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

April 26, 2024

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

RE: **Notice of Exempt Modification for Verizon Wireless: 5000247545**
Crown Site ID# 828540
218 Wheeler Road, Torrington, CT 06790
Latitude: 41° 46′ 50.33″ / Longitude: -73° 8′ 10.02″

Dear Ms. Bachman:

Verizon Wireless currently maintains twelve (12) antennas at the 140-foot mount on the existing 160-foot monopole tower located at 218 Wheeler Road, Torrington, CT. The property is owned Lucille G Lefebvre and the tower is owned by Crown Castle. Verizon now intends to replace nine (9) antennas and ancillary antenna equipment at the 140ft 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:
Install New:
(3) Samsung – MT6407-77A Antennas
(6) Qunintel- QS6656-5D Antennas
(3) Samsung- B2/B66A RRH
(3) Samsung- RF4461D-13A Radios
(1) Raycap- 12OPV
(2) RF/CELLWAVE – HB158-21U6S24- Hybrid Cables

Remove:
(4) Swedcom-SC-E6014 REV2 Antennas
(3) Swedcom – SLX 5512 Antennas
(2) Antel BXA 1711063 Antennas
(2) Antel LPA-80063 Antennas
(3) Nokia UHBA B13 RRH Radios
(6) RFS/Celwave FD9R6004 Diplexers
(6) Andrew LDF7-50A 1 5/8" Coaxial Cables

The facility was originally approved by the City of Torrington, however, a copy of the original decision was not available.

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 Elinor Carbone, Mayor, City of Torrington and Jeremy Leifert, City Planner, City of Torrington. Lucille Lefebvre, 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, Verizon Wireless 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
Permitting Specialist
1800 W. Park Drive
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments
cc:

Elinor Carbone, Mayor
City of Torrington
140 Main Street
Torrington, CT 06790
860-489-2228

Jeremy Leifert, City Planner
City of Torrington
140 Main Street
Torrington, CT 06790
860-489-2221

Lucille Lefebvre, Property Owner
C/O Lorraine Fabbri
264 Cathole Road
Litchfield, CT 06759

Crown Castle, Tower Owner

Unique ID: 15376 Formidon **Card No:** 1 Of 1

Location:	RICHARD RD	Map Id:	235/001/014/2	Zone:	R40	Date Printed:	4/26/2024
		Neighborhood:	5			Last Update:	4/26/2024

Owner Of Record	Volume/Page	Date	Sales Type	Valid	Sale Price
LEFEBVRE LUCILLE G	0428/0999	1/21/1988	Probate	No	0
DBA VOICESTREAM WIRELESS CORP, PMB 331, 4017 WASHINGTON RD, MCMURRAY, PA 15317			Exempt		

Prior Owner History

Permit Number	Date	Permit Description
22-384 BP	8/9/2022	3 NEW ANTENNA/6 NEW RRU & ASSOC EQUIP ON TOWER
22-76 Z	7/13/2022	EQUIP INSTALLATION ON TOWER
20-416 BP	10/2/2020	REPL 6 ANTENNAS & ADD 3 NEW ANTENNAS
20-95 Z	9/17/2020	CELL TOWER ANTENNA UPGRADES
20-133 EL	5/5/2020	GENERATOR SYSTEM FOR AT&T CELL SITE
18-890 Z	6/1/2018	REPL 3 WIRELESS ANTENNAS & ADD 3 REMOTE RADIO UNITS= PP

Supplemental Data

Census/Tract	5	Vision PID	105887
Dev Map ID	4570/4592		
GIS_ID			
Route			
District			
Utilities			

Appraised Value

Total Land Value	72,671
Total Building Value	12,106
Total Outbldg Value	20,023
Total Market Value	104,800

Acres

Land Type	Acres	490	Total Value
Primary Site	1.00	0.00	65.250
Commercial Excess	0.62	0.00	7.421
Total	1.6200	0.00	72,671

State Item Codes

Code	Quantity	Value
	1.62	50.870
	2.00	13.230
	1.00	8.470
	1.00	790

Assessment History (Prior Years as of Oct 1)

	2024	2023	2022	2021	2020
Land	50,870	50,870	50,870	50,870	50,870
Building	8,470	8,470	8,470	8,470	8,470
Outbuilding	14,020	14,020	14,020	14,020	14,020
Total	73,360	73,360	73,360	73,360	73,360

490 Appraised Totals

Type	Acres	Value	Type	Acres	Value
			Totals	0.00	0

Application Date: Expiration Date:

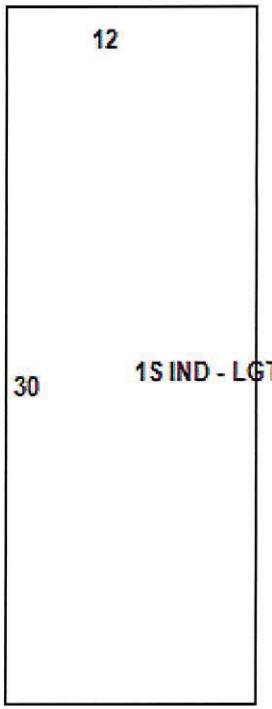
Comments

5/18/2017 NO PICTURE DUE TO ACCESS- GS

Revaluation Date: 10/1/2019

Unique ID: 15376 Torrington

Location: RICHARD RD **Unit**



Commercial Building Description	
Building Use	Industrial
Class	Reinforced Concrete
Overall Condition	Average
Construction Quality	Average
Stories	1.00
Year Built	2004
Remodel	
Percent Complete	100
GLA	360

Basement	
Basement Area	0

HVAC	
Heating Type	
Fuel Type	
Cooling Type	

Interior	
Floors	Concrete
Walls	Masonry
Wall Height	

Exterior	
Exterior Walls	Pre-Cast Concrete
Roof Type	
Roof Cover	

Special Features	
Generator	1

Description	Area/Qty
Base Value	360

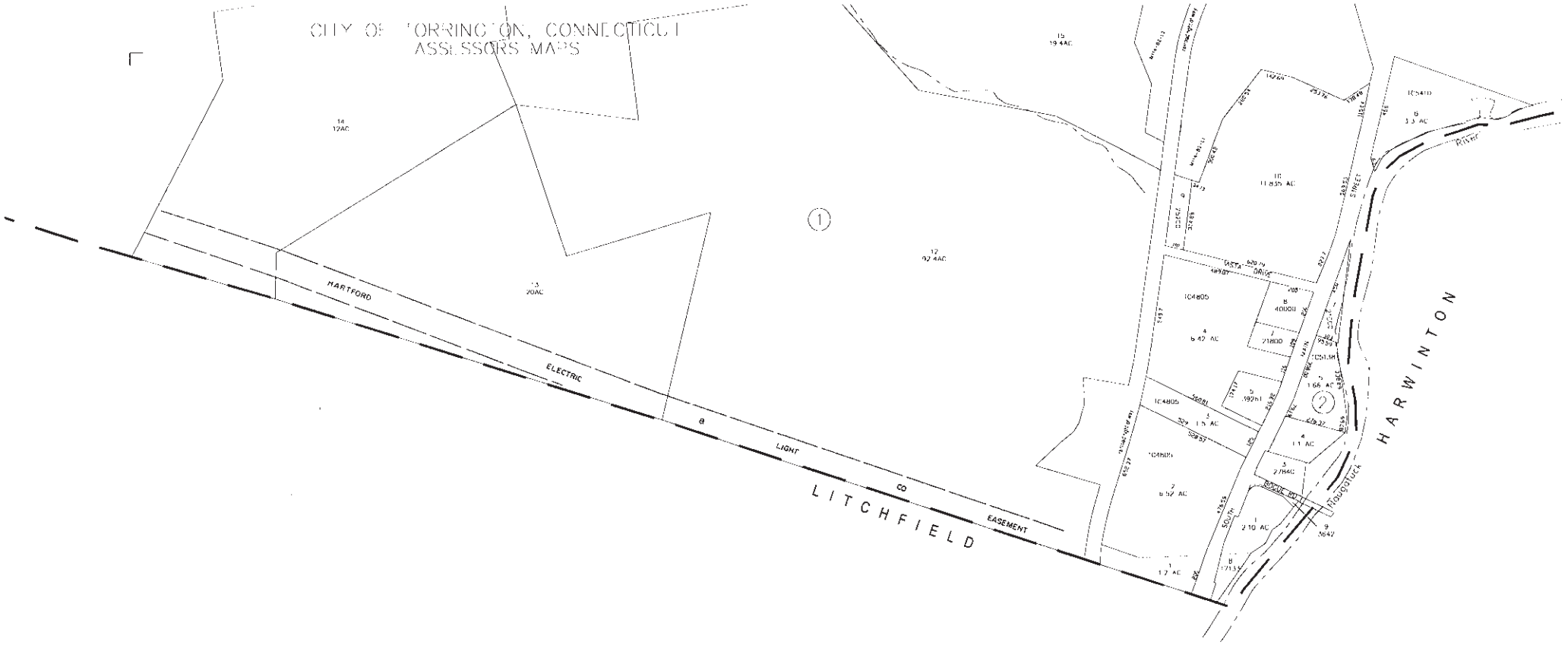
Attached Component Computations

Type	Yr Blt	Area/Qty

Detached Component Computations

Type	Year	Condition	Area/Qty
Concrete Block/Fr Garage	2009	Average	360
Concrete Block/Fr Garage	2009	Average	240
Fencing	2004	Average	240

Type	Year	Condition	Area/Qty



REV	DATE	REVISION
	APR 2019	Update AC 235/2/10
	OCT 2017	Add 235/2/3
	NOV 2012	Add 235/2/11
	NOV 2012	Merge 235/2/1 & 2
	OCT 2012	Update 235/2/5
	MAR 2008	Ref to 114/2/1
	APR 2007	Revise 235/2/5
	OCT 2005	Ref to 114/2/42 & 43
	JAN 2005	No name change Ref to 1
	DEC 2003	UPDATED MAP
	DEC 2003	ADJ. TO MATCH MUS+MUN
	DEC 2003	UPDATED MAP
	OCT 2001	REVISED LOT 2 IN BL 1
	DEC 2000	UPDATED MAP
	JULY 1999	UPDATED MAP
	7/96	UPDATED MAP 235

PREPARED UNDER THE DIRECTION OF
C. BARTON SMITH - ASSESSOR
BY
AVIS AIRMAR INC.

200 0 200 400 600 FEET

AVIS PROJ.No.7454

219	113/114	
218	235	

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, April 29, 2024 10:03 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776126854097: Your package has been delivered

Hi. Your package was delivered Mon, 04/29/2024 at 9:56am.

Delivered to 140 MAIN ST, TORRINGTON, CT 06790
Received by E.WITTAG

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	776126854097
FROM	Crown Castle 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	City of Torrington Elinor Carbone, Mayor 140 Main Street TORRINGTON, CT, US, 06790
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Fri 4/26/2024 06:06 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	TORRINGTON, CT, US, 06790
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Standard Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, April 29, 2024 10:03 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776126872420: Your package has been delivered

Hi. Your package was delivered Mon, 04/29/2024 at 9:56am.

Delivered to 140 MAIN ST, TORRINGTON, CT 06790
Received by E.WITTAG

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	776126872420
FROM	Crown Castle 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	City of Torrington Jeremy Leifert 140 Main Street TORRINGTON, CT, US, 06790
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Fri 4/26/2024 06:06 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	TORRINGTON, CT, US, 06790
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	2.00 LB
SERVICE TYPE	FedEx Standard Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Monday, April 29, 2024 12:18 PM
To: Barbadora, Jeff
Subject: FedEx Shipment 776126929125: Your package has been delivered
Attachments: DeliveryPicture.jpeg

Hi. Your package was delivered Mon, 04/29/2024 at 12:11pm.

Delivered to 264 CATHOLE RD, LITCHFIELD, CT 06759

OBTAIN PROOF OF DELIVERY

Delivery picture not showing? View in browser.

How was your delivery ?

☆ ☆ ☆ ☆ ☆

TRACKING NUMBER	776126929125
FROM	Crown Castle 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	C/O Lorraine Fabbri Lucille Lefebvre 264 Cathole Road LITCHFIELD, CT, US, 06759
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Fri 4/26/2024 06:06 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	LITCHFIELD, CT, US, 06759

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

Post-Modification Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10213430
Colliers Engineering & Design Project #: 21777830A (Rev. 1)

November 17, 2023

Site Information	*Site ID:*	*5000247545-VZW / TORRINGTON S CT*
	Site Name:	*TORRINGTON S CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*218 Wheeler Road* *Torrington, Connecticut 06790* *Litchfield County*
	Latitude:	*41.780653°*
	Longitude:	*-73.136119°*
Structure Information	*Tower Type:*	*160-Ft Monopole*
	Mount Type:	*13.25-Ft Platform*

FUZE ID # 16227597

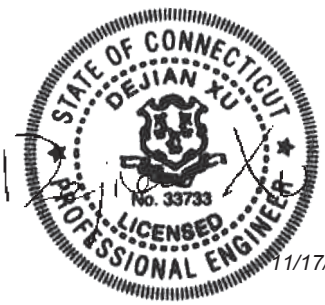
Analysis Results

Platform: **52.9% Pass w/ Modifications***

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

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

Report Prepared By: Nathan LaPorte



11/17/2023

Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

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

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS, Site ID: 324979, dated August 14, 2023*
Mount Mapping Report	*Hudson Design Group, LLC, Site ID: 467790 dated April 28,2021*
Previous Mount Analysis Report	*Colliers Engineering & Design Project #: 21777830A (Rev. 1), dated October 27, 2023*
Mount Modification Drawings	*Colliers Engineering & Design Project #: 21777830A (Rev. 1), dated November 17, 2023*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H Connecticut State Building Code, Effective October 1, 2022	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	115 mph
	Ice Wind Speed (3-sec. Gust):	50 mph
	Design Ice Thickness:	1.00 in
	Risk Category:	II
	Exposure Category:	B
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.964
Seismic Parameters:	S_S:	0.176 g
	S_1:	0.054 g
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Load, Lv:	250 lbs.
	Maintenance Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V20)	

Final Loading Configuration:

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

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
139.00	140.00	6	Quintel	QS6656-5D	Added
		3	Samsung	MT6407-77A	
		1	Raycap	RVZDC-6627-PF-48	
		3	Samsung	RF4439d-25A	
		3	Samsung	RF4461d-13A	

The recent mount mapping did not report existing OVP units. However, it is acceptable to install up to any three (3) of the OVP model numbers listed below as required at any location other than the mount face without affecting the structural capacity of the mount. If OVP units are installed on the mount face, a mount re-analysis may be required.

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

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Colliers Engineering & Design and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Colliers Engineering & Design to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

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

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

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped in accordance with the NSTD-446 Standard, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Colliers Engineering & Design is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Plate — ASTM A36 (Gr. 36)
   - HSS (Rectangular) — ASTM 500 (Gr. B-46)
   - Pipe — ASTM A53 (Gr. B-35)
   - Threaded Rod — F1554 (Gr. 36)
   - Bolts — ASTM A325

8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

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

Analysis Results:

Component	Utilization %	Pass/Fail
Support Rail Corner	29.9%	Pass
Support Rail	15.4%	Pass
OVP Pipe	5.8%	Pass
Mount Pipe	25.8%	Pass
Dual Mount Pipe	22.2%	Pass
Grating Support	8.2%	Pass
Platform Crossmember	14.9%	Pass
Standoff Horizontal	31.3%	Pass
Corner Plate	14.6%	Pass
Cross Arm Plate	52.9%	Pass
Face Horizontal	14.0%	Pass
Mount Connection	46.9%	Pass

Structure Rating – ***(Controlling Utilization of all Components)***	**52.9%**

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

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	25.6	25.5	40.7	40.6
0.5	33.1	32.9	54.2	54.0
1	39.8	39.6	66.9	66.7

Notes:
- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 3 sector(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mount will be **SUFFICIENT** for the final loading configuration (attachment 2) after the modifications detailed in attachment 3 are successfully completed.

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

Attachments:

1. **Contractor Required PMI Report Deliverables**
2. Antenna Placement Diagrams
3. Mount Modification Drawings
4. Mount Photos
5. Mount Mapping Report (for reference only)
6. Analysis Calculations

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

Electronic pdf version of this can be downloaded at https://pmi.vzwsmart.com
For additional questions and support, please reach out to pmisupport@colliersengineering.com

---

MDG #: 5000247545 SMART Project #: 10213430 Fuze Project ID: 16227597

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

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

Base Requirements:

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

Photo Requirements:

- *Photos taken at ground level*
  - Photo of Gate Signs showing the tower owner, site name, and number.
  - Overall tower structure after installation of the modifications.
  - Photos of the mount after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed

- *Photos taken at Mount Elevation*
  - Photos showing the safety climb wire rope above and below the mount prior to modification.
  - Photos showing the climbing facility and safety climb if present.

- Photos showing each individual sector after installation of modifications. Each entire sector must be in one photo to show the interconnection of members.
    - These photos shall also certify that the placement and geometry of the equipment on the mount is as depicted in the antenna placement diagram in this form.
- Photos that show the model number of each antenna and piece of equipment installed per sector.
- Photos of each installed modification per the modification drawings; pictures shall also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
- Photos showing the distances (relative distance between collars) of the installed modifications from the appropriate reference locations shown in the modification drawings.
- Photos showing the installed modifications onto the tower (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevation needs to be changed according to the modification drawings, an elevation measurement shall be provided before the elevation change.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by the SMART Tool vendor.
    - If the materials are as specified on the drawings
        - The contractor shall provide the packing list, or the materials certifications for the materials utilized to perform the mount modification
        - Commscope, Metrosite, Perfect Vision, Sabre, and Site Pro have all agreed to support Verizon vendors with the necessary material certifications
    - If seeking permission to use an equivalent
        - It is required that the SMART Tool engineering vendor approval of such is included in the contractor submission package. There may be an additional charge for approval if the equivalent submission doesn't meet specifications as prescribed in the drawings.

☐ All hardware has been properly installed, and the existing hardware was inspected.

☐ The material utilized was as specified on the SMART Tool engineering vendor Mount Modification Drawings and included in the material certification folder is a packing list or invoice for these materials.

OR

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

Antenna & Equipment Placement and Geometry Confirmation:

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

OR

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

Comments:

Was the mount modification completed in conjunction with the equipment change / installation?

☐ Yes ☐ No

Special Instructions / Validation as required from the MA or Mod Drawings:

Issue:

Contractor shall install a new 36” long PIPE 2 SCH 40 OVP pipe between Beta and Gamma sector standoff horizontals.

Response:

Special Instruction Confirmation:

☐ The contractor has read and acknowledges the above special instructions.

Comments:

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

☐ Yes ☐ No

Contractor certifies no new damage created during the current installation:

☐ Yes ☐ No

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

☐ Safety Climb in Good Condition ☐ Safety Climb Damaged

Comments:

Certifying Individual:

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

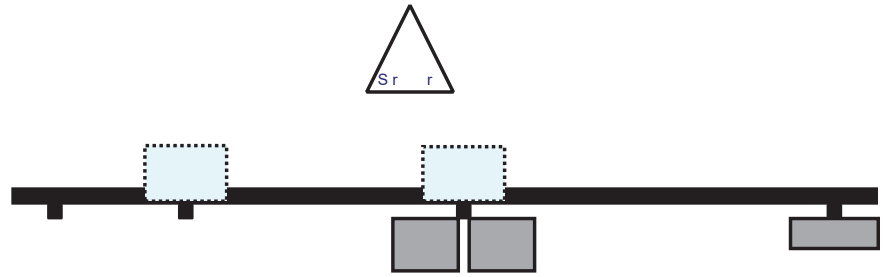
S r **A** 11 1 2 23

S r r T M 1 21343

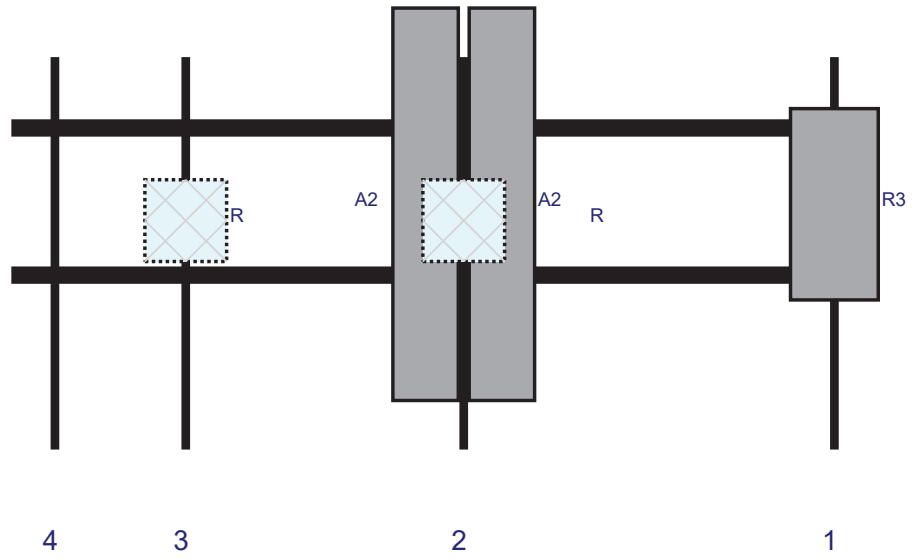
M E 13 . P 1

Colliers Engineering & Design

Plan View

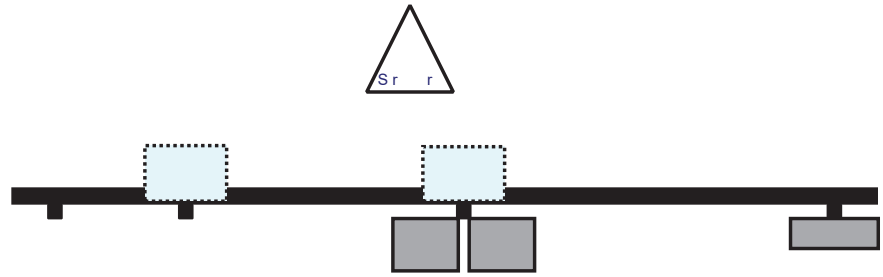


Front View - L S r r

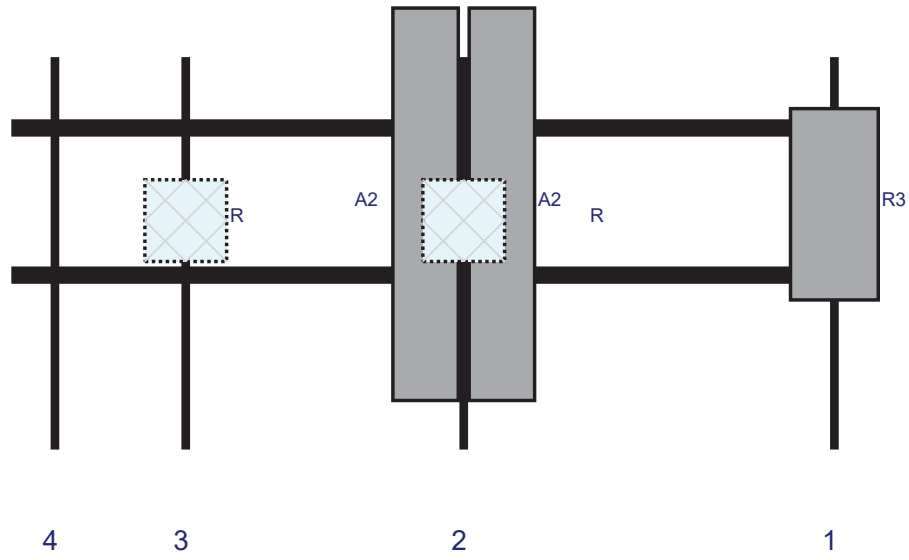


R	M d	d	D r L.	P	P	A r T.	. A O	A S	d
R3	MT 4 A	3 .1	1 .1	1 1	1	r	2	Add	d
A2	S D	2	12	3	2	r	2	Add	d
A2	S D	2	12	3	2	r	2	Add	d
R	R 443 d 2 A	1	1	3	2	B	d 3	Add	d
R	R 44 1d 13A	1	1	32	3	B	d 3	Add	d
M122	R D 2 P 4	2 .	1 .		M r			Add	d

Plan View



Front View - L S r r



R	M d	d	D r L.	P P	A P	. A r T.	A O	S	d
R3	MT 4 A	3 .1	1 .1	1 1	1	r	2	Add d	
A2	S D	2	12	3	2	r	2	Add d	
A2	S D	2	12	3	2	r	2	Add d	
R	R 443 d 2 A	1	1	3	2	B d	3	Add d	
R	R 44 1d 13A	1	1	32	3	B d	3	Add d	

