSON	RRUS 4478 B14	
		3	ERICSSON	RRUS 8843 B2/B66A	
		6	POWERWAVE	LGP21401	
		1	RAYCAP	DC6-48-60-18-8C	
		2	RAYCAP	DC6-48-60-18-8F	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	AT&T Mobility Application	517063 Rev. 0	CCI Sites
Previous Mount Analysis	Infinigy Engineering, PLLC	8112185	CCI Sites
RFDS	AT&T Mobility	RFDS ID: 3719923	CCI Sites
TIA Inspection	--	4/10/2015	CCI Sites
Mount Modification Drawings	Infinigy Engineering, PLLC	Appendix E	Infinigy

3.1) Analysis Method

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

Infinigy Load Calculator 2.1.4, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) 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.
- 4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy Engineering, PLLC should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Mount Pipe(s)	MP12	137.0	41.9	Pass
	Horizontal(s)	M12		51.7	Pass
	Standoff(s)	M13		27.4	Pass
	Support Rail(s)	M55		83.6	Pass
	Stabilizer Angle(s)	M43		22.9	Pass
	Welded Connection(s)	M13		18.1	Pass

Structure Rating (max from all components) =	83.6%
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Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.

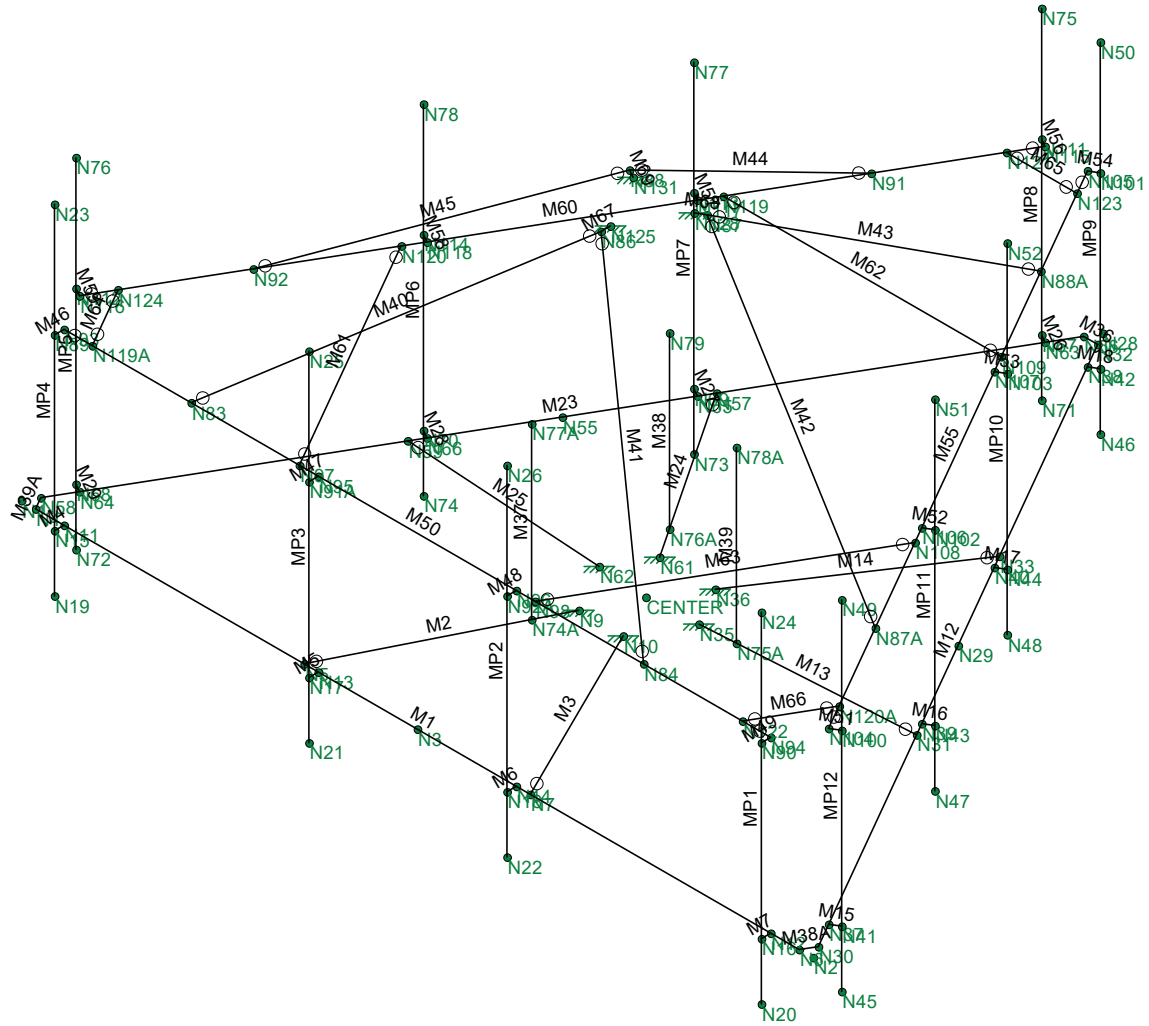
4.1) Recommendations

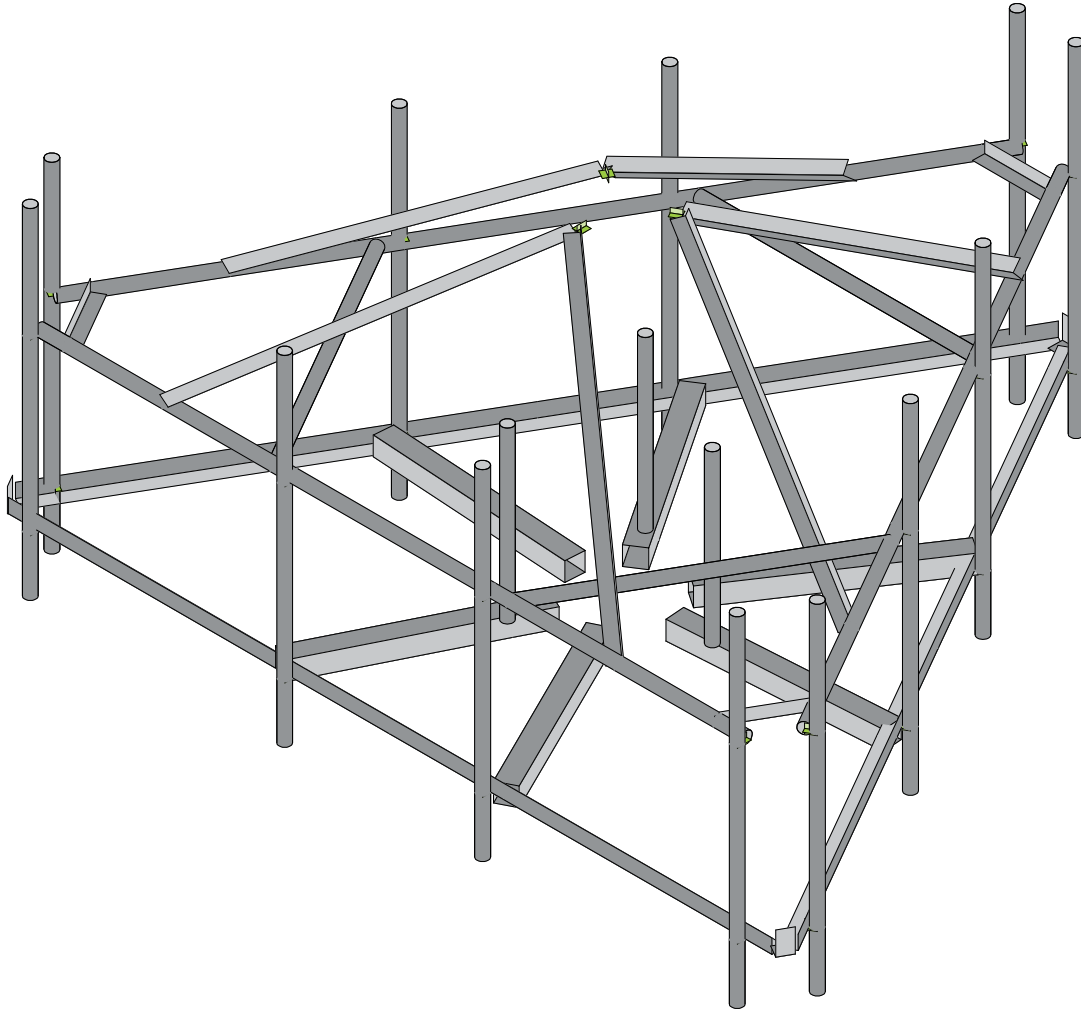
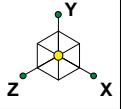
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

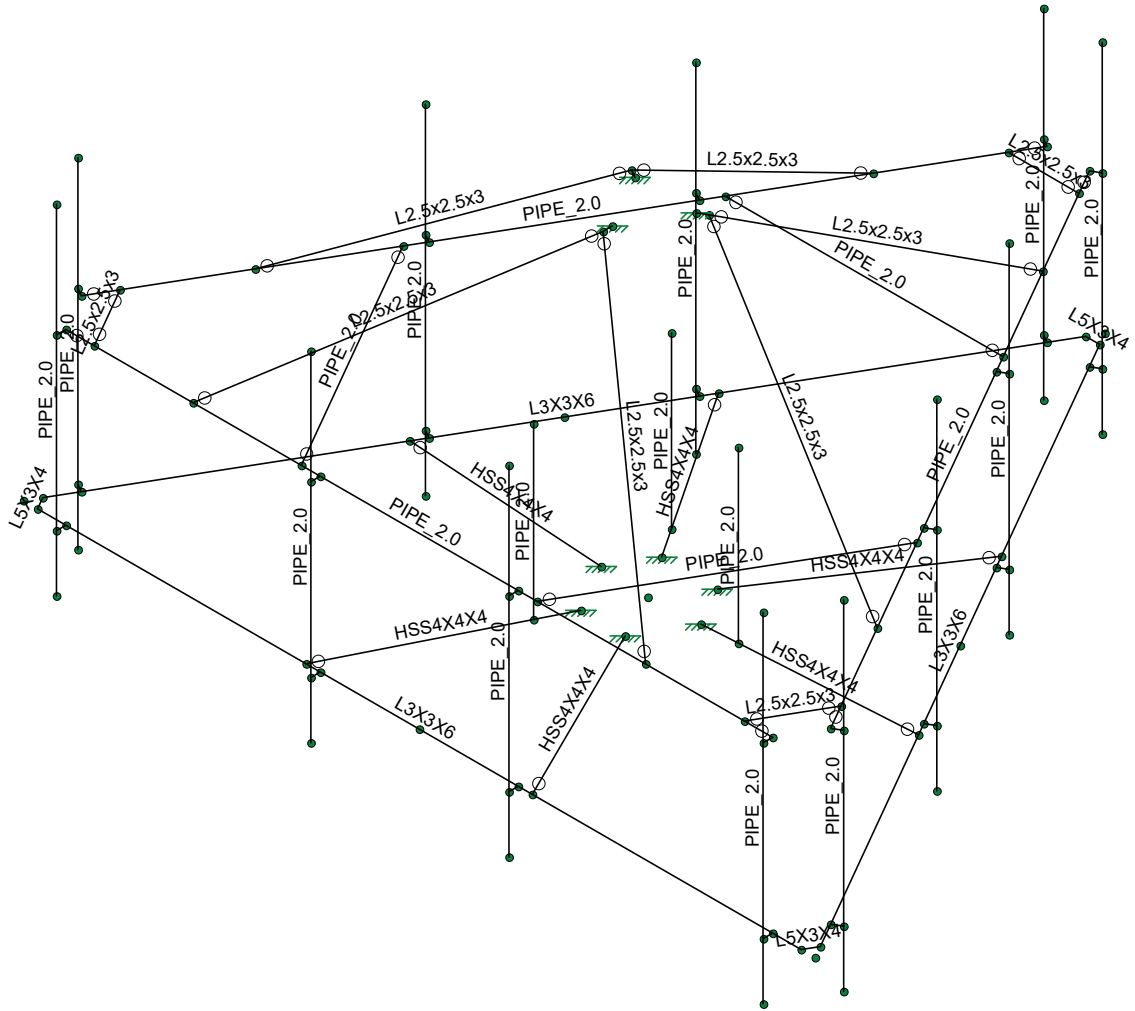
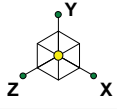
1. Support Rail Kit, Site Pro 1 HRK14-3HD
2. Stabilizer Kit, Site Pro 1 PRK-SFS-L

Engineering detail drawings have been provided in Appendix E – Mount Modification Design Drawings. Connection from the mount to the tower and local stresses on the tower are sufficient.

APPENDIX A
WIRE FRAME AND RENDERED MODELS







Infinigy Engineering, PLLC

JG

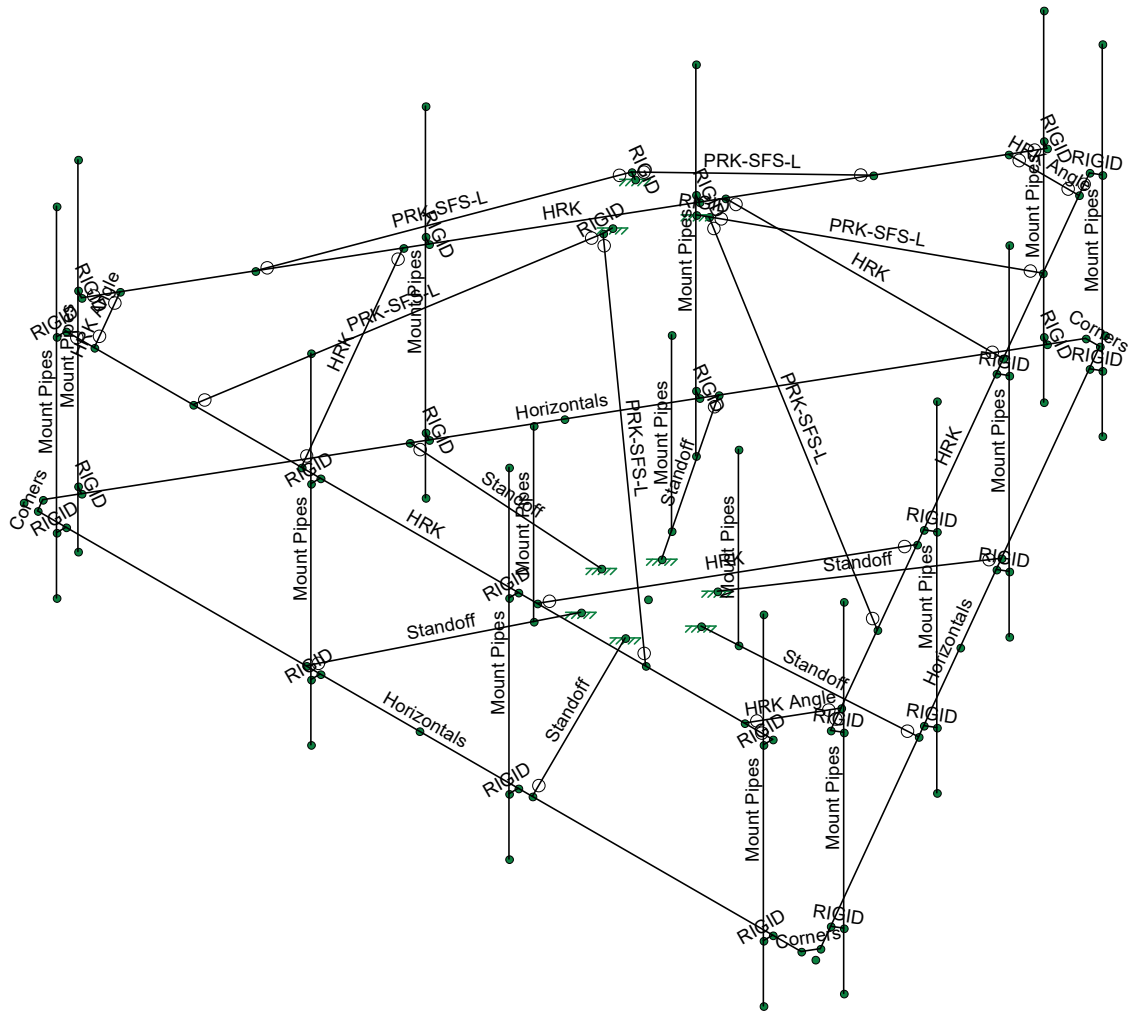
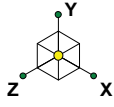
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Shape

May 6, 2020 at 2:24 PM

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JG

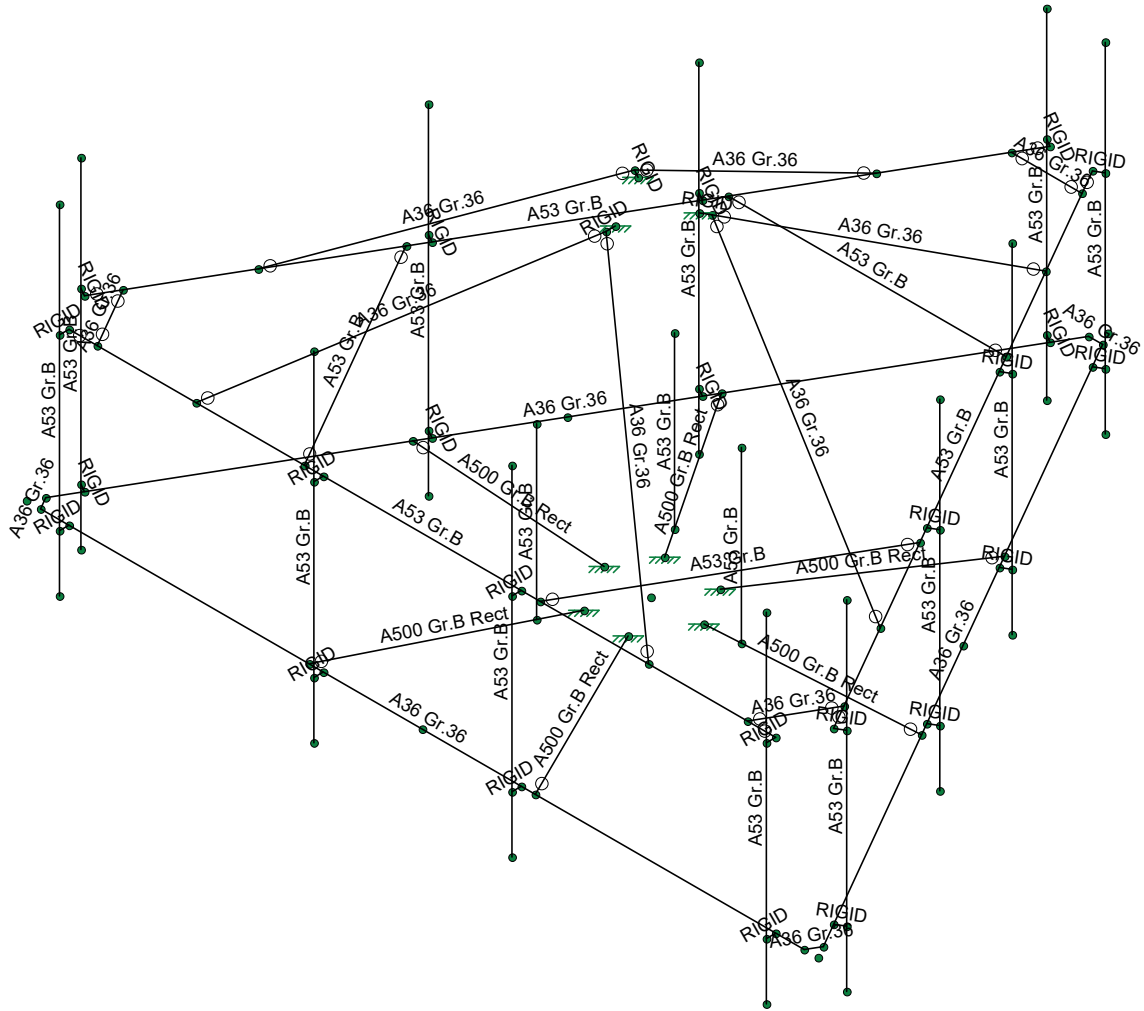
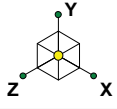
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Section Sets

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Infinigy Engineering, PLLC

JG

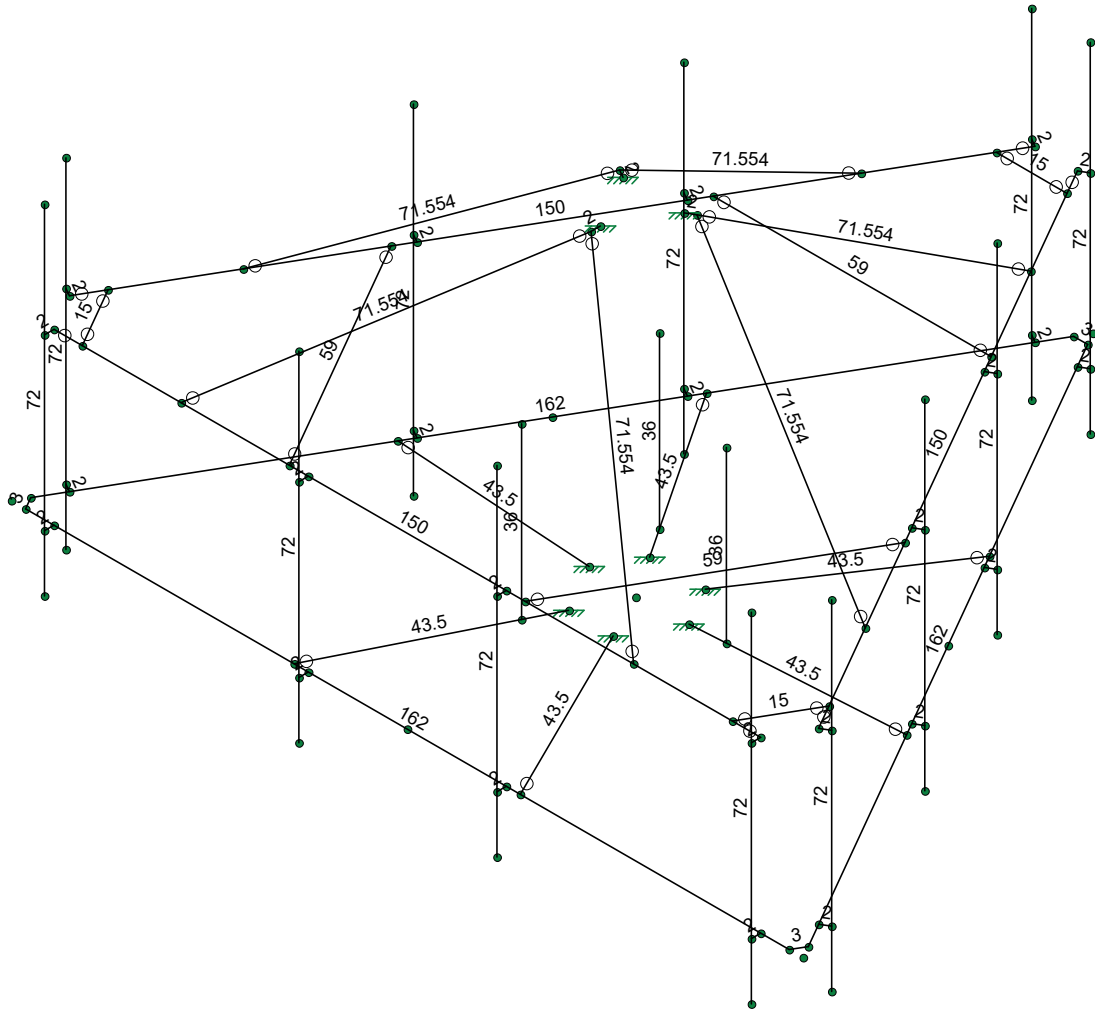
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Grade

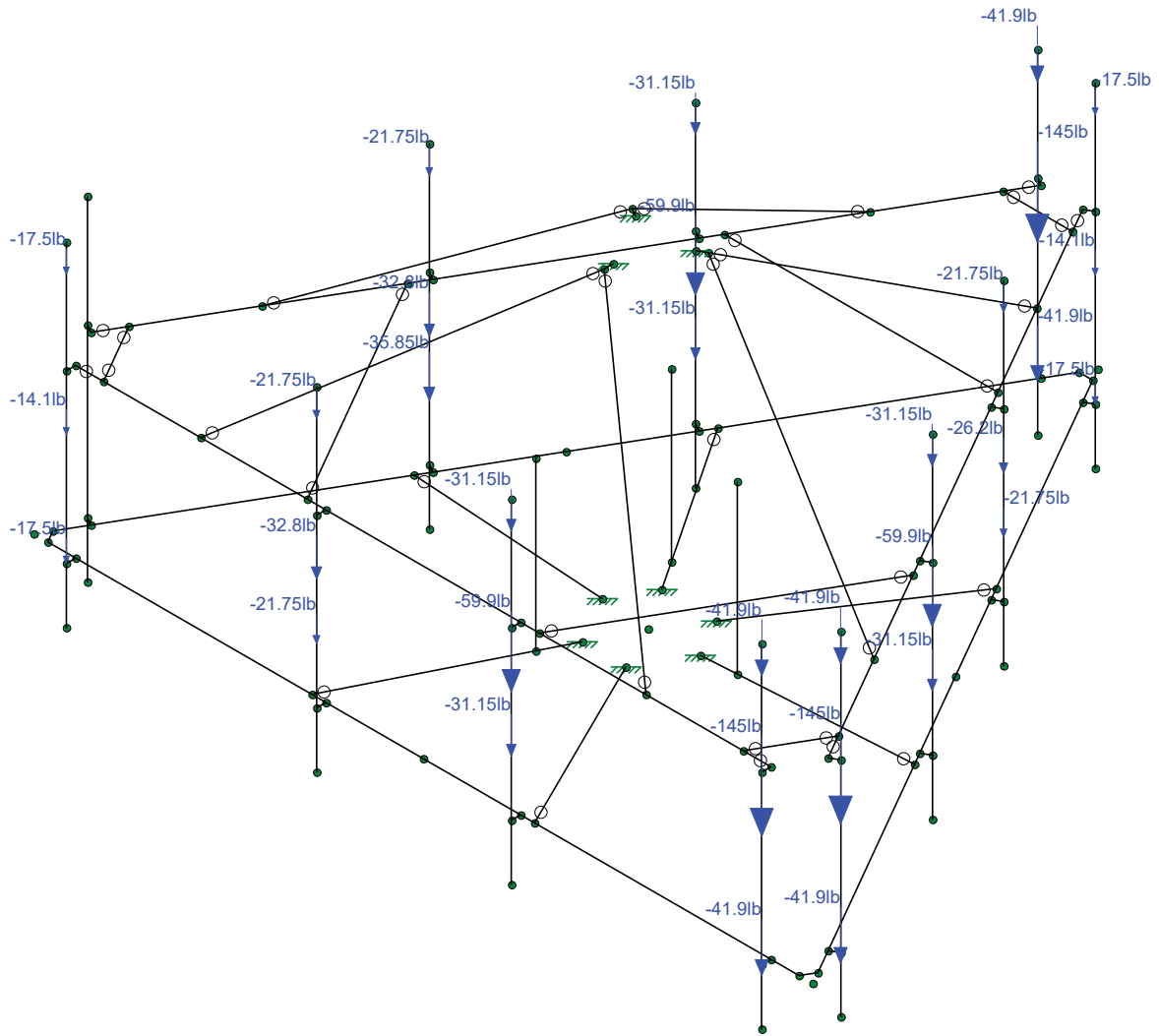
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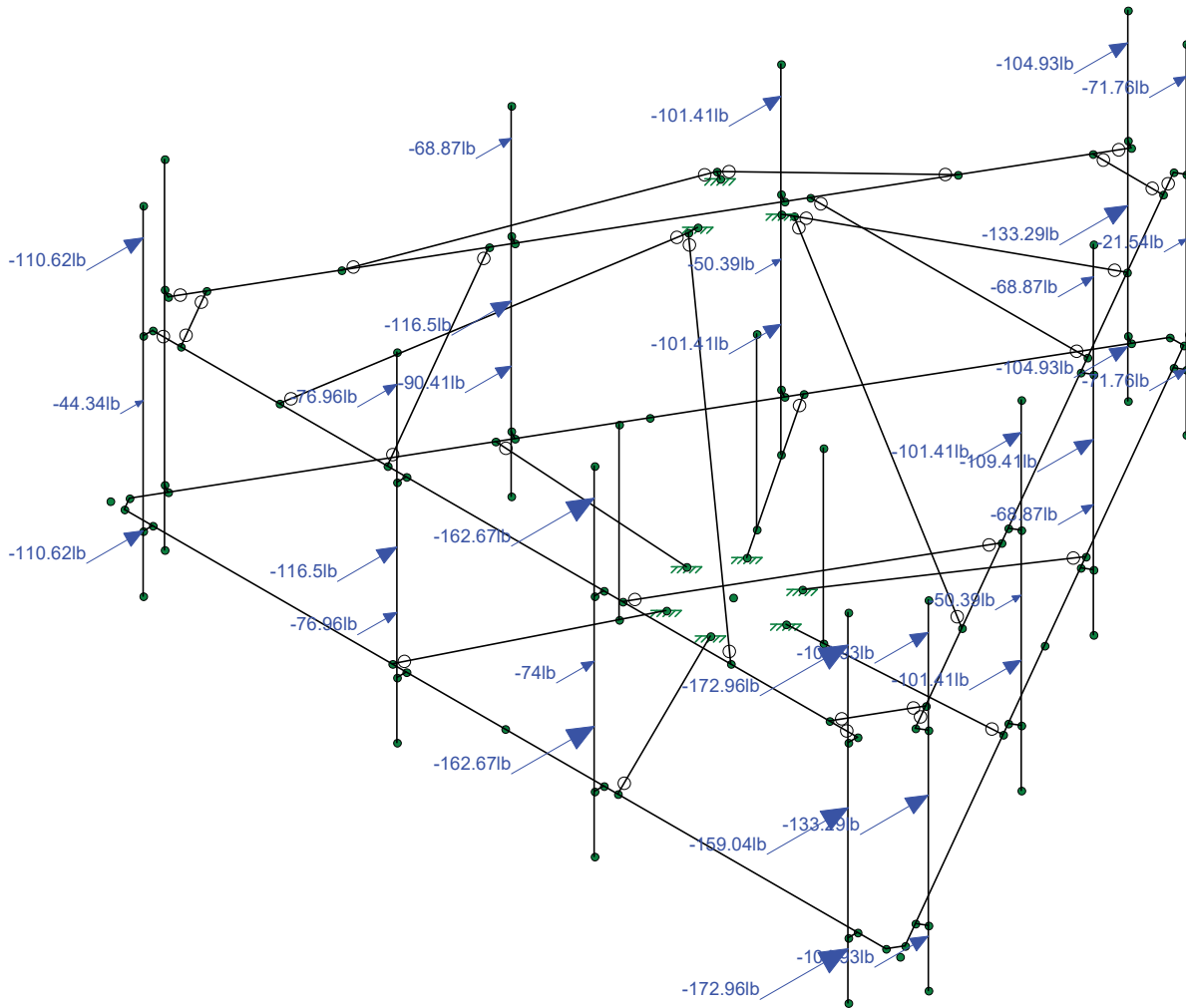


