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

August 13, 2021

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

RE: **Notice of Exempt Modification for T-Mobile: 876347**
53 Slater Street, Manchester, CT 03101
Latitude: 41° 48′ 18.00″ / Longitude: -72° 32′ 1.00″

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 133-foot mount on the existing 155-foot monopole tower located at 53 Slater Street, Manchester, CT. The property is owned by One Hundred Twenty One Connecticut Avenue Associates LLC, Ellington, CT. The tower is owned by Crown Castle. T-Mobile now intends to replace three (3) antennas and ancillary equipment at the 133ft level. 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.

Panned Modification:
Tower:

Installed New:
(3) Ericsson – AIR6449 B41 Antennas
(3) Ericsson Radio 4460 B25 + B66 Remote Radios
(2) Ericsson 6/24 4AWG Hybrid Cables

Remove:
(3) Ericsson – AIR21 KRC118023-1_B2A Antennas
(3) Generic Twin Style 1B-AWS TMAs
(6) 1-5/8" Coax Cables

Ground:

Install New:
(1) 6160 Cabinet
(1) B160 Battery Cabinet
(1) CSR IXRE V2 Router
(1) PSU4813 Voltage Booster
(1) BB6648 IN RBS 6131
(1) BB6648 IN 6160 SSC
(1) 2416 AAV Emerson Cabinet

Remove:

(1) Nortel Cabinet
(6) RU22 Radios
(1) XMU Multiplexer
(1) DUW30
(1) BB5216

The facility was approved by the Town of Manchester on August 17, 1998. The approval was given without conditions.

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 The Deputy and Acting General Manager, Mr. Steven Stephanou for the Town of Manchester, The Director of Planning Board and Economic Development, Mr. Gary Anderson and One Hundred Twenty One Connecticut Avenue Associates LLC as property owner. Crown Castle is the tower owner.

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

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

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

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

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

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

Sincerely,

Jeffrey Barbadora
Site Acquisition Specialist
1800 W. Park Drive
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments
cc:

The Deputy and Acting General Manager, Mr. Steven Stephanou (*via FedEx delivery*), Town of Manchester, 41 Center Street, Manchester, CT 06045.

Director of Planning Board and Economic Development, Mr. Gary Anderson (*via FedEx Delivery*) Town of Manchester, Lincoln Center, 2nd Fl, 494 Main Street, Manchester, CT 06045.

Property Owner, One Hundred Twenty One Connecticut Avenue Associates LLC, 9 Lake Lane, Ellington, CT 06029

Crown Castle, Tower Owner

Town of Manchester

41 Center Street • P.O. Box 191

Manchester, Connecticut 06045-0191

RICHARD J. SARTOR, GENERAL MANAGER

CERTIFIED LETTER
August 24, 1998

Mr. Thomas F. Flynn, III
Vanasse Hangen Brustlin, Inc.
9 Barnes Industrial Road South
Wallingford, CT 06492

Re: Sprint Spectrum LP - 53 Slater Street - Special Exception (S-147)

Dear Mr. Flynn:

As agent for the applicant please be advised that at its meeting of August 17, 1998, the Planning and Zoning Commission approved a telecommunications tower under Article IV, Section 19.05 of the zoning regulations for 53 Slater Street with modifications and the condition that a caveat addressing co-location requirements be submitted for staff review and filed on the land records by the applicant prior to any construction. The approval is for activities as shown on plans entitled, "SPRINT PCS; SITE ID #CT03XC211; MANCHESTER, CT, 06040," dated February 2, 1998, revised April 27, 1998, sheets YHA211Z1, YHA211Z2, YHA211Z3, YHA211Z4, YHA211Z5 by Clough, Harbour & Associates, LLP, Job. No. 23224.

The required plan modifications are detailed in the attached staff memorandum from Nick Francione to Lynne Pike DiSanto, dated August 17, 1998.

Once all the required modifications have been incorporated into the plans, please submit one set of sealed and signed washoff mylar plans and four paper copies, sealed and signed, to this office for stamping and signature. If you would like a stamped set of plans for the applicant's records, please submit an additional set of paper copies. You may want to submit two paper copies for review before submitting the mylars. We will notify you of any necessary revisions.

Also enclosed is the Certificate of Approval of Special Exception for the above referenced application. As agent for the applicant please be advised that this certificate must be recorded in the land records in the office of the Town Clerk before the Special Exception is lawfully effective. If you should have any questions, please feel free to contact me at 647-3044.

Sincerely,

Lynne Pike DiSanto, AICP
Senior Planner

LPD/s
C:\CERTS\TALG98S-147.WPD

cc: Engineering Department
Water & Sewer Department
Assessor-Town of Manchester
Zoning Enforcement Officer

Sprint

Sprint PCS

Engineering & Operations
9 Barnes Industrial Road South
Wallingford, Connecticut 06492

Telephone: 203 294 5600
Fax: 203 294 5647

13 January 1998

Mr. Vincent Urban, Special Services Manager
State of Connecticut
Department of Transportation
District I Maintenance
Bureau of Engineering & Highway Operations
1107 Cromwell Avenue
Rocky Hill, Connecticut 06067

Subject: Manchester - Interstate 84
Communications Tower
Sprint PCS Site #211

Dear Mr. Urban:

As we discussed on 19 December 1997, Sprint PCS is proposing to construct a 160' monopole at 53/73 Slater Road in Manchester. I estimate the linear distance between the base of the proposed tower and the pavement of Interstate 84 to be approximately 300 feet from Connecticut Department of Environmental Protection aerial photographs dated 25 April 1995.

I understand from our conversation that the Connecticut Department of Transportation has no setback requirements from the adjacent highway system or contiguous state property. I anticipate that the Town of Manchester will ask for confirmation of this policy at the time of local approval. I would appreciate a written statement similar verifying this policy. I have attached a copy of a letter prepared by your retired counterpart in District IV, Charles Hagstrom, for your reference, as well as a site plan illustrating our proposal.

Thank you in advance for your prompt attention to this matter.

Sincerely,

C N Rosenthal

Christine Rosenthal
Planner

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
DISTRICT IV
359 South Main Street
Thomaston, Connecticut 06787
Phone: (860) 585-2800

In reply, refer to Unit 1910

September 25, 1996

Mr. Glenn H. Simons
Site Selection Specialist
SBA, Inc.
300 Research Parkway, 3rd Floor
Meriden, Connecticut 06450

Dear Mr. Simons:

Subject: Farmington - Interstate 84
Communications Tower

This is in reply to your letter of September 24, 1996, regarding the Department of Transportation's setback requirements or any other requirements for the erection of a 160 foot tower to be located adjacent to state property.

I have reviewed this matter with several disciplines within the Department as well as with the Rights-of-Way division of the Federal Highway Administration. There are no requirements for setbacks regarding 160 foot towers adjacent to the highway system or state property contiguous therewith.

Mr. James Ware of the Federal Highway Administration did suggest that the base of the tower and the structure should be designed to withstand earthquake tremors of a magnitude to those known to have taken place in Connecticut in the past.

Should you need further information, please contact me at (860) 585-2785.

Very truly yours,

Charles R. Hagstrom
District Maintenance
Special Services Manager
Bureau of Engineering and
Highway Operations

cc: James Ware, FHWA

53 SLATER STREET

Location	53 SLATER STREET	**Mblu**	56/ 5140/ 53/ /
Acct#	514000053	**Owner**	ONE HUNDRED TWENTY ONE CONN-
Assessment	$1,897,100	**Appraisal**	$2,710,000
PID	14616	**Building Count**	4
DISTRICT	E	**CONCRETE**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$1,951,900	$758,100	$2,710,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$1,366,400	$530,700	$1,897,100

Owner of Record

Owner ONE HUNDRED TWENTY ONE CONN-
ECTICUT AVENUE ASSOCIATES LLC
Address 9 LAKE LANE
ELLINGTON, CT 06029

Sale Price	$1,180,000
Certificate	C
Book & Page	2683/0224
Sale Date	07/17/2003
Instrument	33

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ONE HUNDRED TWENTY ONE CONN-	$1,180,000	C	2683/0224	33	07/17/2003
RAGLIN ASSOCIATES LLC	$0		2132/0338		12/02/1999

Building Information

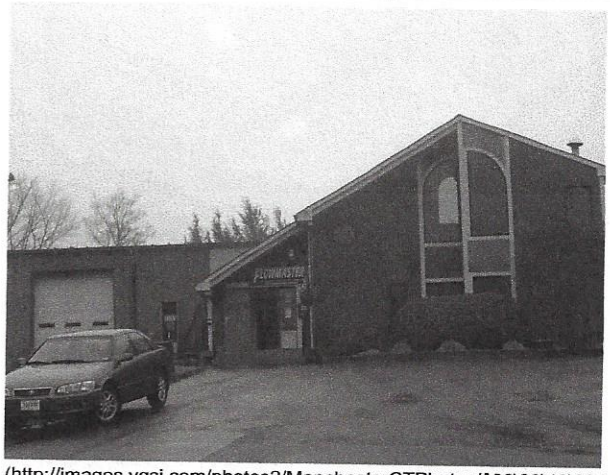
Building 1 : Section 1

Year Built: 1987
Living Area: 6,333

Replacement Cost: $393,597
Replacement Cost Less Depreciation: $236,200

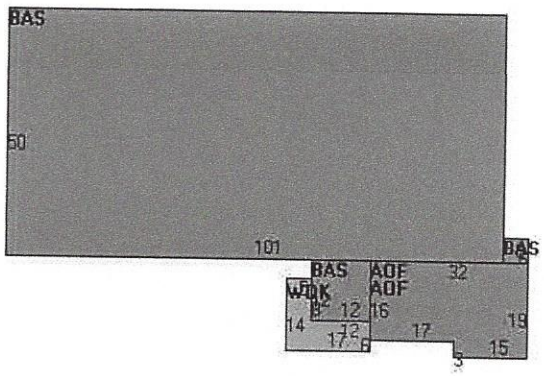
Building Attributes	
Field	**Description**
Style:	Pre-Eng Garage
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	4.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	Brick Veneer
Roof Structure	Gable/Hip
Roof Cover	Enam Mtl Shing
Interior Wall 1	Wall Brd/Wood
Interior Wall 2	Minim/Masonry
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Partial
Struct Class	
Bldg Use	Industrial 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	Heat/AC Packag
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min Wl
Rooms/Prtns	Average
Wall Height	14.00
% Comn Wall	0.00

Building Photo



(http://images.vgsi.com/photos2/ManchesterCTPhotos//\00\03\43\03.jpg)

Building Layout



(http://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/14616_1.

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	5,219	5,219
AOF	Office, (Average)	1,114	1,114
WDK	Wood Deck	142	0
		6,475	6,333

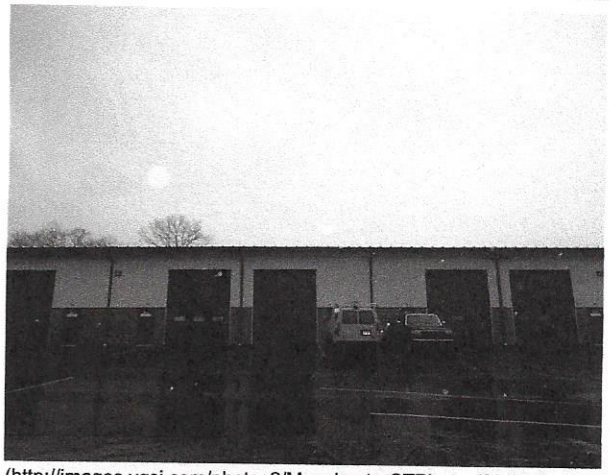
Building 2 : Section 1

Year Built: 1987
Living Area: 24,306
Replacement Cost: $1,332,996
Replacement Cost Less Depreciation: $799,800

Building Attributes : Bldg 2 of 4	
Field	**Description**

Style:	Pre-Eng Garage
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	6.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	Brick Veneer
Roof Structure	Gable/Hip
Roof Cover	Enam Mtl Shing
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Partial
Struct Class	
Bldg Use	Industrial 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	Heat AC Split
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Susp Ceil & Wl
Rooms/Prtns	Average
Wall Height	18.00
% Comn Wall	0.00

Building Photo



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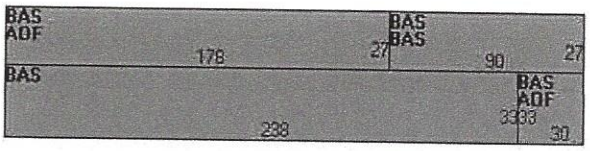
Building Layout



(http://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/14616_1

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	18,510	18,510
AOF	Office, (Average)	5,796	5,796
		24,306	24,306

Building 3 : Section 1

Year Built: 1987
Living Area: 10,320
Replacement Cost: $538,394
Replacement Cost Less Depreciation: $323,000

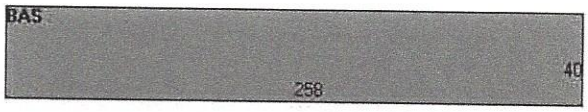
Building Attributes : Bldg 3 of 4	
Field	Description
Style:	Pre-Eng Garage
Model	Ind/Comm
Grade	Average

Stories:	1
Occupancy	6.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	Brick Veneer
Roof Structure	Gable/Hip
Roof Cover	Enam Mtl Shing
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	Industrial 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min Wl
Rooms/Prtns	Average
Wall Height	18.00
% Comn Wall	0.00

Building Photo

(http://images.vgsi.com/photos2/ManchesterCTPhotos//\00\03\43\05.jpg)

Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	10,320	10,320
		10,320	10,320

Building 4 : Section 1

Year Built: 2008
Living Area: 12,000
Replacement Cost: $596,640
Replacement Cost Less Depreciation: $459,400

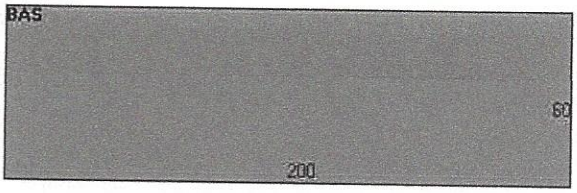
Building Attributes : Bldg 4 of 4	
Field	Description
Style:	Pre-Eng Garage
Model	Ind/Comm
Grade	Average
Stories:	1

Occupancy	6.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	Concr/Cinder
Roof Structure	Gable/Hip
Roof Cover	Enam Mtl Shing
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	None
Struct Class	
Bldg Use	Industrial 96
Total Rooms	00
Total Bedrms	00
Total Baths	0
1st Floor Use:	
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Min Wl
Rooms/Prtns	Average
Wall Height	18.00
% Comn Wall	0.00

Building Photo

(http://images.vgsi.com/photos2/ManchesterCTPhotos//\00\03\43\06.jpg)

Building Layout



(http://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/14616_1

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	12,000	12,000
		12,000	12,000

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
A/C	Partial AC	5796.00 S.F.	$7,000	2

Land

and Use

Use Code	300
Description	Industrial 96
Zone	IND

Land Line Valuation

Size (Acres)	4.96
Frontage	0
Depth	0

Neighborhood 5000
Alt Land Appr No
Category

Assessed Value $530,700
Appraised Value $758,100

tbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asphalt			13350.00 S.F.	$30,000	4
PAV1	Paving Asphalt			37000.00 S.F.	$27,800	1
FN3	Fence 6' Chain			300.00 L.F.	$3,500	1
PAV2	Paving Concrete			96.00 S.F.	$400	4
SHDT	Telephone Shed			319.00 S.F.	$31,600	1
FN4	Fence 8' Chain			54.00 L.F.	$1,600	1
SHDT	Telephone Shed			319.00 S.F.	$31,600	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	$1,951,900	$758,100	$2,710,000
2015	$1,689,400	$725,100	$2,414,500
2010	$1,766,600	$760,300	$2,526,900

Assessment			
Valuation Year	Improvements	Land	Total
2020	$1,366,400	$530,700	$1,897,100
2015	$1,182,600	$507,600	$1,690,200
2010	$1,236,700	$532,300	$1,769,000

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, August 16, 2021 9:56 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 774531575473: Your package has been delivered

Hi. Your package was delivered Mon, 08/16/2021 at 9:54am.

Delivered to 41 CENTER ST GEN MGR, MANCHESTER, CT 06045
Received by L.LEBEL

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 774531575473

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Manchester General Manager Steven Stephanous 41 Center Street MANCHESTER, CT, US, 06045
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Fri 8/13/2021 06:14 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	MANCHESTER, CT, US, 06045
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

FOLLOW FEDEX

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:55 AM CDT 08/16/2021.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, August 16, 2021 9:19 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 774531609604: Your package has been delivered

Hi. Your package was delivered Mon, 08/16/2021 at 9:15am.

Delivered to 494 MAIN ST, MANCHESTER, CT 06045
Received by G.GRENADO

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 774531609604

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Manchester Director of Planning Gary Anderson Lincoln Center, 2nd Fl 494 main Street MANCHESTER, CT, US, 06045
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Fri 8/13/2021 06:14 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	MANCHESTER, CT, US, 06045
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

FOLLOW FEDEX

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 8:18 AM CDT 08/16/2021.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Date: **June 29, 2021**

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

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CT11377C
	Site Name:	N/A
Crown Castle Designation:	**BU Number:**	876347
	Site Name:	BUCKLAND MALL
	JDE Job Number:	673295
	Work Order Number:	1984950
	Order Number:	574604 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	25697.561769
Site Data:	**53 Slater Street, Manchester, Hartford County, CT 06040** **Latitude *41° 48' 18.00"*, Longitude *-72° 32' 1.00"*** **155 Foot - Monopole Tower**	

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

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

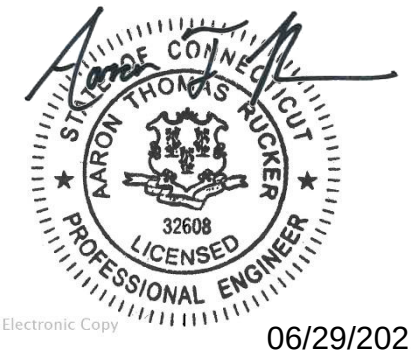
LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 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: Cleve Corley / BHM

Respectfully submitted by:

Aaron T. Rucker, P.E.



06/29/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 155-ft monopole tower designed by Summit.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
133.0	133.0	3	Ericsson	AIR -32 B2A/B66AA	2 3	1-3/8 1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20		
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		1	Tower Mounts	Platform Mount [LP 302-1]		

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)
155.0	155.0	3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe	3 5 2 3	5/16 1/2 5/8 1-1/4
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	Argus Technologies	LPX310R w/ Mount Pipe		
		3	Alcatel Lucent	TD-RRH8X20-25		
		3	Samsung Telecom.	WIMAX DAP HEAD		
		1	Tower Mounts	Miscellaneous [NA 510-1]		
		1	Tower Mounts	Platform Mount [LP 1201-1]		
	151.0	3	Dragonwave	HORIZON COMPACT		
		1	Andrew	VHLP1-23		
		1	Andrew	VHLP2.5-18		
		1	Andrew	VHLP2-11		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
153.0	153.0	3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER	-	-
		3	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		1	Tower Mounts	Pipe Mount [PM 601-3]		
		1	Tower Mounts	Side Arm Mount [SO 104-3]		
143.0	145.0	3	Cci Antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	1 4 6	3/8 3/4 1-1/4
		3	Kathrein	80010965 w/ Mount Pipe		
		6	Cci Antennas	TPX-070821		
		3	Kathrein	782 10253		
		3	Ericsson	RRUS 32		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RRUS 4449 B5/B12		
	143.0	3	Quintel Technology	QS66512-2 w/ Mount Pipe		
		1	Tower Mounts	T-Arm Mount [TA 601-3]		
123.0	123.0	3	Fujitsu	TA08025-B604	1	1-1/2
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		3	Jma Wireless	MX08FRO665-21 w/ Mount Pipe		
		1	Tower Mounts	Platform Mount [LP 716-1]		
113.0	113.0	3	Andrew	LNX-6512DS-T0M w/ Mount Pipe	8	1-5/8
		6	Commscope	SBNHH-1D65B w/ Mount Pipe		
		3	Vzw	Sub6 Antenna - VZS01 w/ Mount Pipe		
		1	Raycap	RVZDC-6627-PF-48		
		1	RFS Celwave	DB-T1-6Z-8AB-0Z		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Samsung Telecom.	RFV01U-D2A		
		1	Tower Mounts	Platform Mount [LP 1201-1]		
60.0	60.0	1	Tower Mounts	Side Arm Mount [SO 701-1]	-	-

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1533476	CCISites
Tower Foundation Drawings	1615406	CCISites
Tower Manufacturer Drawings	2068033	CCISites

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. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ϕP_{allow} (k)	% Capacity	Pass / Fail
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-16402.70	1215380.00	58.1	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.114x0.313	2	-27566.20	1994250.00	88.6	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.057x0.375	3	-37663.70	2792830.00	94.0	Pass
L4	43.75 - 0	Pole	TP48.8x39.735x0.438	4	-55557.60	3928710.00	93.3	Pass
							Summary	
						Pole (L3)	94.0	Pass
						RATING =	**94.0**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	90.1	Pass
1,2	Base Plate	-	68.5	Pass
1,2	Base Foundation Structural	-	58.4	Pass
1,2	Base Foundation Soil Interaction	-	56.0	Pass

Structure Rating (max from all components) =	**94.0%**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Rating per TIA-222-H Section 15.5

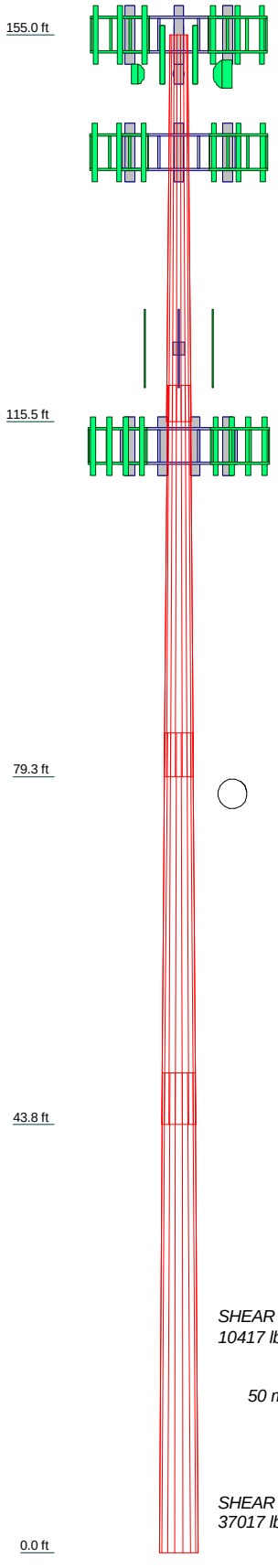
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	39.50	18	0.250	3.75	22.000	29.308	A607-60	2709.5
2	40.00	18	0.313	4.50	28.114	35.514	A607-60	4252.9
3	40.00	18	0.375	5.25	34.057	41.456	A607-65	6056.0
4	49.00	18	0.438		39.735	48.800	A607-65	10148.2
								23166.5



ALL REACTIONS ARE FACTORED

AXIAL 116151 lb

SHEAR 10417 lb

MOMENT 1415402 lb-ft

TORQUE 235 lb-ft
50 mph WIND - 2.000 in ICE

AXIAL 55605 lb

SHEAR 37017 lb

MOMENT 4370430 lb-ft

TORQUE 796 lb-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	A607-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 94%

