CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

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

November 16, 2021

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

RE: **Notice of Exempt Modification for Sprint**
Crown Site ID# 876328; Sprint Site ID# CTHA864A
29 South Main St., West Hartford, CT 06110
Latitude: 41° 45′ 36.41/ Longitude: -72° 44′ 35.25

Dear Ms. Bachman:

Sprint currently maintains six (6) antennas at the 102-foot mount on the existing 40-foot Self Support Tower located at **29 South Main St., in West Hartford** The property is owned by Tower Center West Associates and the Tower by Crown Castle. Sprint now intends to replace six (6) existing antennas and add three (6) antennas. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:

Tower:

Remove and Replace:
(3) Sprint Antennas **(REMOVE) –** (3) RFS-APXVAALL24_43-U-NA20 Antennas **(REPLACE)**
(3) Sprint Antennas **(REMOVE) -** (3) Ericsson Air 6449 B41 Antennas **(REPLACE)**
(3) Sprint RRUs Radios **(REMOVE)** – (3) Ericsson 4480 B71 + B65 Radios **(REPLACE)**
(3) Sprint RRUs Radios **(REMOVE)** – (3) Ericsson 4460 B25 + B66 Radios **(REPLACE)**
(3) Hybrid Cables **(REMOVE)** – (3) Hybrid Cables **(REPLACE)**

Ground:

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

Install New:
(3) BB6648
(1) DUG20 W/RBS 6601Unit
(1) PSU 4813
(1) CSR IXRE V2 (Gen 2)
Upgrade Service to 200AMP

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This facility was approved by the Planning Department in the Town of West Hartford on April 10, 1997. This approval included no conditions according to an email communication from the Planning and Zoning Division.

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 Shari Cantor, Mayor of the Town of West Hartford, Todd Dumais, West Hartford Town Planner and a copy will also be sent to the property owner.

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

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

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

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

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

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

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

Sincerely,

Ersilia Davis
Agent for Sprint
1777 Sentry Parkway W | VEVA 17 Suite 400
Blue Bell, PA | 19422
Edavis@nbcllc.com
551-804-0667

CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

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

cc:

Shari Cantor, Mayor (Via Fedex)
Town of West Hartford
50 South Main St.
West Hartford, CT 06107
860-561-7440

Todd Dumais, Town Planner (Via Fedex)
Town of West Hartford
50 South Main St.
West Hartford, CT 06107
860-561-7555

Town of West Associates, LLC (Via Fedex)
533 S. Main Street
West Hartford, CT 06110
860-313-5400

TRACK ANOTHER SHIPMENT

775230406910

ADD NICKNAME

Delivered
Wednesday, 11/17/2021 at 11:01 am

DELIVERED

Signed for by: P.PHIL

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Ersilia Davis

1777 Sentry Parkway
VEVA 17, Suite 210
Blue Bell, PA US 19422
551-804-0667

TO

Shari Cantor
Town of West Hartford

50 South Main St.
WEST HARTFORD, CT US 06107
860-561-7440

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Wednesday, November 17, 2021

11:01 AM	WEST HARTFORD, CT	Delivered
9:11 AM	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
8:05 AM	WINDSOR LOCKS, CT	At local FedEx facility

Tuesday, November 16, 2021

TRACK ANOTHER SHIPMENT

775230434380

ADD NICKNAME

Delivered
Wednesday, 11/17/2021 at 11:01 am

DELIVERED

Signed for by: P.PHIL

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Ersilia Davis

1777 Sentry Parkway
VEVA 17, Suite 210
Blue Bell, PA US 19422
551-804-0667

TO

Todd Dumais
Town of Hartford

50 South Main St
WEST HARTFORD, CT US 06107
860-561-7555

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Wednesday, November 17, 2021

11:01 AM	WEST HARTFORD, CT	Delivered
9:11 AM	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
8:12 AM	WINDSOR LOCKS, CT	At local FedEx facility
6:24 AM	EAST GRANBY, CT	At destination sort facility
5:29 AM	NEWARK, NJ	Departed FedEx hub

Tuesday, November 16, 2021		
10:52 PM	NEWARK, NJ	Arrived at FedEx hub
9:32 PM	NEWBURGH, NY	Left FedEx origin facility
6:29 PM	NEWBURGH, NY	Picked up
4:40 PM		Shipment information sent to FedEx

Expand History

Shipment Facts

TRACKING NUMBER
775230434380

SERVICE
FedEx Priority Overnight

WEIGHT
1 lbs / 0.45 kgs

DELIVERY ATTEMPTS
1

DELIVERED TO
Mailroom

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
1 lbs / 0.45 kgs

TERMS
Shipper

SHIPPER REFERENCE
100788/ NBC 876328

PACKAGING
FedEx Envelope

SPECIAL HANDLING SECTION
Deliver Weekday

SHIP DATE
11/16/21

STANDARD TRANSIT
11/17/21 before 11:30 am

ACTUAL DELIVERY
11/17/21 at 11:01 am

FedEx

TRACK ANOTHER SHIPMENT

775230465493

ADD NICKNAME

Delivered
Wednesday, 11/17/2021 at 11:36 am

DELIVERED

Signed for by: C.CAO

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Ersilia Davis

1777 Sentry Parkway
VEVA 17, Suite 210
Blue Bell, PA US 19422
551-804-0667

TO

Town Center West Associates LLC

435 S. Main St.
WEST HARTFORD, CT US 06110
860-313-5400

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Wednesday, November 17, 2021		
11:36 AM	WEST HARTFORD, CT	Delivered
8:59 AM	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
8:12 AM	WINDSOR LOCKS, CT	At local FedEx facility
6:24 AM	EAST GRANBY, CT	At destination sort facility
5:29 AM	NEWARK, NJ	Departed FedEx hub
Tuesday, November 16, 2021		
10:52 PM	NEWARK, NJ	Arrived at FedEx hub

Exhibit A

Original Facility Approval

DEPARTMENT OF
COMMUNITY SERVICES

April 10, 1997

Thomas A. Cookingham, AICP
SBA, Inc.
300 Research Parkway
Meriden, CT 06450

Subject: 29 South Main St.

Dear Mr. Cookingham:

Approval has been granted for the site plan application for the subject property. The approval is for the construction of a forty (40) foot stub tower with associated equipment on the penthouse of the parking garage.

The "associated equipment" is detailed on the two (2) sheet plan set. Specifically, one sheet is entitled "Zoning Drawing - rev. date: 11-3-96" sheet 2 entitled, "zoning elevations - rev. date 3-3-87."

Please submit to the Planning Office as soon as possible two (2) blueprint copies and one (1) mylar set of the approved plans, all signed and sealed by the professional responsible for preparing the plans.

If we can be of further assistance, please call me at 523-3123.

Very truly yours,

Mila Limson
Acting Town Planner

c: Ron Van Winklle, Director of Community Services
Don Foster, Town Planner

29SMain

Hanlon, Dashanna

From: Holzschuh, Cymon <Cymon.Holzschuh@ct.gov>
Sent: Tuesday, January 12, 2016 1:13 PM
To: Terry, Dashanna; CSC-DL Siting Council
Cc: Barbadora, Jeff
Subject: RE: 29 Main St - Existing Telecommunication Tower located at 29 Main Street, West Hartford (Crown Castle 876328 / ATT CT5843 - CSC Requirement

I will note in our records that the West Hartford Planning and Zoning Division has no record of conditions of approval for this facility.

Thank you for your submission.

Cymon Holzschuh
Siting Analyst
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051
P: 860.827.2941 | F: 860.827.2950

Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

www.ct.gov/deep

Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.

From: Terry, Dashanna [mailto:Dashanna.Terry@crowncastle.com]
Sent: Tuesday, January 12, 2016 12:36 PM
To: CSC-DL Siting Council
Cc: Barbadora, Jeff
Subject: 29 Main St - Existing Telecommunication Tower located at 29 Main Street, West Hartford (Crown Castle 876328 / ATT CT5843 - CSC Requirement

To Whom It May Concern:

Please be advised both the township (see email below) and Crown Castle as the tower owner, do not have the original zoning resolution on file. Although this approval notice was supplied by the township, the docket number was not available. Please use this email as notification to waive this requirement as we will include this and the email from the township within our submission.

Please let me know if you have any questions or need additional information. Thank you in advance.

Dashanna

DASHANNA TERRY
Real Estate Project Coordinator
T: (781) 970-0067| M: (571) 241-0984

CROWN CASTLE
12 Gill Street, Suite 5800, Woburn, MA 01801
Crowncastle.com

From: Brittany Bermingham [mailto:Brittany.Bermingham@WestHartfordCT.gov]
Sent: Tuesday, January 12, 2016 11:15 AM
To: Terry, Dashanna
Subject: 29 South Main Street Permit Information

Hi Dashanna,

Attached please find the Site Plan approval letter for 29 South Main Street. On the phone you referenced 27 South Main but that property does not exist so we think this might be what you are looking for instead. Let me know!

Brittany

Brittany A. Bermingham
Planning Technician
Planning and Zoning Division, West Hartford Town Hall
860-561-7555

Exhibit B

Property Card

29 SOUTH MAIN STREET

Location	29 SOUTH MAIN STREET	**Mblu**	F9/ 5095/ 29/ /
Parcel ID	5095 1 29 0001	**Owner**	TOWN CENTER WEST ASSOCIATES LLC
Assessment	$28,065,520	**Appraisal**	$40,093,600
Vision Id #	18059	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$33,405,900	$6,687,700	$40,093,600
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$23,384,130	$4,681,390	$28,065,520

Owner of Record

Owner	TOWN CENTER WEST ASSOCIATES LLC	**Sale Price**	$0
Co-Owner		**Certificate**	1
Address	433 SOUTH MAIN STREET WEST HARTFORD, CT 06110	**Book & Page**	2351/0010
		Sale Date	09/03/1998
		Instrument	U

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
TOWN CENTER WEST ASSOCIATES LLC	$0	1	2351/0010	U	09/03/1998
DOA 87 LIMITED PARTNERSHIP	$17,607,200	1	1753/0024	Q	12/23/1992
F P INC	$1	1	1572/0154	U	05/01/1991
SEYBURT ASSOCIATES LIMITED	$0	1	1122/0103	U	10/20/1986
FIRST NATIONAL STORES INC	$6,000,000	1	1122/0097	Q	10/20/1986

Building Information

Building 1 : Section 1

Building Photo

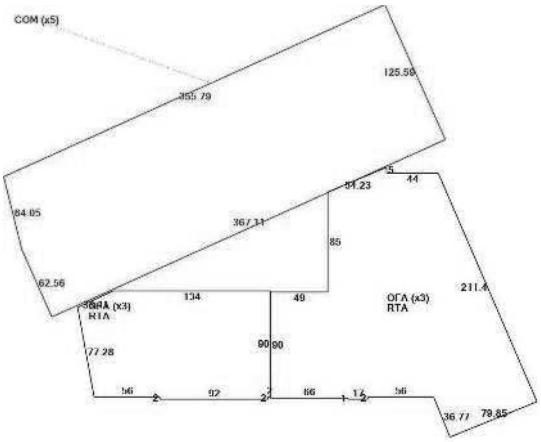
Year Built: 1990
Living Area: 182,816
Replacement Cost: $28,208,446
Building Percent Good: 79
Replacement Cost Less Depreciation: $22,284,700

Building Attributes	
Field	**Description**
Style:	Office General
Model	Comm/Ind
Grade	B 0.95
Stories:	1
Occupancy	
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	None
Heating Fuel	Typical
Heating Type	None
AC Type	None
As Built Use	OFFG
Bldg Use	Commercial
Num of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class B
Frame Type	Steel - Firepr
Plumbing	LIGHT
Ceiling	Not Applicable
Group1	OFF
Wall Height	0.00
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//\00\01\66\76.JPG)

Building Layout



(ParcelSketch.ashx?pid=18059&bid=18059)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
OFA	OFFICE MIXED USE	137,112	137,112
RTA	RETAIL AREA IN MIXED	45,704	45,704
COM	COMMERCIAL - NV	228,748	0
		411,564	182,816

Building 2 : Section 1

Year Built: 1990
Living Area: 228,890

Replacement Cost: $14,630,227
Building Percent Good: 74
Replacement Cost Less Depreciation: $10,826,400

Building Attributes : Bldg 2 of 2	
Field	**Description**
Style:	Parking Garage
Model	Comm/Ind
Grade	C 0.90
Stories:	5
Occupancy	
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	None
Roof Cover	Asbestos
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Reinf Concrete
Floor Cover	None
Heating Fuel	Typical
Heating Type	Steam Boiler
AC Type	None
As Built Use	PGAR
Bldg Use	Commercial
Num of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Conc Reinf
Plumbing	LIGHT
Ceiling	Not Applicable
Group1	IND
Wall Height	12.00
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default.jpg)

Building Layout

(ParcelSketch.ashx?pid=18059&bid=30592)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PGB	PARKING GARAGE LA	228,890	228,890
		228,890	228,890

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	201
Description	Commercial
Zone	BC
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	3.41
Frontage	
Depth	
Assessed Value	$4,681,390
Appraised Value	$6,687,700

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CLP9	Patio - Brick comm			6600.00 SF	$30,000	1
C215	Elevator pass 1.5k lbs			1.00 UNIT	$62,600	1
C215	Elevator pass 1.5k lbs			1.00 UNIT	$62,600	1
CLP4	Paving, Asphalt			18680.00 SF	$48,600	1
CPL6	Light Pole - Steel			130.00 SF	$7,800	1
C215	Elevator pass 1.5k lbs			1.00 UNIT	$81,300	1
COH1	Overhead Door Commercial			98.00 SF	$700	1
COH1	Overhead Door Commercial			161.00 SF	$1,200	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$33,405,900	$6,687,700	$40,093,600
2019	$33,405,900	$6,687,700	$40,093,600
2018	$33,405,900	$6,687,700	$40,093,600

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$23,384,130	$4,681,390	$28,065,520
2019	$23,384,130	$4,681,390	$28,065,520
2018	$23,384,130	$4,681,390	$28,065,520

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CTHA864A
T-MOBILE SITE NAME: CTHA864A
SITE TYPE: SELF SUPPORT TOWER
TOWER HEIGHT: 40'-0"

BUSINESS UNIT #: 876328
SITE ADDRESS: 27-31 SOUTH MAIN ST. WEST HARTFORD, CT 06110
COUNTY: HARTFORD
JURISDICTION: HARTFORD COUNTY

T-MOBILE SPRINT RETAIN SITE CONFIGURATION: 67E5998E_1XAIR+1OP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WEST HARTFORD PARKING
SITE ADDRESS:	27-31 SOUTH MAIN ST. WEST HARTFORD, CT 06110
COUNTY:	HARTFORD
MAP/PARCEL #:	5095 1 29 0001
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.76083000° (41° 45' 36.41")
LONGITUDE:	-72.74305970° (-72° 44' 35.25")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	501.9 FT
CURRENT ZONING:	BC
JURISDICTION:	HARTFORD COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	TOWN CENTER WEST ASSOCIATES LLC 433 SOUTH MAIN STREET WEST HARTFORD, CT 06110
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

PROJECT TEAM

A&E FIRM:	INFINIGY 1033 WATERVLIET SHAKER RD. ALBANY, NY 12205
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1500 CORPORATE DRIVE CANONSBURG, PA 15317
	TRICIA PELON - PROJECT MANAGER
	TRICIA.PELON@CROWNCASTLE.COM
	JASON D'AMICO - CONSTRUCTION MANAGER
	JASON.DAMICO@CROWNCASTLE.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

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

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (3) ANTENNAS
- REMOVE (6) RRHs
- REMOVE (3) HYBRID CABLES
- INSTALL (6) ANTENNAS
- INSTALL (6) RRHs
- INSTALL (3) HYBRID CABLES

GROUND SCOPE OF WORK:
- REMOVE (1) MMBS EQUIPMENT CABINET
- REMOVE (1) BBU EQUIPMENT CABINET
- INSTALL (1) 6160 & (1) B160 BATTERY CABINETS
- INSTALL (3) BB 6648
- INSTALL (1) DUG20 W/ RBS 6601 UNIT
- INSTALL (1) PSU 4813
- INSTALL (1) CSR IXRe V2 (GEN2)
- UPGRADE SERVICE TO 200AMP.

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

LOCATION MAP

NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING:	2018 CT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	09/13/2021
MOUNT ANALYSIS:	INFINIGY
DATED:	08/31/2021
RFDS REVISION:	1
DATED:	07/26/2021
ORDER ID:	559454
REVISION:	0

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

APPROVALS

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

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

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

T-MOBILE SITE NUMBER:
CTHA864A

BU #: **876328**
WEST HARTFORD PARKING

27-31 SOUTH MAIN ST.
WEST HARTFORD, CT 06110

EXISTING 40'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/2021	RCD	FINAL	SS
1	09/13/2021	HL	FINAL	SS
2	10/05/2021	SS	SA REFERENCE ADD	SS
3	10/07/2021	SS	SA REFERENCE ADD	SS

STATE OF CONNECTICUT
KEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/7/2021

SHEET NUMBER: T-1
REVISION: 3

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   - SLAB AND WALLS........3/4"
   - BEAMS AND COLUMNS........1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

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BU #: **876328**
WEST HARTFORD PARKING

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EXISTING 40'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	06/01/2021	RCD	FINAL	SS
1	09/13/2021	HL	FINAL	SS
2	10/05/2021	SS	SA REFERENCE ADD	SS
3	10/07/2021	SS	SA REFERENCE ADD	SS

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SHEET NUMBER: T-2

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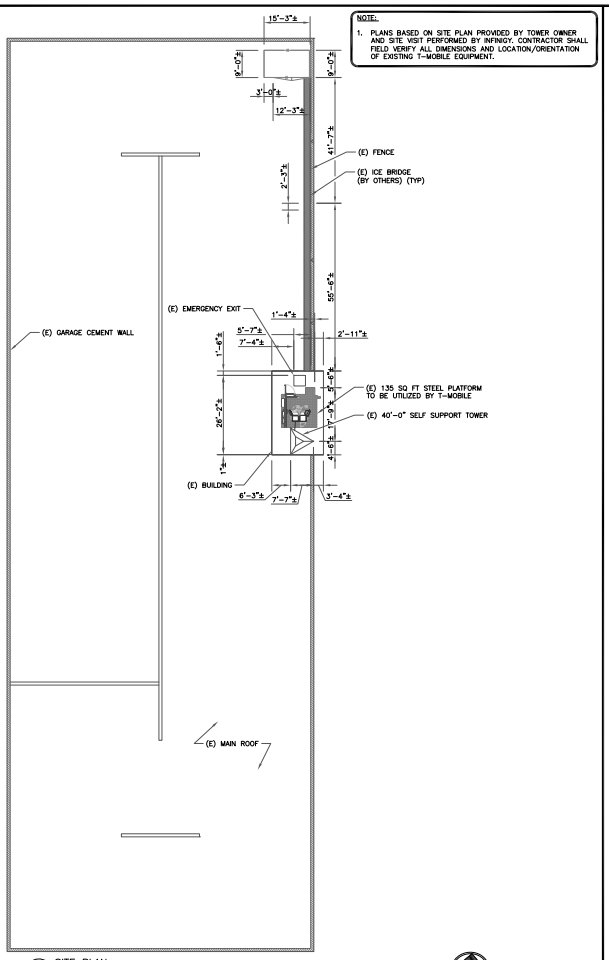
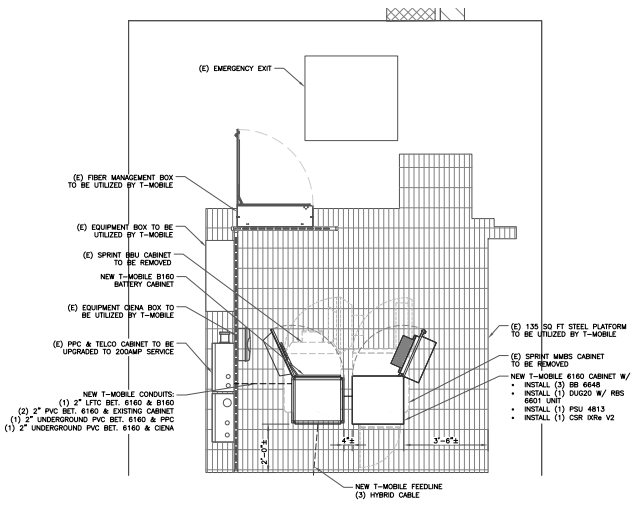


1 SITE PLAN
SCALE: 1/16"=1'-0" (FULL SIZE) 1/32"=1'-0" (11x17)

N

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



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

N

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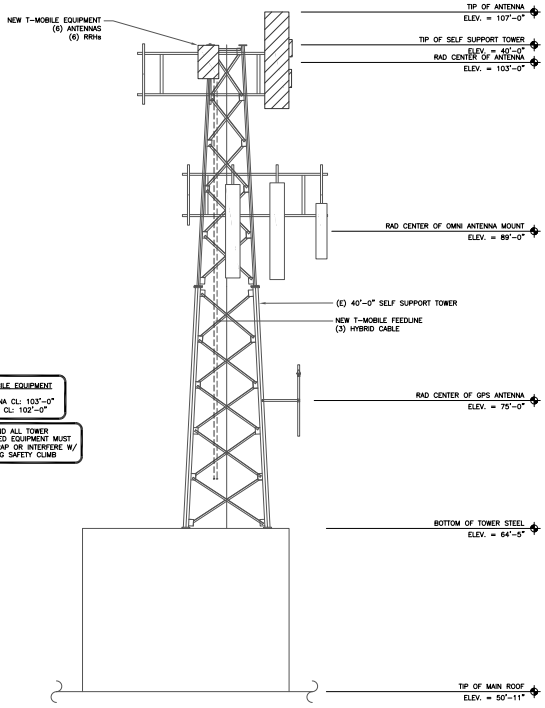
NOTES:

1. ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
2. INFINIGY HAS NOT EVALUATED THE TOWER STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY B+T GROUP.