Infinigy Engineering, PLLC
JG
1039-Z0001-B

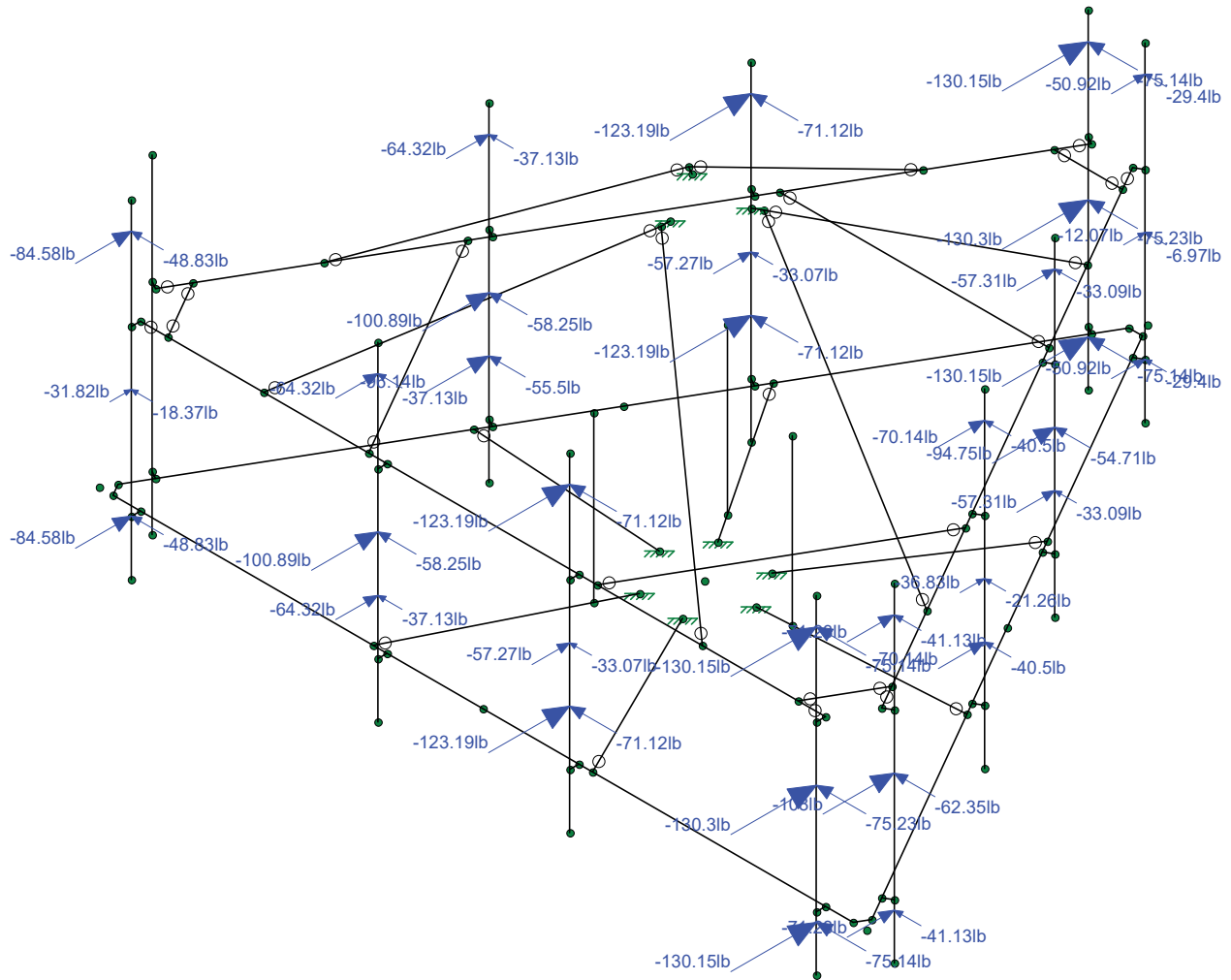
Length
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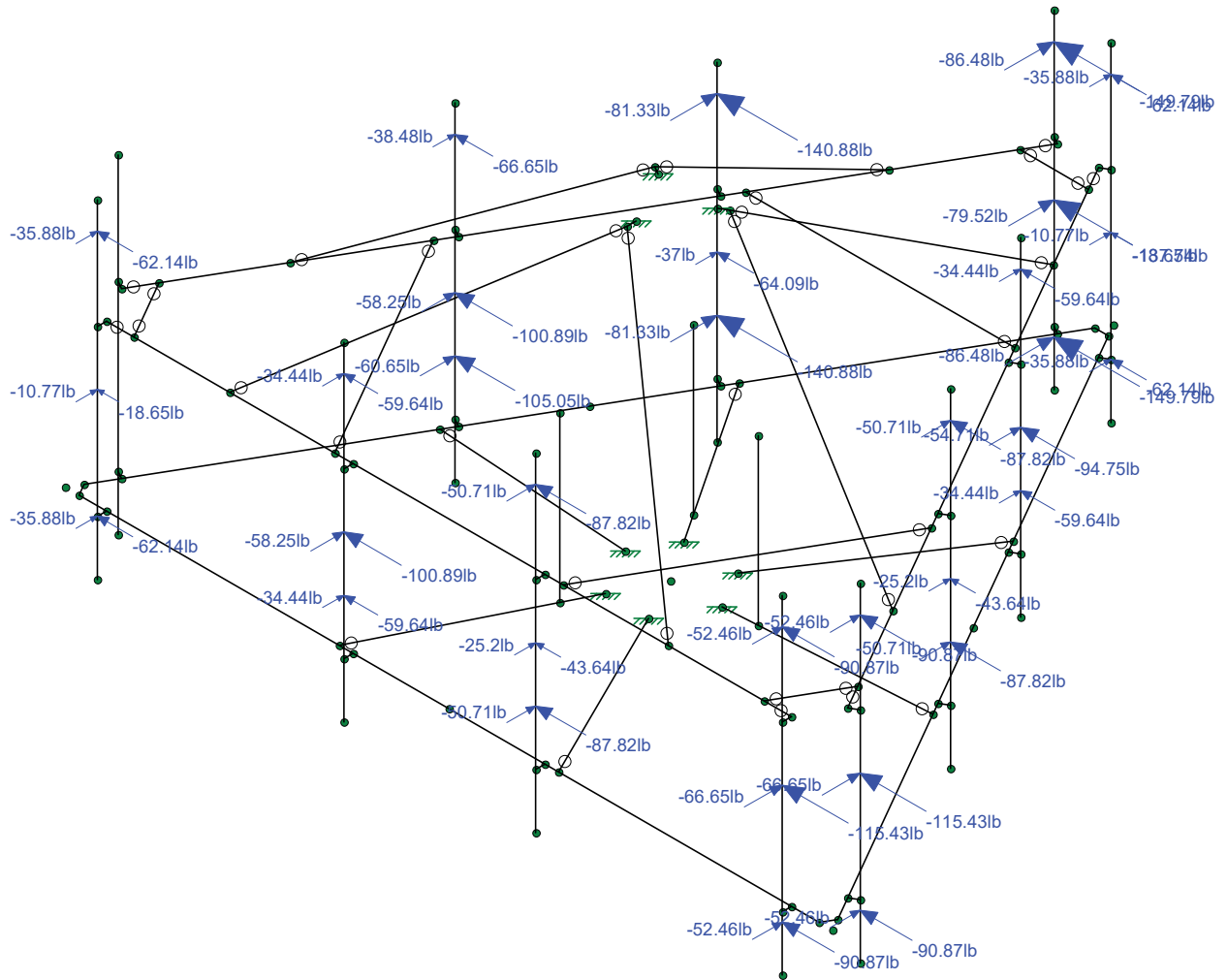
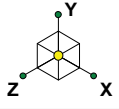
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Loads: BLC 4, Wind Load AZI 60

Infinigy Engineering, PLLC

JG

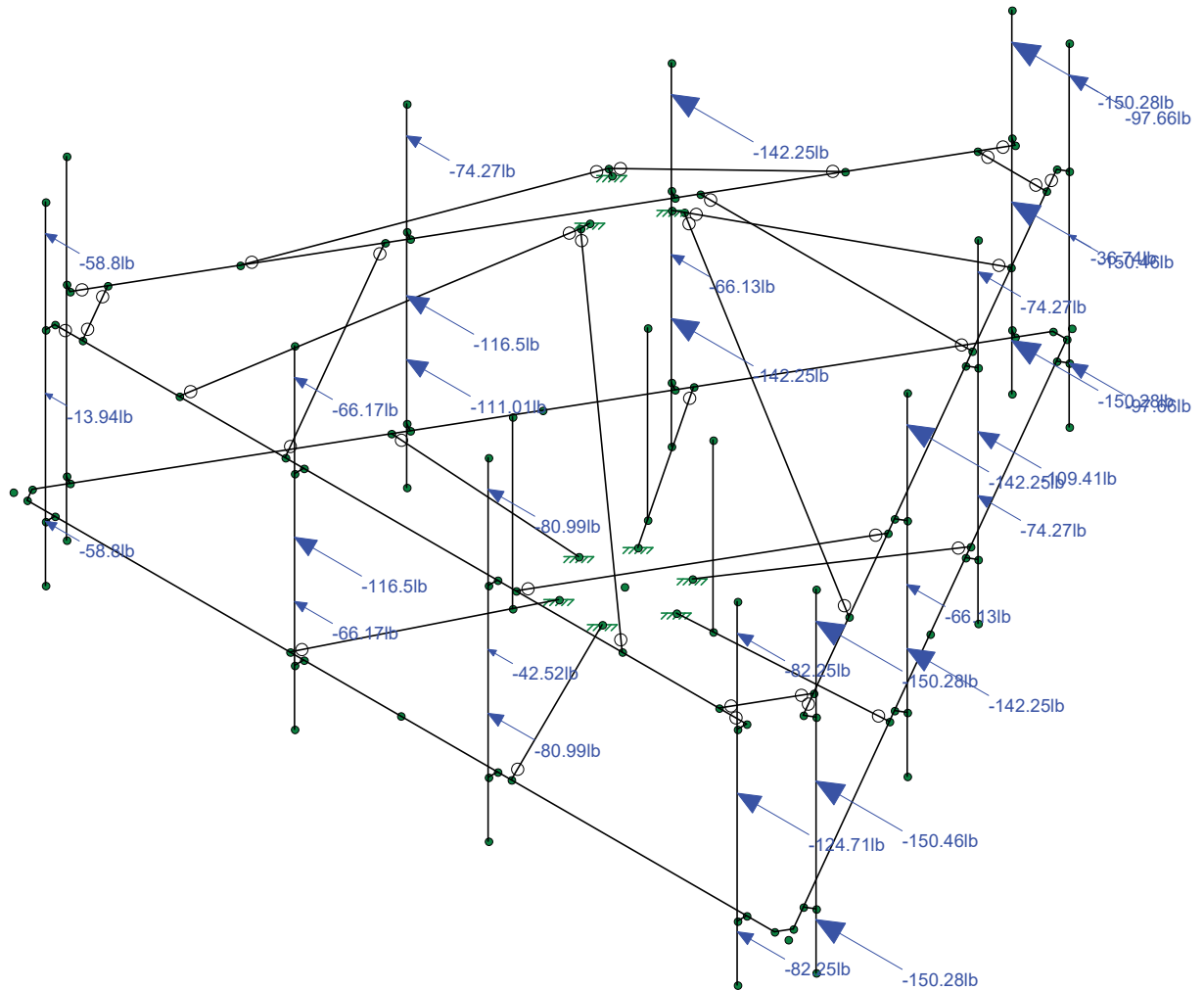
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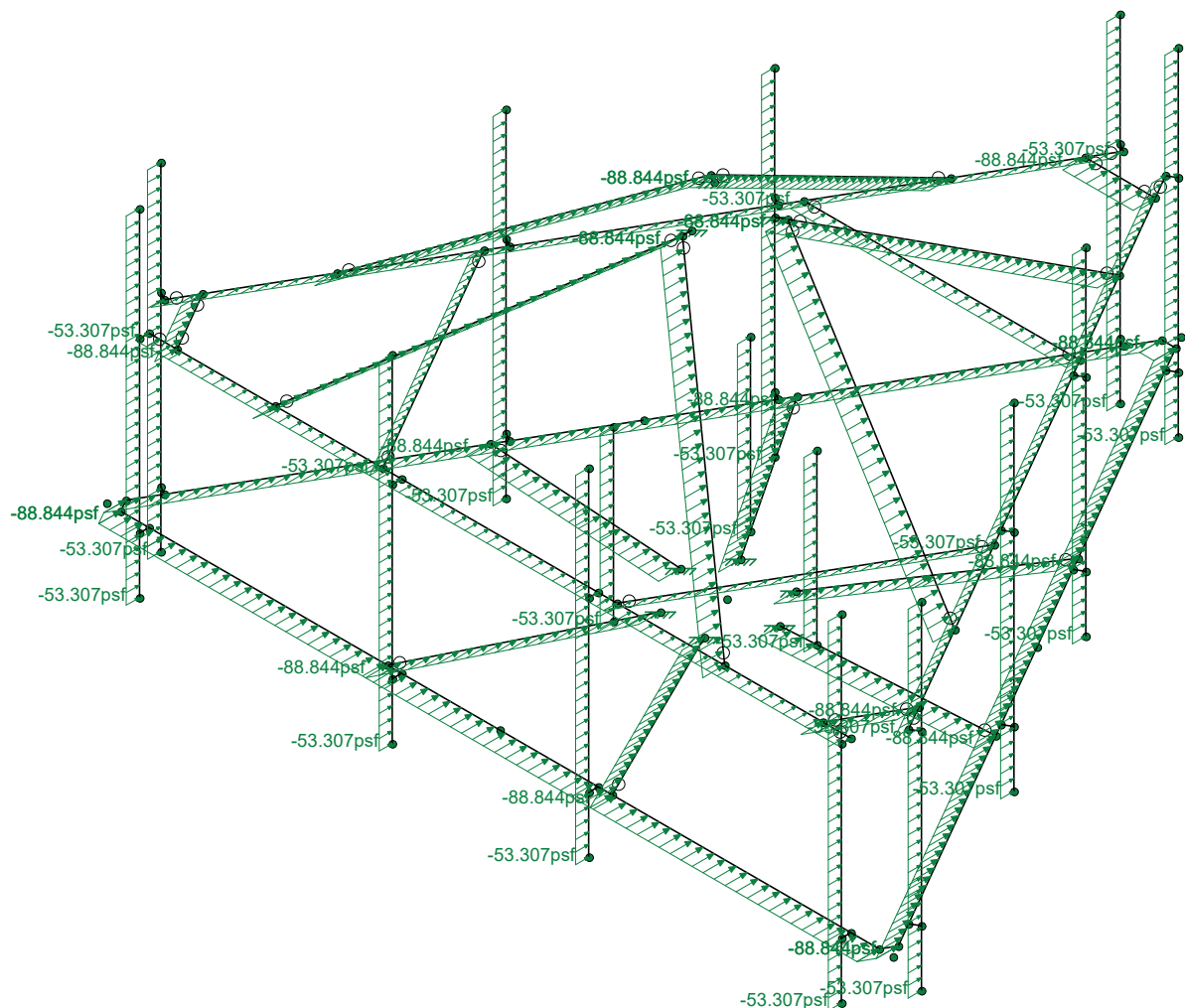
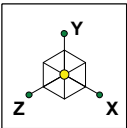
Wind Loading 60

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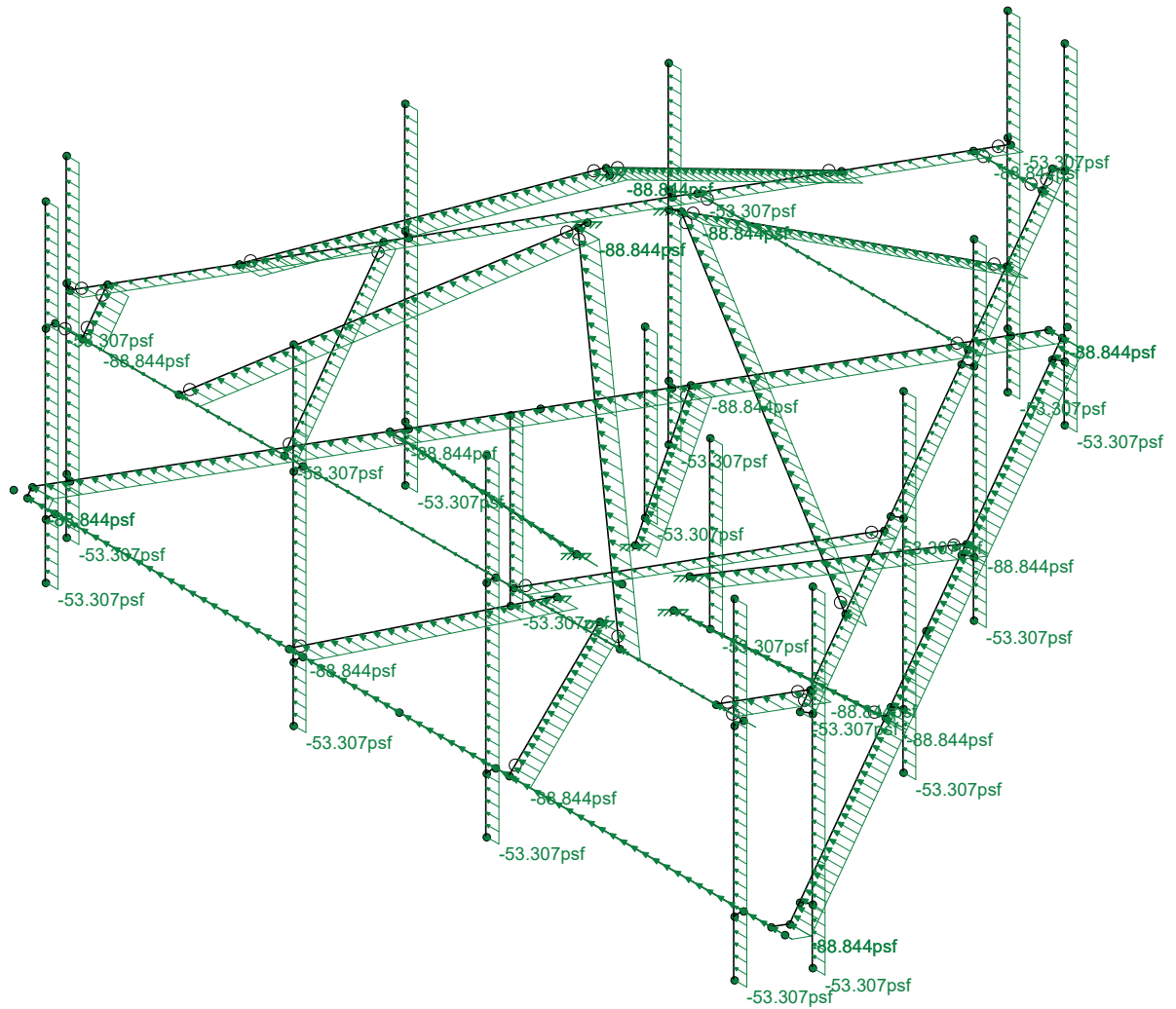
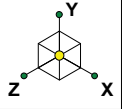


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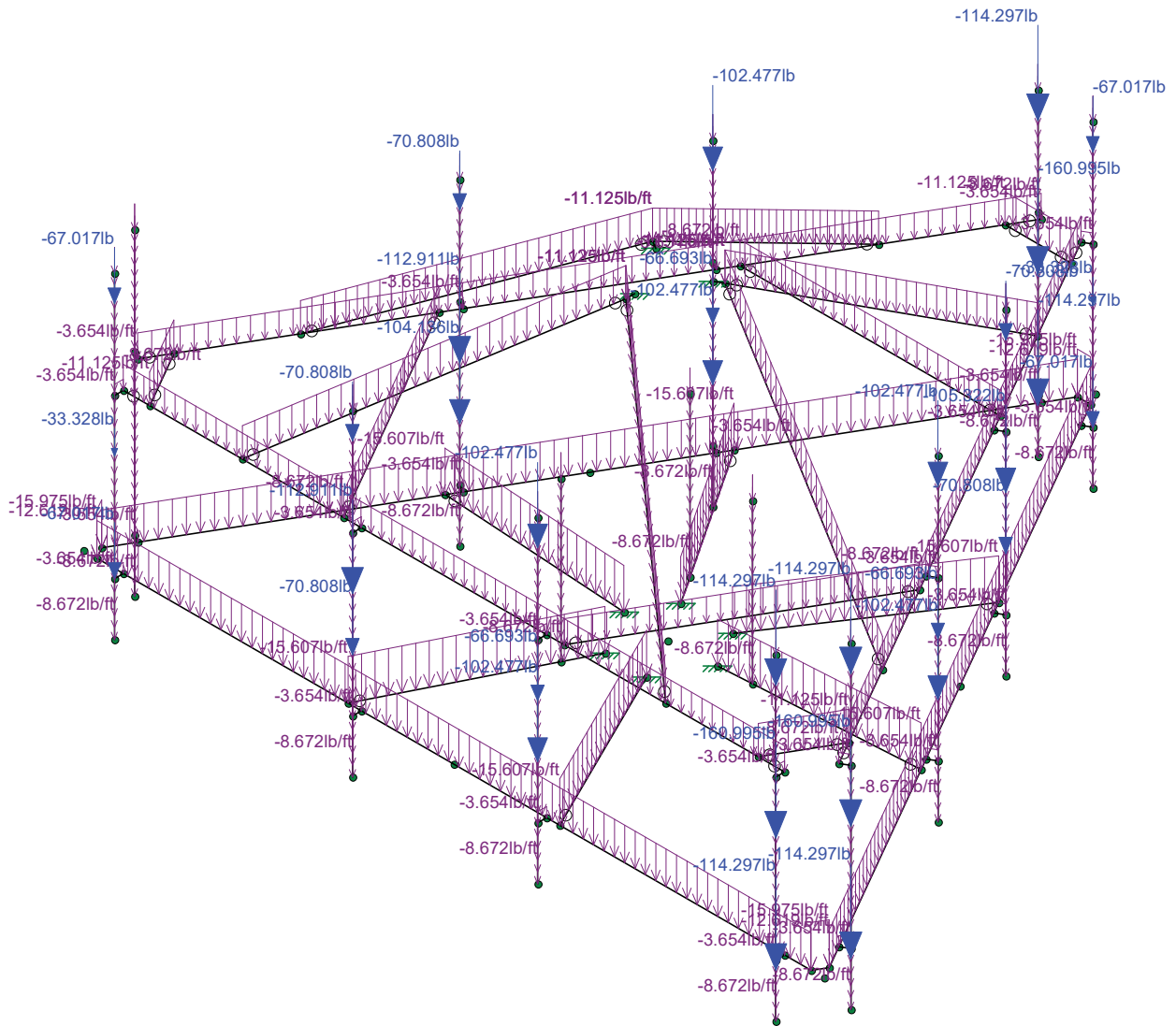
Loads: BLC 14, Distr. Wind Load Z

Infinigy Engineering, PLLC	876346_CTV1094	Dist. Wind Loading 0
JG		May 6, 2020 at 2:26 PM
1039-Z0001-B		Modified_876346_CTV1094_loade...