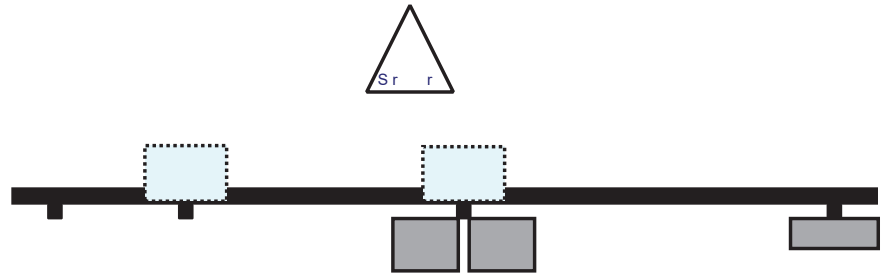
S r **C** 11 1 2 23

S r r T M 1 21343

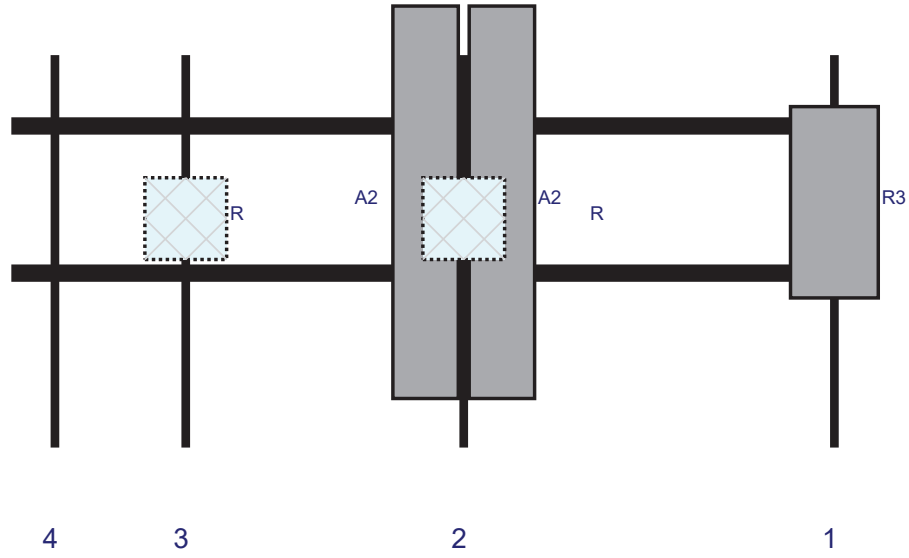
M E 13 . P 3

Colliers Engineering & Design

Plan View



Front View - L S r r



R	M d		d	D r L.	P P	P P	A r T.	. A O	A S	d
R3	MT 4 A	3 .1	1 .1	1 1	1	r	2		Add d	
A2	S D	2	12	3	2	r	2		Add d	
A2	S D	2	12	3	2	r	2		Add d	
R	R 443 d 2 A	1	1	3	2	B	d 3		Add d	
R	R 44 1d 13A	1	1	32	3	B	d 3		Add d	

verizon

MOUNT MODIFICATION DRAWINGS
EXISTING 13.25' PLATFORM

TOWER OWNER: CROWN CASTLE
TOWER OWNER SITE NUMBER: 828540

CARRIER SITE NAME: TORRINGTON S CT
CARRIER SITE NUMBER: 5000247545
FUZE ID: 16227597

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

LATITUDE: 41.780653° N
LONGITUDE: 73.136119° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 115 MPH
EXPOSURE CATEGORY B
TOPOGRAPHIC CATEGORY: 1
TOPOGRAPHIC CONSIDERED: N/A
TOPOGRAPHIC METHOD: N/A
MEAN BASE ELEVATION (AMSL) = 1024.34'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_s = .176
LONG TERM MCER GROUND MOTION, S_1 = .054

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

COMPANY: COLLIERS ENGINEERING & DESIGN
CONTACT: PETER ALBANO
PHONE: 856.797.0412
E-MAIL: PETER.ALBANO@COLLIERSENG.COM

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION: HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #: 10213430
VZW MDG #: 5000247545
ANALYSIS DATE: 11/17/2023

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE DISTURBANCE IN ANY STATE.
Know what's Below. Call before you dig.
811
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE	JOB NUMBER
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DK
0	08/09/23	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JFC.0000131

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE: TITLE SHEET

SHEET NUMBER: ST-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BILL OF MATERIALS

SECTION 1 - VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	VZWSMART	VZWSMART-PLK3	SUPPORT RAIL CORNER BRACKET		30	90
12		VZWSMART-MSK1	CROSSOVER PLATE		14	168
3		VZWSMART-MSK2	CROSSOVER PLATE		15	45
1		VZWSMART-MSK6	BACK TO BACK CROSSOVER PLATE		34	34

SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	-	-	159" LONG, PIPE 2 1/2 SCH40	GALVANIZED	77	231
3	-	-	84" LONG, PIPE 2 1/2 SCH40	GALVANIZED	40	120
1	-	-	36" LONG, PIPE 2 SCH40	GALVANIZED	11	11
3	-	-	36" LONG, L3X3X1/4	GALVANIZED	15	45

SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
1	PERFECT VISON	PV-SCRB-RM-U	ROUTING BRACKET	OR EOR APPROVED EQUIVALENT	-	-
1	PERFECT VISION	PV-CMX-CG-BO	WIRE ROPE GUIDE	OR EOR APPROVED EQUIVALENT	-	-
					TOTAL:	744

*FOR ACTUAL INSTALL WEIGHT PLEASE CHECK THE MA REPORT

NOTES:

1. THE MANUFACTURERS LISTED ARE THE APPROVED VENDORS FOR THE VZW MOUNT KITS. EACH MANUFACTURER WILL BE AWARE OF WHICH KITS HAVE BEEN THROUGH THE VZW APPROVAL PROCESS AND THEY ARE IN TURN APPROVED TO SELL. PLEASE NOTE THAT THE MATERIAL UTILIZED ON THE MOUNT MODIFICATIONS WILL BE REVIEWED AS A PART OF THE DESKTOP PMI COMPLETED BY THE SMART TOOL VENDOR. IT WILL BE REQUIRED THAT THE VZW KITS SPECIFIED ARE UTILIZED IN THE MODIFICATIONS.
2. ALL MATERIALS REQUIRED FOR THE DESIGNED MODIFICATIONS BUT NOT LISTED IN THIS SHEET ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

VZWSMART KITS - APPROVED VENDORS

COMMSCOPE	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM

PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM

SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

BETTER METAL, LLC	
CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM

METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

Colliers Engineering & Design

www.colliersengineering.com

verizon

811 Know what's below. Call before you dig.

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE : AS SHOWN | JOB NUMBER : 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

Colliers Engineering & Design

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING

SHEET TITLE : BILL OF MATERIALS

SHEET NUMBER : SBOM-1

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK, ORDERING MATERIAL, AND PREPARING OF SHOP DRAWINGS. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. 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/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
8. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.
9. ALL INSTALLATIONS PERFORMED ON THIS STRUCTURE SHALL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-322.
10. CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.
11. CONNECTIONS BETWEEN ITEMS SUPPORTED BY THE STRUCTURE AND THE STRUCTURE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH CONNECTIONS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SUBMIT SIGNED AND SEALED CALCULATIONS DURING SHOP DRAWING REVIEW.
12. DO NOT SCALE DRAWINGS.
13. DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
14. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZE AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
15. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
   a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
   b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   c. AISC CODE OF STANDARD PRACTICE
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

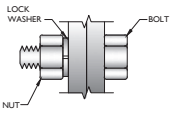
3. ALL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR VERIFYING THE SUBSTITUTE IS SUITABLE FOR USE AND MEETS ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
   a. SUBMIT SHOP DRAWINGS TO
      PETER.ALBANO@COLLIERSENG.COM
   b. PROVIDE COLLIERS ENGINEERING & DESIGN PROJECT # AND COLLIERS ENGINEERING & DESIGN PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
6. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
7. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
8. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.
9. WHERE CONNECTIONS ARE NOT FULLY DETAILED ON THESE DRAWINGS, FABRICATOR SHALL DESIGN CONNECTIONS TO RESIST LOADS AND FORCES WHERE SHOWN ON DRAWINGS AND AS OUTLINED IN SPECIFICATIONS.
10. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.
11. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
12. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
13. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
14. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINC COTE, OR EOR APPROVED EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
15. ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

BOLT SCHEDULE (IN.)

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

WORKABLE GAGES (IN.)

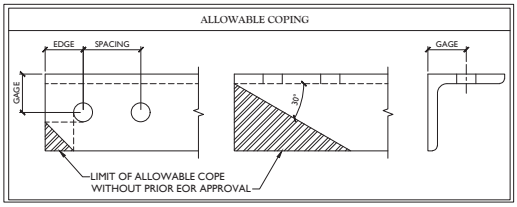
LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8



TYP. BOLT ASSEMBLY

NOTES:

1. ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.



Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE DISTURBANCE IN ANY STATE.
Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/21	ISSUED FOR CONSTRUCTION	SC	DA
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JFC 0000139

SITE NAME:

TORRINGTON S CT
5000247545

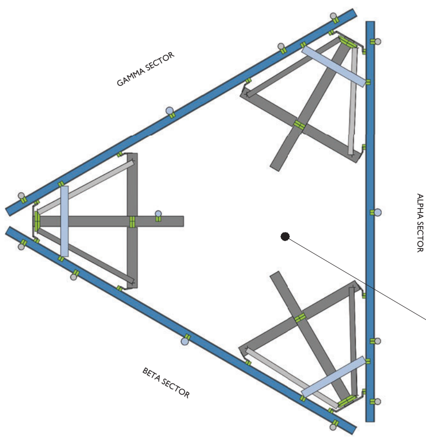
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE:
GENERAL NOTES

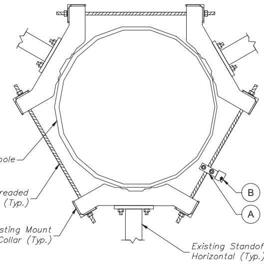
SHEET NUMBER:
SGN-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



1 CLIMBING FACILITY LOCATION

SCALE : N.T.S.



ITEM #	QTY	PART NUMBER	DESCRIPTIONS
A	1	PV-SCRB-RM-U	ROUTING BRACKET (PERFECT VISION OR EOR APPROVED EQ.)
B	1	PV-CMX-CG-BO	WIRE ROPE GUIDE (PERFECT VISION OR EOR APPROVED EQ.)

2 PROPOSED WIRE ROPE GUIDE ATTACHMENT - PLAN VIEW

SCALE : N.T.S.

NOTE: CONTRACTOR SHALL ENSURE THAT WIRE ROPE GUIDE DOES NOT PUSH THE WIRE ROPE OUTSIDE OF THE VERTICAL PLANE OF THE SAFETY CLIMB. CONTRACT EOR WITH PHOTOS OF SAFETY CLIMB AND COLLAR FOR FURTHER DIRECTION IF NEEDED.

Existing Climbing Facility

CLIMBING FACILITY PHOTO

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY HUDSON DESIGN GROUP, LLC. ON 4/28/2021, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (139'-0") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

2. INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB, OR ANY SYSTEM INSTALLED ON THE STRUCTURE. TIMELY NOTICE AND DOCUMENTATION SHALL BE PROVIDED BY CONTRACTORS TO THE EOR (OF STRUCTURAL DESIGN) IF AN OBSTRUCTION WAS REQUIRED TO MEET THE RF SYSTEM DESIGN REQUIREMENTS AND PERFORMANCES.

Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

811 Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE : AS SHOWN

JOB NUMBER : 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

Colliers Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE : CLIMBING FACILITY DETAIL

SHEET NUMBER : SCF-1

LEGEND:

- PROPOSED
- RELOCATED
- EXISTING

MOUNT MODIFICATION SCHEDULE

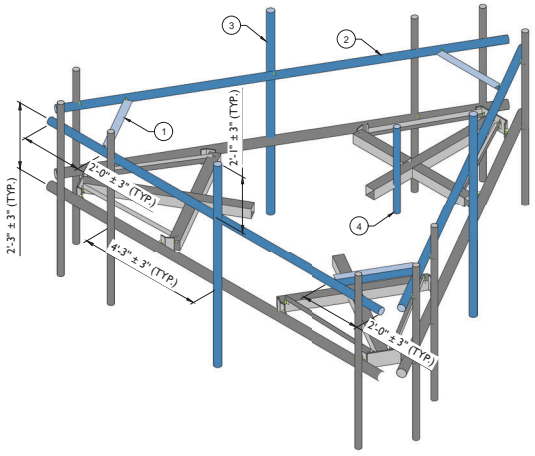
NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	139'-0"	3	PROPOSED SUPPORT RAIL CORNER BRACKET (PART #: VZWSMART-PLK3) WITH 36" LONG L3X3X1/4	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. CONTRACTOR SHALL CONNECT PROPOSED ANGLES TO SUPPORT RAIL CORNER BRACKET (PART #: VZWSMART-PLK3) USING THE PROVIDED (8) 5/8" DIA. BOLTS, (4) BOLTS PER CONNECTION.
2		3	PROPOSED 159" LONG, PIPE 2 1/2 SCH40 SUPPORT RAIL	RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE. CONNECT NEW SUPPORT RAIL TO ALL VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART #: VZWSMART-MSK1).
3		3	PROPOSED 84" LONG, PIPE 2 1/2 SCH40 MOUNT PIPE	CONNECT NEW MOUNT PIPE TO EXISTING HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).
4		1	PROPOSED 36" LONG, PIPE 2 SCH40 OVP PIPE	CONNECT NEW OVP PIPE TO EXISTING STANDOFF HORIZONTAL WITH BACK TO BACK CROSSOVER PLATE (VZWSMART-MSK6).

GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE MINOR CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR

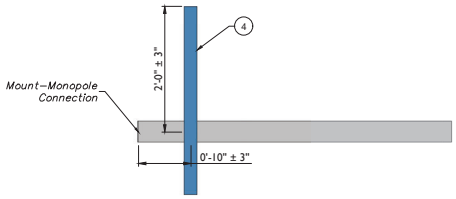
B. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINC KOTE, OR EOR APPROVED EQUAL).

C. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.



1 PROPOSED ISOMETRIC VIEW

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (BETWEEN BETA & GAMMA)

SCALE : N.T.S.

Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE ANYWHERE IN ANY STATE.

Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE	JOB NUMBER
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/22	ISSUED FOR CONSTRUCTION	SC	DA
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JFC.0000131

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE

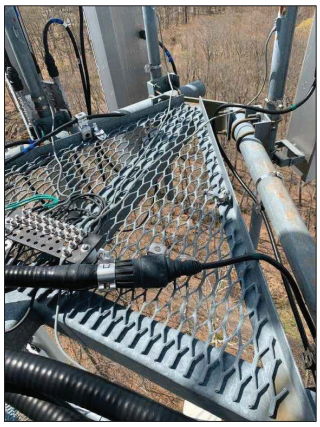
MODIFICATION DETAILS

SHEET NUMBER

SS-1

MOUNT PHOTO 1

MOUNT PHOTO 2



MOUNT PHOTO 3

MOUNT PHOTO 4

Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE ANYWHERE IN ANY STATE.

Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE	AS SHOWN	JOB NUMBER	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/22	ISSUED FOR CONSTRUCTION	SC	DK
0	06/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JFC.0000131

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

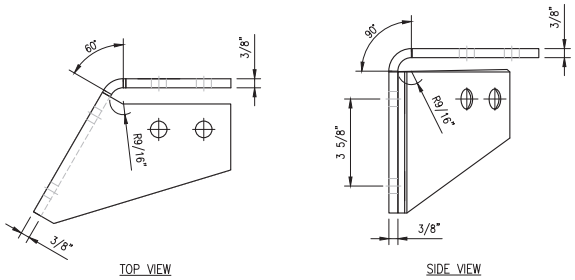
Colliers Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE

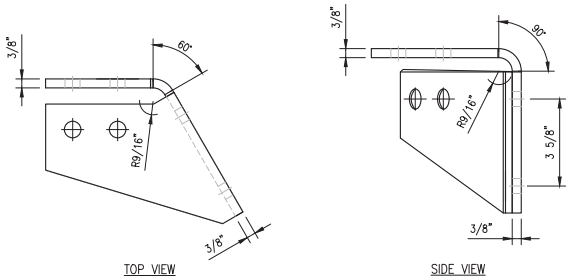
MOUNT PHOTOS

SHEET NUMBER

SS-2



CBP–L



CBP–R

NOTES:
1. HOT–DIPPED GALVANIZED PER ASTM A123.

VZWSMART–PLK3 (SUPPORT RAIL CORNER BRACKET)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	CBP–L	CORNER BENT PLATE BRACKET	PLK3–F1	9
2	1	CBP–R	CORNER BENT PLATE BRACKET	PLK3–F1	9
3	4	MS02–625–300–500	RU–BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC–1	5
4	8	---	BOLT 5/8" X 2" A325	---	3
5	16	FW–625	5/8" HDG USS FLAT WASHER	---	1
6	16	LW–625	5/8" HDG LOCK WASHER	---	0
7	16	NUT–625	5/8" HDG HEX NUT	---	2
				GALVANIZED WT	30

VzW SMART Tool© Vendor

verizon

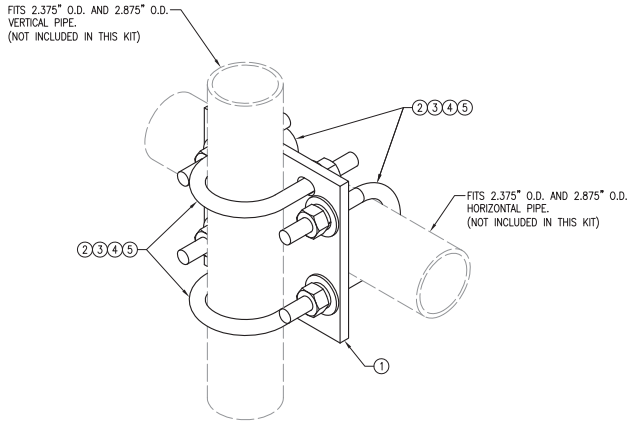
FOR REFERENCE ONLY

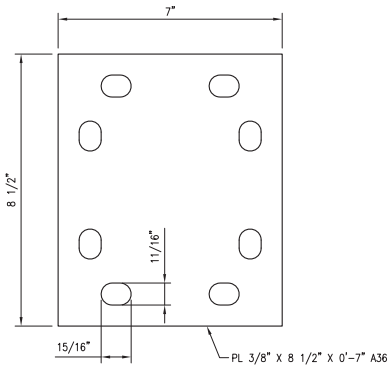
DRAWN BY: H.R | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART–PLK3
SUPPORT RAIL CORNER BRACKET

SHEET NUMBER: VZWSMART–PLK3 | REV #: 0





PL375-857

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-MSK1 (CROSSOVER PLATE)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-857	PL 3/8" X 8 1/2" X 0'-7" A36	MSK1-F1	6
2	4	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	5
3	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	8	LW-625	5/8" HDG LOCK WASHER	---	0
5	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	14

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

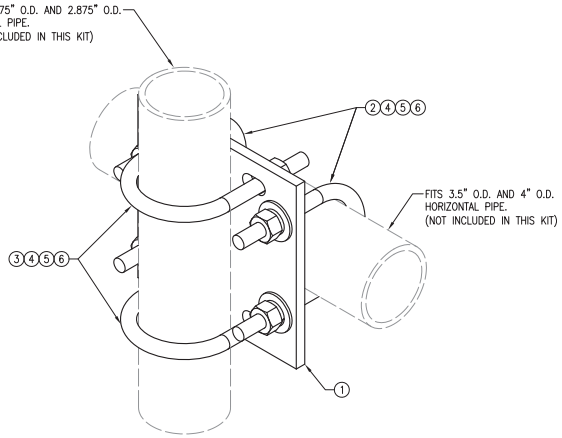
DRAWN BY: H.R | CHECKED BY: HMA

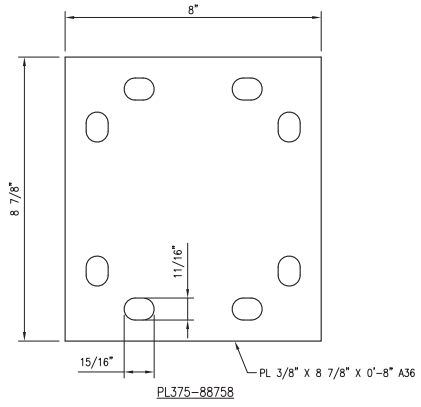
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:

VZWSMART-MSK1
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK1 | REV #: 0





PL375-88758

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-MSK2 (CROSSOVER PLATE)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-88758	PL 3/8" X 8 3/4" X 0'-8" A36	MSK2-F1	8
2	2	MS02-625-4125-600	RU-BOLT 5/8" X 4 1/8" I.W. X 6" I.L. A36 (OR EQUIV.)	RBC-1	3
3	2	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	3
4	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
5	8	LW-625	5/8" HDG LOCK WASHER	---	0
6	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	15

VzW SMART Tool© Vendor

verizon

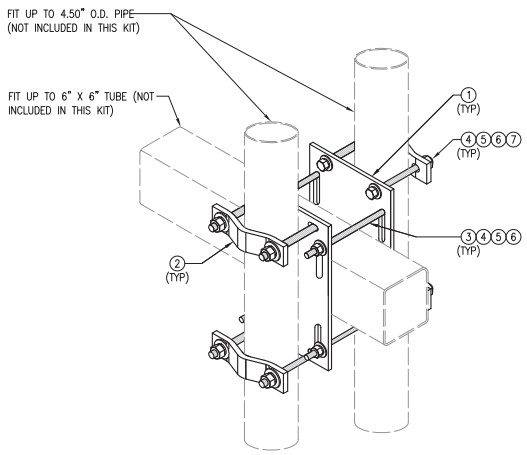
FOR REFERENCE ONLY

DRAWN BY: H.R | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART-MSK2
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK2 | REV #: 0



ISOMETRIC VIEW
BACK TO BACK CROSSOVER

VZWSMART–MSK6 (VZWSMART–MSK6 – BACK TO BACK CROSSOVER)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	2	PL375–8512	PL 3/8" X 8 1/2" X 1'–0" A36	MSK6–F2	20.7
2	4	VCP	PL 1/2" X 2" X 8 5/8" A36 BENT PLATE	MSK6–F1	9.6
3	4	---	THREADED ROD 5/8" DIA. X 10" F1554–36 HDG	---	---
4	16	NUT–625	5/8" HDG HEX NUT	---	2
5	16	FW–625	5/8" HDG USS FLAT WASHER	---	1
6	16	LW–625	5/8" HDG LOCK WASHER	---	0
7	8	---	BOLT 5/8" X 6" SAE GRADE 5 ALL THREAD	---	1
				GALVANIZED WT	34

NOTES:
1. HOT–DIPPED GALVANIZED PER ASTM A123.