Tower Engineering Professionals

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

Job:	***Buckland Mall (BU 876347)***		
Project:	***TEP No. 25697.561769***		
Client: Crown Castle	Drawn by: ccorley		App'd:
Code: TIA-222-H	Date: 06/29/21		Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 196.00 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 2.000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	155.00-115.50	39.50	3.750	18	22.000	29.308	0.250	1.000	A607-60 (60 ksi)
L2	115.50-79.25	40.00	4.500	18	28.114	35.514	0.313	1.250	A607-65 (65 ksi)
L3	79.25-43.75	40.00	5.250	18	34.057	41.456	0.375	1.500	A607-65 (65 ksi)
L4	43.75-0.00	49.00		18	39.735	48.800	0.438	1.750	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.301	17.259	1031.483	7.721	11.176	92.294	2064.324	8.631	3.432	13.728
	29.722	23.058	2459.697	10.316	14.888	165.208	4922.630	11.531	4.718	18.873
L2	29.204	27.576	2692.828	9.870	14.282	188.547	5389.199	13.791	4.398	14.074
	36.014	34.915	5466.104	12.497	18.041	302.980	10939.401	17.461	5.700	18.241
L3	35.369	40.089	5745.804	11.957	17.301	332.114	11499.168	20.049	5.334	14.224
	42.038	48.897	10425.542	14.584	21.060	495.048	20864.803	24.453	6.636	17.697
L4	41.267	54.569	10646.606	13.951	20.185	527.444	21307.222	27.290	6.223	14.225
	49.485	67.157	19844.888	17.169	24.790	800.507	39715.889	33.585	7.819	17.872

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 155.00-115.50				1	1	1			
L2 115.50-79.25				1	1	1			
L3 79.25-43.75				1	1	1			
L4 43.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
***										
Safety Line 3/8	A	No	Surface Ar (CaAa)	155.00 - 0.00	1	1	0.000 0.000	0.375		0.220
155										
2" Rigid Conduit	C	No	Surface Ar (CaAa)	155.00 - 0.00	2	2	0.250 0.250	2.000		2.800
FSJ4-50B(1/2)	C	No	Surface Ar (CaAa)	155.00 - 0.00	5	2	0.000 0.000	0.530		0.140
123										
CU12PSM9P6XXX(1-1/2)	A	No	Surface Ar (CaAa)	123.00 - 0.00	1	1	0.000 0.000	1.600		2.350
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
ATCB-B01-005(5/16)	C	No	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	0.075
							1/2" Ice	0.00	0.075
							1" Ice	0.00	0.075
							2" Ice	0.00	0.075
9776(5/8)	C	No	No	Inside Pole	155.00 - 0.00	1	No Ice	0.00	0.275
							1/2" Ice	0.00	0.275
							1" Ice	0.00	0.275
							2" Ice	0.00	0.275
HB058-M12-XXXF(5/8)	C	No	No	Inside Pole	155.00 - 0.00	1	No Ice	0.00	0.242
							1/2" Ice	0.00	0.242
							1" Ice	0.00	0.242
							2" Ice	0.00	0.242
HB114-1-08U4-M5J(1-1/4)	C	No	No	Inside Pole	155.00 - 0.00	3	No Ice	0.00	1.080
							1/2" Ice	0.00	1.080
							1" Ice	0.00	1.080
							2" Ice	0.00	1.080
143									
LDF6-50A(1-1/4)	A	No	No	Inside Pole	143.00 - 0.00	6	No Ice	0.00	0.600
							1/2" Ice	0.00	0.600
							1" Ice	0.00	0.600
							2" Ice	0.00	0.600
FB-L98B-002-75000(3/8)	A	No	No	Inside Pole	143.00 - 0.00	1	No Ice	0.00	0.059
							1/2" Ice	0.00	0.059
							1" Ice	0.00	0.059
							2" Ice	0.00	0.059
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	143.00 - 0.00	4	No Ice	0.00	0.584
							1/2" Ice	0.00	0.584
							1" Ice	0.00	0.584
							2" Ice	0.00	0.584
2" Rigid Conduit	A	No	No	Inside Pole	143.00 - 0.00	2	No Ice	0.00	2.800
							1/2" Ice	0.00	2.800
							1" Ice	0.00	2.800
							2" Ice	0.00	2.800

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
133									
HCS 6X12 6AWG(1-3/8)	A	No	No	Inside Pole	133.00 - 0.00	2	No Ice	0.00	1.700
							1/2" Ice	0.00	1.700
							1" Ice	0.00	1.700
							2" Ice	0.00	1.700
HCS 6X12 4AWG(1-5/8)	A	No	No	Inside Pole	133.00 - 0.00	3	No Ice	0.00	2.400
							1/2" Ice	0.00	2.400
							1" Ice	0.00	2.400
							2" Ice	0.00	2.400
113									
561(1-5/8)	B	No	No	Inside Pole	113.00 - 0.00	6	No Ice	0.00	1.350
							1/2" Ice	0.00	1.350
							1" Ice	0.00	1.350
							2" Ice	0.00	1.350
HB158-U12S24-XXX-LI(1-5/8)	B	No	No	Inside Pole	113.00 - 0.00	2	No Ice	0.00	3.200
							1/2" Ice	0.00	3.200
							1" Ice	0.00	3.200
							2" Ice	0.00	3.200
***									

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 lb
L1	155.00-115.50	A	0.000	0.000	2.681	0.000	530.67
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	19.987	0.000	406.14
L2	115.50-79.25	A	0.000	0.000	7.159	0.000	897.72
		B	0.000	0.000	0.000	0.000	489.38
		C	0.000	0.000	18.343	0.000	372.72
L3	79.25-43.75	A	0.000	0.000	7.011	0.000	879.14
		B	0.000	0.000	0.000	0.000	514.75
		C	0.000	0.000	17.963	0.000	365.01
L4	43.75-0.00	A	0.000	0.000	8.641	0.000	1083.45
		B	0.000	0.000	0.000	0.000	634.38
		C	0.000	0.000	22.137	0.000	449.84

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 lb
L1	155.00-115.50	A	2.302	0.000	0.000	24.317	0.000	910.26
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	70.441	0.000	1539.00
L2	115.50-79.25	A	2.228	0.000	0.000	40.533	0.000	1568.27
		B		0.000	0.000	0.000	0.000	489.38
		C		0.000	0.000	64.645	0.000	1412.38
L3	79.25-43.75	A	2.128	0.000	0.000	38.642	0.000	1500.35
		B		0.000	0.000	0.000	0.000	514.75

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 lb
L4	43.75-0.00	C	1.921	0.000	0.000	61.992	0.000	1337.11
		A		0.000	0.000	45.874	0.000	1791.98
		B		0.000	0.000	0.000	0.000	634.38
		C		0.000	0.000	74.214	0.000	1573.23

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	155.00-115.50	-1.663	2.698	-2.106	2.709
L2	115.50-79.25	-2.338	2.272	-3.129	2.346
L3	79.25-43.75	-2.419	2.344	-3.400	2.544
L4	43.75-0.00	-2.488	2.406	-3.632	2.722

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 3/8	115.50 - 155.00	1.0000	1.0000
L1	4	2" Rigid Conduit	115.50 - 155.00	1.0000	1.0000
L1	6	FSJ4-50B(1/2)	115.50 - 155.00	1.0000	1.0000
L1	19	CU12PSM9P6XXX(1-1/2)	115.50 - 123.00	1.0000	1.0000
L2	2	Safety Line 3/8	79.25 - 115.50	1.0000	1.0000
L2	4	2" Rigid Conduit	79.25 - 115.50	1.0000	1.0000
L2	6	FSJ4-50B(1/2)	79.25 - 115.50	1.0000	1.0000
L2	19	CU12PSM9P6XXX(1-1/2)	79.25 - 115.50	1.0000	1.0000
L3	2	Safety Line 3/8	43.75 - 79.25	1.0000	1.0000
L3	4	2" Rigid Conduit	43.75 - 79.25	1.0000	1.0000
L3	6	FSJ4-50B(1/2)	43.75 - 79.25	1.0000	1.0000
L3	19	CU12PSM9P6XXX(1-1/2)	43.75 - 79.25	1.0000	1.0000
L4	2	Safety Line 3/8	0.00 - 43.75	1.0000	1.0000
L4	4	2" Rigid Conduit	0.00 - 43.75	1.0000	1.0000
L4	6	FSJ4-50B(1/2)	0.00 - 43.75	1.0000	1.0000
L4	19	CU12PSM9P6XXX(1-1/2)	0.00 - 43.75	1.0000	1.0000

Discrete Tower Loads

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 lb
155									
APXVTM14-C-120 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	77.03 126.70 185.31 330.73
APXVTM14-C-120 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	77.03 126.70 185.31 330.73
APXVTM14-C-120 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	77.03 126.70 185.31 330.73
APXVSPP18-C-A20 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	95.09 159.53 234.77 419.06
APXVSPP18-C-A20 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	95.09 159.53 234.77 419.06
APXVSPP18-C-A20 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.60 5.05 5.50 6.44	4.01 4.45 4.89 5.82	95.09 159.53 234.77 419.06
LPX310R w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.64 2.97 3.65	2.34 2.87 3.41 4.56	29.57 53.95 83.09 158.40
LPX310R w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.64 2.97 3.65	2.34 2.87 3.41 4.56	29.57 53.95 83.09 158.40
LPX310R w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.31 2.64 2.97 3.65	2.34 2.87 3.41 4.56	29.57 53.95 83.09 158.40
TD-RRH8X20-25	A	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.70 3.95 4.20 4.72	1.29 1.46 1.64 2.02	66.00 89.94 117.22 182.59
TD-RRH8X20-25	B	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.70 3.95 4.20 4.72	1.29 1.46 1.64 2.02	66.00 89.94 117.22 182.59
TD-RRH8X20-25	C	From Centroid-Leg	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.70 3.95 4.20 4.72	1.29 1.46 1.64 2.02	66.00 89.94 117.22 182.59
WIMAX DAP HEAD	A	From Centroid-Le	4.00 0.000	0.000	155.00	No Ice 1/2" Ice	1.55 1.70	0.68 0.80	33.00 44.58

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 lb
		g	0.000			1" Ice	1.87	0.92	58.46
						2" Ice	2.22	1.19	93.93
WIMAX DAP HEAD	B	From Centroid-Le g	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	33.00 44.58 58.46 93.93
WIMAX DAP HEAD	C	From Centroid-Le g	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.55 1.70 1.87 2.22	0.68 0.80 0.92 1.19	33.00 44.58 58.46 93.93
HORIZON COMPACT	A	From Centroid-Le g	4.00 0.000 -4.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.72 0.83 0.94 1.19	0.37 0.45 0.54 0.74	11.50 17.99 26.19 48.49
HORIZON COMPACT	B	From Centroid-Le g	4.00 0.000 -4.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.72 0.83 0.94 1.19	0.37 0.45 0.54 0.74	11.50 17.99 26.19 48.49
HORIZON COMPACT	C	From Centroid-Le g	4.00 0.000 -4.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.72 0.83 0.94 1.19	0.37 0.45 0.54 0.74	11.50 17.99 26.19 48.49
2.4" Dia x 4-ft Mount Pipe	A	From Centroid-Le g	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.12 1.37 1.91	0.87 1.12 1.37 1.91	14.64 22.02 32.24 61.82
2.4" Dia x 4-ft Mount Pipe	B	From Centroid-Le g	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.12 1.37 1.91	0.87 1.12 1.37 1.91	14.64 22.02 32.24 61.82
2.4" Dia x 4-ft Mount Pipe	C	From Centroid-Le g	4.00 0.000 0.000	0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.87 1.12 1.37 1.91	0.87 1.12 1.37 1.91	14.64 22.02 32.24 61.82
Miscellaneous [NA 510-1]	C	None		0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.36 8.52 10.62 14.64	6.36 8.52 10.62 14.64	255.70 343.81 458.73 769.04
Platform Mount [LP 1201-1]	C	None		0.000	155.00	No Ice 1/2" Ice 1" Ice 2" Ice	18.38 22.11 25.87 33.47	18.38 22.11 25.87 33.47	2100.00 2651.92 3263.01 4662.44
153									
800MHz 2X50W RRH W/FILTER	A	From Leg	1.00 0.000 0.000	0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.06 2.24 2.43 2.83	1.93 2.11 2.29 2.68	64.00 86.12 111.30 171.62
800MHz 2X50W RRH W/FILTER	B	From Leg	1.00 0.000 0.000	0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.06 2.24 2.43 2.83	1.93 2.11 2.29 2.68	64.00 86.12 111.30 171.62
800MHz 2X50W RRH W/FILTER	C	From Leg	1.00 0.000 0.000	0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.06 2.24 2.43 2.83	1.93 2.11 2.29 2.68	64.00 86.12 111.30 171.62
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.00 0.000	0.000	153.00	No Ice 1/2" Ice	2.32 2.53	2.24 2.44	60.00 83.13

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 lb
			0.000			1" Ice	2.74	2.65	109.50
						2" Ice	3.19	3.09	172.72
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.00 0.000 0.000	0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	60.00 83.13 109.50 172.72
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.00 0.000 0.000	0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	60.00 83.13 109.50 172.72
Pipe Mount [PM 601-3]	C	None		0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.17 3.79 4.42 5.76	3.17 3.79 4.42 5.76	195.00 232.41 279.00 401.46
Side Arm Mount [SO 104-3]	C	None		0.000	153.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.62 3.30 3.98 5.35	2.62 3.30 3.98 5.35	288.00 408.00 528.00 768.00
143									
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	105.59 175.14 255.63 450.81
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	105.59 175.14 255.63 450.81
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.19 9.94 10.71 12.30	6.21 6.93 7.66 9.17	105.59 175.14 255.63 450.81
80010965 w/ Mount Pipe	A	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	136.24 226.19 328.20 569.75
80010965 w/ Mount Pipe	B	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	136.24 226.19 328.20 569.75
80010965 w/ Mount Pipe	C	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.26 13.03 13.80 15.41	5.79 6.47 7.17 8.60	136.24 226.19 328.20 569.75
QS66512-2 w/ Mount Pipe	A	From Leg	4.00 0.000 0.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	136.59 206.23 286.80 482.13
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.000 0.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	136.59 206.23 286.80 482.13
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.000 0.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.04 4.42 4.82 5.63	4.18 4.57 4.97 5.79	136.59 206.23 286.80 482.13
(2) TPX-070821	A	From Leg	4.00 0.000	0.000	143.00	No Ice 1/2" Ice	0.47 0.56	0.10 0.15	7.50 10.95

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 lb
			2.000			1" Ice	0.66	0.20	15.73
						2" Ice	0.87	0.33	30.07
(2) TPX-070821	B	From Leg	4.00	0.000	143.00	No Ice	0.47	0.10	7.50
			0.000			1/2" Ice	0.56	0.15	10.95
			2.000			1" Ice	0.66	0.20	15.73
						2" Ice	0.87	0.33	30.07
(2) TPX-070821	C	From Leg	4.00	0.000	143.00	No Ice	0.47	0.10	7.50
			0.000			1/2" Ice	0.56	0.15	10.95
			2.000			1" Ice	0.66	0.20	15.73
						2" Ice	0.87	0.33	30.07
782 10253	A	From Leg	4.00	0.000	143.00	No Ice	0.11	0.06	2.90
			0.000			1/2" Ice	0.15	0.10	4.04
			2.000			1" Ice	0.20	0.14	5.97
						2" Ice	0.33	0.25	12.92
782 10253	B	From Leg	4.00	0.000	143.00	No Ice	0.11	0.06	2.90
			0.000			1/2" Ice	0.15	0.10	4.04
			2.000			1" Ice	0.20	0.14	5.97
						2" Ice	0.33	0.25	12.92
782 10253	C	From Leg	4.00	0.000	143.00	No Ice	0.11	0.06	2.90
			0.000			1/2" Ice	0.15	0.10	4.04
			2.000			1" Ice	0.20	0.14	5.97
						2" Ice	0.33	0.25	12.92
RRUS 32	A	From Leg	4.00	0.000	143.00	No Ice	2.86	1.78	55.12
			0.000			1/2" Ice	3.08	1.97	77.39
			2.000			1" Ice	3.32	2.17	102.93
						2" Ice	3.81	2.58	164.59
RRUS 32	B	From Leg	4.00	0.000	143.00	No Ice	2.86	1.78	55.12
			0.000			1/2" Ice	3.08	1.97	77.39
			2.000			1" Ice	3.32	2.17	102.93
						2" Ice	3.81	2.58	164.59
RRUS 32	C	From Leg	4.00	0.000	143.00	No Ice	2.86	1.78	55.12
			0.000			1/2" Ice	3.08	1.97	77.39
			2.000			1" Ice	3.32	2.17	102.93
						2" Ice	3.81	2.58	164.59
RRUS 8843 B2/B66A	A	From Leg	4.00	0.000	143.00	No Ice	1.64	1.35	72.00
			0.000			1/2" Ice	1.80	1.50	89.60
			2.000			1" Ice	1.97	1.65	109.91
						2" Ice	2.32	1.99	159.50
RRUS 8843 B2/B66A	B	From Leg	4.00	0.000	143.00	No Ice	1.64	1.35	72.00
			0.000			1/2" Ice	1.80	1.50	89.60
			2.000			1" Ice	1.97	1.65	109.91
						2" Ice	2.32	1.99	159.50
RRUS 8843 B2/B66A	C	From Leg	4.00	0.000	143.00	No Ice	1.64	1.35	72.00
			0.000			1/2" Ice	1.80	1.50	89.60
			2.000			1" Ice	1.97	1.65	109.91
						2" Ice	2.32	1.99	159.50
DC6-48-60-18-8F	A	From Leg	4.00	0.000	143.00	No Ice	1.21	1.21	32.80
			0.000			1/2" Ice	1.89	1.89	54.76
			2.000			1" Ice	2.11	2.11	79.58
						2" Ice	2.57	2.57	138.43
DC6-48-60-18-8F	B	From Leg	4.00	0.000	143.00	No Ice	1.21	1.21	32.80
			0.000			1/2" Ice	1.89	1.89	54.76
			2.000			1" Ice	2.11	2.11	79.58
						2" Ice	2.57	2.57	138.43
DC6-48-60-18-8F	C	From Leg	4.00	0.000	143.00	No Ice	1.21	1.21	32.80
			0.000			1/2" Ice	1.89	1.89	54.76
			2.000			1" Ice	2.11	2.11	79.58

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 lb
						2" Ice	2.57	2.57	138.43
RRUS 4449 B5/B12	A	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	71.00 89.51 110.84 162.74
RRUS 4449 B5/B12	B	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	71.00 89.51 110.84 162.74
RRUS 4449 B5/B12	C	From Leg	4.00 0.000 2.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	71.00 89.51 110.84 162.74
2.4" Dia x 8-ft Mount Pipe	A	From Face	4.00 0.000 4.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	29.28 43.62 63.24 118.94
2.4" Dia x 8-ft Mount Pipe	B	From Face	4.00 0.000 4.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	29.28 43.62 63.24 118.94
2.4" Dia x 8-ft Mount Pipe	C	From Face	4.00 0.000 4.000	0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	29.28 43.62 63.24 118.94
T-Arm Mount [TA 601-3]	C	None		0.000	143.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.56 15.36 18.04 23.69	12.56 15.36 18.04 23.69	726.00 941.10 1210.26 1923.69
133									
AIR -32 B2A/B66AA	A	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.86 4.23 4.61 5.41	2.51 2.86 3.22 3.97	172.00 219.60 272.64 395.77
AIR -32 B2A/B66AA	B	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.86 4.23 4.61 5.41	2.51 2.86 3.22 3.97	172.00 219.60 272.64 395.77
AIR -32 B2A/B66AA	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.86 4.23 4.61 5.41	2.51 2.86 3.22 3.97	172.00 219.60 272.64 395.77
APXVAARR24_43-U-NA20	A	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	153.30 265.89 387.02 655.63
APXVAARR24_43-U-NA20	B	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	153.30 265.89 387.02 655.63
APXVAARR24_43-U-NA20	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.67 15.43 16.21 17.81	5.32 5.99 6.68 8.08	153.30 265.89 387.02 655.63
AIR6449 B41_T-MOBILE	A	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice	5.27 5.70 6.14	2.03 2.36 2.70	114.63 153.52 196.64

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 lb
						2" Ice	7.06	3.43	296.32
AIR6449 B41_T-MOBILE	B	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.27 5.70 6.14 7.06	2.03 2.36 2.70 3.43	114.63 153.52 196.64 296.32
AIR6449 B41_T-MOBILE	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.27 5.70 6.14 7.06	2.03 2.36 2.70 3.43	114.63 153.52 196.64 296.32
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	109.00 131.16 156.36 216.68
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	109.00 131.16 156.36 216.68
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	109.00 131.16 156.36 216.68
RADIO 4449 B71 B85A_T-MOBILE	A	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	73.21 92.97 115.64 170.44
RADIO 4449 B71 B85A_T-MOBILE	B	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	73.21 92.97 115.64 170.44
RADIO 4449 B71 B85A_T-MOBILE	C	From Centroid-Leg	4.00 0.000 0.000	0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.15 2.33 2.72	1.59 1.75 1.92 2.28	73.21 92.97 115.64 170.44
Platform Mount [LP 302-1]	C	None		0.000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	26.56 33.67 40.39 53.23	26.56 33.67 40.39 53.23	1709.10 2264.73 2949.38 4703.10
123									
TA08025-B604	A	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	63.90 80.65 100.10 147.85
TA08025-B605	A	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	75.00 92.97 113.72 164.31
TA08025-B604	B	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	63.90 80.65 100.10 147.85
TA08025-B605	B	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	75.00 92.97 113.72 164.31
TA08025-B604	C	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	63.90 80.65 100.10

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 lb
						2" Ice	2.71	1.55	147.85
TA08025-B605	C	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	75.00 92.97 113.72 164.31
RDIDC-9181-PF-48	A	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.01 2.19 2.37 2.76	1.17 1.31 1.46 1.78	21.85 39.53 59.97 109.90
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	108.09 194.33 291.90 522.49
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	108.09 194.33 291.90 522.49
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.01 8.52 9.04 10.11	4.23 4.69 5.16 6.12	108.09 194.33 291.90 522.49
(2) 8' x 2" Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	29.28 43.62 63.24 118.94
(2) 8' x 2" Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	29.28 43.62 63.24 118.94
(2) 8' x 2" Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	29.28 43.62 63.24 118.94
Platform Mount [LP 716-1]	C	None		0.000	123.00	No Ice 1/2" Ice 1" Ice 2" Ice	26.80 32.20 37.60 48.40	26.80 32.20 37.60 48.40	1509.44 1811.33 2113.22 2717.00
113									
LNX-6512DS-T0M w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.67 2.94 3.22 3.81	2.15 2.42 2.69 3.25	47.13 90.96 142.82 272.07
LNX-6512DS-T0M w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.67 2.94 3.22 3.81	2.15 2.42 2.69 3.25	47.13 90.96 142.82 272.07
LNX-6512DS-T0M w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.67 2.94 3.22 3.81	2.15 2.42 2.69 3.25	47.13 90.96 142.82 272.07
(2) SBNHH-1D65B w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.49 4.89 5.72	3.30 3.68 4.07 4.87	66.47 129.68 203.75 385.89
(2) SBNHH-1D65B w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice	4.09 4.49 4.89	3.30 3.68 4.07	66.47 129.68 203.75