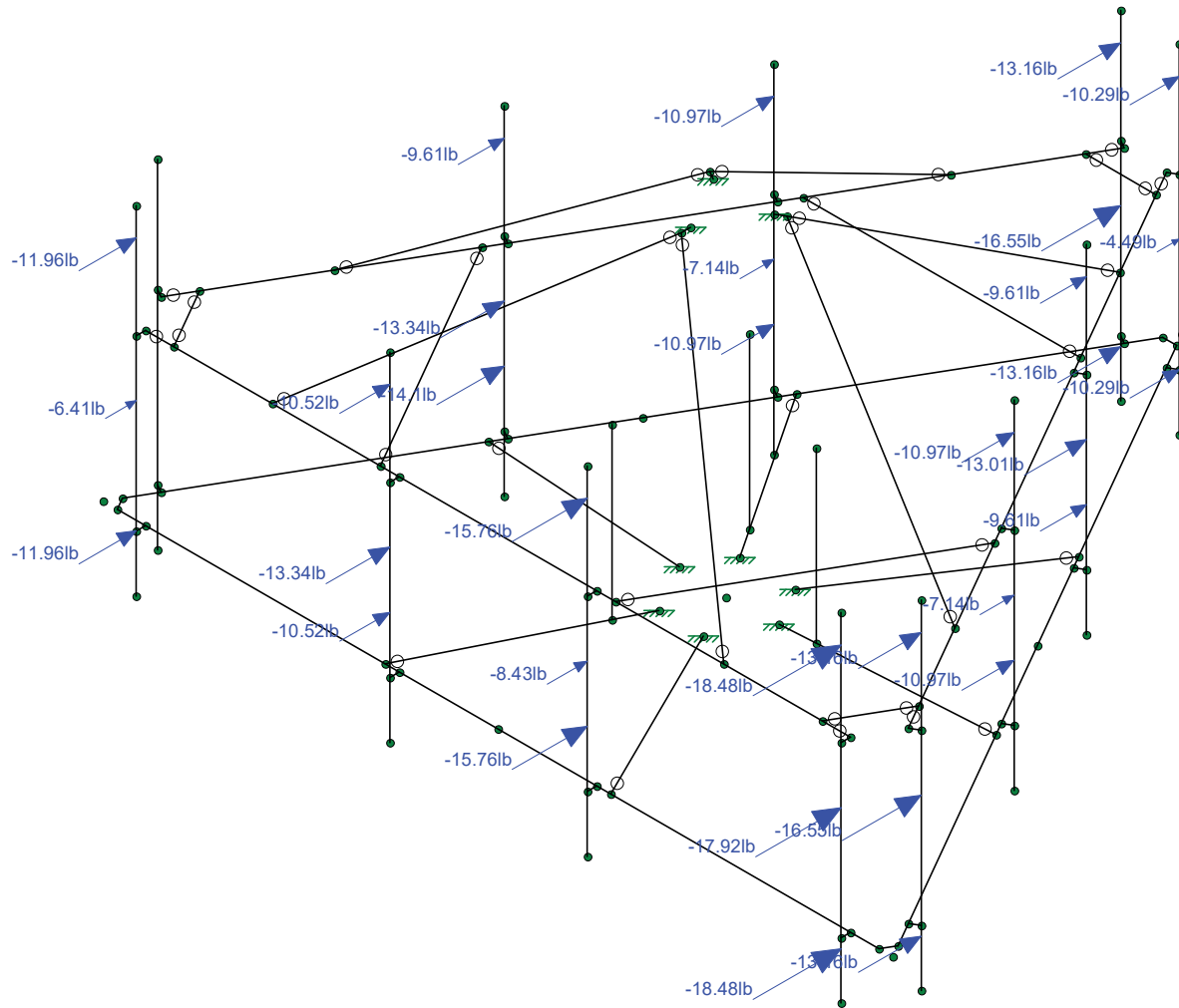
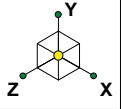


Loads: BLC 15, Distr. Wind Load X

Infinigy Engineering, PLLC	876346_CTV1094	Dist. Wind Loading 90
JG		May 6, 2020 at 2:26 PM
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Loads: BLC 17, Ice Wind Load AZI 0

Infinigy Engineering, PLLC

JG

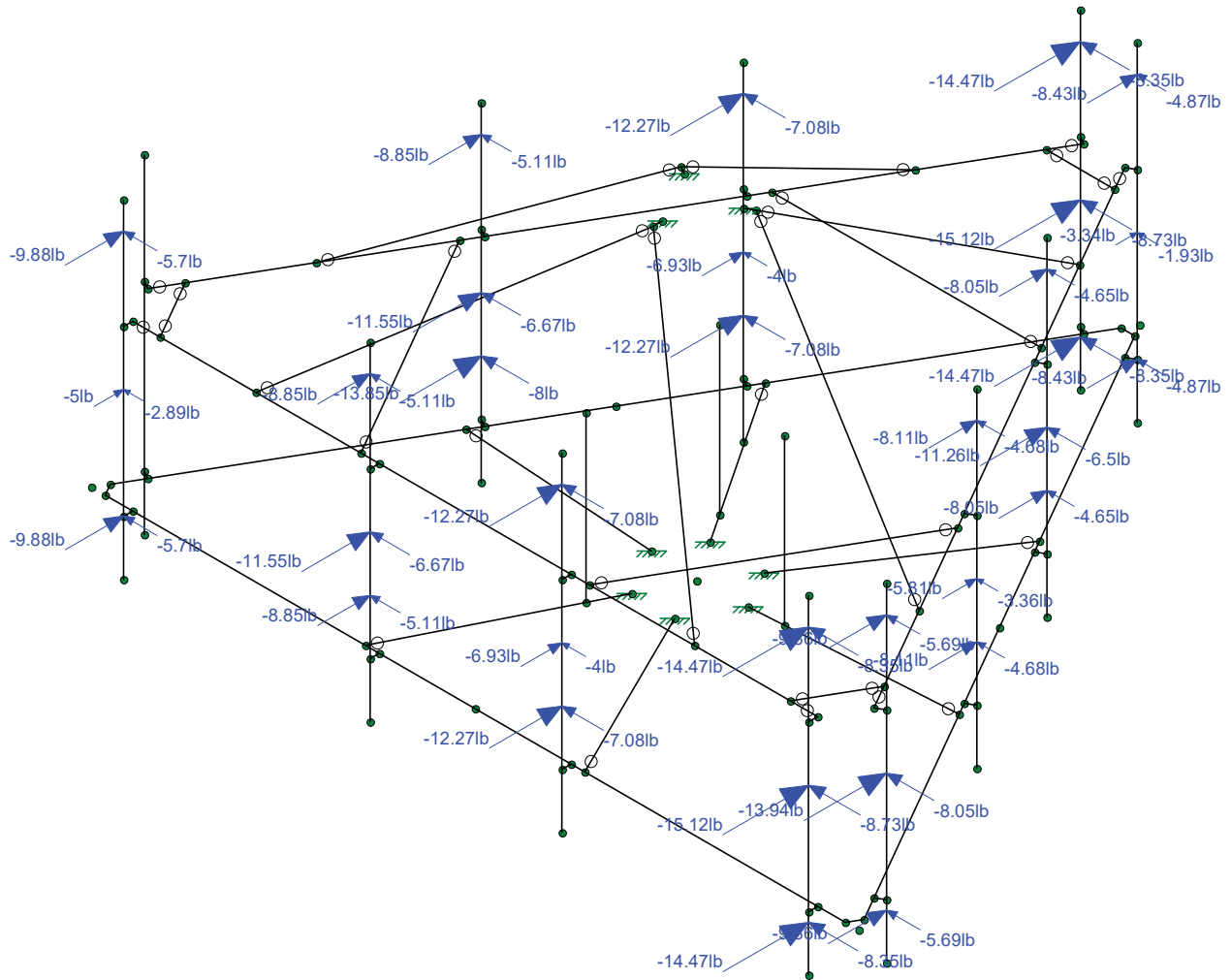
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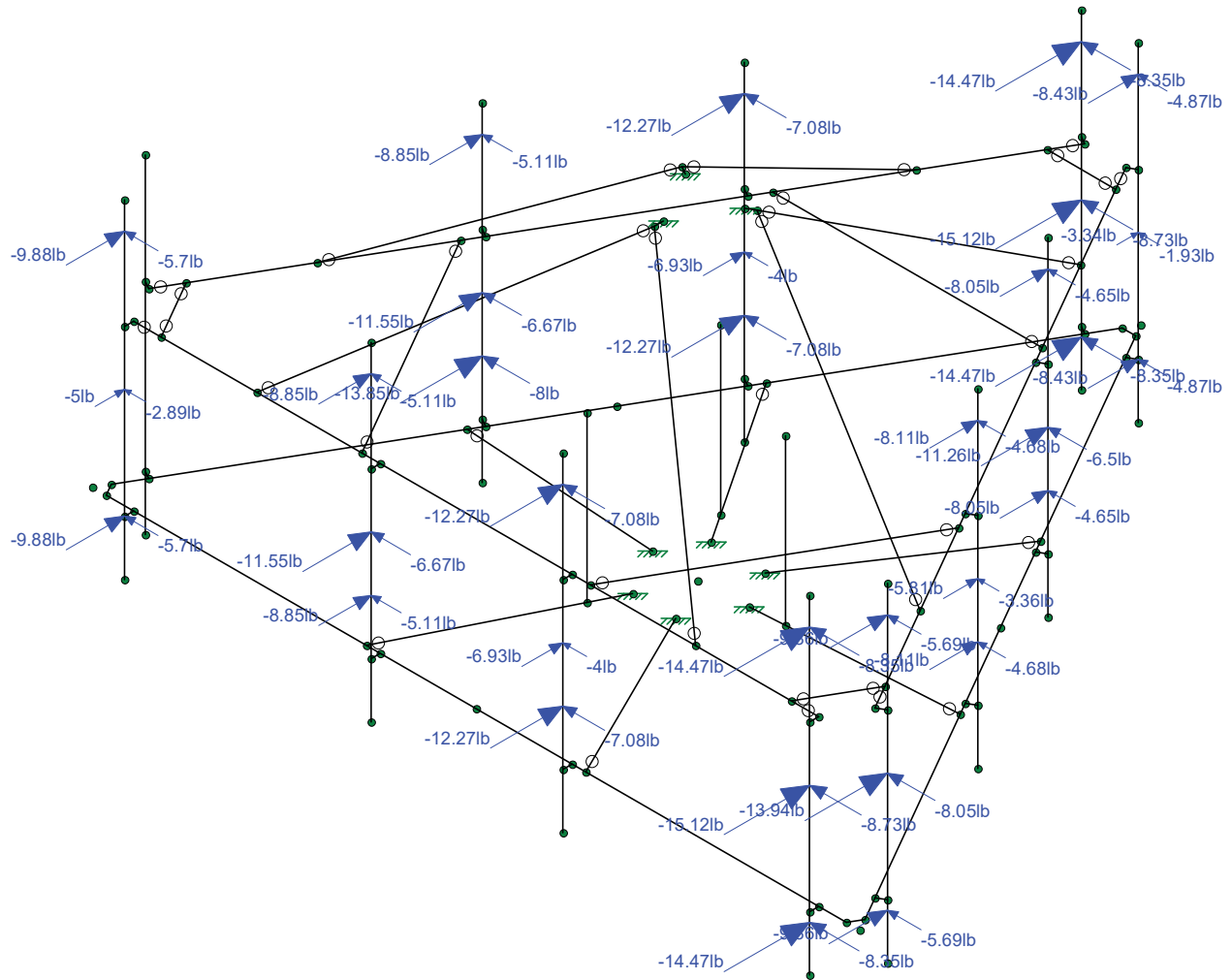
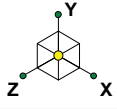
Ice Wind Loading 0

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Loads: BLC 18, Ice Wind Load AZI 30

Infinigy Engineering, PLLC

JG

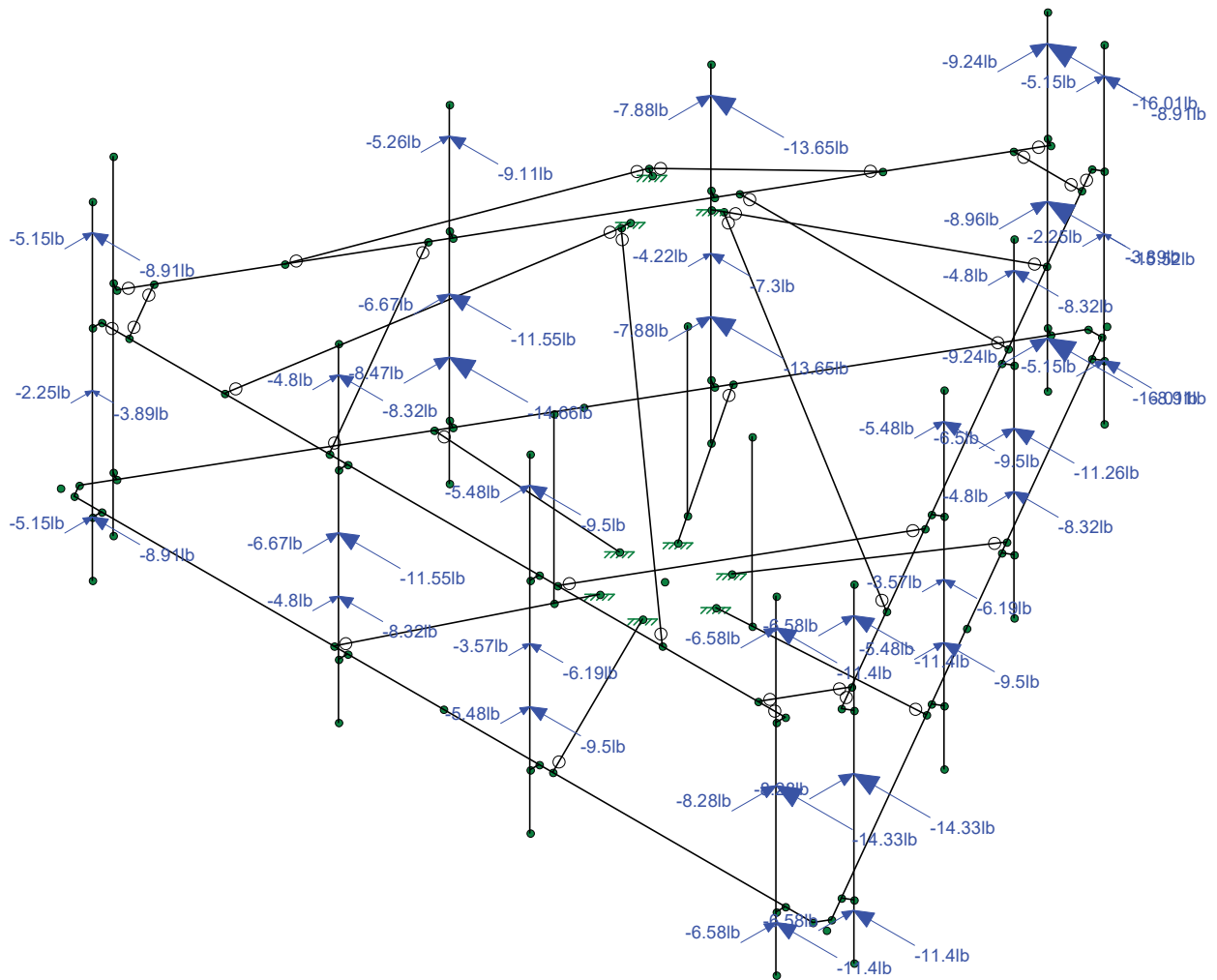
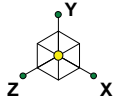
1039-Z0001-B

876346_CTV1094

Ice Wind Loading 30

May 6, 2020 at 2:26 PM

Modified_876346_CTV1094_loade...



Loads: BLC 19, Ice Wind Load AZI 60

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JG

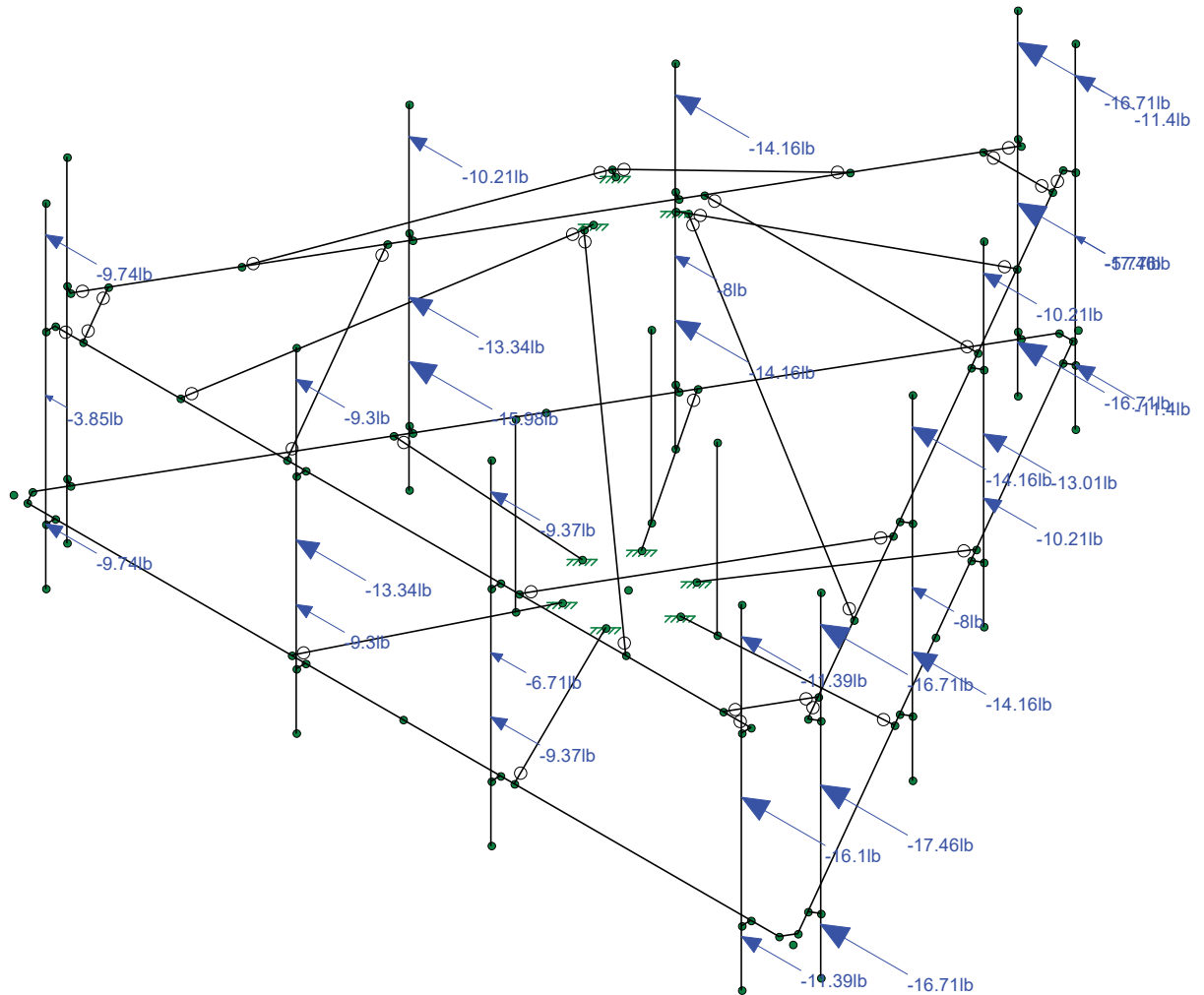
1039-Z0001-B

876346_CTV1094

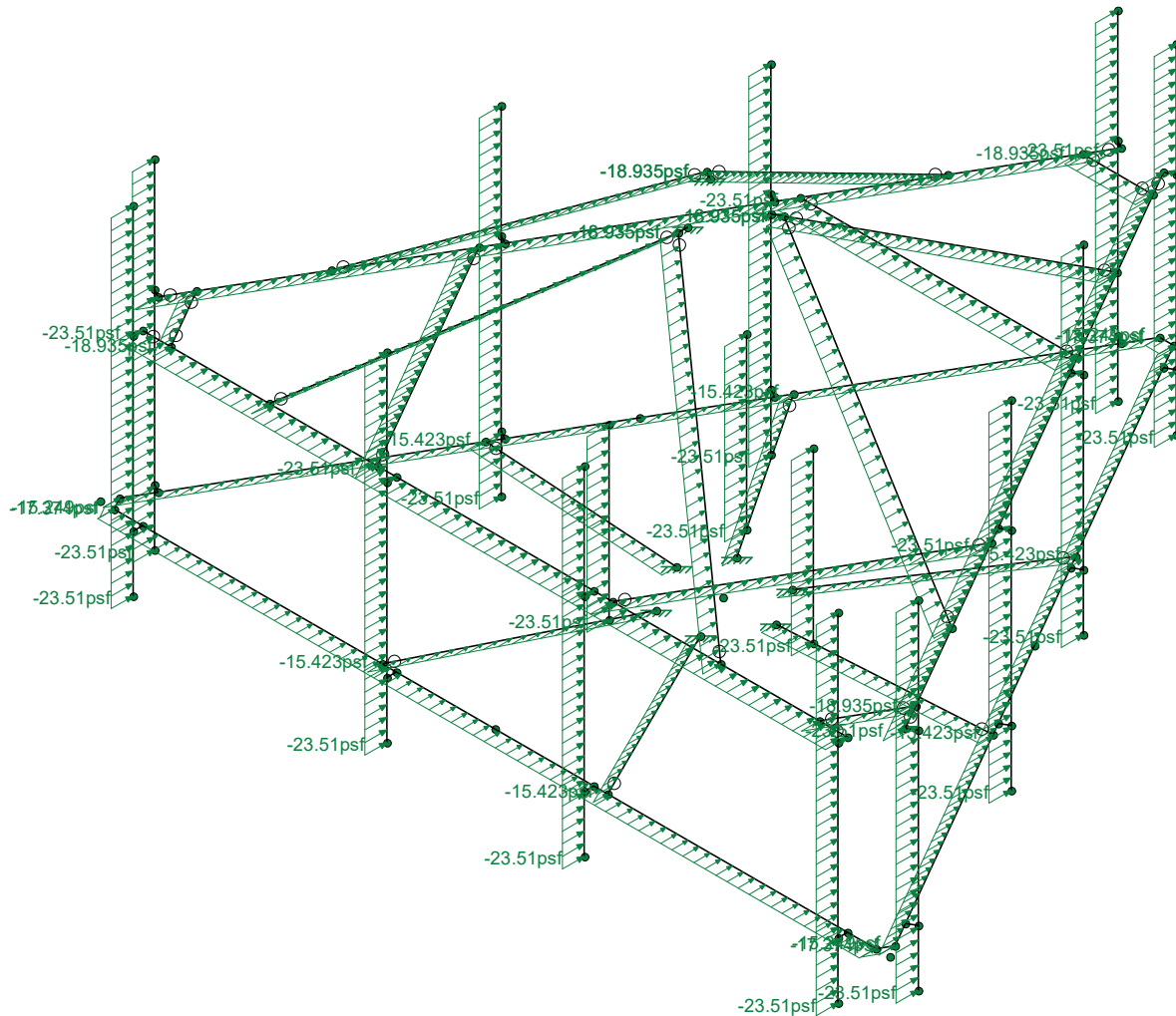
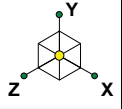
Ice Wind Loading 60

May 6, 2020 at 2:26 PM

Modified_876346_CTV1094_loade...



Modified_876346_CTV1094_loade...

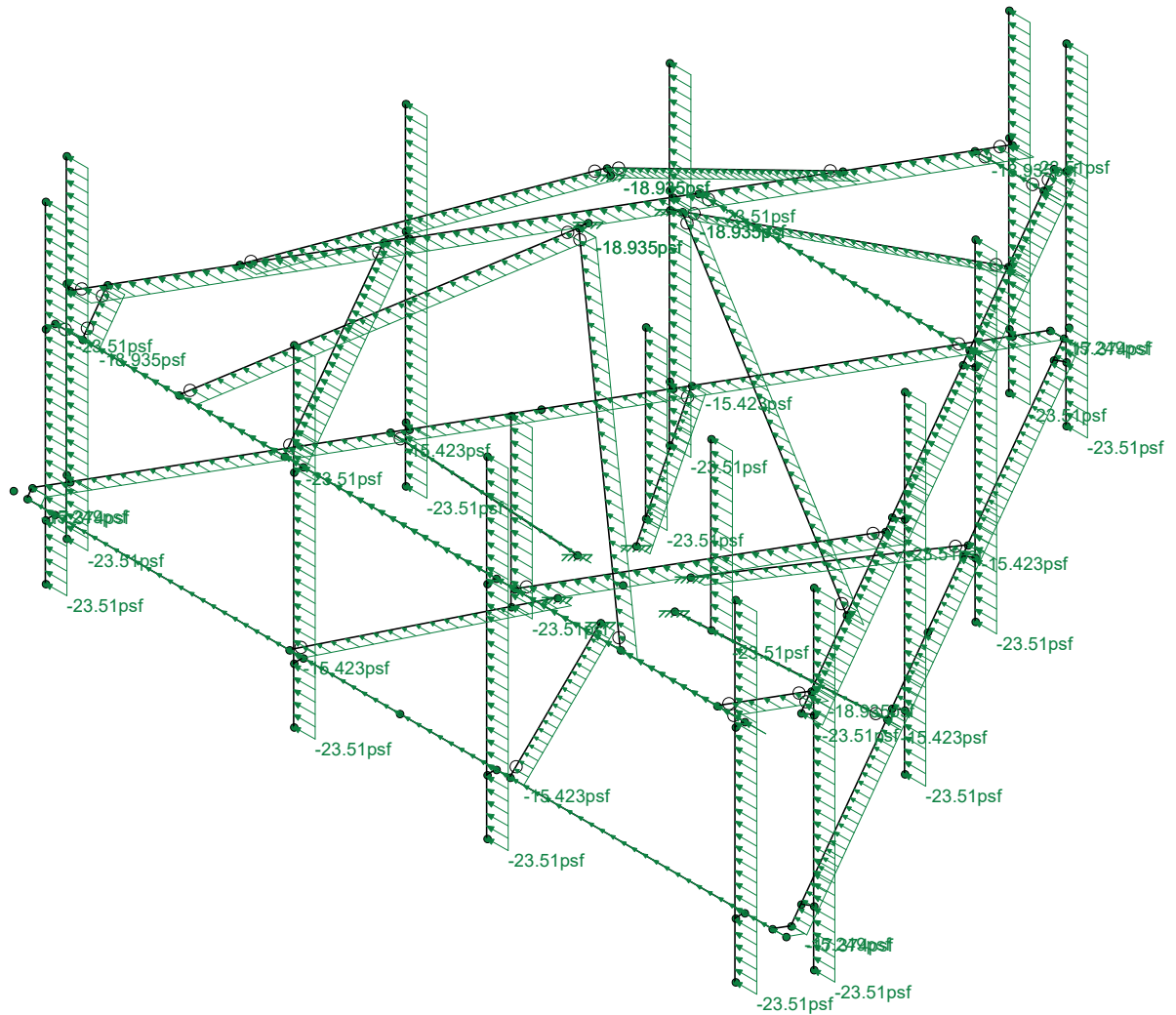
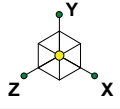


Loads: BLC 29, Distr. Ice Wind Load Z

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JG
1039-Z0001-B

876346_CTV1094

Dist. Ice Wind Loading 0
May 6, 2020 at 2:27 PM
Modified_876346_CTV1094_loade...



Loads: BLC 30, Distr. Ice Wind Load X

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JG

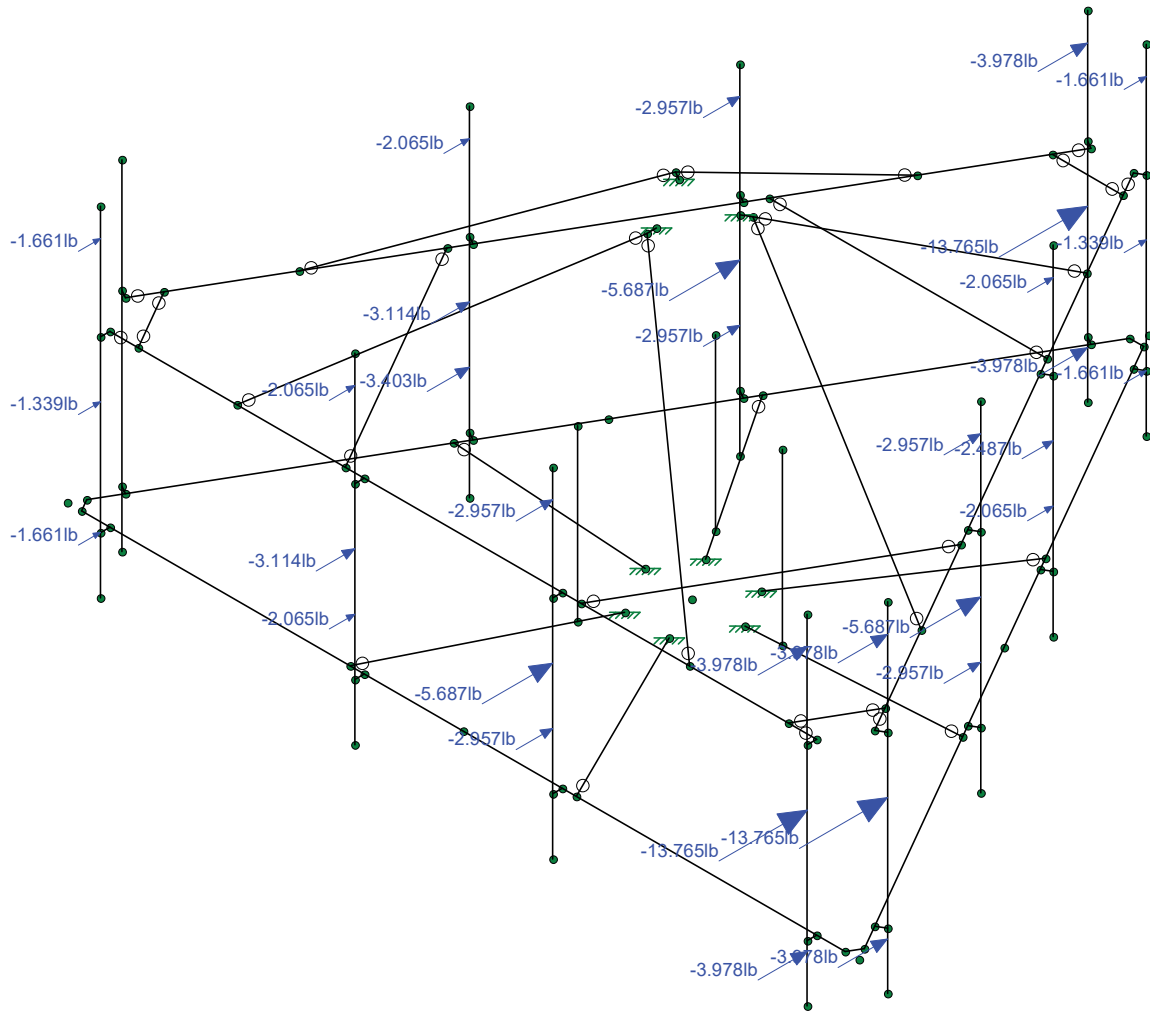
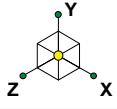
1039-Z0001-B

876346_CTV1094

Dist. Ice Wind Loading 90

May 6, 2020 at 2:27 PM

Modified_876346_CTV1094_loade...