VzW SMART Tool© Vendor

verizon

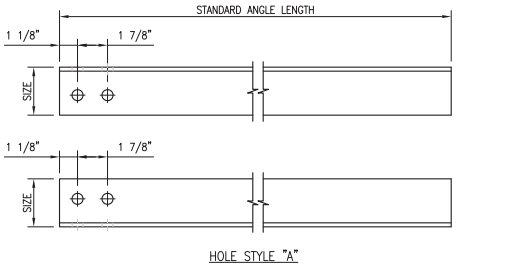
FOR REFERENCE ONLY

DRAWN BY: SK | CHECKED BY: BT/KW

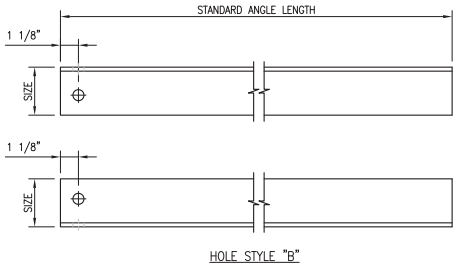
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	SK	05/08/20

SHEET TITLE:
VZWSMART–MSK6
BACK TO BACK
CROSSOVER

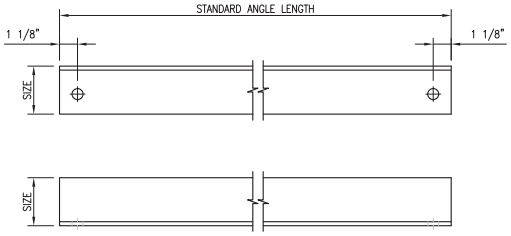
SHEET NUMBER: VZWSMART–MSK6 | REV #: 0



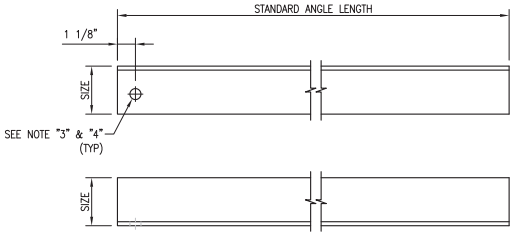
HOLE STYLE "A"



HOLE STYLE "B"



HOLE STYLE "C"



HOLE STYLE "D"

VZWSMART Standard Angle					
VZWSMART Number	Size	Length	Hole Style	Hole Gage	Also Used In:
A-PLK2-01	L 3" X 3" X 1/4"	96"	A	1-3/4"	VZWSMART-PLK2
A-PLK5-01	L 3"X 3" X 3/16"	96"	B	1-3/4"	VZWSMART-PLK5
A-SFK3-01	L 2-1/2" X 2-1/2" X 1/4"	96"	C	1-3/4"	VZWSMART-SFK3,-SFK3-SL, -PLK6, & -PLK8
A-L25X25X4X120	L 2-1/2" X 2-1/2" X 1/4"	120"	D	1-5/16"	
A-L25X25X4X240	L 2-1/2" X 2-1/2" X 1/4"	240"	D	1-5/16"	
A-L30X30X4X120	L 3" X 3" X 1/4"	120"	D	1-1/2"	
A-L30X30X4X240	L 3" X 3" X 1/4"	240"	D	1-1/2"	
A-L40X40X4X120	L 4" X 4" X 1/4"	120"	D	2"	
A-L40X40X4X240	L 4" X 4" X 1/4"	240"	D	2"	
A-L50X30X6X120	L 5" X 3" X 3/8"	120"	D	2-1/2"	
A-L50X50X6X120	L 5" X 5" X 3/8"	120"	D	2-1/2"	

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION ANGLES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL ANGLE GRADE A36 OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

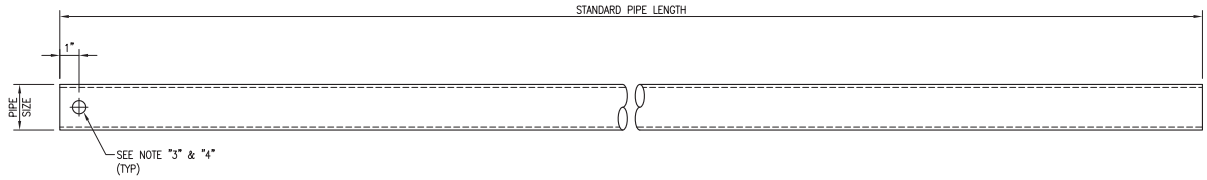
DRAWN BY: BT	CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD ANGLE

SHEET NUMBER: VZWSMART-ANGLE

REV #: 0



VZWSMART Standard Pipe		
VZWSMART Number	Size	Length
P40-238X048	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	48"
P40-238X072	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	72"
P40-238X096	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	96"
P40-238X120	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	120"
P40-238X126	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	126"
P40-238X150	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	150"
P40-238X174	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	174"
P40-278X048	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	48"
P40-278X072	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	72"
P40-278X096	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	96"
P40-278X120	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	120"
P40-278X126	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	126"
P40-278X150	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	150"
P40-278X174	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	174"
P40-312X048	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	48"
P40-312X072	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	72"
P40-312X126	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	126"
P40-312X150	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	150"
P40-312X174	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	174"

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION PIPES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL PIPE GRADE A53-B OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

DRAWN BY: BT	CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE

REV #: 0

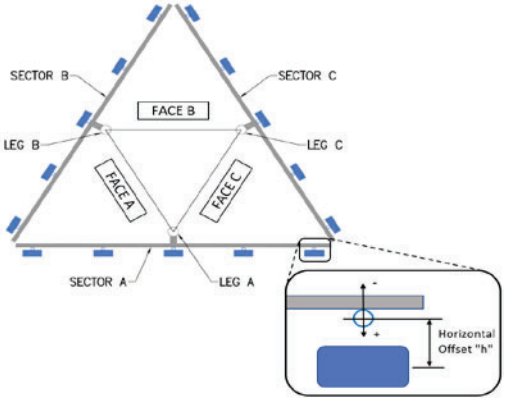
V4.0 Updated on 3-31-2021

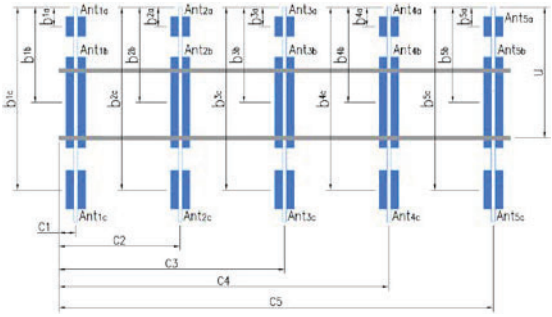
Antenna Mount Mapping Form (PATENT PENDING)

FCC #

Tower Owner:	OTHER	**Mapping Date:**	4/28/2021
Site Name:	TORRINGTON S CT	**Tower Type:**	Monopole
Site Number or ID:	467790	**Tower Height (Ft.):**	160
Mapping Contractor:	HUDSON DESIGN GROUP, LLC.	**Mount Elevation (Ft.):**	141.92

Please insert the sketches of the antenna mount from the "Sketches" tab with dimensions and members here.





Antenna Layout (Looking Out From Tower)

Mount Pipe Configuration and Geometries [Unit = Inches]

Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."
A1	2" E.H. PIPE X 72" LONG	40.00	8.00	C1	2" E.H. PIPE X 72" LONG	40.00	8.00
A2	2" E.H. PIPE X 72" LONG	40.00	76.00	C2	2" E.H. PIPE X 72" LONG	40.00	76.00
A3	2" E.H. PIPE X 72" LONG	40.00	127.00	C3	2" E.H. PIPE X 72" LONG	40.00	127.00
A4	2" E.H. PIPE X 72" LONG	40.00	151.00	C4	2" E.H. PIPE X 72" LONG	40.00	151.00
A5				C5			
A6				C6			
B1	2" E.H. PIPE X 72" LONG	40.00	8.00	D1			
B2	2" E.H. PIPE X 72" LONG	40.00	76.00	D2			
B3	2" E.H. PIPE X 72" LONG	40.00	127.00	D3			
B4	2" E.H. PIPE X 72" LONG	40.00	151.00	D4			
B5				D5			
B6				D6			

Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :	
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	2.83
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	6.58
Please enter additional infomation or comments below.	

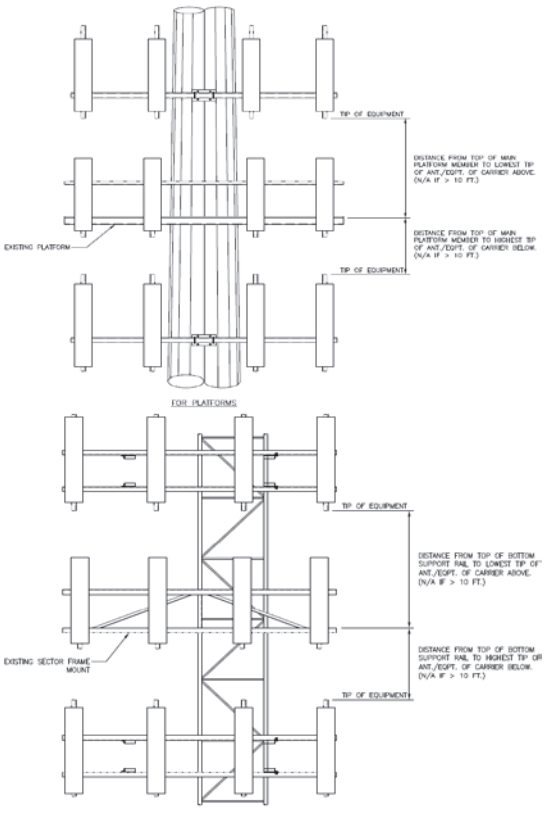
Tower Face Width at Mount Elev. (ft.):		Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.):	48
For T-Arms/Platforms on monopoles, report the weld size from the main standoff to the plate bolting into the collar mount.			0.375

	Enter antenna model. If not labeled, enter "Unknown".						Mounting Locations [Units are inches and degrees]			Photos of antennas
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photo Numbers
Sector A										
Ant_{1a}										
Ant_{1b}	SC-E 6014	8.50	8.50	43.00		142.92	28.00	16.00	345.00	57,61
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	SLXW 5512	14.00	10.00	56.00		142.92	28.00	16.00	345.00	56,60
Ant_{2c}										
Ant_{3a}	(2) RFS DIPLEXER					142.753	30.00	0.00		
Ant_{3b}	BXA-171063-12BF	6.00	4.00	72.00		142.92	28.00	16.00	0.00	55,59
Ant_{3c}										48,55
Ant_{4a}										
Ant_{4b}	SC-E 6014	8.50	8.50	43.00		142.92	28.00	16.00	345.00	55,61
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

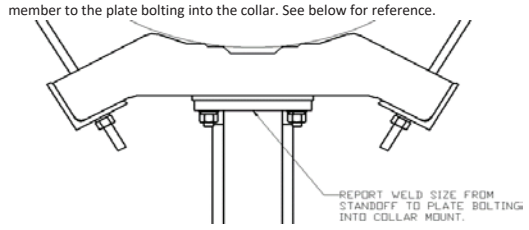
Mount Azimuth (Degree) for Each Sector				Tower Leg Azimuth (Degree) for Each Sector	
Sector A:	0.00	Deg	Leg A:		Deg
Sector B:	120.00	Deg	Leg B:		Deg
Sector C:	240.00	Deg	Leg C:		Deg
Sector D:		Deg	Leg D:		Deg

Climbing Facility Information			
Location:	40.00	Deg	N/A
Climbing Facility	Corrosion Type:		Good condition.
	Access:		Climbing path was unobstructed.
	Condition:		Good condition.

Please insert a photo of the mount centerline measurement here.



For T-Arms/Platforms on monopoles, record the weld size from the main standoff member to the plate bolting into the collar. See below for reference.



Sector B										
Ant_{1a}	GPS ANTENNA					145.253				54
Ant_{1b}	UNKNOWN	15.00	15.00	71.00		142.92	28.00	16.00	140.00	54,61
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	SLXW 5512	14.00	10.00	56.00		142.92	28.00	16.00	140.00	55,60
Ant_{2c}										
Ant_{3a}	(2) RFS DIPLEXER					142.753	30.00	0.00		
Ant_{3b}	BXA-171063-12BF	6.00	4.00	72.00		142.92	28.00	16.00	130.00	52,59
Ant_{3c}										48,52
Ant_{4a}										
Ant_{4b}	UNKNOWN	15.00	15.00	71.00		142.92	28.00	16.00	140.00	52,61
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector C										
Ant_{1a}										
Ant_{1b}	SC-E 6014	8.50	8.50	43.00		142.92	28.00	16.00	240.00	51,61
Ant_{1c}										
Ant_{2a}										
Ant_{2b}	SLXW 5512	14.00	10.00	56.00		142.92	28.00	16.00	250.00	50,60
Ant_{2c}										
Ant_{3a}	(2) RFS DIPLEXER					142.753	30.00	0.00		
Ant_{3b}	BXA-171063-12BF	6.00	4.00	72.00		142.92	28.00	16.00	240.00	49,59
Ant_{3c}										48,49
Ant_{4a}										
Ant_{4b}	SC-E 6014	8.50	8.50	43.00		142.92	28.00	16.00	240.00	49,61
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector D										
Ant_{1a}										
Ant_{1b}										
Ant_{1c}										
Ant_{2a}										
Ant_{2b}										
Ant_{2c}										
Ant_{3a}										
Ant_{3b}										
Ant_{3c}										
Ant_{4a}										
Ant_{4b}										
Ant_{4c}										
Ant_{5a}										
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #
1		
2		
3		
4		
5		
6		
7		
8		

Observed Obstructions to Tower Lighting System					
If the tower lighting system is being obstructed by the carrier's equipment (for example: a light nested by the antennas), please provide photos and fill in the information below.					Photo #
Description of Obstruction:					
Type of Light:		Photo #		Additional Comments:	
Lighting Technology:		Photo #			
Elevation (AGL) at base of light (Ft.):		Photo #			
Is a service loop available?		Photo #			
Is beacon installed on an extension?		Photo #			

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

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

V4.0 Updated on 3-31-2021

Antenna Mount Mapping Form (PATENT PENDING)

FCC #

Tower Owner:	OTHER	**Mapping Date:**	4/28/2021
Site Name:	TORRINGTON S CT	**Tower Type:**	Monopole
Site Number or ID:	467790	**Tower Height (Ft.):**	160
Mapping Contractor:	HUDSON DESIGN GROUP, LLC.	**Mount Elevation (Ft.):**	141.92

Please Insert Sketches of the Antenna Mount

5/3/2021

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

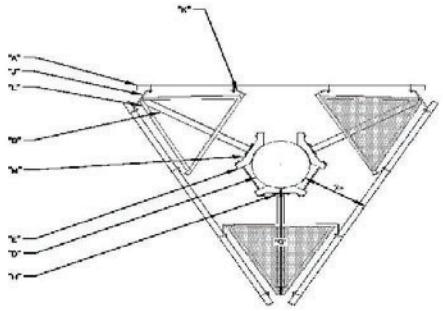
MOUNT MAPPING CHECKLIST

CARRIER:	COLLIER	SITE #:	Torrington S CT	SITE NAME:	
DATE:	4/28/2021	MAPPED BY:	JC	SITE OWNER:	CROWN CASTLE

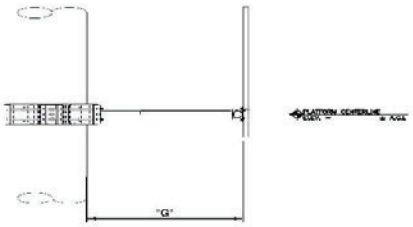
DESCRIPTION	STATUS	Value
A: FACE PIPE CONFIG.	☐	ROUND MAST
SIZE		3-1/2"
LENGTH		159"
B: STAND OFF SIZE	☐	4"x 4"
C: ANTENNA PIPE MAST	☐	3/16"
DIA.		2-3/8"
LENGTH		72"
D: MONOPOLE DIA.	☐	48"
E: RINGMOUNT	☐	10"x 3/8"
F: TOWER TO FACE	☐	33"
G: TOWER TO APEX	☐	69"
H: HARDWARE	☐	5/8"Ø
I: U-BOLTS	☐	1/2"Ø
J: A PLATE	☐	6"x 12"x 3-1/2"x 1/2"
K: B PLATE	☐	6"x 5-1/2"x 3"x 3/8"
L: ANGLE	☐	2"X2"X3/16"
M: MOUNTING PLATE	☐	10"x 10"x 5/8"
N: ALPHA POS 1	☐	SC-E 6014
ALPHA POS 2	☐	SLXW 5512
ALPHA POS 3	☐	BXA-171063-12BF
ALPHA POS 4	☐	SC-E 6014
ALPHA POS 5		
O: BETA POS 1	☐	15-15-71
BETA POS 2	☐	SLXW 5512
BETA POS 3	☐	BXA-171063-12BF
BETA POS 4	☐	15-15-71
BETA POS 5		
P: GAMMA POS 1	☐	SC-E 6014
GAMMA POS 2	☐	SLXW 5512
GAMMA POS 3	☐	BXA-171063-12BF
GAMMA POS 4	☐	SC-E 6014
GAMMA POS 5		
Q: TMA	☐	(6) RFS Diplexers
R: RADIOS	☐	
S: SURGE	☐	
T: SECOND MOUNT	☐	

COMMENTS:

Legend



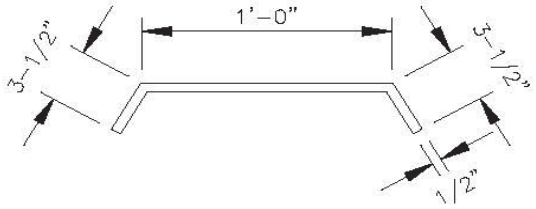
PLAN



ELEVATION

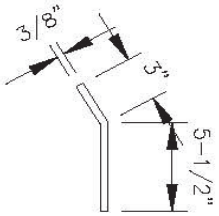
FACE SKETCH

Please Insert Sketches of the Antenna Mount, cont'd



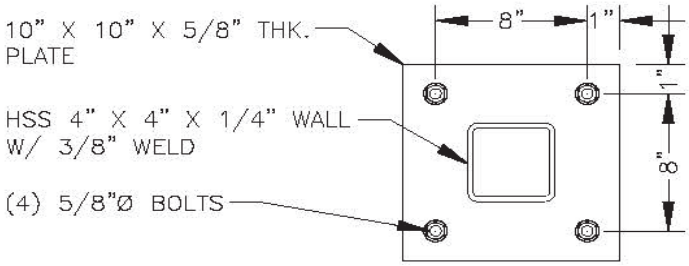
DETAIL J

APEX "A" PLATE DETAIL

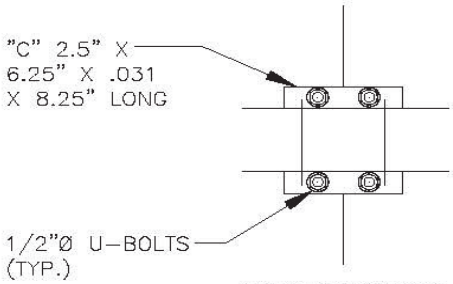


DETAIL K

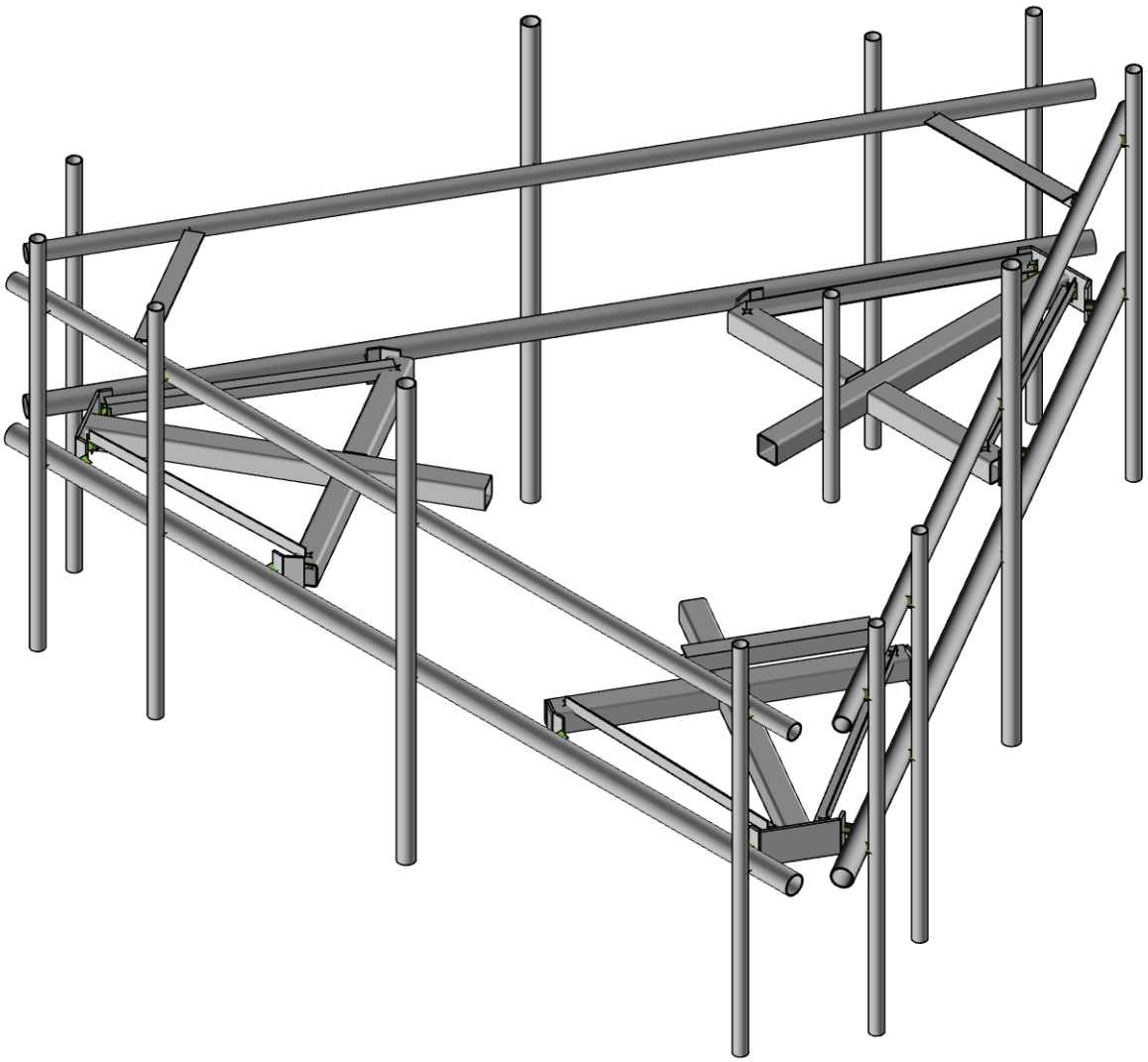
"B" PLATE DETAIL



DETAIL M

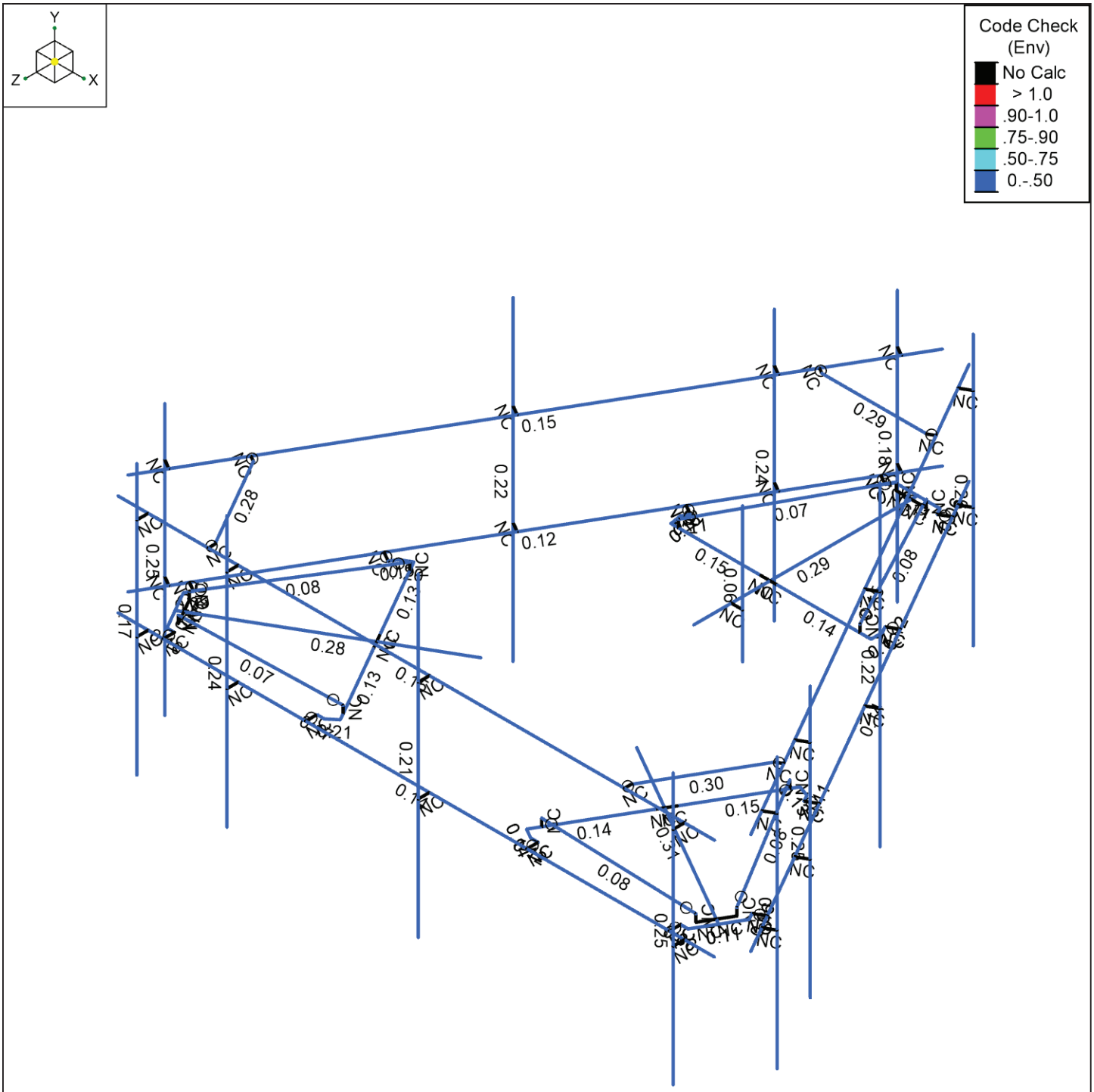


CROSSOVER PLATE DETAIL



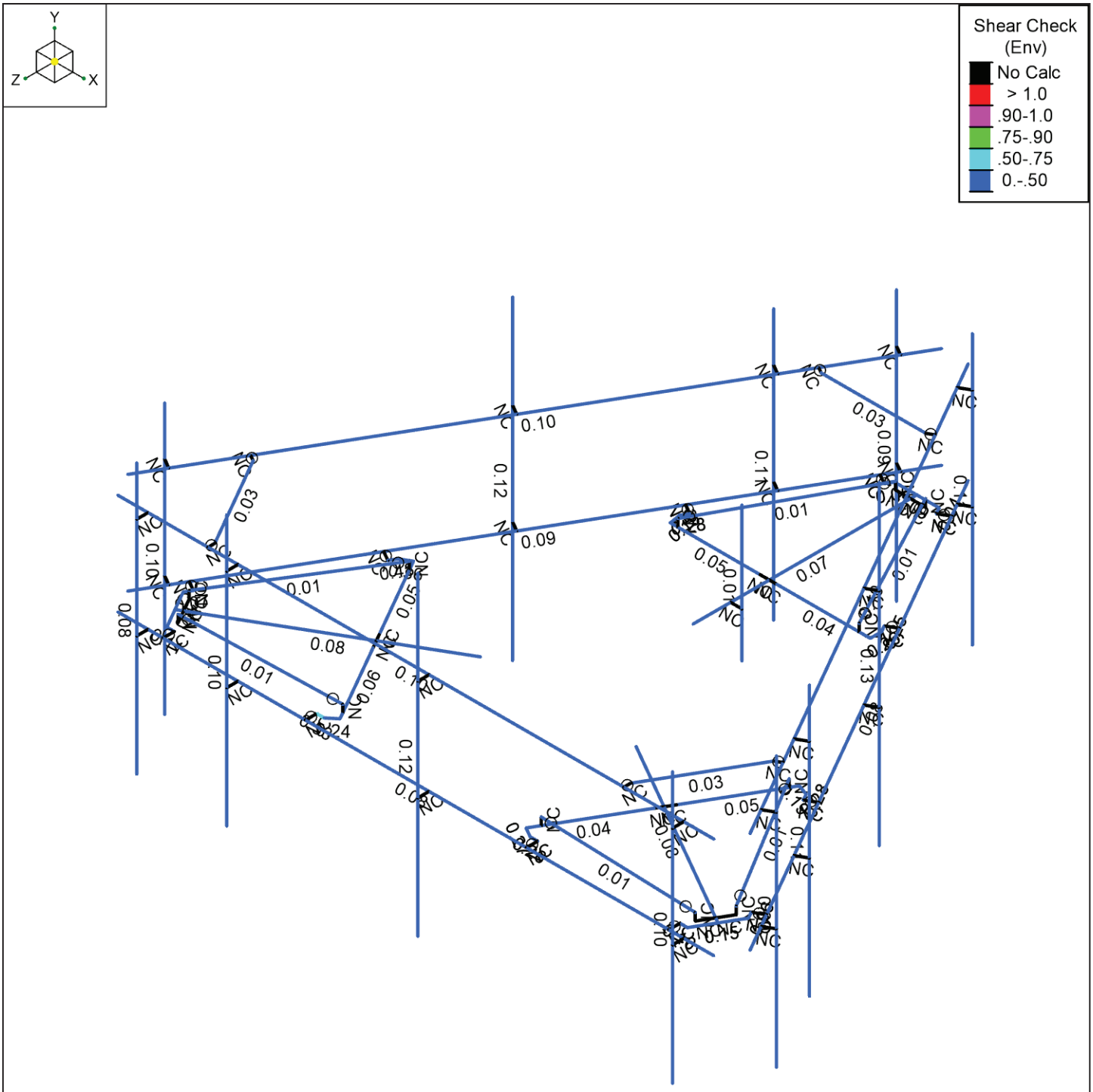
Envelope Only Solution

Colliers Engineering & Design	Mount Modification ReDesign	SK-1
NL		Nov 15, 2023
21777830A (Rev. 1)		5000247545-VZW_MT_LO_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Colliers Engineering & Design	Mount Modification ReDesign	SK-2
NL		Nov 15, 2023
21777830A (Rev. 1)		5000247545-VZW_MT_LO_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Colliers Engineering & Design	Mount Modification ReDesign	SK-3
NL		Nov 15, 2023
21777830A (Rev. 1)		5000247545-VZW_MT_LO_H.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	Q235	29000	11154	0.3	0.65	0.49	35	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Face Horizontal	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Standoff Horizontal	HSS4X4X4	Beam	SquareTube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
3	Corner Plate	PL1/2X6	Beam	RECT	A36 Gr.36	Typical	3	0.063	9	0.237
4	Platform Crossmember	HSS4X4X4	Beam	SquareTube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
5	Grating Support	L2X2X3	Beam	Single Angle	A36 Gr.36	Typical	0.722	0.271	0.271	0.009
6	Mount Pipe	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
7	Cross Arm Plate	PL3/8X6	Column	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
8	OVP Pipe	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
9	Dual Mount Pipe	PIPE 2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
10	Support Rail	PIPE 2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
11	Support Rail Corner	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N4	N3		Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
2	M2	N8	N7		Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
3	M3	N12	N11		Face Horizontal	Beam	Pipe	A53 Gr.B	Typical
4	M4	N11A	N15		RIGID	None	None	RIGID	Typical
5	M5	N14	N18		RIGID	None	None	RIGID	Typical
6	M6	N13	N17		RIGID	None	None	RIGID	Typical
7	M7	N12A	N16		RIGID	None	None	RIGID	Typical
8	M8	N15	N19		Corner Plate	Beam	RECT	A36 Gr.36	Typical
9	M9	N16	N20		Corner Plate	Beam	RECT	A36 Gr.36	Typical
10	M10	N17	N22		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
11	M11	N18	N21		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
12	M12	N21	N23		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
13	M13	N22	N24		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
14	M14	N26	N30		RIGID	None	None	RIGID	Typical
15	M15	N29	N33		RIGID	None	None	RIGID	Typical
16	M16	N28	N32		RIGID	None	None	RIGID	Typical
17	M17	N27	N31		RIGID	None	None	RIGID	Typical
18	M18	N30	N34		Corner Plate	Beam	RECT	A36 Gr.36	Typical
19	M19	N31	N35		Corner Plate	Beam	RECT	A36 Gr.36	Typical
20	M20	N32	N37		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
21	M21	N33	N36		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
22	M22	N36	N38		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
23	M23	N37	N39		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
24	M24	N41	N45		RIGID	None	None	RIGID	Typical
25	M25	N44	N48		RIGID	None	None	RIGID	Typical
26	M26	N43	N47		RIGID	None	None	RIGID	Typical
27	M27	N42	N46		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
28	M28	N45	N49		Corner Plate	Beam	RECT	A36 Gr.36	Typical
29	M29	N46	N50		Corner Plate	Beam	RECT	A36 Gr.36	Typical
30	M30	N47	N52		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
31	M31	N48	N51		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
32	M32	N51	N53		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
33	M33	N52	N54		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
34	M34	N19	N50		Corner Plate	Beam	RECT	A36 Gr.36	Typical
35	M35	N20	N34		Corner Plate	Beam	RECT	A36 Gr.36	Typical
36	M36	N35	N49		Corner Plate	Beam	RECT	A36 Gr.36	Typical
37	M41	N60	N61		Standoff Horizontal	Beam	SquareTube	A500 Gr.B Rect	Typical
38	M39	N57	N61A		RIGID	None	None	RIGID	Typical
39	M39A	N23	N59		Platform Crossmember	Beam	SquareTube	A500 Gr.B Rect	Typical
40	M40	N59	N57		RIGID	None	None	RIGID	Typical
41	M41A	N61A	N54		Platform Crossmember	Beam	SquareTube	A500 Gr.B Rect	Typical
42	M42	N64	N62A		RIGID	None	None	RIGID	Typical
43	M43	N62A	N63		RIGID	None	None	RIGID	Typical
44	M44	N64	N68		RIGID	None	None	RIGID	Typical
45	M45	N63	N67		RIGID	None	None	RIGID	Typical
46	M46	N58A	N65		RIGID	None	None	RIGID	Typical
47	M47	N60A	N66		RIGID	None	None	RIGID	Typical
48	M48	N65	N68		Grating Support	Beam	Single Angle	A36 Gr.36	Typical
49	M49	N66	N67	90	Grating Support	Beam	Single Angle	A36 Gr.36	Typical
50	M50	N26	N30		RIGID	None	None	RIGID	Typical
51	M51	N29	N33		RIGID	None	None	RIGID	Typical
52	M52	N30	N34		Corner Plate	Beam	RECT	A36 Gr.36	Typical
53	M53	N33	N36		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
54	M54	N36	N38		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
55	M55	N13	N17		RIGID	None	None	RIGID	Typical
56	M56	N12A	N16		RIGID	None	None	RIGID	Typical
57	M57	N16	N20		Corner Plate	Beam	RECT	A36 Gr.36	Typical
58	M58	N17	N22		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
59	M59	N22	N24		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
60	M60	N34	N20		Corner Plate	Beam	RECT	A36 Gr.36	Typical
61	M61	N62	N85		Standoff Horizontal	Beam	SquareTube	A500 Gr.B Rect	Typical
62	M62	N86	N90		RIGID	None	None	RIGID	Typical
63	M63	N38	N88		Platform Crossmember	Beam	SquareTube	A500 Gr.B Rect	Typical
64	M64	N88	N86		RIGID	None	None	RIGID	Typical
65	M65	N90	N24		Platform Crossmember	Beam	SquareTube	A500 Gr.B Rect	Typical
66	M66	N93	N91		RIGID	None	None	RIGID	Typical
67	M67	N91	N92		RIGID	None	None	RIGID	Typical
68	M68	N93	N97		RIGID	None	None	RIGID	Typical
69	M69	N92	N96		RIGID	None	None	RIGID	Typical
70	M70	N87	N94		RIGID	None	None	RIGID	Typical
71	M71	N89	N95		RIGID	None	None	RIGID	Typical
72	M72	N94	N97		Grating Support	Beam	Single Angle	A36 Gr.36	Typical
73	M73	N95	N96	270	Grating Support	Beam	Single Angle	A36 Gr.36	Typical
74	M74	N41	N45		RIGID	None	None	RIGID	Typical
75	M75	N44	N48		RIGID	None	None	RIGID	Typical
76	M76	N45	N49		Corner Plate	Beam	RECT	A36 Gr.36	Typical
77	M77	N48	N51		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
78	M78	N51	N53		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
79	M79	N28	N32		RIGID	None	None	RIGID	Typical
80	M80	N27	N31		RIGID	None	None	RIGID	Typical
81	M81	N31	N35		Corner Plate	Beam	RECT	A36 Gr.36	Typical
82	M82	N32	N37		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
83	M83	N37	N39		Cross Arm Plate	Column	RECT	A36 Gr.36	Typical
84	M84	N49	N35		Corner Plate	Beam	RECT	A36 Gr.36	Typical
85	M85	N58	N114		Standoff Horizontal	Beam	SquareTube	A500 Gr.B Rect	Typical
86	M86	N115	N119		RIGID	None	None	RIGID	Typical
87	M87	N53	N117		Platform Crossmember	Beam	SquareTube	A500 Gr.B Rect	Typical
88	M88	N117	N115		RIGID	None	None	RIGID	Typical
89	M89	N119	N39		Platform Crossmember	Beam	SquareTube	A500 Gr.B Rect	Typical
90	M90	N122	N120		RIGID	None	None	RIGID	Typical
91	M91	N120	N121		RIGID	None	None	RIGID	Typical
92	M92	N122	N126		RIGID	None	None	RIGID	Typical
93	M93	N121	N125		RIGID	None	None	RIGID	Typical
94	M94	N116	N123		RIGID	None	None	RIGID	Typical
95	M95	N118	N124		RIGID	None	None	RIGID	Typical
96	M96	N123	N126		Grating Support	Beam	Single Angle	A36 Gr.36	Typical
97	M97	N124	N125	270	Grating Support	Beam	Single Angle	A36 Gr.36	Typical
98	M98	N95A	N99		RIGID	None	None	RIGID	Typical
99	M99	N96A	N100		RIGID	None	None	RIGID	Typical
100	M100	N97A	N101		RIGID	None	None	RIGID	Typical
101	M101	N98	N102		RIGID	None	None	RIGID	Typical
102	MP1A	N103	N107		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
103	MP2A	N104	N108		Dual Mount Pipe	Column	Pipe	A53 Gr.B	Typical
104	MP3A	N105	N109		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
105	MP4A	N106	N110		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
106	M106	N112	N116A		RIGID	None	None	RIGID	Typical
107	M107	N113	N117A		RIGID	None	None	RIGID	Typical
108	M108	N114A	N118A		RIGID	None	None	RIGID	Typical
109	M109	N115A	N119A		RIGID	None	None	RIGID	Typical
110	MP1C	N120A	N124A		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
111	MP2C	N121A	N125A		Dual Mount Pipe	Column	Pipe	A53 Gr.B	Typical
112	MP3C	N122A	N126A		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
113	MP4C	N123A	N127		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
114	M114	N129	N133		RIGID	None	None	RIGID	Typical
115	M115	N130	N134		RIGID	None	None	RIGID	Typical
116	M116	N131	N135		RIGID	None	None	RIGID	Typical
117	M117	N132	N136		RIGID	None	None	RIGID	Typical
118	MP1B	N137	N141		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
119	MP2B	N138	N142		Dual Mount Pipe	Column	Pipe	A53 Gr.B	Typical
120	MP3B	N139	N143		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
121	MP4B	N140	N144		Mount Pipe	Column	Pipe	A53 Gr.B	Typical
122	M122	N145	N146		OVP Pipe	Column	Pipe	A53 Gr.B	Typical
123	M123	N143A	N144A		RIGID	None	None	RIGID	Typical
124	M124	N148	N147		Support Rail	Beam	Pipe	A53 Gr.B	Typical
125	M125	N149	N153		RIGID	None	None	RIGID	Typical
126	M126	N150	N154		RIGID	None	None	RIGID	Typical
127	M127	N151	N155		RIGID	None	None	RIGID	Typical
128	M128	N152	N156		RIGID	None	None	RIGID	Typical
129	M129	N157	N158		RIGID	None	None	RIGID	Typical
130	M130	N159	N160		RIGID	None	None	RIGID	Typical
131	M131	N162	N161		Support Rail	Beam	Pipe	A53 Gr.B	Typical
132	M132	N163	N167		RIGID	None	None	RIGID	Typical
133	M133	N164	N168		RIGID	None	None	RIGID	Typical
134	M134	N165	N169		RIGID	None	None	RIGID	Typical
135	M135	N166	N170		RIGID	None	None	RIGID	Typical
136	M136	N171	N172		RIGID	None	None	RIGID	Typical
137	M137	N173	N174		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
138	M138	N176	N175		Support Rail	Beam	Pipe	A53 Gr.B	Typical
139	M139	N177	N181		RIGID	None	None	RIGID	Typical
140	M140	N178	N182		RIGID	None	None	RIGID	Typical
141	M141	N179	N183		RIGID	None	None	RIGID	Typical
142	M142	N180	N184		RIGID	None	None	RIGID	Typical
143	M143	N185	N186		RIGID	None	None	RIGID	Typical
144	M144	N187	N188		RIGID	None	None	RIGID	Typical
145	M145	N158	N188	90	Support Rail Corner	Beam	Single Angle	A36 Gr.36	Typical
146	M146	N186	N174	90	Support Rail Corner	Beam	Single Angle	A36 Gr.36	Typical
147	M147	N172	N160	90	Support Rail Corner	Beam	Single Angle	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M1			Yes	N/A	None
2	M2			Yes	N/A	None
3	M3			Yes	N/A	None
4	M4	BenPIN		Yes	** NA **	None
5	M5	BenPIN		Yes	** NA **	None
6	M6	BenPIN		Yes	** NA **	None
7	M7	BenPIN		Yes	** NA **	None
8	M8			Yes	N/A	None
9	M9			Yes	N/A	None
10	M10			Yes	** NA **	None
11	M11			Yes	** NA **	None
12	M12			Yes	** NA **	None
13	M13			Yes	** NA **	None
14	M14	BenPIN		Yes	** NA **	None
15	M15	BenPIN		Yes	** NA **	None
16	M16	BenPIN		Yes	** NA **	None
17	M17	BenPIN		Yes	** NA **	None
18	M18			Yes	N/A	None
19	M19			Yes	N/A	None
20	M20			Yes	** NA **	None
21	M21			Yes	** NA **	None
22	M22			Yes	** NA **	None
23	M23			Yes	** NA **	None
24	M24	BenPIN		Yes	** NA **	None
25	M25	BenPIN		Yes	** NA **	None
26	M26	BenPIN		Yes	** NA **	None
27	M27	BenPIN		Yes	** NA **	None
28	M28			Yes	N/A	None
29	M29			Yes	N/A	None
30	M30			Yes	** NA **	None
31	M31			Yes	** NA **	None
32	M32			Yes	** NA **	None
33	M33			Yes	** NA **	None
34	M34			Yes	N/A	None
35	M35			Yes	N/A	None
36	M36			Yes	N/A	None
37	M41			Yes	N/A	None
38	M39			Yes	** NA **	None
39	M39A			Yes	N/A	None
40	M40			Yes	** NA **	None
41	M41A			Yes	N/A	None
42	M42			Yes	** NA **	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
43	M43			Yes	** NA **	None
44	M44			Yes	** NA **	None
45	M45			Yes	** NA **	None
46	M46			Yes	** NA **	None
47	M47			Yes	** NA **	None
48	M48	OOOOOX	OOOOOX	Yes	N/A	None
49	M49	OOOOXO	OOOOXO	Yes	Default	None
50	M50	BenPIN		Yes	** NA **	None
51	M51	BenPIN		Yes	** NA **	None
52	M52			Yes	N/A	None
53	M53			Yes	** NA **	None
54	M54			Yes	** NA **	None
55	M55	BenPIN		Yes	** NA **	None
56	M56	BenPIN		Yes	** NA **	None
57	M57			Yes	N/A	None
58	M58			Yes	** NA **	None
59	M59			Yes	** NA **	None
60	M60			Yes	N/A	None
61	M61			Yes	N/A	None
62	M62			Yes	** NA **	None
63	M63			Yes	N/A	None
64	M64			Yes	** NA **	None
65	M65			Yes	N/A	None
66	M66			Yes	** NA **	None
67	M67			Yes	** NA **	None
68	M68			Yes	** NA **	None
69	M69			Yes	** NA **	None
70	M70			Yes	** NA **	None
71	M71			Yes	** NA **	None
72	M72	OOOOOX	OOOOOX	Yes	N/A	None
73	M73	OOOOXO	OOOOXO	Yes	Default	None
74	M74	BenPIN		Yes	** NA **	None
75	M75	BenPIN		Yes	** NA **	None
76	M76			Yes	N/A	None
77	M77			Yes	** NA **	None
78	M78			Yes	** NA **	None
79	M79	BenPIN		Yes	** NA **	None
80	M80	BenPIN		Yes	** NA **	None
81	M81			Yes	N/A	None
82	M82			Yes	** NA **	None
83	M83			Yes	** NA **	None
84	M84			Yes	N/A	None
85	M85			Yes	N/A	None
86	M86			Yes	** NA **	None
87	M87			Yes	N/A	None
88	M88			Yes	** NA **	None
89	M89			Yes	N/A	None
90	M90			Yes	** NA **	None
91	M91			Yes	** NA **	None
92	M92			Yes	** NA **	None
93	M93			Yes	** NA **	None
94	M94			Yes	** NA **	None
95	M95			Yes	** NA **	None
96	M96	OOOOOX	OOOOOX	Yes	N/A	None
97	M97	OOOOXO	OOOOXO	Yes	Default	None

Member Advanced Data (Continued)

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
98	M98			Yes	** NA **	None
99	M99			Yes	** NA **	None
100	M100			Yes	** NA **	None
101	M101			Yes	** NA **	None
102	MP1A			Yes	** NA **	None
103	MP2A			Yes	** NA **	None
104	MP3A			Yes	** NA **	None
105	MP4A			Yes	** NA **	None
106	M106			Yes	** NA **	None
107	M107			Yes	** NA **	None
108	M108			Yes	** NA **	None
109	M109			Yes	** NA **	None
110	MP1C			Yes	** NA **	None
111	MP2C			Yes	** NA **	None
112	MP3C			Yes	** NA **	None
113	MP4C			Yes	** NA **	None
114	M114			Yes	** NA **	None
115	M115			Yes	** NA **	None
116	M116			Yes	** NA **	None
117	M117			Yes	** NA **	None
118	MP1B			Yes	** NA **	None
119	MP2B			Yes	** NA **	None
120	MP3B			Yes	** NA **	None
121	MP4B			Yes	** NA **	None
122	M122			Yes	** NA **	None
123	M123			Yes	** NA **	None
124	M124			Yes	N/A	None
125	M125			Yes	** NA **	None
126	M126			Yes	** NA **	None
127	M127			Yes	** NA **	None
128	M128			Yes	** NA **	None
129	M129	OOOOOX		Yes	** NA **	None
130	M130	OOOOOX		Yes	** NA **	None
131	M131			Yes	N/A	None
132	M132			Yes	** NA **	None
133	M133			Yes	** NA **	None
134	M134			Yes	** NA **	None
135	M135			Yes	** NA **	None
136	M136	OOOOOX		Yes	** NA **	None
137	M137	OOOOOX		Yes	** NA **	None
138	M138			Yes	N/A	None
139	M139			Yes	** NA **	None
140	M140			Yes	** NA **	None
141	M141			Yes	** NA **	None
142	M142			Yes	** NA **	None
143	M143	OOOOOX		Yes	** NA **	None
144	M144	OOOOOX		Yes	** NA **	None
145	M145			Yes	N/A	None
146	M146			Yes	N/A	None
147	M147			Yes	N/A	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	M1	Face Horizontal	13.25	Lbyy	N/A	N/A	Lateral
2	M2	Face Horizontal	13.25	Lbyy	N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
3	M3	Face Horizontal	13.25	Lbyy	N/A	N/A	Lateral
4	M8	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
5	M9	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
6	M10	Cross Arm Plate	0.167		N/A	N/A	Lateral
7	M11	Cross Arm Plate	0.167		N/A	N/A	Lateral
8	M12	Cross Arm Plate	0.25		N/A	N/A	Lateral
9	M13	Cross Arm Plate	0.25		N/A	N/A	Lateral
10	M18	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
11	M19	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
12	M20	Cross Arm Plate	0.167		N/A	N/A	Lateral
13	M21	Cross Arm Plate	0.167		N/A	N/A	Lateral
14	M22	Cross Arm Plate	0.25		N/A	N/A	Lateral
15	M23	Cross Arm Plate	0.25		N/A	N/A	Lateral
16	M28	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
17	M29	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
18	M30	Cross Arm Plate	0.167		N/A	N/A	Lateral
19	M31	Cross Arm Plate	0.167		N/A	N/A	Lateral
20	M32	Cross Arm Plate	0.25		N/A	N/A	Lateral
21	M33	Cross Arm Plate	0.25		N/A	N/A	Lateral
22	M34	Corner Plate	0.992	Lbyy	N/A	N/A	Lateral
23	M35	Corner Plate	0.992	Lbyy	N/A	N/A	Lateral
24	M36	Corner Plate	0.992	Lbyy	N/A	N/A	Lateral
25	M41	Standoff Horizontal	4.974	Lbyy	N/A	N/A	Lateral
26	M39A	Platform Crossmember	2	Lbyy	N/A	N/A	Lateral
27	M41A	Platform Crossmember	2.079	Lbyy	N/A	N/A	Lateral
28	M48	Grating Support	3.569	Lbyy	N/A	N/A	Lateral
29	M49	Grating Support	3.555	Lbyy	N/A	N/A	Lateral
30	M52	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
31	M53	Cross Arm Plate	0.167		N/A	N/A	Lateral
32	M54	Cross Arm Plate	0.25		N/A	N/A	Lateral
33	M57	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
34	M58	Cross Arm Plate	0.167		N/A	N/A	Lateral
35	M59	Cross Arm Plate	0.25		N/A	N/A	Lateral
36	M60	Corner Plate	0.992	Lbyy	N/A	N/A	Lateral
37	M61	Standoff Horizontal	4.974	Lbyy	N/A	N/A	Lateral
38	M63	Platform Crossmember	2	Lbyy	N/A	N/A	Lateral
39	M65	Platform Crossmember	2.079	Lbyy	N/A	N/A	Lateral
40	M72	Grating Support	3.569	Lbyy	N/A	N/A	Lateral
41	M73	Grating Support	3.555	Lbyy	N/A	N/A	Lateral
42	M76	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
43	M77	Cross Arm Plate	0.167		N/A	N/A	Lateral
44	M78	Cross Arm Plate	0.25		N/A	N/A	Lateral
45	M81	Corner Plate	0.167	Lbyy	N/A	N/A	Lateral
46	M82	Cross Arm Plate	0.167		N/A	N/A	Lateral
47	M83	Cross Arm Plate	0.25		N/A	N/A	Lateral
48	M84	Corner Plate	0.992	Lbyy	N/A	N/A	Lateral
49	M85	Standoff Horizontal	4.974	Lbyy	N/A	N/A	Lateral
50	M87	Platform Crossmember	2	Lbyy	N/A	N/A	Lateral
51	M89	Platform Crossmember	2.079	Lbyy	N/A	N/A	Lateral
52	M96	Grating Support	3.569	Lbyy	N/A	N/A	Lateral
53	M97	Grating Support	3.555	Lbyy	N/A	N/A	Lateral
54	MP1A	Mount Pipe	6		N/A	N/A	Lateral
55	MP2A	Dual Mount Pipe	7		N/A	N/A	Lateral
56	MP3A	Mount Pipe	6		N/A	N/A	Lateral
57	MP4A	Mount Pipe	6		N/A	N/A	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
58	MP1C	Mount Pipe	6		N/A	N/A	Lateral
59	MP2C	Dual Mount Pipe	7		N/A	N/A	Lateral
60	MP3C	Mount Pipe	6		N/A	N/A	Lateral
61	MP4C	Mount Pipe	6		N/A	N/A	Lateral
62	MP1B	Mount Pipe	6		N/A	N/A	Lateral
63	MP2B	Dual Mount Pipe	7		N/A	N/A	Lateral
64	MP3B	Mount Pipe	6		N/A	N/A	Lateral
65	MP4B	Mount Pipe	6		N/A	N/A	Lateral
66	M122	OVP Pipe	3		N/A	N/A	Lateral
67	M124	Support Rail	13.25	Lbyy	N/A	N/A	Lateral
68	M131	Support Rail	13.25	Lbyy	N/A	N/A	Lateral
69	M138	Support Rail	13.25	Lbyy	N/A	N/A	Lateral
70	M145	Support Rail Corner	2.332	Lbyy	N/A	N/A	Lateral
71	M146	Support Rail Corner	2.332	Lbyy	N/A	N/A	Lateral
72	M147	Support Rail Corner	2.332	Lbyy	N/A	N/A	Lateral