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 lb
						2" Ice	5.72	4.87	385.89
(2) SBNHH-1D65B w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.49 4.89 5.72	3.30 3.68 4.07 4.87	66.47 129.68 203.75 385.89
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.92 5.26 5.62 6.37	2.69 3.15 3.63 4.64	101.43 141.20 186.10 293.81
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.92 5.26 5.62 6.37	2.69 3.15 3.63 4.64	101.43 141.20 186.10 293.81
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.92 5.26 5.62 6.37	2.69 3.15 3.63 4.64	101.43 141.20 186.10 293.81
RVZDC-6627-PF-48	B	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	32.00 63.48 98.72 181.25
DB-T1-6Z-8AB-0Z	A	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	44.00 80.13 120.22 213.04
RFV01U-D1A	A	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	84.40 102.74 123.87 175.27
(2) RFV01U-D1A	B	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	84.40 102.74 123.87 175.27
(3) RFV01U-D2A	A	From Centroid-Leg	4.00 0.000 0.000	0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	70.30 86.73 105.83 152.80
Platform Mount [LP 1201-1]	C	None		0.000	113.00	No Ice 1/2" Ice 1" Ice 2" Ice	18.38 22.11 25.87 33.47	18.38 22.11 25.87 33.47	2100.00 2651.92 3263.01 4662.44
60									
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.000 0.000	0.000	60.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	65.00 79.00 93.00 121.00
***									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
VHLP1-23	A	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 0.000 -4.000	-64.000		155.00	1.27	No Ice 1/2" Ice 1" Ice 2" Ice	1.28 1.45 1.62 1.96	10.00 20.00 20.00 40.00
VHLP2.5-18	B	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 0.000 -4.000	21.000		155.00	2.92	No Ice 1/2" Ice 1" Ice 2" Ice	6.68 7.07 7.45 8.23	47.60 83.89 120.19 192.77
VHLP2-11	C	Paraboloid w/Shroud (HP)	From Centroid -Leg	4.00 0.000 -4.000	13.000		155.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	30.00 50.00 70.00 110.00

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

Comb. No.	Description
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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	155 - 115.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53120.91	3063.90	-3199.50
			Max. Mx	20	-16424.43	487289.79	6455.91
			Max. My	2	-16423.87	5906.08	483583.09
			Max. Vy	8	23295.73	-485490.07	-5926.69
			Max. Vx	2	-23238.40	5906.08	483583.09
			Max. Torque	4			-966.28
L2	115.5 - 79.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77239.89	2092.89	-2107.70
			Max. Mx	8	-27601.16	-1488438.92	-11730.18
			Max. My	2	-27579.79	11543.97	1490574.09
			Max. Vy	8	30573.37	-1488438.92	-11730.18
			Max. Vx	2	-30720.58	11543.97	1490574.09
			Max. Torque	4			-751.18
L3	79.25 - 43.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91976.51	3345.40	-3387.48
			Max. Mx	8	-37682.53	-2607730.84	-18443.09
			Max. My	2	-37671.92	17997.53	2614603.85
			Max. Vy	8	33749.93	-2607730.84	-18443.09
			Max. Vx	2	-33857.82	17997.53	2614603.85
			Max. Torque	23			-800.19
L4	43.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-116150.97	4893.88	-5645.23
			Max. Mx	8	-55558.04	-4348041.37	-27854.63
			Max. My	2	-55557.78	26697.86	4359773.96
			Max. Vy	8	36924.13	-4348041.37	-27854.63
			Max. Vx	2	-37026.79	26697.86	4359773.96
			Max. Torque	23			-798.35

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	33	116150.97	-33.04	-10385.87
	Max. H_x	20	55604.55	36828.78	251.04
	Max. H_z	2	55604.55	164.62	36956.51
	Max. M_x	2	4359773.96	164.62	36956.51
	Max. M_z	8	4348041.37	-36854.04	-172.30
	Max. Torsion	13	700.53	-18507.82	-31954.93
	Min. Vert	23	41703.41	31961.66	18560.92
	Min. H_x	8	55604.55	-36854.04	-172.30
	Min. H_z	14	55604.55	-157.80	-36883.47
	Min. M_x	14	-4349903.10	-157.80	-36883.47
	Min. M_z	20	-4346127.33	36828.78	251.04
	Min. Torsion	23	-796.22	31961.66	18560.92

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	46337.13	-0.00	0.00	796.88	849.70	0.01
1.2 Dead+1.0 Wind 0 deg - No Ice	55604.55	-164.62	-36956.51	-4359773.96	26698.13	697.94
0.9 Dead+1.0 Wind 0 deg - No Ice	41703.42	-164.62	-36956.50	-4273380.30	25818.19	696.96
1.2 Dead+1.0 Wind 30 deg - No Ice	55604.55	18278.62	-31961.64	-3769301.34	-2150599.61	621.85
0.9 Dead+1.0 Wind 30 deg - No Ice	41703.41	18278.62	-31961.64	-3694625.20	-2108158.33	615.92
1.2 Dead+1.0 Wind 60 deg - No Ice	55604.55	31906.46	-18302.71	-2151923.23	-3764901.02	112.98
0.9 Dead+1.0 Wind 60 deg - No Ice	41703.41	31906.46	-18302.71	-2109462.18	-3690276.83	103.04
1.2 Dead+1.0 Wind 90 deg - No Ice	55604.55	36854.04	172.30	27854.82	-4348041.37	-491.60
0.9 Dead+1.0 Wind 90 deg - No Ice	41703.42	36854.03	172.30	26981.69	-4261852.13	-502.61
1.2 Dead+1.0 Wind 120 deg - No Ice	55604.55	31949.64	18482.57	2180847.90	-3770341.86	-657.58
0.9 Dead+1.0 Wind 120 deg - No Ice	41703.41	31949.64	18482.57	2137263.49	-3695624.75	-665.97
1.2 Dead+1.0 Wind 150 deg - No Ice	55604.55	18507.82	31954.93	3768597.88	-2185607.61	-696.56
0.9 Dead+1.0 Wind 150 deg - No Ice	41703.41	18507.82	31954.93	3693474.30	-2142398.82	-700.53
1.2 Dead+1.0 Wind 180 deg - No Ice	55604.55	157.80	36883.47	4349903.10	-23305.91	-631.39
0.9 Dead+1.0 Wind 180 deg - No Ice	41703.42	157.80	36883.46	4263238.22	-23071.58	-629.95
1.2 Dead+1.0 Wind 210 deg - No Ice	55604.55	-18296.99	31907.35	3762416.44	2155906.16	-613.24
0.9 Dead+1.0 Wind 210 deg - No Ice	41703.41	-18296.99	31907.35	3687413.79	2112778.06	-607.32

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 240 deg - No Ice	55604.55	-31812.59	18315.78	2156142.67	3751777.29	-59.69
0.9 Dead+1.0 Wind 240 deg - No Ice	41703.41	-31812.59	18315.78	2113093.35	3676899.47	-50.18
1.2 Dead+1.0 Wind 270 deg - No Ice	55604.55	-36828.78	-251.04	-38735.58	4346127.33	741.16
0.9 Dead+1.0 Wind 270 deg - No Ice	41703.42	-36828.77	-251.04	-38114.69	4259432.61	752.13
1.2 Dead+1.0 Wind 300 deg - No Ice	55604.55	-31961.66	-18560.92	-2191610.92	3774480.40	787.23
0.9 Dead+1.0 Wind 300 deg - No Ice	41703.41	-31961.66	-18560.92	-2148287.88	3699116.74	796.22
1.2 Dead+1.0 Wind 330 deg - No Ice	55604.55	-18560.98	-32027.48	-3778343.57	2196538.57	666.12
0.9 Dead+1.0 Wind 330 deg - No Ice	41703.41	-18560.98	-32027.48	-3703504.97	2152518.28	670.43
1.2 Dead+1.0 Ice+1.0 Temp	116150.97	-0.06	0.07	5645.23	4893.88	-0.17
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	116150.97	-33.34	-10400.53	-1405916.86	11261.96	142.36
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	116150.97	5169.00	-8998.26	-1215233.11	-694984.69	85.49
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	116150.97	9003.07	-5163.47	-693151.24	-1216914.42	-55.01
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	116150.97	10393.57	35.32	12423.29	-1405297.55	-187.67
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	116150.97	9011.63	5200.59	711537.35	-1218205.55	-207.58
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	116150.97	5216.04	8996.76	1226334.13	-703528.30	-184.44
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	116150.97	33.04	10385.87	1414816.96	-969.37	-130.69
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	116150.97	-5172.68	8986.67	1224723.35	705927.32	-80.64
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	116150.97	-8982.42	5166.44	705497.68	1223091.93	63.27
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	116150.97	-10386.54	-51.21	-3741.73	1414136.13	235.41
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	116150.97	-9012.45	-5216.23	-702804.06	1228588.72	231.40
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	116150.97	-5226.12	-9010.95	-1217325.98	715729.15	174.22
Dead+Wind 0 deg - Service	46337.13	-33.94	-7621.91	-889949.11	6134.71	147.95
Dead+Wind 30 deg - Service	46337.13	3769.79	-6591.76	-769321.63	-438620.07	131.52
Dead+Wind 60 deg - Service	46337.13	6580.38	-3774.76	-438947.07	-768362.54	22.99
Dead+Wind 90 deg - Service	46337.13	7600.78	35.52	6313.56	-887479.69	-104.77
Dead+Wind 120 deg - Service	46337.13	6589.29	3811.84	446130.73	-769502.56	-138.79
Dead+Wind 150 deg - Service	46337.13	3817.04	6590.38	770471.78	-445774.81	-146.85
Dead+Wind 180 deg - Service	46337.13	32.53	7606.85	889183.43	-4064.40	-133.17
Dead+Wind 210 deg - Service	46337.13	-3773.58	6580.57	769183.08	441077.70	-129.99
Dead+Wind 240 deg - Service	46337.13	-6561.03	3777.45	441068.52	767055.20	-12.90
Dead+Wind 270 deg - Service	46337.13	-7595.58	-51.75	-7269.57	888472.13	156.77
Dead+Wind 300 deg - Service	46337.13	-6591.76	-3827.99	-447072.77	771745.44	167.20
Dead+Wind 330 deg - Service	46337.13	-3828.00	-6605.33	-771219.56	449398.60	141.49

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-46337.13	0.00	0.00	46337.13	-0.00	0.000%
2	-164.62	-55604.55	-36956.50	164.62	55604.55	36956.51	0.000%
3	-164.62	-41703.41	-36956.50	164.62	41703.42	36956.50	0.000%
4	18278.62	-55604.55	-31961.64	-18278.62	55604.55	31961.64	0.000%
5	18278.62	-41703.41	-31961.64	-18278.62	41703.41	31961.64	0.000%
6	31906.46	-55604.55	-18302.71	-31906.46	55604.55	18302.71	0.000%
7	31906.46	-41703.41	-18302.71	-31906.46	41703.41	18302.71	0.000%
8	36854.03	-55604.55	172.30	-36854.04	55604.55	-172.30	0.000%
9	36854.03	-41703.41	172.30	-36854.03	41703.42	-172.30	0.000%
10	31949.64	-55604.55	18482.57	-31949.64	55604.55	-18482.57	0.000%
11	31949.64	-41703.41	18482.57	-31949.64	41703.41	-18482.57	0.000%
12	18507.82	-55604.55	31954.93	-18507.82	55604.55	-31954.93	0.000%
13	18507.82	-41703.41	31954.93	-18507.82	41703.41	-31954.93	0.000%
14	157.80	-55604.55	36883.46	-157.80	55604.55	-36883.47	0.000%
15	157.80	-41703.41	36883.46	-157.80	41703.42	-36883.46	0.000%
16	-18296.99	-55604.55	31907.35	18296.99	55604.55	-31907.35	0.000%
17	-18296.99	-41703.41	31907.35	18296.99	41703.41	-31907.35	0.000%
18	-31812.59	-55604.55	18315.78	31812.59	55604.55	-18315.78	0.000%
19	-31812.59	-41703.41	18315.78	31812.59	41703.41	-18315.78	0.000%
20	-36828.77	-55604.55	-251.04	36828.78	55604.55	251.04	0.000%
21	-36828.77	-41703.41	-251.04	36828.77	41703.42	251.04	0.000%
22	-31961.66	-55604.55	-18560.92	31961.66	55604.55	18560.92	0.000%
23	-31961.66	-41703.41	-18560.92	31961.66	41703.41	18560.92	0.000%
24	-18560.98	-55604.55	-32027.48	18560.98	55604.55	32027.48	0.000%
25	-18560.98	-41703.41	-32027.48	18560.98	41703.41	32027.48	0.000%
26	0.00	-116150.97	0.00	0.06	116150.97	-0.07	0.000%
27	-33.34	-116150.97	-10400.30	33.34	116150.97	10400.53	0.000%
28	5168.88	-116150.97	-8998.06	-5169.00	116150.97	8998.26	0.000%
29	9002.87	-116150.97	-5163.36	-9003.07	116150.97	5163.47	0.000%
30	10393.33	-116150.97	35.32	-10393.57	116150.97	-35.32	0.000%
31	9011.43	-116150.97	5200.47	-9011.63	116150.97	-5200.59	0.000%
32	5215.93	-116150.97	8996.56	-5216.04	116150.97	-8996.76	0.000%
33	33.04	-116150.97	10385.63	-33.04	116150.97	-10385.87	0.000%
34	-5172.57	-116150.97	8986.46	5172.68	116150.97	-8986.67	0.000%
35	-8982.22	-116150.97	5166.32	8982.42	116150.97	-5166.44	0.000%
36	-10386.30	-116150.97	-51.21	10386.54	116150.97	51.21	0.000%
37	-9012.24	-116150.97	-5216.11	9012.45	116150.97	5216.23	0.000%
38	-5226.00	-116150.97	-9010.75	5226.12	116150.97	9010.95	0.000%
39	-33.94	-46337.13	-7621.89	33.94	46337.13	7621.91	0.000%
40	3769.79	-46337.13	-6591.76	-3769.79	46337.13	6591.76	0.000%
41	6580.38	-46337.13	-3774.76	-6580.38	46337.13	3774.76	0.000%
42	7600.77	-46337.13	35.52	-7600.78	46337.13	-35.52	0.000%
43	6589.29	-46337.13	3811.84	-6589.29	46337.13	-3811.84	0.000%
44	3817.04	-46337.13	6590.37	-3817.04	46337.13	-6590.38	0.000%
45	32.53	-46337.13	7606.83	-32.53	46337.13	-7606.85	0.000%
46	-3773.58	-46337.13	6580.57	3773.58	46337.13	-6580.57	0.000%
47	-6561.03	-46337.13	3777.45	6561.03	46337.13	-3777.45	0.000%
48	-7595.56	-46337.13	-51.75	7595.58	46337.13	51.75	0.000%
49	-6591.76	-46337.13	-3827.99	6591.76	46337.13	3827.99	0.000%
50	-3828.00	-46337.13	-6605.33	3828.00	46337.13	6605.33	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00018077
3	Yes	5	0.00000001	0.00007005
4	Yes	7	0.00000001	0.00013210
5	Yes	6	0.00000001	0.00047518
6	Yes	7	0.00000001	0.00013076
7	Yes	6	0.00000001	0.00047011
8	Yes	5	0.00000001	0.00029239
9	Yes	5	0.00000001	0.00012213
10	Yes	7	0.00000001	0.00013154
11	Yes	6	0.00000001	0.00047227
12	Yes	7	0.00000001	0.00013282
13	Yes	6	0.00000001	0.00047723
14	Yes	5	0.00000001	0.00045814
15	Yes	5	0.00000001	0.00020483
16	Yes	7	0.00000001	0.00013009
17	Yes	6	0.00000001	0.00046740
18	Yes	7	0.00000001	0.00013132
19	Yes	6	0.00000001	0.00047234
20	Yes	5	0.00000001	0.00064049
21	Yes	5	0.00000001	0.00028546
22	Yes	7	0.00000001	0.00013334
23	Yes	6	0.00000001	0.00047898
24	Yes	7	0.00000001	0.00013190
25	Yes	6	0.00000001	0.00047319
26	Yes	4	0.00000001	0.00011564
27	Yes	7	0.00006030	0.00031901
28	Yes	7	0.00005970	0.00075953
29	Yes	7	0.00005970	0.00075663
30	Yes	7	0.00006031	0.00031898
31	Yes	7	0.00005966	0.00077668
32	Yes	7	0.00005966	0.00077952
33	Yes	7	0.00006029	0.00032104
34	Yes	7	0.00005966	0.00077674
35	Yes	7	0.00005967	0.00077709
36	Yes	7	0.00006030	0.00032129
37	Yes	7	0.00005966	0.00078229
38	Yes	7	0.00005964	0.00078175
39	Yes	4	0.00000001	0.00036462
40	Yes	5	0.00000001	0.00022343
41	Yes	5	0.00000001	0.00021655
42	Yes	4	0.00000001	0.00035814
43	Yes	5	0.00000001	0.00022102
44	Yes	5	0.00000001	0.00022744
45	Yes	4	0.00000001	0.00037950
46	Yes	5	0.00000001	0.00021612
47	Yes	5	0.00000001	0.00022138
48	Yes	4	0.00000001	0.00038612
49	Yes	5	0.00000001	0.00023025
50	Yes	5	0.00000001	0.00022407

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	33.747	49	1.846	0.002
L2	119.25 - 79.25	20.437	50	1.636	0.001
L3	83.75 - 43.75	9.907	50	1.141	0.000
L4	49 - 0	3.342	50	0.632	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	APXVTM14-C-120 w/ Mount Pipe	49	33.747	1.846	0.002	35257
153.00	800MHz 2X50W RRH W/FILTER	49	32.973	1.838	0.002	35257
151.00	VHLP1-23	49	32.199	1.831	0.002	35257
143.00	OPA-65R-LCUU-H6 w/ Mount Pipe	50	29.123	1.798	0.002	14690
133.00	AIR -32 B2A/B66AA	50	25.358	1.745	0.001	8012
123.00	TA08025-B604	50	21.741	1.671	0.001	5509
113.00	LNX-6512DS-T0M w/ Mount Pipe	50	18.338	1.567	0.001	4713
60.00	Side Arm Mount [SO 701-1]	50	4.974	0.787	0.000	3436

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	155 - 115.5	164.816	24	9.046	0.010
L2	119.25 - 79.25	99.951	24	8.023	0.004
L3	83.75 - 43.75	48.513	24	5.599	0.002
L4	49 - 0	16.373	24	3.097	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
155.00	APXVTM14-C-120 w/ Mount Pipe	24	164.816	9.046	0.011	7572
153.00	800MHz 2X50W RRH W/FILTER	24	161.049	9.009	0.010	7572
151.00	VHLP1-23	24	157.284	8.972	0.010	7572
143.00	OPA-65R-LCUU-H6 w/ Mount Pipe	24	142.304	8.812	0.008	3153
133.00	AIR -32 B2A/B66AA	24	123.949	8.557	0.007	1716
123.00	TA08025-B604	24	106.313	8.196	0.005	1176
113.00	LNX-6512DS-T0M w/ Mount Pipe	24	89.710	7.685	0.004	1001
60.00	Side Arm Mount [SO 701-1]	24	24.366	3.857	0.001	708

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	39.50	0.00	0.0	22.507	-16402.70	1215380.00	0.013
L2	115.5 - 79.25 (2)	TP35.514x28.114x0.313	40.00	0.00	0.0	34.090	-27566.20	1994250.00	0.014
L3	79.25 - 43.75 (3)	TP41.456x34.057x0.375	40.00	0.00	0.0	47.741	-37663.70	2792830.00	0.013
L4	43.75 - 0 (4)	TP48.8x39.735x0.438	49.00	0.00	0.0	67.157	-55557.60	3928710.00	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	488928.33	867625.00	0.564	0.00	867625.00	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.114x0.313	1495708.33	1720891.67	0.869	0.00	1720891.67	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.057x0.375	2621933.33	2833975.00	0.925	0.00	2833975.00	0.000
L4	43.75 - 0 (4)	TP48.8x39.735x0.438	4370433.33	4763741.67	0.917	0.00	4763741.67	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u lb-ft	ϕT_n lb-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	155 - 115.5 (1)	TP29.308x22x0.25	23331.30	364613.00	0.064	246.48	905700.00	0.000
L2	115.5 - 79.25 (2)	TP35.514x28.114x0.313	30778.90	598276.00	0.051	555.27	1800733.33	0.000
L3	79.25 - 43.75 (3)	TP41.456x34.057x0.375	33923.40	837850.00	0.040	668.54	2943041.67	0.000
L4	43.75 - 0 (4)	TP48.8x39.735x0.438	37087.60	1178610.00	0.031	666.16	4991825.00	0.000