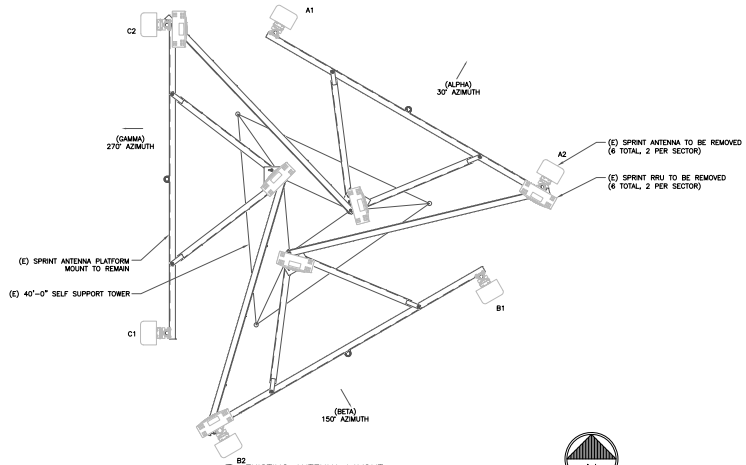


T-MOBILE EQUIPMENT

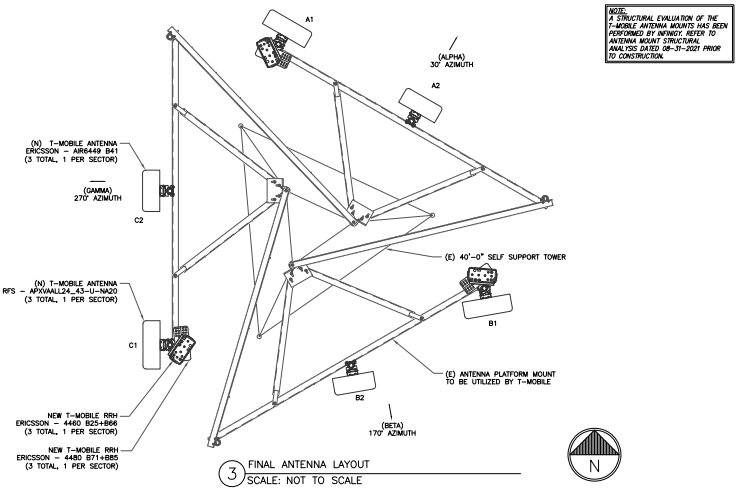
ANTENNA CL: 103'-0"
MOUNT CL: 102'-0"

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

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



NOTE:
A STRUCTURAL EVALUATION OF THE T-MOBILE ANTENNA MOUNTS HAS BEEN PERFORMED BY INFINIGY. REFER TO ANTENNA MOUNT STRUCTURAL ANALYSIS DATED 08-31-2021 PRIOR TO CONSTRUCTION.

3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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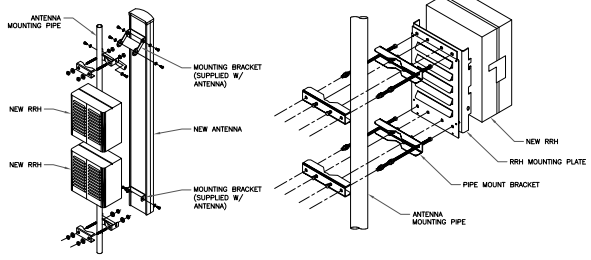
ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L600/L700/N600 L2100/L1900/G1900	103'-0"	30°	RFS	APXVAALL24_43-U-NA20	0°	0°	(1) ERICSSON – RRUS 4480 B71+B85 (1) ERICSSON – RRUS 4460 B25+B66	(1) 6X24 HCS HYBRID
ALPHA	A2	L2500/N2500	103'-0"	30°	ERICSSON	AIR6649 B41	0°	0°	--	
BETA	B1	L600/L700/N600 L2100/L1900/G1900	103'-0"	170°	RFS	APXVAALL24_43-U-NA20	0°	0°	(1) ERICSSON – RRUS 4480 B71+B85 (1) ERICSSON – RRUS 4460 B25+B66	(1) 6X24 HCS HYBRID
BETA	B2	L2500/N2500	103'-0"	170°	ERICSSON	AIR6649 B41	0°	0°	--	
GAMMA	G1	L600/L700/N600 L2100/L1900/G1900	103'-0"	270°	RFS	APXVAALL24_43-U-NA20	0°	0°	(1) ERICSSON – RRUS 4480 B71+B85 (1) ERICSSON – RRUS 4460 B25+B66	(1) 6X24 HCS HYBRID
GAMMA	G2	L2500/N2500	103'-0"	270°	ERICSSON	AIR6649 B41	0°	0°	--	

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



NOTE:

1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

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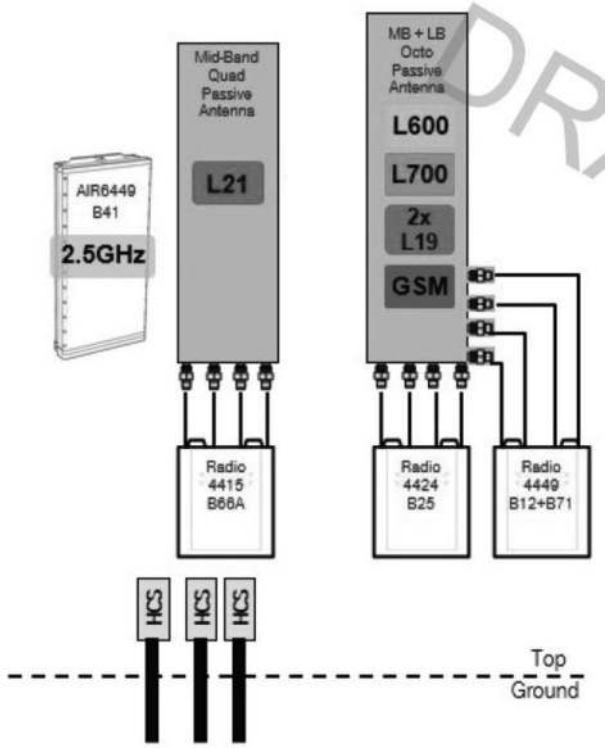

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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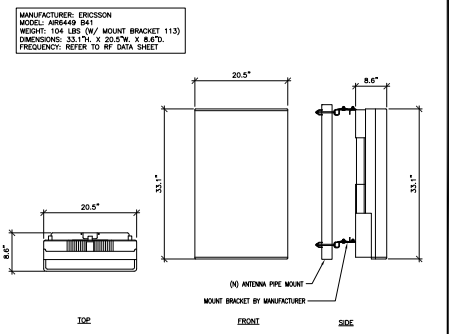
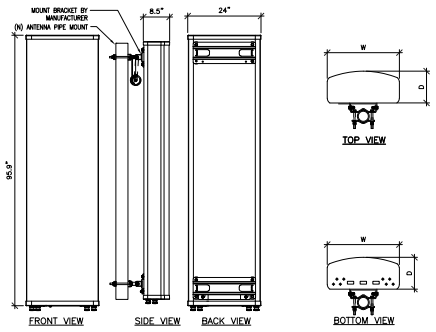
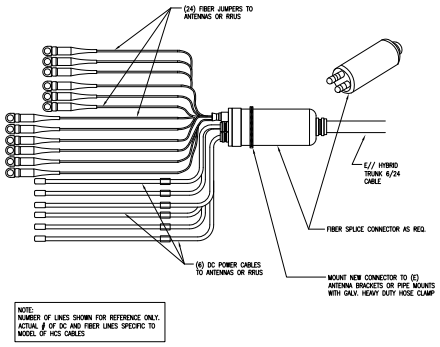


1 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

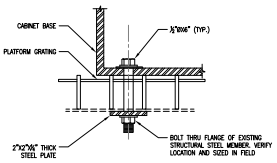
RFS ANTENNAS	
MODEL	WEIGHT (lb)
(8') APXVAALL24_43-U-NA20	122.8
WEIGHT W/ MOUNTING BRACKET (lb):	149.9



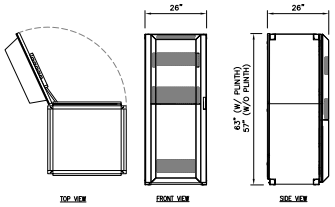
2 (N) APXVAAL24_43-UNA20 ANTENNA SPEC
SCALE: NOT TO SCALE



3 (N) 6X24 HCS CABLE DETAIL
SCALE: NOT TO SCALE

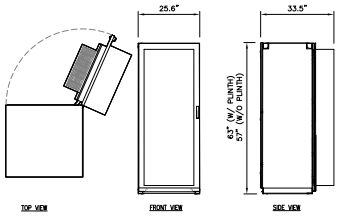


4 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



ERICSSON MODEL NO.: B160	
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

5 (N) B160 BATTERY CABINET DETAIL
SCALE: NOT TO SCALE



ERICSSON MODEL NO.: 6160	
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

6 (N) 6160 EQUIPMENT CABINET DETAIL
SCALE: NOT TO SCALE

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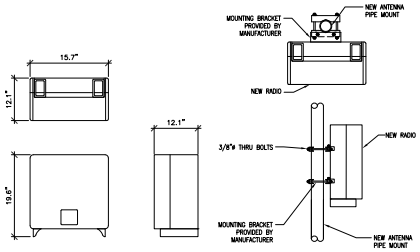
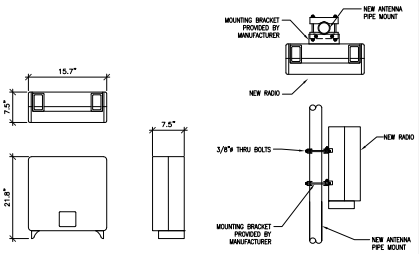
DIMENSIONS, WxDxH:	15.7"x12.1"x19.6"
TOTAL WEIGHT:	109 lbs
TEMPERATURE:	-40° TO 55° C



(1) (N) RADIO 4460 B25+B66 SPEC
SCALE: NOT TO SCALE

DIMENSIONS, WxDxH:	15.2"x7.5"x19.2"
TOTAL WEIGHT:	92.5 lbs
TEMPERATURE:	-40° TO 55° C

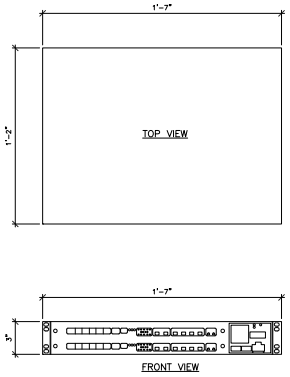


(2) (N) RADIO 4480 B71+B85 SPEC
SCALE: NOT TO SCALE

DIGITAL UNIT FOR GSM
THE DIGITAL UNIT GSM, DUG 20 CAN CONTROL UP TO 12 GSM CARRIERS. IF MORE THAN 12 TRXS ARE REQUIRED, THEN AN ADDITIONAL DUG CAN BE INSTALLED IN THE RBS 6601 MAIN UNIT AND SYNCHRONIZED WITH THE OTHER DUG IN THE MAIN UNIT.
THE DUG SUPPORTS THE CROSS-CONNECTION OF INDIVIDUAL TIME SLOTS TO SPECIFIC TRXS AND EXTRACTS THE SYNCHRONIZATION INFORMATION FROM THE PULSE-CODE MODULATION (PCM) LINK TO GENERATE A TIMING REFERENCE FOR THE RBS.
THE DUG 20 SUPPORTS:

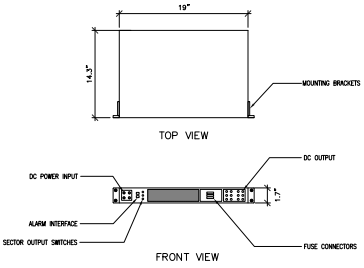
- Ethernet connection interface
- Electric accessing
- Link Access Procedure on D-Channel (LAPD) concentration - multiplexing
- Abis optimization
- Multidrop connection
- Synchronization via network, through an external GPS receiver
- Transceiver Power (TX) synchronization
- Site LAN

(3) (N) DUG20 SPEC
SCALE: NOT TO SCALE



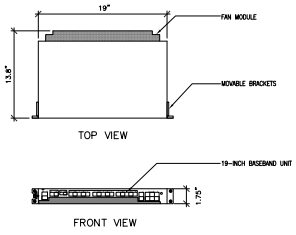
(4) (N) RBS 6601 MAIN UNIT SPEC
SCALE: NOT TO SCALE

DIMENSIONS, WxDxH:	19"x14.3"x1.7"
TOTAL WEIGHT:	< 17.3 lbs



(5) (N) PSU 4813 SPEC
SCALE: NOT TO SCALE

DIMENSIONS, WxDxH:	(19"x13.78"x1.75")
MAX POWER CONSUMPTION:	180 W
BREAKER SIZE:	MIN 10 A, MAX 30 A
TOTAL WEIGHT:	± 14.33 lbs



(6) (N) BASEBAND 6648 SPEC
SCALE: NOT TO SCALE

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T-MOBILE PANEL SCHEDULE

MAIN: 200A MAIN BREAKER	**VOTAGE/PHASE:** 120/240V, 1-PHASE, 3-WIRE	**SHORT CIRCUIT CURRENT RATING:** --
MOUNTING: INSIDE PPC ENCLOSURE	**ENCLOSURE:** NEMA 3R	**SURGE PROTECTION DEVICE:** YES

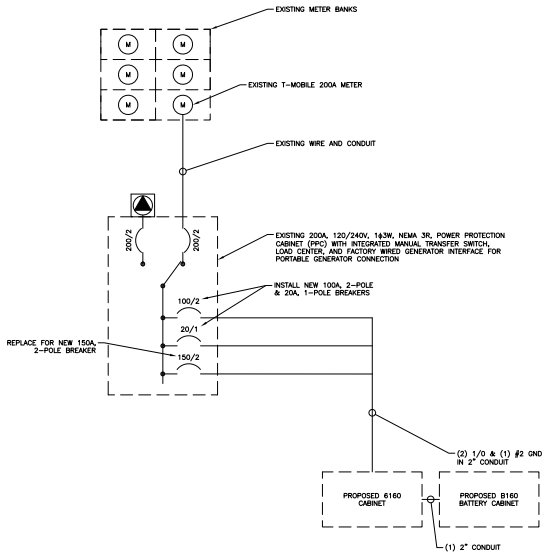
					PHASE LOADS (VA)						
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	A	B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
RBS 6601	1000	C	100	1	1000		2	30	NC	0	GENERATOR
	1000	C		3		1000	4		NC	0	
6160	7000	C	100	5	7200		6	20	NC	200	TOWER LIGHTS
	7000	C		7		7200	8		NC	200	
6160 GFI	180	NC	20	9	360		10	20	NC	180	TELCO GFCI
BLANK				11		0	12				BLANK
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					8560	8200					
25% OF CONTINUOUS LOAD (VA) =					2050	2050					
TOTAL LOAD (VA) =					11610	10250					
TOTAL LOAD (A) =					89	86					

*INDICATES NEW LOAD. ALL OTHER LOADS ARE EXISTING. NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

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



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

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T-MOBILE SITE NUMBER:
CTHA864A

BU #: **876328**
WEST HARTFORD PARKING

27-31 SOUTH MAIN ST.
WEST HARTFORD, CT 06110

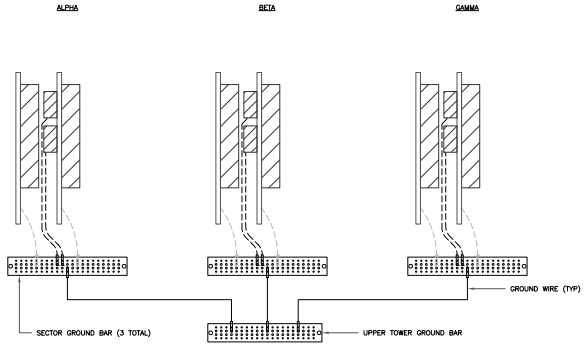
EXISTING 40'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN.	DESCRIPTION	DES./QA
0	06/01/2021	RCD	FINAL	SS
1	09/13/2021	HL	FINAL	SS
2	10/05/2021	SS	SA REVERENCE ADD	SS
3	10/07/2021	SS	SA REVERENCE ADD	SS

STATE OF CONNECTICUT
HEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER
10/7/2021

SHEET NUMBER:	REVISION:
E-1	3



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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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BU #: **876328**
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WEST HARTFORD, CT 06110

EXISTING 40'-0" SELF SUPPORT TOWER

ISSUED FOR:

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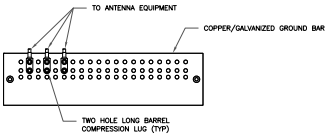
3	10/07/2021	SS	SA REFERENCE ADD	SS

STATE OF CONNECTICUT
KEI SAKANISHI
34916
LICENSED PROFESSIONAL ENGINEER
10/7/2021

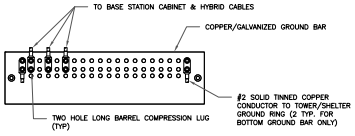
SHEET NUMBER:	REVISION:
G-1	3



NOTES:

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

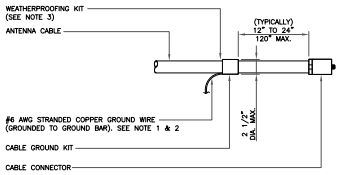
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

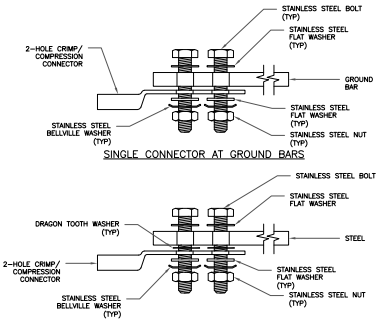
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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3	10/07/2021	SS	SA REFERENCE ADD	SS

STATE OF CONNECTICUT
SHEI SAKANDE
34916
LICENSED PROFESSIONAL ENGINEER

10/7/2021

SHEET NUMBER: G-2
REVISION: 3

Exhibit D

Structural Analysis Report

Date: **September 13, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	**Site Number:**	CTHA864A
	Site Name:	CTHA864A
Crown Castle Designation:	**BU Number:**	876328
	Site Name:	West Hartford Parking Garage
	JDE Job Number:	652117
	Work Order Number:	2014783
	Order Number:	559454 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	155853.001.01
Site Data:	**27-31 South Main St., West Hartford, Hartford County, CT** **Latitude *41° 45' 36.41"*, Longitude *-72° 44' 35.25"*** **40 Foot - Self Support Tower on Modified Parking Garage**	

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

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

LC7: Proposed Equipment Configuration **Sufficient Capacity –69.4%**

This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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

Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 40 ft. Self-Support tower designed by Rohn.