Design Size and Code Check Parameters

	Label	Max Axial/Bending Chk	Max Shear Chk
1	Typical	1	1

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.2D+1.0Wo (0 Deg)	Yes	Y	1	1.2	39	1.2	3	1	41	1								
2	1.2D+1.0Wo (30 Deg)	Yes	Y	1	1.2	39	1.2	4	1	42	1								
3	1.2D+1.0Wo (60 Deg)	Yes	Y	1	1.2	39	1.2	5	1	43	1								
4	1.2D+1.0Wo (90 Deg)	Yes	Y	1	1.2	39	1.2	6	1	44	1								
5	1.2D+1.0Wo (120 Deg)	Yes	Y	1	1.2	39	1.2	7	1	45	1								
6	1.2D+1.0Wo (150 Deg)	Yes	Y	1	1.2	39	1.2	8	1	46	1								
7	1.2D+1.0Wo (180 Deg)	Yes	Y	1	1.2	39	1.2	9	1	47	1								
8	1.2D+1.0Wo (210 Deg)	Yes	Y	1	1.2	39	1.2	10	1	48	1								
9	1.2D+1.0Wo (240 Deg)	Yes	Y	1	1.2	39	1.2	11	1	49	1								
10	1.2D+1.0Wo (270 Deg)	Yes	Y	1	1.2	39	1.2	12	1	50	1								
11	1.2D+1.0Wo (300 Deg)	Yes	Y	1	1.2	39	1.2	13	1	51	1								
12	1.2D+1.0Wo (330 Deg)	Yes	Y	1	1.2	39	1.2	14	1	52	1								
13	1.2D + 1.0Di + 1.0Wi (0 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	15	1	53	1				
14	1.2D + 1.0Di + 1.0Wi (30 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	16	1	54	1				
15	1.2D + 1.0Di + 1.0Wi (60 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	17	1	55	1				
16	1.2D + 1.0Di + 1.0Wi (90 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	18	1	56	1				
17	1.2D + 1.0Di + 1.0Wi (120 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	19	1	57	1				
18	1.2D + 1.0Di + 1.0Wi (150 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	20	1	58	1				
19	1.2D + 1.0Di + 1.0Wi (180 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	21	1	59	1				
20	1.2D + 1.0Di + 1.0Wi (210 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	22	1	60	1				
21	1.2D + 1.0Di + 1.0Wi (240 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	23	1	61	1				
22	1.2D + 1.0Di + 1.0Wi (270 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	24	1	62	1				
23	1.2D + 1.0Di + 1.0Wi (300 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	25	1	63	1				
24	1.2D + 1.0Di + 1.0Wi (330 Deg)	Yes	Y	1	1.2	39	1.2	2	1	40	1	26	1	64	1				
25	1.2D + 1.5Lm1 + 1.0Wm (0 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	27	1	65	1						
26	1.2D + 1.5Lm1 + 1.0Wm (30 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	28	1	66	1						
27	1.2D + 1.5Lm1 + 1.0Wm (60 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	29	1	67	1						
28	1.2D + 1.5Lm1 + 1.0Wm (90 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	30	1	68	1						
29	1.2D + 1.5Lm1 + 1.0Wm (120 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	31	1	69	1						
30	1.2D + 1.5Lm1 + 1.0Wm (150 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	32	1	70	1						
31	1.2D + 1.5Lm1 + 1.0Wm (180 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	33	1	71	1						

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
32	1.2D + 1.5Lm1 + 1.0Wm (210 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	34	1	72	1						
33	1.2D + 1.5Lm1 + 1.0Wm (240 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	35	1	73	1						
34	1.2D + 1.5Lm1 + 1.0Wm (270 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	36	1	74	1						
35	1.2D + 1.5Lm1 + 1.0Wm (300 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	37	1	75	1						
36	1.2D + 1.5Lm1 + 1.0Wm (330 Deg)	Yes	Y	1	1.2	39	1.2	77	1.5	38	1	76	1						
37	1.2D + 1.5Lm2 + 1.0Wm (0 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	27	1	65	1						
38	1.2D + 1.5Lm2 + 1.0Wm (30 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	28	1	66	1						
39	1.2D + 1.5Lm2 + 1.0Wm (60 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	29	1	67	1						
40	1.2D + 1.5Lm2 + 1.0Wm (90 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	30	1	68	1						
41	1.2D + 1.5Lm2 + 1.0Wm (120 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	31	1	69	1						
42	1.2D + 1.5Lm2 + 1.0Wm (150 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	32	1	70	1						
43	1.2D + 1.5Lm2 + 1.0Wm (180 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	33	1	71	1						
44	1.2D + 1.5Lm2 + 1.0Wm (210 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	34	1	72	1						
45	1.2D + 1.5Lm2 + 1.0Wm (240 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	35	1	73	1						
46	1.2D + 1.5Lm2 + 1.0Wm (270 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	36	1	74	1						
47	1.2D + 1.5Lm2 + 1.0Wm (300 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	37	1	75	1						
48	1.2D + 1.5Lm2 + 1.0Wm (330 Deg)	Yes	Y	1	1.2	39	1.2	78	1.5	38	1	76	1						
49	1.2D + 1.5Lv1	Yes	Y	1	1.2	39	1.2	79	1.5										
50	1.2D + 1.5Lv2	Yes	Y	1	1.2	39	1.2	80	1.5										
51	1.4D	Yes	Y	1	1.4	39	1.4												
52	1.2D + 1.0Ev + 1.0Eh (0 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	1	83		ELZ	1	ELX	
53	1.2D + 1.0Ev + 1.0Eh (30 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.866	83	0.5	ELZ	0.866	ELX	0.5
54	1.2D + 1.0Ev + 1.0Eh (60 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.5	83	0.866	ELZ	0.5	ELX	0.866
55	1.2D + 1.0Ev + 1.0Eh (90 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82		83	1	ELZ		ELX	1
56	1.2D + 1.0Ev + 1.0Eh (120 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.5	83	0.866	ELZ	-0.5	ELX	0.866
57	1.2D + 1.0Ev + 1.0Eh (150 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.866	83	0.5	ELZ	-0.866	ELX	0.5
58	1.2D + 1.0Ev + 1.0Eh (180 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-1	83		ELZ	-1	ELX	
59	1.2D + 1.0Ev + 1.0Eh (210 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.866	83	-0.5	ELZ	-0.866	ELX	-0.5
60	1.2D + 1.0Ev + 1.0Eh (240 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	-0.5	83	-0.866	ELZ	-0.5	ELX	-0.866
61	1.2D + 1.0Ev + 1.0Eh (270 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82		83	-1	ELZ		ELX	-1
62	1.2D + 1.0Ev + 1.0Eh (300 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.5	83	-0.866	ELZ	0.5	ELX	-0.866
63	1.2D + 1.0Ev + 1.0Eh (330 Deg)	Yes	Y	1	1.2	39	1.2	81	1	ELY	1	82	0.866	83	-0.5	ELZ	0.866	ELX	-0.5
64	0.9D - 1.0Ev + 1.0Eh (0 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	1	83		ELZ	1	ELX	
65	0.9D - 1.0Ev + 1.0Eh (30 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.866	83	0.5	ELZ	0.866	ELX	0.5
66	0.9D - 1.0Ev + 1.0Eh (60 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.5	83	0.866	ELZ	0.5	ELX	0.866
67	0.9D - 1.0Ev + 1.0Eh (90 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82		83	1	ELZ		ELX	1
68	0.9D - 1.0Ev + 1.0Eh (120 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.5	83	0.866	ELZ	-0.5	ELX	0.866
69	0.9D - 1.0Ev + 1.0Eh (150 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.866	83	0.5	ELZ	-0.866	ELX	0.5
70	0.9D - 1.0Ev + 1.0Eh (180 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-1	83		ELZ	-1	ELX	
71	0.9D - 1.0Ev + 1.0Eh (210 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.866	83	-0.5	ELZ	-0.866	ELX	-0.5
72	0.9D - 1.0Ev + 1.0Eh (240 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	-0.5	83	-0.866	ELZ	-0.5	ELX	-0.866
73	0.9D - 1.0Ev + 1.0Eh (270 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82		83	-1	ELZ		ELX	-1
74	0.9D - 1.0Ev + 1.0Eh (300 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.5	83	-0.866	ELZ	0.5	ELX	-0.866
75	0.9D - 1.0Ev + 1.0Eh (330 Deg)	Yes	Y	1	0.9	39	0.9	81	-1	ELY	-1	82	0.866	83	-0.5	ELZ	0.866	ELX	-0.5

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
1	Antenna D	None				75		
2	Antenna Di	None				75		
3	Antenna Wo (0 Deg)	None				75		
4	Antenna Wo (30 Deg)	None				75		
5	Antenna Wo (60 Deg)	None				75		
6	Antenna Wo (90 Deg)	None				75		
7	Antenna Wo (120 Deg)	None				75		
8	Antenna Wo (150 Deg)	None				75		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
9	Antenna Wo (180 Deg)	None				75		
10	Antenna Wo (210 Deg)	None				75		
11	Antenna Wo (240 Deg)	None				75		
12	Antenna Wo (270 Deg)	None				75		
13	Antenna Wo (300 Deg)	None				75		
14	Antenna Wo (330 Deg)	None				75		
15	Antenna Wi (0 Deg)	None				75		
16	Antenna Wi (30 Deg)	None				75		
17	Antenna Wi (60 Deg)	None				75		
18	Antenna Wi (90 Deg)	None				75		
19	Antenna Wi (120 Deg)	None				75		
20	Antenna Wi (150 Deg)	None				75		
21	Antenna Wi (180 Deg)	None				75		
22	Antenna Wi (210 Deg)	None				75		
23	Antenna Wi (240 Deg)	None				75		
24	Antenna Wi (270 Deg)	None				75		
25	Antenna Wi (300 Deg)	None				75		
26	Antenna Wi (330 Deg)	None				75		
27	Antenna Wm (0 Deg)	None				75		
28	Antenna Wm (30 Deg)	None				75		
29	Antenna Wm (60 Deg)	None				75		
30	Antenna Wm (90 Deg)	None				75		
31	Antenna Wm (120 Deg)	None				75		
32	Antenna Wm (150 Deg)	None				75		
33	Antenna Wm (180 Deg)	None				75		
34	Antenna Wm (210 Deg)	None				75		
35	Antenna Wm (240 Deg)	None				75		
36	Antenna Wm (270 Deg)	None				75		
37	Antenna Wm (300 Deg)	None				75		
38	Antenna Wm (330 Deg)	None				75		
39	Structure D	None		-1				3
40	Structure Di	None					72	3
41	Structure Wo (0 Deg)	None					144	
42	Structure Wo (30 Deg)	None					144	
43	Structure Wo (60 Deg)	None					144	
44	Structure Wo (90 Deg)	None					144	
45	Structure Wo (120 Deg)	None					144	
46	Structure Wo (150 Deg)	None					144	
47	Structure Wo (180 Deg)	None					144	
48	Structure Wo (210 Deg)	None					144	
49	Structure Wo (240 Deg)	None					144	
50	Structure Wo (270 Deg)	None					144	
51	Structure Wo (300 Deg)	None					144	
52	Structure Wo (330 Deg)	None					144	
53	Structure Wi (0 Deg)	None					144	
54	Structure Wi (30 Deg)	None					144	
55	Structure Wi (60 Deg)	None					144	
56	Structure Wi (90 Deg)	None					144	
57	Structure Wi (120 Deg)	None					144	
58	Structure Wi (150 Deg)	None					144	
59	Structure Wi (180 Deg)	None					144	
60	Structure Wi (210 Deg)	None					144	
61	Structure Wi (240 Deg)	None					144	
62	Structure Wi (270 Deg)	None					144	
63	Structure Wi (300 Deg)	None					144	

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Point	Distributed	Area(Member)
64	Structure Wi (330 Deg)	None					144	
65	Structure Wm (0 Deg)	None					144	
66	Structure Wm (30 Deg)	None					144	
67	Structure Wm (60 Deg)	None					144	
68	Structure Wm (90 Deg)	None					144	
69	Structure Wm (120 Deg)	None					144	
70	Structure Wm (150 Deg)	None					144	
71	Structure Wm (180 Deg)	None					144	
72	Structure Wm (210 Deg)	None					144	
73	Structure Wm (240 Deg)	None					144	
74	Structure Wm (270 Deg)	None					144	
75	Structure Wm (300 Deg)	None					144	
76	Structure Wm (330 Deg)	None					144	
77	Lm1	None				1		
78	Lm2	None				1		
79	Lv1	None				1		
80	Lv2	None				1		
81	Antenna Ev	None				75		
82	Antenna Eh (0 Deg)	None				50		
83	Antenna Eh (90 Deg)	None				50		
84	Structure Ev	ELY		-0.038				3
85	Structure Eh (0 Deg)	ELZ			-0.094			3
86	Structure Eh (90 Deg)	ELX	0.094					3
87	BLC 39 Transient Area Loads	None					27	
88	BLC 40 Transient Area Loads	None					27	
89	BLC 84 Transient Area Loads	None					27	
90	BLC 85 Transient Area Loads	None					27	
91	BLC 86 Transient Area Loads	None					27	

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N60	max	1086.928	9	2068.589	21	747.682	1	-0.173	3	0.703	12	-0.066	3
2		min	-1173.538	3	366.442	3	-701.915	7	-2.313	21	-0.701	6	-3.822	21
3	N58	max	743.842	10	2361.684	13	1720.285	1	4.733	13	0.899	4	-0.013	1
4		min	-744.148	4	470.684	7	-1819.268	7	0.134	7	-0.887	10	-0.151	20
5	N62	max	1498.066	11	2211.061	17	895.773	12	-0.002	11	0.821	8	4.28	29
6		min	-1410.769	5	413.236	11	-840.843	6	-2.71	29	-0.817	2	0.197	11
7	Totals:	max	3258.579	10	6186.171	16	3315.476	1						
8		min	-3258.58	4	2235.281	73	-3315.475	7						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	M1	PIPE_3.0	0.14	8.971	18	0.084	8.971		6	25475.856	65205	5.749	5.749	1	H1-1b
2	M2	PIPE_3.0	0.139	8.971	14	0.084	4.141		4	25475.856	65205	5.749	5.749	1	H1-1b
3	M3	PIPE_3.0	0.12	4.279	24	0.086	4.141		12	25475.856	65205	5.749	5.749	1	H1-1b
4	M8	PL1/2X6	0.096	0	9	0.11	0	y	5	96230.196	97200	1.012	12.15	1.099	H1-1b
5	M9	PL1/2X6	0.062	0	5	0.099	0.167	y	27	96230.196	97200	1.012	12.15	1.114	H1-1b
6	M10	PL3/8X6	0.122	0	11	0.255	0.167	y	17	71601.728	72900	0.57	9.113	1.078	H1-1b
7	M11	PL3/8X6	0.175	0	3	0.529	0.167	y	20	71601.728	72900	0.57	9.113	1.814	H1-1b
8	M12	PL3/8X6	0.214	0.25	11	0.244	0.25	y	19	70011.354	72900	0.57	9.113	1.221	H1-1b
9	M13	PL3/8X6	0.137	0.25	3	0.269	0.25	y	18	70011.354	72900	0.57	9.113	1.358	H1-1b
10	M18	PL1/2X6	0.063	0	5	0.056	0	y	25	96230.196	97200	1.012	12.15	1.057	H1-1b
11	M19	PL1/2X6	0.061	0	1	0.036	0.167	y	11	96230.196	97200	1.012	12.15	1.103	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
12	M20	PL3/8X6	0.116	0	7	0.25	0.167	y	13	71601.728	72900	0.57	9.113	1.075	H1-1b
13	M21	PL3/8X6	0.107	0	11	0.278	0.167	y	16	71601.728	72900	0.57	9.113	1.257	H1-1b
14	M22	PL3/8X6	0.133	0.25	7	0.189	0.25	y	14	70011.354	72900	0.57	9.113	1.25	H1-1b
15	M23	PL3/8X6	0.116	0.25	11	0.265	0.25	y	13	70011.354	72900	0.57	9.113	1.376	H1-1b
16	M28	PL1/2X6	0.063	0	1	0.053	0	y	9	96230.196	97200	1.012	12.15	1.058	H1-1b
17	M29	PL1/2X6	0.094	0	9	0.075	0.167	y	7	96230.196	97200	1.012	12.15	1.158	H1-1b
18	M30	PL3/8X6	0.192	0	3	0.482	0.167	y	21	71601.728	72900	0.57	9.113	1.152	H1-1b
19	M31	PL3/8X6	0.111	0	7	0.284	0.167	y	24	71601.728	72900	0.57	9.113	1.269	H1-1b
20	M32	PL3/8X6	0.156	0.25	3	0.195	0.25	y	22	70011.354	72900	0.57	9.113	1.248	H1-1b
21	M33	PL3/8X6	0.2	0.25	6	0.356	0.25	y	22	70011.354	72900	0.57	9.113	1.287	H1-1b
22	M34	PL1/2X6	0.14	0.496	5	0.114	0	y	6	68128.151	97200	1.012	12.15	1.341	H1-1b
23	M35	PL1/2X6	0.106	0.496	4	0.146	0.496	y	26	68128.151	97200	1.012	12.15	1.37	H1-1b
24	M36	PL1/2X6	0.113	0.496	2	0.09	0.992	y	10	68128.151	97200	1.012	12.15	1.336	H1-1b
25	M41	HSS4X4X4	0.278	0	21	0.079	0	y	46	125794.4	139518	16.181	16.181	3	H1-1b
26	M39A	HSS4X4X4	0.134	2	20	0.056	2	y	20	137201.855	139518	16.181	16.181	1.591	H1-1b
27	M41A	HSS4X4X4	0.126	0	22	0.048	0	y	21	137015.914	139518	16.181	16.181	1.6	H1-1b
28	M48	L2X2X3	0.074	3.569	7	0.012	3.569	y	18	12357.762	23392.8	0.558	1.163	1.428	H2-1
29	M49	L2X2X3	0.081	1.629	15	0.011	3.555	z	23	12419.665	23392.8	0.558	1.174	1.5	H2-1
30	M52	PL1/2X6	0.063	0	5	0.056	0	y	25	96230.196	97200	1.012	12.15	1.057	H1-1b
31	M53	PL3/8X6	0.107	0	11	0.278	0.167	y	16	71601.728	72900	0.57	9.113	1.257	H1-1b
32	M54	PL3/8X6	0.133	0.25	7	0.189	0.25	y	14	70011.354	72900	0.57	9.113	1.25	H1-1b
33	M57	PL1/2X6	0.062	0	5	0.099	0.167	y	27	96230.196	97200	1.012	12.15	1.114	H1-1b
34	M58	PL3/8X6	0.122	0	11	0.255	0.167	y	17	71601.728	72900	0.57	9.113	1.078	H1-1b
35	M59	PL3/8X6	0.137	0.25	3	0.269	0.25	y	18	70011.354	72900	0.57	9.113	1.358	H1-1b
36	M60	PL1/2X6	0.106	0.496	4	0.146	0.496	y	26	68128.151	97200	1.012	12.15	1.37	H1-1b
37	M61	HSS4X4X4	0.313	0	29	0.081	0	y	41	125794.4	139518	16.181	16.181	2.69	H1-1b
38	M63	HSS4X4X4	0.146	2	16	0.054	2	y	17	137201.855	139518	16.181	16.181	1.573	H1-1b
39	M65	HSS4X4X4	0.14	0	18	0.044	0	y	29	137015.914	139518	16.181	16.181	1.57	H1-1b
40	M72	L2X2X3	0.077	3.569	3	0.012	3.569	y	13	12357.762	23392.8	0.558	1.163	1.428	H2-1
41	M73	L2X2X3	0.081	1.703	23	0.011	3.555	z	19	12419.665	23392.8	0.558	1.174	1.5	H2-1
42	M76	PL1/2X6	0.063	0	1	0.053	0	y	9	96230.196	97200	1.012	12.15	1.058	H1-1b
43	M77	PL3/8X6	0.111	0	7	0.284	0.167	y	24	71601.728	72900	0.57	9.113	1.269	H1-1b
44	M78	PL3/8X6	0.156	0.25	3	0.195	0.25	y	22	70011.354	72900	0.57	9.113	1.248	H1-1b
45	M81	PL1/2X6	0.061	0	1	0.036	0.167	y	11	96230.196	97200	1.012	12.15	1.103	H1-1b
46	M82	PL3/8X6	0.116	0	7	0.25	0.167	y	13	71601.728	72900	0.57	9.113	1.075	H1-1b
47	M83	PL3/8X6	0.116	0.25	11	0.265	0.25	y	13	70011.354	72900	0.57	9.113	1.376	H1-1b
48	M84	PL1/2X6	0.113	0.496	2	0.09	0	y	10	68128.151	97200	1.012	12.15	1.336	H1-1b
49	M85	HSS4X4X4	0.294	0	13	0.07	0	y	13	125794.4	139518	16.181	16.181	3	H1-1b
50	M87	HSS4X4X4	0.149	2	24	0.055	2	y	13	137201.855	139518	16.181	16.181	1.573	H1-1b
51	M89	HSS4X4X4	0.136	0	14	0.041	0	y	13	137015.914	139518	16.181	16.181	1.57	H1-1b
52	M96	L2X2X3	0.072	3.569	12	0.012	3.569	y	22	12357.762	23392.8	0.558	1.12	1.178	H2-1
53	M97	L2X2X3	0.082	2.37	2	0.011	3.555	z	15	12419.665	23392.8	0.558	1.174	1.5	H2-1
54	MP1A	PIPE_2.0	0.25	3.313	9	0.103	1.125		8	20866.733	32130	1.872	1.872	1	H1-1b
55	MP2A	PIPE_2.5	0.209	4.302	10	0.123	4.302		10	33961.614	50715	3.596	3.596	1	H1-1b
56	MP3A	PIPE_2.0	0.243	3.313	5	0.103	3.313		7	20866.733	32130	1.872	1.872	1	H1-1b
57	MP4A	PIPE_2.0	0.167	3.313	6	0.081	1.125		7	20866.733	32130	1.872	1.872	1	H1-1b
58	MP1C	PIPE_2.0	0.258	3.313	5	0.106	1.125		4	20866.733	32130	1.872	1.872	1	H1-1b
59	MP2C	PIPE_2.5	0.222	4.302	6	0.128	4.302		6	33961.614	50715	3.596	3.596	1	H1-1b
60	MP3C	PIPE_2.0	0.252	3.313	1	0.109	3.313		3	20866.733	32130	1.872	1.872	1	H1-1b
61	MP4C	PIPE_2.0	0.182	3.313	2	0.087	1.125		3	20866.733	32130	1.872	1.872	1	H1-1b
62	MP1B	PIPE_2.0	0.249	3.313	1	0.097	1.125		12	20866.733	32130	1.872	1.872	1	H1-1b
63	MP2B	PIPE_2.5	0.217	4.302	2	0.123	4.302		2	33961.614	50715	3.596	3.596	1	H1-1b
64	MP3B	PIPE_2.0	0.241	3.313	9	0.108	3.313		11	20866.733	32130	1.872	1.872	1	H1-1b
65	MP4B	PIPE_2.0	0.177	3.313	10	0.086	1.125		11	20866.733	32130	1.872	1.872	1	H1-1b
66	M122	PIPE_2.0	0.058	2	1	0.011	2		1	28843.414	32130	1.872	1.872	1	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
67	M124	PIPE_2.5	0.153	6.901	5	0.102	11.318		12	12957.273	50715	3.596	3.596	1	H1-1b
68	M131	PIPE_2.5	0.154	7.039	5	0.101	2.76		4	12957.273	50715	3.596	3.596	1	H1-1b
69	M138	PIPE_2.5	0.152	7.039	1	0.103	2.76		12	12957.273	50715	3.596	3.596	1	H1-1b
70	M145	L3X3X4	0.277	0	11	0.027	2.332	y	6	41360.627	46656	1.688	3.756	1.5	H2-1
71	M146	L3X3X4	0.288	0	3	0.029	2.332	y	4	41360.627	46656	1.688	3.756	1.5	H2-1
72	M147	L3X3X4	0.299	0	7	0.028	2.332	y	8	41360.627	46656	1.688	3.756	1.5	H2-1