Loads: BLC 31, Seismic Load Z

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JG

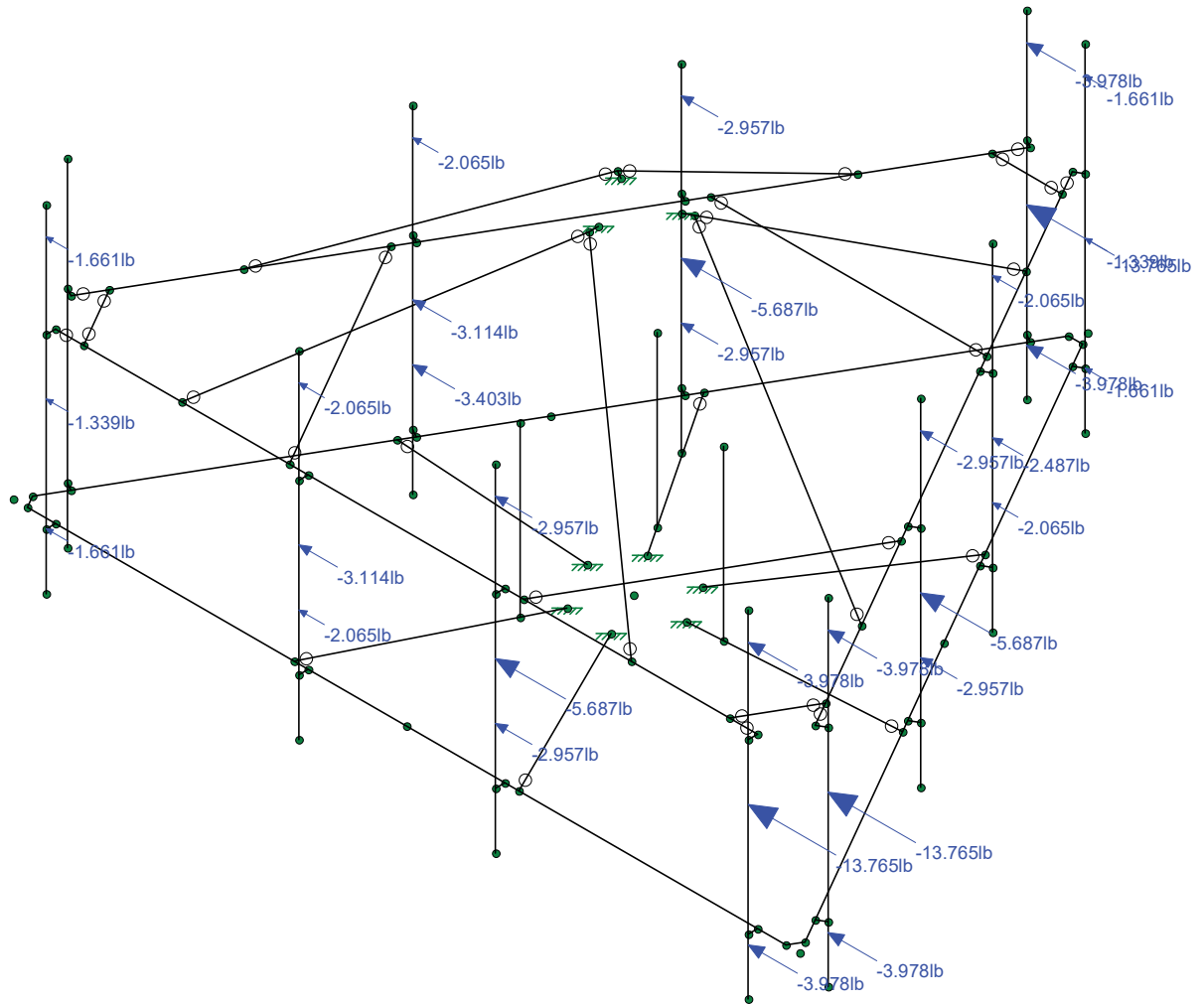
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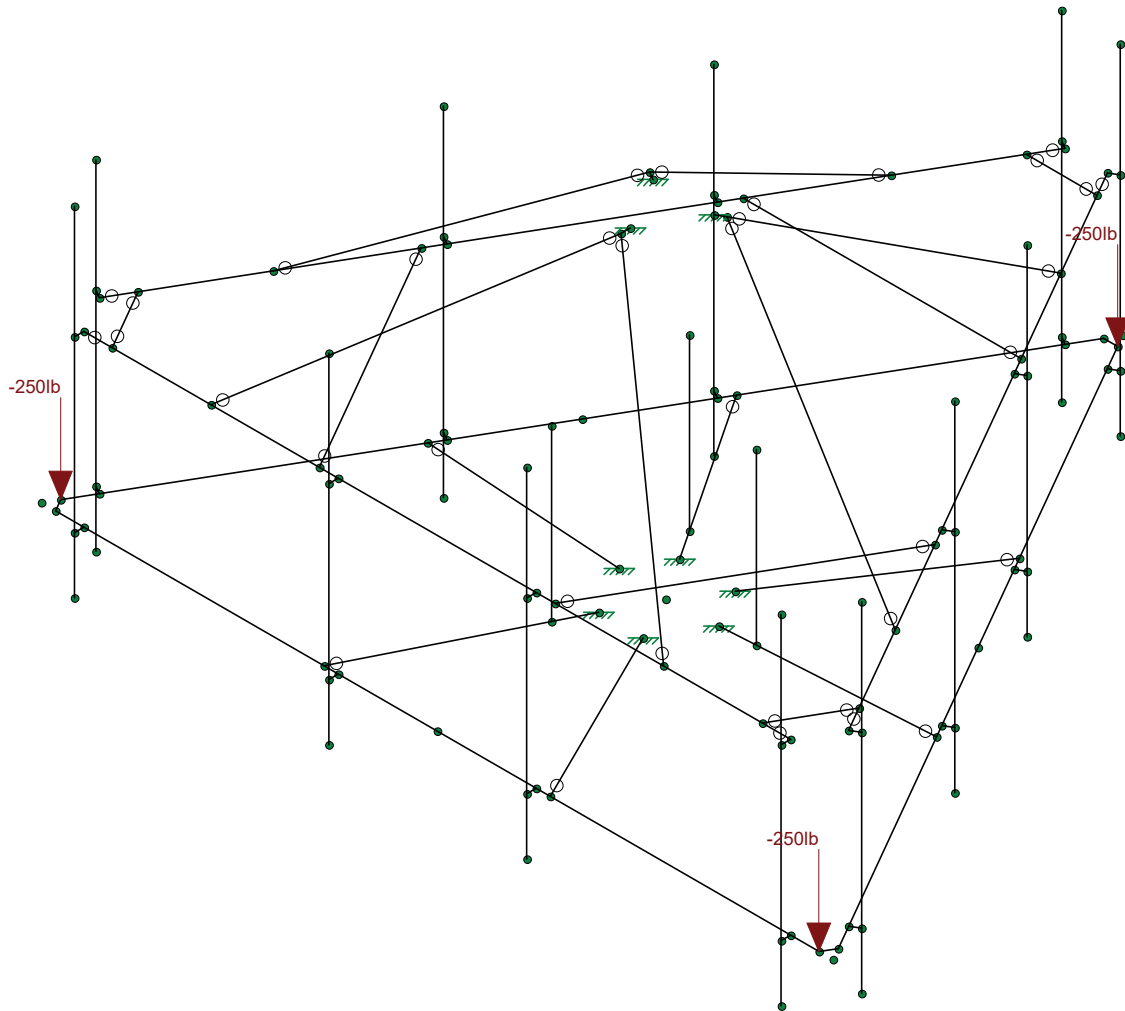
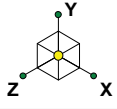
Seismic Loading 0

May 6, 2020 at 2:27 PM

Modified_876346_CTV1094_loade...



Modified_876346_CTV1094_loade...



Loads: BLC 33, Service Live Loads

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JG

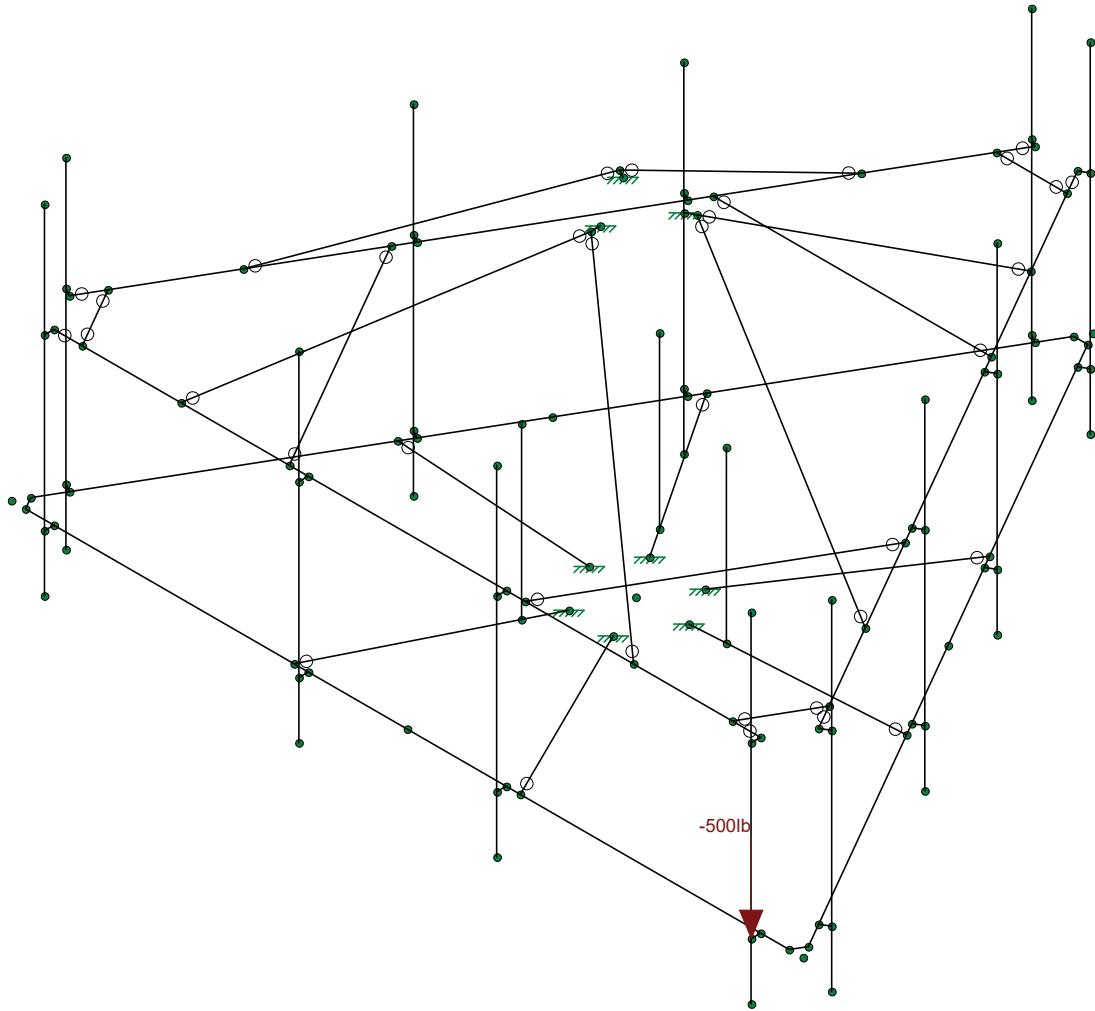
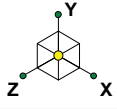
1039-Z0001-B

876346_CTV1094

Service

May 6, 2020 at 2:27 PM

Modified_876346_CTV1094_loade...



Loads: BLC 34, Maintenance Load 1

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JG

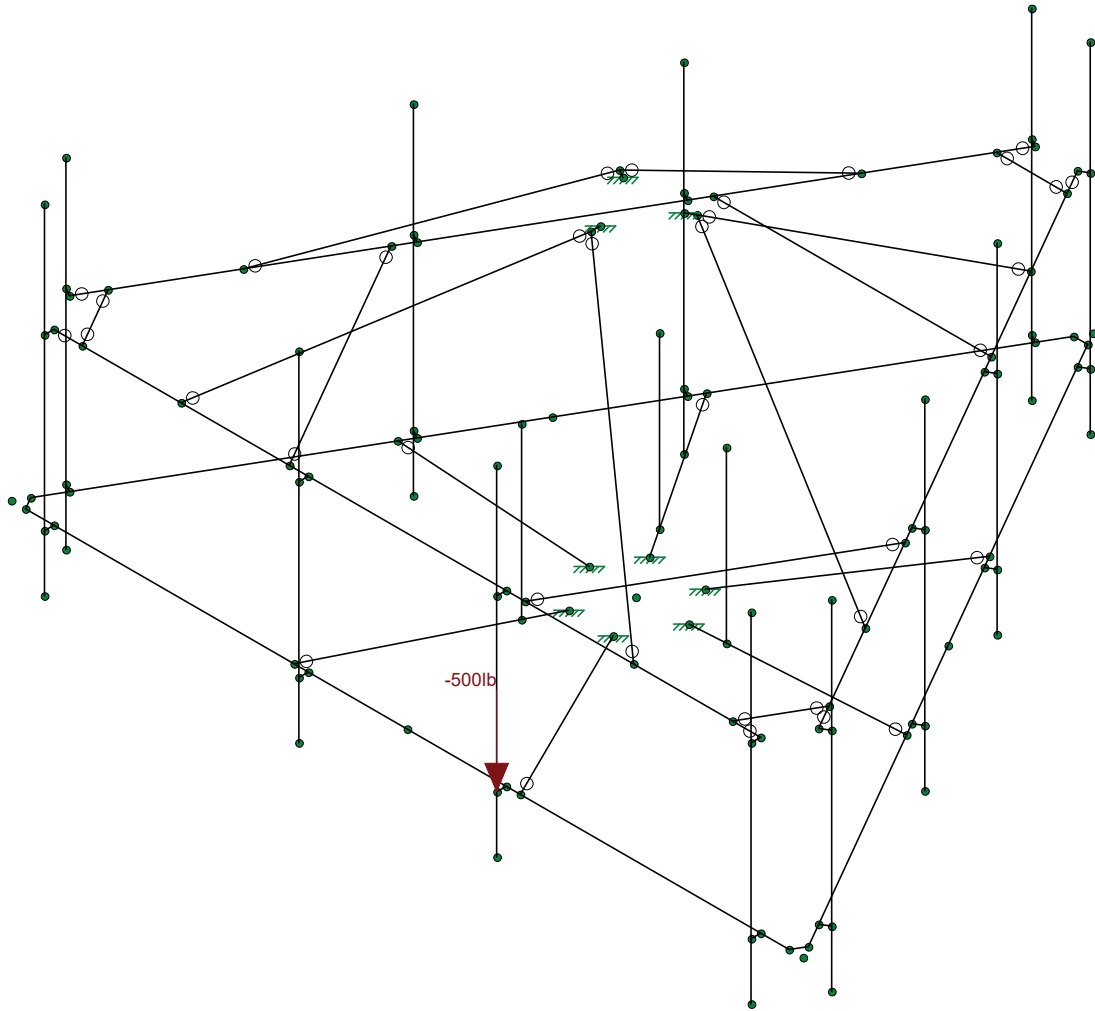
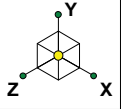
1039-Z0001-B

876346_CTV1094

Maintenance Load 1

May 6, 2020 at 2:27 PM

Modified_876346_CTV1094_loade...



Loads: BLC 35, Maintenance Load 2

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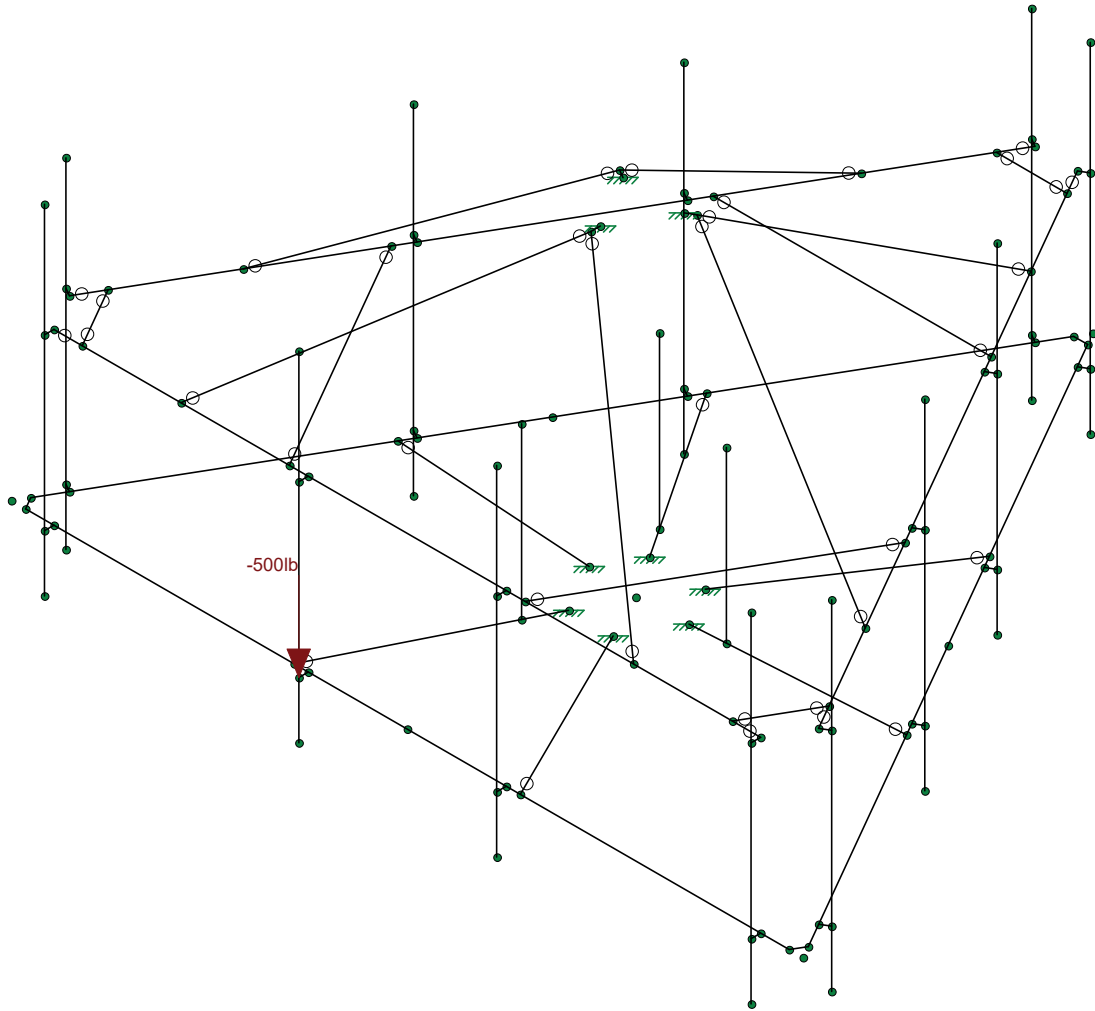
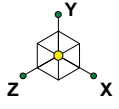
1039-Z0001-B

876346_CTV1094

Maintenance Load 2

May 6, 2020 at 2:28 PM

Modified_876346_CTV1094_loade...



Loads: BLC 36, Maintenance Load 3

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JG

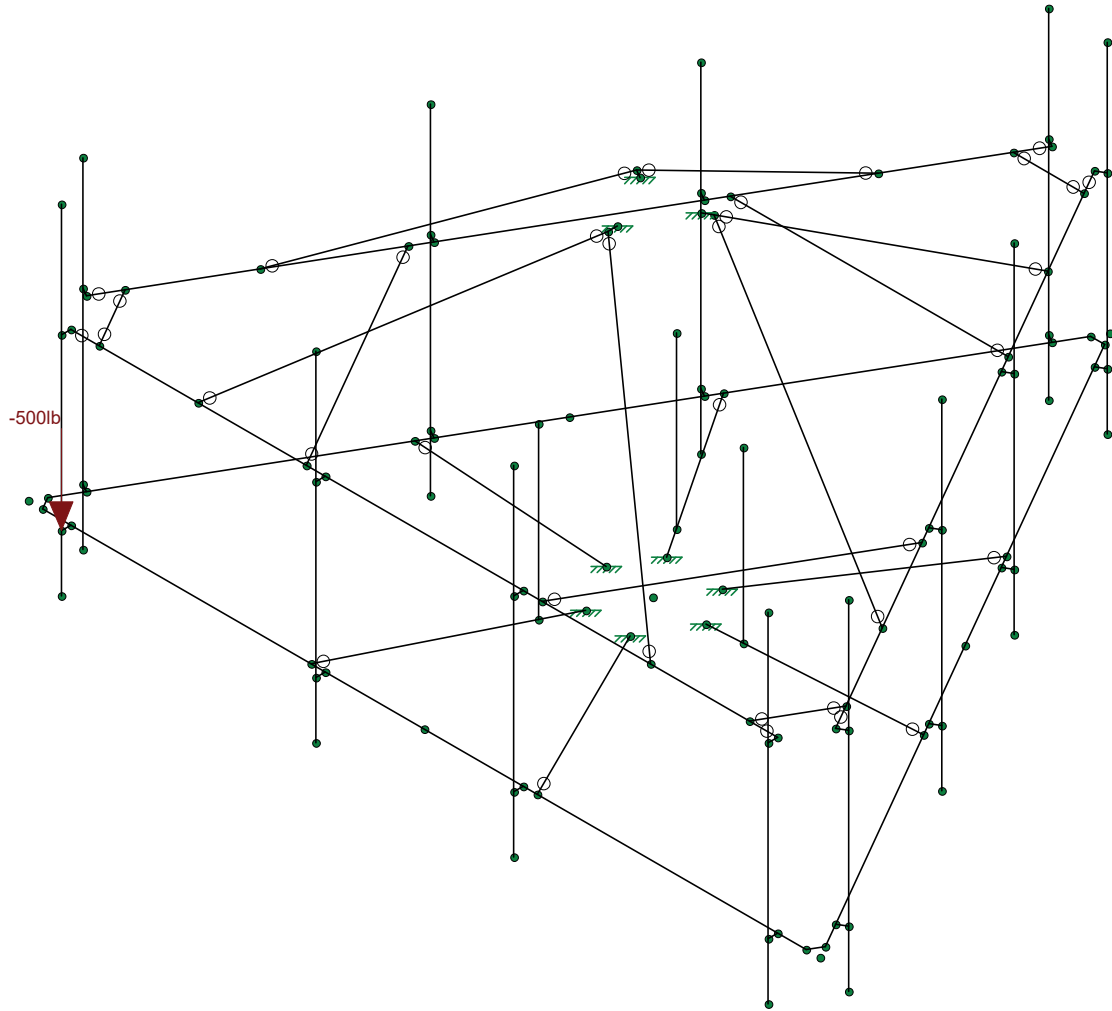
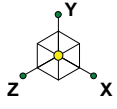
1039-Z0001-B

876346_CTV1094

Maintenance Load 3

May 6, 2020 at 2:28 PM

Modified_876346_CTV1094_loade...



Loads: BLC 37, Maintenance Load 4

Infinigy Engineering, PLLC

JG

1039-Z0001-B

876346_CTV1094

Maintenance Load 4

May 6, 2020 at 2:28 PM

Modified_876346_CTV1094_loade...

APPENDIX B
SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION		
Client:	Crown Castle	
Carrier:	AT&T	
Engineer:	Jacques Grimaldi	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil	
Ground Elevation:	840.5	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	137.0	ft
Tower Height AGL:	150.0	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_g):	0.97	*Rev H Only
Rooftop Speed-Up (K_z):	1.00	*Rev H Only
Topographic Factor (K_{zt}):	1.00	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2018 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-16	

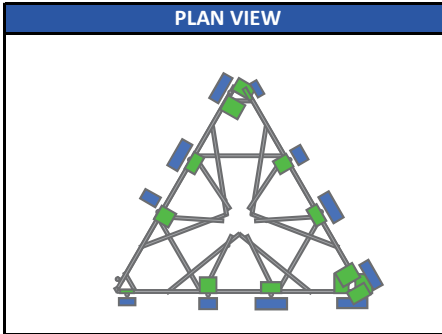
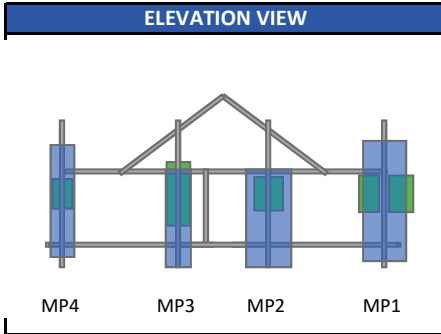
WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	118	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	88.84	psf
Round Pressure:	53.31	psf
Ice Wind Pressure:	9.57	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.18	g
1-Second Accel. (S_1):	0.06	g
Short-Period Design (S_{DS}):	0.19	
1-Second Design (S_{D1}):	0.09	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	



Infinigy Load Calculator V2.1.4

Program Inputs

[illegible]

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N4	N6		270	Horizontals	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N5	N9			Standoff	Beam	Tube	A500 Gr.B...	Typical
3	M3	N7	N10			Standoff	Beam	Tube	A500 Gr.B...	Typical
4	M4	N15	N11			RIGID	None	None	RIGID	Typical
5	M5	N17	N13			RIGID	None	None	RIGID	Typical
6	M6	N18	N14			RIGID	None	None	RIGID	Typical
7	M7	N16	N12			RIGID	None	None	RIGID	Typical
8	MP1	N20	N24			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
9	MP2	N22	N26			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
10	MP3	N21	N25			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
11	MP4	N19	N23			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
12	M12	N30	N32		270	Horizontals	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N31	N35			Standoff	Beam	Tube	A500 Gr.B...	Typical
14	M14	N33	N36			Standoff	Beam	Tube	A500 Gr.B...	Typical
15	M15	N41	N37			RIGID	None	None	RIGID	Typical
16	M16	N43	N39			RIGID	None	None	RIGID	Typical
17	M17	N44	N40			RIGID	None	None	RIGID	Typical
18	M18	N42	N38			RIGID	None	None	RIGID	Typical
19	MP9	N46	N50			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
20	MP10	N48	N52			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
21	MP11	N47	N51			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
22	MP12	N45	N49			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
23	M23	N56	N58		270	Horizontals	Beam	Single Angle	A36 Gr.36	Typical
24	M24	N57	N61			Standoff	Beam	Tube	A500 Gr.B...	Typical
25	M25	N59	N62			Standoff	Beam	Tube	A500 Gr.B...	Typical
26	M26	N67	N63			RIGID	None	None	RIGID	Typical
27	M27	N69	N65			RIGID	None	None	RIGID	Typical
28	M28	N70	N66			RIGID	None	None	RIGID	Typical
29	M29	N68	N64			RIGID	None	None	RIGID	Typical
30	MP5	N72	N76			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
31	MP6	N74	N78			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
32	MP7	N73	N77			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
33	MP8	N71	N75			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
34	M36	N56	N32			Corners	Beam	Single Angle	A36 Gr.36	Typical
35	M37	N74A	N77A			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
36	M38	N76A	N79			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
37	M39	N75A	N78A			Mount Pipes	Beam	Pipe	A53 Gr.B	Typical
38	M38A	N30	N6			Corners	Beam	Single Angle	A36 Gr.36	Typical
39	M39A	N4	N58			Corners	Beam	Single Angle	A36 Gr.36	Typical
40	M40	N86	N83			PRK-SFS-L	Beam	Single Angle	A36 Gr.36	Typical
41	M41	N86	N84			PRK-SFS-L	Beam	Single Angle	A36 Gr.36	Typical
42	M42	N87	N87A			PRK-SFS-L	Beam	Single Angle	A36 Gr.36	Typical
43	M43	N87	N88A			PRK-SFS-L	Beam	Single Angle	A36 Gr.36	Typical
44	M44	N88	N91			PRK-SFS-L	Beam	Single Angle	A36 Gr.36	Typical
45	M45	N88	N92			PRK-SFS-L	Beam	Single Angle	A36 Gr.36	Typical
46	M46	N89	N93			RIGID	None	None	RIGID	Typical
47	M47	N91A	N95			RIGID	None	None	RIGID	Typical
48	M48	N92A	N96			RIGID	None	None	RIGID	Typical
49	M49	N90	N94			RIGID	None	None	RIGID	Typical
50	M50	N93	N94			HRK	Beam	Pipe	A53 Gr.B	Typical
51	M51	N100	N104			RIGID	None	None	RIGID	Typical
52	M52	N102	N106			RIGID	None	None	RIGID	Typical
53	M53	N103	N107			RIGID	None	None	RIGID	Typical
54	M54	N101	N105			RIGID	None	None	RIGID	Typical
55	M55	N104	N105			HRK	Beam	Pipe	A53 Gr.B	Typical
56	M56	N111	N115			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M57	N113	N117			RIGID	None	None	RIGID	Typical
58	M58	N114	N118			RIGID	None	None	RIGID	Typical
59	M59	N112	N116			RIGID	None	None	RIGID	Typical
60	M60	N115	N116			HRK	Beam	Pipe	A53 Gr.B	Typical
61	M61	N97	N120			HRK	Beam	Pipe	A53 Gr.B	Typical
62	M62	N119	N109			HRK	Beam	Pipe	A53 Gr.B	Typical
63	M63	N108	N98			HRK	Beam	Pipe	A53 Gr.B	Typical
64	M64	N119A	N124			HRK Angle	Beam	Single Angle	A36 Gr.36	Typical
65	M65	N121	N123			HRK Angle	Beam	Single Angle	A36 Gr.36	Typical
66	M66	N120A	N122			HRK Angle	Beam	Single Angle	A36 Gr.36	Typical
67	M67	N86	N125			RIGID	None	None	RIGID	Typical
68	M68	N87	N128			RIGID	None	None	RIGID	Typical
69	M69	N88	N131			RIGID	None	None	RIGID	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		27	54	0
3	Total General		27	54	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	L2.5x2.5x3	9	474.3	.121
7	A36 Gr.36	L3X3X6	3	486	.291
8	A36 Gr.36	L5X3X4	3	9	.005
9	A500 Gr.B Rect	HSS4X4X4	6	261	.268
10	A53 Gr.B	PIPE_2.0	21	1599	.462
11	Total HR Steel		42	2829.3	1.148