The tower has been modified per reinforcement drawings by GPD in June of 2015. Reinforcement consists of extension plates to the tower base frame connections and extension plates to the existing stair well walls.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
102.0	103.0	3	Ericsson	AIR6449 B41_T-MOBILE	3	1-5/8
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
	102.0	1	--	Sector Mount [SM 502-3]		
75.0	77.0	1	Lucent	KS24019-L112A	1	1/2
	75.0	1	--	Side Arm Mount [SO 306-1]		

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)
92.0	92.0	1	--	Sector Mount [SM 503-3]	3 6 3	7/8 13/16 3/8
		3	Site Pro 1	SFS-V-L Reinforcement Kit		
	91.0	3	Ericsson	AIR 6449 B77D		
	89.0	3	CCI Antennas	DMP65R-BU8D		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 32 B66A		
		3	Ericsson	RRUS 4415 B25_CCIV2		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14_CCIV2		
		3	Ericsson	RRUS E2 B29		
		3	Quintel Tech.	QD8616-7		
		2	Raycap	DC6-48-60-0-8C-EV		
		1	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC9-48-60-24-8C-EV		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	87.0	3	Ericsson	AIR 6419 B77G		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	1440544	CCI Sites
Tower Mapping		
Mount Analysis Report	9959180	CCI Sites
Parking Garage Modification	5735691	CCI Sites
Post Modification Inspection	6076906	CCI Sites
Base Frame & Parking Garage Design	5460756	CCI Sites
Crown CAD Package	Date: 09/02/2021	CCI Sites

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	105 - 85	Leg	ROHN 2.5 STD	2	-13.439	66.738	20.1	Pass
T2	85 - 65	Leg	ROHN 2.5 STD	38	-33.337	59.993	55.6	Pass
T1	105 - 85	Diagonal	L1 1/2x1 1/2x1/8	9	-2.834	5.082	55.8	Pass
T2	85 - 65	Diagonal	L1 3/4x1 3/4x3/16	46	-2.422	6.769	35.8	Pass
T1	105 - 85	Top Girt	L2x2x1/8	6	-0.271	4.273	6.3	Pass
T2	85 - 65	Top Girt	L2x2x1/8	40	-0.578	4.273	13.5	Pass
							Summary	
						Leg (T2)	55.6	Pass
						Diagonal (T1)	55.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Top Girt (T2)	13.5	Pass
						Bolt Checks	69.4	Pass
						Rating =	69.4	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2,3	Base Frame & Parking Garage	65.0	48.8	Pass

Structure Rating (max from all components) =	69.4%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5.
3) The base frame and parking garage capacity was determined based on reaction comparison from the previous modification design passing analysis (CCI Sites Doc ID# 5735731, dated 7/28/2015). See Appendix C for the reaction comparison.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section								
Legs	T1	ROHN 2.5 STD					6.5625	
Leg Grade		A572-50					5 @ 4	0.7
Diagonals			L1 1/2x1 1/2x1/8					
Diagonal Grade				A36				
Top Girts					L2x2x1/8			
Face Width (ft)	8.5625							
# Panels @ (ft)		4 @ 5						0.9
Weight (K)	1.6							
Section	T2		L1 3/4x1 3/4x3/16					

105.0 ft

85.0 ft

65.0 ft

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

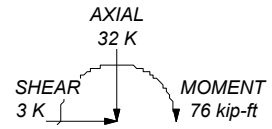
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0'
8. TIA-222-H Annex S
9. TOWER RATING: 69.4%

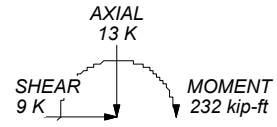
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 36 K
SHEAR: 5 K

UPLIFT: -27 K
SHEAR: 5 K



TORQUE 1 kip-ft
50 mph WIND - 1.500 in ICE



TORQUE 2 kip-ft
REACTIONS - 117 mph WIND

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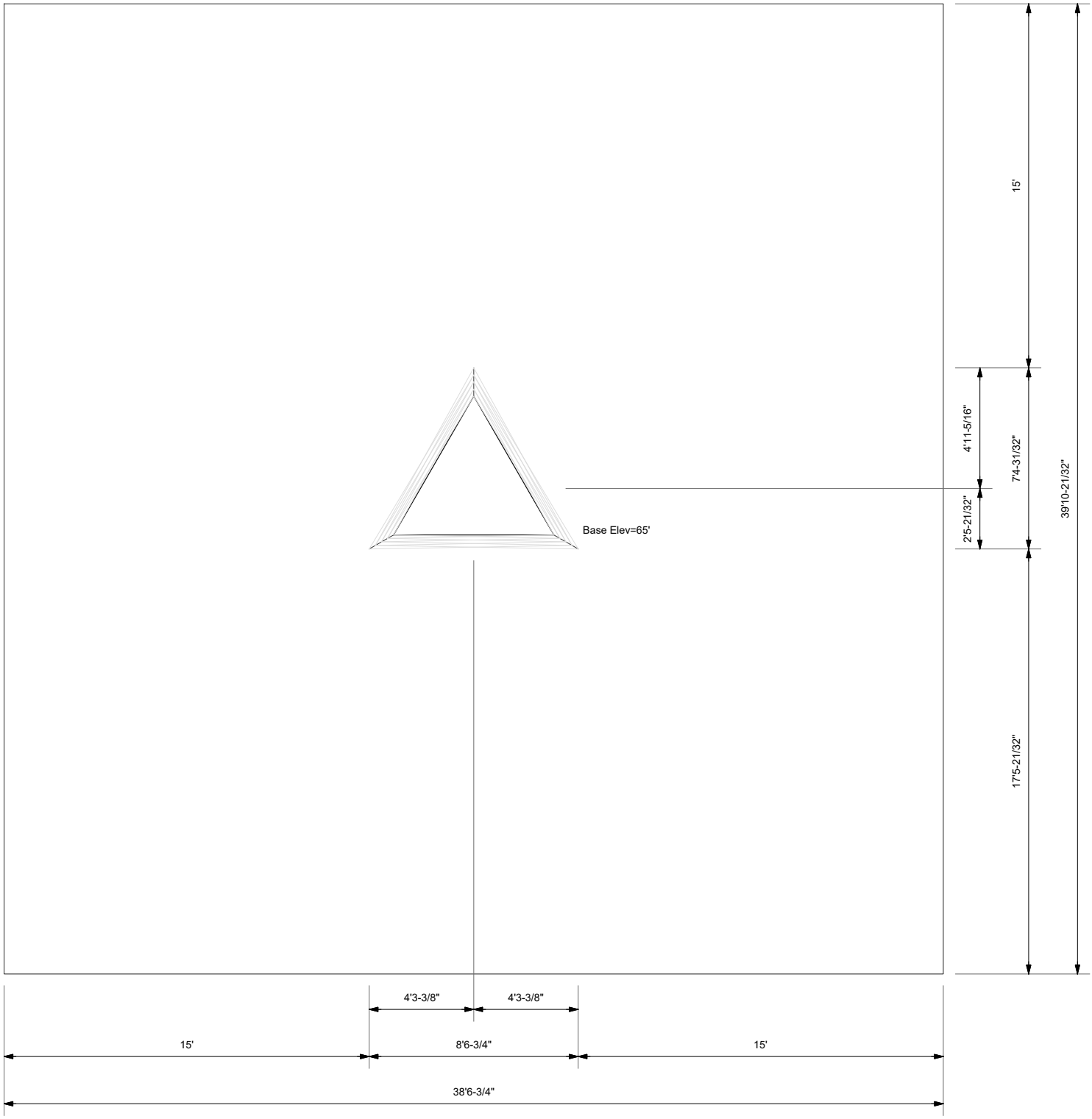
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***155853.001.01 - WEST HARTFORD PARKING GARAGE, CT (BU# 87632***		
Project:		
Client: Crown Castle	Drawn by: Chinmaya	App'd:
Code: TIA-222-H	Date: 09/04/21	Scale: NTS
Path:		Dwg No. E-1

Plot Plan
Total Area - 0.04 Acres



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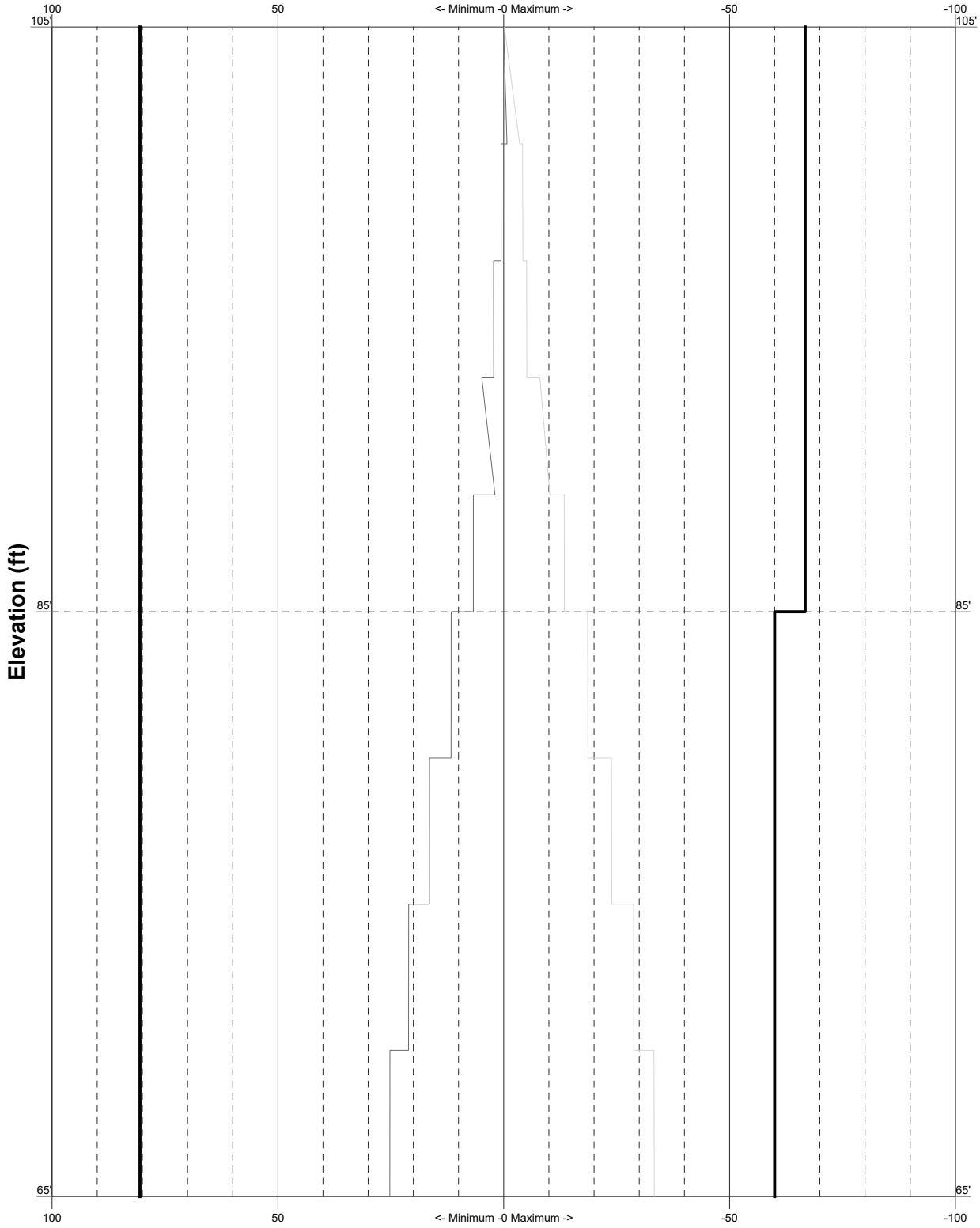
Client: Crown Castle	Drawn by: Chinmaya	App'd:	
Code: TIA-222-H	Date: 09/04/21	Scale: NTS	
Path:		Dwg No. E-2	

TIA-222-H - 117 mph/50 mph 1.500 in Ice Exposure B

Leg Capacity ——— Leg Compression (K)



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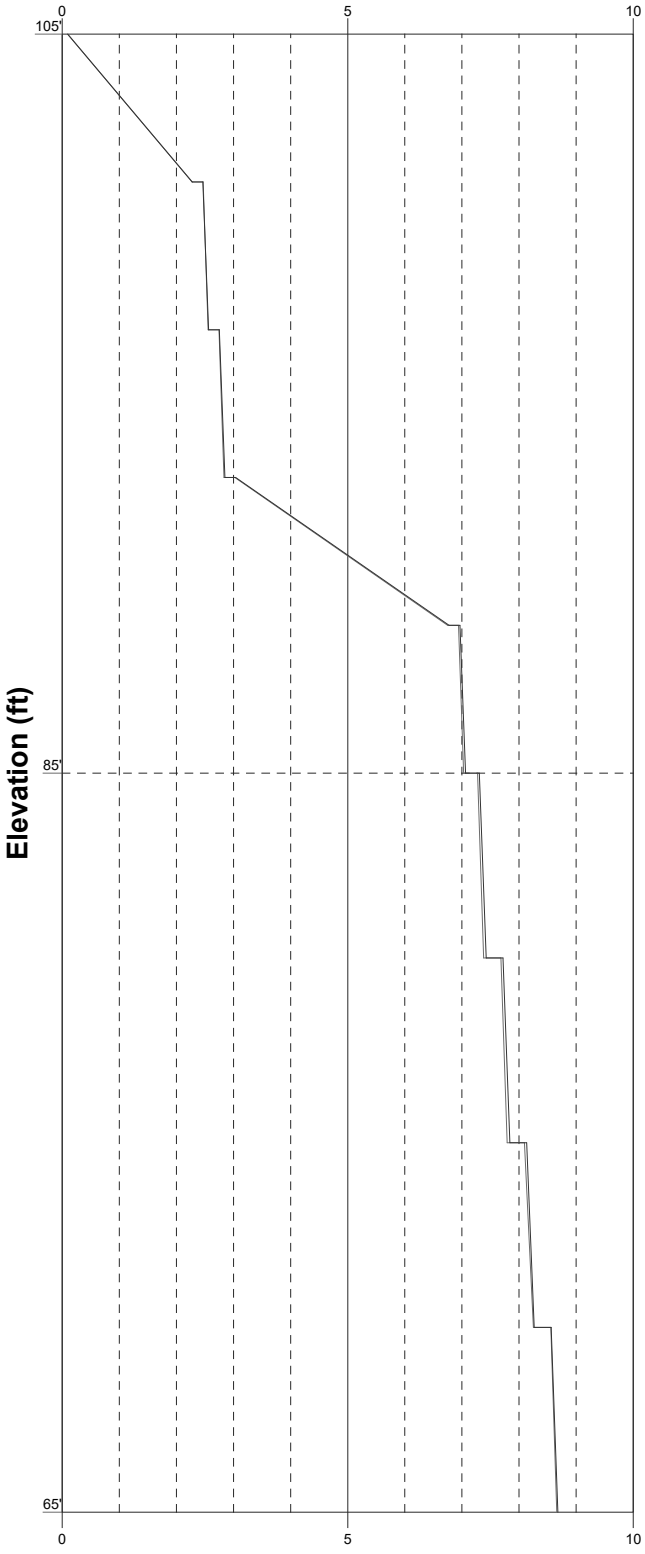
Project:		
Client: Crown Castle	Drawn by: Chinmaya	App'd:
Code: TIA-222-H	Date: 09/04/21	Scale: NTS
Path:		Dwg No. E-3