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Y	-32.5	0.25
2	MP2A	My	-0.016	0.25
3	MP2A	Mz	0.019	0.25
4	MP2A	Y	-32.5	4.25
5	MP2A	My	-0.016	4.25
6	MP2A	Mz	0.019	4.25
7	MP2B	Y	-32.5	0.25
8	MP2B	My	-0.004	0.25
9	MP2B	Mz	-0.025	0.25
10	MP2B	Y	-32.5	4.25
11	MP2B	My	-0.004	4.25
12	MP2B	Mz	-0.025	4.25
13	MP2C	Y	-32.5	0.25
14	MP2C	My	0.023	0.25
15	MP2C	Mz	0.009	0.25
16	MP2C	Y	-32.5	4.25
17	MP2C	My	0.023	4.25
18	MP2C	Mz	0.009	4.25
19	MP2A	Y	-32.5	0.25
20	MP2A	My	-0.016	0.25
21	MP2A	Mz	-0.019	0.25
22	MP2A	Y	-32.5	4.25
23	MP2A	My	-0.016	4.25
24	MP2A	Mz	-0.019	4.25
25	MP2B	Y	-32.5	0.25
26	MP2B	My	0.025	0.25
27	MP2B	Mz	-0.000262	0.25
28	MP2B	Y	-32.5	4.25
29	MP2B	My	0.025	4.25
30	MP2B	Mz	-0.000262	4.25
31	MP2C	Y	-32.5	0.25
32	MP2C	My	-0.012	0.25
33	MP2C	Mz	0.022	0.25
34	MP2C	Y	-32.5	4.25
35	MP2C	My	-0.012	4.25
36	MP2C	Mz	0.022	4.25
37	MP1A	Y	-43.55	1.25
38	MP1A	My	-0.022	1.25
39	MP1A	Mz	0	1.25
40	MP1A	Y	-43.55	3.25
41	MP1A	My	-0.022	3.25
42	MP1A	Mz	0	3.25
43	MP1B	Y	-43.55	1.25
44	MP1B	My	0.014	1.25
45	MP1B	Mz	-0.017	1.25
46	MP1B	Y	-43.55	3.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
47	MP1B	My	0.014	3.25
48	MP1B	Mz	-0.017	3.25
49	MP1C	Y	-43.55	1.25
50	MP1C	My	0.011	1.25
51	MP1C	Mz	0.019	1.25
52	MP1C	Y	-43.55	3.25
53	MP1C	My	0.011	3.25
54	MP1C	Mz	0.019	3.25
55	M122	Y	-32	1
56	M122	My	0	1
57	M122	Mz	0	1
58	MP2A	Y	-74.7	1
59	MP2A	My	0.037	1
60	MP2A	Mz	0	1
61	MP2B	Y	-74.7	1
62	MP2B	My	-0.024	1
63	MP2B	Mz	0.029	1
64	MP2C	Y	-74.7	1
65	MP2C	My	-0.013	1
66	MP2C	Mz	-0.035	1
67	MP3A	Y	-79.1	1
68	MP3A	My	0.04	1
69	MP3A	Mz	0	1
70	MP3B	Y	-79.1	1
71	MP3B	My	-0.025	1
72	MP3B	Mz	0.03	1
73	MP3C	Y	-79.1	1
74	MP3C	My	-0.014	1
75	MP3C	Mz	-0.037	1

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Y	-68.962	0.25
2	MP2A	My	-0.034	0.25
3	MP2A	Mz	0.04	0.25
4	MP2A	Y	-68.962	4.25
5	MP2A	My	-0.034	4.25
6	MP2A	Mz	0.04	4.25
7	MP2B	Y	-68.962	0.25
8	MP2B	My	-0.009	0.25
9	MP2B	Mz	-0.052	0.25
10	MP2B	Y	-68.962	4.25
11	MP2B	My	-0.009	4.25
12	MP2B	Mz	-0.052	4.25
13	MP2C	Y	-68.962	0.25
14	MP2C	My	0.05	0.25
15	MP2C	Mz	0.019	0.25
16	MP2C	Y	-68.962	4.25
17	MP2C	My	0.05	4.25
18	MP2C	Mz	0.019	4.25
19	MP2A	Y	-68.962	0.25
20	MP2A	My	-0.034	0.25
21	MP2A	Mz	-0.04	0.25
22	MP2A	Y	-68.962	4.25
23	MP2A	My	-0.034	4.25

Member Point Loads (BLC 2 : Antenna Di) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
24	MP2A	Mz	-0.04	4.25
25	MP2B	Y	-68.962	0.25
26	MP2B	My	0.053	0.25
27	MP2B	Mz	-0.000556	0.25
28	MP2B	Y	-68.962	4.25
29	MP2B	My	0.053	4.25
30	MP2B	Mz	-0.000556	4.25
31	MP2C	Y	-68.962	0.25
32	MP2C	My	-0.026	0.25
33	MP2C	Mz	0.046	0.25
34	MP2C	Y	-68.962	4.25
35	MP2C	My	-0.026	4.25
36	MP2C	Mz	0.046	4.25
37	MP1A	Y	-35.636	1.25
38	MP1A	My	-0.018	1.25
39	MP1A	Mz	0	1.25
40	MP1A	Y	-35.636	3.25
41	MP1A	My	-0.018	3.25
42	MP1A	Mz	0	3.25
43	MP1B	Y	-35.636	1.25
44	MP1B	My	0.011	1.25
45	MP1B	Mz	-0.014	1.25
46	MP1B	Y	-35.636	3.25
47	MP1B	My	0.011	3.25
48	MP1B	Mz	-0.014	3.25
49	MP1C	Y	-35.636	1.25
50	MP1C	My	0.009	1.25
51	MP1C	Mz	0.015	1.25
52	MP1C	Y	-35.636	3.25
53	MP1C	My	0.009	3.25
54	MP1C	Mz	0.015	3.25
55	M122	Y	-87.967	1
56	M122	My	0	1
57	M122	Mz	0	1
58	MP2A	Y	-44.929	1
59	MP2A	My	0.022	1
60	MP2A	Mz	0	1
61	MP2B	Y	-44.929	1
62	MP2B	My	-0.014	1
63	MP2B	Mz	0.017	1
64	MP2C	Y	-44.929	1
65	MP2C	My	-0.008	1
66	MP2C	Mz	-0.021	1
67	MP3A	Y	-45.405	1
68	MP3A	My	0.023	1
69	MP3A	Mz	0	1
70	MP3B	Y	-45.405	1
71	MP3B	My	-0.015	1
72	MP3B	Mz	0.017	1
73	MP3C	Y	-45.405	1
74	MP3C	My	-0.008	1
75	MP3C	Mz	-0.021	1

Member Point Loads (BLC 3 : Antenna Wo (0 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	0.25
2	MP2A	Z	-123.106	0.25
3	MP2A	Mx	-0.072	0.25
4	MP2A	X	0	4.25
5	MP2A	Z	-123.106	4.25
6	MP2A	Mx	-0.072	4.25
7	MP2B	X	0	0.25
8	MP2B	Z	-111.288	0.25
9	MP2B	Mx	0.084	0.25
10	MP2B	X	0	4.25
11	MP2B	Z	-111.288	4.25
12	MP2B	Mx	0.084	4.25
13	MP2C	X	0	0.25
14	MP2C	Z	-105.322	0.25
15	MP2C	Mx	-0.028	0.25
16	MP2C	X	0	4.25
17	MP2C	Z	-105.322	4.25
18	MP2C	Mx	-0.028	4.25
19	MP2A	X	0	0.25
20	MP2A	Z	-123.106	0.25
21	MP2A	Mx	0.072	0.25
22	MP2A	X	0	4.25
23	MP2A	Z	-123.106	4.25
24	MP2A	Mx	0.072	4.25
25	MP2B	X	0	0.25
26	MP2B	Z	-111.288	0.25
27	MP2B	Mx	0.000897	0.25
28	MP2B	X	0	4.25
29	MP2B	Z	-111.288	4.25
30	MP2B	Mx	0.000897	4.25
31	MP2C	X	0	0.25
32	MP2C	Z	-105.322	0.25
33	MP2C	Mx	-0.07	0.25
34	MP2C	X	0	4.25
35	MP2C	Z	-105.322	4.25
36	MP2C	Mx	-0.07	4.25
37	MP1A	X	0	1.25
38	MP1A	Z	-59.357	1.25
39	MP1A	Mx	0	1.25
40	MP1A	X	0	3.25
41	MP1A	Z	-59.357	3.25
42	MP1A	Mx	0	3.25
43	MP1B	X	0	1.25
44	MP1B	Z	-36.521	1.25
45	MP1B	Mx	0.014	1.25
46	MP1B	X	0	3.25
47	MP1B	Z	-36.521	3.25
48	MP1B	Mx	0.014	3.25
49	MP1C	X	0	1.25
50	MP1C	Z	-30.171	1.25
51	MP1C	Mx	-0.013	1.25
52	MP1C	X	0	3.25
53	MP1C	Z	-30.171	3.25
54	MP1C	Mx	-0.013	3.25
55	M122	X	0	1