Basic Load Cases

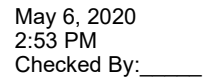
	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface(Plate/Wall)
1	Self Weight	DL		-1			37			
2	Wind Load AZI 0	WLZ					74			
3	Wind Load AZI 30	None					74			
4	Wind Load AZI 60	None					74			
5	Wind Load AZI 90	WLX					74			
6	Wind Load AZI 1...	None					74			
7	Wind Load AZI 1...	None					74			
8	Wind Load AZI 1...	None					74			
9	Wind Load AZI 2...	None					74			
10	Wind Load AZI 2...	None					74			
11	Wind Load AZI 2...	None					74			
12	Wind Load AZI 3...	None					74			
13	Wind Load AZI 3...	None					74			
14	Distr. Wind Load Z	WLZ						66		
15	Distr. Wind Load X	WLX						66		
16	Ice Weight	OL1					37	66		
17	Ice Wind Load AZ...	OL2					74			
18	Ice Wind Load AZ...	None					74			
19	Ice Wind Load AZ...	None					74			
20	Ice Wind Load AZ...	OL3					74			
21	Ice Wind Load AZ...	None					74			
22	Ice Wind Load AZ...	None					74			
23	Ice Wind Load AZ...	None					74			
24	Ice Wind Load AZ...	None					74			

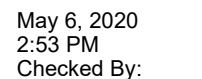
Basic Load Cases (Continued)

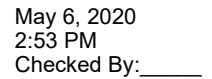
	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut	Area(M...	Surface(Plate/Wall)
25	Ice Wind Load AZ...	None					74			
26	Ice Wind Load AZ...	None					74			
27	Ice Wind Load AZ...	None					74			
28	Ice Wind Load AZ...	None					74			
29	Distr. Ice Wind Lo...	OL2						66		
30	Distr. Ice Wind Lo...	OL3						66		
31	Seismic Load Z	ELZ			-.095		37			
32	Seismic Load X	ELX	-.095				37			
33	Service Live Loads	LL				3				
34	Maintenance Loa...	LL				1				
35	Maintenance Loa...	LL				1				
36	Maintenance Loa...	LL				1				
37	Maintenance Loa...	LL				1				
38	Maintenance Loa...	LL				1				
39	Maintenance Loa...	LL				1				
40	Maintenance Loa...	LL				1				
41	Maintenance Loa...	LL				1				
42	Maintenance Loa...	LL				1				
43	Maintenance Loa...	LL				1				
44	Maintenance Loa...	LL				1				
45	Maintenance Loa...	LL				1				

Load Combinations

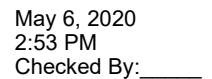
	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y			1	1.4													
2	1.2DL + 1WL AZI 0	Yes	Y			1	1.2	2	1	14	1	15								
3	1.2DL + 1WL AZI 30	Yes	Y			1	1.2	3	1	14	.866	15	.5							
4	1.2DL + 1WL AZI 60	Yes	Y			1	1.2	4	1	14	.5	15	.866							
5	1.2DL + 1WL AZI 90	Yes	Y			1	1.2	5	1	14		15	1							
6	1.2DL + 1WL AZI 120	Yes	Y			1	1.2	6	1	14	-.5	15	.866							
7	1.2DL + 1WL AZI 150	Yes	Y			1	1.2	7	1	14	-.8...	15	.5							
8	1.2DL + 1WL AZI 180	Yes	Y			1	1.2	8	1	14	-1	15								
9	1.2DL + 1WL AZI 210	Yes	Y			1	1.2	9	1	14	-.8...	15	-.5							
10	1.2DL + 1WL AZI 240	Yes	Y			1	1.2	10	1	14	-.5	15	-.8...							
11	1.2DL + 1WL AZI 270	Yes	Y			1	1.2	11	1	14		15	-1							
12	1.2DL + 1WL AZI 300	Yes	Y			1	1.2	12	1	14	.5	15	-.8...							
13	1.2DL + 1WL AZI 330	Yes	Y			1	1.2	13	1	14	.866	15	-.5							
14	0.9DL + 1WL AZI 0	Yes	Y			1	.9	2	1	14	1	15								
15	0.9DL + 1WL AZI 30	Yes	Y			1	.9	3	1	14	.866	15	.5							
16	0.9DL + 1WL AZI 60	Yes	Y			1	.9	4	1	14	.5	15	.866							
17	0.9DL + 1WL AZI 90	Yes	Y			1	.9	5	1	14		15	1							
18	0.9DL + 1WL AZI 120	Yes	Y			1	.9	6	1	14	-.5	15	.866							
19	0.9DL + 1WL AZI 150	Yes	Y			1	.9	7	1	14	-.8...	15	.5							
20	0.9DL + 1WL AZI 180	Yes	Y			1	.9	8	1	14	-1	15								
21	0.9DL + 1WL AZI 210	Yes	Y			1	.9	9	1	14	-.8...	15	-.5							
22	0.9DL + 1WL AZI 240	Yes	Y			1	.9	10	1	14	-.5	15	-.8...							
23	0.9DL + 1WL AZI 270	Yes	Y			1	.9	11	1	14		15	-1							
24	0.9DL + 1WL AZI 300	Yes	Y			1	.9	12	1	14	.5	15	-.8...							
25	0.9DL + 1WL AZI 330	Yes	Y			1	.9	13	1	14	.866	15	-.5							
26	1.2D + 1.0Di	Yes	Y			1	1.2	16	1											
27	1.2D + 1.0Di + 1.0Wi AZI 0	Yes	Y			1	1.2	16	1	17	1	29	1	30						
28	1.2D + 1.0Di + 1.0Wi AZI 30	Yes	Y			1	1.2	16	1	18	1	29	.866	30	.5					
29	1.2D + 1.0Di + 1.0Wi AZI 60	Yes	Y			1	1.2	16	1	19	1	29	.5	30	.866					
30	1.2D + 1.0Di + 1.0Wi AZI 90	Yes	Y			1	1.2	16	1	20	1	29		30	1					
31	1.2D + 1.0Di + 1.0Wi AZI 120	Yes	Y			1	1.2	16	1	21	1	29	-.5	30	.866					

[illegible]

[illegible]



	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...
146	1.2DL + 1.5LM-MP6 + 1SWL...	Yes	Y			1	1.2	39	1.5	12	.065	14	.032	15	-0...														
147	1.2DL + 1.5LM-MP6 + 1SWL...	Yes	Y			1	1.2	39	1.5	13	.065	14	.056	15	-0...														
148	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	2	.065	14	.065	15															
149	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	3	.065	14	.056	15	.032														
150	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	4	.065	14	.032	15	.056														
151	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	5	.065	14		15	.065														
152	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	6	.065	14	-0...	15	.056														
153	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	7	.065	14	-0...	15	.032														
154	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	8	.065	14	-0...	15															
155	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	9	.065	14	-0...	15	-0...														
156	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	10	.065	14	-0...	15	-0...														
157	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	11	.065	14		15	-0...														
158	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	12	.065	14	.032	15	-0...														
159	1.2DL + 1.5LM-MP7 + 1SWL...	Yes	Y			1	1.2	40	1.5	13	.065	14	.056	15	-0...														
160	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	2	.065	14	.065	15															
161	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	3	.065	14	.056	15	.032														
162	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	4	.065	14	.032	15	.056														
163	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	5	.065	14		15	.065														
164	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	6	.065	14	-0...	15	.056														
165	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	7	.065	14	-0...	15	.032														
166	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	8	.065	14	-0...	15															
167	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	9	.065	14	-0...	15	-0...														
168	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	10	.065	14	-0...	15	-0...														
169	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	11	.065	14		15	-0...														
170	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	12	.065	14	.032	15	-0...														
171	1.2DL + 1.5LM-MP8 + 1SWL...	Yes	Y			1	1.2	41	1.5	13	.065	14	.056	15	-0...														
172	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	2	.065	14	.065	15															
173	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	3	.065	14	.056	15	.032														
174	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	4	.065	14	.032	15	.056														
175	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	5	.065	14		15	.065														
176	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	6	.065	14	-0...	15	.056														
177	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	7	.065	14	-0...	15	.032														
178	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	8	.065	14	-0...	15															
179	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	9	.065	14	-0...	15	-0...														
180	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	10	.065	14	-0...	15	-0...														
181	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	11	.065	14		15	-0...														
182	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	12	.065	14	.032	15	-0...														
183	1.2DL + 1.5LM-MP9 + 1SWL...	Yes	Y			1	1.2	42	1.5	13	.065	14	.056	15	-0...														
184	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	2	.065	14	.065	15															
185	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	3	.065	14	.056	15	.032														
186	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	4	.065	14	.032	15	.056														
187	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	5	.065	14		15	.065														
188	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	6	.065	14	-0...	15	.056														
189	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	7	.065	14	-0...	15	.032														
190	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	8	.065	14	-0...	15															
191	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	9	.065	14	-0...	15	-0...														
192	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	10	.065	14	-0...	15	-0...														
193	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	11	.065	14		15	-0...														
194	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	12	.065	14	.032	15	-0...														
195	1.2DL + 1.5LM-MP10 + 1SW...	Yes	Y			1	1.2	43	1.5	13	.065	14	.056	15	-0...														
196	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	2	.065	14	.065	15															
197	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	3	.065	14	.056	15	.032														
198	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	4	.065	14	.032	15	.056														
199	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	5	.065	14		15	.065														
200	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	6	.065	14	-0...	15	.056														
201	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	7	.065	14	-0...	15	.032														
202	1.2DL + 1.5LM-MP11 + 1SW...	Yes	Y			1	1.2	44	1.5	8	.065	14	-0...	15															

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

Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
13	MP10	PIPE 2.0	.294	48	13	.129	12		13	20866...	32130	1871.6...	1871.6...	2...H1-1b
14	M13	HSS4X4X4	.274	43.5	4	.048	43.5	y	31	13205...	139518	16180.5...	16180.5...	1...H1-1b
15	MP2	PIPE 2.0	.274	12	6	.096	48		9	20866...	32130	1871.6...	1871.6...	2...H1-1b
16	MP6	PIPE 2.0	.260	48	5	.119	12		5	20866...	32130	1871.6...	1871.6...	1...H1-1b
17	MP5	PIPE 2.0	.255	12	122	.032	12		122	20866...	32130	1871.6...	1871.6...	2...H1-1b
18	MP4	PIPE 2.0	.253	12	182	.032	48		174	20866...	32130	1871.6...	1871.6...	1...H1-1b
19	M14	HSS4X4X4	.245	43.5	8	.033	43.5	y	31	13205...	139518	16180.5...	16180.5...	1...H1-1b
20	M3	HSS4X4X4	.239	43.5	13	.048	43.5	y	27	13205...	139518	16180.5...	16180.5...	1...H1-1b
21	MP7	PIPE 2.0	.232	48	3	.091	12		3	20866...	32130	1871.6...	1871.6...	2...H1-1b
22	M43	L2.5x2.5x3	.229	35.777	18	.019	0	z	5	9236.0...	29192.4	872.574	1533.9...	1...H2-1
23	M44	L2.5x2.5x3	.215	35.032	22	.019	0	z	10	9236.0...	29192.4	872.574	1533.9...	1...H2-1
24	M2	HSS4X4X4	.215	43.5	13	.025	43.5	y	112	13205...	139518	16180.5...	16180.5...	1...H1-1b
25	M41	L2.5x2.5x3	.213	35.032	14	.020	0	z	13	9236.0...	29192.4	872.574	1533.9...	1...H2-1
26	M24	HSS4X4X4	.211	43.5	11	.040	43.5	y	35	13205...	139518	16180.5...	16180.5...	1...H1-1b
27	M25	HSS4X4X4	.205	43.5	11	.025	43.5	y	181	13205...	139518	16180.5...	16180.5...	1...H1-1b
28	M42	L2.5x2.5x3	.198	35.777	19	.021	71.554	z	7	9236.0...	29192.4	872.574	1533.9...	1...H2-1
29	M38A	L5X3X4	.189	3	4	.285	3	z	13	52710...	62856	1938.8...	5358.4...	1...H2-1
30	M45	L2.5x2.5x3	.181	35.777	21	.010	0	z	3	9236.0...	29192.4	872.574	1533.9...	1...H2-1
31	M36	L5X3X4	.178	0	8	.231	0	z	5	52710...	62856	1938.8...	5482.4...	1...H2-1
32	M40	L2.5x2.5x3	.175	35.032	14	.010	71.554	z	8	9236.0...	29192.4	872.574	1533.9...	1...H2-1
33	M39A	L5X3X4	.146	0	6	.089	3	y	118	52710...	62856	1938.8...	6808.6...	1...H2-1
34	M63	PIPE 2.0	.033	29.5	35	.031	59		7	24045...	32130	1871.6...	1871.6...	1...H1-1b
35	M62	PIPE 2.0	.032	29.5	27	.031	0		5	24045...	32130	1871.6...	1871.6...	1...H1-1b
36	M61	PIPE 2.0	.029	29.5	31	.032	59		3	24045...	32130	1871.6...	1871.6...	1...H1-1b
37	M39	PIPE 2.0	.026	0	9	.003	0		9	28843...	32130	1871.6...	1871.6...	2...H1-1b
38	M38	PIPE 2.0	.026	0	13	.003	0		13	28843...	32130	1871.6...	1871.6...	2...H1-1b
39	M37	PIPE 2.0	.026	0	10	.003	0		5	28843...	32130	1871.6...	1871.6...	2...H1-1b
40	M66	L2.5x2.5x3	.019	7.5	35	.150	15	z	13	27407...	29192.4	872.574	1971.83	1...H2-1
41	M65	L2.5x2.5x3	.018	7.5	27	.125	15	y	5	27407...	29192.4	872.574	1971.83	1...H2-1
42	M64	L2.5x2.5x3	.016	7.5	30	.071	0	z	9	27407...	29192.4	872.574	1971.83	1...H2-1

Joint Boundary Conditions

Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N62	Reaction	Reaction	Reaction	Reaction	Reaction
2	N61	Reaction	Reaction	Reaction	Reaction	Reaction
3	N36	Reaction	Reaction	Reaction	Reaction	Reaction
4	N35	Reaction	Reaction	Reaction	Reaction	Reaction
5	N10	Reaction	Reaction	Reaction	Reaction	Reaction
6	N9	Reaction	Reaction	Reaction	Reaction	Reaction
7	N86					
8	N88					
9	N87					
10	N125	Reaction	Reaction	Reaction	Reaction	Reaction
11	N128	Reaction	Reaction	Reaction	Reaction	Reaction
12	N131	Reaction	Reaction	Reaction	Reaction	Reaction

Member Advanced Data

Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1					Yes				None
2	M2	BenPIN				Yes	Default			None
3	M3	BenPIN				Yes	Default			None
4	M4					Yes	** NA **			None
5	M5					Yes	** NA **			None
6	M6					Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
7	M7						Yes	** NA **			None
8	MP1						Yes				None
9	MP2						Yes				None
10	MP3						Yes				None
11	MP4						Yes				None
12	M12						Yes				None
13	M13	BenPIN					Yes	Default			None
14	M14	BenPIN					Yes	Default			None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None
18	M18						Yes	** NA **			None
19	MP9						Yes				None
20	MP10						Yes				None
21	MP11						Yes				None
22	MP12						Yes				None
23	M23						Yes				None
24	M24	BenPIN					Yes	Default			None
25	M25	BenPIN					Yes	Default			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28						Yes	** NA **			None
29	M29						Yes	** NA **			None
30	MP5						Yes				None
31	MP6						Yes				None
32	MP7						Yes				None
33	MP8						Yes				None
34	M36						Yes				None
35	M37						Yes				None
36	M38						Yes				None
37	M39						Yes				None
38	M38A						Yes				None
39	M39A						Yes				None
40	M40	BenPIN	BenPIN				Yes	Default			None
41	M41	BenPIN	BenPIN				Yes	Default			None
42	M42	BenPIN	BenPIN				Yes	Default			None
43	M43	BenPIN	BenPIN				Yes	Default			None
44	M44	BenPIN	BenPIN				Yes	Default			None
45	M45	BenPIN	BenPIN				Yes	Default			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50	BenPIN	BenPIN				Yes				None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55	BenPIN	BenPIN				Yes				None
56	M56						Yes	** NA **			None
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	M60	BenPIN	BenPIN				Yes	Default			None
61	M61	BenPIN	BenPIN				Yes				None
62	M62	BenPIN	BenPIN				Yes				None
63	M63	BenPIN	BenPIN				Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
64	M64	BenPIN	BenPIN				Yes				None
65	M65	BenPIN	BenPIN				Yes	Default			None
66	M66	BenPIN	BenPIN				Yes				None
67	M67						Yes	** NA **			None
68	M68						Yes	** NA **			None
69	M69						Yes	** NA **			None

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	Y	-21.75	24
2	MP3	Y	-21.75	66
3	MP2	Y	-31.15	24
4	MP2	Y	-31.15	66
5	MP1	Y	-41.9	10
6	MP1	Y	-41.9	66
7	MP4	Y	-17.5	12
8	MP4	Y	-17.5	66
9	MP1	Y	-70	36
10	MP2	Y	-59.9	36
11	MP1	Y	-75	36
12	MP4	Y	-14.1	36
13	MP3	Y	-32.8	36
14	MP6	Y	-21.75	24
15	MP6	Y	-21.75	66
16	MP7	Y	-31.15	24
17	MP7	Y	-31.15	66
18	MP8	Y	-41.9	10
19	MP8	Y	-41.9	66
20	MP8	Y	-70	36
21	MP7	Y	-59.9	36
22	MP8	Y	-75	36
23	MP6	Y	-14.1	24
24	MP6	Y	-32.8	36
25	MP10	Y	-21.75	24
26	MP10	Y	-21.75	66
27	MP11	Y	-31.15	24
28	MP11	Y	-31.15	66
29	MP12	Y	-41.9	10
30	MP12	Y	-41.9	66
31	MP9	Y	-17.5	12
32	MP9	Y	-17.5	66
33	MP12	Y	-70	36
34	MP11	Y	-59.9	36
35	MP12	Y	-75	36
36	MP9	Y	-14.1	36
37	MP10	Y	-26.2	36

Member Point Loads (BLC 2 : Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	0	24
2	MP3	Z	-76.96	24
3	MP3	X	0	66
4	MP3	Z	-76.96	66
5	MP2	X	0	24
6	MP2	Z	-162.67	24

Member Point Loads (BLC 2 : Wind Load AZI 0) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
7	MP2	X	0	66
8	MP2	Z	-162.67	66
9	MP1	X	0	10
10	MP1	Z	-172.96	10
11	MP1	X	0	66
12	MP1	Z	-172.96	66
13	MP4	X	0	12
14	MP4	Z	-110.62	12
15	MP4	X	0	66
16	MP4	Z	-110.62	66
17	MP1	X	0	36
18	MP1	Z	-79.52	36
19	MP2	X	0	36
20	MP2	Z	-74	36
21	MP1	X	0	36
22	MP1	Z	-79.52	36
23	MP4	X	0	36
24	MP4	Z	-44.34	36
25	MP3	X	0	36
26	MP3	Z	-116.5	36
27	MP6	X	0	24
28	MP6	Z	-68.87	24
29	MP6	X	0	66
30	MP6	Z	-68.87	66
31	MP7	X	0	24
32	MP7	Z	-101.41	24
33	MP7	X	0	66
34	MP7	Z	-101.41	66
35	MP8	X	0	10
36	MP8	Z	-104.93	10
37	MP8	X	0	66
38	MP8	Z	-104.93	66
39	MP8	X	0	36
40	MP8	Z	-62.35	36
41	MP7	X	0	36
42	MP7	Z	-50.39	36
43	MP8	X	0	36
44	MP8	Z	-70.94	36
45	MP6	X	0	24
46	MP6	Z	-21.54	24
47	MP6	X	0	36
48	MP6	Z	-116.5	36
49	MP10	X	0	24
50	MP10	Z	-68.87	24
51	MP10	X	0	66
52	MP10	Z	-68.87	66
53	MP11	X	0	24
54	MP11	Z	-101.41	24
55	MP11	X	0	66
56	MP11	Z	-101.41	66
57	MP12	X	0	10
58	MP12	Z	-104.93	10
59	MP12	X	0	66
60	MP12	Z	-104.93	66
61	MP9	X	0	12
62	MP9	Z	-71.76	12
63	MP9	X	0	66

Member Point Loads (BLC 2 : Wind Load AZI 0) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
64	MP9	Z	-71.76	66
65	MP12	X	0	36
66	MP12	Z	-62.35	36
67	MP11	X	0	36
68	MP11	Z	-50.39	36
69	MP12	X	0	36
70	MP12	Z	-70.94	36
71	MP9	X	0	36
72	MP9	Z	-21.54	36
73	MP10	X	0	36
74	MP10	Z	-109.41	36

Member Point Loads (BLC 3 : Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
1	MP3	X	-37.13	24
2	MP3	Z	-64.32	24
3	MP3	X	-37.13	66
4	MP3	Z	-64.32	66
5	MP2	X	-71.12	24
6	MP2	Z	-123.19	24
7	MP2	X	-71.12	66
8	MP2	Z	-123.19	66
9	MP1	X	-75.14	10
10	MP1	Z	-130.15	10
11	MP1	X	-75.14	66
12	MP1	Z	-130.15	66
13	MP4	X	-48.83	12
14	MP4	Z	-84.58	12
15	MP4	X	-48.83	66
16	MP4	Z	-84.58	66
17	MP1	X	-36.9	36
18	MP1	Z	-63.91	36
19	MP2	X	-33.07	36
20	MP2	Z	-57.27	36
21	MP1	X	-38.33	36
22	MP1	Z	-66.39	36
23	MP4	X	-18.37	36
24	MP4	Z	-31.82	36
25	MP3	X	-58.25	36
26	MP3	Z	-100.89	36
27	MP6	X	-37.13	24
28	MP6	Z	-64.32	24
29	MP6	X	-37.13	66
30	MP6	Z	-64.32	66
31	MP7	X	-71.12	24
32	MP7	Z	-123.19	24
33	MP7	X	-71.12	66
34	MP7	Z	-123.19	66
35	MP8	X	-75.14	10
36	MP8	Z	-130.15	10
37	MP8	X	-75.14	66
38	MP8	Z	-130.15	66
39	MP8	X	-36.9	36
40	MP8	Z	-63.91	36
41	MP7	X	-33.07	36
42	MP7	Z	-57.27	36

Member Point Loads (BLC 3 : Wind Load AZI 30) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
43	MP8	X	-38.33	36
44	MP8	Z	-66.39	36
45	MP6	X	-18.37	24
46	MP6	Z	-31.82	24
47	MP6	X	-58.25	36
48	MP6	Z	-100.89	36
49	MP10	X	-33.09	24
50	MP10	Z	-57.31	24
51	MP10	X	-33.09	66
52	MP10	Z	-57.31	66
53	MP11	X	-40.5	24
54	MP11	Z	-70.14	24
55	MP11	X	-40.5	66
56	MP11	Z	-70.14	66
57	MP12	X	-41.13	10
58	MP12	Z	-71.23	10
59	MP12	X	-41.13	66
60	MP12	Z	-71.23	66
61	MP9	X	-29.4	12
62	MP9	Z	-50.92	12
63	MP9	X	-29.4	66
64	MP9	Z	-50.92	66
65	MP12	X	-28.31	36
66	MP12	Z	-49.04	36
67	MP11	X	-21.26	36
68	MP11	Z	-36.83	36
69	MP12	X	-34.04	36
70	MP12	Z	-58.96	36
71	MP9	X	-6.97	36
72	MP9	Z	-12.07	36
73	MP10	X	-54.71	36
74	MP10	Z	-94.75	36

Member Point Loads (BLC 4 : Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	-59.64	24
2	MP3	Z	-34.44	24
3	MP3	X	-59.64	66
4	MP3	Z	-34.44	66
5	MP2	X	-87.82	24
6	MP2	Z	-50.71	24
7	MP2	X	-87.82	66
8	MP2	Z	-50.71	66
9	MP1	X	-90.87	10
10	MP1	Z	-52.46	10
11	MP1	X	-90.87	66
12	MP1	Z	-52.46	66
13	MP4	X	-62.14	12
14	MP4	Z	-35.88	12
15	MP4	X	-62.14	66
16	MP4	Z	-35.88	66
17	MP1	X	-54	36
18	MP1	Z	-31.18	36
19	MP2	X	-43.64	36
20	MP2	Z	-25.2	36
21	MP1	X	-61.43	36

Member Point Loads (BLC 4 : Wind Load AZI 60) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
22	MP1	Z	-35.47	36
23	MP4	X	-18.65	36
24	MP4	Z	-10.77	36
25	MP3	X	-100.89	36
26	MP3	Z	-58.25	36
27	MP6	X	-66.65	24
28	MP6	Z	-38.48	24
29	MP6	X	-66.65	66
30	MP6	Z	-38.48	66
31	MP7	X	-140.88	24
32	MP7	Z	-81.33	24
33	MP7	X	-140.88	66
34	MP7	Z	-81.33	66
35	MP8	X	-149.79	10
36	MP8	Z	-86.48	10
37	MP8	X	-149.79	66
38	MP8	Z	-86.48	66
39	MP8	X	-68.87	36
40	MP8	Z	-39.76	36
41	MP7	X	-64.09	36
42	MP7	Z	-37	36
43	MP8	X	-68.87	36
44	MP8	Z	-39.76	36
45	MP6	X	-38.4	24
46	MP6	Z	-22.17	24
47	MP6	X	-100.89	36
48	MP6	Z	-58.25	36
49	MP10	X	-59.64	24
50	MP10	Z	-34.44	24
51	MP10	X	-59.64	66
52	MP10	Z	-34.44	66
53	MP11	X	-87.82	24
54	MP11	Z	-50.71	24
55	MP11	X	-87.82	66
56	MP11	Z	-50.71	66
57	MP12	X	-90.87	10
58	MP12	Z	-52.46	10
59	MP12	X	-90.87	66
60	MP12	Z	-52.46	66
61	MP9	X	-62.14	12
62	MP9	Z	-35.88	12
63	MP9	X	-62.14	66
64	MP9	Z	-35.88	66
65	MP12	X	-54	36
66	MP12	Z	-31.18	36
67	MP11	X	-43.64	36
68	MP11	Z	-25.2	36
69	MP12	X	-61.43	36
70	MP12	Z	-35.47	36
71	MP9	X	-18.65	36
72	MP9	Z	-10.77	36
73	MP10	X	-94.75	36
74	MP10	Z	-54.71	36

Member Point Loads (BLC 5 : Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
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Member Point Loads (BLC 5 : Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
1	MP3	X	-66.17	24
2	MP3	Z	0	24
3	MP3	X	-66.17	66
4	MP3	Z	0	66
5	MP2	X	-80.99	24
6	MP2	Z	0	24
7	MP2	X	-80.99	66
8	MP2	Z	0	66
9	MP1	X	-82.25	10
10	MP1	Z	0	10
11	MP1	X	-82.25	66
12	MP1	Z	0	66
13	MP4	X	-58.8	12
14	MP4	Z	0	12
15	MP4	X	-58.8	66
16	MP4	Z	0	66
17	MP1	X	-56.63	36
18	MP1	Z	0	36
19	MP2	X	-42.52	36
20	MP2	Z	0	36
21	MP1	X	-68.08	36
22	MP1	Z	0	36
23	MP4	X	-13.94	36
24	MP4	Z	0	36
25	MP3	X	-116.5	36
26	MP3	Z	0	36
27	MP6	X	-74.27	24
28	MP6	Z	0	24
29	MP6	X	-74.27	66
30	MP6	Z	0	66
31	MP7	X	-142.25	24
32	MP7	Z	0	24
33	MP7	X	-142.25	66
34	MP7	Z	0	66
35	MP8	X	-150.28	10
36	MP8	Z	0	10
37	MP8	X	-150.28	66
38	MP8	Z	0	66
39	MP8	X	-73.8	36
40	MP8	Z	0	36
41	MP7	X	-66.13	36
42	MP7	Z	0	36
43	MP8	X	-76.66	36
44	MP8	Z	0	36
45	MP6	X	-36.74	24
46	MP6	Z	0	24
47	MP6	X	-116.5	36
48	MP6	Z	0	36
49	MP10	X	-74.27	24
50	MP10	Z	0	24
51	MP10	X	-74.27	66
52	MP10	Z	0	66
53	MP11	X	-142.25	24
54	MP11	Z	0	24
55	MP11	X	-142.25	66
56	MP11	Z	0	66
57	MP12	X	-150.28	10