TIA-222-H - 117 mph/50 mph 1.500 in Ice Exposure B

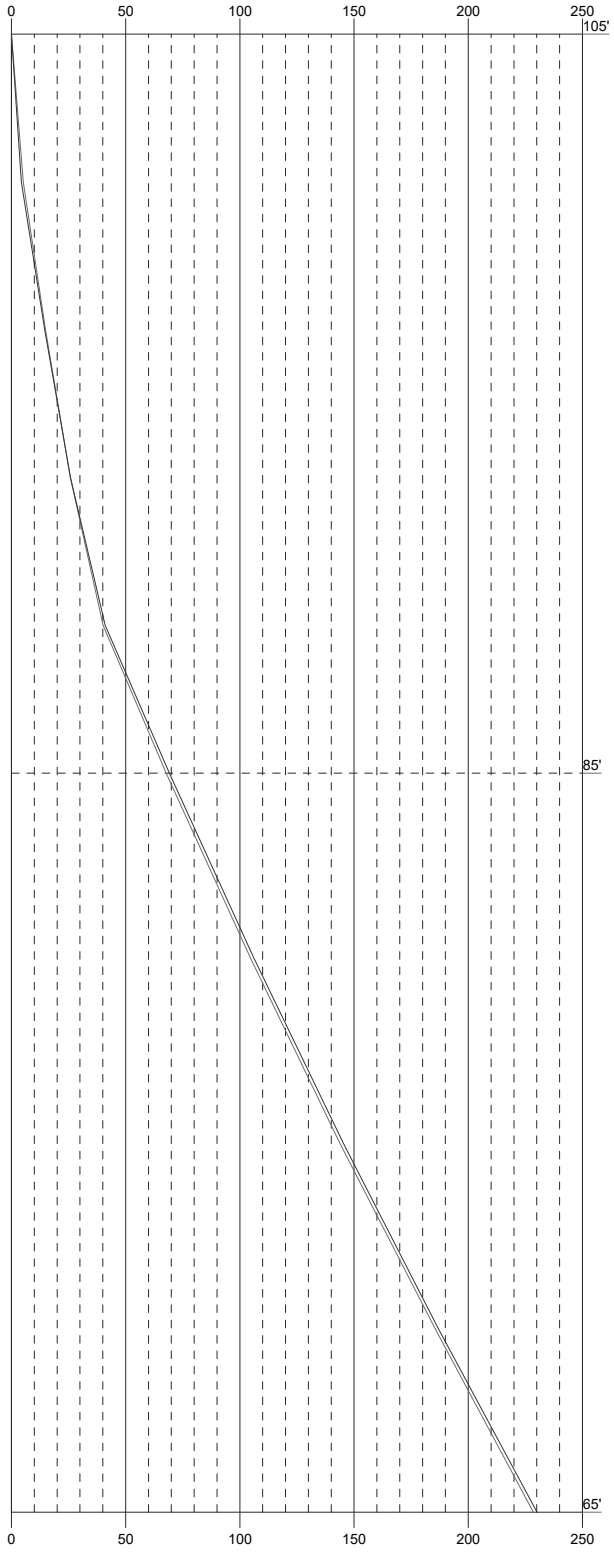
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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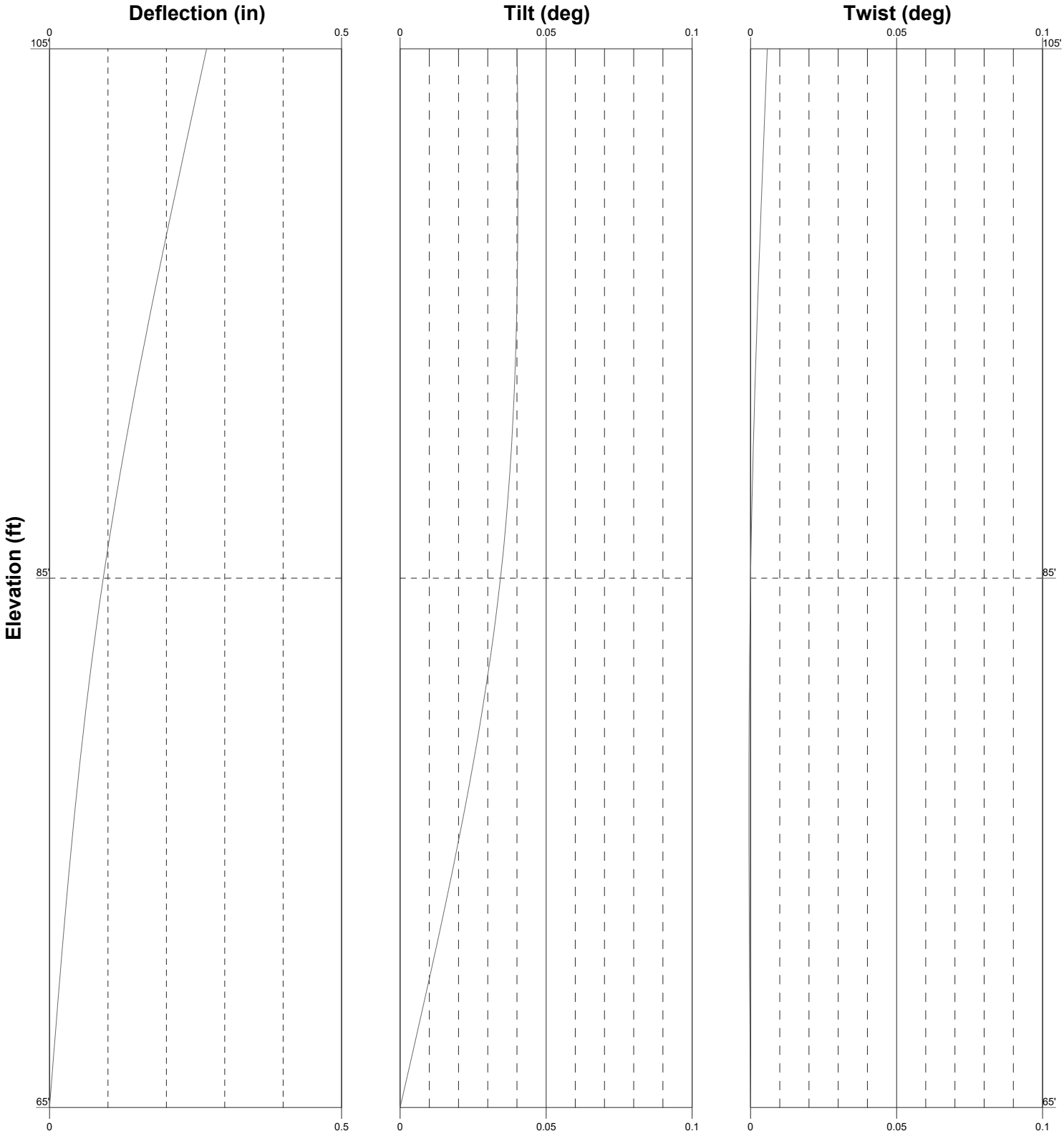
Job: *155853.001.01 - WEST HARTFORD PARKING GARAGE, CT (BU# 87632*		
Project:		
Client: Crown Castle	Drawn by: Chinmaya	App'd:
Code: TIA-222-H	Date: 09/04/21	Scale: NTS
Path:		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values



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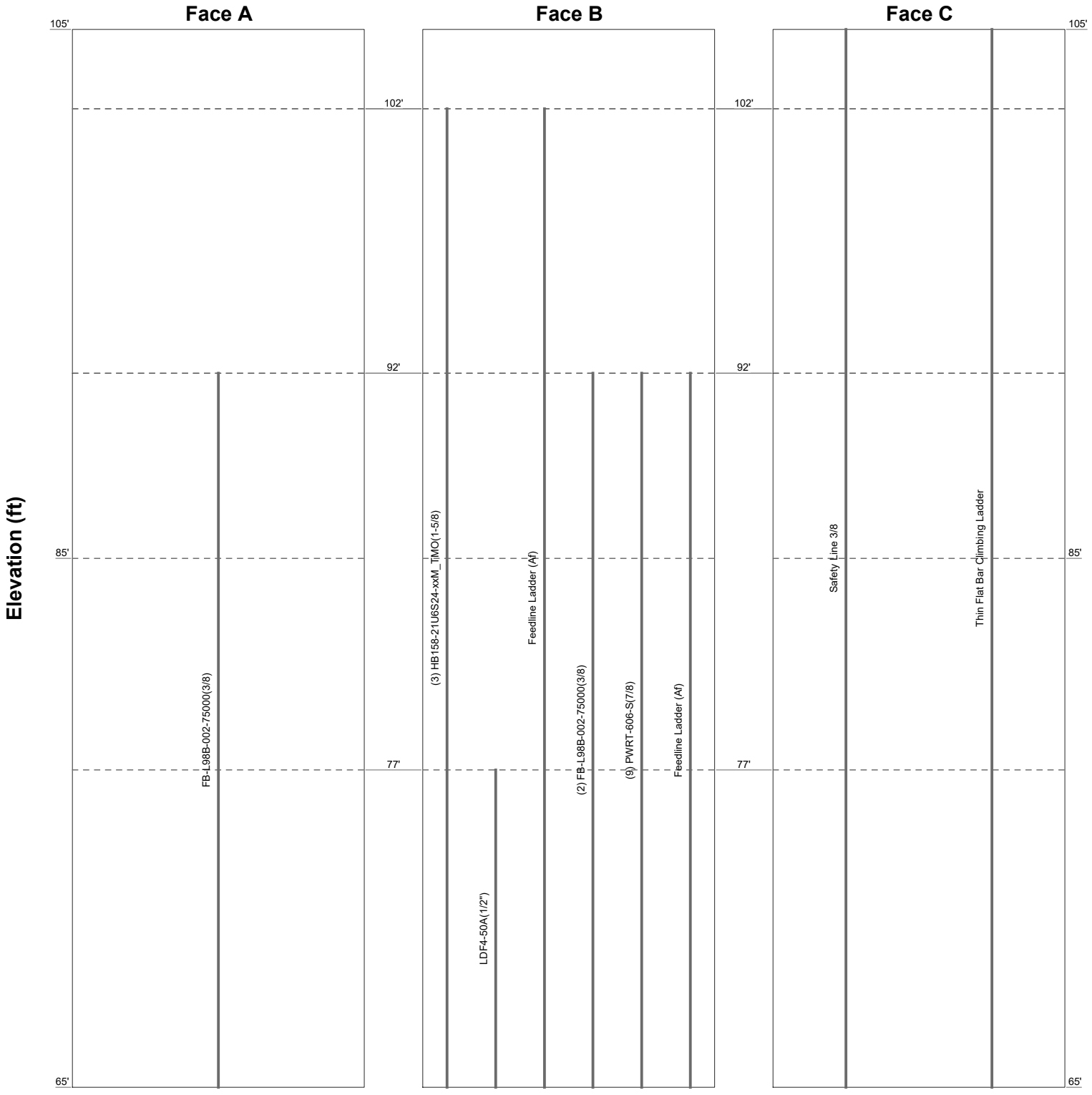
Project:		
Client: Crown Castle	Drawn by: Chinmaya	App'd:
Code: TIA-222-H	Date: 09/04/21	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
65' - 105'

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



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Project:		
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Code: TIA-222-H	Date: 09/04/21	Scale: NTS
Path:		Dwg No. E-7

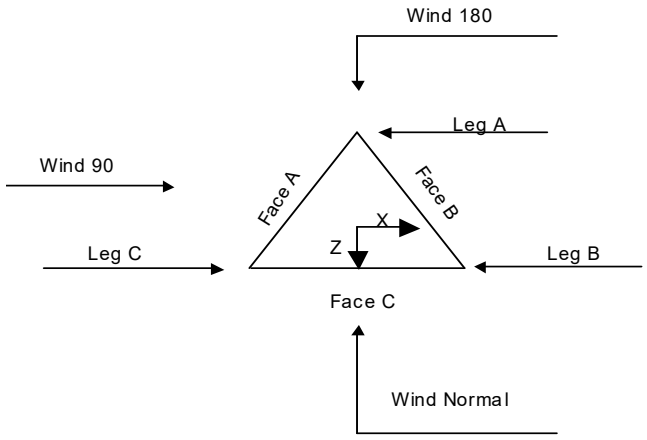
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 105' above the ground line.
The base of the tower is set at an elevation of 65' above the ground line.
The face width of the tower is 6'6-3/4" at the top and 8'6-3/4" at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 191'.
Basic wind speed of 117 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0'.
Nominal ice thickness of 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	105'-85'			6'6-3/4"	1	20'
T2	85'-65'			6'6-3/4"	1	20'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	105'-85'	4'	X Brace	No	No	0.000	0.000
T2	85'-65'	5'	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 105'-85'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 85'-65'	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 105'-85'	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 85'-65'	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 105'-85'	0.000	0.188	A36 (36 ksi)	1.05	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 85'-65'	0.000	0.188	A36 (36 ksi)	1.05	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 105'-85'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 85'-65'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 105'-85'	0.000	1	0.000	0.75	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1
T2 85'-65'	0.000	1	0.000	0.75	0.000	0.75	0.000	1	0.000	1	0.000	1	0.000	1

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 105'-85'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 85'-65'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 105'-85'	Flange	0.625 A325N	4	0.500 A325N	1	0.500 A325N	1	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0
T2 85'-65'	Flange	0.000 A325N	0	0.500 A325N	1	0.500 A325N	1	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0	0.000 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
HB158-21U6S24-xxM_TMO (1-5/8)	B	No	No	Ar (CaAa)	102' - 65'	0.000	-0.2	3	3	0.850 0.750	1.996		0.003
LDF4-50A(1/2")	B	No	No	Ar (CaAa)	77' - 65'	0.000	-0.25	1	1	0.500	0.630		0.000
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	102' - 65'	0.000	-0.2	1	1	3.000	3.000		0.008
FB-L98B-002-75000(3/8)	B	No	No	Ar (CaAa)	92' - 65'	0.000	0.125	2	2	0.850 0.750	0.394		0.000
FB-L98B-002-75000(3/8)	A	No	No	Ar (CaAa)	92' - 65'	0.000	0.35	1	1	0.500	0.394		0.000
PWRT-606-S(7/8)	B	No	No	Ar (CaAa)	92' - 65'	0.000	0.2	9	8	0.850 0.750	0.920		0.001
Feedline	B	No	No	Af (CaAa)	92' - 65'	0.000	0.2	1	1	3.000	3.000		0.008

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
Ladder (Af) *													
Safety Line 3/8	C	No	No	Ar (CaAa)	105' - 65'	-1.000	0	1	1	0.375	0.375		0.000
Thin Flat Bar Climbing Ladder *	C	No	No	Af (CaAa)	105' - 65'	-0.500	0	1	1	2.000	2.000		0.004

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	105'-85'	A	0.000	0.000	0.276	0.000	0.000
		B	0.000	0.000	28.527	0.000	0.386
		C	0.000	0.000	7.417	0.000	0.084
T2	85'-65'	A	0.000	0.000	0.787	0.000	0.001
		B	0.000	0.000	50.867	0.000	0.650
		C	0.000	0.000	7.417	0.000	0.084

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	105'-85'	A	1.417	0.000	0.000	2.260	0.000	0.022
		B		0.000	0.000	63.134	0.000	1.045
		C		0.000	0.000	18.754	0.000	0.294
T2	85'-65'	A	1.384	0.000	0.000	6.324	0.000	0.061
		B		0.000	0.000	119.802	0.000	1.863
		C		0.000	0.000	18.489	0.000	0.286

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	105'-85'	3.858	-3.019	4.006	-2.515
T2	85'-65'	7.611	-3.571	7.933	-3.972

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	HB158-21U6S24-xxM_TMO (1-5/8)	85.00 - 102.00	0.6000	0.6000
T1	4	Feedline Ladder (Af)	85.00 - 102.00	0.6000	0.6000
T1	7	FB-L98B-002-75000(3/8)	85.00 - 92.00	0.6000	0.6000
T1	8	FB-L98B-002-75000(3/8)	85.00 - 92.00	0.6000	0.6000
T1	10	PWRT-606-S(7/8)	85.00 - 92.00	0.6000	0.6000
T1	12	Feedline Ladder (Af)	85.00 - 92.00	0.6000	0.6000
T1	14	Safety Line 3/8	85.00 - 105.00	0.6000	0.6000
T1	15	Thin Flat Bar Climbing Ladder	85.00 - 105.00	0.6000	0.6000
T2	2	HB158-21U6S24-xxM_TMO (1-5/8)	65.00 - 85.00	0.6000	0.6000
T2	3	LDF4-50A(1/2")	65.00 - 77.00	0.6000	0.6000
T2	4	Feedline Ladder (Af)	65.00 - 85.00	0.6000	0.6000
T2	7	FB-L98B-002-75000(3/8)	65.00 - 85.00	0.6000	0.6000
T2	8	FB-L98B-002-75000(3/8)	65.00 - 85.00	0.6000	0.6000
T2	10	PWRT-606-S(7/8)	65.00 - 85.00	0.6000	0.6000
T2	12	Feedline Ladder (Af)	65.00 - 85.00	0.6000	0.6000
T2	14	Safety Line 3/8	65.00 - 85.00	0.6000	0.6000
T2	15	Thin Flat Bar Climbing Ladder	65.00 - 85.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AIR6449 B41_T-MOBILE	A	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	5.270 5.700 6.140 7.060	2.030 2.360 2.700 3.430	0.115 0.154 0.197 0.296
AIR6449 B41_T-MOBILE	B	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	5.270 5.700 6.140 7.060	2.030 2.360 2.700 3.430	0.115 0.154 0.197 0.296
AIR6449 B41_T-MOBILE	C	From Leg	4.000 0'	0.000	102'	No Ice 1/2" Ice	5.270 5.700	2.030 2.360	0.115 0.154

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1'			1" Ice	6.140	2.700	0.197
						2" Ice	7.060	3.430	0.296
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
(2) RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
Radio 4480_TMOV2	A	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	2.878 3.091 3.312 3.775	1.397 1.558 1.727 2.090	0.081 0.103 0.128 0.188
(2) Radio 4480_TMOV2	B	From Leg	4.000 0' 1'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	2.878 3.091 3.312 3.775	1.397 1.558 1.727 2.090	0.081 0.103 0.128 0.188
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Sector Mount [SM 502-3]	C	None		0.000	102'	No Ice 1/2" Ice 1" Ice 2" Ice	29.820 42.210 54.430 78.490	29.820 42.210 54.430 78.490	1.673 2.266 3.052 5.180
*									
RRUS 32 B30	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B30	B	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B30	C	From Leg	4.000 0'	0.000	92'	No Ice 1/2" Ice	2.692 2.912	1.573 1.756	0.060 0.080

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-3'			1" Ice	3.138	1.945	0.104
						2" Ice	3.614	2.346	0.161
RRUS 32 B66A	A	From Leg	4.000	0.000	92'	No Ice	2.864	1.782	0.055
			0'			1/2" Ice	3.090	1.973	0.077
			-3'			1" Ice	3.323	2.171	0.103
						2" Ice	3.813	2.589	0.165
RRUS 32 B66A	B	From Leg	4.000	0.000	92'	No Ice	2.864	1.782	0.055
			0'			1/2" Ice	3.090	1.973	0.077
			-3'			1" Ice	3.323	2.171	0.103
						2" Ice	3.813	2.589	0.165
RRUS 32 B66A	C	From Leg	4.000	0.000	92'	No Ice	2.864	1.782	0.055
			0'			1/2" Ice	3.090	1.973	0.077
			-3'			1" Ice	3.323	2.171	0.103
						2" Ice	3.813	2.589	0.165
RRUS E2 B29	A	From Leg	4.000	0.000	92'	No Ice	3.145	1.285	0.060
			0'			1/2" Ice	3.365	1.438	0.083
			-3'			1" Ice	3.592	1.600	0.110
						2" Ice	4.069	1.954	0.173
RRUS E2 B29	B	From Leg	4.000	0.000	92'	No Ice	3.145	1.285	0.060
			0'			1/2" Ice	3.365	1.438	0.083
			-3'			1" Ice	3.592	1.600	0.110
						2" Ice	4.069	1.954	0.173
RRUS E2 B29	C	From Leg	4.000	0.000	92'	No Ice	3.145	1.285	0.060
			0'			1/2" Ice	3.365	1.438	0.083
			-3'			1" Ice	3.592	1.600	0.110
						2" Ice	4.069	1.954	0.173
AIR 6419 B77G	A	From Leg	4.000	0.000	92'	No Ice	3.668	1.653	0.066
			0'			1/2" Ice	3.915	1.843	0.092
			-5'			1" Ice	4.169	2.039	0.120
						2" Ice	4.699	2.453	0.189
AIR 6419 B77G	B	From Leg	4.000	0.000	92'	No Ice	3.668	1.653	0.066
			0'			1/2" Ice	3.915	1.843	0.092
			-5'			1" Ice	4.169	2.039	0.120
						2" Ice	4.699	2.453	0.189
AIR 6419 B77G	C	From Leg	4.000	0.000	92'	No Ice	3.668	1.653	0.066
			0'			1/2" Ice	3.915	1.843	0.092
			-5'			1" Ice	4.169	2.039	0.120
						2" Ice	4.699	2.453	0.189
QD8616-7 w/ Mount Pipe	A	From Leg	4.000	0.000	92'	No Ice	19.052	11.738	0.183
			0'			1/2" Ice	19.793	13.269	0.316
			-3'			1" Ice	20.543	14.825	0.460
						2" Ice	21.978	17.190	0.784
QD8616-7 w/ Mount Pipe	B	From Leg	4.000	0.000	92'	No Ice	19.052	11.738	0.183
			0'			1/2" Ice	19.793	13.269	0.316
			-3'			1" Ice	20.543	14.825	0.460
						2" Ice	21.978	17.190	0.784
QD8616-7 w/ Mount Pipe	C	From Leg	4.000	0.000	92'	No Ice	19.052	11.738	0.183
			0'			1/2" Ice	19.793	13.269	0.316
			-3'			1" Ice	20.543	14.825	0.460
						2" Ice	21.978	17.190	0.784
AIR 6449 B77D	A	From Leg	4.000	0.000	92'	No Ice	3.640	1.720	0.082
			0'			1/2" Ice	4.000	2.020	0.111
			-1'			1" Ice	4.370	2.330	0.145
						2" Ice	5.160	2.990	0.223
AIR 6449 B77D	B	From Leg	4.000	0.000	92'	No Ice	3.640	1.720	0.082
			0'			1/2" Ice	4.000	2.020	0.111
			-1'			1" Ice	4.370	2.330	0.145

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	5.160	2.990	0.223
AIR 6449 B77D	C	From Leg	4.000 0' -1'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	3.640 4.000 4.370 5.160	1.720 2.020 2.330 2.990	0.082 0.111 0.145 0.223
DMP65R-BU8D w/ Mount Pipe	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	15.890 16.810 17.760 19.700	7.890 8.740 9.600 11.370	0.139 0.252 0.380 0.679
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	15.890 16.810 17.760 19.700	7.890 8.740 9.600 11.370	0.139 0.252 0.380 0.679
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	15.890 16.810 17.760 19.700	7.890 8.740 9.600 11.370	0.139 0.252 0.380 0.679
RRUS 4478 B14_CCIV2	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.021 2.200 2.386 2.780	1.246 1.396 1.554 1.891	0.059 0.077 0.097 0.147
RRUS 4478 B14_CCIV2	B	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.021 2.200 2.386 2.780	1.246 1.396 1.554 1.891	0.059 0.077 0.097 0.147
RRUS 4478 B14_CCIV2	C	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.021 2.200 2.386 2.780	1.246 1.396 1.554 1.891	0.059 0.077 0.097 0.147
RRUS 4449 B5/B12	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4449 B5/B12	B	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4449 B5/B12	C	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4415 B25_CCIV2	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	0.820 0.943 1.075 1.368	0.046 0.060 0.077 0.118
RRUS 4415 B25_CCIV2	B	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	0.820 0.943 1.075 1.368	0.046 0.060 0.077 0.118
RRUS 4415 B25_CCIV2	C	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	0.820 0.943 1.075 1.368	0.046 0.060 0.077 0.118
DC6-48-60-18-8F	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.212 1.892 2.105 2.570	1.212 1.892 2.105 2.570	0.033 0.055 0.080 0.138