Member Point Loads (BLC 3 : Antenna Wo (0 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	M122	Z	-95.307	1
57	M122	Mx	0	1
58	MP2A	X	0	1
59	MP2A	Z	-46.941	1
60	MP2A	Mx	0	1
61	MP2B	X	0	1
62	MP2B	Z	-37.877	1
63	MP2B	Mx	-0.015	1
64	MP2C	X	0	1
65	MP2C	Z	-33.302	1
66	MP2C	Mx	0.016	1
67	MP3A	X	0	1
68	MP3A	Z	-56.632	1
69	MP3A	Mx	0	1
70	MP3B	X	0	1
71	MP3B	Z	-46.058	1
72	MP3B	Mx	-0.018	1
73	MP3C	X	0	1
74	MP3C	Z	-40.72	1
75	MP3C	Mx	0.019	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	59.035	0.25
2	MP2A	Z	-102.252	0.25
3	MP2A	Mx	-0.089	0.25
4	MP2A	X	59.035	4.25
5	MP2A	Z	-102.252	4.25
6	MP2A	Mx	-0.089	4.25
7	MP2B	X	51.787	0.25
8	MP2B	Z	-89.698	0.25
9	MP2B	Mx	0.061	0.25
10	MP2B	X	51.787	4.25
11	MP2B	Z	-89.698	4.25
12	MP2B	Mx	0.061	4.25
13	MP2C	X	57.392	0.25
14	MP2C	Z	-99.406	0.25
15	MP2C	Mx	0.014	0.25
16	MP2C	X	57.392	4.25
17	MP2C	Z	-99.406	4.25
18	MP2C	Mx	0.014	4.25
19	MP2A	X	59.035	0.25
20	MP2A	Z	-102.252	0.25
21	MP2A	Mx	0.03	0.25
22	MP2A	X	59.035	4.25
23	MP2A	Z	-102.252	4.25
24	MP2A	Mx	0.03	4.25
25	MP2B	X	51.787	0.25
26	MP2B	Z	-89.698	0.25
27	MP2B	Mx	0.041	0.25
28	MP2B	X	51.787	4.25
29	MP2B	Z	-89.698	4.25
30	MP2B	Mx	0.041	4.25
31	MP2C	X	57.392	0.25
32	MP2C	Z	-99.406	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
33	MP2C	Mx	-0.088	0.25
34	MP2C	X	57.392	4.25
35	MP2C	Z	-99.406	4.25
36	MP2C	Mx	-0.088	4.25
37	MP1A	X	24.814	1.25
38	MP1A	Z	-42.979	1.25
39	MP1A	Mx	-0.012	1.25
40	MP1A	X	24.814	3.25
41	MP1A	Z	-42.979	3.25
42	MP1A	Mx	-0.012	3.25
43	MP1B	X	10.808	1.25
44	MP1B	Z	-18.719	1.25
45	MP1B	Mx	0.011	1.25
46	MP1B	X	10.808	3.25
47	MP1B	Z	-18.719	3.25
48	MP1B	Mx	0.011	3.25
49	MP1C	X	24.814	1.25
50	MP1C	Z	-42.979	1.25
51	MP1C	Mx	-0.012	1.25
52	MP1C	X	24.814	3.25
53	MP1C	Z	-42.979	3.25
54	MP1C	Mx	-0.012	3.25
55	M122	X	46.654	1
56	M122	Z	-80.808	1
57	M122	Mx	0	1
58	MP2A	X	21.54	1
59	MP2A	Z	-37.308	1
60	MP2A	Mx	0.011	1
61	MP2B	X	15.981	1
62	MP2B	Z	-27.679	1
63	MP2B	Mx	-0.016	1
64	MP2C	X	20.28	1
65	MP2C	Z	-35.125	1
66	MP2C	Mx	0.013	1
67	MP3A	X	26.063	1
68	MP3A	Z	-45.143	1
69	MP3A	Mx	0.013	1
70	MP3B	X	19.578	1
71	MP3B	Z	-33.91	1
72	MP3B	Mx	-0.019	1
73	MP3C	X	24.593	1
74	MP3C	Z	-42.597	1
75	MP3C	Mx	0.016	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	93.532	0.25
2	MP2A	Z	-54.001	0.25
3	MP2A	Mx	-0.078	0.25
4	MP2A	X	93.532	4.25
5	MP2A	Z	-54.001	4.25
6	MP2A	Mx	-0.078	4.25
7	MP2B	X	91.212	0.25
8	MP2B	Z	-52.661	0.25
9	MP2B	Mx	0.028	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
10	MP2B	X	91.212	4.25
11	MP2B	Z	-52.661	4.25
12	MP2B	Mx	0.028	4.25
13	MP2C	X	106.087	0.25
14	MP2C	Z	-61.249	0.25
15	MP2C	Mx	0.06	0.25
16	MP2C	X	106.087	4.25
17	MP2C	Z	-61.249	4.25
18	MP2C	Mx	0.06	4.25
19	MP2A	X	93.532	0.25
20	MP2A	Z	-54.001	0.25
21	MP2A	Mx	-0.015	0.25
22	MP2A	X	93.532	4.25
23	MP2A	Z	-54.001	4.25
24	MP2A	Mx	-0.015	4.25
25	MP2B	X	91.212	0.25
26	MP2B	Z	-52.661	0.25
27	MP2B	Mx	0.07	0.25
28	MP2B	X	91.212	4.25
29	MP2B	Z	-52.661	4.25
30	MP2B	Mx	0.07	4.25
31	MP2C	X	106.087	0.25
32	MP2C	Z	-61.249	0.25
33	MP2C	Mx	-0.081	0.25
34	MP2C	X	106.087	4.25
35	MP2C	Z	-61.249	4.25
36	MP2C	Mx	-0.081	4.25
37	MP1A	X	26.129	1.25
38	MP1A	Z	-15.085	1.25
39	MP1A	Mx	-0.013	1.25
40	MP1A	X	26.129	3.25
41	MP1A	Z	-15.085	3.25
42	MP1A	Mx	-0.013	3.25
43	MP1B	X	21.646	1.25
44	MP1B	Z	-12.497	1.25
45	MP1B	Mx	0.012	1.25
46	MP1B	X	21.646	3.25
47	MP1B	Z	-12.497	3.25
48	MP1B	Mx	0.012	3.25
49	MP1C	X	51.405	1.25
50	MP1C	Z	-29.679	1.25
51	MP1C	Mx	0	1.25
52	MP1C	X	51.405	3.25
53	MP1C	Z	-29.679	3.25
54	MP1C	Mx	0	3.25
55	M122	X	71.443	1
56	M122	Z	-41.247	1
57	M122	Mx	0	1
58	MP2A	X	30.62	1
59	MP2A	Z	-17.678	1
60	MP2A	Mx	0.015	1
61	MP2B	X	28.841	1
62	MP2B	Z	-16.651	1
63	MP2B	Mx	-0.016	1
64	MP2C	X	40.248	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
65	MP2C	Z	-23.237	1
66	MP2C	Mx	0.004	1
67	MP3A	X	37.341	1
68	MP3A	Z	-21.559	1
69	MP3A	Mx	0.019	1
70	MP3B	X	35.265	1
71	MP3B	Z	-20.36	1
72	MP3B	Mx	-0.019	1
73	MP3C	X	48.574	1
74	MP3C	Z	-28.044	1
75	MP3C	Mx	0.005	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	102.967	0.25
2	MP2A	Z	0	0.25
3	MP2A	Mx	-0.051	0.25
4	MP2A	X	102.967	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	-0.051	4.25
7	MP2B	X	114.785	0.25
8	MP2B	Z	0	0.25
9	MP2B	Mx	-0.014	0.25
10	MP2B	X	114.785	4.25
11	MP2B	Z	0	4.25
12	MP2B	Mx	-0.014	4.25
13	MP2C	X	120.75	0.25
14	MP2C	Z	0	0.25
15	MP2C	Mx	0.087	0.25
16	MP2C	X	120.75	4.25
17	MP2C	Z	0	4.25
18	MP2C	Mx	0.087	4.25
19	MP2A	X	102.967	0.25
20	MP2A	Z	0	0.25
21	MP2A	Mx	-0.051	0.25
22	MP2A	X	102.967	4.25
23	MP2A	Z	0	4.25
24	MP2A	Mx	-0.051	4.25
25	MP2B	X	114.785	0.25
26	MP2B	Z	0	0.25
27	MP2B	Mx	0.088	0.25
28	MP2B	X	114.785	4.25
29	MP2B	Z	0	4.25
30	MP2B	Mx	0.088	4.25
31	MP2C	X	120.75	0.25
32	MP2C	Z	0	0.25
33	MP2C	Mx	-0.046	0.25
34	MP2C	X	120.75	4.25
35	MP2C	Z	0	4.25
36	MP2C	Mx	-0.046	4.25
37	MP1A	X	20.442	1.25
38	MP1A	Z	0	1.25
39	MP1A	Mx	-0.01	1.25
40	MP1A	X	20.442	3.25
41	MP1A	Z	0	3.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
42	MP1A	Mx	-0.01	3.25
43	MP1B	X	43.278	1.25
44	MP1B	Z	0	1.25
45	MP1B	Mx	0.014	1.25
46	MP1B	X	43.278	3.25
47	MP1B	Z	0	3.25
48	MP1B	Mx	0.014	3.25
49	MP1C	X	49.628	1.25
50	MP1C	Z	0	1.25
51	MP1C	Mx	0.012	1.25
52	MP1C	X	49.628	3.25
53	MP1C	Z	0	3.25
54	MP1C	Mx	0.012	3.25
55	M122	X	73.679	1
56	M122	Z	0	1
57	M122	Mx	0	1
58	MP2A	X	31.496	1
59	MP2A	Z	0	1
60	MP2A	Mx	0.016	1
61	MP2B	X	40.559	1
62	MP2B	Z	0	1
63	MP2B	Mx	-0.013	1
64	MP2C	X	45.134	1
65	MP2C	Z	0	1
66	MP2C	Mx	-0.008	1
67	MP3A	X	38.612	1
68	MP3A	Z	0	1
69	MP3A	Mx	0.019	1
70	MP3B	X	49.187	1
71	MP3B	Z	0	1
72	MP3B	Mx	-0.016	1
73	MP3C	X	54.524	1
74	MP3C	Z	0	1
75	MP3C	Mx	-0.009	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	93.532	0.25
2	MP2A	Z	54.001	0.25
3	MP2A	Mx	-0.015	0.25
4	MP2A	X	93.532	4.25
5	MP2A	Z	54.001	4.25
6	MP2A	Mx	-0.015	4.25
7	MP2B	X	106.087	0.25
8	MP2B	Z	61.249	0.25
9	MP2B	Mx	-0.06	0.25
10	MP2B	X	106.087	4.25
11	MP2B	Z	61.249	4.25
12	MP2B	Mx	-0.06	4.25
13	MP2C	X	96.378	0.25
14	MP2C	Z	55.644	0.25
15	MP2C	Mx	0.084	0.25
16	MP2C	X	96.378	4.25
17	MP2C	Z	55.644	4.25
18	MP2C	Mx	0.084	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
19	MP2A	X	93.532	0.25
20	MP2A	Z	54.001	0.25
21	MP2A	Mx	-0.078	0.25
22	MP2A	X	93.532	4.25
23	MP2A	Z	54.001	4.25
24	MP2A	Mx	-0.078	4.25
25	MP2B	X	106.087	0.25
26	MP2B	Z	61.249	0.25
27	MP2B	Mx	0.081	0.25
28	MP2B	X	106.087	4.25
29	MP2B	Z	61.249	4.25
30	MP2B	Mx	0.081	4.25
31	MP2C	X	96.378	0.25
32	MP2C	Z	55.644	0.25
33	MP2C	Mx	0.000897	0.25
34	MP2C	X	96.378	4.25
35	MP2C	Z	55.644	4.25
36	MP2C	Mx	0.000897	4.25
37	MP1A	X	26.129	1.25
38	MP1A	Z	15.085	1.25
39	MP1A	Mx	-0.013	1.25
40	MP1A	X	26.129	3.25
41	MP1A	Z	15.085	3.25
42	MP1A	Mx	-0.013	3.25
43	MP1B	X	50.389	1.25
44	MP1B	Z	29.092	1.25
45	MP1B	Mx	0.005	1.25
46	MP1B	X	50.389	3.25
47	MP1B	Z	29.092	3.25
48	MP1B	Mx	0.005	3.25
49	MP1C	X	26.129	1.25
50	MP1C	Z	15.085	1.25
51	MP1C	Mx	0.013	1.25
52	MP1C	X	26.129	3.25
53	MP1C	Z	15.085	3.25
54	MP1C	Mx	0.013	3.25
55	M122	X	65.539	1
56	M122	Z	37.839	1
57	M122	Mx	0	1
58	MP2A	X	30.62	1
59	MP2A	Z	17.678	1
60	MP2A	Mx	0.015	1
61	MP2B	X	40.248	1
62	MP2B	Z	23.237	1
63	MP2B	Mx	-0.004	1
64	MP2C	X	32.803	1
65	MP2C	Z	18.939	1
66	MP2C	Mx	-0.015	1
67	MP3A	X	37.341	1
68	MP3A	Z	21.559	1
69	MP3A	Mx	0.019	1
70	MP3B	X	48.574	1
71	MP3B	Z	28.044	1
72	MP3B	Mx	-0.005	1
73	MP3C	X	39.887	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
74	MP3C	Z	23.029	1
75	MP3C	Mx	-0.018	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	59.035	0.25
2	MP2A	Z	102.252	0.25
3	MP2A	Mx	0.03	0.25
4	MP2A	X	59.035	4.25
5	MP2A	Z	102.252	4.25
6	MP2A	Mx	0.03	4.25
7	MP2B	X	60.375	0.25
8	MP2B	Z	104.572	0.25
9	MP2B	Mx	-0.087	0.25
10	MP2B	X	60.375	4.25
11	MP2B	Z	104.572	4.25
12	MP2B	Mx	-0.087	4.25
13	MP2C	X	51.787	0.25
14	MP2C	Z	89.698	0.25
15	MP2C	Mx	0.061	0.25
16	MP2C	X	51.787	4.25
17	MP2C	Z	89.698	4.25
18	MP2C	Mx	0.061	4.25
19	MP2A	X	59.035	0.25
20	MP2A	Z	102.252	0.25
21	MP2A	Mx	-0.089	0.25
22	MP2A	X	59.035	4.25
23	MP2A	Z	102.252	4.25
24	MP2A	Mx	-0.089	4.25
25	MP2B	X	60.375	0.25
26	MP2B	Z	104.572	0.25
27	MP2B	Mx	0.046	0.25
28	MP2B	X	60.375	4.25
29	MP2B	Z	104.572	4.25
30	MP2B	Mx	0.046	4.25
31	MP2C	X	51.787	0.25
32	MP2C	Z	89.698	0.25
33	MP2C	Mx	0.041	0.25
34	MP2C	X	51.787	4.25
35	MP2C	Z	89.698	4.25
36	MP2C	Mx	0.041	4.25
37	MP1A	X	24.814	1.25
38	MP1A	Z	42.979	1.25
39	MP1A	Mx	-0.012	1.25
40	MP1A	X	24.814	3.25
41	MP1A	Z	42.979	3.25
42	MP1A	Mx	-0.012	3.25
43	MP1B	X	27.403	1.25
44	MP1B	Z	47.463	1.25
45	MP1B	Mx	-0.009	1.25
46	MP1B	X	27.403	3.25
47	MP1B	Z	47.463	3.25
48	MP1B	Mx	-0.009	3.25
49	MP1C	X	10.221	1.25
50	MP1C	Z	17.703	1.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
51	MP1C	Mx	0.01	1.25
52	MP1C	X	10.221	3.25
53	MP1C	Z	17.703	3.25
54	MP1C	Mx	0.01	3.25
55	M122	X	43.246	1
56	M122	Z	74.904	1
57	M122	Mx	0	1
58	MP2A	X	21.54	1
59	MP2A	Z	37.308	1
60	MP2A	Mx	0.011	1
61	MP2B	X	22.567	1
62	MP2B	Z	39.087	1
63	MP2B	Mx	0.008	1
64	MP2C	X	15.981	1
65	MP2C	Z	27.679	1
66	MP2C	Mx	-0.016	1
67	MP3A	X	26.063	1
68	MP3A	Z	45.143	1
69	MP3A	Mx	0.013	1
70	MP3B	X	27.262	1
71	MP3B	Z	47.219	1
72	MP3B	Mx	0.009	1
73	MP3C	X	19.578	1
74	MP3C	Z	33.91	1
75	MP3C	Mx	-0.019	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	0.25
2	MP2A	Z	123.106	0.25
3	MP2A	Mx	0.072	0.25
4	MP2A	X	0	4.25
5	MP2A	Z	123.106	4.25
6	MP2A	Mx	0.072	4.25
7	MP2B	X	0	0.25
8	MP2B	Z	111.288	0.25
9	MP2B	Mx	-0.084	0.25
10	MP2B	X	0	4.25
11	MP2B	Z	111.288	4.25
12	MP2B	Mx	-0.084	4.25
13	MP2C	X	0	0.25
14	MP2C	Z	105.322	0.25
15	MP2C	Mx	0.028	0.25
16	MP2C	X	0	4.25
17	MP2C	Z	105.322	4.25
18	MP2C	Mx	0.028	4.25
19	MP2A	X	0	0.25
20	MP2A	Z	123.106	0.25
21	MP2A	Mx	-0.072	0.25
22	MP2A	X	0	4.25
23	MP2A	Z	123.106	4.25
24	MP2A	Mx	-0.072	4.25
25	MP2B	X	0	0.25
26	MP2B	Z	111.288	0.25
27	MP2B	Mx	-0.000897	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
28	MP2B	X	0	4.25
29	MP2B	Z	111.288	4.25
30	MP2B	Mx	-0.000897	4.25
31	MP2C	X	0	0.25
32	MP2C	Z	105.322	0.25
33	MP2C	Mx	0.07	0.25
34	MP2C	X	0	4.25
35	MP2C	Z	105.322	4.25
36	MP2C	Mx	0.07	4.25
37	MP1A	X	0	1.25
38	MP1A	Z	59.357	1.25
39	MP1A	Mx	0	1.25
40	MP1A	X	0	3.25
41	MP1A	Z	59.357	3.25
42	MP1A	Mx	0	3.25
43	MP1B	X	0	1.25
44	MP1B	Z	36.521	1.25
45	MP1B	Mx	-0.014	1.25
46	MP1B	X	0	3.25
47	MP1B	Z	36.521	3.25
48	MP1B	Mx	-0.014	3.25
49	MP1C	X	0	1.25
50	MP1C	Z	30.171	1.25
51	MP1C	Mx	0.013	1.25
52	MP1C	X	0	3.25
53	MP1C	Z	30.171	3.25
54	MP1C	Mx	0.013	3.25
55	M122	X	0	1
56	M122	Z	95.307	1
57	M122	Mx	0	1
58	MP2A	X	0	1
59	MP2A	Z	46.941	1
60	MP2A	Mx	0	1
61	MP2B	X	0	1
62	MP2B	Z	37.877	1
63	MP2B	Mx	0.015	1
64	MP2C	X	0	1
65	MP2C	Z	33.302	1
66	MP2C	Mx	-0.016	1
67	MP3A	X	0	1
68	MP3A	Z	56.632	1
69	MP3A	Mx	0	1
70	MP3B	X	0	1
71	MP3B	Z	46.058	1
72	MP3B	Mx	0.018	1
73	MP3C	X	0	1
74	MP3C	Z	40.72	1
75	MP3C	Mx	-0.019	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-59.035	0.25
2	MP2A	Z	102.252	0.25
3	MP2A	Mx	0.089	0.25
4	MP2A	X	-59.035	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
5	MP2A	Z	102.252	4.25
6	MP2A	Mx	0.089	4.25
7	MP2B	X	-51.787	0.25
8	MP2B	Z	89.698	0.25
9	MP2B	Mx	-0.061	0.25
10	MP2B	X	-51.787	4.25
11	MP2B	Z	89.698	4.25
12	MP2B	Mx	-0.061	4.25
13	MP2C	X	-57.392	0.25
14	MP2C	Z	99.406	0.25
15	MP2C	Mx	-0.014	0.25
16	MP2C	X	-57.392	4.25
17	MP2C	Z	99.406	4.25
18	MP2C	Mx	-0.014	4.25
19	MP2A	X	-59.035	0.25
20	MP2A	Z	102.252	0.25
21	MP2A	Mx	-0.03	0.25
22	MP2A	X	-59.035	4.25
23	MP2A	Z	102.252	4.25
24	MP2A	Mx	-0.03	4.25
25	MP2B	X	-51.787	0.25
26	MP2B	Z	89.698	0.25
27	MP2B	Mx	-0.041	0.25
28	MP2B	X	-51.787	4.25
29	MP2B	Z	89.698	4.25
30	MP2B	Mx	-0.041	4.25
31	MP2C	X	-57.392	0.25
32	MP2C	Z	99.406	0.25
33	MP2C	Mx	0.088	0.25
34	MP2C	X	-57.392	4.25
35	MP2C	Z	99.406	4.25
36	MP2C	Mx	0.088	4.25
37	MP1A	X	-24.814	1.25
38	MP1A	Z	42.979	1.25
39	MP1A	Mx	0.012	1.25
40	MP1A	X	-24.814	3.25
41	MP1A	Z	42.979	3.25
42	MP1A	Mx	0.012	3.25
43	MP1B	X	-10.808	1.25
44	MP1B	Z	18.719	1.25
45	MP1B	Mx	-0.011	1.25
46	MP1B	X	-10.808	3.25
47	MP1B	Z	18.719	3.25
48	MP1B	Mx	-0.011	3.25
49	MP1C	X	-24.814	1.25
50	MP1C	Z	42.979	1.25
51	MP1C	Mx	0.012	1.25
52	MP1C	X	-24.814	3.25
53	MP1C	Z	42.979	3.25
54	MP1C	Mx	0.012	3.25
55	M122	X	-46.654	1
56	M122	Z	80.808	1
57	M122	Mx	0	1
58	MP2A	X	-21.54	1
59	MP2A	Z	37.308	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
60	MP2A	Mx	-0.011	1
61	MP2B	X	-15.981	1
62	MP2B	Z	27.679	1
63	MP2B	Mx	0.016	1
64	MP2C	X	-20.28	1
65	MP2C	Z	35.125	1
66	MP2C	Mx	-0.013	1
67	MP3A	X	-26.063	1
68	MP3A	Z	45.143	1
69	MP3A	Mx	-0.013	1
70	MP3B	X	-19.578	1
71	MP3B	Z	33.91	1
72	MP3B	Mx	0.019	1
73	MP3C	X	-24.593	1
74	MP3C	Z	42.597	1
75	MP3C	Mx	-0.016	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-93.532	0.25
2	MP2A	Z	54.001	0.25
3	MP2A	Mx	0.078	0.25
4	MP2A	X	-93.532	4.25
5	MP2A	Z	54.001	4.25
6	MP2A	Mx	0.078	4.25
7	MP2B	X	-91.212	0.25
8	MP2B	Z	52.661	0.25
9	MP2B	Mx	-0.028	0.25
10	MP2B	X	-91.212	4.25
11	MP2B	Z	52.661	4.25
12	MP2B	Mx	-0.028	4.25
13	MP2C	X	-106.087	0.25
14	MP2C	Z	61.249	0.25
15	MP2C	Mx	-0.06	0.25
16	MP2C	X	-106.087	4.25
17	MP2C	Z	61.249	4.25
18	MP2C	Mx	-0.06	4.25
19	MP2A	X	-93.532	0.25
20	MP2A	Z	54.001	0.25
21	MP2A	Mx	0.015	0.25
22	MP2A	X	-93.532	4.25
23	MP2A	Z	54.001	4.25
24	MP2A	Mx	0.015	4.25
25	MP2B	X	-91.212	0.25
26	MP2B	Z	52.661	0.25
27	MP2B	Mx	-0.07	0.25
28	MP2B	X	-91.212	4.25
29	MP2B	Z	52.661	4.25
30	MP2B	Mx	-0.07	4.25
31	MP2C	X	-106.087	0.25
32	MP2C	Z	61.249	0.25
33	MP2C	Mx	0.081	0.25
34	MP2C	X	-106.087	4.25
35	MP2C	Z	61.249	4.25
36	MP2C	Mx	0.081	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
37	MP1A	X	-26.129	1.25
38	MP1A	Z	15.085	1.25
39	MP1A	Mx	0.013	1.25
40	MP1A	X	-26.129	3.25
41	MP1A	Z	15.085	3.25
42	MP1A	Mx	0.013	3.25
43	MP1B	X	-21.646	1.25
44	MP1B	Z	12.497	1.25
45	MP1B	Mx	-0.012	1.25
46	MP1B	X	-21.646	3.25
47	MP1B	Z	12.497	3.25
48	MP1B	Mx	-0.012	3.25
49	MP1C	X	-51.405	1.25
50	MP1C	Z	29.679	1.25
51	MP1C	Mx	0	1.25
52	MP1C	X	-51.405	3.25
53	MP1C	Z	29.679	3.25
54	MP1C	Mx	0	3.25
55	M122	X	-71.443	1
56	M122	Z	41.247	1
57	M122	Mx	0	1
58	MP2A	X	-30.62	1
59	MP2A	Z	17.678	1
60	MP2A	Mx	-0.015	1
61	MP2B	X	-28.841	1
62	MP2B	Z	16.651	1
63	MP2B	Mx	0.016	1
64	MP2C	X	-40.248	1
65	MP2C	Z	23.237	1
66	MP2C	Mx	-0.004	1
67	MP3A	X	-37.341	1
68	MP3A	Z	21.559	1
69	MP3A	Mx	-0.019	1
70	MP3B	X	-35.265	1
71	MP3B	Z	20.36	1
72	MP3B	Mx	0.019	1
73	MP3C	X	-48.574	1
74	MP3C	Z	28.044	1
75	MP3C	Mx	-0.005	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-102.967	0.25
2	MP2A	Z	0	0.25
3	MP2A	Mx	0.051	0.25
4	MP2A	X	-102.967	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	0.051	4.25
7	MP2B	X	-114.785	0.25
8	MP2B	Z	0	0.25
9	MP2B	Mx	0.014	0.25
10	MP2B	X	-114.785	4.25
11	MP2B	Z	0	4.25
12	MP2B	Mx	0.014	4.25
13	MP2C	X	-120.75	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
14	MP2C	Z	0	0.25
15	MP2C	Mx	-0.087	0.25
16	MP2C	X	-120.75	4.25
17	MP2C	Z	0	4.25
18	MP2C	Mx	-0.087	4.25
19	MP2A	X	-102.967	0.25
20	MP2A	Z	0	0.25
21	MP2A	Mx	0.051	0.25
22	MP2A	X	-102.967	4.25
23	MP2A	Z	0	4.25
24	MP2A	Mx	0.051	4.25
25	MP2B	X	-114.785	0.25
26	MP2B	Z	0	0.25
27	MP2B	Mx	-0.088	0.25
28	MP2B	X	-114.785	4.25
29	MP2B	Z	0	4.25
30	MP2B	Mx	-0.088	4.25
31	MP2C	X	-120.75	0.25
32	MP2C	Z	0	0.25
33	MP2C	Mx	0.046	0.25
34	MP2C	X	-120.75	4.25
35	MP2C	Z	0	4.25
36	MP2C	Mx	0.046	4.25
37	MP1A	X	-20.442	1.25
38	MP1A	Z	0	1.25
39	MP1A	Mx	0.01	1.25
40	MP1A	X	-20.442	3.25
41	MP1A	Z	0	3.25
42	MP1A	Mx	0.01	3.25
43	MP1B	X	-43.278	1.25
44	MP1B	Z	0	1.25
45	MP1B	Mx	-0.014	1.25
46	MP1B	X	-43.278	3.25
47	MP1B	Z	0	3.25
48	MP1B	Mx	-0.014	3.25
49	MP1C	X	-49.628	1.25
50	MP1C	Z	0	1.25
51	MP1C	Mx	-0.012	1.25
52	MP1C	X	-49.628	3.25
53	MP1C	Z	0	3.25
54	MP1C	Mx	-0.012	3.25
55	M122	X	-73.679	1
56	M122	Z	0	1
57	M122	Mx	0	1
58	MP2A	X	-31.496	1
59	MP2A	Z	0	1
60	MP2A	Mx	-0.016	1
61	MP2B	X	-40.559	1
62	MP2B	Z	0	1
63	MP2B	Mx	0.013	1
64	MP2C	X	-45.134	1
65	MP2C	Z	0	1
66	MP2C	Mx	0.008	1
67	MP3A	X	-38.612	1
68	MP3A	Z	0	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
69	MP3A	Mx	-0.019	1
70	MP3B	X	-49.187	1
71	MP3B	Z	0	1
72	MP3B	Mx	0.016	1
73	MP3C	X	-54.524	1
74	MP3C	Z	0	1
75	MP3C	Mx	0.009	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-93.532	0.25
2	MP2A	Z	-54.001	0.25
3	MP2A	Mx	0.015	0.25
4	MP2A	X	-93.532	4.25
5	MP2A	Z	-54.001	4.25
6	MP2A	Mx	0.015	4.25
7	MP2B	X	-106.087	0.25
8	MP2B	Z	-61.249	0.25
9	MP2B	Mx	0.06	0.25
10	MP2B	X	-106.087	4.25
11	MP2B	Z	-61.249	4.25
12	MP2B	Mx	0.06	4.25
13	MP2C	X	-96.378	0.25
14	MP2C	Z	-55.644	0.25
15	MP2C	Mx	-0.084	0.25
16	MP2C	X	-96.378	4.25
17	MP2C	Z	-55.644	4.25
18	MP2C	Mx	-0.084	4.25
19	MP2A	X	-93.532	0.25
20	MP2A	Z	-54.001	0.25
21	MP2A	Mx	0.078	0.25
22	MP2A	X	-93.532	4.25
23	MP2A	Z	-54.001	4.25
24	MP2A	Mx	0.078	4.25
25	MP2B	X	-106.087	0.25
26	MP2B	Z	-61.249	0.25
27	MP2B	Mx	-0.081	0.25
28	MP2B	X	-106.087	4.25
29	MP2B	Z	-61.249	4.25
30	MP2B	Mx	-0.081	4.25
31	MP2C	X	-96.378	0.25
32	MP2C	Z	-55.644	0.25
33	MP2C	Mx	-0.000897	0.25
34	MP2C	X	-96.378	4.25