Pole Interaction Design Data

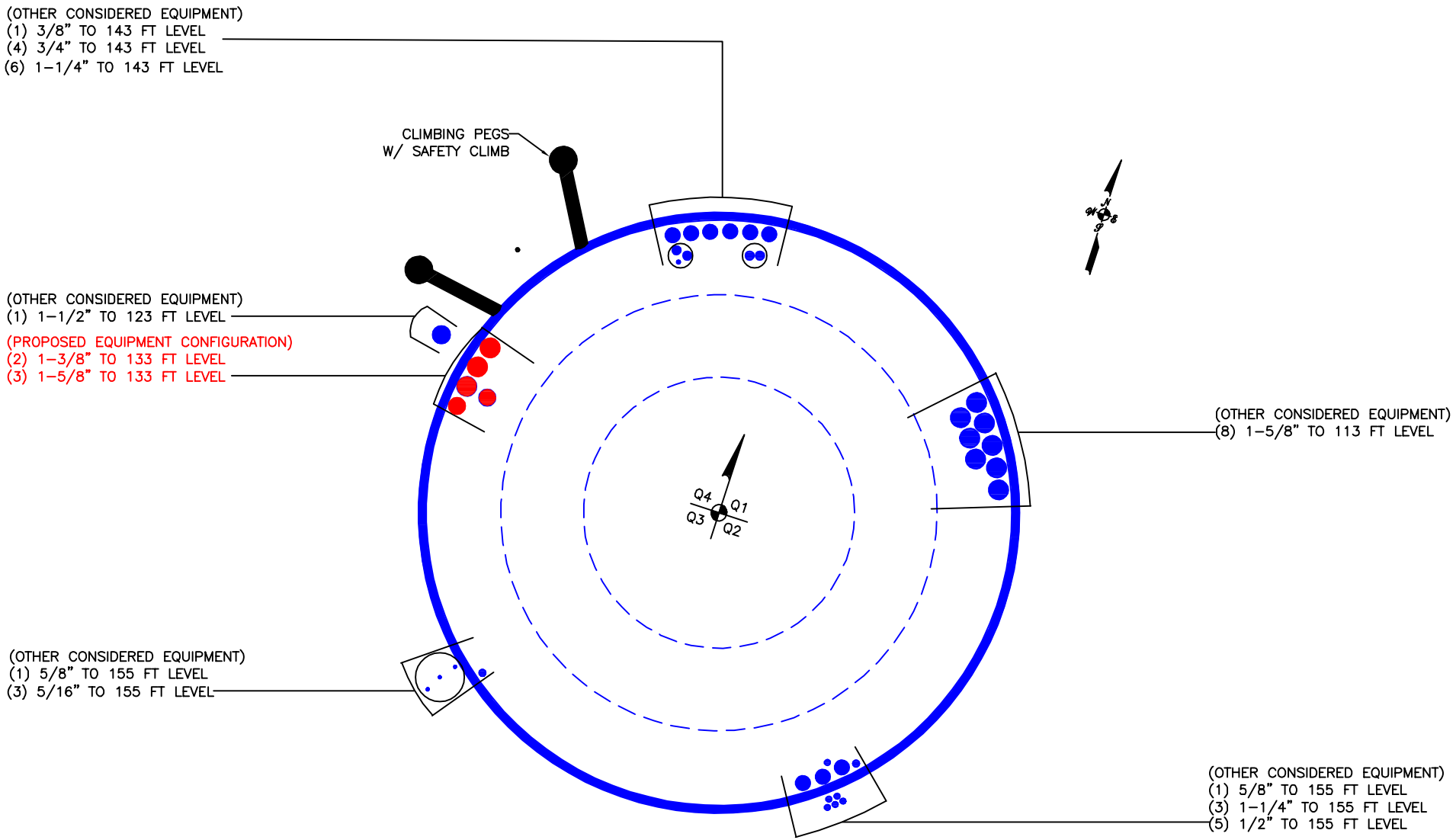
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	155 - 115.5 (1)	0.013	0.564	0.000	0.064	0.000	0.581	1.000	4.8.2
L2	115.5 - 79.25 (2)	0.014	0.869	0.000	0.051	0.000	0.886	1.000	4.8.2
L3	79.25 - 43.75 (3)	0.013	0.925	0.000	0.040	0.000	0.940	1.000	4.8.2
L4	43.75 - 0 (4)	0.014	0.917	0.000	0.031	0.000	0.933	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	155 - 115.5	Pole	TP29.308x22x0.25	1	-16402.70	1215380.00	58.1	Pass
L2	115.5 - 79.25	Pole	TP35.514x28.114x0.313	2	-27566.20	1994250.00	88.6	Pass
L3	79.25 - 43.75	Pole	TP41.456x34.057x0.375	3	-37663.70	2792830.00	94.0	Pass
L4	43.75 - 0	Pole	TP48.8x39.735x0.438	4	-55557.60	3928710.00	93.3	Pass
							Summary	
						Pole (L3)	94.0	Pass
						RATING =	**94.0**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 143 FT LEVEL
(4) 3/4" TO 143 FT LEVEL
(6) 1-1/4" TO 143 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 123 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-3/8" TO 133 FT LEVEL
(3) 1-5/8" TO 133 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(8) 1-5/8" TO 113 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(1) 5/8" TO 155 FT LEVEL
(3) 5/16" TO 155 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 5/8" TO 155 FT LEVEL
(3) 1-1/4" TO 155 FT LEVEL
(5) 1/2" TO 155 FT LEVEL

APPENDIX C

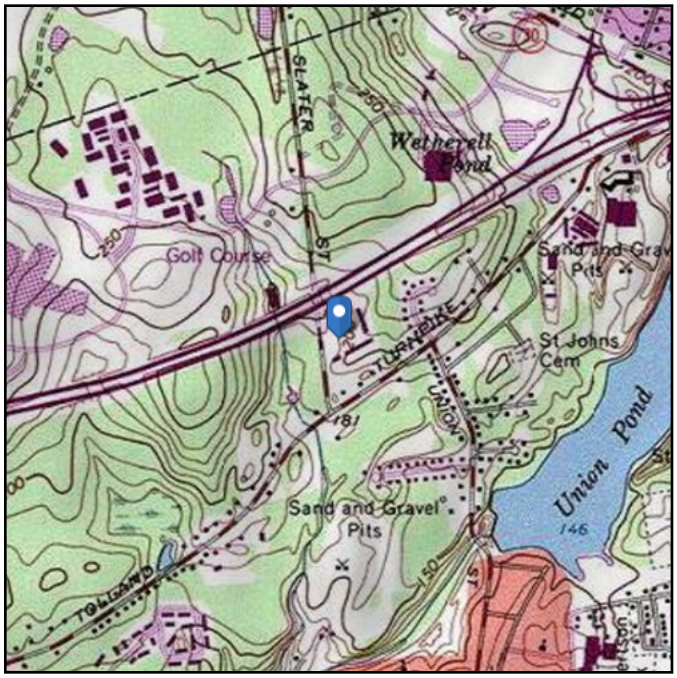
ADDITIONAL CALCULATIONS

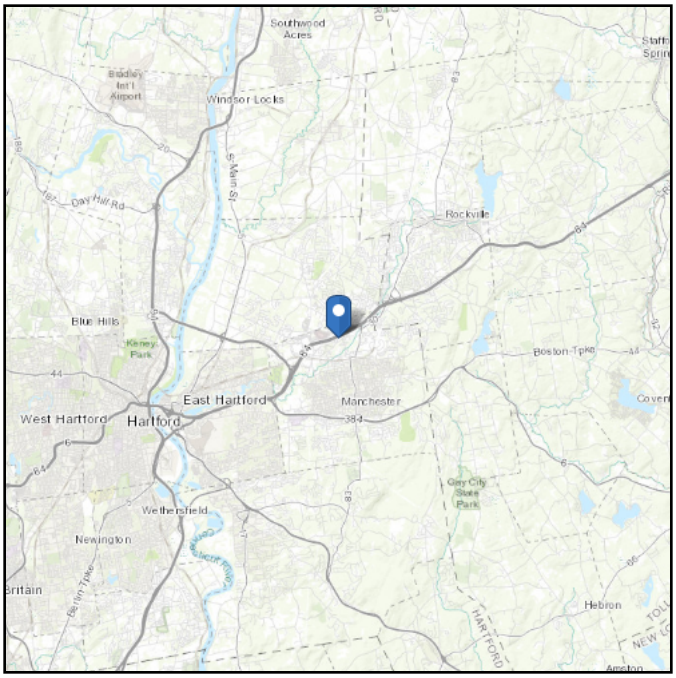
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 195.5 ft (NAVD 88)
Latitude: 41.805
Longitude: -72.533611





Wind

Results:

Wind Speed:	123 Vmph	125 Vmph per Jurisdiction
10-year MRI	77 Vmph	
25-year MRI	87 Vmph	
50-year MRI	93 Vmph	
100-year MRI	101 Vmph	

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

Date Accessed: Fri Apr 09 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 7-10 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.

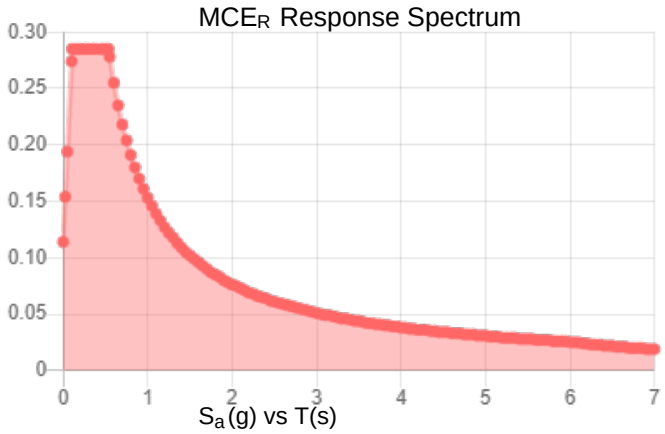
Seismic

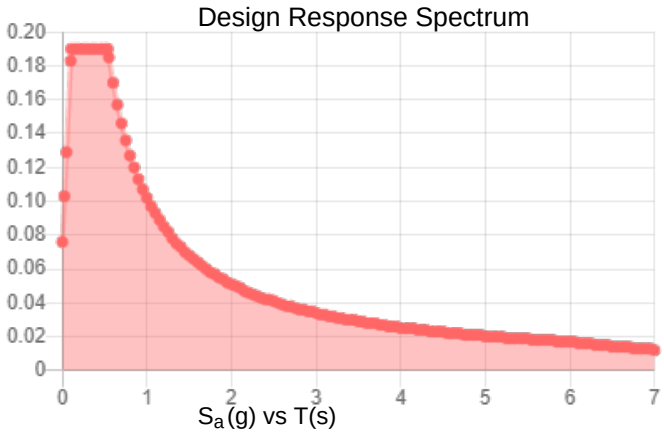
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.178	S_{DS} :	0.19
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.285	PGA_M :	0.143
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri Apr 09 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:	Fri Apr 09 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.

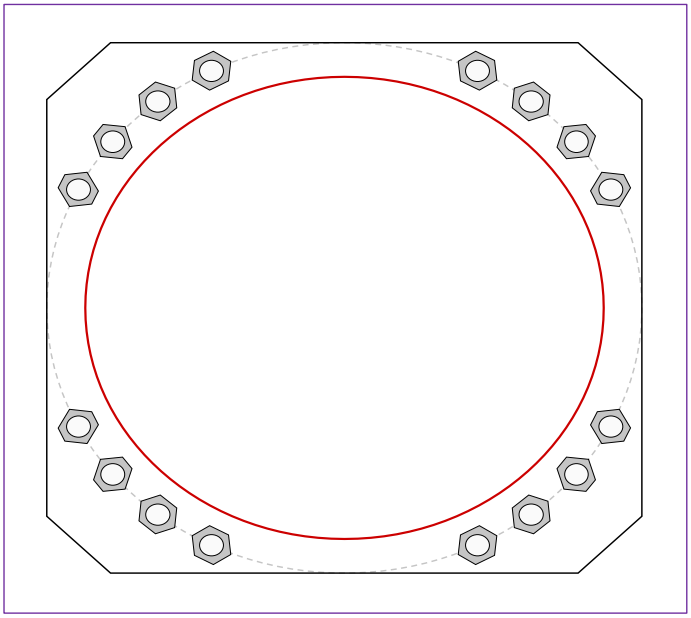
Monopole Base Plate Connection

Site Info	
BU #	876347
Site Name	Buckland Mall
Order #	574604 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.75

Applied Loads	
Moment (kip-ft)	4370.43
Axial Force (kips)	55.61
Shear Force (kips)	37.02

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 56" BC

Anchor Spacing: 6 in

Base Plate Data

56" W x 3.25" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

48.8" x 0.4375" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 230.5	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.31	ϕVn = 149.1	**90.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	32.37	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**68.5%**	**Pass**

Pier and Pad Foundation

BU # :	876347
Site Name:	Buckland Mall
App. Number:	574604 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	55.605	kips
Base Shear, Vu_comp:	37.017	kips
Moment, M_u:	4370.43	ft-kips
Tower Height, **H**:	155	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	32	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	10	ft
Pad Width, W_1:	23	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	34	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	115	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	15	
Base Friction, μ:	0.45	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	405.53	37.02	**8.7%**	**Pass**
Bearing Pressure (ksf)	22.50	3.34	**14.8%**	**Pass**
*Overturning (kip*ft)*	8507.57	4768.36	**56.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	7584.34	4648.06	**58.4%**	**Pass**
Pier Compression (kip)	23390.64	121.76	**0.5%**	**Pass**
*Pad Flexure (kip*ft)*	4568.38	1784.21	**37.2%**	**Pass**
Pad Shear - 1-way (kips)	709.93	299.31	**40.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.047	**27.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	6333.75	2788.83	**41.9%**	**Pass**

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

Structural Rating*:	**58.4%**
Soil Rating*:	**56.0%**

Date: **June 15, 2021**

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

Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Anchor**	
	Carrier Site Number:	CT11377C
	Carrier Site Name:	Sprint Manchester/slater
Crown Castle Designation:	**Crown Castle BU Number:**	876347
	Crown Castle Site Name:	BUCKLAND MALL
	Crown Castle JDE Job Number:	673295
	Crown Castle Order Number:	574604 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	186128
Site Data:	**53 Slater Street, Manchester, Hartford County, CT, 06040 Latitude 41°48'18.00" Longitude -72°32'1.00"**	
Structure Information:	**Tower Height & Type:**	**155.0 ft Monopole**
	Mount Elevation:	**133.0 ft**
	Mount Type:	**14.5 ft Platform**

Dear Darcy Tarr,

Trylon 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:

Platform **Sufficient**

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

Mount analysis prepared by: Andrei Florea

Respectfully Submitted by:
Jinshan Wang,P.E

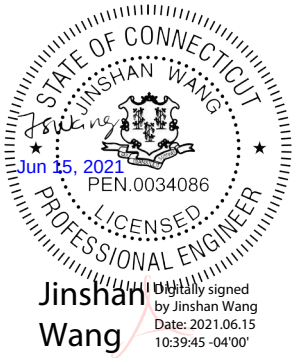


TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 sector 14.5 ft Platform, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.000
Topographic Factor at Mount:	1.000
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.178
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
133.0	133.0	3	ERICSSON	AIR -32 B2A/B66AA	14.5 ft Platform
		3	ERICSSON	AIR6449 B41_T-MOBILE	
		3	RFS/CELWAVE	APXVAARR24_43-U-NA20	
		3	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	574604 Rev.0	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQLP-496-HK (No kicker)	Trylon

3.1) Analysis Method

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

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3	Mount Pipe(s)	M80	133.0	50.0	Pass
	Horizontal(s)	M12		35.2	Pass
	Standoff(s)	M49		68.0	Pass
	Bracing(s)	M3		32.0	Pass
	Handrail(s)	M68		44.1	Pass
	Plate(s)	M15		65.2	Pass
	Mount Connection(s)	M49		54.5	Pass

Structure Rating (max from all components) =	68.0%

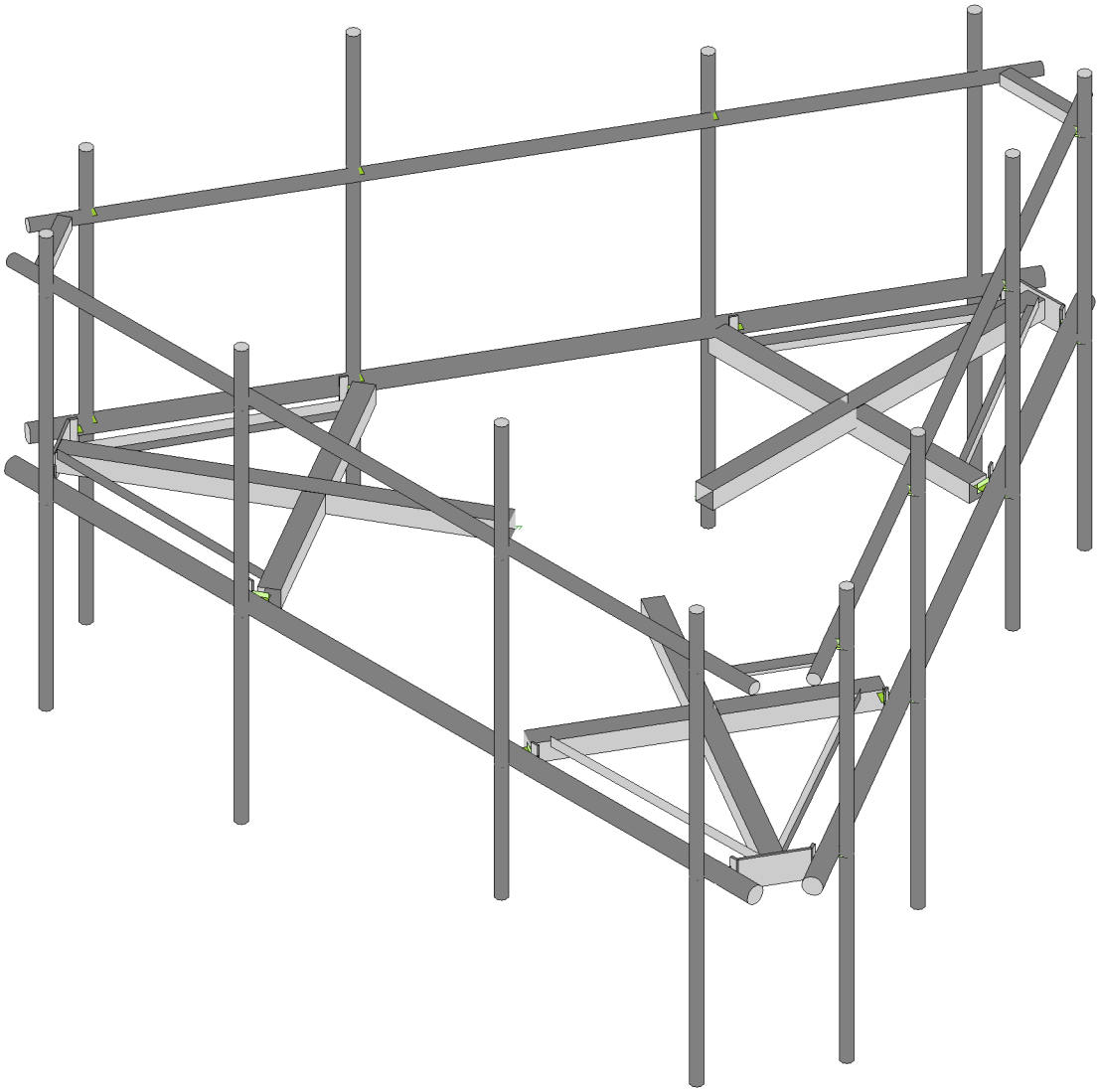
Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical
3) Rating per TIA-222-H, Section 15.5

4.1) Recommendations

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

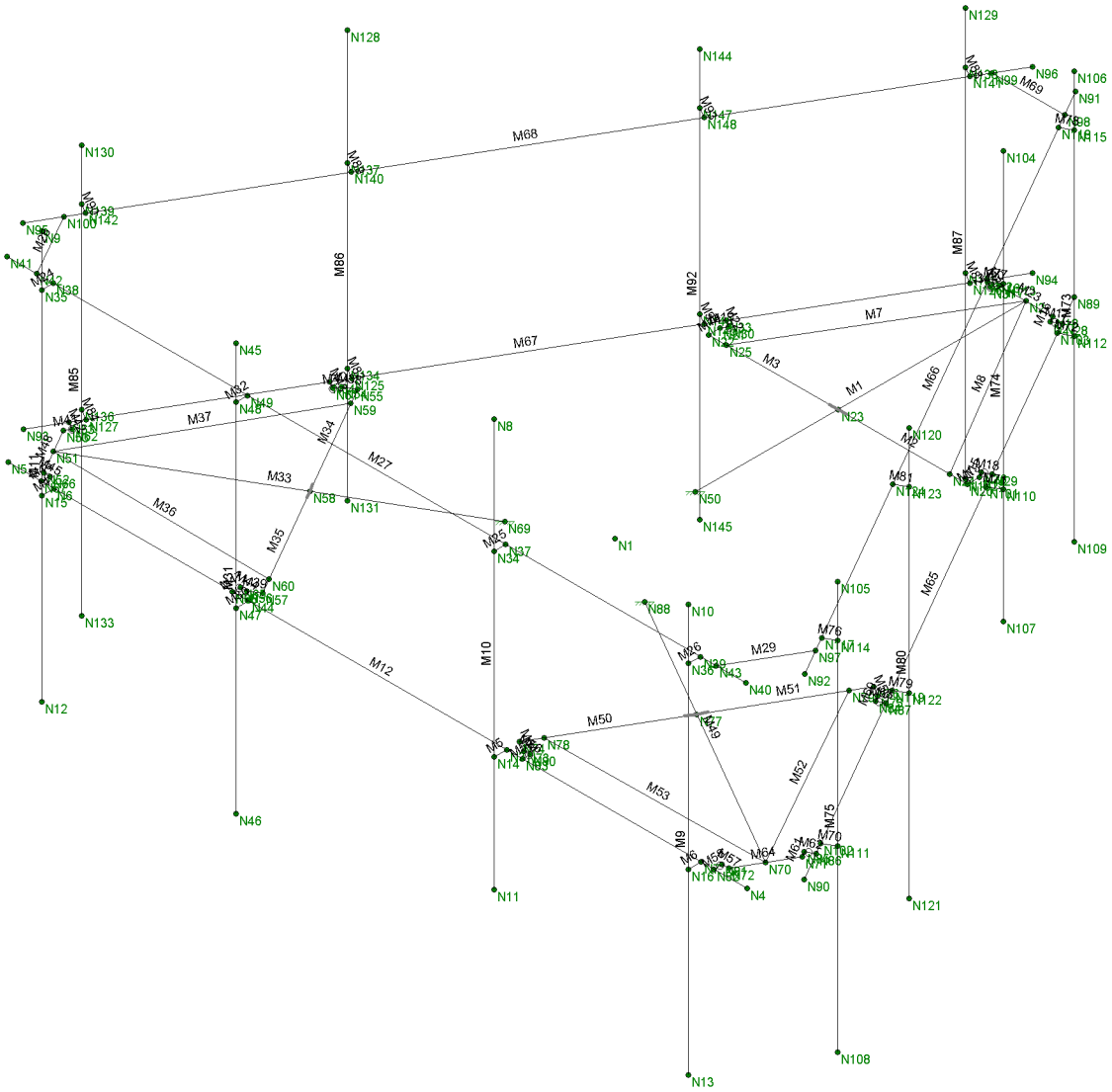
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	876347	SK - 1
AF		June 14, 2021 at 4:44 PM
186128		876347.r3d



Envelope Only Solution

Trylon	876347	SK - 2
AF		June 14, 2021 at 4:44 PM
186128		876347.r3d

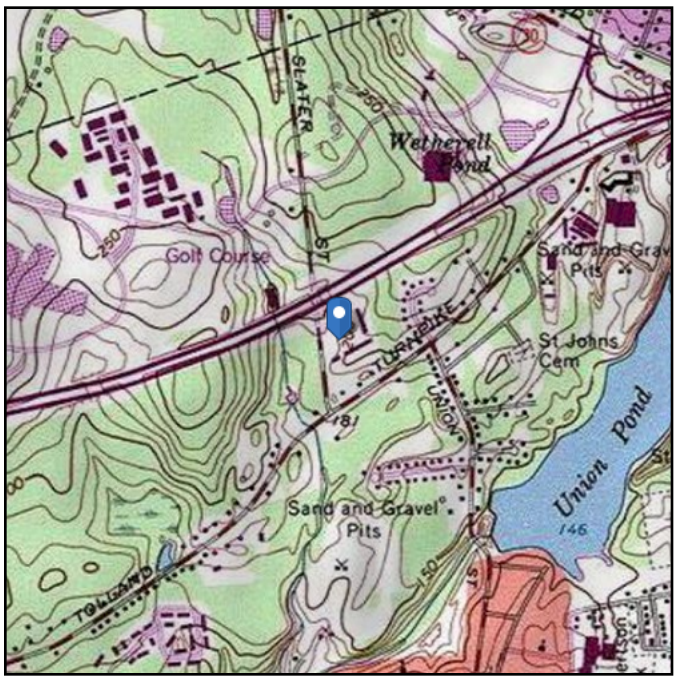
APPENDIX B

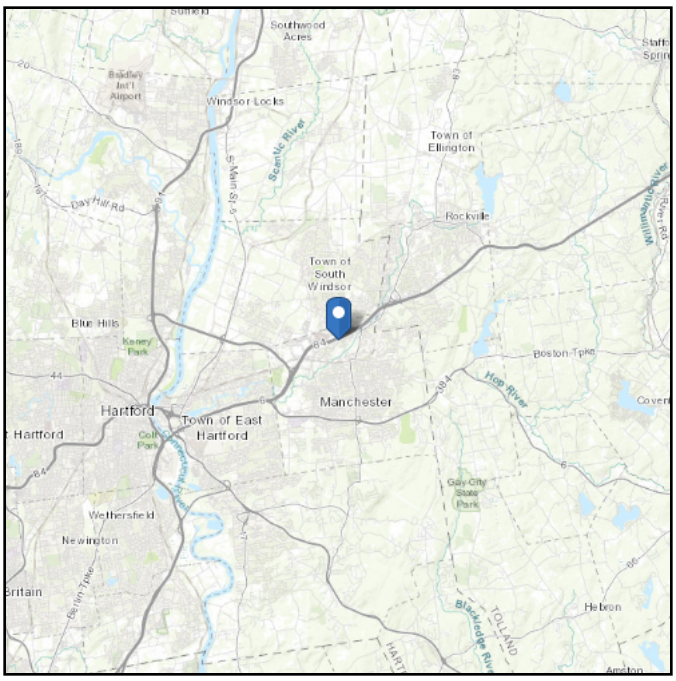
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	195.35 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.804971
Soil Class:	D - Stiff Soil	**Longitude:**	-72.533585





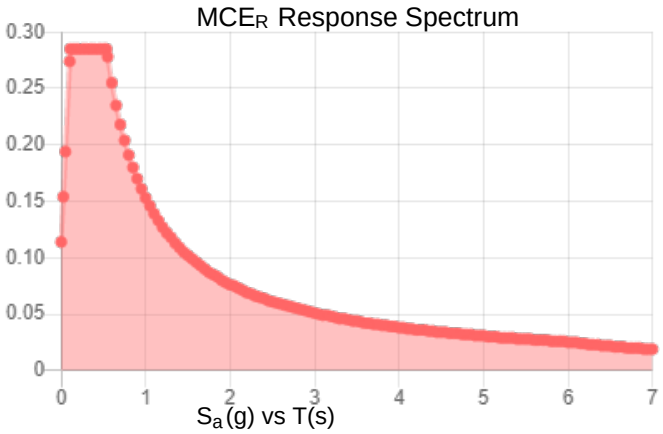
Seismic

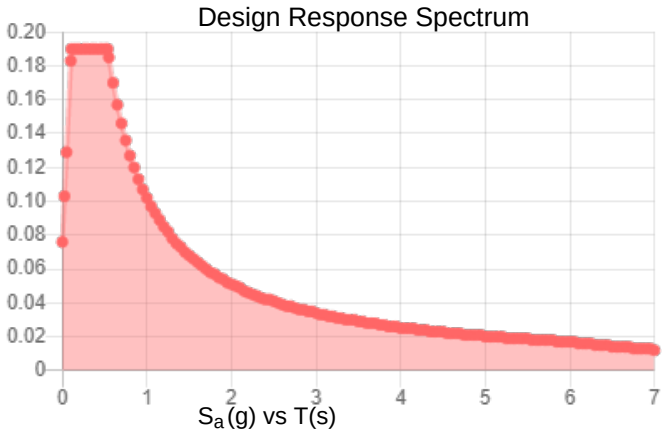
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.178	S_{DS} :	0.19
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.285	PGA_M :	0.143
S_{M1} :	0.153	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Jun 15 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:	Tue Jun 15 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.