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC9-48-60-24-8C-EV	A	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.737 2.963 3.196 3.684	4.785 5.065 5.352 5.948	0.026 0.063 0.104 0.200
DC6-48-60-0-8C-EV	B	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.736 2.962 3.195 3.683	4.783 5.063 5.350 5.947	0.026 0.063 0.104 0.200
DC6-48-60-0-8C-EV	C	From Leg	4.000 0' -3'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	2.736 2.962 3.195 3.683	4.783 5.063 5.350 5.947	0.026 0.063 0.104 0.200
(2) L 2 1/2x2 1/2x1/4x6'	A	From Leg	2.000 0' -2'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.500 1.918 2.343 3.215	0.007 0.025 0.051 0.126	0.053 0.062 0.076 0.119
(2) L 2 1/2x2 1/2x1/4x6'	B	From Leg	2.000 0' -2'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.500 1.918 2.343 3.215	0.007 0.025 0.051 0.126	0.053 0.062 0.076 0.119
(2) L 2 1/2x2 1/2x1/4x6'	C	From Leg	2.000 0' -2'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.500 1.918 2.343 3.215	0.007 0.025 0.051 0.126	0.053 0.062 0.076 0.119
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Sector Mount [SM 503-3]	C	None		0.000	92'	No Ice 1/2" Ice 1" Ice 2" Ice	30.430 43.020 55.430 79.890	30.430 43.020 55.430 79.890	1.690 2.296 3.097 5.269
*									
KS24019-L112A	A	From Leg	4.000 0' 2'	0.000	75'	No Ice 1/2" Ice 1" Ice 2" Ice	0.141 0.198 0.262 0.415	0.141 0.198 0.262 0.415	0.005 0.007 0.009 0.018
Side Arm Mount [SO 306-1]	A	From Leg	2.000 0' 0'	0.000	75'	No Ice 1/2" Ice 1" Ice 2" Ice	0.410 0.810 1.230 2.080	2.260 3.830 5.480 9.370	0.042 0.062 0.094 0.187
*									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	105 - 85	Leg	Max Tension	7	6.722	-0.030	0.015
			Max. Compression	10	-13.439	-0.064	-0.043
			Max. Mx	20	-3.489	-0.699	-0.020
			Max. My	2	-1.453	-0.055	-0.660
			Max. Vy	8	-0.967	-0.383	-0.112
			Max. Vx	2	1.001	0.003	0.445
		Diagonal	Max Tension	25	2.772	0.000	0.000
			Max. Compression	12	-2.834	0.000	0.000
			Max. Mx	30	0.401	0.015	-0.000
			Max. My	16	0.902	0.003	0.002
			Max. Vy	30	-0.016	0.015	-0.000
			Max. Vx	16	0.000	0.000	0.000
		Top Girt	Max Tension	23	0.264	0.000	0.000
			Max. Compression	10	-0.271	0.000	0.000
			Max. Mx	26	-0.028	-0.051	0.000
			Max. Vy	26	0.031	0.000	0.000
T2	85 - 65	Leg	Max Tension	7	25.216	0.000	0.000
			Max. Compression	10	-33.338	0.000	-0.000
			Max. Mx	35	-18.686	0.089	0.000
			Max. My	4	-4.521	-0.018	-0.131
			Max. Vy	33	-0.049	-0.074	0.001
			Max. Vx	4	0.059	-0.024	-0.117
		Diagonal	Max Tension	24	2.492	0.000	0.000
			Max. Compression	24	-2.562	0.000	0.000
			Max. Mx	30	0.240	0.029	0.002
			Max. My	30	1.161	0.019	0.004
			Max. Vy	30	0.024	0.028	-0.002
			Max. Vx	30	-0.001	0.000	0.000
		Top Girt	Max Tension	31	0.216	0.000	0.000
			Max. Compression	6	-0.163	0.000	0.000
			Max. Mx	26	0.178	-0.050	0.000
			Max. My	26	0.181	0.000	0.001
			Max. Vy	26	-0.030	0.000	0.000
			Max. Vx	26	0.001	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	35.142	4.620	-2.650
	Max. H_x	18	35.142	4.620	-2.650
	Max. H_z	5	-23.382	-3.337	2.360
	Min. Vert	7	-27.336	-4.077	2.341
	Min. H_x	7	-27.336	-4.077	2.341
	Min. H_z	18	35.142	4.620	-2.650
Leg B	Max. Vert	10	35.597	-4.520	-2.728
	Max. H_x	23	-26.701	3.966	2.400
	Max. H_z	25	-22.383	3.131	2.405
	Min. Vert	23	-26.701	3.966	2.400
	Min. H_x	10	35.597	-4.520	-2.728
	Min. H_z	10	35.597	-4.520	-2.728
Leg A	Max. Vert	2	35.168	0.120	5.244
	Max. H_x	20	4.508	0.990	0.286
	Max. H_z	2	35.168	0.120	5.244
	Min. Vert	15	-26.702	-0.108	-4.608
	Min. H_x	9	3.195	-0.979	0.193

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	15	-26.702	-0.108	-4.608

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	10.895	0.000	0.000	-0.271	-2.223	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	13.075	-0.021	-8.828	-228.468	-1.880	1.656
0.9 Dead+1.0 Wind 0 deg - No Ice	9.806	-0.021	-8.828	-228.386	-1.213	1.656
1.2 Dead+1.0 Wind 30 deg - No Ice	13.075	4.389	-7.577	-196.097	-115.690	1.171
0.9 Dead+1.0 Wind 30 deg - No Ice	9.806	4.389	-7.577	-196.016	-115.023	1.171
1.2 Dead+1.0 Wind 60 deg - No Ice	13.075	7.561	-4.327	-112.192	-197.992	0.114
0.9 Dead+1.0 Wind 60 deg - No Ice	9.806	7.561	-4.327	-112.111	-197.325	0.114
1.2 Dead+1.0 Wind 90 deg - No Ice	13.075	8.814	0.021	0.463	-230.078	-0.973
0.9 Dead+1.0 Wind 90 deg - No Ice	9.806	8.814	0.021	0.544	-229.411	-0.973
1.2 Dead+1.0 Wind 120 deg - No Ice	13.075	7.702	4.432	114.429	-201.416	-1.509
0.9 Dead+1.0 Wind 120 deg - No Ice	9.806	7.702	4.432	114.510	-200.749	-1.509
1.2 Dead+1.0 Wind 150 deg - No Ice	13.075	4.242	7.280	190.718	-113.870	-1.349
0.9 Dead+1.0 Wind 150 deg - No Ice	9.806	4.242	7.280	190.799	-113.203	-1.349
1.2 Dead+1.0 Wind 180 deg - No Ice	13.075	0.021	8.543	222.162	-3.456	-1.656
0.9 Dead+1.0 Wind 180 deg - No Ice	9.806	0.021	8.543	222.244	-2.789	-1.656
1.2 Dead+1.0 Wind 210 deg - No Ice	13.075	-4.389	7.577	195.446	110.354	-1.171
0.9 Dead+1.0 Wind 210 deg - No Ice	9.806	-4.389	7.577	195.528	111.021	-1.171
1.2 Dead+1.0 Wind 240 deg - No Ice	13.075	-7.808	4.469	114.369	197.553	-0.114
0.9 Dead+1.0 Wind 240 deg - No Ice	9.806	-7.808	4.469	114.451	198.220	-0.114
1.2 Dead+1.0 Wind 270 deg - No Ice	13.075	-8.814	-0.021	-1.113	224.741	0.973
0.9 Dead+1.0 Wind 270 deg - No Ice	9.806	-8.814	-0.021	-1.032	225.408	0.973
1.2 Dead+1.0 Wind 300 deg - No Ice	13.075	-7.455	-4.289	-112.252	191.182	1.509
0.9 Dead+1.0 Wind 300 deg - No Ice	9.806	-7.455	-4.289	-112.170	191.849	1.509
1.2 Dead+1.0 Wind 330 deg - No Ice	13.075	-4.242	-7.280	-191.368	108.534	1.349
0.9 Dead+1.0 Wind 330 deg - No Ice	9.806	-4.242	-7.280	-191.287	109.201	1.349
1.2 Dead+1.0 Ice+1.0 Temp	31.523	-0.000	0.000	-2.135	-6.660	0.000

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	31.523	-0.004	-2.638	-69.950	-6.502	0.560
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	31.523	1.352	-2.326	-61.459	-40.978	0.400
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	31.523	2.373	-1.356	-36.540	-66.683	-0.021
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	31.523	2.712	0.004	-1.977	-75.569	-0.455
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	31.523	2.307	1.322	31.910	-65.742	-0.615
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	31.523	1.299	2.224	55.539	-40.207	-0.590
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	31.523	0.004	2.596	64.861	-6.818	-0.560
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	31.523	-1.352	2.326	57.189	27.657	-0.400
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	31.523	-2.409	1.376	32.680	54.072	0.021
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	31.523	-2.712	-0.004	-2.293	62.248	0.455
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	31.523	-2.271	-1.302	-35.769	51.712	0.615
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	31.523	-1.299	-2.224	-59.808	26.887	0.590
Dead+Wind 0 deg - Service	10.895	-0.006	-2.446	-63.470	-2.005	0.458
Dead+Wind 30 deg - Service	10.895	1.216	-2.099	-54.503	-33.532	0.317
Dead+Wind 60 deg - Service	10.895	2.095	-1.199	-31.260	-56.331	0.020
Dead+Wind 90 deg - Service	10.895	2.442	0.006	-0.053	-65.219	-0.283
Dead+Wind 120 deg - Service	10.895	2.134	1.228	31.517	-57.279	-0.430
Dead+Wind 150 deg - Service	10.895	1.175	2.017	52.652	-33.029	-0.381
Dead+Wind 180 deg - Service	10.895	0.006	2.367	61.362	-2.442	-0.458
Dead+Wind 210 deg - Service	10.895	-1.216	2.099	53.961	29.085	-0.317
Dead+Wind 240 deg - Service	10.895	-2.163	1.238	31.501	53.240	-0.020
Dead+Wind 270 deg - Service	10.895	-2.442	-0.006	-0.489	60.772	0.283
Dead+Wind 300 deg - Service	10.895	-2.065	-1.188	-31.276	51.476	0.430
Dead+Wind 330 deg - Service	10.895	-1.175	-2.017	-53.194	28.582	0.381

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-10.895	0.000	0.000	10.895	0.000	0.000%
2	-0.021	-13.075	-8.828	0.021	13.075	8.828	0.000%
3	-0.021	-9.806	-8.828	0.021	9.806	8.828	0.000%
4	4.389	-13.075	-7.577	-4.389	13.075	7.577	0.000%
5	4.389	-9.806	-7.577	-4.389	9.806	7.577	0.000%
6	7.561	-13.075	-4.327	-7.561	13.075	4.327	0.000%
7	7.561	-9.806	-4.327	-7.561	9.806	4.327	0.000%
8	8.814	-13.075	0.021	-8.814	13.075	-0.021	0.000%
9	8.814	-9.806	0.021	-8.814	9.806	-0.021	0.000%
10	7.702	-13.075	4.432	-7.702	13.075	-4.432	0.000%
11	7.702	-9.806	4.432	-7.702	9.806	-4.432	0.000%
12	4.242	-13.075	7.280	-4.242	13.075	-7.280	0.000%
13	4.242	-9.806	7.280	-4.242	9.806	-7.280	0.000%
14	0.021	-13.075	8.543	-0.021	13.075	-8.543	0.000%
15	0.021	-9.806	8.543	-0.021	9.806	-8.543	0.000%
16	-4.389	-13.075	7.577	4.389	13.075	-7.577	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
17	-4.389	-9.806	7.577	4.389	9.806	-7.577	0.000%
18	-7.808	-13.075	4.469	7.808	13.075	-4.469	0.000%
19	-7.808	-9.806	4.469	7.808	9.806	-4.469	0.000%
20	-8.814	-13.075	-0.021	8.814	13.075	0.021	0.000%
21	-8.814	-9.806	-0.021	8.814	9.806	0.021	0.000%
22	-7.455	-13.075	-4.289	7.455	13.075	4.289	0.000%
23	-7.455	-9.806	-4.289	7.455	9.806	4.289	0.000%
24	-4.242	-13.075	-7.280	4.242	13.075	7.280	0.000%
25	-4.242	-9.806	-7.280	4.242	9.806	7.280	0.000%
26	0.000	-31.523	0.000	0.000	31.523	0.000	0.000%
27	-0.004	-31.523	-2.638	0.004	31.523	2.638	0.000%
28	1.352	-31.523	-2.326	-1.352	31.523	2.326	0.000%
29	2.373	-31.523	-1.356	-2.373	31.523	1.356	0.000%
30	2.712	-31.523	0.004	-2.712	31.523	-0.004	0.000%
31	2.307	-31.523	1.322	-2.307	31.523	-1.322	0.000%
32	1.299	-31.523	2.224	-1.299	31.523	-2.224	0.000%
33	0.004	-31.523	2.596	-0.004	31.523	-2.596	0.000%
34	-1.352	-31.523	2.326	1.352	31.523	-2.326	0.000%
35	-2.409	-31.523	1.376	2.409	31.523	-1.376	0.000%
36	-2.712	-31.523	-0.004	2.712	31.523	0.004	0.000%
37	-2.271	-31.523	-1.302	2.271	31.523	1.302	0.000%
38	-1.299	-31.523	-2.224	1.299	31.523	2.224	0.000%
39	-0.006	-10.895	-2.446	0.006	10.895	2.446	0.000%
40	1.216	-10.895	-2.099	-1.216	10.895	2.099	0.000%
41	2.095	-10.895	-1.199	-2.095	10.895	1.199	0.000%
42	2.442	-10.895	0.006	-2.442	10.895	-0.006	0.000%
43	2.134	-10.895	1.228	-2.134	10.895	-1.228	0.000%
44	1.175	-10.895	2.017	-1.175	10.895	-2.017	0.000%
45	0.006	-10.895	2.367	-0.006	10.895	-2.367	0.000%
46	-1.216	-10.895	2.099	1.216	10.895	-2.099	0.000%
47	-2.163	-10.895	1.238	2.163	10.895	-1.238	0.000%
48	-2.442	-10.895	-0.006	2.442	10.895	0.006	0.000%
49	-2.065	-10.895	-1.188	2.065	10.895	1.188	0.000%
50	-1.175	-10.895	-2.017	1.175	10.895	2.017	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	105 - 85	0.269	43	0.039	0.003
T2	85 - 65	0.092	43	0.032	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102'	AIR6449 B41_T-MOBILE	43	0.239	0.039	0.003	150906
92'	RRUS 32 B30	43	0.146	0.037	0.002	58041
75'	KS24019-L112A	43	0.038	0.018	0.001	75453

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	105 - 85	0.949	10	0.137	0.011
T2	85 - 65	0.327	10	0.112	0.006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102'	AIR6449 B41_T-MOBILE	10	0.845	0.137	0.010	43523
92'	RRUS 32 B30	10	0.517	0.129	0.008	16740
75'	KS24019-L112A	10	0.136	0.064	0.003	21761

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	105	Leg	A325N	0.625	4	1.680	20.340	0.083 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.500	1	2.772	3.806	0.728 ✓	1.05	Member Block Shear
		Top Girt	A325N	0.500	1	0.264	4.133	0.064 ✓	1.05	Member Bearing
T2	85	Diagonal	A325N	0.500	1	2.492	6.199	0.402 ✓	1.05	Member Bearing
		Top Girt	A325N	0.500	1	0.578	4.133	0.140 ✓	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	105 - 85	ROHN 2.5 STD	20'	4'	50.7 K=1.00	1.704	-13.439	63.560	0.211 [1] ✓
T2	85 - 65	ROHN 2.5 STD	20'13/32"	5'3/32"	63.4 K=1.00	1.704	-33.337	57.136	0.583 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	105 - 85	L1 1/2x1 1/2x1/8	7'8-7/32''	3'7-3/16''	145.8 K=1.00	0.359	-2.834	4.840	0.586 [1] ✔
T2	85 - 65	L1 3/4x1 3/4x3/16	9'8-13/32''	4'9-1/32''	166.1 K=1.00	0.621	-2.422	6.447	0.376 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	105 - 85	L2x2x1/8	6'6-3/4"	6'1-3/8"	184.6 K=1.00	0.484	-0.271	4.070	0.067 [1] ✔
T2	85 - 65	L2x2x1/8	6'6-3/4"	6'1-3/8"	184.6 K=1.00	0.484	-0.578	4.070	0.142 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	105 - 85	ROHN 2.5 STD	20'	4'	50.7	1.704	6.722	76.682	0.088 [1] ✔
T2	85 - 65	ROHN 2.5 STD	20'13/32"	5'3/32"	63.4	1.704	25.216	76.682	0.329 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	105 - 85	L1 1/2x1 1/2x1/8	7'8-7/32"	3'7-3/16"	95.5	0.211	2.772	9.176	0.302 [1] ✔
T2	85 - 65	L1 3/4x1 3/4x3/16	8'10-5/16"	4'4-1/32"	99.3	0.378	2.492	16.440	0.152 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	105 - 85	L2x2x1/8	6'6-3/4"	6'1-3/8"	121.2	0.305	0.264	13.254	0.020 [1] ✔
T2	85 - 65	L2x2x1/8	6'6-3/4"	6'1-3/8"	121.2	0.305	0.578	13.254	0.044 [1] ✔

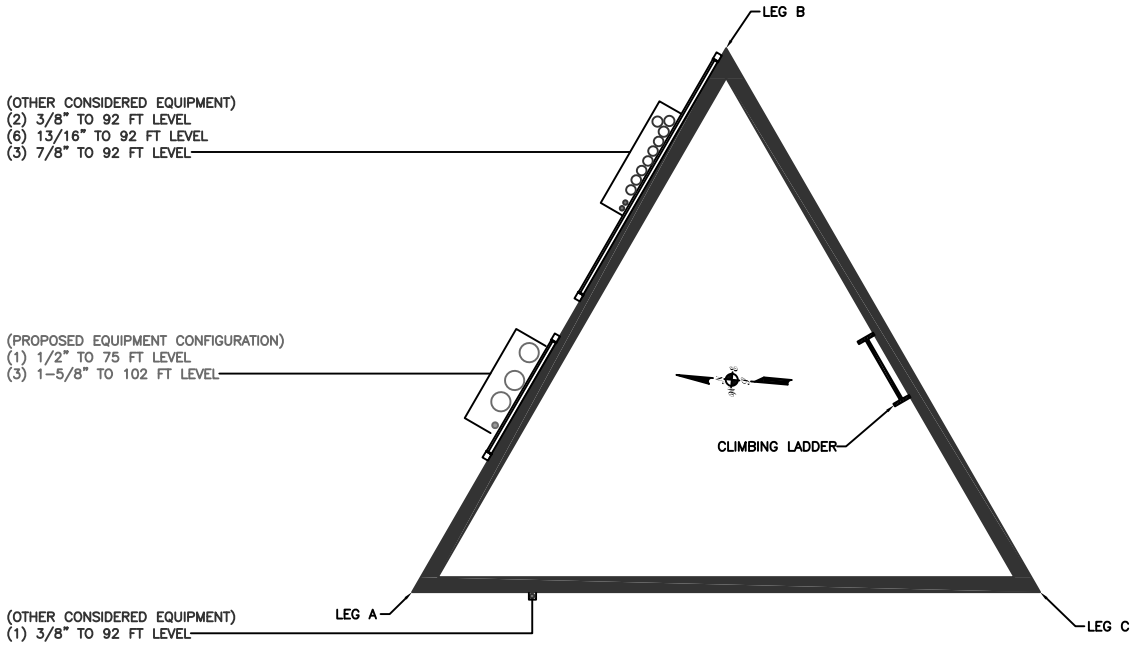
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	105 - 85	Leg	ROHN 2.5 STD	2	-13.439	66.738	20.1	Pass
T2	85 - 65	Leg	ROHN 2.5 STD	38	-33.337	59.993	55.6	Pass
T1	105 - 85	Diagonal	L1 1/2x1 1/2x1/8	9	-2.834	5.082	55.8	Pass
T2	85 - 65	Diagonal	L1 3/4x1 3/4x3/16	46	-2.422	6.769	35.8	Pass
T1	105 - 85	Top Girt	L2x2x1/8	6	-0.271	4.273	6.3	Pass
T2	85 - 65	Top Girt	L2x2x1/8	40	-0.578	4.273	13.5	Pass
							Summary	
						Leg (T2)	55.6	Pass
						Diagonal (T1)	55.8	Pass
						Top Girt (T2)	13.5	Pass
						Bolt Checks	69.4	Pass
						RATING =	**69.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876328