Member Point Loads (BLC 5 : Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
58	MP12	Z	0	10
59	MP12	X	-150.28	66
60	MP12	Z	0	66
61	MP9	X	-97.66	12
62	MP9	Z	0	12
63	MP9	X	-97.66	66
64	MP9	Z	0	66
65	MP12	X	-73.8	36
66	MP12	Z	0	36
67	MP11	X	-66.13	36
68	MP11	Z	0	36
69	MP12	X	-76.66	36
70	MP12	Z	0	36
71	MP9	X	-36.74	36
72	MP9	Z	0	36
73	MP10	X	-109.41	36
74	MP10	Z	0	36

Member Point Loads (BLC 6 : Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	-59.64	24
2	MP3	Z	34.44	24
3	MP3	X	-59.64	66
4	MP3	Z	34.44	66
5	MP2	X	-87.82	24
6	MP2	Z	50.71	24
7	MP2	X	-87.82	66
8	MP2	Z	50.71	66
9	MP1	X	-90.87	10
10	MP1	Z	52.46	10
11	MP1	X	-90.87	66
12	MP1	Z	52.46	66
13	MP4	X	-62.14	12
14	MP4	Z	35.88	12
15	MP4	X	-62.14	66
16	MP4	Z	35.88	66
17	MP1	X	-54	36
18	MP1	Z	31.18	36
19	MP2	X	-43.64	36
20	MP2	Z	25.2	36
21	MP1	X	-61.43	36
22	MP1	Z	35.47	36
23	MP4	X	-18.65	36
24	MP4	Z	10.77	36
25	MP3	X	-100.89	36
26	MP3	Z	58.25	36
27	MP6	X	-59.64	24
28	MP6	Z	34.44	24
29	MP6	X	-59.64	66
30	MP6	Z	34.44	66
31	MP7	X	-87.82	24
32	MP7	Z	50.71	24
33	MP7	X	-87.82	66
34	MP7	Z	50.71	66
35	MP8	X	-90.87	10
36	MP8	Z	52.46	10

Member Point Loads (BLC 6 : Wind Load AZI 120) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
37	MP8	X	-90.87	66
38	MP8	Z	52.46	66
39	MP8	X	-54	36
40	MP8	Z	31.18	36
41	MP7	X	-43.64	36
42	MP7	Z	25.2	36
43	MP8	X	-61.43	36
44	MP8	Z	35.47	36
45	MP6	X	-18.65	24
46	MP6	Z	10.77	24
47	MP6	X	-100.89	36
48	MP6	Z	58.25	36
49	MP10	X	-66.65	24
50	MP10	Z	38.48	24
51	MP10	X	-66.65	66
52	MP10	Z	38.48	66
53	MP11	X	-140.88	24
54	MP11	Z	81.33	24
55	MP11	X	-140.88	66
56	MP11	Z	81.33	66
57	MP12	X	-149.79	10
58	MP12	Z	86.48	10
59	MP12	X	-149.79	66
60	MP12	Z	86.48	66
61	MP9	X	-95.8	12
62	MP9	Z	55.31	12
63	MP9	X	-95.8	66
64	MP9	Z	55.31	66
65	MP12	X	-68.87	36
66	MP12	Z	39.76	36
67	MP11	X	-64.09	36
68	MP11	Z	37	36
69	MP12	X	-68.87	36
70	MP12	Z	39.76	36
71	MP9	X	-38.4	36
72	MP9	Z	22.17	36
73	MP10	X	-94.75	36
74	MP10	Z	54.71	36

Member Point Loads (BLC 7 : Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	-37.13	24
2	MP3	Z	64.32	24
3	MP3	X	-37.13	66
4	MP3	Z	64.32	66
5	MP2	X	-71.12	24
6	MP2	Z	123.19	24
7	MP2	X	-71.12	66
8	MP2	Z	123.19	66
9	MP1	X	-75.14	10
10	MP1	Z	130.15	10
11	MP1	X	-75.14	66
12	MP1	Z	130.15	66
13	MP4	X	-48.83	12
14	MP4	Z	84.58	12
15	MP4	X	-48.83	66

Member Point Loads (BLC 7 : Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
16	MP4	Z	84.58	66
17	MP1	X	-36.9	36
18	MP1	Z	63.91	36
19	MP2	X	-33.07	36
20	MP2	Z	57.27	36
21	MP1	X	-38.33	36
22	MP1	Z	66.39	36
23	MP4	X	-18.37	36
24	MP4	Z	31.82	36
25	MP3	X	-58.25	36
26	MP3	Z	100.89	36
27	MP6	X	-33.09	24
28	MP6	Z	57.31	24
29	MP6	X	-33.09	66
30	MP6	Z	57.31	66
31	MP7	X	-40.5	24
32	MP7	Z	70.14	24
33	MP7	X	-40.5	66
34	MP7	Z	70.14	66
35	MP8	X	-41.13	10
36	MP8	Z	71.23	10
37	MP8	X	-41.13	66
38	MP8	Z	71.23	66
39	MP8	X	-28.31	36
40	MP8	Z	49.04	36
41	MP7	X	-21.26	36
42	MP7	Z	36.83	36
43	MP8	X	-34.04	36
44	MP8	Z	58.96	36
45	MP6	X	-6.97	24
46	MP6	Z	12.07	24
47	MP6	X	-58.25	36
48	MP6	Z	100.89	36
49	MP10	X	-37.13	24
50	MP10	Z	64.32	24
51	MP10	X	-37.13	66
52	MP10	Z	64.32	66
53	MP11	X	-71.12	24
54	MP11	Z	123.19	24
55	MP11	X	-71.12	66
56	MP11	Z	123.19	66
57	MP12	X	-75.14	10
58	MP12	Z	130.15	10
59	MP12	X	-75.14	66
60	MP12	Z	130.15	66
61	MP9	X	-48.83	12
62	MP9	Z	84.58	12
63	MP9	X	-48.83	66
64	MP9	Z	84.58	66
65	MP12	X	-36.9	36
66	MP12	Z	63.91	36
67	MP11	X	-33.07	36
68	MP11	Z	57.27	36
69	MP12	X	-38.33	36
70	MP12	Z	66.39	36
71	MP9	X	-18.37	36
72	MP9	Z	31.82	36

Member Point Loads (BLC 7 : Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
73	MP10	X	-54.71	36
74	MP10	Z	94.75	36

Member Point Loads (BLC 8 : Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	0	24
2	MP3	Z	76.96	24
3	MP3	X	0	66
4	MP3	Z	76.96	66
5	MP2	X	0	24
6	MP2	Z	162.67	24
7	MP2	X	0	66
8	MP2	Z	162.67	66
9	MP1	X	0	10
10	MP1	Z	172.96	10
11	MP1	X	0	66
12	MP1	Z	172.96	66
13	MP4	X	0	12
14	MP4	Z	110.62	12
15	MP4	X	0	66
16	MP4	Z	110.62	66
17	MP1	X	0	36
18	MP1	Z	79.52	36
19	MP2	X	0	36
20	MP2	Z	74	36
21	MP1	X	0	36
22	MP1	Z	79.52	36
23	MP4	X	0	36
24	MP4	Z	44.34	36
25	MP3	X	0	36
26	MP3	Z	116.5	36
27	MP6	X	0	24
28	MP6	Z	68.87	24
29	MP6	X	0	66
30	MP6	Z	68.87	66
31	MP7	X	0	24
32	MP7	Z	101.41	24
33	MP7	X	0	66
34	MP7	Z	101.41	66
35	MP8	X	0	10
36	MP8	Z	104.93	10
37	MP8	X	0	66
38	MP8	Z	104.93	66
39	MP8	X	0	36
40	MP8	Z	62.35	36
41	MP7	X	0	36
42	MP7	Z	50.39	36
43	MP8	X	0	36
44	MP8	Z	70.94	36
45	MP6	X	0	24
46	MP6	Z	21.54	24
47	MP6	X	0	36
48	MP6	Z	116.5	36
49	MP10	X	0	24
50	MP10	Z	68.87	24
51	MP10	X	0	66

Member Point Loads (BLC 8 : Wind Load AZI 180) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
52	MP10	Z	68.87	66
53	MP11	X	0	24
54	MP11	Z	101.41	24
55	MP11	X	0	66
56	MP11	Z	101.41	66
57	MP12	X	0	10
58	MP12	Z	104.93	10
59	MP12	X	0	66
60	MP12	Z	104.93	66
61	MP9	X	0	12
62	MP9	Z	71.76	12
63	MP9	X	0	66
64	MP9	Z	71.76	66
65	MP12	X	0	36
66	MP12	Z	62.35	36
67	MP11	X	0	36
68	MP11	Z	50.39	36
69	MP12	X	0	36
70	MP12	Z	70.94	36
71	MP9	X	0	36
72	MP9	Z	21.54	36
73	MP10	X	0	36
74	MP10	Z	109.41	36

Member Point Loads (BLC 9 : Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	37.13	24
2	MP3	Z	64.32	24
3	MP3	X	37.13	66
4	MP3	Z	64.32	66
5	MP2	X	71.12	24
6	MP2	Z	123.19	24
7	MP2	X	71.12	66
8	MP2	Z	123.19	66
9	MP1	X	75.14	10
10	MP1	Z	130.15	10
11	MP1	X	75.14	66
12	MP1	Z	130.15	66
13	MP4	X	48.83	12
14	MP4	Z	84.58	12
15	MP4	X	48.83	66
16	MP4	Z	84.58	66
17	MP1	X	36.9	36
18	MP1	Z	63.91	36
19	MP2	X	33.07	36
20	MP2	Z	57.27	36
21	MP1	X	38.33	36
22	MP1	Z	66.39	36
23	MP4	X	18.37	36
24	MP4	Z	31.82	36
25	MP3	X	58.25	36
26	MP3	Z	100.89	36
27	MP6	X	37.13	24
28	MP6	Z	64.32	24
29	MP6	X	37.13	66
30	MP6	Z	64.32	66

Member Point Loads (BLC 9 : Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
31	MP7	X	71.12	24
32	MP7	Z	123.19	24
33	MP7	X	71.12	66
34	MP7	Z	123.19	66
35	MP8	X	75.14	10
36	MP8	Z	130.15	10
37	MP8	X	75.14	66
38	MP8	Z	130.15	66
39	MP8	X	36.9	36
40	MP8	Z	63.91	36
41	MP7	X	33.07	36
42	MP7	Z	57.27	36
43	MP8	X	38.33	36
44	MP8	Z	66.39	36
45	MP6	X	18.37	24
46	MP6	Z	31.82	24
47	MP6	X	58.25	36
48	MP6	Z	100.89	36
49	MP10	X	33.09	24
50	MP10	Z	57.31	24
51	MP10	X	33.09	66
52	MP10	Z	57.31	66
53	MP11	X	40.5	24
54	MP11	Z	70.14	24
55	MP11	X	40.5	66
56	MP11	Z	70.14	66
57	MP12	X	41.13	10
58	MP12	Z	71.23	10
59	MP12	X	41.13	66
60	MP12	Z	71.23	66
61	MP9	X	29.4	12
62	MP9	Z	50.92	12
63	MP9	X	29.4	66
64	MP9	Z	50.92	66
65	MP12	X	28.31	36
66	MP12	Z	49.04	36
67	MP11	X	21.26	36
68	MP11	Z	36.83	36
69	MP12	X	34.04	36
70	MP12	Z	58.96	36
71	MP9	X	6.97	36
72	MP9	Z	12.07	36
73	MP10	X	54.71	36
74	MP10	Z	94.75	36

Member Point Loads (BLC 10 : Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	59.64	24
2	MP3	Z	34.44	24
3	MP3	X	59.64	66
4	MP3	Z	34.44	66
5	MP2	X	87.82	24
6	MP2	Z	50.71	24
7	MP2	X	87.82	66
8	MP2	Z	50.71	66
9	MP1	X	90.87	10

Member Point Loads (BLC 10 : Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
10	MP1	Z	52.46	10
11	MP1	X	90.87	66
12	MP1	Z	52.46	66
13	MP4	X	62.14	12
14	MP4	Z	35.88	12
15	MP4	X	62.14	66
16	MP4	Z	35.88	66
17	MP1	X	54	36
18	MP1	Z	31.18	36
19	MP2	X	43.64	36
20	MP2	Z	25.2	36
21	MP1	X	61.43	36
22	MP1	Z	35.47	36
23	MP4	X	18.65	36
24	MP4	Z	10.77	36
25	MP3	X	100.89	36
26	MP3	Z	58.25	36
27	MP6	X	66.65	24
28	MP6	Z	38.48	24
29	MP6	X	66.65	66
30	MP6	Z	38.48	66
31	MP7	X	140.88	24
32	MP7	Z	81.33	24
33	MP7	X	140.88	66
34	MP7	Z	81.33	66
35	MP8	X	149.79	10
36	MP8	Z	86.48	10
37	MP8	X	149.79	66
38	MP8	Z	86.48	66
39	MP8	X	68.87	36
40	MP8	Z	39.76	36
41	MP7	X	64.09	36
42	MP7	Z	37	36
43	MP8	X	68.87	36
44	MP8	Z	39.76	36
45	MP6	X	38.4	24
46	MP6	Z	22.17	24
47	MP6	X	100.89	36
48	MP6	Z	58.25	36
49	MP10	X	59.64	24
50	MP10	Z	34.44	24
51	MP10	X	59.64	66
52	MP10	Z	34.44	66
53	MP11	X	87.82	24
54	MP11	Z	50.71	24
55	MP11	X	87.82	66
56	MP11	Z	50.71	66
57	MP12	X	90.87	10
58	MP12	Z	52.46	10
59	MP12	X	90.87	66
60	MP12	Z	52.46	66
61	MP9	X	62.14	12
62	MP9	Z	35.88	12
63	MP9	X	62.14	66
64	MP9	Z	35.88	66
65	MP12	X	54	36
66	MP12	Z	31.18	36

Member Point Loads (BLC 10 : Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
67	MP11	X	43.64	36
68	MP11	Z	25.2	36
69	MP12	X	61.43	36
70	MP12	Z	35.47	36
71	MP9	X	18.65	36
72	MP9	Z	10.77	36
73	MP10	X	94.75	36
74	MP10	Z	54.71	36

Member Point Loads (BLC 11 : Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	66.17	24
2	MP3	Z	0	24
3	MP3	X	66.17	66
4	MP3	Z	0	66
5	MP2	X	80.99	24
6	MP2	Z	0	24
7	MP2	X	80.99	66
8	MP2	Z	0	66
9	MP1	X	82.25	10
10	MP1	Z	0	10
11	MP1	X	82.25	66
12	MP1	Z	0	66
13	MP4	X	58.8	12
14	MP4	Z	0	12
15	MP4	X	58.8	66
16	MP4	Z	0	66
17	MP1	X	56.63	36
18	MP1	Z	0	36
19	MP2	X	42.52	36
20	MP2	Z	0	36
21	MP1	X	68.08	36
22	MP1	Z	0	36
23	MP4	X	13.94	36
24	MP4	Z	0	36
25	MP3	X	116.5	36
26	MP3	Z	0	36
27	MP6	X	74.27	24
28	MP6	Z	0	24
29	MP6	X	74.27	66
30	MP6	Z	0	66
31	MP7	X	142.25	24
32	MP7	Z	0	24
33	MP7	X	142.25	66
34	MP7	Z	0	66
35	MP8	X	150.28	10
36	MP8	Z	0	10
37	MP8	X	150.28	66
38	MP8	Z	0	66
39	MP8	X	73.8	36
40	MP8	Z	0	36
41	MP7	X	66.13	36
42	MP7	Z	0	36
43	MP8	X	76.66	36
44	MP8	Z	0	36
45	MP6	X	36.74	24

Member Point Loads (BLC 11 : Wind Load AZI 270) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
46	MP6	Z	0	24
47	MP6	X	116.5	36
48	MP6	Z	0	36
49	MP10	X	74.27	24
50	MP10	Z	0	24
51	MP10	X	74.27	66
52	MP10	Z	0	66
53	MP11	X	142.25	24
54	MP11	Z	0	24
55	MP11	X	142.25	66
56	MP11	Z	0	66
57	MP12	X	150.28	10
58	MP12	Z	0	10
59	MP12	X	150.28	66
60	MP12	Z	0	66
61	MP9	X	97.66	12
62	MP9	Z	0	12
63	MP9	X	97.66	66
64	MP9	Z	0	66
65	MP12	X	73.8	36
66	MP12	Z	0	36
67	MP11	X	66.13	36
68	MP11	Z	0	36
69	MP12	X	76.66	36
70	MP12	Z	0	36
71	MP9	X	36.74	36
72	MP9	Z	0	36
73	MP10	X	109.41	36
74	MP10	Z	0	36

Member Point Loads (BLC 12 : Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	59.64	24
2	MP3	Z	-34.44	24
3	MP3	X	59.64	66
4	MP3	Z	-34.44	66
5	MP2	X	87.82	24
6	MP2	Z	-50.71	24
7	MP2	X	87.82	66
8	MP2	Z	-50.71	66
9	MP1	X	90.87	10
10	MP1	Z	-52.46	10
11	MP1	X	90.87	66
12	MP1	Z	-52.46	66
13	MP4	X	62.14	12
14	MP4	Z	-35.88	12
15	MP4	X	62.14	66
16	MP4	Z	-35.88	66
17	MP1	X	54	36
18	MP1	Z	-31.18	36
19	MP2	X	43.64	36
20	MP2	Z	-25.2	36
21	MP1	X	61.43	36
22	MP1	Z	-35.47	36
23	MP4	X	18.65	36
24	MP4	Z	-10.77	36

Member Point Loads (BLC 12 : Wind Load AZI 300) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
25	MP3	X	100.89	36
26	MP3	Z	-58.25	36
27	MP6	X	59.64	24
28	MP6	Z	-34.44	24
29	MP6	X	59.64	66
30	MP6	Z	-34.44	66
31	MP7	X	87.82	24
32	MP7	Z	-50.71	24
33	MP7	X	87.82	66
34	MP7	Z	-50.71	66
35	MP8	X	90.87	10
36	MP8	Z	-52.46	10
37	MP8	X	90.87	66
38	MP8	Z	-52.46	66
39	MP8	X	54	36
40	MP8	Z	-31.18	36
41	MP7	X	43.64	36
42	MP7	Z	-25.2	36
43	MP8	X	61.43	36
44	MP8	Z	-35.47	36
45	MP6	X	18.65	24
46	MP6	Z	-10.77	24
47	MP6	X	100.89	36
48	MP6	Z	-58.25	36
49	MP10	X	66.65	24
50	MP10	Z	-38.48	24
51	MP10	X	66.65	66
52	MP10	Z	-38.48	66
53	MP11	X	140.88	24
54	MP11	Z	-81.33	24
55	MP11	X	140.88	66
56	MP11	Z	-81.33	66
57	MP12	X	149.79	10
58	MP12	Z	-86.48	10
59	MP12	X	149.79	66
60	MP12	Z	-86.48	66
61	MP9	X	95.8	12
62	MP9	Z	-55.31	12
63	MP9	X	95.8	66
64	MP9	Z	-55.31	66
65	MP12	X	68.87	36
66	MP12	Z	-39.76	36
67	MP11	X	64.09	36
68	MP11	Z	-37	36
69	MP12	X	68.87	36
70	MP12	Z	-39.76	36
71	MP9	X	38.4	36
72	MP9	Z	-22.17	36
73	MP10	X	94.75	36
74	MP10	Z	-54.71	36

Member Point Loads (BLC 13 : Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	37.13	24
2	MP3	Z	-64.32	24
3	MP3	X	37.13	66

Member Point Loads (BLC 13 : Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
4	MP3	Z	-64.32	66
5	MP2	X	71.12	24
6	MP2	Z	-123.19	24
7	MP2	X	71.12	66
8	MP2	Z	-123.19	66
9	MP1	X	75.14	10
10	MP1	Z	-130.15	10
11	MP1	X	75.14	66
12	MP1	Z	-130.15	66
13	MP4	X	48.83	12
14	MP4	Z	-84.58	12
15	MP4	X	48.83	66
16	MP4	Z	-84.58	66
17	MP1	X	36.9	36
18	MP1	Z	-63.91	36
19	MP2	X	33.07	36
20	MP2	Z	-57.27	36
21	MP1	X	38.33	36
22	MP1	Z	-66.39	36
23	MP4	X	18.37	36
24	MP4	Z	-31.82	36
25	MP3	X	58.25	36
26	MP3	Z	-100.89	36
27	MP6	X	33.09	24
28	MP6	Z	-57.31	24
29	MP6	X	33.09	66
30	MP6	Z	-57.31	66
31	MP7	X	40.5	24
32	MP7	Z	-70.14	24
33	MP7	X	40.5	66
34	MP7	Z	-70.14	66
35	MP8	X	41.13	10
36	MP8	Z	-71.23	10
37	MP8	X	41.13	66
38	MP8	Z	-71.23	66
39	MP8	X	28.31	36
40	MP8	Z	-49.04	36
41	MP7	X	21.26	36
42	MP7	Z	-36.83	36
43	MP8	X	34.04	36
44	MP8	Z	-58.96	36
45	MP6	X	6.97	24
46	MP6	Z	-12.07	24
47	MP6	X	58.25	36
48	MP6	Z	-100.89	36
49	MP10	X	37.13	24
50	MP10	Z	-64.32	24
51	MP10	X	37.13	66
52	MP10	Z	-64.32	66
53	MP11	X	71.12	24
54	MP11	Z	-123.19	24
55	MP11	X	71.12	66
56	MP11	Z	-123.19	66
57	MP12	X	75.14	10
58	MP12	Z	-130.15	10
59	MP12	X	75.14	66
60	MP12	Z	-130.15	66

Member Point Loads (BLC 13 : Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
61	MP9	X	48.83	12
62	MP9	Z	-84.58	12
63	MP9	X	48.83	66
64	MP9	Z	-84.58	66
65	MP12	X	36.9	36
66	MP12	Z	-63.91	36
67	MP11	X	33.07	36
68	MP11	Z	-57.27	36
69	MP12	X	38.33	36
70	MP12	Z	-66.39	36
71	MP9	X	18.37	36
72	MP9	Z	-31.82	36
73	MP10	X	54.71	36
74	MP10	Z	-94.75	36

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	Y	-70.808	24
2	MP3	Y	-70.808	66
3	MP2	Y	-102.477	24
4	MP2	Y	-102.477	66
5	MP1	Y	-114.297	10
6	MP1	Y	-114.297	66
7	MP4	Y	-67.017	12
8	MP4	Y	-67.017	66
9	MP1	Y	-76.798	36
10	MP2	Y	-66.693	36
11	MP1	Y	-84.197	36
12	MP4	Y	-33.328	36
13	MP3	Y	-112.911	36
14	MP6	Y	-70.808	24
15	MP6	Y	-70.808	66
16	MP7	Y	-102.477	24
17	MP7	Y	-102.477	66
18	MP8	Y	-114.297	10
19	MP8	Y	-114.297	66
20	MP8	Y	-76.798	36
21	MP7	Y	-66.693	36
22	MP8	Y	-84.197	36
23	MP6	Y	-33.328	24
24	MP6	Y	-112.911	36
25	MP10	Y	-70.808	24
26	MP10	Y	-70.808	66
27	MP11	Y	-102.477	24
28	MP11	Y	-102.477	66
29	MP12	Y	-114.297	10
30	MP12	Y	-114.297	66
31	MP9	Y	-67.017	12
32	MP9	Y	-67.017	66
33	MP12	Y	-76.798	36
34	MP11	Y	-66.693	36
35	MP12	Y	-84.197	36
36	MP9	Y	-33.328	36
37	MP10	Y	-105.322	36

Member Point Loads (BLC 17 : Ice Wind Load AZI 0)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
1	MP3	X	0	24
2	MP3	Z	-10.52	24
3	MP3	X	0	66
4	MP3	Z	-10.52	66
5	MP2	X	0	24
6	MP2	Z	-15.76	24
7	MP2	X	0	66
8	MP2	Z	-15.76	66
9	MP1	X	0	10
10	MP1	Z	-18.48	10
11	MP1	X	0	66
12	MP1	Z	-18.48	66
13	MP4	X	0	12
14	MP4	Z	-11.96	12
15	MP4	X	0	66
16	MP4	Z	-11.96	66
17	MP1	X	0	36
18	MP1	Z	-8.96	36
19	MP2	X	0	36
20	MP2	Z	-8.43	36
21	MP1	X	0	36
22	MP1	Z	-8.96	36
23	MP4	X	0	36
24	MP4	Z	-6.41	36
25	MP3	X	0	36
26	MP3	Z	-13.34	36
27	MP6	X	0	24
28	MP6	Z	-9.61	24
29	MP6	X	0	66
30	MP6	Z	-9.61	66
31	MP7	X	0	24
32	MP7	Z	-10.97	24
33	MP7	X	0	66
34	MP7	Z	-10.97	66
35	MP8	X	0	10
36	MP8	Z	-13.16	10
37	MP8	X	0	66
38	MP8	Z	-13.16	66
39	MP8	X	0	36
40	MP8	Z	-8.06	36
41	MP7	X	0	36
42	MP7	Z	-7.14	36
43	MP8	X	0	36
44	MP8	Z	-8.49	36
45	MP6	X	0	24
46	MP6	Z	-4.49	24
47	MP6	X	0	36
48	MP6	Z	-13.34	36
49	MP10	X	0	24
50	MP10	Z	-9.61	24
51	MP10	X	0	66
52	MP10	Z	-9.61	66
53	MP11	X	0	24
54	MP11	Z	-10.97	24
55	MP11	X	0	66
56	MP11	Z	-10.97	66
57	MP12	X	0	10

Member Point Loads (BLC 17 : Ice Wind Load AZI 0) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
58	MP12	Z	-13.16	10
59	MP12	X	0	66
60	MP12	Z	-13.16	66
61	MP9	X	0	12
62	MP9	Z	-10.29	12
63	MP9	X	0	66
64	MP9	Z	-10.29	66
65	MP12	X	0	36
66	MP12	Z	-8.06	36
67	MP11	X	0	36
68	MP11	Z	-7.14	36
69	MP12	X	0	36
70	MP12	Z	-8.49	36
71	MP9	X	0	36
72	MP9	Z	-4.49	36
73	MP10	X	0	36
74	MP10	Z	-13.01	36

Member Point Loads (BLC 18 : Ice Wind Load AZI 30)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	-5.11	24
2	MP3	Z	-8.85	24
3	MP3	X	-5.11	66
4	MP3	Z	-8.85	66
5	MP2	X	-7.08	24
6	MP2	Z	-12.27	24
7	MP2	X	-7.08	66
8	MP2	Z	-12.27	66
9	MP1	X	-8.35	10
10	MP1	Z	-14.47	10
11	MP1	X	-8.35	66
12	MP1	Z	-14.47	66
13	MP4	X	-5.7	12
14	MP4	Z	-9.88	12
15	MP4	X	-5.7	66
16	MP4	Z	-9.88	66
17	MP1	X	-4.33	36
18	MP1	Z	-7.5	36
19	MP2	X	-4	36
20	MP2	Z	-6.93	36
21	MP1	X	-4.4	36
22	MP1	Z	-7.62	36
23	MP4	X	-2.89	36
24	MP4	Z	-5	36
25	MP3	X	-6.67	36
26	MP3	Z	-11.55	36
27	MP6	X	-5.11	24
28	MP6	Z	-8.85	24
29	MP6	X	-5.11	66
30	MP6	Z	-8.85	66
31	MP7	X	-7.08	24
32	MP7	Z	-12.27	24
33	MP7	X	-7.08	66
34	MP7	Z	-12.27	66
35	MP8	X	-8.35	10
36	MP8	Z	-14.47	10

Member Point Loads (BLC 18 : Ice Wind Load AZI 30) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
37	MP8	X	-8.35	66
38	MP8	Z	-14.47	66
39	MP8	X	-4.33	36
40	MP8	Z	-7.5	36
41	MP7	X	-4	36
42	MP7	Z	-6.93	36
43	MP8	X	-4.4	36
44	MP8	Z	-7.62	36
45	MP6	X	-2.89	24
46	MP6	Z	-5	24
47	MP6	X	-6.67	36
48	MP6	Z	-11.55	36
49	MP10	X	-4.65	24
50	MP10	Z	-8.05	24
51	MP10	X	-4.65	66
52	MP10	Z	-8.05	66
53	MP11	X	-4.68	24
54	MP11	Z	-8.11	24
55	MP11	X	-4.68	66
56	MP11	Z	-8.11	66
57	MP12	X	-5.69	10
58	MP12	Z	-9.86	10
59	MP12	X	-5.69	66
60	MP12	Z	-9.86	66
61	MP9	X	-4.87	12
62	MP9	Z	-8.43	12
63	MP9	X	-4.87	66
64	MP9	Z	-8.43	66
65	MP12	X	-3.88	36
66	MP12	Z	-6.72	36
67	MP11	X	-3.36	36
68	MP11	Z	-5.81	36
69	MP12	X	-4.17	36
70	MP12	Z	-7.22	36
71	MP9	X	-1.93	36
72	MP9	Z	-3.34	36
73	MP10	X	-6.5	36
74	MP10	Z	-11.26	36