Trylon
1825 W. Walnut Hill Lane Suite 120
Irving, TX 75038

TIA LOAD CALCULATOR 1.1

PROJECT DATA	
Job Code:	186128
Carrier Site ID:	CT11377C
Carrier Site Name:	Sprint Manchester/slater

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	018 Conneticut Building Coc
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	133.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	155.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	195.35	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	125	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.34	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	50.71	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	2.00	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	50.71	psf
Mount Ice Thickness (t_{iz}):	2.30	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	91.28	psf
Round Member Pressure:	54.77	psf
Ice Wind Pressure:	7.50	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.19	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
ERICSSON AIR -32 B2A/B66AA	3	133	No Ice	3.86	2.51	172.00
M9	--	--	w/ Ice	5.45	4.01	255.64
/CELWAVE APXVAARR24_43-U-N	3	133	No Ice	14.66603009	5.321531982	153.00
M10	--	--	w/ Ice	17.86	8.13	589.69
RICSSON AIR6449 B41_T-MOBILE	3	133	No Ice	5.27	2.03	114.63
M31	--	--	w/ Ice	7.12	3.49	215.18
SSON RADIO 4449 B71 B85A_T-M	3	133	No Ice	1.97	1.59	73.21
M9	--	--	w/ Ice	2.56	2.14	116.26
CSSON RADIO 4460 B2/B25 B66_T	3	133	No Ice	2.14	1.69	109.00
M31	--	--	w/ Ice	2.75	2.24	128.48
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
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			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
ICSSON AIR -32 B2A/B66	3	133	1.00	1.34	0.95	2.30	50.71	8.11
LWAVE APXVAARR24_43	3	133	1.00	1.34	0.95	2.30	50.71	8.11
SSON AIR6449 B41_T-M	3	133	1.00	1.34	0.95	2.30	50.71	8.11
N RADIO 4449 B71 B85A_	3	133	1.00	1.34	0.95	2.30	50.71	8.11
ON RADIO 4460 B2/B25 B	3	133	1.00	1.34	0.95	2.30	50.71	8.11

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
ERICSSON AIR -32 B2A/B66AA	3	No Ice	176.16	129.96	160.76	114.55	160.76	129.96
M9	--	w/ Ice	39.79	31.91	37.16	29.29	37.16	31.91
CELWAVE APXVAARR24_43-U	3	No Ice	669.34	349.48	562.72	242.87	562.72	349.48
M10	--	w/ Ice	130.43	77.12	112.66	59.35	112.66	77.12
ICSSON AIR6449 B41_T-MOB	3	No Ice	240.52	129.61	203.55	92.65	203.55	129.61
M31	--	w/ Ice	52.01	32.12	45.38	25.49	45.38	32.12
ON RADIO 4449 B71 B85A_T-	3	No Ice	89.91	76.78	85.54	72.41	85.54	76.78
M9	--	w/ Ice	18.71	16.38	17.93	15.61	17.93	16.38
SSON RADIO 4460 B2/B25 B66	3	No Ice	97.63	82.11	92.46	76.94	92.46	82.11
M31	--	w/ Ice	20.05	17.29	19.13	16.37	19.13	17.29
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
ERICSSON AIR -32 B2A/B66AA	3	133	172	19.59
RFS/CELWAVE APXVAARR24_43-U-N	3	133	153	17.43
ERICSSON AIR6449 B41_T-MOBILE	3	133	114.63	13.06
ERICSSON RADIO 4449 B71 B85A_T-M	3	133	73.21	8.34
ERICSSON RADIO 4460 B2/B25 B66_T	3	133	109	12.42

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Z
Global Member Orientation Plane	XY
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	Q235-GB	29000	11154	.3	.65	.49	35	1.5	58	1.2
9	Q345	29000	11154	.3	.65	.49	36	1.1	58	1.1

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Tube 4"x4"x0.25"	HSS4X4X4	Beam	Tube	A500 Gr.B ...	Typical	3.37	7.8	7.8	12.8
2	Pipe 3.5" O.D S...	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	L2"x2"x0.188"	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
4	Pipe 2.375" O.D...	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Plate 6"x0.5"	6"x1/2" Plate	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
6	L2.5"x2.5"x0.25"	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
7	Plate 6"x0.375"	PL6x.375	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X057	Beam	None	A653 SS Gr...	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N50	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N69	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N88	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL			-1		24		6	
2	Structure Wind X	WLX						51		
3	Structure Wind Y	WLY						51		
4	Wind Load 0 AZI	WLX					24			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLY					24			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			
12	Ice Weight	OL1					24	51	6	
13	Structure Ice Wind X	OL2						51		
14	Structure Ice Wind Y	OL3						51		
15	Ice Wind Load 0 AZI	OL2					24			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					24			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load X	ELX	-.114				24			
24	Seismic Load Y	ELY		-.114			24			
25	Live Load 1 (Lv)	LL					1			
26	Live Load 2 (Lv)	LL				1				
27	Live Load 3 (Lv)	LL					1			
28	Live Load 4 (Lv)	LL				1				
29	Live Load 5 (Lv)	LL					1			
30	Live Load 6 (Lv)	LL				1				
31	Maintenance Load 1 (Lm)	None				1				
32	Maintenance Load 2 (Lm)	None				1				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
33	Maintenance Load 3 (Lm)	None				1				
34	Maintenance Load 4 (Lm)	None				1				
35	Maintenance Load 5 (Lm)	None				1				
36	Maintenance Load 6 (Lm)	None				1				
37	Maintenance Load 7 (Lm)	None				1				
38	Maintenance Load 8 (Lm)	None				1				
39	Maintenance Load 9 (Lm)	None				1				
40	Maintenance Load 10 (L...	None				1				
41	Maintenance Load 11 (L...	None				1				
42	Maintenance Load 12 (L...	None				1				
43	BLC 1 Transient Area Lo...	None						21		
44	BLC 12 Transient Area L...	None						21		

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1W...	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1W...	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1W...	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1W...	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1W...	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1W...	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1W...	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1W...	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1W...	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1W...	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1W...	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1W...	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1W...	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1W...	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1W...	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1W...	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1W...	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1W...	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1W...	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1W...	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1W...	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1W...	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1W...	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1W...	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1W...	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1W...	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1W...	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1W...	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1W...	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1W...	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1W...	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1W...	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DL...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1DL...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
36	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DL..	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	1	ELY																	
51	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	.866	ELY	.5																
52	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	.707	ELY	.707																
53	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	.5	ELY	.866																
54	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX		ELY	1																
55	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-.5	ELY	.866																
56	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-.707	ELY	.707																
57	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-.866	ELY	.5																
58	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-1	ELY																	
59	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-.866	ELY	-.5																
60	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-.707	ELY	-.707																
61	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	-.5	ELY	-.866																
62	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX		ELY	-1																
63	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	.5	ELY	-.866																
64	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	.707	ELY	-.707																
65	(1.2+0.2Sds...	Yes	Y		DL	1.238	ELX	.866	ELY	-.5																
66	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	1	ELY																	
67	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	.866	ELY	.5																
68	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	.707	ELY	.707																
69	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	.5	ELY	.866																
70	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX		ELY	1																
71	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-.5	ELY	.866																
72	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-.707	ELY	.707																
73	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-.866	ELY	.5																
74	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-1	ELY																	
75	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-.866	ELY	-.5																
76	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-.707	ELY	-.707																
77	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	-.5	ELY	-.866																
78	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX		ELY	-1																
79	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	.5	ELY	-.866																
80	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	.707	ELY	-.707																
81	(0.9-0.2Sds)...	Yes	Y		DL	.862	ELX	.866	ELY	-.5																
82	1.2D + 1.5 L...	Yes	Y		DL	1.2	25	1.5																		
83	1.2D + 1.5 L...	Yes	Y		DL	1.2	26	1.5																		
84	1.2D + 1.5 L...	Yes	Y		DL	1.2	27	1.5																		
85	1.2D + 1.5 L...	Yes	Y		DL	1.2	28	1.5																		
86	1.2D + 1.5 L...	Yes	Y		DL	1.2	29	1.5																		
87	1.2D + 1.5 L...	Yes	Y		DL	1.2	30	1.5																		

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
88	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	4	.058	2	.058	3													
89	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	5	.058	2	.05	3	.029												
90	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	6	.058	2	.041	3	.041												
91	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	7	.058	2	.029	3	.05												
92	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	8	.058	2	3.52...	3	.058												
93	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	9	.058	2	-.029	3	.05												
94	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	10	.058	2	-.041	3	.041												
95	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	11	.058	2	-.05	3	.029												
96	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	4	.058	2	-.058	3	7.05...												
97	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	5	.058	2	-.05	3	-.029												
98	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	6	.058	2	-.041	3	-.041												
99	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	7	.058	2	-.029	3	-.05												
100	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	8	.058	2	-1.0...	3	-.058												
101	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	9	.058	2	.029	3	-.05												
102	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	10	.058	2	.041	3	-.041												
103	1.2D + 1.5L...	Yes	Y		DL	1.2	31	1.5	11	.058	2	.05	3	-.029												
104	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	4	.058	2	.058	3													
105	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	5	.058	2	.05	3	.029												
106	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	6	.058	2	.041	3	.041												
107	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	7	.058	2	.029	3	.05												
108	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	8	.058	2	3.52...	3	.058												
109	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	9	.058	2	-.029	3	.05												
110	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	10	.058	2	-.041	3	.041												
111	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	11	.058	2	-.05	3	.029												
112	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	4	.058	2	-.058	3	7.05...												
113	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	5	.058	2	-.05	3	-.029												
114	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	6	.058	2	-.041	3	-.041												
115	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	7	.058	2	-.029	3	-.05												
116	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	8	.058	2	-1.0...	3	-.058												
117	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	9	.058	2	.029	3	-.05												
118	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	10	.058	2	.041	3	-.041												
119	1.2D + 1.5L...	Yes	Y		DL	1.2	32	1.5	11	.058	2	.05	3	-.029												
120	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	4	.058	2	.058	3													
121	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	5	.058	2	.05	3	.029												
122	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	6	.058	2	.041	3	.041												
123	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	7	.058	2	.029	3	.05												
124	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	8	.058	2	3.52...	3	.058												
125	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	9	.058	2	-.029	3	.05												
126	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	10	.058	2	-.041	3	.041												
127	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	11	.058	2	-.05	3	.029												
128	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	4	.058	2	-.058	3	7.05...												
129	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	5	.058	2	-.05	3	-.029												
130	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	6	.058	2	-.041	3	-.041												
131	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	7	.058	2	-.029	3	-.05												
132	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	8	.058	2	-1.0...	3	-.058												
133	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	9	.058	2	.029	3	-.05												
134	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	10	.058	2	.041	3	-.041												
135	1.2D + 1.5L...	Yes	Y		DL	1.2	33	1.5	11	.058	2	.05	3	-.029												
136	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	4	.058	2	.058	3													
137	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	5	.058	2	.05	3	.029												
138	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	6	.058	2	.041	3	.041												
139	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	7	.058	2	.029	3	.05												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
140	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	8	.058	2	3.52...	3	.058												
141	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	9	.058	2	-.029	3	.05												
142	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	10	.058	2	-.041	3	.041												
143	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	11	.058	2	-.05	3	.029												
144	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	4	.058	2	-.058	3	7.05...												
145	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	5	.058	2	-.05	3	-.029												
146	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	6	.058	2	-.041	3	-.041												
147	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	7	.058	2	-.029	3	-.05												
148	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	8	.058	2	-1.0...	3	-.058												
149	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	9	.058	2	.029	3	-.05												
150	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	10	.058	2	.041	3	-.041												
151	1.2D + 1.5L...	Yes	Y		DL	1.2	34	1.5	11	.058	2	.05	3	-.029												
152	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	4	.058	2	.058	3													
153	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	5	.058	2	.05	3	.029												
154	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	6	.058	2	.041	3	.041												
155	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	7	.058	2	.029	3	.05												
156	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	8	.058	2	3.52...	3	.058												
157	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	9	.058	2	-.029	3	.05												
158	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	10	.058	2	-.041	3	.041												
159	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	11	.058	2	-.05	3	.029												
160	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	4	.058	2	-.058	3	7.05...												
161	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	5	.058	2	-.05	3	-.029												
162	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	6	.058	2	-.041	3	-.041												
163	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	7	.058	2	-.029	3	-.05												
164	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	8	.058	2	-1.0...	3	-.058												
165	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	9	.058	2	.029	3	-.05												
166	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	10	.058	2	.041	3	-.041												
167	1.2D + 1.5L...	Yes	Y		DL	1.2	35	1.5	11	.058	2	.05	3	-.029												
168	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	4	.058	2	.058	3													
169	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	5	.058	2	.05	3	.029												
170	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	6	.058	2	.041	3	.041												
171	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	7	.058	2	.029	3	.05												
172	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	8	.058	2	3.52...	3	.058												
173	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	9	.058	2	-.029	3	.05												
174	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	10	.058	2	-.041	3	.041												
175	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	11	.058	2	-.05	3	.029												
176	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	4	.058	2	-.058	3	7.05...												
177	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	5	.058	2	-.05	3	-.029												
178	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	6	.058	2	-.041	3	-.041												
179	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	7	.058	2	-.029	3	-.05												
180	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	8	.058	2	-1.0...	3	-.058												
181	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	9	.058	2	.029	3	-.05												
182	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	10	.058	2	.041	3	-.041												
183	1.2D + 1.5L...	Yes	Y		DL	1.2	36	1.5	11	.058	2	.05	3	-.029												
184	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	4	.058	2	.058	3													
185	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	5	.058	2	.05	3	.029												
186	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	6	.058	2	.041	3	.041												
187	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	7	.058	2	.029	3	.05												
188	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	8	.058	2	3.52...	3	.058												
189	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	9	.058	2	-.029	3	.05												
190	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	10	.058	2	-.041	3	.041												
191	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	11	.058	2	-.05	3	.029												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
192	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	4	.058	2	-.058	3	7.05...												
193	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	5	.058	2	-.05	3	-.029												
194	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	6	.058	2	-.041	3	-.041												
195	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	7	.058	2	-.029	3	-.05												
196	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	8	.058	2	-1.0...	3	-.058												
197	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	9	.058	2	.029	3	-.05												
198	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	10	.058	2	.041	3	-.041												
199	1.2D + 1.5L...	Yes	Y		DL	1.2	37	1.5	11	.058	2	.05	3	-.029												
200	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	4	.058	2	.058	3													
201	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	5	.058	2	.05	3	.029												
202	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	6	.058	2	.041	3	.041												
203	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	7	.058	2	.029	3	.05												
204	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	8	.058	2	3.52...	3	.058												
205	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	9	.058	2	-.029	3	.05												
206	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	10	.058	2	-.041	3	.041												
207	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	11	.058	2	-.05	3	.029												
208	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	4	.058	2	-.058	3	7.05...												
209	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	5	.058	2	-.05	3	-.029												
210	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	6	.058	2	-.041	3	-.041												
211	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	7	.058	2	-.029	3	-.05												
212	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	8	.058	2	-1.0...	3	-.058												
213	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	9	.058	2	.029	3	-.05												
214	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	10	.058	2	.041	3	-.041												
215	1.2D + 1.5L...	Yes	Y		DL	1.2	38	1.5	11	.058	2	.05	3	-.029												
216	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	4	.058	2	.058	3													
217	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	5	.058	2	.05	3	.029												
218	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	6	.058	2	.041	3	.041												
219	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	7	.058	2	.029	3	.05												
220	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	8	.058	2	3.52...	3	.058												
221	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	9	.058	2	-.029	3	.05												
222	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	10	.058	2	-.041	3	.041												
223	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	11	.058	2	-.05	3	.029												
224	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	4	.058	2	-.058	3	7.05...												
225	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	5	.058	2	-.05	3	-.029												
226	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	6	.058	2	-.041	3	-.041												
227	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	7	.058	2	-.029	3	-.05												
228	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	8	.058	2	-1.0...	3	-.058												
229	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	9	.058	2	.029	3	-.05												
230	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	10	.058	2	.041	3	-.041												
231	1.2D + 1.5L...	Yes	Y		DL	1.2	39	1.5	11	.058	2	.05	3	-.029												
232	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	4	.058	2	.058	3													
233	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	5	.058	2	.05	3	.029												
234	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	6	.058	2	.041	3	.041												
235	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	7	.058	2	.029	3	.05												
236	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	8	.058	2	3.52...	3	.058												
237	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	9	.058	2	-.029	3	.05												
238	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	10	.058	2	-.041	3	.041												
239	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	11	.058	2	-.05	3	.029												
240	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	4	.058	2	-.058	3	7.05...												
241	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	5	.058	2	-.05	3	-.029												
242	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	6	.058	2	-.041	3	-.041												
243	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	7	.058	2	-.029	3	-.05												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
244	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	8	.058	2	-1.0...	3	-.058												
245	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	9	.058	2	.029	3	-.05												
246	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	10	.058	2	.041	3	-.041												
247	1.2D + 1.5L...	Yes	Y		DL	1.2	40	1.5	11	.058	2	.05	3	-.029												
248	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	4	.058	2	.058	3													
249	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	5	.058	2	.05	3	.029												
250	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	6	.058	2	.041	3	.041												
251	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	7	.058	2	.029	3	.05												
252	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	8	.058	2	3.52...	3	.058												
253	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	9	.058	2	-.029	3	.05												
254	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	10	.058	2	-.041	3	.041												
255	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	11	.058	2	-.05	3	.029												
256	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	4	.058	2	-.058	3	7.05...												
257	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	5	.058	2	-.05	3	-.029												
258	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	6	.058	2	-.041	3	-.041												
259	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	7	.058	2	-.029	3	-.05												
260	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	8	.058	2	-1.0...	3	-.058												
261	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	9	.058	2	.029	3	-.05												
262	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	10	.058	2	.041	3	-.041												
263	1.2D + 1.5L...	Yes	Y		DL	1.2	41	1.5	11	.058	2	.05	3	-.029												
264	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	4	.058	2	.058	3													
265	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	5	.058	2	.05	3	.029												
266	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	6	.058	2	.041	3	.041												
267	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	7	.058	2	.029	3	.05												
268	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	8	.058	2	3.52...	3	.058												
269	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	9	.058	2	-.029	3	.05												
270	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	10	.058	2	-.041	3	.041												
271	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	11	.058	2	-.05	3	.029												
272	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	4	.058	2	-.058	3	7.05...												
273	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	5	.058	2	-.05	3	-.029												
274	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	6	.058	2	-.041	3	-.041												
275	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	7	.058	2	-.029	3	-.05												
276	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	8	.058	2	-1.0...	3	-.058												
277	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	9	.058	2	.029	3	-.05												
278	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	10	.058	2	.041	3	-.041												
279	1.2D + 1.5L...	Yes	Y		DL	1.2	42	1.5	11	.058	2	.05	3	-.029												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N50	max	2469.274	18	1452.245	22	4388.264	34	695.872	14	11493.761	34	2661.711	30
2		min	-2540.072	10	-1451.573	30	261.014	26	-655.509	22	-389.281	26	-2656.532	22
3	N69	max	1573.33	2	2076.142	23	4382.593	39	216.064	31	186.854	32	2221.541	19
4		min	-1539.883	26	-2137.636	15	296.564	31	-10036.192	39	-5573.939	40	-2215.74	27
5	N88	max	1699.232	2	2210.428	5	4388.926	45	9851.009	45	344.063	20	2033.657	25
6		min	-1663.767	26	-2148.823	29	259.718	21	-315.537	21	-5950.22	44	-2029.386	33
7	Totals:	max	5732.872	18	5548.171	6	12736.802	37						
8		min	-5732.866	26	-5548.17	30	2829.73	77						