APPENDIX C

ADDITIONAL CALCULATIONS

PROJECT	**155853.001.01 - West Hartford Parkir**
SUBJECT	**Foundation Reaction Comparison**
DATE	**09-04-21**

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

v1.3.2

TIA Rev. H - Self Support

Base Reaction Type	*Modified Design Reactions		Factored Reactions		Rating % with TIA-222-H Seciton 15.5 applied	
SST Leg Uplift	44	kips	27	kips	**43.3%**	Pass
SST Leg Compression	52	kips	36	kips	**48.8%**	Pass
SST Leg Uplift Shear	8	kips	5	kips	**44.4%**	Pass

The modified tnxTower design reactions were obtained from the design by GPD (CCIsites Doc ID# 5735731, dated 7/28/2015)

*Design loads were multiplied by 1.35 for comparison asa allowed by TIA-222-H, section 15.6

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 126.05 ft (NAVD 88)
Latitude: 41.760114
Longitude: -72.743125

Wind

Results:

Wind Speed:	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Sep 03 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

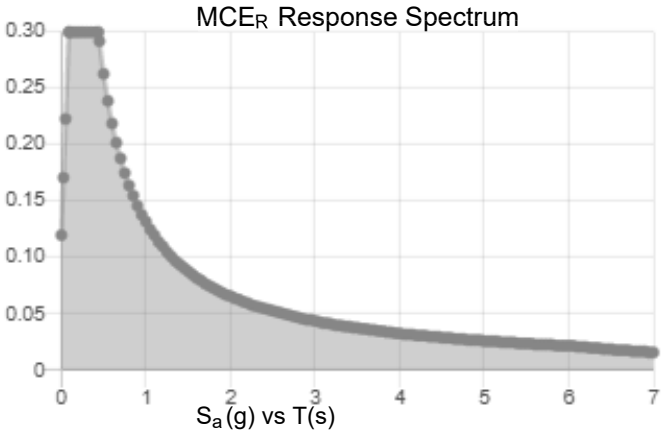
Seismic

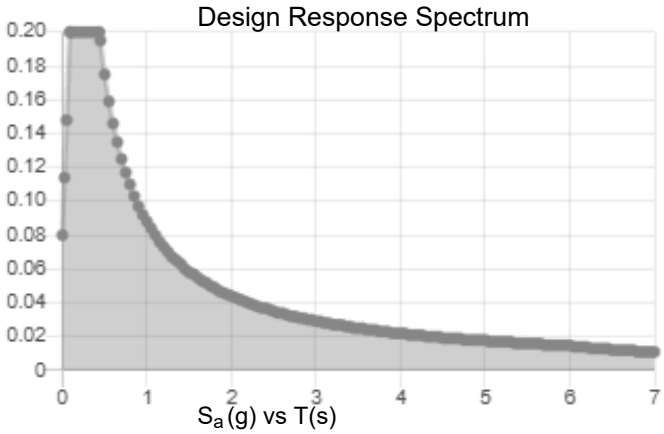
Site Soil Class: D - Default (see Section 11.4.3)

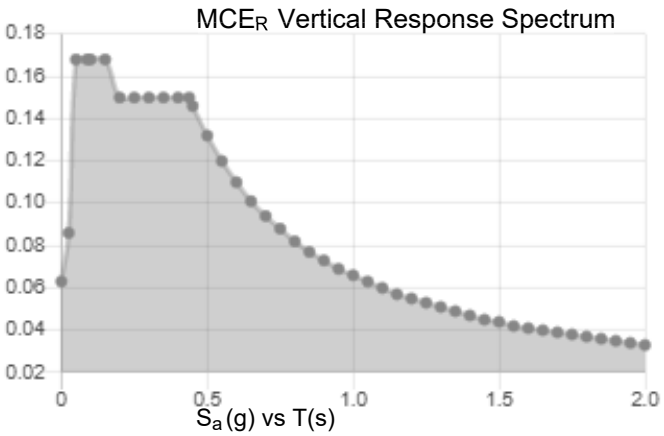
Results:

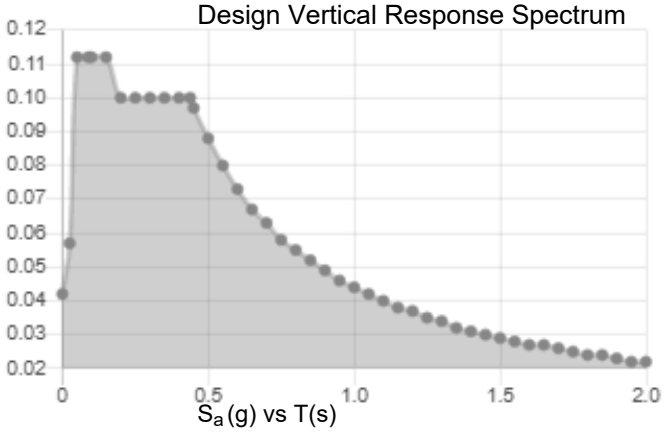
S_S :	0.187	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.101
F_v :	2.4	PGA_M :	0.161
S_{MS} :	0.3	F_{PGA} :	1.598
S_{M1} :	0.132	I_e :	1
S_{DS} :	0.2	C_v :	0.7

Seismic Design Category B









Data Accessed: Fri Sep 03 2021

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Sep 03 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

Date: **August 31, 2021**

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

Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Retain**	
	Carrier Site Number:	CTHA864A
	Carrier Site Name:	CTHA864A
Crown Castle Designation:	**Crown Castle BU Number:**	876328
	Crown Castle Site Name:	WEST HARTFORD PARKING GARAGE
	Crown Castle JDE Job Number:	652117
	Crown Castle Order Number:	559454 Rev. 1
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B	
Site Data:	**27-31 South Main Street**, **West Hartford**, **Hartford County**, **CT**, **06110** **Latitude 41°45'36.41", Longitude -72°44'35.25"**	
Structure Information:	**Tower Height & Type:**	**40.3 ft Self Support**
	Mount Elevation:	**102.0 ft**
	Mount Type:	**12.0 ft Sector Frame**

Dear Darcy Tarr,

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

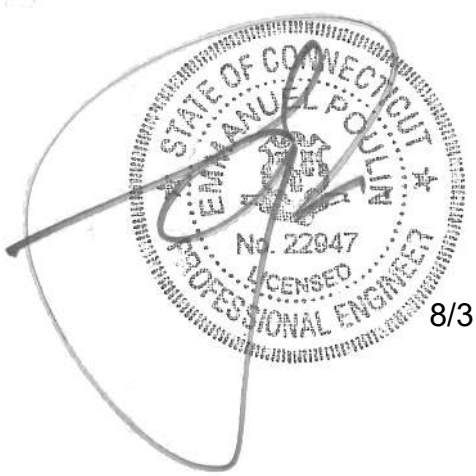
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Frame **Sufficient**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code and Appendix N based upon an ultimate 3-second gust wind speed of 125 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Leehou Proc

Respectfully Submitted by:
Emmanuel Poulin, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. 22947



8/31/21

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 sector 12.0 ft Platform, designed by Rohn.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code and Appendix N
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.181
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
102.0	103.0	3	ERICSSON	AIR6449 B41_T-MOBILE	12.0 ft Sector Frame
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_ TMO	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	
		3	ERICSSON	RADIO 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	559454 Rev. 1	CCI Sites
Loading Document	T-Mobile	RFDS Version: 1	TSA
Previous Mount Analysis	Infinigy Engineering, PLLC	9741920	CCI Sites

3.1) Analysis Method

RISA-3D (Version 19.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool V2.1.7, 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 A307

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 (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mount Pipe(s)	MP1	102.0	26.0	Pass
	Face Horizontal(s)	M1		19.9	Pass
	Standoff(s)	M4		50.2	Pass
	Bracing(s)	M9		41.5	Pass
	Mount Connection(s)	-		25.1	Pass

Structure Rating (max from all components) =	50.2%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D - Additional Calculations” for detailed mount connection calculations.

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity $(lb)^2$	Notes
N53	Existing	1,060.8	Leg	ROHN 2.5 STD	3,329.0	1, 2

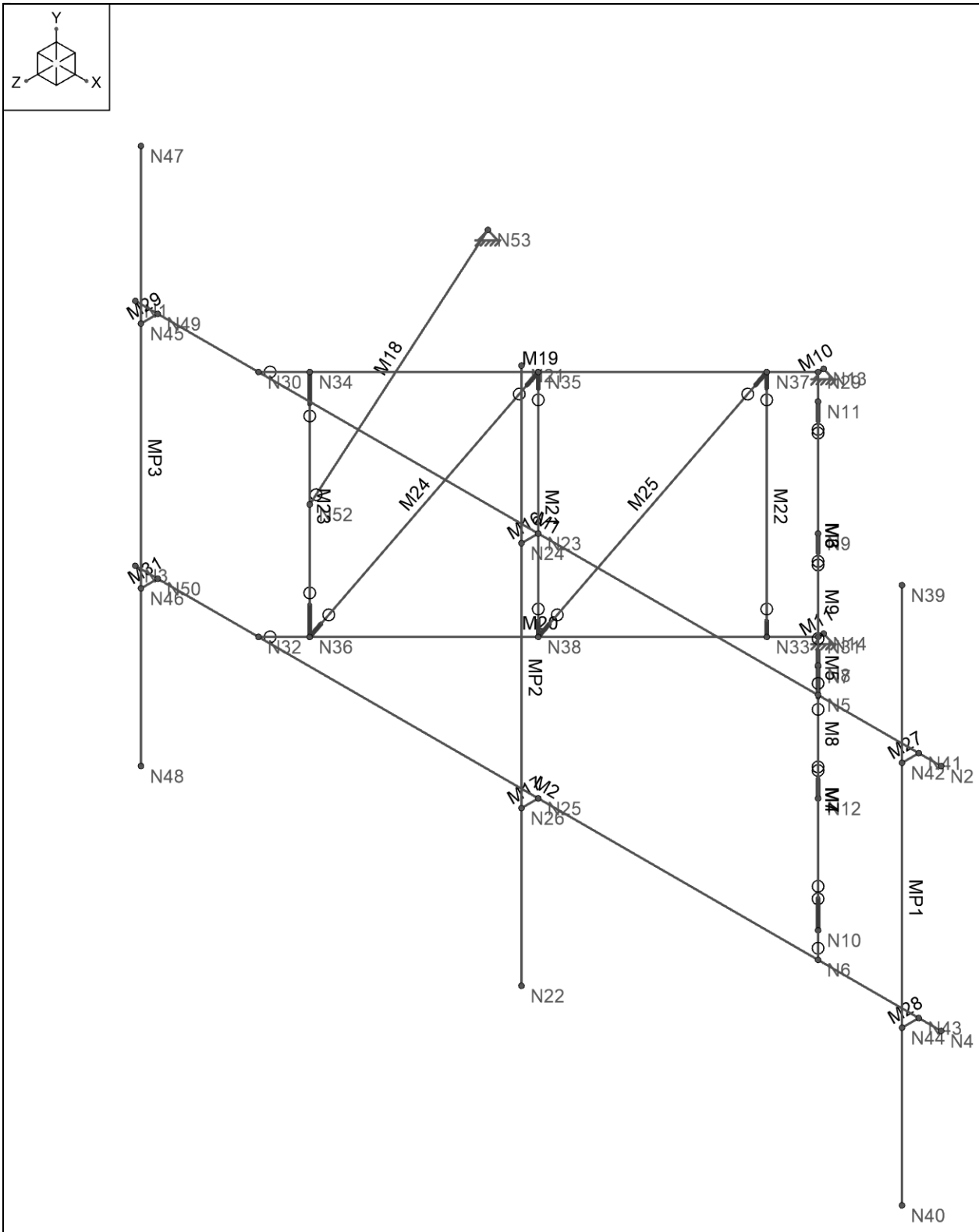
Notes:
1) Tieback connection point is within 25% of either end of the connected tower member.
2) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances.*

4.1) Recommendations

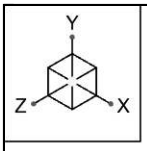
The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

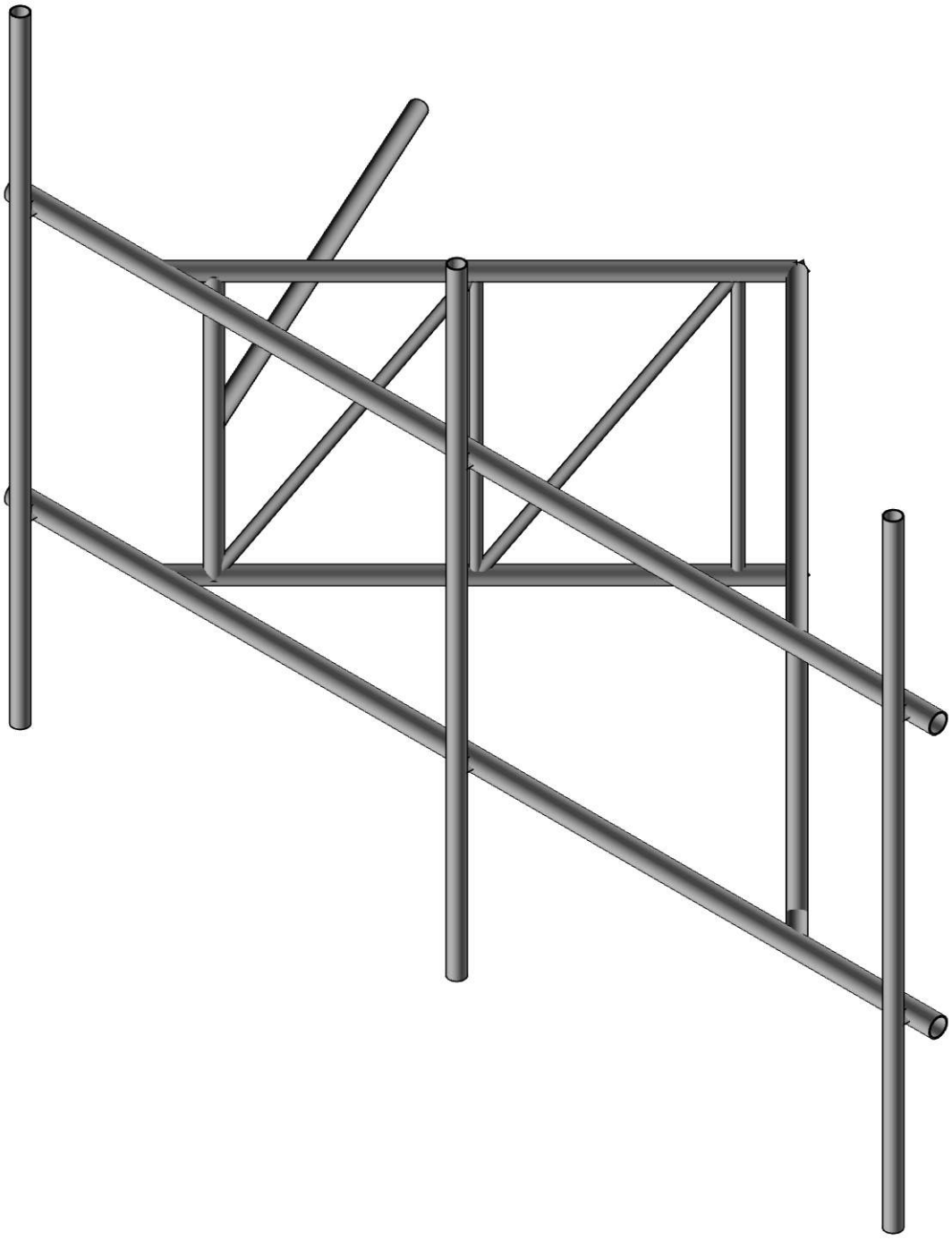
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Infinigy Engineering, PLLC	876328	Wireframe - 1
LP		Aug 30, 2021
1039-Z0001-B		876328_loaded.r3d





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LP		Aug 30, 2021
1039-Z0001-B		876328_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	T-Mobile
Engineer:	Leehou Proc

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	126.05	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Sector Frame	
Num Sectors:	3	
Centerline AGL:	102.00	ft
Tower Height AGL:	105.30	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):	0.950	
Ground Ele. Factor (K_e):	0.995	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Gust Effect Factor (G_h):	1.000	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	125	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	2	in
Flat Pressure:	75.188	psf
Round Pressure:	45.113	psf
Ice Wind Pressure:	7.218	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.181	g
1-Second Accel. (S_1):	0.064	g
Short-Period Design (S_{DS}):	0.193	
1-Second Design (S_{D1}):	0.102	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	

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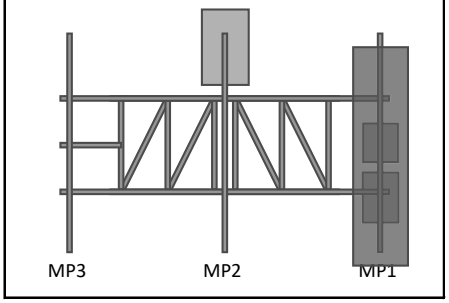
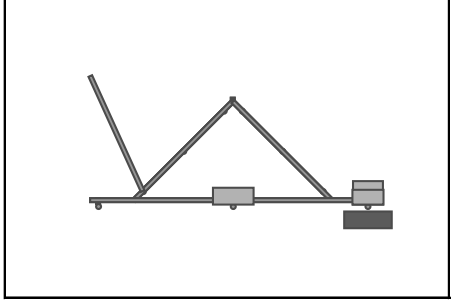
Infinigy Load Calculator V2.1.7

Program Inputs

ELEVATION VIEW



PLAN VIEW



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FROM ZERO TO INFINIGY
the solutions are endless

Infinigy Load Calculator V2.1.7

APPURTENANCE INFORMATION

Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
ERICSSON AIR6449 B41_T-MOBILE	103.0	3	0.90	37.70	5.27	2.03	178.81	68.88	114.63	33.20	MP2
/CELWAVE APXVAALL24_43-U-NA20_TI	103.0	3	0.90	37.70	14.67	5.32	497.74	180.50	149.90	43.41	MP1
RICSSON RADIO 4460 B2/B25 B66_TMC	103.0	3	0.90	37.70	2.14	1.69	72.58	57.20	109.00	31.57	MP1
ERICSSON RADIO 4480_TMOV2	103.0	3	0.90	37.70	2.88	1.40	97.66	47.40	81.00	23.46	MP1