Member Point Loads (BLC 19 : Ice Wind Load AZI 60)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	-8.32	24
2	MP3	Z	-4.8	24
3	MP3	X	-8.32	66
4	MP3	Z	-4.8	66
5	MP2	X	-9.5	24
6	MP2	Z	-5.48	24
7	MP2	X	-9.5	66
8	MP2	Z	-5.48	66
9	MP1	X	-11.4	10
10	MP1	Z	-6.58	10
11	MP1	X	-11.4	66
12	MP1	Z	-6.58	66
13	MP4	X	-8.91	12
14	MP4	Z	-5.15	12
15	MP4	X	-8.91	66

Member Point Loads (BLC 19 : Ice Wind Load AZI 60) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
16	MP4	Z	-5.15	66
17	MP1	X	-6.98	36
18	MP1	Z	-4.03	36
19	MP2	X	-6.19	36
20	MP2	Z	-3.57	36
21	MP1	X	-7.35	36
22	MP1	Z	-4.25	36
23	MP4	X	-3.89	36
24	MP4	Z	-2.25	36
25	MP3	X	-11.55	36
26	MP3	Z	-6.67	36
27	MP6	X	-9.11	24
28	MP6	Z	-5.26	24
29	MP6	X	-9.11	66
30	MP6	Z	-5.26	66
31	MP7	X	-13.65	24
32	MP7	Z	-7.88	24
33	MP7	X	-13.65	66
34	MP7	Z	-7.88	66
35	MP8	X	-16.01	10
36	MP8	Z	-9.24	10
37	MP8	X	-16.01	66
38	MP8	Z	-9.24	66
39	MP8	X	-7.76	36
40	MP8	Z	-4.48	36
41	MP7	X	-7.3	36
42	MP7	Z	-4.22	36
43	MP8	X	-7.76	36
44	MP8	Z	-4.48	36
45	MP6	X	-5.55	24
46	MP6	Z	-3.21	24
47	MP6	X	-11.55	36
48	MP6	Z	-6.67	36
49	MP10	X	-8.32	24
50	MP10	Z	-4.8	24
51	MP10	X	-8.32	66
52	MP10	Z	-4.8	66
53	MP11	X	-9.5	24
54	MP11	Z	-5.48	24
55	MP11	X	-9.5	66
56	MP11	Z	-5.48	66
57	MP12	X	-11.4	10
58	MP12	Z	-6.58	10
59	MP12	X	-11.4	66
60	MP12	Z	-6.58	66
61	MP9	X	-8.91	12
62	MP9	Z	-5.15	12
63	MP9	X	-8.91	66
64	MP9	Z	-5.15	66
65	MP12	X	-6.98	36
66	MP12	Z	-4.03	36
67	MP11	X	-6.19	36
68	MP11	Z	-3.57	36
69	MP12	X	-7.35	36
70	MP12	Z	-4.25	36
71	MP9	X	-3.89	36
72	MP9	Z	-2.25	36

Member Point Loads (BLC 19 : Ice Wind Load AZI 60) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
73	MP10	X	-11.26	36
74	MP10	Z	-6.5	36

Member Point Loads (BLC 20 : Ice Wind Load AZI 90)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	-9.3	24
2	MP3	Z	0	24
3	MP3	X	-9.3	66
4	MP3	Z	0	66
5	MP2	X	-9.37	24
6	MP2	Z	0	24
7	MP2	X	-9.37	66
8	MP2	Z	0	66
9	MP1	X	-11.39	10
10	MP1	Z	0	10
11	MP1	X	-11.39	66
12	MP1	Z	0	66
13	MP4	X	-9.74	12
14	MP4	Z	0	12
15	MP4	X	-9.74	66
16	MP4	Z	0	66
17	MP1	X	-7.76	36
18	MP1	Z	0	36
19	MP2	X	-6.71	36
20	MP2	Z	0	36
21	MP1	X	-8.34	36
22	MP1	Z	0	36
23	MP4	X	-3.85	36
24	MP4	Z	0	36
25	MP3	X	-13.34	36
26	MP3	Z	0	36
27	MP6	X	-10.21	24
28	MP6	Z	0	24
29	MP6	X	-10.21	66
30	MP6	Z	0	66
31	MP7	X	-14.16	24
32	MP7	Z	0	24
33	MP7	X	-14.16	66
34	MP7	Z	0	66
35	MP8	X	-16.71	10
36	MP8	Z	0	10
37	MP8	X	-16.71	66
38	MP8	Z	0	66
39	MP8	X	-8.66	36
40	MP8	Z	0	36
41	MP7	X	-8	36
42	MP7	Z	0	36
43	MP8	X	-8.8	36
44	MP8	Z	0	36
45	MP6	X	-5.77	24
46	MP6	Z	0	24
47	MP6	X	-13.34	36
48	MP6	Z	0	36
49	MP10	X	-10.21	24
50	MP10	Z	0	24
51	MP10	X	-10.21	66

Member Point Loads (BLC 20 : Ice Wind Load AZI 90) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
52	MP10	Z	0	66
53	MP11	X	-14.16	24
54	MP11	Z	0	24
55	MP11	X	-14.16	66
56	MP11	Z	0	66
57	MP12	X	-16.71	10
58	MP12	Z	0	10
59	MP12	X	-16.71	66
60	MP12	Z	0	66
61	MP9	X	-11.4	12
62	MP9	Z	0	12
63	MP9	X	-11.4	66
64	MP9	Z	0	66
65	MP12	X	-8.66	36
66	MP12	Z	0	36
67	MP11	X	-8	36
68	MP11	Z	0	36
69	MP12	X	-8.8	36
70	MP12	Z	0	36
71	MP9	X	-5.77	36
72	MP9	Z	0	36
73	MP10	X	-13.01	36
74	MP10	Z	0	36

Member Point Loads (BLC 21 : Ice Wind Load AZI 120)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
1	MP3	X	-8.32	24
2	MP3	Z	4.8	24
3	MP3	X	-8.32	66
4	MP3	Z	4.8	66
5	MP2	X	-9.5	24
6	MP2	Z	5.48	24
7	MP2	X	-9.5	66
8	MP2	Z	5.48	66
9	MP1	X	-11.4	10
10	MP1	Z	6.58	10
11	MP1	X	-11.4	66
12	MP1	Z	6.58	66
13	MP4	X	-8.91	12
14	MP4	Z	5.15	12
15	MP4	X	-8.91	66
16	MP4	Z	5.15	66
17	MP1	X	-6.98	36
18	MP1	Z	4.03	36
19	MP2	X	-6.19	36
20	MP2	Z	3.57	36
21	MP1	X	-7.35	36
22	MP1	Z	4.25	36
23	MP4	X	-3.89	36
24	MP4	Z	2.25	36
25	MP3	X	-11.55	36
26	MP3	Z	6.67	36
27	MP6	X	-8.32	24
28	MP6	Z	4.8	24
29	MP6	X	-8.32	66
30	MP6	Z	4.8	66

Member Point Loads (BLC 21 : Ice Wind Load AZI 120) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
31	MP7	X	-9.5	24
32	MP7	Z	5.48	24
33	MP7	X	-9.5	66
34	MP7	Z	5.48	66
35	MP8	X	-11.4	10
36	MP8	Z	6.58	10
37	MP8	X	-11.4	66
38	MP8	Z	6.58	66
39	MP8	X	-6.98	36
40	MP8	Z	4.03	36
41	MP7	X	-6.19	36
42	MP7	Z	3.57	36
43	MP8	X	-7.35	36
44	MP8	Z	4.25	36
45	MP6	X	-3.89	24
46	MP6	Z	2.25	24
47	MP6	X	-11.55	36
48	MP6	Z	6.67	36
49	MP10	X	-9.11	24
50	MP10	Z	5.26	24
51	MP10	X	-9.11	66
52	MP10	Z	5.26	66
53	MP11	X	-13.65	24
54	MP11	Z	7.88	24
55	MP11	X	-13.65	66
56	MP11	Z	7.88	66
57	MP12	X	-16.01	10
58	MP12	Z	9.24	10
59	MP12	X	-16.01	66
60	MP12	Z	9.24	66
61	MP9	X	-10.36	12
62	MP9	Z	5.98	12
63	MP9	X	-10.36	66
64	MP9	Z	5.98	66
65	MP12	X	-7.76	36
66	MP12	Z	4.48	36
67	MP11	X	-7.3	36
68	MP11	Z	4.22	36
69	MP12	X	-7.76	36
70	MP12	Z	4.48	36
71	MP9	X	-5.55	36
72	MP9	Z	3.21	36
73	MP10	X	-11.26	36
74	MP10	Z	6.5	36

Member Point Loads (BLC 22 : Ice Wind Load AZI 150)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	-5.11	24
2	MP3	Z	8.85	24
3	MP3	X	-5.11	66
4	MP3	Z	8.85	66
5	MP2	X	-7.08	24
6	MP2	Z	12.27	24
7	MP2	X	-7.08	66
8	MP2	Z	12.27	66
9	MP1	X	-8.35	10

Member Point Loads (BLC 22 : Ice Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
10	MP1	Z	14.47	10
11	MP1	X	-8.35	66
12	MP1	Z	14.47	66
13	MP4	X	-5.7	12
14	MP4	Z	9.88	12
15	MP4	X	-5.7	66
16	MP4	Z	9.88	66
17	MP1	X	-4.33	36
18	MP1	Z	7.5	36
19	MP2	X	-4	36
20	MP2	Z	6.93	36
21	MP1	X	-4.4	36
22	MP1	Z	7.62	36
23	MP4	X	-2.89	36
24	MP4	Z	5	36
25	MP3	X	-6.67	36
26	MP3	Z	11.55	36
27	MP6	X	-4.65	24
28	MP6	Z	8.05	24
29	MP6	X	-4.65	66
30	MP6	Z	8.05	66
31	MP7	X	-4.68	24
32	MP7	Z	8.11	24
33	MP7	X	-4.68	66
34	MP7	Z	8.11	66
35	MP8	X	-5.69	10
36	MP8	Z	9.86	10
37	MP8	X	-5.69	66
38	MP8	Z	9.86	66
39	MP8	X	-3.88	36
40	MP8	Z	6.72	36
41	MP7	X	-3.36	36
42	MP7	Z	5.81	36
43	MP8	X	-4.17	36
44	MP8	Z	7.22	36
45	MP6	X	-1.93	24
46	MP6	Z	3.34	24
47	MP6	X	-6.67	36
48	MP6	Z	11.55	36
49	MP10	X	-5.11	24
50	MP10	Z	8.85	24
51	MP10	X	-5.11	66
52	MP10	Z	8.85	66
53	MP11	X	-7.08	24
54	MP11	Z	12.27	24
55	MP11	X	-7.08	66
56	MP11	Z	12.27	66
57	MP12	X	-8.35	10
58	MP12	Z	14.47	10
59	MP12	X	-8.35	66
60	MP12	Z	14.47	66
61	MP9	X	-5.7	12
62	MP9	Z	9.88	12
63	MP9	X	-5.7	66
64	MP9	Z	9.88	66
65	MP12	X	-4.33	36
66	MP12	Z	7.5	36

Member Point Loads (BLC 22 : Ice Wind Load AZI 150) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
67	MP11	X	-4	36
68	MP11	Z	6.93	36
69	MP12	X	-4.4	36
70	MP12	Z	7.62	36
71	MP9	X	-2.89	36
72	MP9	Z	5	36
73	MP10	X	-6.5	36
74	MP10	Z	11.26	36

Member Point Loads (BLC 23 : Ice Wind Load AZI 180)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	0	24
2	MP3	Z	10.52	24
3	MP3	X	0	66
4	MP3	Z	10.52	66
5	MP2	X	0	24
6	MP2	Z	15.76	24
7	MP2	X	0	66
8	MP2	Z	15.76	66
9	MP1	X	0	10
10	MP1	Z	18.48	10
11	MP1	X	0	66
12	MP1	Z	18.48	66
13	MP4	X	0	12
14	MP4	Z	11.96	12
15	MP4	X	0	66
16	MP4	Z	11.96	66
17	MP1	X	0	36
18	MP1	Z	8.96	36
19	MP2	X	0	36
20	MP2	Z	8.43	36
21	MP1	X	0	36
22	MP1	Z	8.96	36
23	MP4	X	0	36
24	MP4	Z	6.41	36
25	MP3	X	0	36
26	MP3	Z	13.34	36
27	MP6	X	0	24
28	MP6	Z	9.61	24
29	MP6	X	0	66
30	MP6	Z	9.61	66
31	MP7	X	0	24
32	MP7	Z	10.97	24
33	MP7	X	0	66
34	MP7	Z	10.97	66
35	MP8	X	0	10
36	MP8	Z	13.16	10
37	MP8	X	0	66
38	MP8	Z	13.16	66
39	MP8	X	0	36
40	MP8	Z	8.06	36
41	MP7	X	0	36
42	MP7	Z	7.14	36
43	MP8	X	0	36
44	MP8	Z	8.49	36
45	MP6	X	0	24

Member Point Loads (BLC 23 : Ice Wind Load AZI 180) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
46	MP6	Z	4.49	24
47	MP6	X	0	36
48	MP6	Z	13.34	36
49	MP10	X	0	24
50	MP10	Z	9.61	24
51	MP10	X	0	66
52	MP10	Z	9.61	66
53	MP11	X	0	24
54	MP11	Z	10.97	24
55	MP11	X	0	66
56	MP11	Z	10.97	66
57	MP12	X	0	10
58	MP12	Z	13.16	10
59	MP12	X	0	66
60	MP12	Z	13.16	66
61	MP9	X	0	12
62	MP9	Z	10.29	12
63	MP9	X	0	66
64	MP9	Z	10.29	66
65	MP12	X	0	36
66	MP12	Z	8.06	36
67	MP11	X	0	36
68	MP11	Z	7.14	36
69	MP12	X	0	36
70	MP12	Z	8.49	36
71	MP9	X	0	36
72	MP9	Z	4.49	36
73	MP10	X	0	36
74	MP10	Z	13.01	36

Member Point Loads (BLC 24 : Ice Wind Load AZI 210)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	5.11	24
2	MP3	Z	8.85	24
3	MP3	X	5.11	66
4	MP3	Z	8.85	66
5	MP2	X	7.08	24
6	MP2	Z	12.27	24
7	MP2	X	7.08	66
8	MP2	Z	12.27	66
9	MP1	X	8.35	10
10	MP1	Z	14.47	10
11	MP1	X	8.35	66
12	MP1	Z	14.47	66
13	MP4	X	5.7	12
14	MP4	Z	9.88	12
15	MP4	X	5.7	66
16	MP4	Z	9.88	66
17	MP1	X	4.33	36
18	MP1	Z	7.5	36
19	MP2	X	4	36
20	MP2	Z	6.93	36
21	MP1	X	4.4	36
22	MP1	Z	7.62	36
23	MP4	X	2.89	36
24	MP4	Z	5	36

Member Point Loads (BLC 24 : Ice Wind Load AZI 210) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
25	MP3	X	6.67	36
26	MP3	Z	11.55	36
27	MP6	X	5.11	24
28	MP6	Z	8.85	24
29	MP6	X	5.11	66
30	MP6	Z	8.85	66
31	MP7	X	7.08	24
32	MP7	Z	12.27	24
33	MP7	X	7.08	66
34	MP7	Z	12.27	66
35	MP8	X	8.35	10
36	MP8	Z	14.47	10
37	MP8	X	8.35	66
38	MP8	Z	14.47	66
39	MP8	X	4.33	36
40	MP8	Z	7.5	36
41	MP7	X	4	36
42	MP7	Z	6.93	36
43	MP8	X	4.4	36
44	MP8	Z	7.62	36
45	MP6	X	2.89	24
46	MP6	Z	5	24
47	MP6	X	6.67	36
48	MP6	Z	11.55	36
49	MP10	X	4.65	24
50	MP10	Z	8.05	24
51	MP10	X	4.65	66
52	MP10	Z	8.05	66
53	MP11	X	4.68	24
54	MP11	Z	8.11	24
55	MP11	X	4.68	66
56	MP11	Z	8.11	66
57	MP12	X	5.69	10
58	MP12	Z	9.86	10
59	MP12	X	5.69	66
60	MP12	Z	9.86	66
61	MP9	X	4.87	12
62	MP9	Z	8.43	12
63	MP9	X	4.87	66
64	MP9	Z	8.43	66
65	MP12	X	3.88	36
66	MP12	Z	6.72	36
67	MP11	X	3.36	36
68	MP11	Z	5.81	36
69	MP12	X	4.17	36
70	MP12	Z	7.22	36
71	MP9	X	1.93	36
72	MP9	Z	3.34	36
73	MP10	X	6.5	36
74	MP10	Z	11.26	36

Member Point Loads (BLC 25 : Ice Wind Load AZI 240)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	8.32	24
2	MP3	Z	4.8	24
3	MP3	X	8.32	66

Member Point Loads (BLC 25 : Ice Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
4	MP3	Z	4.8	66
5	MP2	X	9.5	24
6	MP2	Z	5.48	24
7	MP2	X	9.5	66
8	MP2	Z	5.48	66
9	MP1	X	11.4	10
10	MP1	Z	6.58	10
11	MP1	X	11.4	66
12	MP1	Z	6.58	66
13	MP4	X	8.91	12
14	MP4	Z	5.15	12
15	MP4	X	8.91	66
16	MP4	Z	5.15	66
17	MP1	X	6.98	36
18	MP1	Z	4.03	36
19	MP2	X	6.19	36
20	MP2	Z	3.57	36
21	MP1	X	7.35	36
22	MP1	Z	4.25	36
23	MP4	X	3.89	36
24	MP4	Z	2.25	36
25	MP3	X	11.55	36
26	MP3	Z	6.67	36
27	MP6	X	9.11	24
28	MP6	Z	5.26	24
29	MP6	X	9.11	66
30	MP6	Z	5.26	66
31	MP7	X	13.65	24
32	MP7	Z	7.88	24
33	MP7	X	13.65	66
34	MP7	Z	7.88	66
35	MP8	X	16.01	10
36	MP8	Z	9.24	10
37	MP8	X	16.01	66
38	MP8	Z	9.24	66
39	MP8	X	7.76	36
40	MP8	Z	4.48	36
41	MP7	X	7.3	36
42	MP7	Z	4.22	36
43	MP8	X	7.76	36
44	MP8	Z	4.48	36
45	MP6	X	5.55	24
46	MP6	Z	3.21	24
47	MP6	X	11.55	36
48	MP6	Z	6.67	36
49	MP10	X	8.32	24
50	MP10	Z	4.8	24
51	MP10	X	8.32	66
52	MP10	Z	4.8	66
53	MP11	X	9.5	24
54	MP11	Z	5.48	24
55	MP11	X	9.5	66
56	MP11	Z	5.48	66
57	MP12	X	11.4	10
58	MP12	Z	6.58	10
59	MP12	X	11.4	66
60	MP12	Z	6.58	66

Member Point Loads (BLC 25 : Ice Wind Load AZI 240) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
61	MP9	X	8.91	12
62	MP9	Z	5.15	12
63	MP9	X	8.91	66
64	MP9	Z	5.15	66
65	MP12	X	6.98	36
66	MP12	Z	4.03	36
67	MP11	X	6.19	36
68	MP11	Z	3.57	36
69	MP12	X	7.35	36
70	MP12	Z	4.25	36
71	MP9	X	3.89	36
72	MP9	Z	2.25	36
73	MP10	X	11.26	36
74	MP10	Z	6.5	36

Member Point Loads (BLC 26 : Ice Wind Load AZI 270)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in, %]
1	MP3	X	9.3	24
2	MP3	Z	0	24
3	MP3	X	9.3	66
4	MP3	Z	0	66
5	MP2	X	9.37	24
6	MP2	Z	0	24
7	MP2	X	9.37	66
8	MP2	Z	0	66
9	MP1	X	11.39	10
10	MP1	Z	0	10
11	MP1	X	11.39	66
12	MP1	Z	0	66
13	MP4	X	9.74	12
14	MP4	Z	0	12
15	MP4	X	9.74	66
16	MP4	Z	0	66
17	MP1	X	7.76	36
18	MP1	Z	0	36
19	MP2	X	6.71	36
20	MP2	Z	0	36
21	MP1	X	8.34	36
22	MP1	Z	0	36
23	MP4	X	3.85	36
24	MP4	Z	0	36
25	MP3	X	13.34	36
26	MP3	Z	0	36
27	MP6	X	10.21	24
28	MP6	Z	0	24
29	MP6	X	10.21	66
30	MP6	Z	0	66
31	MP7	X	14.16	24
32	MP7	Z	0	24
33	MP7	X	14.16	66
34	MP7	Z	0	66
35	MP8	X	16.71	10
36	MP8	Z	0	10
37	MP8	X	16.71	66
38	MP8	Z	0	66
39	MP8	X	8.66	36

Member Point Loads (BLC 26 : Ice Wind Load AZI 270) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
40	MP8	Z	0	36
41	MP7	X	8	36
42	MP7	Z	0	36
43	MP8	X	8.8	36
44	MP8	Z	0	36
45	MP6	X	5.77	24
46	MP6	Z	0	24
47	MP6	X	13.34	36
48	MP6	Z	0	36
49	MP10	X	10.21	24
50	MP10	Z	0	24
51	MP10	X	10.21	66
52	MP10	Z	0	66
53	MP11	X	14.16	24
54	MP11	Z	0	24
55	MP11	X	14.16	66
56	MP11	Z	0	66
57	MP12	X	16.71	10
58	MP12	Z	0	10
59	MP12	X	16.71	66
60	MP12	Z	0	66
61	MP9	X	11.4	12
62	MP9	Z	0	12
63	MP9	X	11.4	66
64	MP9	Z	0	66
65	MP12	X	8.66	36
66	MP12	Z	0	36
67	MP11	X	8	36
68	MP11	Z	0	36
69	MP12	X	8.8	36
70	MP12	Z	0	36
71	MP9	X	5.77	36
72	MP9	Z	0	36
73	MP10	X	13.01	36
74	MP10	Z	0	36

Member Point Loads (BLC 27 : Ice Wind Load AZI 300)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	X	8.32	24
2	MP3	Z	-4.8	24
3	MP3	X	8.32	66
4	MP3	Z	-4.8	66
5	MP2	X	9.5	24
6	MP2	Z	-5.48	24
7	MP2	X	9.5	66
8	MP2	Z	-5.48	66
9	MP1	X	11.4	10
10	MP1	Z	-6.58	10
11	MP1	X	11.4	66
12	MP1	Z	-6.58	66
13	MP4	X	8.91	12
14	MP4	Z	-5.15	12
15	MP4	X	8.91	66
16	MP4	Z	-5.15	66
17	MP1	X	6.98	36
18	MP1	Z	-4.03	36

Member Point Loads (BLC 27 : Ice Wind Load AZI 300) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
19	MP2	X	6.19	36
20	MP2	Z	-3.57	36
21	MP1	X	7.35	36
22	MP1	Z	-4.25	36
23	MP4	X	3.89	36
24	MP4	Z	-2.25	36
25	MP3	X	11.55	36
26	MP3	Z	-6.67	36
27	MP6	X	8.32	24
28	MP6	Z	-4.8	24
29	MP6	X	8.32	66
30	MP6	Z	-4.8	66
31	MP7	X	9.5	24
32	MP7	Z	-5.48	24
33	MP7	X	9.5	66
34	MP7	Z	-5.48	66
35	MP8	X	11.4	10
36	MP8	Z	-6.58	10
37	MP8	X	11.4	66
38	MP8	Z	-6.58	66
39	MP8	X	6.98	36
40	MP8	Z	-4.03	36
41	MP7	X	6.19	36
42	MP7	Z	-3.57	36
43	MP8	X	7.35	36
44	MP8	Z	-4.25	36
45	MP6	X	3.89	24
46	MP6	Z	-2.25	24
47	MP6	X	11.55	36
48	MP6	Z	-6.67	36
49	MP10	X	9.11	24
50	MP10	Z	-5.26	24
51	MP10	X	9.11	66
52	MP10	Z	-5.26	66
53	MP11	X	13.65	24
54	MP11	Z	-7.88	24
55	MP11	X	13.65	66
56	MP11	Z	-7.88	66
57	MP12	X	16.01	10
58	MP12	Z	-9.24	10
59	MP12	X	16.01	66
60	MP12	Z	-9.24	66
61	MP9	X	10.36	12
62	MP9	Z	-5.98	12
63	MP9	X	10.36	66
64	MP9	Z	-5.98	66
65	MP12	X	7.76	36
66	MP12	Z	-4.48	36
67	MP11	X	7.3	36
68	MP11	Z	-4.22	36
69	MP12	X	7.76	36
70	MP12	Z	-4.48	36
71	MP9	X	5.55	36
72	MP9	Z	-3.21	36
73	MP10	X	11.26	36
74	MP10	Z	-6.5	36

Member Point Loads (BLC 28 : Ice Wind Load AZI 330)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
1	MP3	X	5.11	24
2	MP3	Z	-8.85	24
3	MP3	X	5.11	66
4	MP3	Z	-8.85	66
5	MP2	X	7.08	24
6	MP2	Z	-12.27	24
7	MP2	X	7.08	66
8	MP2	Z	-12.27	66
9	MP1	X	8.35	10
10	MP1	Z	-14.47	10
11	MP1	X	8.35	66
12	MP1	Z	-14.47	66
13	MP4	X	5.7	12
14	MP4	Z	-9.88	12
15	MP4	X	5.7	66
16	MP4	Z	-9.88	66
17	MP1	X	4.33	36
18	MP1	Z	-7.5	36
19	MP2	X	4	36
20	MP2	Z	-6.93	36
21	MP1	X	4.4	36
22	MP1	Z	-7.62	36
23	MP4	X	2.89	36
24	MP4	Z	-5	36
25	MP3	X	6.67	36
26	MP3	Z	-11.55	36
27	MP6	X	4.65	24
28	MP6	Z	-8.05	24
29	MP6	X	4.65	66
30	MP6	Z	-8.05	66
31	MP7	X	4.68	24
32	MP7	Z	-8.11	24
33	MP7	X	4.68	66
34	MP7	Z	-8.11	66
35	MP8	X	5.69	10
36	MP8	Z	-9.86	10
37	MP8	X	5.69	66
38	MP8	Z	-9.86	66
39	MP8	X	3.88	36
40	MP8	Z	-6.72	36
41	MP7	X	3.36	36
42	MP7	Z	-5.81	36
43	MP8	X	4.17	36
44	MP8	Z	-7.22	36
45	MP6	X	1.93	24
46	MP6	Z	-3.34	24
47	MP6	X	6.67	36
48	MP6	Z	-11.55	36
49	MP10	X	5.11	24
50	MP10	Z	-8.85	24
51	MP10	X	5.11	66
52	MP10	Z	-8.85	66
53	MP11	X	7.08	24
54	MP11	Z	-12.27	24
55	MP11	X	7.08	66
56	MP11	Z	-12.27	66
57	MP12	X	8.35	10

Member Point Loads (BLC 28 : Ice Wind Load AZI 330) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
58	MP12	Z	-14.47	10
59	MP12	X	8.35	66
60	MP12	Z	-14.47	66
61	MP9	X	5.7	12
62	MP9	Z	-9.88	12
63	MP9	X	5.7	66
64	MP9	Z	-9.88	66
65	MP12	X	4.33	36
66	MP12	Z	-7.5	36
67	MP11	X	4	36
68	MP11	Z	-6.93	36
69	MP12	X	4.4	36
70	MP12	Z	-7.62	36
71	MP9	X	2.89	36
72	MP9	Z	-5	36
73	MP10	X	6.5	36
74	MP10	Z	-11.26	36

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in. %]
1	MP3	Z	-2.065	24
2	MP3	Z	-2.065	66
3	MP2	Z	-2.957	24
4	MP2	Z	-2.957	66
5	MP1	Z	-3.978	10
6	MP1	Z	-3.978	66
7	MP4	Z	-1.661	12
8	MP4	Z	-1.661	66
9	MP1	Z	-6.645	36
10	MP2	Z	-5.687	36
11	MP1	Z	-7.12	36
12	MP4	Z	-1.339	36
13	MP3	Z	-3.114	36
14	MP6	Z	-2.065	24
15	MP6	Z	-2.065	66
16	MP7	Z	-2.957	24
17	MP7	Z	-2.957	66
18	MP8	Z	-3.978	10
19	MP8	Z	-3.978	66
20	MP8	Z	-6.645	36
21	MP7	Z	-5.687	36
22	MP8	Z	-7.12	36
23	MP6	Z	-1.339	24
24	MP6	Z	-3.114	36
25	MP10	Z	-2.065	24
26	MP10	Z	-2.065	66
27	MP11	Z	-2.957	24
28	MP11	Z	-2.957	66
29	MP12	Z	-3.978	10
30	MP12	Z	-3.978	66
31	MP9	Z	-1.661	12
32	MP9	Z	-1.661	66
33	MP12	Z	-6.645	36
34	MP11	Z	-5.687	36
35	MP12	Z	-7.12	36
36	MP9	Z	-1.339	36