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

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M49	HSS4X4X4	.715	0	45	.136	0	y	42	64209.44	139518	16180.5	16180.5	3....	H1-1b
2	M1	HSS4X4X4	.713	0	34	.136	0	y	47	64209.44	139518	16180.5	16180.5	3....	H1-1b
3	M33	HSS4X4X4	.712	0	39	.136	0	y	36	64209.44	139518	16180.5	16180.5	3....	H1-1b
4	M86	PIPE_2.0	.527	69	3	.132	27		5	14916.096	32130	1871.625	1871.625	1	H1-1b
5	M80	PIPE_2.0	.526	54	3	.166	54		15	14916.096	32130	1871.625	1871.625	1	H1-1b
6	M31	PIPE_2.0	.519	54	13	.169	54		10	14916.096	32130	1871.625	1871.625	1....	H1-1b
7	M92	PIPE_2.0	.516	54	8	.165	54		4	14916.096	32130	1871.625	1871.625	1	H1-1b
8	M74	PIPE_2.0	.510	69	13	.129	27		16	14916.096	32130	1871.625	1871.625	1....	H1-1b
9	M73	PIPE_2.0	.503	54	45	.255	12		15	14916.096	32130	1871.625	1871.625	1....	H1-1b
10	M85	PIPE_2.0	.502	54	34	.263	54		4	14916.096	32130	1871.625	1871.625	2....	H1-1b
11	M11	PIPE_2.0	.501	54	44	.223	54		11	14916.096	32130	1871.625	1871.625	1....	H1-1b
12	M75	PIPE_2.0	.500	54	34	.209	54		16	14916.096	32130	1871.625	1871.625	1	H1-1b
13	M87	PIPE_2.0	.499	54	39	.213	54		6	14916.096	32130	1871.625	1871.625	1	H1-1b
14	M9	PIPE_2.0	.499	54	39	.262	12		10	14916.096	32130	1871.625	1871.625	1	H1-1b
15	M10	PIPE_2.0	.495	69	38	.136	27		10	14916.096	32130	1871.625	1871.625	1	H1-1b
16	M68	PIPE_2.0	.464	117.8...	4	.340	166.75		11	4678.524	32130	1871.625	1871.625	2....	H3-6
17	M66	PIPE_2.0	.453	117.8...	14	.332	166.75		6	4678.524	32130	1871.625	1871.625	2....	H3-6
18	M27	PIPE_2.0	.439	117.8...	10	.325	163.1...		2	4678.524	32130	1871.625	1871.625	2....	H3-6
19	M28	L2.5x2.5x4	.395	17.138	12	.131	0	y	11	36073.446	38556	1113.554	2537.388	2....	H2-1
20	M29	L2.5x2.5x4	.379	17.138	2	.122	0	y	17	36073.446	38556	1113.554	2537.388	2....	H2-1
21	M69	L2.5x2.5x4	.378	17.138	6	.128	0	y	6	36073.446	38556	1113.554	2537.388	2....	H2-1
22	M67	PIPE_3.0	.370	54.375	36	.125	54.375		35	21266.02	65205	5748.75	5748.75	2....	H1-1b
23	M12	PIPE_3.0	.370	54.375	42	.125	54.375		41	21266.02	65205	5748.75	5748.75	2....	H1-1b
24	M65	PIPE_3.0	.369	54.375	47	.125	54.375		46	21266.02	65205	5748.75	5748.75	2....	H1-1b
25	M56	PL6x.375	.340	1.5	12	.686	0	y	44	72166.853	72900	569.533	9112.5	1	H1-1b
26	M3	HSS4X4X4	.337	0	35	.088	24.344	y	47	135796.5...	139518	16180.5	16180.5	1....	H1-1b
27	M51	HSS4X4X4	.337	0	46	.088	24.344	y	42	135796.5...	139518	16180.5	16180.5	1....	H1-1b
28	M35	HSS4X4X4	.336	0	41	.087	24.344	y	37	135796.5...	139518	16180.5	16180.5	1....	H1-1b
29	M40	PL6x.375	.334	1.5	6	.685	0	y	38	72166.853	72900	569.533	9112.5	1	H1-1b
30	M50	HSS4X4X4	.332	28.5	43	.071	4.156	y	48	135796.5...	139518	16180.5	16180.5	1....	H1-1b
31	M34	HSS4X4X4	.331	28.5	38	.071	4.156	y	42	135796.5...	139518	16180.5	16180.5	1....	H1-1b
32	M2	HSS4X4X4	.331	28.5	49	.071	4.156	y	37	135796.5...	139518	16180.5	16180.5	1....	H1-1b
33	M60	PL6x.375	.330	0	13	.682	1.5	y	45	72166.853	72900	569.533	9112.5	1	H1-1b
34	M15	PL6x.375	.327	1.5	2	.685	0	y	34	72166.853	72900	569.533	9112.5	1	H1-1b
35	M19	PL6x.375	.325	0	2	.682	1.5	y	35	72166.853	72900	569.533	9112.5	1	H1-1b
36	M44	PL6x.375	.315	0	8	.682	1.5	y	40	72166.853	72900	569.533	9112.5	1	H1-1b
37	M53	L2x2x3	.236	51.455	12	.022	51.455	y	49	9312.528	23392.8	557.717	1075.81	1....	H2-1
38	M37	L2x2x3	.220	51.455	6	.022	51.455	y	44	9312.195	23392.8	557.717	1083.564	1....	H2-1
39	M8	L2x2x3	.219	51.455	17	.022	51.455	y	38	9312.195	23392.8	557.717	1086.49	1....	H2-1
40	M52	L2x2x3	.218	0	13	.024	51.454	z	41	9312.528	23392.8	557.717	1031.804	1	H2-1
41	M36	L2x2x3	.217	51.454	9	.024	51.454	z	35	9312.528	23392.8	557.717	1077.161	1....	H2-1
42	M7	L2x2x3	.217	51.454	34	.024	51.454	z	46	9312.528	23392.8	557.717	1031.804	1	H2-1
43	M64	6"x1/2" Plate	.112	6.338	13	.184	0	y	42	64763.403	97200	1012.5	12150	1....	H1-1b
44	M23	6"x1/2" Plate	.110	6.338	2	.184	0	y	47	64763.403	97200	1012.5	12150	1....	H1-1b
45	M48	6"x1/2" Plate	.109	6.338	6	.184	0	y	36	64763.403	97200	1012.5	12150	1....	H1-1b
46	M20	6"x1/2" Plate	.045	1.5	2	.099	1.5	y	14	96648.928	97200	1012.5	12150	1....	H1-1b
47	M61	6"x1/2" Plate	.044	1.5	13	.097	1.5	y	41	96648.928	97200	1012.5	12150	1....	H1-1b
48	M45	6"x1/2" Plate	.044	1.5	7	.101	1.5	y	3	96648.928	97200	1012.5	12150	1....	H1-1b
49	M16	6"x1/2" Plate	.042	0	3	.108	1.5	y	216	96648.928	97200	1012.5	12150	1....	H1-1b
50	M57	6"x1/2" Plate	.042	0	13	.110	1.5	y	95	96648.928	97200	1012.5	12150	1....	H1-1b
51	M41	6"x1/2" Plate	.040	0	9	.111	1.5	y	155	96648.928	97200	1012.5	12150	1....	H1-1b

Envelope AISI S100-16: LRFD Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	phi*V...	phi*V...	Cb	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

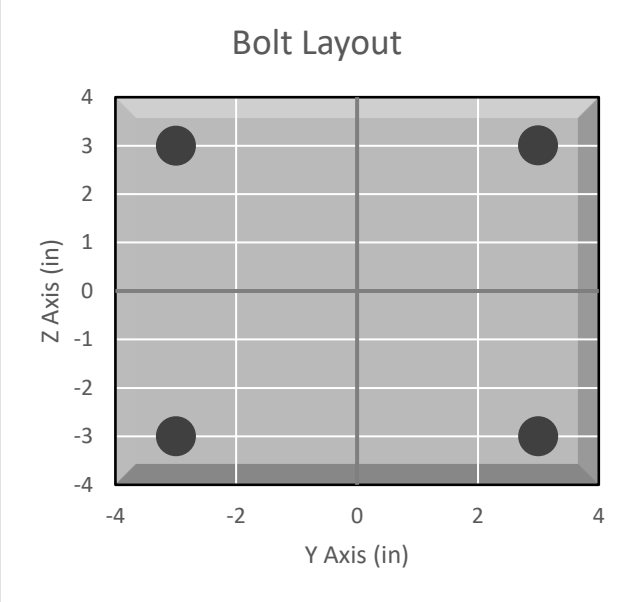
Analysis date: 6/14/2021

BOLT TOOL 1.5.1

Project Data	
Job Code:	186128
Carrier Site ID:	CT11377C
Carrier Site Name:	Sprint Manchester/slater

Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	AISC

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Monopole Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	11635.0	lbs
Shear Force (V_u):	997.0	lbs
Tension Usage:	54.5%	--
Shear Usage:	6.9%	--
Interaction:	54.5%	Pass
Controlling Member:	M49	--
Controlling LC:	45	--

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

1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

INFINIGY

Non-Ionizing Radiation Report

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

Site Name: CT11371C

Site ID: CT11371C

55 Slater Street, Manchester, CT 06825

Latitude: 41.804971; Longitude: -72.533585

Structure Type: Monopole

Report Date: July 14, 2021

Report Written By: Tim Harris

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

Table of Contents

1. Executive Summary:

Northeast Site Solutions on behalf of T-Mobile has contracted Infinigy Solutions, LLC to determine whether the site CT11371C located at 55 Slater Street in Manchester, CT Will Be Compliant with all Federal Communications Commission (FCC) rules and regulations for radio frequency (RF) exposure as indicated in **47CFR§1.1310**.

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

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

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

T-Mobile, All Bands Cumulative Exposure %		
Uncontrolled / General Population	Exposure values at the site (mW/cm^2)	0.0268
	% Exposure	3.19 %
Controlled / Occupational	Exposure values at the site (mW/cm^2)	0.0268
	% Exposure	0.64 %

2. Site Summary:

Site Information	
Site Name: CT11371C	
Site Address: 55 Slater Street, Manchester, CT 06825	
Site Type: Monopole	
Compliance Status	Will Be Compliant
Mitigation Required	No
Signage Required	Yes
Barriers Required	No
Access Locked	No
Area Controlled or Uncontrolled	Uncontrolled

3. Site Compliance

This report also incorporates overview of the site information:

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

4. Site Compliance Recommendations

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

Base of tower

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

5. Antenna Inventory Table

Ant ID	Sector	Azimuth	Operator	Antenna manufacturer	Antenna Model	Operating Frequency/Technology	Rad Ctr (Ft)	Az (Deg)	Total ERP Power (Watts)
1a	Alpha	40	T-Mobile	Ericsson	AIR6449 B41	2500 MHz LTE	133	40	3590
1b	Alpha	40	T-Mobile	Ericsson	AIR6449 B41	2500 MHz 5G	133	40	3591
2a	Alpha	40	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	133	40	2256
2b	Alpha	40	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	133	40	1128
2c	Alpha	40	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	133	40	1128
2d	Alpha	40	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz LTE	133	40	3166
2e	Alpha	40	T-Mobile	RFS	APXVARR24_43-C-NA20	2100 MHz UMTS	133	40	4308
3a	Alpha	40	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	2100 MHz LTE	133	40	4308
3b	Alpha	40	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz GSM	133	40	2034
3c	Alpha	40	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz LTE	133	40	4070
4a	Beta	170	T-Mobile	Ericsson	AIR6449 B41	2500 MHz LTE	133	170	3590
4b	Beta	170	T-Mobile	Ericsson	AIR6449 B41	2500 MHz 5G	133	170	3591
5a	Beta	170	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	133	170	2256
5b	Beta	170	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	133	170	1128
5c	Beta	170	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	133	170	1128
5d	Beta	170	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz LTE	133	170	3166
5e	Beta	170	T-Mobile	RFS	APXVARR24_43-C-NA20	2100 MHz UMTS	133	170	4308
6a	Beta	170	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	2100 MHz LTE	133	170	4308
6b	Beta	170	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz GSM	133	170	2034
6c	Beta	170	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz LTE	133	170	4070
7a	Gamma	270	T-Mobile	Ericsson	AIR6449 B41	2500 MHz LTE	133	270	3590
7b	Gamma	270	T-Mobile	Ericsson	AIR6449 B41	2500 MHz 5G	133	270	3591
8a	Gamma	270	T-Mobile	RFS	APXVARR24_43-C-NA20	700 MHz LTE	133	270	2256
8b	Gamma	270	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz LTE	133	270	1128

Ant ID	Sector	Azimuth	Operator	Antenna manufacturer	Antenna Model	Operating Frequency/Technology	Rad Ctr (Ft)	Az (Deg)	Total ERP Power (Watts)
8c	Gamma	270	T-Mobile	RFS	APXVARR24_43-C-NA20	600 MHz 5G	133	270	1128
8d	Gamma	270	T-Mobile	RFS	APXVARR24_43-C-NA20	1900 MHz LTE	133	270	3166
8e	Gamma	270	T-Mobile	RFS	APXVARR24_43-C-NA20	2100 MHz UMTS	133	270	4308
9a	Gamma	270	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	2100 MHz LTE	133	270	4308
9b	Gamma	270	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz GSM	133	270	2034
9c	Gamma	270	T-Mobile	Ericsson	AIR32 KRD901146-1_B66A_B2A	1900 MHz LTE	133	270	4070

6. RF Guidelines

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

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

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

c) Site Access: Restricting access to transmitting antenna locations is one of the most important elements of RF safety. This can be done with:

- Locked doors/gates/ladder access
- Alarmed doors
- Restrictive barriers

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

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

7. T-Mobile Exposure Analysis By Band and Technology

T-Mobile 600 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.4**
	Exposure values at the site (mW/cm^2)	**0.0010**
	% Exposure	**0.26%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.0**
	Exposure values at the site (mW/cm^2)	**0.0010**
	% Exposure	**0.05%**

T-Mobile 600 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.4**
	Exposure values at the site (mW/cm^2)	**0.0010**
	% Exposure	**0.26%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.0**
	Exposure values at the site (mW/cm^2)	**0.0010**
	% Exposure	**0.05%**

T-Mobile 700 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**0.5**
	Exposure values at the site (mW/cm^2)	**0.0020**
	% Exposure	**0.41%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**2.3**
	Exposure values at the site (mW/cm^2)	**0.0020**
	% Exposure	**0.09%**

T-Mobile 1900 MHz GSM		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0018**
	% Exposure	**0.18%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0018**
	% Exposure	**0.04%**

T-Mobile 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0066**
	% Exposure	**0.66%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0066**
	% Exposure	**0.13%**

T-Mobile 2100 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0039**
	% Exposure	**0.39%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0039**
	% Exposure	**0.08%**

T-Mobile 2100 MHz UMTS		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0039**
	% Exposure	**0.39%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0039**
	% Exposure	**0.08%**

T-Mobile 2500 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0032**
	% Exposure	**0.32%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0032**
	% Exposure	**0.06%**

T-Mobile 2500 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	**1.0**
	Exposure values at the site (mW/cm^2)	**0.0032**
	% Exposure	**0.32%**
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	**5.0**
	Exposure values at the site (mW/cm^2)	**0.0032**
	% Exposure	**0.06%**

8. Appendix A: FCC Guidelines

FCC Policies

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

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

Occupational / Controlled

These limits apply in situations when someone is exposed to RF energy through his/her occupation, is fully aware of the harmful effects of the RF exposure and has an ability to exercise control over this exposure. Occupational / controlled exposure limits also apply when exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. limits for Occupational/Controlled exposure can be found on Table 1(A).

General Population / Uncontrolled

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

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

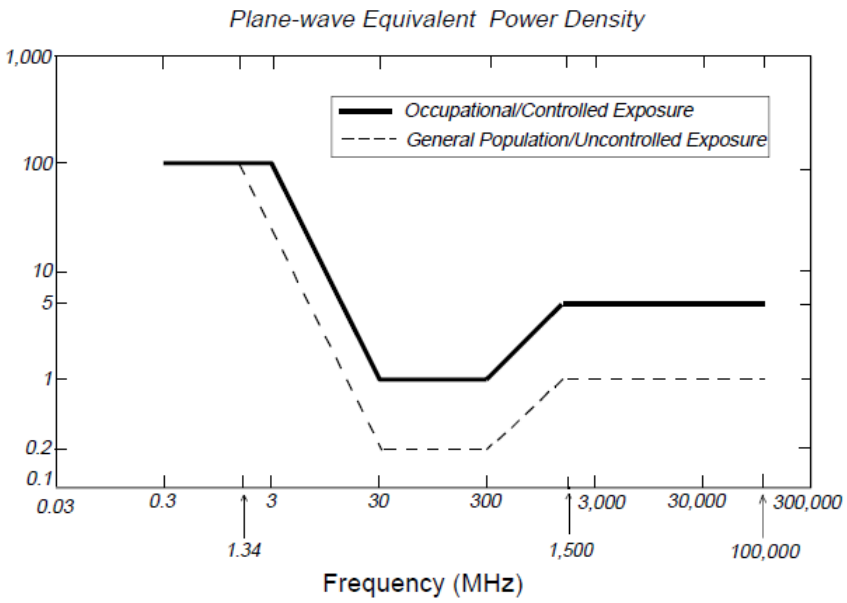
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

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

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

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



OSHA Statement:

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

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

(a) Each employer

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

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

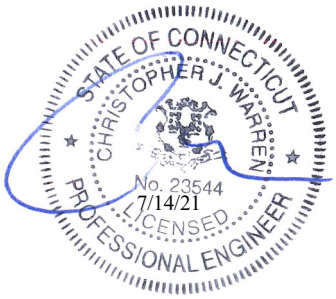
9. Preparer Certification

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

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

Timothy A. Harris *7/14/2021*

Signature Date



T-Mobile

T-MOBILE SITE NUMBER: CT11377C
T-MOBILE SITE NAME: SPRINT MANCHESTER/SLATER
SITE TYPE: MONOPOLE
TOWER HEIGHT: 155'-0"

BUSINESS UNIT #: 876347
SITE ADDRESS: 53 SLATER STREET MANCHESTER, CT 06040
COUNTY: HARTFORD
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5A997DB OUTDOOR

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	53 SLATER STREET
SITE ADDRESS:	53 SLATER STREET MANCHESTER, CT 06040
COUNTY:	HARTFORD
MAP/PARCEL #:	14616
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.805059
LONGITUDE:	-72.533502
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	205 FT
CURRENT ZONING:	INDUSTRIAL
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	ONE HUNDRED TWENTY ONE CONNECTICUT AVENUE ASSOCIATES LLC 9 LAKE LANE ELLINGTON, CT 06029
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	N/A
TELCO PROVIDER:	N/A

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S BOULDER AVE, SUITE 300 TULSA, OK 74119 RICHARD MCCLURE (918) 587-4630
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277
	TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM
	N/A - CONSTRUCTION MANAGER

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	CODE SUMMARY
T-3	CODE SUMMARY
T-4	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 24X36. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (3) ANTENNAS
- REMOVE (3) TMAs
- RETAIN (3) RADIOs
- RETAIN (6) ANTENNAS
- RETAIN (3) 6x12 HCS 6AWG CABLES
- REMOVE (6) 1-5/8" COAX CABLES
- INSTALL (3) ANTENNAS
- INSTALL (3) RADIOs
- INSTALL (2) 6/24 4AWG HYBRID CABLE

GROUND SCOPE OF WORK:
- RETAIN (1) RBS 6131 CABINET
- RETAIN (1) DUW30 IN RBS 6131
- RETAIN (1) DUG20 IN RBS 6131
- RETAIN (1) BB6630 IN RBS 6131
- RELOCATE BATTERIES TO A NEW BBU
- MOVE AAV TO NEW EMERSON CABINET
- REMOVE (1) NORTEL CABINET
- REMOVE (6) RU22 RADIOS FROM RBS 6131 CABINET
- REMOVE (1) XMU MULTIPLEXER
- REMOVE (1) DUW30 FROM RBS 6131
- REMOVE (1) BB5216 FROM RBS 6131
- INSTALL (1) 6160 CABINET
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) CSR IXRE V2 (GEN2) ROUTER
- INSTALL (1) PSC4813 VOLTAGE BOOSTER
- INSTALL (1) BB6648 IN RBS 6131
- INSTALL (1) BB6648 IN 6160 SSC
- INSTALL (1) 2416 AAV EMERSON CABINET

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

LOCATION MAP

NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TOWER ENGINEERING PROFESSIONALS
DATED:	6/29/21
MOUNT ANALYSIS:	TRYLON
DATED:	6/15/21
AC ELECTRICAL POWER DESIGN:	N/A
DATED:	
RFDS REVISION:	6
DATED:	5/20/21
ORDER ID:	574604
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
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11377C

BU #: **876347**
53 SLATER STREET

53 SLATER STREET
MANCHESTER, CT 06040

EXISTING
155'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/6/21	KT	CONSTRUCTION	MJT
1	7/30/21	KT	CONSTRUCTION	KT
2	8/12/21	MAH	CONSTRUCTION	JTS

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
8/12/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: T-1
REVISION: 2

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: T-Mobile Anchor Site Configuration
Address: 53 Slater Street, Manchester CT Zip Code 06040
Owner/Authorized Agent: _____ Phone # (___) ___ - ____ E-Mail _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City _____ ☒ County HARTFORD ☐ State

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				(___)	
Civil	Crown Castle	Andrew Fandozzi, P.E., C.P.E.	042222	(724) 416-2864	andrew.fandozzi@crowncastle.com
Electrical	Crown Castle	Andrew Fandozzi, P.E., C.P.E.	042222	(724) 416-2864	andrew.fandozzi@crowncastle.com
Fire Alarm				(___)	
Plumbing				(___)	
Mechanical				(___)	
Sprinkler-Standpipe				(___)	
Structural	John W. Kelly P.E. Engineering, P.C.	John W/Kelly, III	042719	(918) 587-4630	
Retaining Walls >5' High				(___)	
Other				(___)	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): U
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): U

RISK CATEGORY (Table 1604.5): **Current:** ☐ I ☒ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: (check all that apply) ☐ I-A ☐ I-B ☐ II-A ☒ II-B ☐ III-A ☐ III-B ☐ IV ☐ V-A ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☐ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor			
Basement			
TOTAL			

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ☒ No ☐ Yes Separation: ____ Hr Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30 =$ _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]			
Building Height in Stories (Table 504.4) [3]			

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction Including supporting beams and joists							
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☐ Yes
Exit Signs: ☐ No ☐ Yes
Fire Alarm: ☐ No ☐ Yes
Smoke Detection Systems: ☐ No ☐ Yes ☐ Partial _____
Carbon Monoxide Detection: ☐ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations (if not on the site plan)
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	TOTAL # OF PARKING SPACES PROVIDED	# OF ACCESSIBLE SPACES PROVIDED: REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATERCLOSETS MALE	WATERCLOSETS FEMALE	WATERCLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

_____

_____

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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STATE OF CONNECTICUT
JOHN W. KELLY III
No. 23924
LICENSED
PROFESSIONAL ENGINEER
8/12/21

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: T-2
REVISION: 2

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☐ 3A ☐ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
(If "Other" specify source here)_____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Skylights in each assembly: _____
U-Value of skylight: _____
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Openings (windows or doors with glazing)
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: _____

Walls below grade (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors over unconditioned space (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors slab on grade
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/vertical requirement: _____
slab heated: _____

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_s) _____
Seismic (I_E) _____

Live Loads: Roof _____ psf
Mezzanine _____ psf
Floor _____ psf

Ground Snow Load: _____ psf

Wind Load: Ultimate Wind Speed _____ mph (ASCE-7)
Exposure Category _____

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_s_____ %g S_1_____ %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system ☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) _____ psf
Presumptive Bearing capacity _____ psf
File size, type, and capacity _____

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
☐ C406.2 More Efficient HVAC Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

2018 NC Administrative Code and Policies

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1	7/30/21	KT	CONSTRUCTION	KT
2	8/12/21	MAH	CONSTRUCTION	JTS