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 126.05 ft ()
Latitude: 41.760114
Longitude: -72.743125

Wind

Results:

Wind Speed:	125 Vmph per West Hartford County Requirements
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph

Data Accessed: Mon Aug 30 2021

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

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

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

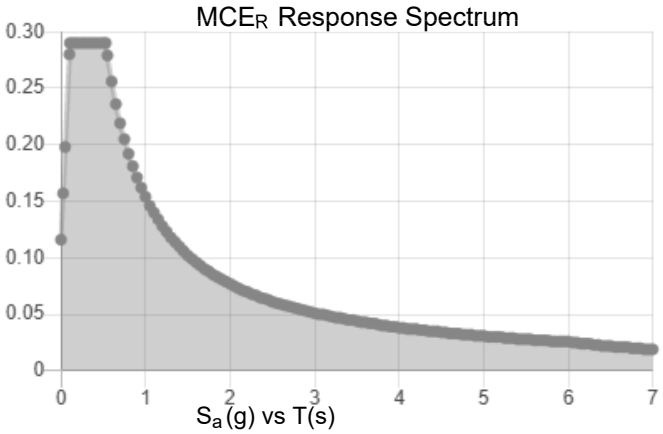
Seismic

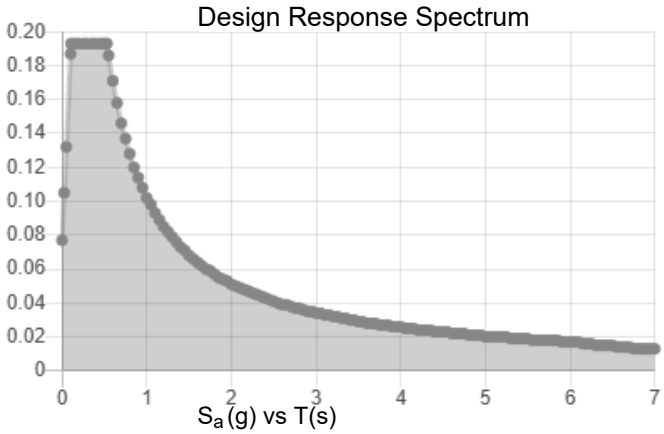
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.091
S_{MS} :	0.29	PGA_M :	0.146
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Aug 30 2021

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

Ice

Results:

Ice Thickness:	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:	Mon Aug 30 2021

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

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

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2	Frame Rail	Beam	Pipe	A53 Gr.B	Typical
2	M2	N3	N4	Frame Rail	Beam	Pipe	A53 Gr.B	Typical
3	M3	N29	N5	Sidearms	Beam	Pipe	A53 Gr.B	Typical
4	M4	N31	N6	Sidearms	Beam	Pipe	A53 Gr.B	Typical
5	M5	N9	N12	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
6	M6	N11	N7	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
7	M7	N8	N10	Vert Bracing	VBrace	Pipe	A53 Gr.B	Typical
8	M8	N9	N10	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
9	M9	N11	N12	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
10	M10	N13	N29	RIGID	None	None	RIGID	Typical
11	M11	N14	N31	RIGID	None	None	RIGID	Typical
12	MP2	N21	N22	Mount Pipe 2.0	Column	Pipe	A53 Gr.B	Typical
13	M16	N23	N24	RIGID	None	None	RIGID	Typical
14	M17	N25	N26	RIGID	None	None	RIGID	Typical
15	M18	N52	N53	TieBack	HBrace	Pipe	A53 Gr.B	Typical
16	M19	N29	N30	Sidearms	Beam	Pipe	A53 Gr.B	Typical
17	M20	N31	N32	Sidearms	Beam	Pipe	A53 Gr.B	Typical
18	M21	N35	N38	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
19	M22	N37	N33	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
20	M23	N34	N36	Vert Bracing	VBrace	Pipe	A53 Gr.B	Typical
21	M24	N35	N36	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
22	M25	N37	N38	Diag Bracing	VBrace	Pipe	A53 Gr.B	Typical
23	MP1	N39	N40	Mount Pipe 2.0	Column	Pipe	A53 Gr.B	Typical
24	M27	N41	N42	RIGID	None	None	RIGID	Typical
25	M28	N43	N44	RIGID	None	None	RIGID	Typical
26	M29	N49	N45	RIGID	None	None	RIGID	Typical
27	MP3	N47	N48	Mount Pipe 2.0	Column	Pipe	A53 Gr.B	Typical
28	M31	N50	N46	RIGID	None	None	RIGID	Typical

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [lb/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	490	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	490	50	1.25	65	1.15
8	A913 Gr.65	29000	11154	0.3	0.65	490	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Mount Pipe 2.0	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
2	Frame Rail	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
3	Sidearms	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
4	Vert Bracing	PIPE_2.0	VBrace	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
5	Diag Bracing	ROHN 1.5x0.067	VBrace	Pipe	A53 Gr.B	Typical	0.302	0.078	0.078	0.155
6	TieBack	PIPE_2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	Mount Pipe 2.5	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	-160.321261	0	107.095244	
2	N2	-16.321261	0	107.095244	
3	N3	-160.321261	-41	107.095244	
4	N4	-16.321261	-41	107.095244	
5	N5	-38.321261	0	107.095244	
6	N6	-38.321261	-41	107.095244	
7	N7	-83.73897	-41	61.677535	
8	N8	-42.903553	0	102.512952	
9	N9	-63.321261	0	82.095244	
10	N10	-42.903553	-41	102.512952	
11	N11	-83.73897	0	61.677535	
12	N12	-63.321261	-41	82.095244	
13	N13	-88.321261	0	56.095244	
14	N14	-88.321261	-41	56.095244	
15	N21	-88.321261	27.5	110.095244	
16	N22	-88.321261	-68.5	110.095244	
17	N23	-88.321261	0	107.095244	
18	N24	-88.321261	0	110.095244	
19	N25	-88.321261	-41	107.095244	
20	N26	-88.321261	-41	110.095244	
21	N29	-88.321261	0	57.095244	
22	N30	-138.321261	0	107.095244	
23	N31	-88.321261	-41	57.095244	
24	N32	-138.321261	-41	107.095244	
25	N33	-92.903553	-41	61.677535	
26	N34	-133.73897	0	102.512952	
27	N35	-113.321261	0	82.095244	
28	N36	-133.73897	-41	102.512952	
29	N37	-92.903553	0	61.677535	
30	N38	-113.321261	-41	82.095244	
31	N39	-20.321261	27.5	110.095244	
32	N40	-20.321261	-68.5	110.095244	
33	N41	-20.321261	0	107.095244	
34	N42	-20.321261	0	110.095244	
35	N43	-20.321261	-41	107.095244	
36	N44	-20.321261	-41	110.095244	
37	N45	-156.321261	0	110.095244	
38	N46	-156.321261	-41	110.095244	
39	N47	-156.321261	27.5	110.095244	
40	N48	-156.321261	-68.5	110.095244	
41	N49	-156.321261	0	107.095244	
42	N50	-156.321261	-41	107.095244	
43	N52	-133.73897	-20.5	102.512952	
44	N53	-160.321261	-20.5	44.095244	

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lcomp top [in]	Function
1	M1	Frame Rail	144	Lbyy	Lateral
2	M2	Frame Rail	144	Lbyy	Lateral
3	M3	Sidearms	70.711	Lbyy	Lateral
4	M4	Sidearms	70.711	Lbyy	Lateral
5	M5	Diag Bracing	41	Lbyy	Lateral
6	M6	Diag Bracing	41	Lbyy	Lateral
7	M7	Vert Bracing	41	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lcomp top [in]	Function
8	M8	Diag Bracing	50.147	Lbyy	Lateral
9	M9	Diag Bracing	50.147	Lbyy	Lateral
10	MP2	Mount Pipe 2.0	96	Lbyy	Lateral
11	M18	TieBack	64.181	Lbyy	Lateral
12	M19	Sidearms	70.711	Lbyy	Lateral
13	M20	Sidearms	70.711	Lbyy	Lateral
14	M21	Diag Bracing	41	Lbyy	Lateral
15	M22	Diag Bracing	41	Lbyy	Lateral
16	M23	Vert Bracing	41	Lbyy	Lateral
17	M24	Diag Bracing	50.147	Lbyy	Lateral
18	M25	Diag Bracing	50.147	Lbyy	Lateral
19	MP1	Mount Pipe 2.0	96	Lbyy	Lateral
20	MP3	Mount Pipe 2.0	96	Lbyy	Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed
1	Self Weight	DL		-1			6	
2	Wind Load AZI 0	WLZ					12	
3	Wind Load AZI 30	None					12	
4	Wind Load AZI 60	None					12	
5	Wind Load AZI 90	WLX					12	
6	Wind Load AZI 120	None					12	
7	Wind Load AZI 150	None					12	
8	Wind Load AZI 180	None					12	
9	Wind Load AZI 210	None					12	
10	Wind Load AZI 240	None					12	
11	Wind Load AZI 270	None					12	
12	Wind Load AZI 300	None					12	
13	Wind Load AZI 330	None					12	
14	Distr. Wind Load Z	WLZ						28
15	Distr. Wind Load X	WLX						28
16	Ice Weight	OL1					6	28
17	Ice Wind Load AZI 0	OL2					12	
18	Ice Wind Load AZI 30	None					12	
19	Ice Wind Load AZI 60	None					12	
20	Ice Wind Load AZI 90	OL3					12	
21	Ice Wind Load AZI 120	None					12	
22	Ice Wind Load AZI 150	None					12	
23	Ice Wind Load AZI 180	None					12	
24	Ice Wind Load AZI 210	None					12	
25	Ice Wind Load AZI 240	None					12	
26	Ice Wind Load AZI 270	None					12	
27	Ice Wind Load AZI 300	None					12	
28	Ice Wind Load AZI 330	None					12	
29	Distr. Ice Wind Load Z	OL2						28
30	Distr. Ice Wind Load X	OL3						28
31	Seismic Load Z	ELZ			-0.29		6	
32	Seismic Load X	ELX	-0.29				6	
33	Service Live Loads	LL				1		
34	Maintenance Load 1	LL				1		
35	Maintenance Load 2	LL				1		
36	Maintenance Load 3	LL				1		

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	Y	-57.315	6
2	MP2	Y	-57.315	30
3	MP1	Y	-74.95	6
4	MP1	Y	-74.95	90
5	MP1	Y	-109	%50
6	MP1	Y	-81	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	0	6
2	MP2	Z	-89.4	6
3	MP2	X	0	30
4	MP2	Z	-89.4	30
5	MP1	X	0	6
6	MP1	Z	-248.87	6
7	MP1	X	0	90
8	MP1	Z	-248.87	90
9	MP1	X	0	%50
10	MP1	Z	-72.58	%50
11	MP1	X	0	%75
12	MP1	Z	-97.66	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-37.83	6
2	MP2	Z	-65.52	6
3	MP2	X	-37.83	30
4	MP2	Z	-65.52	30
5	MP1	X	-104.61	6
6	MP1	Z	-181.19	6
7	MP1	X	-104.61	90
8	MP1	Z	-181.19	90
9	MP1	X	-34.37	%50
10	MP1	Z	-59.53	%50
11	MP1	X	-42.55	%75
12	MP1	Z	-73.69	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-41.72	6
2	MP2	Z	-24.09	6
3	MP2	X	-41.72	30
4	MP2	Z	-24.09	30
5	MP1	X	-112.5	6
6	MP1	Z	-64.95	6
7	MP1	X	-112.5	90
8	MP1	Z	-64.95	90
9	MP1	X	-52.87	%50
10	MP1	Z	-30.52	%50
11	MP1	X	-51.93	%75
12	MP1	Z	-29.98	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-34.44	6
2	MP2	Z	0	6
3	MP2	X	-34.44	30
4	MP2	Z	0	30
5	MP1	X	-90.25	6
6	MP1	Z	0	6
7	MP1	X	-90.25	90
8	MP1	Z	0	90
9	MP1	X	-57.2	%50
10	MP1	Z	0	%50
11	MP1	X	-47.4	%75
12	MP1	Z	0	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-41.72	6
2	MP2	Z	24.09	6
3	MP2	X	-41.72	30
4	MP2	Z	24.09	30
5	MP1	X	-112.5	6
6	MP1	Z	64.95	6
7	MP1	X	-112.5	90
8	MP1	Z	64.95	90
9	MP1	X	-52.87	%50
10	MP1	Z	30.52	%50
11	MP1	X	-51.93	%75
12	MP1	Z	29.98	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-37.83	6
2	MP2	Z	65.52	6
3	MP2	X	-37.83	30
4	MP2	Z	65.52	30
5	MP1	X	-104.61	6
6	MP1	Z	181.19	6
7	MP1	X	-104.61	90
8	MP1	Z	181.19	90
9	MP1	X	-34.37	%50
10	MP1	Z	59.53	%50
11	MP1	X	-42.55	%75
12	MP1	Z	73.69	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	0	6
2	MP2	Z	89.4	6
3	MP2	X	0	30
4	MP2	Z	89.4	30
5	MP1	X	0	6
6	MP1	Z	248.87	6

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
7	MP1	X	0	90
8	MP1	Z	248.87	90
9	MP1	X	0	%50
10	MP1	Z	72.58	%50
11	MP1	X	0	%75
12	MP1	Z	97.66	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	37.83	6
2	MP2	Z	65.52	6
3	MP2	X	37.83	30
4	MP2	Z	65.52	30
5	MP1	X	104.61	6
6	MP1	Z	181.19	6
7	MP1	X	104.61	90
8	MP1	Z	181.19	90
9	MP1	X	34.37	%50
10	MP1	Z	59.53	%50
11	MP1	X	42.55	%75
12	MP1	Z	73.69	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	41.72	6
2	MP2	Z	24.09	6
3	MP2	X	41.72	30
4	MP2	Z	24.09	30
5	MP1	X	112.5	6
6	MP1	Z	64.95	6
7	MP1	X	112.5	90
8	MP1	Z	64.95	90
9	MP1	X	52.87	%50
10	MP1	Z	30.52	%50
11	MP1	X	51.93	%75
12	MP1	Z	29.98	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	34.44	6
2	MP2	Z	0	6
3	MP2	X	34.44	30
4	MP2	Z	0	30
5	MP1	X	90.25	6
6	MP1	Z	0	6
7	MP1	X	90.25	90
8	MP1	Z	0	90
9	MP1	X	57.2	%50
10	MP1	Z	0	%50
11	MP1	X	47.4	%75
12	MP1	Z	0	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	41.72	6
2	MP2	Z	-24.09	6
3	MP2	X	41.72	30
4	MP2	Z	-24.09	30
5	MP1	X	112.5	6
6	MP1	Z	-64.95	6
7	MP1	X	112.5	90
8	MP1	Z	-64.95	90
9	MP1	X	52.87	%50
10	MP1	Z	-30.52	%50
11	MP1	X	51.93	%75
12	MP1	Z	-29.98	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	37.83	6
2	MP2	Z	-65.52	6
3	MP2	X	37.83	30
4	MP2	Z	-65.52	30
5	MP1	X	104.61	6
6	MP1	Z	-181.19	6
7	MP1	X	104.61	90
8	MP1	Z	-181.19	90
9	MP1	X	34.37	%50
10	MP1	Z	-59.53	%50
11	MP1	X	42.55	%75
12	MP1	Z	-73.69	%75

Member Point Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	Y	-104.273	6
2	MP2	Y	-104.273	30
3	MP1	Y	-284.439	6
4	MP1	Y	-284.439	90
5	MP1	Y	-124.339	%50
6	MP1	Y	-123.59	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	0	6
2	MP2	Z	-8.85	6
3	MP2	X	0	30
4	MP2	Z	-8.85	30
5	MP1	X	0	6
6	MP1	Z	-28.17	6
7	MP1	X	0	90
8	MP1	Z	-28.17	90
9	MP1	X	0	%50
10	MP1	Z	-7.93	%50
11	MP1	X	0	%75
12	MP1	Z	-10.07	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-4.02	6
2	MP2	Z	-6.96	6
3	MP2	X	-4.02	30
4	MP2	Z	-6.96	30
5	MP1	X	-12.73	6
6	MP1	Z	-22.06	6
7	MP1	X	-12.73	90
8	MP1	Z	-22.06	90
9	MP1	X	-3.86	%50
10	MP1	Z	-6.69	%50
11	MP1	X	-4.71	%75
12	MP1	Z	-8.16	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-5.55	6
2	MP2	Z	-3.21	6
3	MP2	X	-5.55	30
4	MP2	Z	-3.21	30
5	MP1	X	-17.37	6
6	MP1	Z	-10.03	6
7	MP1	X	-17.37	90
8	MP1	Z	-10.03	90
9	MP1	X	-6.33	%50
10	MP1	Z	-3.65	%50
11	MP1	X	-7.02	%75
12	MP1	Z	-4.05	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-5.6	6
2	MP2	Z	0	6
3	MP2	X	-5.6	30
4	MP2	Z	0	30
5	MP1	X	-17.36	6
6	MP1	Z	0	6
7	MP1	X	-17.36	90
8	MP1	Z	0	90
9	MP1	X	-7.1	%50
10	MP1	Z	0	%50
11	MP1	X	-7.45	%75
12	MP1	Z	0	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-5.55	6
2	MP2	Z	3.21	6
3	MP2	X	-5.55	30
4	MP2	Z	3.21	30
5	MP1	X	-17.37	6
6	MP1	Z	10.03	6

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
7	MP1	X	-17.37	90
8	MP1	Z	10.03	90
9	MP1	X	-6.33	%50
10	MP1	Z	3.65	%50
11	MP1	X	-7.02	%75
12	MP1	Z	4.05	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-4.02	6
2	MP2	Z	6.96	6
3	MP2	X	-4.02	30
4	MP2	Z	6.96	30
5	MP1	X	-12.73	6
6	MP1	Z	22.06	6
7	MP1	X	-12.73	90
8	MP1	Z	22.06	90
9	MP1	X	-3.86	%50
10	MP1	Z	6.69	%50
11	MP1	X	-4.71	%75
12	MP1	Z	8.16	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	0	6
2	MP2	Z	8.85	6
3	MP2	X	0	30
4	MP2	Z	8.85	30
5	MP1	X	0	6
6	MP1	Z	28.17	6
7	MP1	X	0	90
8	MP1	Z	28.17	90
9	MP1	X	0	%50
10	MP1	Z	7.93	%50
11	MP1	X	0	%75
12	MP1	Z	10.07	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	4.02	6
2	MP2	Z	6.96	6
3	MP2	X	4.02	30
4	MP2	Z	6.96	30
5	MP1	X	12.73	6
6	MP1	Z	22.06	6
7	MP1	X	12.73	90
8	MP1	Z	22.06	90
9	MP1	X	3.86	%50
10	MP1	Z	6.69	%50
11	MP1	X	4.71	%75
12	MP1	Z	8.16	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	5.55	6
2	MP2	Z	3.21	6
3	MP2	X	5.55	30
4	MP2	Z	3.21	30
5	MP1	X	17.37	6
6	MP1	Z	10.03	6
7	MP1	X	17.37	90
8	MP1	Z	10.03	90
9	MP1	X	6.33	%50
10	MP1	Z	3.65	%50
11	MP1	X	7.02	%75
12	MP1	Z	4.05	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	5.6	6
2	MP2	Z	0	6
3	MP2	X	5.6	30
4	MP2	Z	0	30
5	MP1	X	17.36	6
6	MP1	Z	0	6
7	MP1	X	17.36	90
8	MP1	Z	0	90
9	MP1	X	7.1	%50
10	MP1	Z	0	%50
11	MP1	X	7.45	%75
12	MP1	Z	0	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	5.55	6
2	MP2	Z	-3.21	6
3	MP2	X	5.55	30
4	MP2	Z	-3.21	30
5	MP1	X	17.37	6
6	MP1	Z	-10.03	6
7	MP1	X	17.37	90
8	MP1	Z	-10.03	90
9	MP1	X	6.33	%50
10	MP1	Z	-3.65	%50
11	MP1	X	7.02	%75
12	MP1	Z	-4.05	%75