Member Point Loads (BLC 31 : Seismic Load Z) (Continued)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
37	MP10	Z	-2.487	36

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude[lb.lb-ft]	Location[in.%]
1	MP3	X	-2.065	24
2	MP3	X	-2.065	66
3	MP2	X	-2.957	24
4	MP2	X	-2.957	66
5	MP1	X	-3.978	10
6	MP1	X	-3.978	66
7	MP4	X	-1.661	12
8	MP4	X	-1.661	66
9	MP1	X	-6.645	36
10	MP2	X	-5.687	36
11	MP1	X	-7.12	36
12	MP4	X	-1.339	36
13	MP3	X	-3.114	36
14	MP6	X	-2.065	24
15	MP6	X	-2.065	66
16	MP7	X	-2.957	24
17	MP7	X	-2.957	66
18	MP8	X	-3.978	10
19	MP8	X	-3.978	66
20	MP8	X	-6.645	36
21	MP7	X	-5.687	36
22	MP8	X	-7.12	36
23	MP6	X	-1.339	24
24	MP6	X	-3.114	36
25	MP10	X	-2.065	24
26	MP10	X	-2.065	66
27	MP11	X	-2.957	24
28	MP11	X	-2.957	66
29	MP12	X	-3.978	10
30	MP12	X	-3.978	66
31	MP9	X	-1.661	12
32	MP9	X	-1.661	66
33	MP12	X	-6.645	36
34	MP11	X	-5.687	36
35	MP12	X	-7.12	36
36	MP9	X	-1.339	36
37	MP10	X	-2.487	36

Member Area Loads

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

Joint Loads and Enforced Displacements (BLC 33 : Service Live Loads)

	Joint Label	L,D,M	Direction	Magnitude[(lb.lb-ft), (in.rad), (lb*s^...
1	N6	L	Y	-250
2	N32	L	Y	-250
3	N58	L	Y	-250

Joint Loads and Enforced Displacements (BLC 34 : Maintenance Load 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N16	L	Y	-500

Joint Loads and Enforced Displacements (BLC 35 : Maintenance Load 2)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N18	L	Y	-500

Joint Loads and Enforced Displacements (BLC 36 : Maintenance Load 3)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N17	L	Y	-500

Joint Loads and Enforced Displacements (BLC 37 : Maintenance Load 4)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N15	L	Y	-500

Joint Loads and Enforced Displacements (BLC 38 : Maintenance Load 5)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N42	L	Y	-500

Joint Loads and Enforced Displacements (BLC 39 : Maintenance Load 6)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N44	L	Y	-500

Joint Loads and Enforced Displacements (BLC 40 : Maintenance Load 7)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N43	L	Y	-500

Joint Loads and Enforced Displacements (BLC 41 : Maintenance Load 8)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N41	L	Y	-500

Joint Loads and Enforced Displacements (BLC 42 : Maintenance Load 9)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N68	L	Y	-500

Joint Loads and Enforced Displacements (BLC 43 : Maintenance Load 10)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N70	L	Y	-500

Joint Loads and Enforced Displacements (BLC 44 : Maintenance Load 11)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N69	L	Y	-500

Joint Loads and Enforced Displacements (BLC 45 : Maintenance Load 12)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^...
1	N67	L	Y	-500

APPENDIX D
ADDITIONAL CALCUATIONS

Welded Calculation Tool, V1.0

PROJECT DATA		
Site Name:	Union	
Site Number:	876346	
Job Code:	1039-Z0001-B	
Date:	5/6/2020	

WELD INFORMATION		
Design:	LRFD	-
Weld Strength (F _{EXX}):	70	ksi
Weld Thickness:	0.25	in

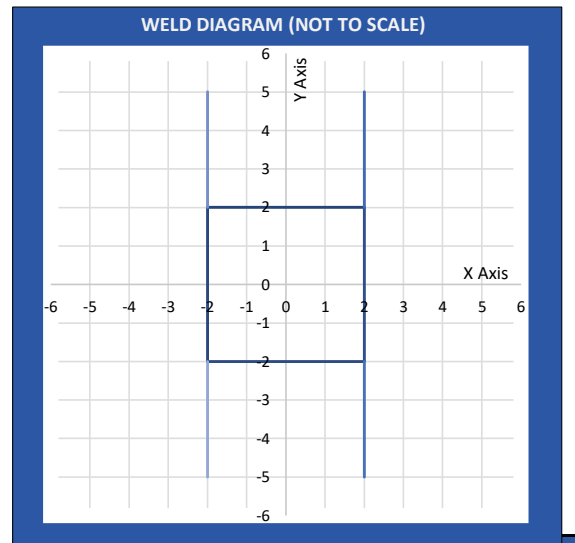
MAIN SHAPE INFORMATION		
Main Shape:	Rectangle	-
Main Shape Material:	A 500 Gr. B Rect.	-
Main Shape Thickness:	0.233	in
Main Shape Size:	4X4	in

TOTAL SUM OF LINES PROPERTIES		
Polar Moment of Inertia:	289.333	in ³
Section Modulus X-X dir.:	39.733	in ²
Section Modulus Y-Y dir.:	45.333	in ²
Critical Usage Mode*:	Base Yielding	-
Critical Thickness Used**:	0.242	in

SECONDARY SHAPE INFORMATION		
Secondary Shape:	Custom	-
Secondary Shape Material:	A36	-
Secondary Shape Thickness:	0.25	in
Secondary Shape Size:	N/A	in

WELD DESCRIPTION		

RESULTS		
Critical Risa Combination:	LC 28	-
Critical Member Label:	M3	-
Member End:	j	-
Weld Strength (Phi*Rn):	5400.000	lb/in
Weld Demand (Ru):	975.186	lb/in
Usage ratio:	18.1%	OK



NOTES	
*Base Yielding governs when the welded object has a lesser effective strength than the weld itself.	
**For base shapes with double sided weldments half the thickness is used to calculate the effective strength.	

APPENDIX E

MOUNT MODIFICATION DESIGN DRAWINGS (MDD) / SUPPLEMENTAL DRAWINGS

GENERAL NOTES:

1. THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF APPLICABLE LOCAL/STATE/COUNTY/CITY BUILDING CODES, AS WELL AS AISC/AIA-222 STANDARD, AISC/AIA-100 STANDARD, NDS, NEC, MSJC, AND/OR THE LATEST VERSION OF THE INTERNATIONAL BUILDING CODE, UNLESS NOTED OTHERWISE IN THE CORRESPONDING STRUCTURAL REPORT.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN SIMILAR CONSTRUCTION.
4. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. IF OBSTRUCTIONS ARE FOUND, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD PRIOR TO CONTINUING WORK.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND/OR CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE DURING CONSTRUCTION. 10A-1018-A-2011 IS AN APPROPRIATE REFERENCE FOR THOSE DESIGNS MEETING IIA STANDARDS. THE ENGINEER OF RECORD MAY PROVIDE FORMAL RIGGING PLANS AT THE REQUEST AND EXPENSE OF THE CONTRACTOR.
7. INSTALLATION SHALL NOT INTERFERE NOR DENY ADEQUATE ACCESS TO OR FROM ANY EXISTING OR PROPOSED OPERATIONAL AND SAFETY EQUIPMENT.
8. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINITY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES, AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVALITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS' RECOMMENDATIONS.
3. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
4. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
5. ALL STEEL MEMBERS AND CONNECTIONS SHALL MEET THE FOLLOWING GRADES:
 - ANGLES, CHANNELS, PLATES AND BARS TO BE A36, Fy=36 KSI, U.S.O.
 - W SHAPES TO BE A992, Fy=50 KSI, U.S.O.
 - RECTANGULAR HSS TO BE A500, GRADE B, Fy=46 KSI, U.S.O.
 - ROUND HSS TO BE A500, GRADE B, Fy=42 KSI, U.S.O.
 - STEEL PIPE TO BE A53, GRADE B, Fy=35 KSI, U.S.O.
 - BOLTS TO BE A325-X, Fu=120 KSI, U.S.O.
 - U-BOLTS AND LAG BOLDS TO BE A307 OR A, Fu=60 KSI, U.S.O.
6. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, U.S.O.
7. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION.
8. ALL HELI ANCHORS TO BE CARBON STEEL, U.S.O.
 - MECHANICAL ANCHORS: HWY BOLT-TZ, U.S.O.
 - CMU BLOCK ANCHORS: ADHESIVE - HY120, U.S.O.
 - CONCRETE ANCHORS: ADHESIVE - HY150, U.S.O.
 - CONCRETE REBAR: ADHESIVE - RESO, U.S.O.
9. ALL STUDS TO BE NELSON CAPACITOR DISCHARGE 1/4"-20 LOW CARBON STEEL COPPER-FLASH AT 55 KSI UTS/50 KSI YIELD, U.S.O.
10. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
11. MINIMUM EDGE DISTANCES SHALL CONFORM TO AISC TABLE J3.4.
12. REMOVAL/REPLACEMENT OF STRUCTURAL MEMBERS SHALL BE DONE ONE MEMBER AT A TIME. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STRUCTURAL INTEGRITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

CONCRETE CONSTRUCTION NOTES:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.
2. EXISTING CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH NEW PROPOSED CONCRETE SHOULD BE WIRE BRUSHED CLEAN AND TREATED WITH APPROPRIATE MECHANICAL SCRATCH COAT AND REPAIR MATERIALS OR APPROPRIATE CHEMICAL METHODS SUCH AS THE APPLICATION OF A BONDING AGENT, EX. SAKRETE OR EQUIVALENT, TO ENSURE A QUALITY BOND BETWEEN EXISTING AND PROPOSED CONCRETE SURFACES.

FIBER REINFORCED POLYMER (FRP) NOTES:

1. FRP PLATES, SHAPES, BOLTS AND NUTS (STUD/NUT ASSEMBLIES) SHALL CONFORM TO ASTM D638, 695, 790. PLATES AND SHAPES TO BE Fy = 5.35 KSI LW (SAFETY FACTOR OF 8), 345 KSI CW (SAFETY FACTOR OF 8) MIN.
2. IF FIELD FABRICATION IS REQUIRED, ALL CUT EDGES AND DRILLED HOLES TO BE SEALED USING VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
3. ALL FASTENERS TO BE 1/2" DIA FRP THREADED ROD WITH FIBER REINFORCED THERMOPLASTIC NUT, SPACED AT 12 INCHES ON CENTER MAXIMUM, U.S.O., FOR PANELS AND AS DESIGNED FOR STRUCTURAL MEMBERS.
4. THE COLOR AND SURFACE PATTERN OF EXPOSED FRP PANELS SHALL MATCH THE EXTERIOR OF THE EXISTING BUILDING, U.S.O.
5. STUD/NUT ASSEMBLIES SHOULD BE LUBRICATED FOR INSTALLATION
6. ENSURE BEARING SURFACES OF THE NUTS ARE PARALLEL TO THE SURFACES BEING FASTENED.
7. TORQUE BOLTS ACCORDING TO THE FOLLOWING TABLE:

INSTALLATION TORQUE TABLE		
SIZE	ULTIMATE TORQUE STRENGTH	RECOMMENDED MAXIMUM INSTALLATION TORQUE
3/8-16 UNC	8 FT-LBS	4 FT-LBS
1/2-13 UNC	18 FT-LBS	8 FT-LBS
5/8-11 UNC	35 FT-LBS	16 FT-LBS
3/4-10 UNC	50 FT-LBS	24 FT-LBS
1-8 UNC	110 FT-LBS	50 FT-LBS

8. WHEN TIGHTENING FRP STUD/NUT ASSEMBLIES, WRENCHES MUST MAKE FULL CONTACT WITH ALL NUT EDGES. A STANDARD SIX POINT SOCKET IS RECOMMENDED.
9. STUD/NUT ASSEMBLIES SHOULD BE BONDED BY APPLYING BONDING AGENT TO ENTIRE NUT AND EXPOSED STUD.
10. ALL FRP MATERIALS TO BE PROVIDED BY FIBERGLITE COMPOSITE STRUCTURES, DALLAS TX, OR APPROVED EQUAL.
11. ALL FRP SHAPES TO BE DYNAFORM PULTRUDED STRUCTURAL SHAPES.
12. ALL FRP PLATES TO BE FIBERPLATE MOLDED FRP PLATE.
13. ALL FRP PANELS TO BE FIBERPLATE CLADDING PANEL.
14. EACH FRP PANEL TO BE IDENTIFIED WITH LARR#25536 AND FIBERGLITE COMPOSITE STRUCTURAL LABEL.
15. FRP MATERIAL TO BE CLASSIFIED AS Cc1 OR BETTER, AND HAVE MAXIMUM FLAME SPREAD OF 50.
16. ALL DESIGN AND CONSTRUCTION TO BE COMPLETED IN ACCORDANCE WITH LOS ANGELES RESEARCH REPORT RR25536, DATED FEBRUARY 1, 2016.
17. SPECIAL INSPECTIONS MUST BE PROVIDED FOR ALL FRP INSTALLMENTS. SEE SPECIAL INSPECTION SECTION, THIS SHEET.

RATIO OF EDGE DISTANCE TO FRP FASTENER DIAMETER		
	RANGE	RECOMMENDED
EDGE DISTANCE - CL* BOLT TO END	2.0-4.0	3.0
EDGE DISTANCE - CL* BOLT TO SIDE	1.5-3.5	2.5
BOLT PITCH - CL* TO CL*	4.0-5.0	5.0

WOOD CONSTRUCTION NOTES:

1. ALL EXISTING WOOD SHAPES ARE ASSUMED TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN.
2. ALL PROPOSED WOOD SHAPES ARE TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN. U.S.O.
3. ALL EXISTING AND PROPOSED GLUED LAMINATED TIMBERS ARE TO BE 24F-1.8C DOUGLAS FIR BALANCED WITH A REFERENCE DESIGN BENDING VALUE OF 2400 PSI MIN. U.S.O.

MASONRY CONSTRUCTION NOTES:

1. ALL BRICK TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
 - FOR INTERIOR/ABOVE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 100 PSI SHALL BE USED. FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 133 PSI.
 - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
2. ALL CMU TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
 - FOR INTERIOR/ABOVE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 64 PSI SHALL BE USED FOR UNROUTED BLOCKS, AND 158 PSI FOR FULLY GROUTED BLOCKS.
 - FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 84 PSI SHALL BE USED FOR UNROUTED BLOCKS, AND 163 PSI FOR FULLY GROUTED BLOCKS.
 - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.

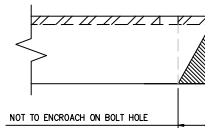
TOWER PLUMB & TENSION NOTES:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETENSIONING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINES AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS FOR LATTICED STRUCTURES.
4. THE TWIST BETWEEN ANY TWO ELEVATIONS THROUGHOUT THE HEIGHT OF A LATTICE STRUCTURE SHALL NOT EXCEED 0.5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE LATTICE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.

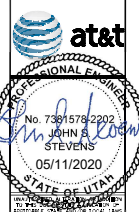
SPECIAL INSPECTIONS NOTES:

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER AND APPROVED BY THE JURISDICTION, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH THE COVERING BUILDING CODE, APPLICABLE SECTION(S) AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
 - a. STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELDS ONLY).
 - b. HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 AND/OR A490 BOLTS) TO BE TIGHTENED PER "TURN-OF-THE-NUT" METHOD.
 - c. MECHANICAL AND EPOXID ANCHORAGES.
 - d. FIBER REINFORCED POLYMER.
 - THE SPECIAL INSPECTOR MUST VERIFY THAT THE FRP MATERIAL SPECIFIED ON THE APPROVED DESIGN DOCUMENTS IS BEING INSTALLED.
 - THE SPECIAL INSPECTOR MUST VERIFY THAT ALL CUT EDGES AND DRILLED HOLES ARE PROPERLY SEALED USING A VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
 - THE SPECIAL INSPECTOR MUST VERIFY THAT THE STRUCTURE IS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN DOCUMENTS.
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT THE SPECIAL INSPECTIONS.

MAXIMUM ALLOWABLE ANGLE CLIP



INFINICITY8
ENGINEERING, PLLC
8033 W. WILLOW AVE. SUITE 100
DENVER, CO 80231
TEL: 303.733.8888
WWW.INFINICITY8.COM



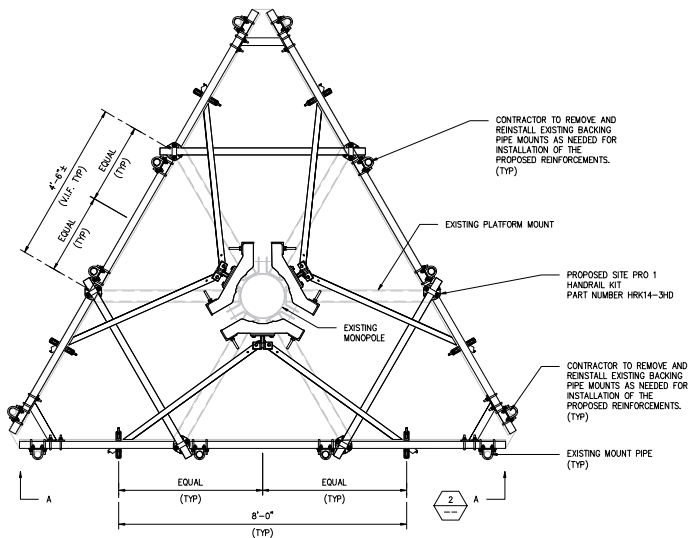
Project Number	1039-20001-B
Project Title	UNION
	876346
	21 HOLLAND ROAD STAFFORD SPRINGS, CT 06076

Prepared For	CROWN CASTLE
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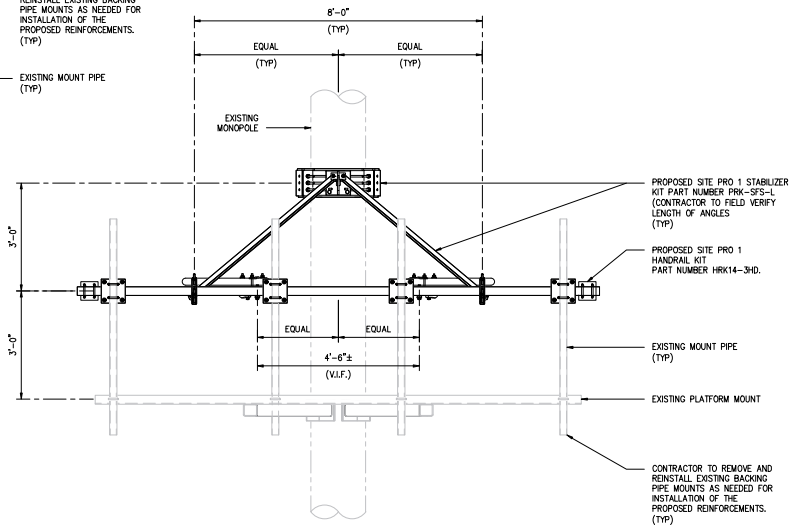
Drawing Scale	AS NOTED
Date	0

Drawing Title	GENERAL NOTES
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Drawing Number	S-1
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1 PLAN VIEW
SCALE: NOT TO SCALE

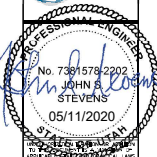


2 SECTION A-A
SCALE: NOT TO SCALE

NOTES:

1. VARIOUS EXISTING CONDITIONS AND PROPOSED MODIFICATIONS NOT SHOWN FOR CLARITY.
2. ALL SITE PRO 1 PARTS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. CONTRACTOR TO FIELD VERIFY REQUIRED LENGTHS OF ALL PROPOSED REINFORCEMENT KIT PIPES & ANGLES AND TRIM & DRILL ON SITE AS NECESSARY.
4. REMOVAL/REPLACEMENT OF STRUCTURAL MEMBERS SHALL BE DONE ONE MEMBER AT A TIME. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STRUCTURAL INTEGRITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.

INFINIGY8
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3033 WILLOW LANE
ANN ARBOR, MI 48106
TEL: 734.769.8800
FAX: 734.769.8801



Rev	Revised By	Revised Date
1	SS	05/11/2020
2	SS	05/11/2020
3	SS	05/11/2020
4	SS	05/11/2020
5	SS	05/11/2020
6	SS	05/11/2020
7	SS	05/11/2020
8	SS	05/11/2020
9	SS	05/11/2020
10	SS	05/11/2020

Project Title: **UNION**
876346
21 HOLLAND ROAD
STAFFORD SPRINGS, CT 06076

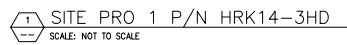
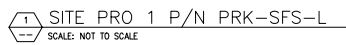
Prepared For: **CROWN CASTLE**

Drawing Scale: **AS NOTED**
Date: **05/11/2020**

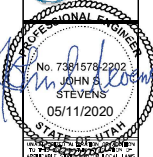
Drawing Title: **MOUNT MODIFICATION DETAILS**

Drawing Number: **S-2**

1. VARIOUS EXISTING CONDITIONS AND PROPOSED MODIFICATIONS NOT SHOWN FOR CLARITY.
2. ALL SITE PRO 1 PARTS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
3. CONTRACTOR TO FIELD VERIFY REQUIRED LENGTHS OF PROPOSED REINFORCEMENT KIT ANGLES AND TRIM ON SITE AS NECESSARY.



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1033 WATERVLIET SHAKER ROAD
ALBANY, NY 12205
CONTACT: 518.263.1200



3	ISSUED FOR REVIEW	RD	06/10/20
4	Submitted / Revision	Post	Date
Drawn:	WLD	Date:	05/10/20
Designed:	dlb	Date:	05/25/22
Checked:	kd	Date:	05/10/20

Project Number: 1000-20001-B

Project Title:

UNION

876346

[illegible]

23 HOLLAND ROAD
STAFFORD SPRINGS, CT 06076

Prepared For: **ZW**

WTL

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Drawing Scale:	
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AS NOTED

Date: 05/10/20

037020	
Drawing Title	

REQUIRED

REQUIRED PARTS

Drawing Number

52

S-3

Exhibit F

Power Density/RF Emissions Report



RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of AT&T Mobility, LLC

Crown Castle Site Order ID: 517063
Crown Castle Site BU Number: 876346
Crown Castle Site Name: UNION
AT&T Mobility, LLC Site FA Number: 10035087
AT&T Mobility, LLC Site ID: CTV1094
AT&T Mobility, LLC Site Name: UNION NORTH
23 Holland Road
Union, CT
6/10/2020

Report Status:

AT&T Mobility, LLC is Compliant



Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Connecticut License Number 33928
Expires January 31, 2021

Signed 11 June 2020

Prepared By:

Site Safe, LLC

Engineering Statement in Re:
Electromagnetic Energy Analysis
Crown Castle
Union, CT

My signature on the cover of this document indicates:

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

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

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

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

That the technical information serving as the basis for this report was supplied by Crown Castle on behalf of AT&T Mobility, LLC (see attached Site Summary and Carrier documents) and that AT&T Mobility, LLC's installation involves communications equipment, antennas and associated technical equipment at a location referred to as "UNION" ("the site"); and

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

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

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

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

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

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

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is

no more than 1.782% of the maximum permissible exposure limits in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET 65 Appendix A, that regardless of the existent radio frequency environment, only those licensees whose contributions exceed 5% of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 3.356% of the maximum in any accessible area up to two meters above the ground per OET 65; and

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

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

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

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

**Crown Castle
UNION
Site Summary**

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.430 %
AT&T Mobility, LLC	0.599 %
AT&T Mobility, LLC	0.200 %
AT&T Mobility, LLC	0.277 %
AT&T Mobility, LLC (Not in Service)	0.000 %
AT&T Mobility, LLC (Proposed)	0.276 %
MetroPCS	0.125 %
Sprint	0.204 %
Sprint	0.138 %
Sprint	1.107 %
Composite Site MPE:	3.356 %

**AT&T Mobility, LLC
UNION
Carrier Summary**

Frequency: 2100 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 4.30313 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.43031 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
CCI Antennas	HPA65R-BU4A	140	30	4562	3.098087	0.309809	4.259453	0.425945
CCI Antennas	HPA65R-BU4A	140	150	4562	3.098087	0.309809	4.259453	0.425945
CCI Antennas	HPA65R-BU4A	140	270	4562	3.098087	0.309809	4.259453	0.425945

**AT&T Mobility, LLC
UNION
Carrier Summary**

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 5.98789 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.59879 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
CCI Antennas	HPA65R-BU4A	140	30	4066	4.809639	0.480964	5.950283	0.595028
CCI Antennas	HPA65R-BU4A	140	150	4066	4.809639	0.480964	5.950283	0.595028
CCI Antennas	HPA65R-BU4A	140	270	4066	4.809639	0.480964	5.950283	0.595028

**AT&T Mobility, LLC
UNION
Carrier Summary**

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu\text{W}/\text{cm}^2$
Maximum power density at ground level:	1.13551	$\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure:	0.20038	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Kathrein-Scala	800-10964	140	30	2631	0.786505	0.138795	0.955255	0.168574
Kathrein-Scala	800-10964	140	150	2631	0.786505	0.138795	0.955255	0.168574
Kathrein-Scala	800-10964	140	270	2631	0.786505	0.138795	0.955255	0.168574

**AT&T Mobility, LLC
UNION
Carrier Summary**

Frequency:	737	MHz
Maximum Permissible Exposure (MPE):	491.33	$\mu\text{W}/\text{cm}^2$
Maximum power density at ground level:	1.36099	$\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure:	0.27700	%

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Kathrein-Scala	800-10964	140	30	2209	0.886594	0.180446	1.258048	0.256048
Kathrein-Scala	800-10964	140	150	2209	0.886594	0.180446	1.258048	0.256048
Kathrein-Scala	800-10964	140	270	2209	0.886594	0.180446	1.258048	0.256048

AT&T Mobility, LLC (Not in Service)
UNION
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	$\mu\text{W}/\text{cm}^2$
Maximum power density at ground level:	0.00000	$\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure:	0.00000	%

Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	On Axis		Area	
					Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Powerwave	7770	140	45	0	0.000000	0.000000	0.000000	0.000000
Powerwave	7770	140	236	0	0.000000	0.000000	0.000000	0.000000

AT&T Mobility, LLC (Proposed)
UNION
Carrier Summary

Frequency: 763 MHz
Maximum Permissible Exposure (MPE): 508.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.40248 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.27572 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
CCI	OPA65R-BU4D	140	30	1775	1.297613	0.255101	1.383923	0.272069
CCI	OPA65R-BU4D	140	150	1775	1.297613	0.255101	1.383923	0.272069
CCI	OPA65R-BU4D	140	270	1775	1.297613	0.255101	1.383923	0.272069

MetroPCS UNION Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.25261 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.12526 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Kathrein-Scala	80010504	130	30	2114	0.665791	0.066579	0.753278	0.075328
Kathrein-Scala	80010504	130	150	2114	0.665791	0.066579	0.753278	0.075328
Kathrein-Scala	80010504	130	270	2114	0.665791	0.066579	0.753278	0.075328

Sprint UNION Carrier Summary

Frequency: 2500 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 2.04134 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.20413 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
RFS	APXVTM14-C-I20	147	30	6168	1.046561	0.104656	1.958436	0.195844
RFS	APXVTM14-C-I20	147	240	6168	1.046561	0.104656	1.958436	0.195844

Sprint UNION Carrier Summary

Frequency: 1900 MHz
Maximum Permissible Exposure (MPE): 1000 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 1.37923 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 0.13792 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
Commscope	NNVV-65B-R4	147	30	2781	1.078241	0.107824	1.378811	0.137881
Commscope	NNVV-65B-R4	147	240	2781	1.078241	0.107824	1.378811	0.137881

Sprint UNION Carrier Summary

Frequency: 850 MHz
Maximum Permissible Exposure (MPE): 566.67 $\mu\text{W}/\text{cm}^2$
Maximum power density at ground level: 6.27242 $\mu\text{W}/\text{cm}^2$
Highest percentage of Maximum Permissible Exposure: 1.10690 %

					On Axis		Area	
Antenna Make	Model	Height (feet)	Orientation (degrees true)	ERP (Watts)	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE	Max Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of MPE
ANDREW	DB980H90E-M	147	0	3162	1.449152	0.255733	2.758391	0.486775
Commscope	NNVV-65B-R4	147	30	1901	0.832746	0.146955	0.839976	0.148231
ANDREW	DB980H90E-M	147	90	3162	1.449152	0.255733	2.758391	0.486775
ANDREW	DB980H90E-M	147	200	3162	1.449152	0.255733	2.758391	0.486775
Commscope	NNVV-65B-R4	147	240	1901	0.832746	0.146955	0.839976	0.148231
ANDREW	DB980H90E-M	147	200	3162	1.449152	0.255733	2.758391	0.486775