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: T-3

REVISION: 2

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**

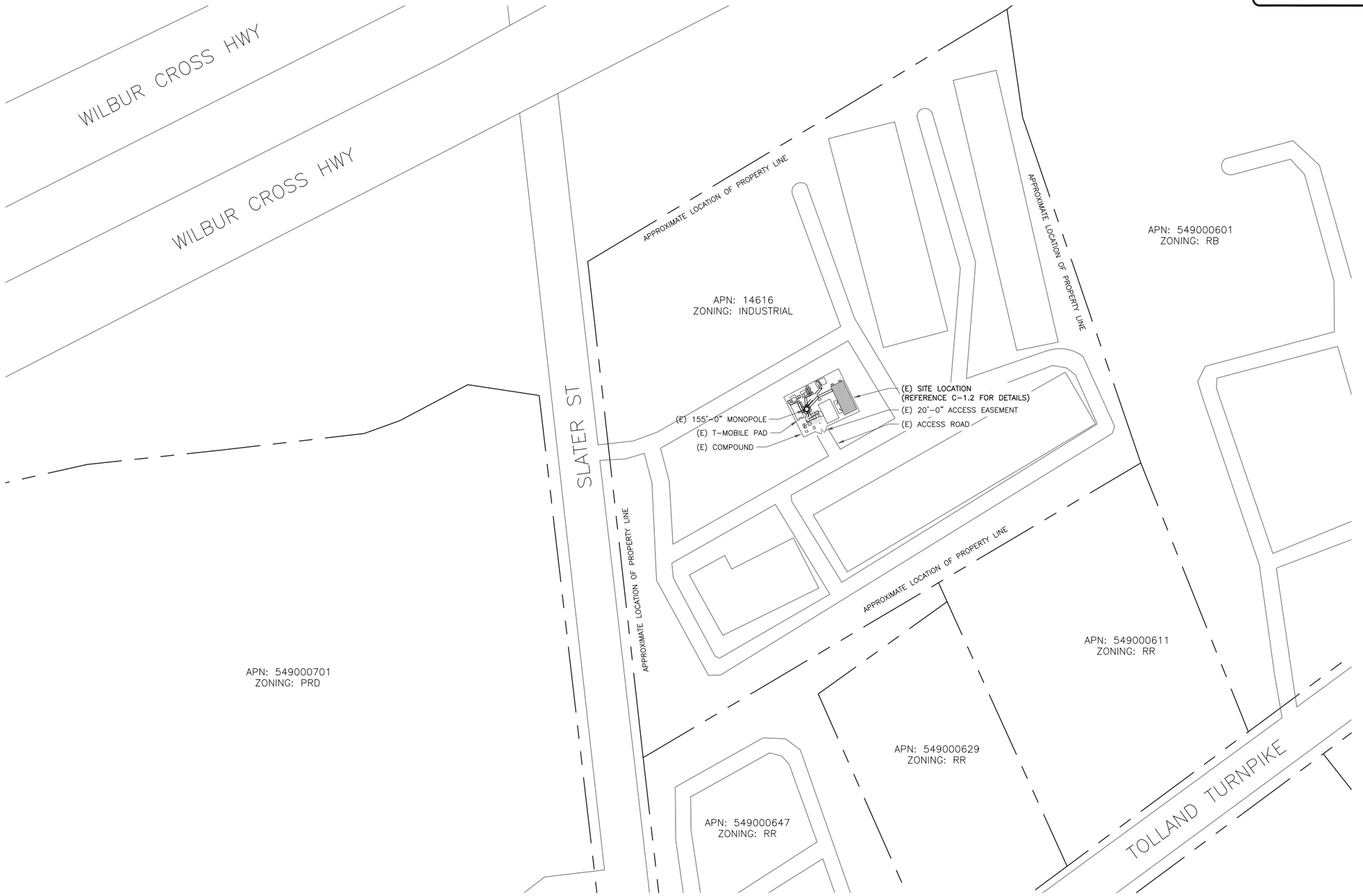
* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

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

SITE PLAN DISCLAIMER:

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



1 OVERALL SITE PLAN
SCALE: 50' 25' 0 50' 1" = 50'-0" (FULL SIZE) 1" = 100'-0" (11x17)

N

T-Mobile
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PARSIPPANY, NJ 07054

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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

T-MOBILE SITE NUMBER:
CT11377C

BU #: **876347**
53 SLATER STREET

53 SLATER STREET
MANCHESTER, CT 06040

EXISTING
155'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/6/21	KT	CONSTRUCTION	MJT
1	7/30/21	KT	CONSTRUCTION	KT
2	8/12/21	MAH	CONSTRUCTION	JTS

STATE OF CONNECTICUT
GARY A. HALEY
No. 23924
LICENSED
PROFESSIONAL ENGINEER
8/12/21

B&T ENGINEERING, INC.
PEC.0001564
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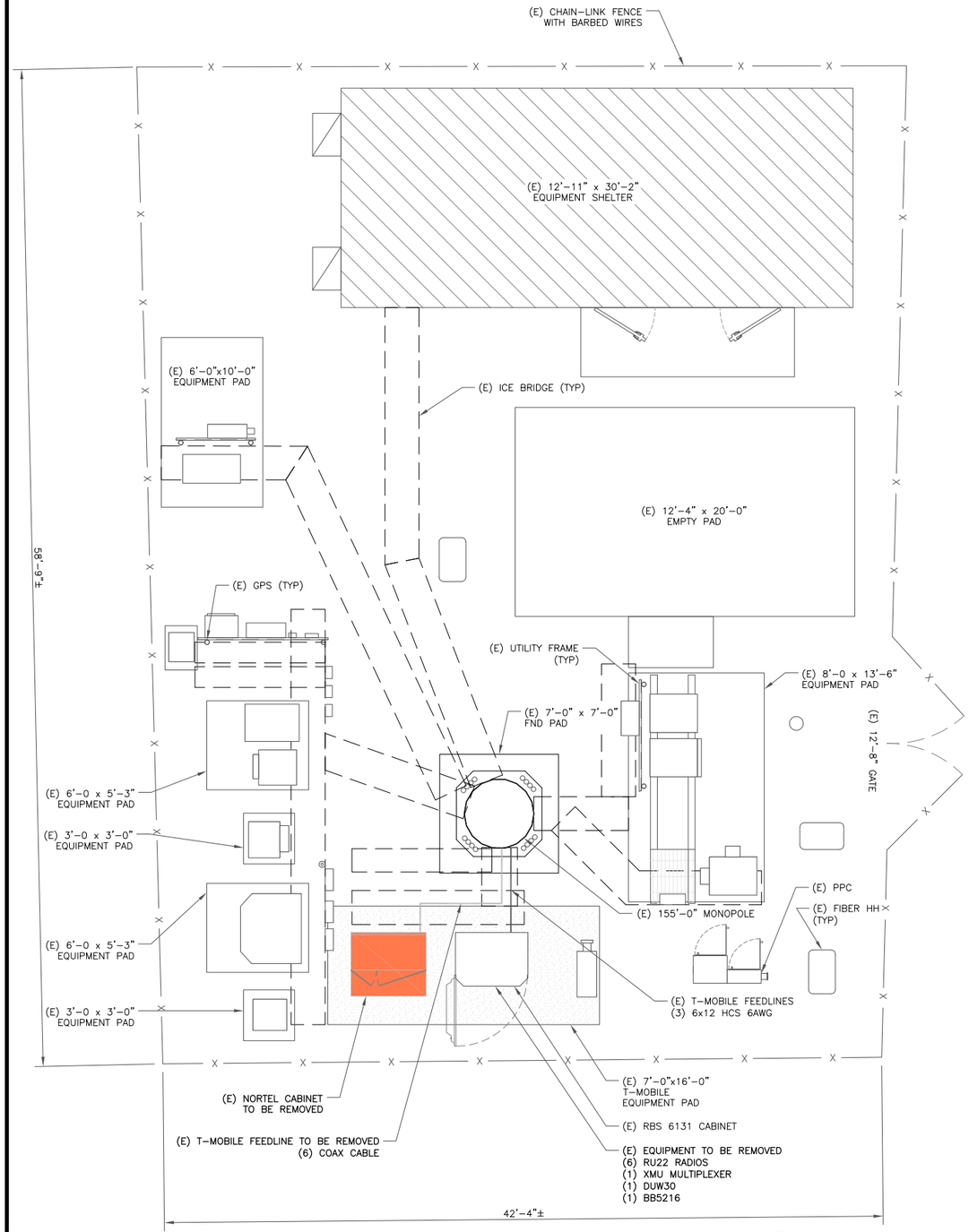
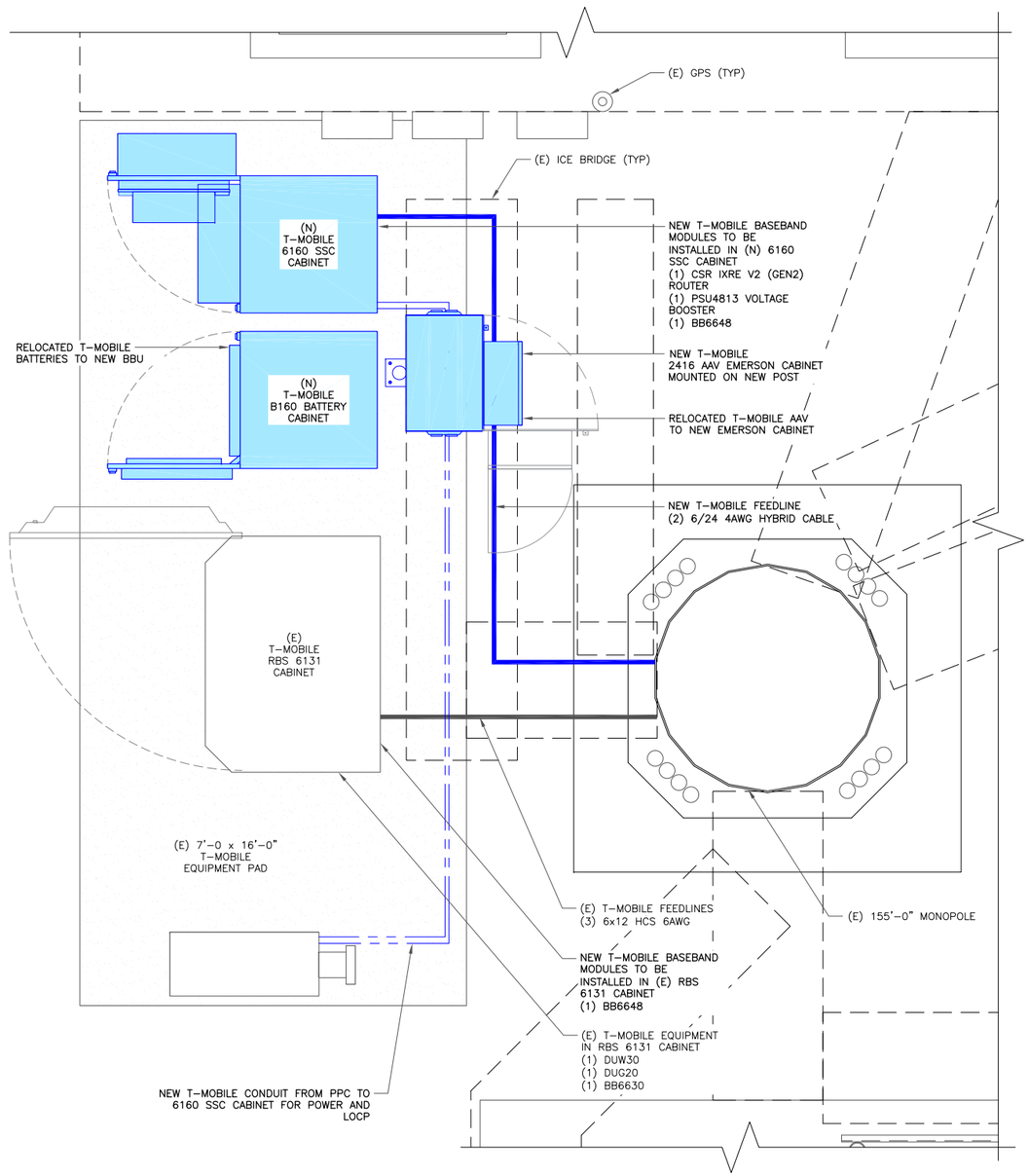
SHEET NUMBER: C-1.1
REVISION: 2

149606.002.01 BUCKLAND MALL.dwg – Sheet:C-1.1 – User: jsikes – Aug 12, 2021 – 4:16pm



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



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

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.

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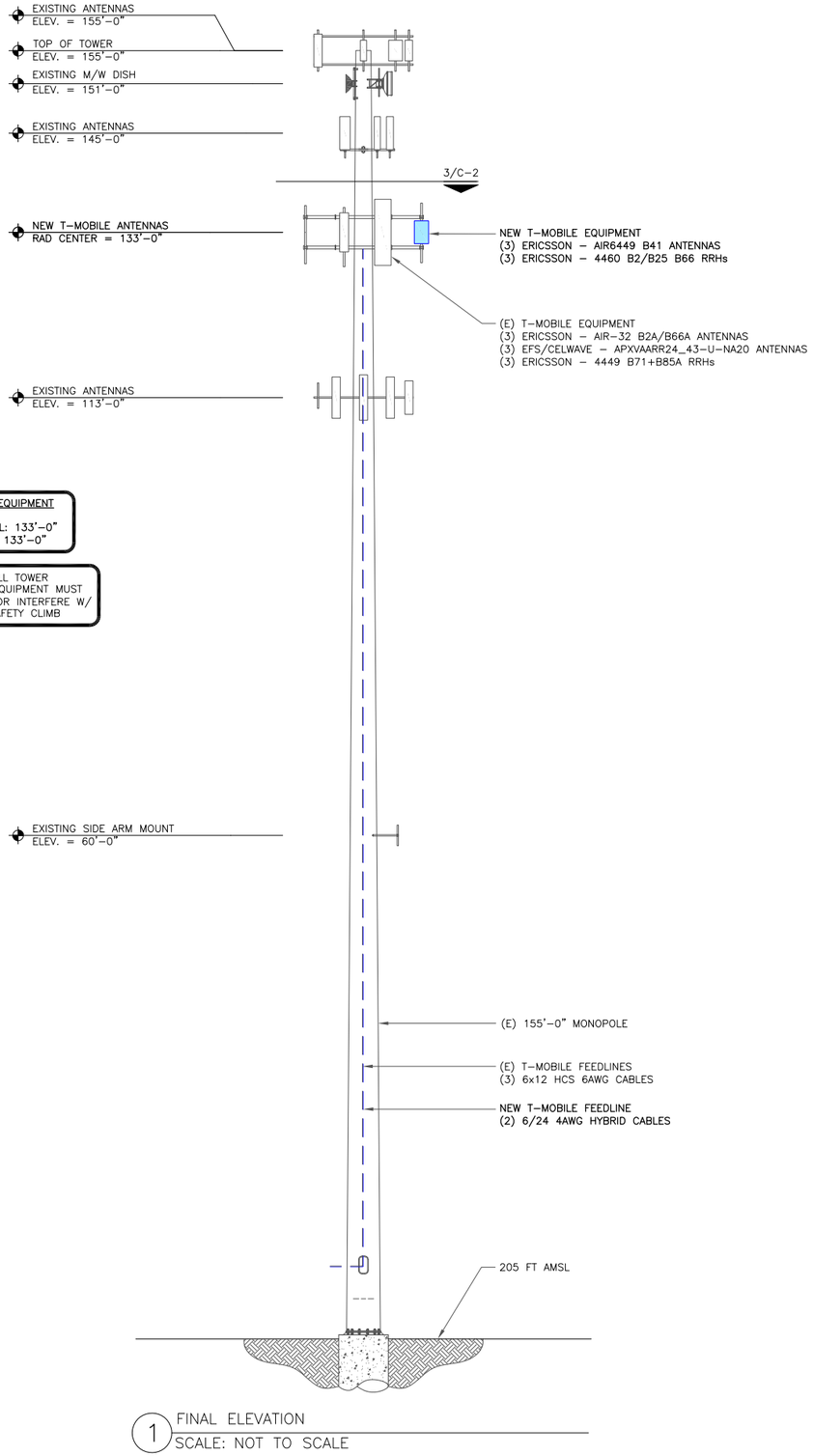
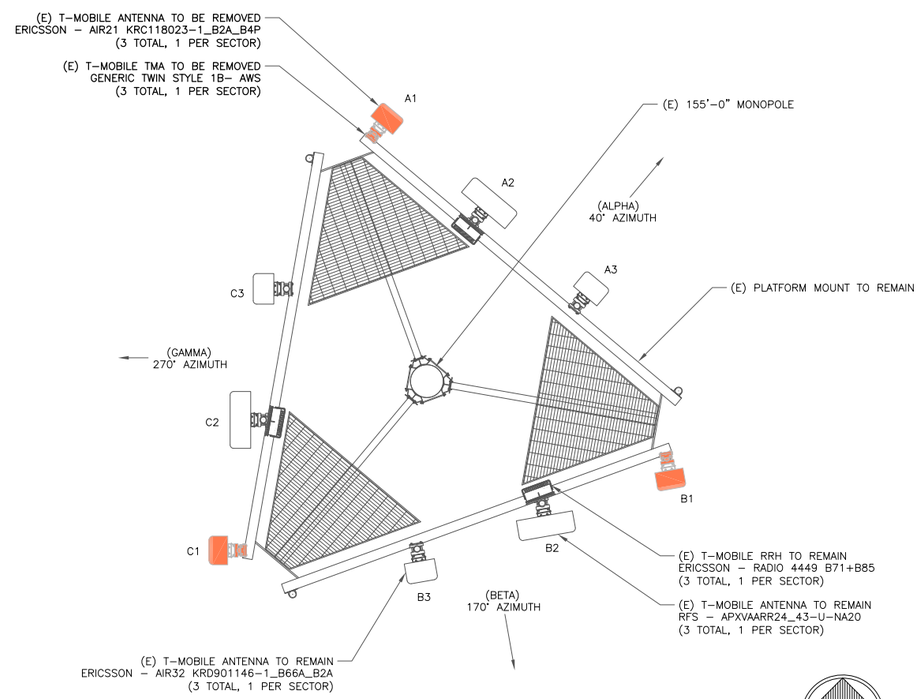
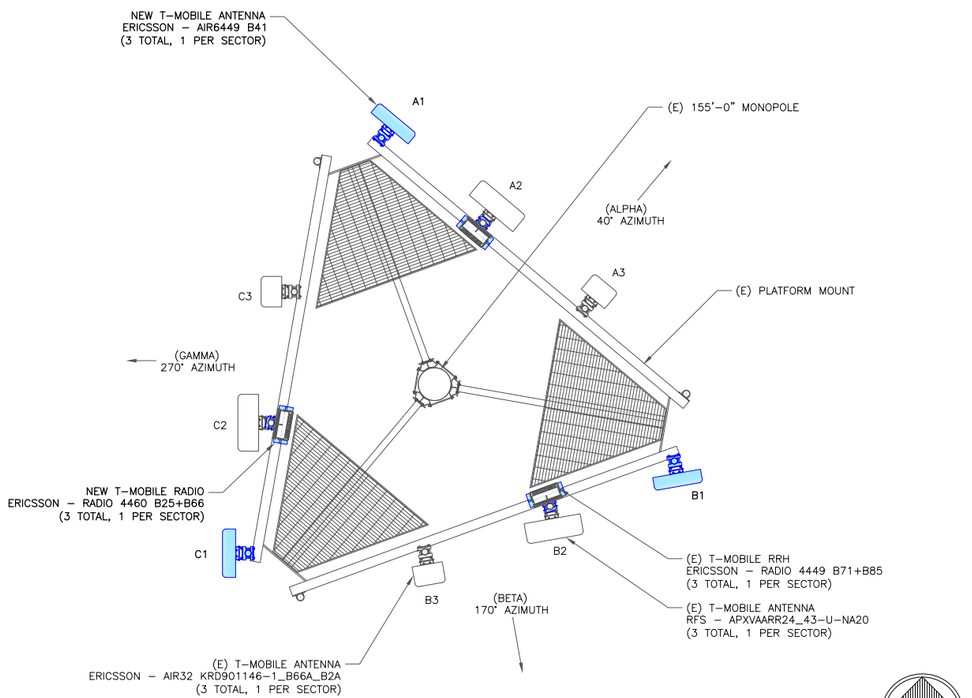
SHEET NUMBER: C-1.2
REVISION: 2



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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SHEET NUMBER: C-2

REVISION: 2

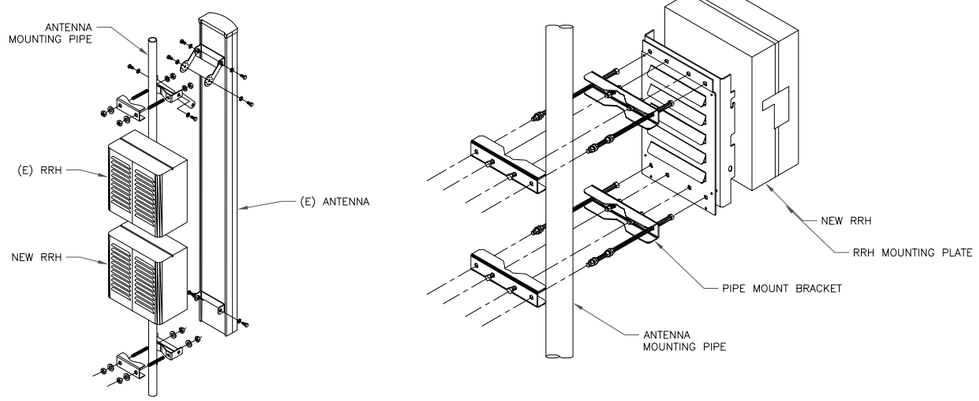
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU
ALPHA	A-1	L2500/N2500	ERICSSON	AIR6449 B41	40°	0°	–	133'-0"	–
	A-2	L700/L600/N600/ L1900/U2100	RFS	APXVAARR24_43-U-NA20	40°	0°	–	133'-0"	(1) ERICSSON – RADIO 4449 B71+B85 (1) ERICSSON – RADIO 4460 B25+B66
	A-3	L2100/L1900/ G1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	40°	0°	–	133'-0"	–
		EMPTY MOUNT PIPE	–	–	–	–	–	–	–
BETA	B-1	L2500/N2500	ERICSSON	AIR6449 B41	170°	0°	–	133'-0"	–
	B-2	L700/L600/N600/ L1900/U2100	RFS	APXVAARR24_43-U-NA20	170°	0°	–	133'-0"	(1) ERICSSON – RADIO 4449 B71+B85 (1) ERICSSON – RADIO 4460 B25+B66
	B-3	L2100/L1900/ G1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	170°	0°	–	133'-0"	–
		EMPTY MOUNT PIPE	–	–	–	–	–	–	–
GAMMA	C-1	L2500/N2500	ERICSSON	AIR6449 B41	270°	0°	–	133'-0"	–
	C-2	L700/L600/N600/ L1900/U2100	RFS	APXVAARR24_43-U-NA20	270°	0°	–	133'-0"	(1) ERICSSON – RADIO 4449 B71+B85 (1) ERICSSON – RADIO 4460 B25+B66
	C-3	L2100/L1900/ G1900	ERICSSON	AIR32 KRD901146-1_B66A_B2A	270°	0°	–	133'-0"	–
		EMPTY MOUNT PIPE	–	–	–	–	–	–	–

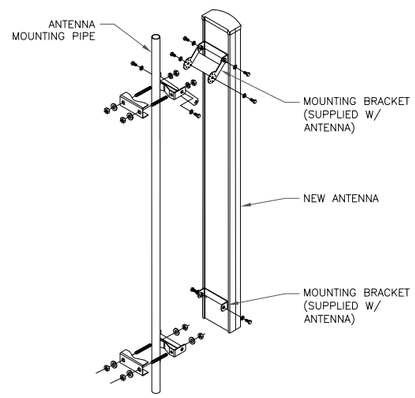
1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

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.