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	4.02	6
2	MP2	Z	-6.96	6
3	MP2	X	4.02	30
4	MP2	Z	-6.96	30
5	MP1	X	12.73	6
6	MP1	Z	-22.06	6

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

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
7	MP1	X	12.73	90
8	MP1	Z	-22.06	90
9	MP1	X	3.86	%50
10	MP1	Z	-6.69	%50
11	MP1	X	4.71	%75
12	MP1	Z	-8.16	%75

Member Point Loads (BLC 31 : Seismic Load Z)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	Z	-16.598	6
2	MP2	Z	-16.598	30
3	MP1	Z	-21.706	6
4	MP1	Z	-21.706	90
5	MP1	Z	-31.566	%50
6	MP1	Z	-23.458	%75

Member Point Loads (BLC 32 : Seismic Load X)

	Member Label	Direction	Magnitude [lb, lb-ft]	Location [(in, %)]
1	MP2	X	-16.598	6
2	MP2	X	-16.598	30
3	MP1	X	-21.706	6
4	MP1	X	-21.706	90
5	MP1	X	-31.566	%50
6	MP1	X	-23.458	%75

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

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N4	L	Y	-250

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

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N25	L	Y	-500

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

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N43	L	Y	-500

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

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s²/in, lb*s²*in)]
1	N50	L	Y	-500

Member Distributed Loads (BLC 14 : Distr. Wind Load Z)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	SZ	-45.113	-45.113	0	%100
2	M2	SZ	-45.113	-45.113	0	%100
3	M3	SZ	-45.113	-45.113	0	%100

Member Distributed Loads (BLC 14 : Distr. Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
4	M4	SZ	-45.113	-45.113	0	%100
5	M5	SZ	-45.113	-45.113	0	%100
6	M6	SZ	-45.113	-45.113	0	%100
7	M7	SZ	-45.113	-45.113	0	%100
8	M8	SZ	-45.113	-45.113	0	%100
9	M9	SZ	-45.113	-45.113	0	%100
10	M10	SZ	0	0	0	%100
11	M11	SZ	0	0	0	%100
12	MP2	SZ	-45.113	-45.113	0	%100
13	M16	SZ	0	0	0	%100
14	M17	SZ	0	0	0	%100
15	M18	SZ	-45.113	-45.113	0	%100
16	M19	SZ	-45.113	-45.113	0	%100
17	M20	SZ	-45.113	-45.113	0	%100
18	M21	SZ	-45.113	-45.113	0	%100
19	M22	SZ	-45.113	-45.113	0	%100
20	M23	SZ	-45.113	-45.113	0	%100
21	M24	SZ	-45.113	-45.113	0	%100
22	M25	SZ	-45.113	-45.113	0	%100
23	MP1	SZ	-45.113	-45.113	0	%100
24	M27	SZ	0	0	0	%100
25	M28	SZ	0	0	0	%100
26	M29	SZ	0	0	0	%100
27	MP3	SZ	-45.113	-45.113	0	%100
28	M31	SZ	0	0	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	SX	-45.113	-45.113	0	%100
2	M2	SX	-45.113	-45.113	0	%100
3	M3	SX	-45.113	-45.113	0	%100
4	M4	SX	-45.113	-45.113	0	%100
5	M5	SX	-45.113	-45.113	0	%100
6	M6	SX	-45.113	-45.113	0	%100
7	M7	SX	-45.113	-45.113	0	%100
8	M8	SX	-45.113	-45.113	0	%100
9	M9	SX	-45.113	-45.113	0	%100
10	M10	SX	0	0	0	%100
11	M11	SX	0	0	0	%100
12	MP2	SX	-45.113	-45.113	0	%100
13	M16	SX	0	0	0	%100
14	M17	SX	0	0	0	%100
15	M18	SX	-45.113	-45.113	0	%100
16	M19	SX	-45.113	-45.113	0	%100
17	M20	SX	-45.113	-45.113	0	%100
18	M21	SX	-45.113	-45.113	0	%100
19	M22	SX	-45.113	-45.113	0	%100
20	M23	SX	-45.113	-45.113	0	%100
21	M24	SX	-45.113	-45.113	0	%100
22	M25	SX	-45.113	-45.113	0	%100
23	MP1	SX	-45.113	-45.113	0	%100
24	M27	SX	0	0	0	%100
25	M28	SX	0	0	0	%100
26	M29	SX	0	0	0	%100
27	MP3	SX	-45.113	-45.113	0	%100

Member Distributed Loads (BLC 15 : Distr. Wind Load X) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
28	M31	SX	0	0	0	%100

Member Distributed Loads (BLC 16 : Ice Weight)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	Y	-13.988	-13.988	0	%100
2	M2	Y	-13.988	-13.988	0	%100
3	M3	Y	-12.621	-12.621	0	%100
4	M4	Y	-12.621	-12.621	0	%100
5	M5	Y	-10.227	-10.227	0	%100
6	M6	Y	-10.227	-10.227	0	%100
7	M7	Y	-12.621	-12.621	0	%100
8	M8	Y	-10.227	-10.227	0	%100
9	M9	Y	-10.227	-10.227	0	%100
10	M10	Y	-6.124	-6.124	0	%100
11	M11	Y	-6.124	-6.124	0	%100
12	MP2	Y	-12.621	-12.621	0	%100
13	M16	Y	-6.124	-6.124	0	%100
14	M17	Y	-6.124	-6.124	0	%100
15	M18	Y	-12.621	-12.621	0	%100
16	M19	Y	-12.621	-12.621	0	%100
17	M20	Y	-12.621	-12.621	0	%100
18	M21	Y	-10.227	-10.227	0	%100
19	M22	Y	-10.227	-10.227	0	%100
20	M23	Y	-12.621	-12.621	0	%100
21	M24	Y	-10.227	-10.227	0	%100
22	M25	Y	-10.227	-10.227	0	%100
23	MP1	Y	-12.621	-12.621	0	%100
24	M27	Y	-6.124	-6.124	0	%100
25	M28	Y	-6.124	-6.124	0	%100
26	M29	Y	-6.124	-6.124	0	%100
27	MP3	Y	-12.621	-12.621	0	%100
28	M31	Y	-6.124	-6.124	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	SZ	-18.46	-18.46	0	%100
2	M2	SZ	-18.46	-18.46	0	%100
3	M3	SZ	-20.827	-20.827	0	%100
4	M4	SZ	-20.827	-20.827	0	%100
5	M5	SZ	-28.766	-28.766	0	%100
6	M6	SZ	-28.766	-28.766	0	%100
7	M7	SZ	-20.827	-20.827	0	%100
8	M8	SZ	-28.766	-28.766	0	%100
9	M9	SZ	-28.766	-28.766	0	%100
10	M10	SZ	0	0	0	%100
11	M11	SZ	0	0	0	%100
12	MP2	SZ	-20.827	-20.827	0	%100
13	M16	SZ	0	0	0	%100
14	M17	SZ	0	0	0	%100
15	M18	SZ	-20.827	-20.827	0	%100
16	M19	SZ	-20.827	-20.827	0	%100
17	M20	SZ	-20.827	-20.827	0	%100
18	M21	SZ	-28.766	-28.766	0	%100

Member Distributed Loads (BLC 29 : Distr. Ice Wind Load Z) (Continued)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
19	M22	SZ	-28.766	-28.766	0	%100
20	M23	SZ	-20.827	-20.827	0	%100
21	M24	SZ	-28.766	-28.766	0	%100
22	M25	SZ	-28.766	-28.766	0	%100
23	MP1	SZ	-20.827	-20.827	0	%100
24	M27	SZ	0	0	0	%100
25	M28	SZ	0	0	0	%100
26	M29	SZ	0	0	0	%100
27	MP3	SZ	-20.827	-20.827	0	%100
28	M31	SZ	0	0	0	%100

Member Distributed Loads (BLC 30 : Distr. Ice Wind Load X)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/in]	End Magnitude [lb/ft, F, psf, lb-ft/in]	Start Location [(in, %)]	End Location [(in, %)]
1	M1	SX	-18.46	-18.46	0	%100
2	M2	SX	-18.46	-18.46	0	%100
3	M3	SX	-20.827	-20.827	0	%100
4	M4	SX	-20.827	-20.827	0	%100
5	M5	SX	-28.766	-28.766	0	%100
6	M6	SX	-28.766	-28.766	0	%100
7	M7	SX	-20.827	-20.827	0	%100
8	M8	SX	-28.766	-28.766	0	%100
9	M9	SX	-28.766	-28.766	0	%100
10	M10	SX	0	0	0	%100
11	M11	SX	0	0	0	%100
12	MP2	SX	-20.827	-20.827	0	%100
13	M16	SX	0	0	0	%100
14	M17	SX	0	0	0	%100
15	M18	SX	-20.827	-20.827	0	%100
16	M19	SX	-20.827	-20.827	0	%100
17	M20	SX	-20.827	-20.827	0	%100
18	M21	SX	-28.766	-28.766	0	%100
19	M22	SX	-28.766	-28.766	0	%100
20	M23	SX	-20.827	-20.827	0	%100
21	M24	SX	-28.766	-28.766	0	%100
22	M25	SX	-28.766	-28.766	0	%100
23	MP1	SX	-20.827	-20.827	0	%100
24	M27	SX	0	0	0	%100
25	M28	SX	0	0	0	%100
26	M29	SX	0	0	0	%100
27	MP3	SX	-20.827	-20.827	0	%100
28	M31	SX	0	0	0	%100

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
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	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
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	-0.866	15	-0.5		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
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	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
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	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
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	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.239	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.239	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.239	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.239	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.239	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.239	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.239	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.239	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.239	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.239	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.239	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.239	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.861	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.861	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.861	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.861	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.861	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.861	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.861	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.861	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.861	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.861	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.861	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.861	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.23	14	0.23	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.23	14	0.2	15	0.115	33	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.23	14	0.115	15	0.2	33	1.5
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.23	14		15	0.23	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.23	14	-0.115	15	0.2	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.23	14	-0.2	15	0.115	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.23	14	-0.23	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.23	14	-0.2	15	-0.115	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.23	14	-0.115	15	-0.2	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.23	14		15	-0.23	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.23	14	0.115	15	-0.2	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.23	14	0.2	15	-0.115	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.058	14	0.058	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.058	14	0.05	15	0.029
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.058	14	0.029	15	0.05
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.058	14		15	0.058
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.058	14	-0.029	15	0.05
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.058	14	-0.05	15	0.029
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.058	14	-0.058	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.058	14	-0.05	15	-0.029
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.058	14	-0.029	15	-0.05
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.058	14		15	-0.058
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.058	14	0.029	15	-0.05
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.058	14	0.05	15	-0.029
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.058	14	0.058	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.058	14	0.05	15	0.029
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.058	14	0.029	15	0.05
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.058	14		15	0.058
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.058	14	-0.029	15	0.05
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.058	14	-0.05	15	0.029
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.058	14	-0.058	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.058	14	-0.05	15	-0.029
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.058	14	-0.029	15	-0.05
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.058	14		15	-0.058
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.058	14	0.029	15	-0.05
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.058	14	0.05	15	-0.029
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.058	14	0.058	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.058	14	0.05	15	0.029
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.058	14	0.029	15	0.05
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.058	14		15	0.058
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.058	14	-0.029	15	0.05
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.058	14	-0.05	15	0.029
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.058	14	-0.058	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.058	14	-0.05	15	-0.029
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.058	14	-0.029	15	-0.05
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.058	14		15	-0.058
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.058	14	0.029	15	-0.05

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N13	max	602.588	102	1786.366	31	391.005	14	0	110	0	110	0	110
2		min	-2122.568	36	343.621	24	-4095.078	32	0	1	0	1	0	1
3	N14	max	2114.029	30	1559.071	37	4084.362	38	0	110	0	110	0	110
4		min	-598.887	108	305.766	18	-242.452	20	0	1	0	1	0	1
5	N53	max	448.477	7	45.083	37	954.161	7	0	110	0	110	0	110
6		min	-449.971	13	7.962	55	-955.385	13	0	1	0	1	0	1

Envelope Node Reactions (Continued)

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
7	Totals:	max	983.409	17	3359.471	37	1711.913	2						
8		min	-983.41	11	702.361	54	-1711.912	20						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M4	PIPE_2.0	0.502	6.629	27	0.165	0	36	21188.88	32130	1871.625	1871.625	1.998	H1-1a
2	M9	ROHN 1.5x0.067	0.415	22.103	29	0.016	45.147	103	6333.703	9501.25	361.421	361.421	1.136	H1-1a
3	M3	PIPE_2.0	0.404	5.893	33	0.182	0	30	21188.88	32130	1871.625	1871.625	2.109	H1-1b
4	M5	ROHN 1.5x0.067	0.381	20.25	34	0.012	36	94	7341.707	9501.25	361.421	361.421	1.136	H1-1a
5	M8	ROHN 1.5x0.067	0.374	22.103	29	0.028	45.147	8	6333.703	9501.25	361.421	361.421	1.136	H1-1a
6	M23	PIPE_2.0	0.372	15.5	13	0.058	31	7	29659.269	32130	1871.625	1871.625	1.319	H1-1b
7	MP1	PIPE_2.0	0.26	69	8	0.038	69	20	14916.096	32130	1871.625	1871.625	3	H1-1b
8	M1	PIPE_2.5	0.199	121.5	8	0.074	123	27	15797.3	50715	3596.25	3596.25	1.657	H1-1b
9	M2	PIPE_2.5	0.195	72	83	0.107	123	8	15797.3	50715	3596.25	3596.25	1.768	H1-1b
10	M20	PIPE_2.0	0.194	6.629	100	0.167	70.711	7	21188.88	32130	1871.625	1871.625	1.965	H1-1b
11	M6	ROHN 1.5x0.067	0.187	36	38	0.042	36	30	7341.707	9501.25	361.421	361.421	1.136	H1-1b*
12	M19	PIPE_2.0	0.178	5.893	105	0.172	70.711	13	21188.88	32130	1871.625	1871.625	2.099	H1-1b
13	M21	ROHN 1.5x0.067	0.177	36	105	0.015	36	30	7341.707	9501.25	361.421	361.421	1.136	H1-1b*
14	M25	ROHN 1.5x0.067	0.17	0	101	0.042	45.147	36	6333.703	9501.25	361.421	361.421	1.136	H1-1b*
15	M24	ROHN 1.5x0.067	0.163	0	101	0.027	45.147	8	6333.703	9501.25	361.421	361.421	1.136	H1-1b*
16	MP3	PIPE_2.0	0.16	28	106	0.027	28	76	14916.096	32130	1871.625	1871.625	3	H1-1b
17	MP2	PIPE_2.0	0.104	68	27	0.035	28	31	14916.096	32130	1871.625	1871.625	3	H1-1b
18	M22	ROHN 1.5x0.067	0.085	36	106	0.043	36	31	7341.707	9501.25	361.421	361.421	1	H1-1b*
19	M18	PIPE_2.0	0.047	0	7	0.005	64.181	36	22801.138	32130	1871.625	1871.625	1.136	H1-1b*
20	M7	PIPE_2.0	0.045	31	28	0.004	31	2	29659.269	32130	1871.625	1871.625	1.136	H1-1b*

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General Members				
2	RIGID		8	20	0
3	Total General		8	20	0
4					
5	Hot Rolled Steel				
6	A53 Gr.B	PIPE_2.0	10	697	201.605
7	A53 Gr.B	PIPE_2.5	2	288	131.483
8	A53 Gr.B	ROHN 1.5x0.067	8	324.6	27.762
9	Total HR Steel		20	1309.6	360.85

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.5.1

PROJECT DATA	
Site Name:	EST HARTFORD PARKING GARA
Site Number:	876328
Connection Description:	Mount to Tower

MAXIMUM BOLT LOADS		
Bolt Tension:	1023.77	lbs
Bolt Shear:	681.87	lbs

WORST CASE BOLT LOADS[1]		
Bolt Tension:	1023.77	lbs
Bolt Shear:	647.42	lbs

WORST CASE CONNECTION SLIP LOADS[2]		
Sliding Force:	1747.20	lbs
Torsion About Leg:	0.00	lbs-ft

BOLT PROPERTIES		
Bolt Type:	U-Bolt	-
Bolt Diameter:	0.5	in
Bolt Grade:	A307	-
# of U-Bolts:	2	-
Leg Diameter:	2.875	in
Threads Excluded?	No	-

[1] *Worst case bolt loads correspond to Load combination #32 on member M10 in RISA-3D, which causes the maximum demand on the bolts.*

[2] *Worst Case slip loads correspond to Load combination #32 on member M10 in RISA 3D, which causes the maximum slip demand on the connection.*

Member Information
I nodes of M10, M11

BOLT CHECK		
Tensile Strength	6385.43	
Shear Strength	4417.86	
Max Tensile Usage	16.0%	
Max Shear Usage	15.4%	
Interaction Check (Worst Case)	0.05	***≤1.05***
Result	Pass	

SLIP CHECK (WORST CASE)		
Torsional Slip Resistance	834.68	
Sliding Resistance	6967.73	
Torsional Slip Usage	0.0%	
Sliding Usage	25.1%	
Interaction Check	0.06	***≤1.05***
Result	Pass	

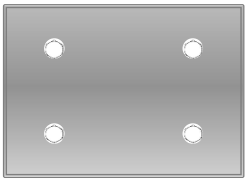


Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTHA864A

CTHA864A
13 South Main Street
West Hartford, Connecticut 06110

November 11, 2021

EBI Project Number: 6221007047

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**70.80%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

November 11, 2021

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTHA864A - CTHA864A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **13 South Main Street** in **West Hartford, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 13 South Main Street in West Hartford, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.

9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

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

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

13) The antennas used in this modeling are the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied

specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 103 feet above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd
Height (AGL):	103 feet	Height (AGL):	103 feet	Height (AGL):	103 feet
Channel Count:	13	Channel Count:	13	Channel Count:	13
Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts
ERP (W):	17,868.72	ERP (W):	17,868.72	ERP (W):	17,868.72
Antenna A1 MPE %:	**9.02%**	Antenna B1 MPE %:	**9.02%**	Antenna C1 MPE %:	**9.02%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	103 feet	Height (AGL):	103 feet	Height (AGL):	103 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A2 MPE %:	**13.89%**	Antenna B2 MPE %:	**13.89%**	Antenna C2 MPE %:	**13.89%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	22.91%
AT&T	47.89%
Site Total MPE % :	70.80%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	22.91%
T-Mobile Sector B Total:	22.91%
T-Mobile Sector C Total:	22.91%
Site Total MPE % :	70.80%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	103.0	4.52	600 MHz LTE	400	1.13%
T-Mobile 600 MHz NR	1	1577.94	103.0	6.03	600 MHz NR	400	1.51%
T-Mobile 700 MHz LTE	2	695.22	103.0	5.31	700 MHz LTE	467	1.14%
T-Mobile 1900 MHz GSM	4	1052.26	103.0	16.08	1900 MHz GSM	1000	1.61%
T-Mobile 1900 MHz LTE	2	2104.51	103.0	16.08	1900 MHz LTE	1000	1.61%
T-Mobile 2100 MHz LTE	2	2649.42	103.0	20.25	2100 MHz LTE	1000	2.02%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	103.0	42.20	2500 MHz LTE 1C & 2C Traffic	1000	4.22%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	103.0	4.10	2500 MHz LTE 1C & 2C Broadcast	1000	0.41%
T-Mobile 2500 MHz NR Traffic	1	22089.26	103.0	84.40	2500 MHz NR Traffic	1000	8.44%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	103.0	8.21	2500 MHz NR Broadcast	1000	0.82%
						Total:	**22.91%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	22.91%
Sector B:	22.91%
Sector C:	22.91%
T-Mobile Maximum MPE % (Sector A):	22.91%
Site Total:	70.80%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **70.80%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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