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE



3 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

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BU #: **876347**
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STATE OF CONNECTICUT
No. 23924
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8/12/21

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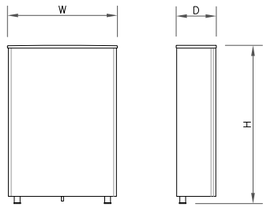
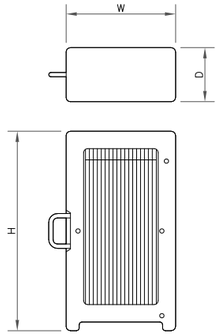
SHEET NUMBER: C-3
REVISION: 2



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

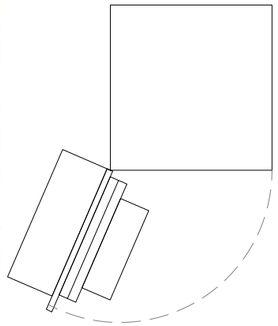
1 ANTENNA SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4460 B2/B25 B66
WIDTH	15.10"
DEPTH	11.90"
HEIGHT	17.00"
WEIGHT	109.00 LBS

2 RRU SPECS
SCALE: NOT TO SCALE

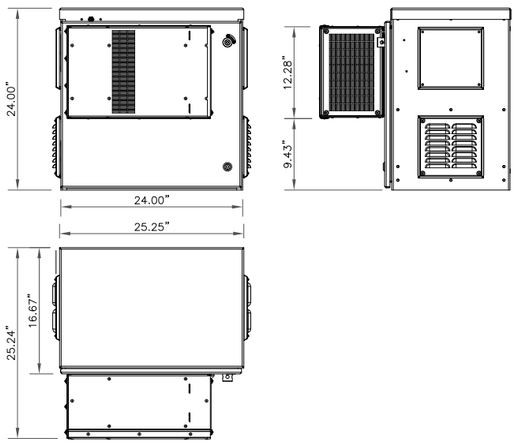
ERICSSON 6160 SSC
WEIGHT: 60.0 LBS
SIZE (HxWxD): 63"x25.6"x33.5" IN.



3 ERICSSON 6160 SSC
SCALE: NOT TO SCALE

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

4 ERICSSON B160 BATTERY CABINET
SCALE: NOT TO SCALE



EMERSON 2416 AAV CABINET (OUTDOOR)
WALL OR H-FRAME MOUNTED, POLE MOUNT
(WALL-MOUNT KIT INCLUDED)
WEIGHT: 64.0 LBS WITHOUT BATTERIES
ENCLOSURE: 24"x24"x16"
BATTERY TRAY: 22"Wx13"D

5 EMERSON 2416 AAV CABINET
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

7 NOT USED
SCALE: NOT TO SCALE

8 NOT USED
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
CT11377C

BU #: **876347**
53 SLATER STREET

53 SLATER STREET
MANCHESTER, CT 06040

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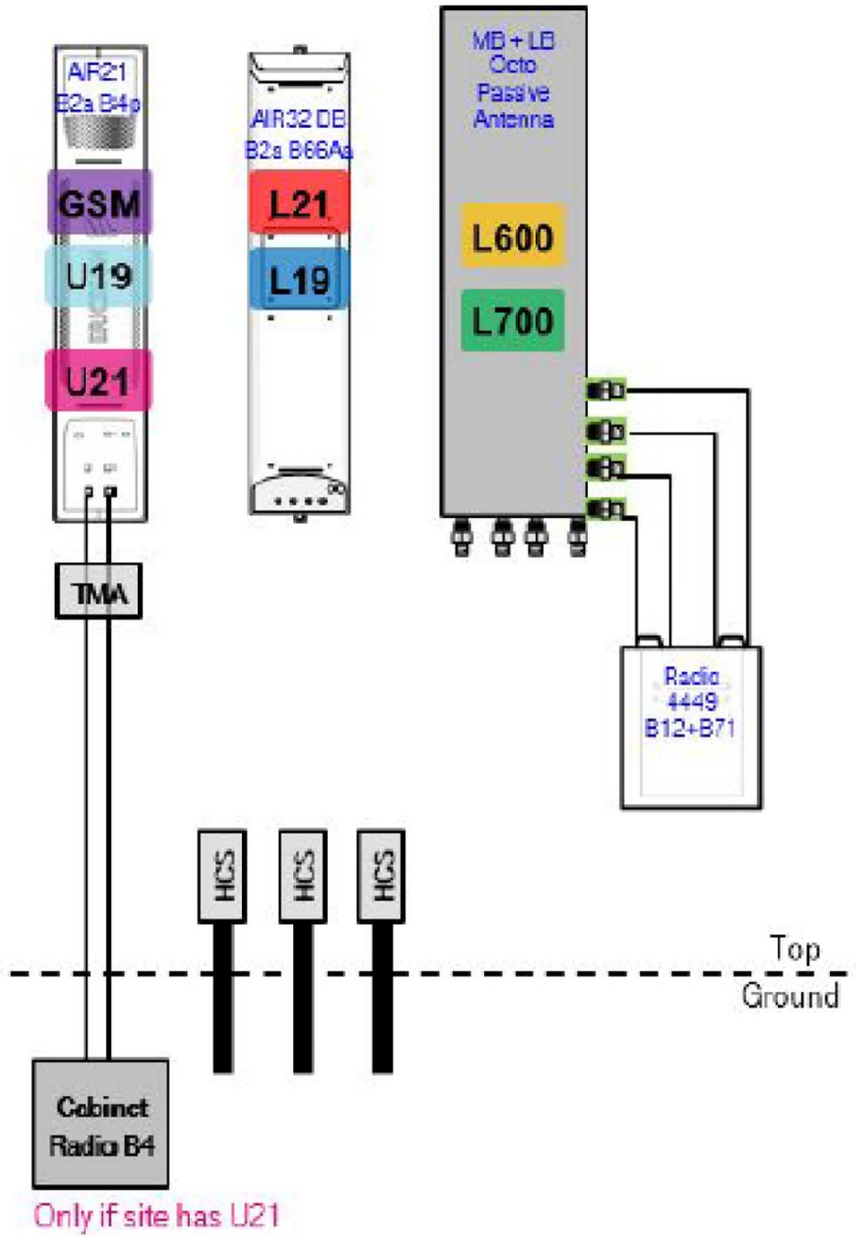
REVISION: 2



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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4 SYLVAN WAY
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SHEET NUMBER: C-4
REVISION: 2

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
CABINET	2	50	1	7	40	2	SURGE
			2	8			
6160	2	150	3	9	125	2	UMTS
			4	10			
EQUIPMENT	1	15	5	11	20	1	GFI
GFI	1	20	6	12			

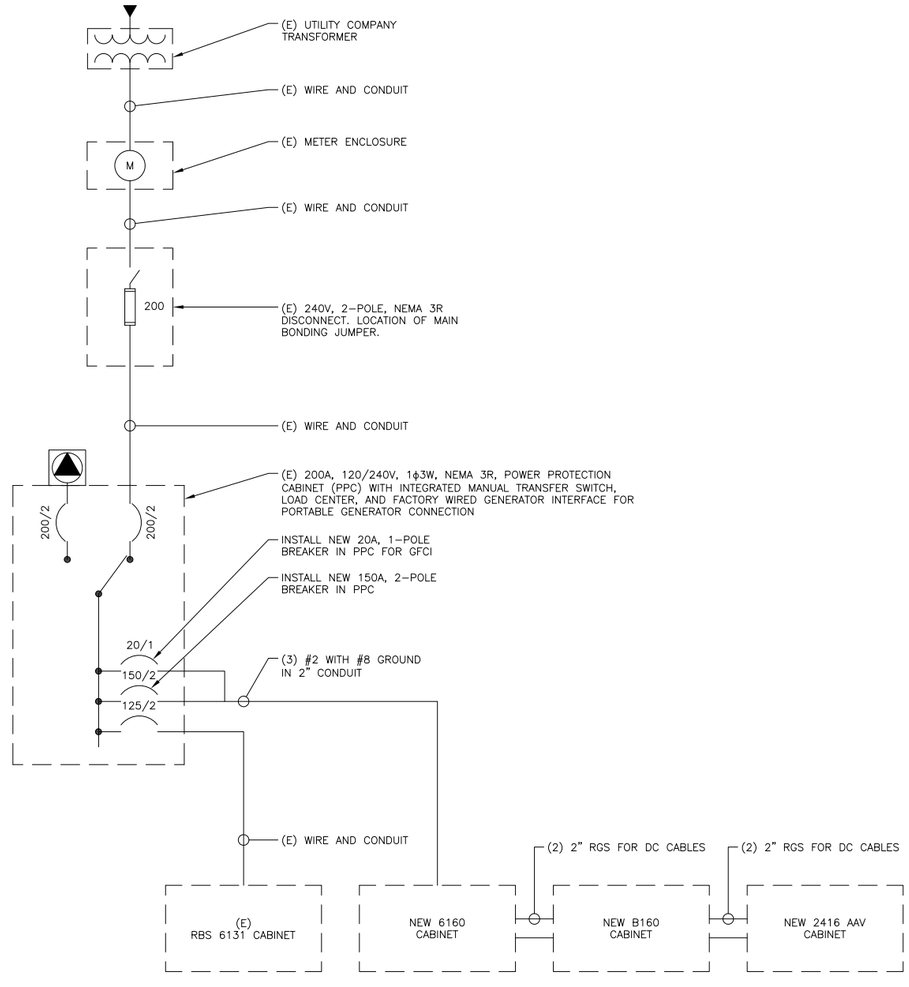
RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: ■12 □24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____,	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY ■MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO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

INSTALL NEW BREAKER IN POSITION 3 AND 4 WITH A NEW 2P 150A BREAKER
INSTALL NEW BREAKER IN POSITION 11 WITH A NEW 1P 20A BREAKER
IF 150A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING DOCUMENTS AND PHOTOS

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

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, 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.



NOTES:

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

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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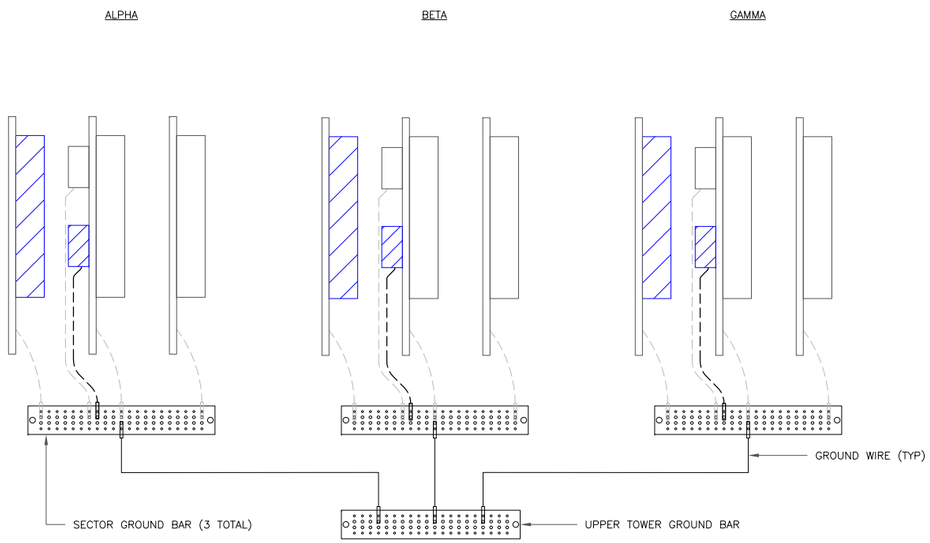
SHEET NUMBER: E-1
REVISION: 2



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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SHEET NUMBER: G-1

REVISION: 2

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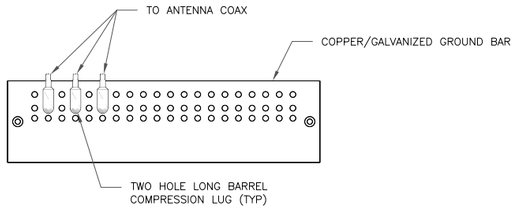
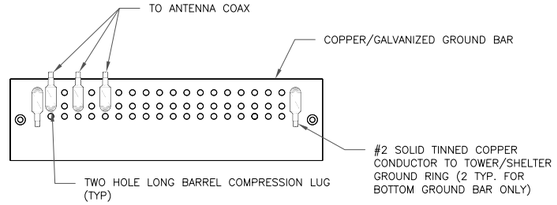


NOTES:

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

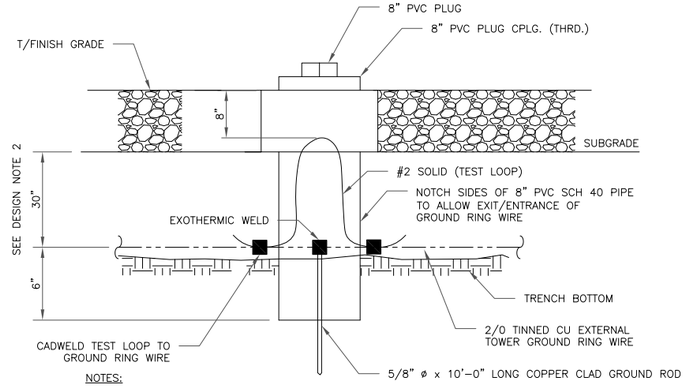
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

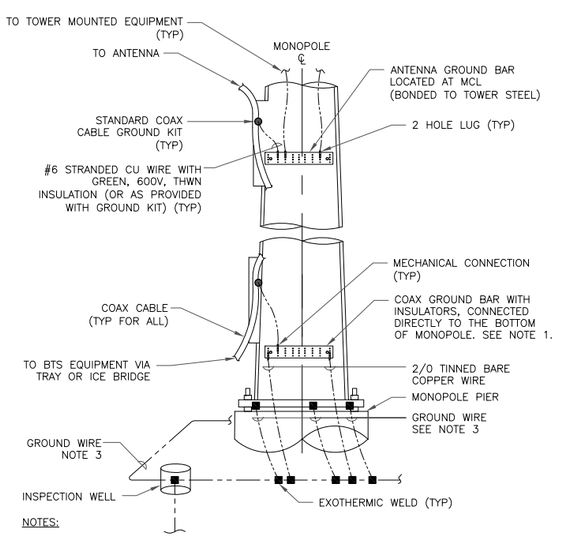
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

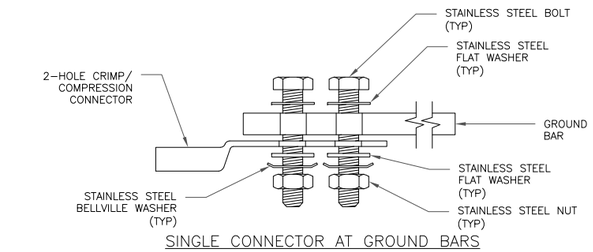
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



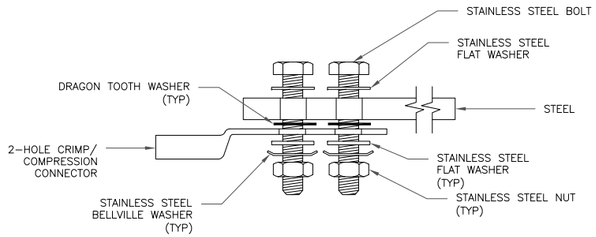
NOTES:

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

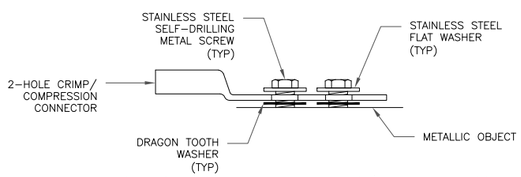
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

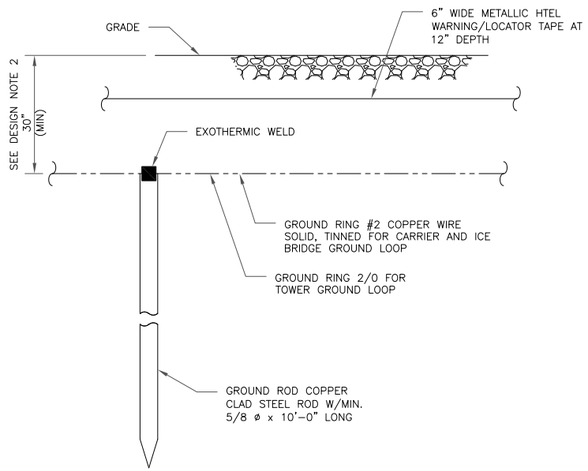


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

T-MOBILE SITE NUMBER:
CT11377C

BU #: **876347**
53 SLATER STREET

53 SLATER STREET
MANCHESTER, CT 06040

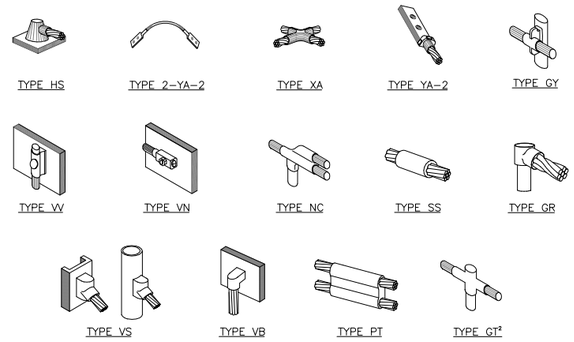
EXISTING
155'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	7/6/21	KT	CONSTRUCTION	MJT
1	7/30/21	KT	CONSTRUCTION	KT
2	8/12/21	MAH	CONSTRUCTION	JTS

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: G-2
REVISION: 2

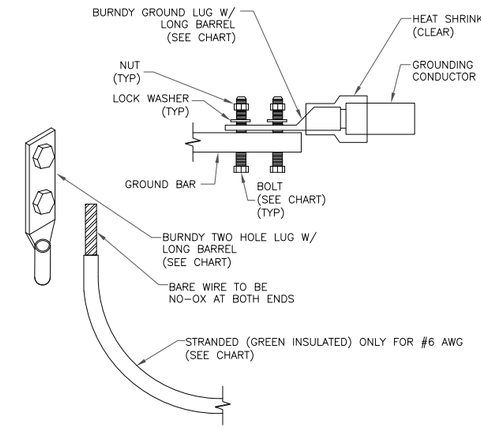


NOTE:

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

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

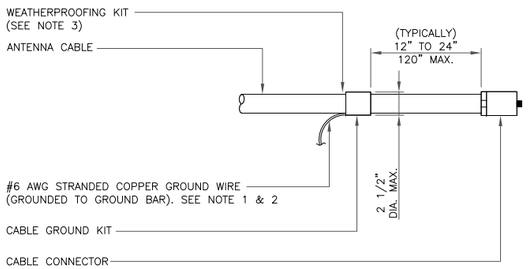
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

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

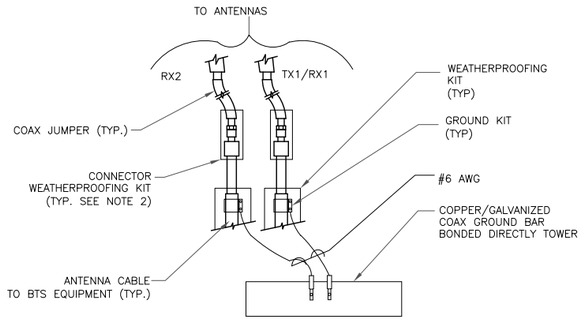
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

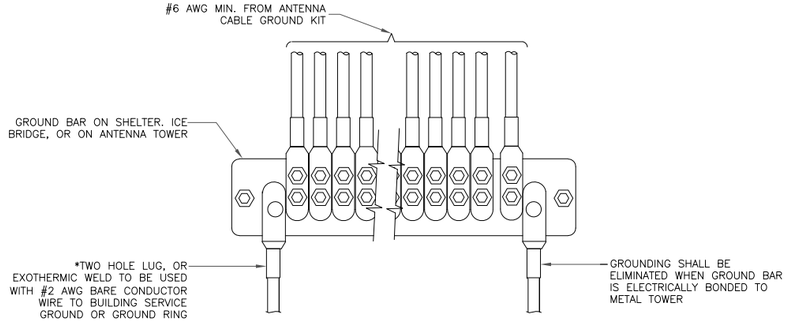
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



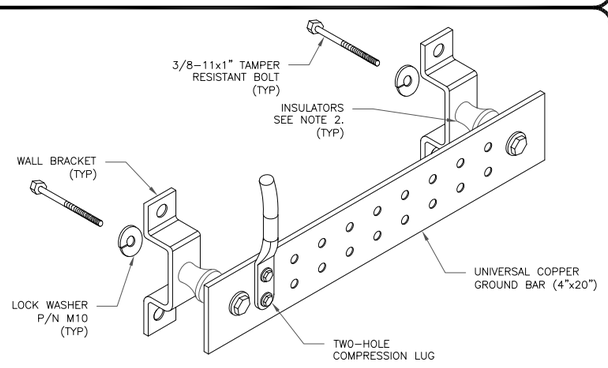
NOTES:

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

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



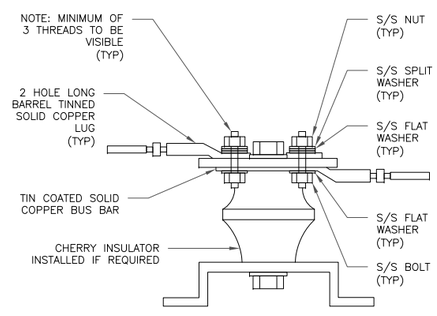
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



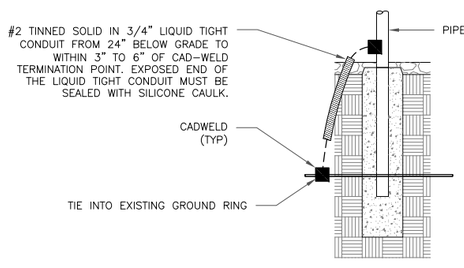
NOTES:

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

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: G-3
REVISION: 2

From: TrackingUpdates@fedex.com
To: Barbadora, Jeff
Subject: FedEx Shipment 774531705601: Your package has been delivered
Date: Monday, August 16, 2021 11:34:30 AM

FedEx

Hi. Your package was delivered Mon, 08/16/2021 at 11:21am.

Delivered to 9 LAKE LN, ELLINGTON, CT 06029

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 774531705601

FROM Jeff Barbadora
1800 W. Park Drive
WESTBOROUGH, MA, US, 01581

TO	121 Connecticut Avenue Associate Jean Burns 9 Lake Lane ELLINGTON, CT, US, 06029
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Fri 8/13/2021 06:14 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	ELLINGTON, CT, US, 06029
SPECIAL HANDLING	Deliver Weekday Residential Delivery
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

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