35	MP2C	Z	-55.644	4.25
36	MP2C	Mx	-0.000897	4.25
37	MP1A	X	-26.129	1.25
38	MP1A	Z	-15.085	1.25
39	MP1A	Mx	0.013	1.25
40	MP1A	X	-26.129	3.25
41	MP1A	Z	-15.085	3.25
42	MP1A	Mx	0.013	3.25
43	MP1B	X	-50.389	1.25
44	MP1B	Z	-29.092	1.25
45	MP1B	Mx	-0.005	1.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
46	MP1B	X	-50.389	3.25
47	MP1B	Z	-29.092	3.25
48	MP1B	Mx	-0.005	3.25
49	MP1C	X	-26.129	1.25
50	MP1C	Z	-15.085	1.25
51	MP1C	Mx	-0.013	1.25
52	MP1C	X	-26.129	3.25
53	MP1C	Z	-15.085	3.25
54	MP1C	Mx	-0.013	3.25
55	M122	X	-65.539	1
56	M122	Z	-37.839	1
57	M122	Mx	0	1
58	MP2A	X	-30.62	1
59	MP2A	Z	-17.678	1
60	MP2A	Mx	-0.015	1
61	MP2B	X	-40.248	1
62	MP2B	Z	-23.237	1
63	MP2B	Mx	0.004	1
64	MP2C	X	-32.803	1
65	MP2C	Z	-18.939	1
66	MP2C	Mx	0.015	1
67	MP3A	X	-37.341	1
68	MP3A	Z	-21.559	1
69	MP3A	Mx	-0.019	1
70	MP3B	X	-48.574	1
71	MP3B	Z	-28.044	1
72	MP3B	Mx	0.005	1
73	MP3C	X	-39.887	1
74	MP3C	Z	-23.029	1
75	MP3C	Mx	0.018	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-59.035	0.25
2	MP2A	Z	-102.252	0.25
3	MP2A	Mx	-0.03	0.25
4	MP2A	X	-59.035	4.25
5	MP2A	Z	-102.252	4.25
6	MP2A	Mx	-0.03	4.25
7	MP2B	X	-60.375	0.25
8	MP2B	Z	-104.572	0.25
9	MP2B	Mx	0.087	0.25
10	MP2B	X	-60.375	4.25
11	MP2B	Z	-104.572	4.25
12	MP2B	Mx	0.087	4.25
13	MP2C	X	-51.787	0.25
14	MP2C	Z	-89.698	0.25
15	MP2C	Mx	-0.061	0.25
16	MP2C	X	-51.787	4.25
17	MP2C	Z	-89.698	4.25
18	MP2C	Mx	-0.061	4.25
19	MP2A	X	-59.035	0.25
20	MP2A	Z	-102.252	0.25
21	MP2A	Mx	0.089	0.25
22	MP2A	X	-59.035	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP2A	Z	-102.252	4.25
24	MP2A	Mx	0.089	4.25
25	MP2B	X	-60.375	0.25
26	MP2B	Z	-104.572	0.25
27	MP2B	Mx	-0.046	0.25
28	MP2B	X	-60.375	4.25
29	MP2B	Z	-104.572	4.25
30	MP2B	Mx	-0.046	4.25
31	MP2C	X	-51.787	0.25
32	MP2C	Z	-89.698	0.25
33	MP2C	Mx	-0.041	0.25
34	MP2C	X	-51.787	4.25
35	MP2C	Z	-89.698	4.25
36	MP2C	Mx	-0.041	4.25
37	MP1A	X	-24.814	1.25
38	MP1A	Z	-42.979	1.25
39	MP1A	Mx	0.012	1.25
40	MP1A	X	-24.814	3.25
41	MP1A	Z	-42.979	3.25
42	MP1A	Mx	0.012	3.25
43	MP1B	X	-27.403	1.25
44	MP1B	Z	-47.463	1.25
45	MP1B	Mx	0.009	1.25
46	MP1B	X	-27.403	3.25
47	MP1B	Z	-47.463	3.25
48	MP1B	Mx	0.009	3.25
49	MP1C	X	-10.221	1.25
50	MP1C	Z	-17.703	1.25
51	MP1C	Mx	-0.01	1.25
52	MP1C	X	-10.221	3.25
53	MP1C	Z	-17.703	3.25
54	MP1C	Mx	-0.01	3.25
55	M122	X	-43.246	1
56	M122	Z	-74.904	1
57	M122	Mx	0	1
58	MP2A	X	-21.54	1
59	MP2A	Z	-37.308	1
60	MP2A	Mx	-0.011	1
61	MP2B	X	-22.567	1
62	MP2B	Z	-39.087	1
63	MP2B	Mx	-0.008	1
64	MP2C	X	-15.981	1
65	MP2C	Z	-27.679	1
66	MP2C	Mx	0.016	1
67	MP3A	X	-26.063	1
68	MP3A	Z	-45.143	1
69	MP3A	Mx	-0.013	1
70	MP3B	X	-27.262	1
71	MP3B	Z	-47.219	1
72	MP3B	Mx	-0.009	1
73	MP3C	X	-19.578	1
74	MP3C	Z	-33.91	1
75	MP3C	Mx	0.019	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	0.25
2	MP2A	Z	-25.675	0.25
3	MP2A	Mx	-0.015	0.25
4	MP2A	X	0	4.25
5	MP2A	Z	-25.675	4.25
6	MP2A	Mx	-0.015	4.25
7	MP2B	X	0	0.25
8	MP2B	Z	-23.394	0.25
9	MP2B	Mx	0.018	0.25
10	MP2B	X	0	4.25
11	MP2B	Z	-23.394	4.25
12	MP2B	Mx	0.018	4.25
13	MP2C	X	0	0.25
14	MP2C	Z	-22.242	0.25
15	MP2C	Mx	-0.006	0.25
16	MP2C	X	0	4.25
17	MP2C	Z	-22.242	4.25
18	MP2C	Mx	-0.006	4.25
19	MP2A	X	0	0.25
20	MP2A	Z	-25.675	0.25
21	MP2A	Mx	0.015	0.25
22	MP2A	X	0	4.25
23	MP2A	Z	-25.675	4.25
24	MP2A	Mx	0.015	4.25
25	MP2B	X	0	0.25
26	MP2B	Z	-23.394	0.25
27	MP2B	Mx	0.000189	0.25
28	MP2B	X	0	4.25
29	MP2B	Z	-23.394	4.25
30	MP2B	Mx	0.000189	4.25
31	MP2C	X	0	0.25
32	MP2C	Z	-22.242	0.25
33	MP2C	Mx	-0.015	0.25
34	MP2C	X	0	4.25
35	MP2C	Z	-22.242	4.25
36	MP2C	Mx	-0.015	4.25
37	MP1A	X	0	1.25
38	MP1A	Z	-15.199	1.25
39	MP1A	Mx	0	1.25
40	MP1A	X	0	3.25
41	MP1A	Z	-15.199	3.25
42	MP1A	Mx	0	3.25
43	MP1B	X	0	1.25
44	MP1B	Z	-10.079	1.25
45	MP1B	Mx	0.004	1.25
46	MP1B	X	0	3.25
47	MP1B	Z	-10.079	3.25
48	MP1B	Mx	0.004	3.25
49	MP1C	X	0	1.25
50	MP1C	Z	-8.656	1.25
51	MP1C	Mx	-0.004	1.25
52	MP1C	X	0	3.25
53	MP1C	Z	-8.656	3.25
54	MP1C	Mx	-0.004	3.25
55	M122	X	0	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	M122	Z	-26.153	1
57	M122	Mx	0	1
58	MP2A	X	0	1
59	MP2A	Z	-12.81	1
60	MP2A	Mx	0	1
61	MP2B	X	0	1
62	MP2B	Z	-10.522	1
63	MP2B	Mx	-0.004	1
64	MP2C	X	0	1
65	MP2C	Z	-9.367	1
66	MP2C	Mx	0.004	1
67	MP3A	X	0	1
68	MP3A	Z	-12.81	1
69	MP3A	Mx	0	1
70	MP3B	X	0	1
71	MP3B	Z	-10.614	1
72	MP3B	Mx	-0.004	1
73	MP3C	X	0	1
74	MP3C	Z	-9.505	1
75	MP3C	Mx	0.004	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	12.352	0.25
2	MP2A	Z	-21.394	0.25
3	MP2A	Mx	-0.019	0.25
4	MP2A	X	12.352	4.25
5	MP2A	Z	-21.394	4.25
6	MP2A	Mx	-0.019	4.25
7	MP2B	X	10.952	0.25
8	MP2B	Z	-18.97	0.25
9	MP2B	Mx	0.013	0.25
10	MP2B	X	10.952	4.25
11	MP2B	Z	-18.97	4.25
12	MP2B	Mx	0.013	4.25
13	MP2C	X	12.035	0.25
14	MP2C	Z	-20.844	0.25
15	MP2C	Mx	0.003	0.25
16	MP2C	X	12.035	4.25
17	MP2C	Z	-20.844	4.25
18	MP2C	Mx	0.003	4.25
19	MP2A	X	12.352	0.25
20	MP2A	Z	-21.394	0.25
21	MP2A	Mx	0.006	0.25
22	MP2A	X	12.352	4.25
23	MP2A	Z	-21.394	4.25
24	MP2A	Mx	0.006	4.25
25	MP2B	X	10.952	0.25
26	MP2B	Z	-18.97	0.25
27	MP2B	Mx	0.009	0.25
28	MP2B	X	10.952	4.25
29	MP2B	Z	-18.97	4.25
30	MP2B	Mx	0.009	4.25
31	MP2C	X	12.035	0.25
32	MP2C	Z	-20.844	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
33	MP2C	Mx	-0.018	0.25
34	MP2C	X	12.035	4.25
35	MP2C	Z	-20.844	4.25
36	MP2C	Mx	-0.018	4.25
37	MP1A	X	6.509	1.25
38	MP1A	Z	-11.274	1.25
39	MP1A	Mx	-0.003	1.25
40	MP1A	X	6.509	3.25
41	MP1A	Z	-11.274	3.25
42	MP1A	Mx	-0.003	3.25
43	MP1B	X	3.369	1.25
44	MP1B	Z	-5.835	1.25
45	MP1B	Mx	0.003	1.25
46	MP1B	X	3.369	3.25
47	MP1B	Z	-5.835	3.25
48	MP1B	Mx	0.003	3.25
49	MP1C	X	6.509	1.25
50	MP1C	Z	-11.274	1.25
51	MP1C	Mx	-0.003	1.25
52	MP1C	X	6.509	3.25
53	MP1C	Z	-11.274	3.25
54	MP1C	Mx	-0.003	3.25
55	M122	X	12.827	1
56	M122	Z	-22.217	1
57	M122	Mx	0	1
58	MP2A	X	5.918	1
59	MP2A	Z	-10.25	1
60	MP2A	Mx	0.003	1
61	MP2B	X	4.514	1
62	MP2B	Z	-7.819	1
63	MP2B	Mx	-0.004	1
64	MP2C	X	5.6	1
65	MP2C	Z	-9.699	1
66	MP2C	Mx	0.004	1
67	MP3A	X	5.937	1
68	MP3A	Z	-10.284	1
69	MP3A	Mx	0.003	1
70	MP3B	X	4.59	1
71	MP3B	Z	-7.95	1
72	MP3B	Mx	-0.005	1
73	MP3C	X	5.632	1
74	MP3C	Z	-9.755	1
75	MP3C	Mx	0.004	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	19.71	0.25
2	MP2A	Z	-11.38	0.25
3	MP2A	Mx	-0.016	0.25
4	MP2A	X	19.71	4.25
5	MP2A	Z	-11.38	4.25
6	MP2A	Mx	-0.016	4.25
7	MP2B	X	19.262	0.25
8	MP2B	Z	-11.121	0.25
9	MP2B	Mx	0.006	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
10	MP2B	X	19.262	4.25
11	MP2B	Z	-11.121	4.25
12	MP2B	Mx	0.006	4.25
13	MP2C	X	22.134	0.25
14	MP2C	Z	-12.779	0.25
15	MP2C	Mx	0.012	0.25
16	MP2C	X	22.134	4.25
17	MP2C	Z	-12.779	4.25
18	MP2C	Mx	0.012	4.25
19	MP2A	X	19.71	0.25
20	MP2A	Z	-11.38	0.25
21	MP2A	Mx	-0.003	0.25
22	MP2A	X	19.71	4.25
23	MP2A	Z	-11.38	4.25
24	MP2A	Mx	-0.003	4.25
25	MP2B	X	19.262	0.25
26	MP2B	Z	-11.121	0.25
27	MP2B	Mx	0.015	0.25
28	MP2B	X	19.262	4.25
29	MP2B	Z	-11.121	4.25
30	MP2B	Mx	0.015	4.25
31	MP2C	X	22.134	0.25
32	MP2C	Z	-12.779	0.25
33	MP2C	Mx	-0.017	0.25
34	MP2C	X	22.134	4.25
35	MP2C	Z	-12.779	4.25
36	MP2C	Mx	-0.017	4.25
37	MP1A	X	7.496	1.25
38	MP1A	Z	-4.328	1.25
39	MP1A	Mx	-0.004	1.25
40	MP1A	X	7.496	3.25
41	MP1A	Z	-4.328	3.25
42	MP1A	Mx	-0.004	3.25
43	MP1B	X	6.491	1.25
44	MP1B	Z	-3.748	1.25
45	MP1B	Mx	0.004	1.25
46	MP1B	X	6.491	3.25
47	MP1B	Z	-3.748	3.25
48	MP1B	Mx	0.004	3.25
49	MP1C	X	13.163	1.25
50	MP1C	Z	-7.6	1.25
51	MP1C	Mx	0	1.25
52	MP1C	X	13.163	3.25
53	MP1C	Z	-7.6	3.25
54	MP1C	Mx	0	3.25
55	M122	X	19.882	1
56	M122	Z	-11.479	1
57	M122	Mx	0	1
58	MP2A	X	8.561	1
59	MP2A	Z	-4.943	1
60	MP2A	Mx	0.004	1
61	MP2B	X	8.112	1
62	MP2B	Z	-4.684	1
63	MP2B	Mx	-0.004	1
64	MP2C	X	10.992	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
65	MP2C	Z	-6.346	1
66	MP2C	Mx	0.001	1
67	MP3A	X	8.663	1
68	MP3A	Z	-5.001	1
69	MP3A	Mx	0.004	1
70	MP3B	X	8.232	1
71	MP3B	Z	-4.752	1
72	MP3B	Mx	-0.004	1
73	MP3C	X	10.996	1
74	MP3C	Z	-6.349	1
75	MP3C	Mx	0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	21.787	0.25
2	MP2A	Z	0	0.25
3	MP2A	Mx	-0.011	0.25
4	MP2A	X	21.787	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	-0.011	4.25
7	MP2B	X	24.069	0.25
8	MP2B	Z	0	0.25
9	MP2B	Mx	-0.003	0.25
10	MP2B	X	24.069	4.25
11	MP2B	Z	0	4.25
12	MP2B	Mx	-0.003	4.25
13	MP2C	X	25.221	0.25
14	MP2C	Z	0	0.25
15	MP2C	Mx	0.018	0.25
16	MP2C	X	25.221	4.25
17	MP2C	Z	0	4.25
18	MP2C	Mx	0.018	4.25
19	MP2A	X	21.787	0.25
20	MP2A	Z	0	0.25
21	MP2A	Mx	-0.011	0.25
22	MP2A	X	21.787	4.25
23	MP2A	Z	0	4.25
24	MP2A	Mx	-0.011	4.25
25	MP2B	X	24.069	0.25
26	MP2B	Z	0	0.25
27	MP2B	Mx	0.018	0.25
28	MP2B	X	24.069	4.25
29	MP2B	Z	0	4.25
30	MP2B	Mx	0.018	4.25
31	MP2C	X	25.221	0.25
32	MP2C	Z	0	0.25
33	MP2C	Mx	-0.01	0.25
34	MP2C	X	25.221	4.25
35	MP2C	Z	0	4.25
36	MP2C	Mx	-0.01	4.25
37	MP1A	X	6.475	1.25
38	MP1A	Z	0	1.25
39	MP1A	Mx	-0.003	1.25
40	MP1A	X	6.475	3.25
41	MP1A	Z	0	3.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
42	MP1A	Mx	-0.003	3.25
43	MP1B	X	11.594	1.25
44	MP1B	Z	0	1.25
45	MP1B	Mx	0.004	1.25
46	MP1B	X	11.594	3.25
47	MP1B	Z	0	3.25
48	MP1B	Mx	0.004	3.25
49	MP1C	X	13.018	1.25
50	MP1C	Z	0	1.25
51	MP1C	Mx	0.003	1.25
52	MP1C	X	13.018	3.25
53	MP1C	Z	0	3.25
54	MP1C	Mx	0.003	3.25
55	M122	X	20.76	1
56	M122	Z	0	1
57	M122	Mx	0	1
58	MP2A	X	8.911	1
59	MP2A	Z	0	1
60	MP2A	Mx	0.004	1
61	MP2B	X	11.199	1
62	MP2B	Z	0	1
63	MP2B	Mx	-0.004	1
64	MP2C	X	12.354	1
65	MP2C	Z	0	1
66	MP2C	Mx	-0.002	1
67	MP3A	X	9.067	1
68	MP3A	Z	0	1
69	MP3A	Mx	0.005	1
70	MP3B	X	11.264	1
71	MP3B	Z	0	1
72	MP3B	Mx	-0.004	1
73	MP3C	X	12.373	1
74	MP3C	Z	0	1
75	MP3C	Mx	-0.002	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	19.71	0.25
2	MP2A	Z	11.38	0.25
3	MP2A	Mx	-0.003	0.25
4	MP2A	X	19.71	4.25
5	MP2A	Z	11.38	4.25
6	MP2A	Mx	-0.003	4.25
7	MP2B	X	22.134	0.25
8	MP2B	Z	12.779	0.25
9	MP2B	Mx	-0.012	0.25
10	MP2B	X	22.134	4.25
11	MP2B	Z	12.779	4.25
12	MP2B	Mx	-0.012	4.25
13	MP2C	X	20.26	0.25
14	MP2C	Z	11.697	0.25
15	MP2C	Mx	0.018	0.25
16	MP2C	X	20.26	4.25
17	MP2C	Z	11.697	4.25
18	MP2C	Mx	0.018	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
19	MP2A	X	19.71	0.25
20	MP2A	Z	11.38	0.25
21	MP2A	Mx	-0.016	0.25
22	MP2A	X	19.71	4.25
23	MP2A	Z	11.38	4.25
24	MP2A	Mx	-0.016	4.25
25	MP2B	X	22.134	0.25
26	MP2B	Z	12.779	0.25
27	MP2B	Mx	0.017	0.25
28	MP2B	X	22.134	4.25
29	MP2B	Z	12.779	4.25
30	MP2B	Mx	0.017	4.25
31	MP2C	X	20.26	0.25
32	MP2C	Z	11.697	0.25
33	MP2C	Mx	0.000189	0.25
34	MP2C	X	20.26	4.25
35	MP2C	Z	11.697	4.25
36	MP2C	Mx	0.000189	4.25
37	MP1A	X	7.496	1.25
38	MP1A	Z	4.328	1.25
39	MP1A	Mx	-0.004	1.25
40	MP1A	X	7.496	3.25
41	MP1A	Z	4.328	3.25
42	MP1A	Mx	-0.004	3.25
43	MP1B	X	12.935	1.25
44	MP1B	Z	7.468	1.25
45	MP1B	Mx	0.001	1.25
46	MP1B	X	12.935	3.25
47	MP1B	Z	7.468	3.25
48	MP1B	Mx	0.001	3.25
49	MP1C	X	7.496	1.25
50	MP1C	Z	4.328	1.25
51	MP1C	Mx	0.004	1.25
52	MP1C	X	7.496	3.25
53	MP1C	Z	4.328	3.25
54	MP1C	Mx	0.004	3.25
55	M122	X	18.41	1
56	M122	Z	10.629	1
57	M122	Mx	0	1
58	MP2A	X	8.561	1
59	MP2A	Z	4.943	1
60	MP2A	Mx	0.004	1
61	MP2B	X	10.992	1
62	MP2B	Z	6.346	1
63	MP2B	Mx	-0.001	1
64	MP2C	X	9.112	1
65	MP2C	Z	5.261	1
66	MP2C	Mx	-0.004	1
67	MP3A	X	8.663	1
68	MP3A	Z	5.001	1
69	MP3A	Mx	0.004	1
70	MP3B	X	10.996	1
71	MP3B	Z	6.349	1
72	MP3B	Mx	-0.001	1
73	MP3C	X	9.192	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
74	MP3C	Z	5.307	1
75	MP3C	Mx	-0.004	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	12.352	0.25
2	MP2A	Z	21.394	0.25
3	MP2A	Mx	0.006	0.25
4	MP2A	X	12.352	4.25
5	MP2A	Z	21.394	4.25
6	MP2A	Mx	0.006	4.25
7	MP2B	X	12.61	0.25
8	MP2B	Z	21.842	0.25
9	MP2B	Mx	-0.018	0.25
10	MP2B	X	12.61	4.25
11	MP2B	Z	21.842	4.25
12	MP2B	Mx	-0.018	4.25
13	MP2C	X	10.952	0.25
14	MP2C	Z	18.97	0.25
15	MP2C	Mx	0.013	0.25
16	MP2C	X	10.952	4.25
17	MP2C	Z	18.97	4.25
18	MP2C	Mx	0.013	4.25
19	MP2A	X	12.352	0.25
20	MP2A	Z	21.394	0.25
21	MP2A	Mx	-0.019	0.25
22	MP2A	X	12.352	4.25
23	MP2A	Z	21.394	4.25
24	MP2A	Mx	-0.019	4.25
25	MP2B	X	12.61	0.25
26	MP2B	Z	21.842	0.25
27	MP2B	Mx	0.01	0.25
28	MP2B	X	12.61	4.25
29	MP2B	Z	21.842	4.25
30	MP2B	Mx	0.01	4.25
31	MP2C	X	10.952	0.25
32	MP2C	Z	18.97	0.25
33	MP2C	Mx	0.009	0.25
34	MP2C	X	10.952	4.25
35	MP2C	Z	18.97	4.25
36	MP2C	Mx	0.009	4.25
37	MP1A	X	6.509	1.25
38	MP1A	Z	11.274	1.25
39	MP1A	Mx	-0.003	1.25
40	MP1A	X	6.509	3.25
41	MP1A	Z	11.274	3.25
42	MP1A	Mx	-0.003	3.25
43	MP1B	X	7.089	1.25
44	MP1B	Z	12.279	1.25
45	MP1B	Mx	-0.002	1.25
46	MP1B	X	7.089	3.25
47	MP1B	Z	12.279	3.25
48	MP1B	Mx	-0.002	3.25
49	MP1C	X	3.237	1.25
50	MP1C	Z	5.607	1.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
51	MP1C	Mx	0.003	1.25
52	MP1C	X	3.237	3.25
53	MP1C	Z	5.607	3.25
54	MP1C	Mx	0.003	3.25
55	M122	X	11.977	1
56	M122	Z	20.745	1
57	M122	Mx	0	1
58	MP2A	X	5.918	1
59	MP2A	Z	10.25	1
60	MP2A	Mx	0.003	1
61	MP2B	X	6.177	1
62	MP2B	Z	10.699	1
63	MP2B	Mx	0.002	1
64	MP2C	X	4.514	1
65	MP2C	Z	7.819	1
66	MP2C	Mx	-0.004	1
67	MP3A	X	5.937	1
68	MP3A	Z	10.284	1
69	MP3A	Mx	0.003	1
70	MP3B	X	6.186	1
71	MP3B	Z	10.715	1
72	MP3B	Mx	0.002	1
73	MP3C	X	4.59	1
74	MP3C	Z	7.95	1
75	MP3C	Mx	-0.005	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	0.25
2	MP2A	Z	25.675	0.25
3	MP2A	Mx	0.015	0.25
4	MP2A	X	0	4.25
5	MP2A	Z	25.675	4.25
6	MP2A	Mx	0.015	4.25
7	MP2B	X	0	0.25
8	MP2B	Z	23.394	0.25
9	MP2B	Mx	-0.018	0.25
10	MP2B	X	0	4.25
11	MP2B	Z	23.394	4.25
12	MP2B	Mx	-0.018	4.25
13	MP2C	X	0	0.25
14	MP2C	Z	22.242	0.25
15	MP2C	Mx	0.006	0.25
16	MP2C	X	0	4.25
17	MP2C	Z	22.242	4.25
18	MP2C	Mx	0.006	4.25
19	MP2A	X	0	0.25
20	MP2A	Z	25.675	0.25
21	MP2A	Mx	-0.015	0.25
22	MP2A	X	0	4.25
23	MP2A	Z	25.675	4.25
24	MP2A	Mx	-0.015	4.25
25	MP2B	X	0	0.25
26	MP2B	Z	23.394	0.25
27	MP2B	Mx	-0.000189	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
28	MP2B	X	0	4.25
29	MP2B	Z	23.394	4.25
30	MP2B	Mx	-0.000189	4.25
31	MP2C	X	0	0.25
32	MP2C	Z	22.242	0.25
33	MP2C	Mx	0.015	0.25
34	MP2C	X	0	4.25
35	MP2C	Z	22.242	4.25
36	MP2C	Mx	0.015	4.25
37	MP1A	X	0	1.25
38	MP1A	Z	15.199	1.25
39	MP1A	Mx	0	1.25
40	MP1A	X	0	3.25
41	MP1A	Z	15.199	3.25
42	MP1A	Mx	0	3.25
43	MP1B	X	0	1.25
44	MP1B	Z	10.079	1.25
45	MP1B	Mx	-0.004	1.25
46	MP1B	X	0	3.25
47	MP1B	Z	10.079	3.25
48	MP1B	Mx	-0.004	3.25
49	MP1C	X	0	1.25
50	MP1C	Z	8.656	1.25
51	MP1C	Mx	0.004	1.25
52	MP1C	X	0	3.25
53	MP1C	Z	8.656	3.25
54	MP1C	Mx	0.004	3.25
55	M122	X	0	1
56	M122	Z	26.153	1
57	M122	Mx	0	1
58	MP2A	X	0	1
59	MP2A	Z	12.81	1
60	MP2A	Mx	0	1
61	MP2B	X	0	1
62	MP2B	Z	10.522	1
63	MP2B	Mx	0.004	1
64	MP2C	X	0	1
65	MP2C	Z	9.367	1
66	MP2C	Mx	-0.004	1
67	MP3A	X	0	1
68	MP3A	Z	12.81	1
69	MP3A	Mx	0	1
70	MP3B	X	0	1
71	MP3B	Z	10.614	1
72	MP3B	Mx	0.004	1
73	MP3C	X	0	1
74	MP3C	Z	9.505	1
75	MP3C	Mx	-0.004	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-12.352	0.25
2	MP2A	Z	21.394	0.25
3	MP2A	Mx	0.019	0.25
4	MP2A	X	-12.352	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
5	MP2A	Z	21.394	4.25
6	MP2A	Mx	0.019	4.25
7	MP2B	X	-10.952	0.25
8	MP2B	Z	18.97	0.25
9	MP2B	Mx	-0.013	0.25
10	MP2B	X	-10.952	4.25
11	MP2B	Z	18.97	4.25
12	MP2B	Mx	-0.013	4.25
13	MP2C	X	-12.035	0.25
14	MP2C	Z	20.844	0.25
15	MP2C	Mx	-0.003	0.25
16	MP2C	X	-12.035	4.25
17	MP2C	Z	20.844	4.25
18	MP2C	Mx	-0.003	4.25
19	MP2A	X	-12.352	0.25
20	MP2A	Z	21.394	0.25
21	MP2A	Mx	-0.006	0.25
22	MP2A	X	-12.352	4.25
23	MP2A	Z	21.394	4.25
24	MP2A	Mx	-0.006	4.25
25	MP2B	X	-10.952	0.25
26	MP2B	Z	18.97	0.25
27	MP2B	Mx	-0.009	0.25
28	MP2B	X	-10.952	4.25
29	MP2B	Z	18.97	4.25
30	MP2B	Mx	-0.009	4.25
31	MP2C	X	-12.035	0.25
32	MP2C	Z	20.844	0.25
33	MP2C	Mx	0.018	0.25
34	MP2C	X	-12.035	4.25
35	MP2C	Z	20.844	4.25
36	MP2C	Mx	0.018	4.25
37	MP1A	X	-6.509	1.25
38	MP1A	Z	11.274	1.25
39	MP1A	Mx	0.003	1.25
40	MP1A	X	-6.509	3.25
41	MP1A	Z	11.274	3.25
42	MP1A	Mx	0.003	3.25
43	MP1B	X	-3.369	1.25
44	MP1B	Z	5.835	1.25
45	MP1B	Mx	-0.003	1.25
46	MP1B	X	-3.369	3.25
47	MP1B	Z	5.835	3.25
48	MP1B	Mx	-0.003	3.25
49	MP1C	X	-6.509	1.25
50	MP1C	Z	11.274	1.25
51	MP1C	Mx	0.003	1.25
52	MP1C	X	-6.509	3.25
53	MP1C	Z	11.274	3.25
54	MP1C	Mx	0.003	3.25
55	M122	X	-12.827	1
56	M122	Z	22.217	1
57	M122	Mx	0	1
58	MP2A	X	-5.918	1
59	MP2A	Z	10.25	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
60	MP2A	Mx	-0.003	1
61	MP2B	X	-4.514	1
62	MP2B	Z	7.819	1
63	MP2B	Mx	0.004	1
64	MP2C	X	-5.6	1
65	MP2C	Z	9.699	1
66	MP2C	Mx	-0.004	1
67	MP3A	X	-5.937	1
68	MP3A	Z	10.284	1
69	MP3A	Mx	-0.003	1
70	MP3B	X	-4.59	1
71	MP3B	Z	7.95	1
72	MP3B	Mx	0.005	1
73	MP3C	X	-5.632	1
74	MP3C	Z	9.755	1
75	MP3C	Mx	-0.004	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-19.71	0.25
2	MP2A	Z	11.38	0.25
3	MP2A	Mx	0.016	0.25
4	MP2A	X	-19.71	4.25
5	MP2A	Z	11.38	4.25
6	MP2A	Mx	0.016	4.25
7	MP2B	X	-19.262	0.25
8	MP2B	Z	11.121	0.25
9	MP2B	Mx	-0.006	0.25
10	MP2B	X	-19.262	4.25
11	MP2B	Z	11.121	4.25
12	MP2B	Mx	-0.006	4.25
13	MP2C	X	-22.134	0.25
14	MP2C	Z	12.779	0.25
15	MP2C	Mx	-0.012	0.25
16	MP2C	X	-22.134	4.25
17	MP2C	Z	12.779	4.25
18	MP2C	Mx	-0.012	4.25
19	MP2A	X	-19.71	0.25
20	MP2A	Z	11.38	0.25
21	MP2A	Mx	0.003	0.25
22	MP2A	X	-19.71	4.25
23	MP2A	Z	11.38	4.25
24	MP2A	Mx	0.003	4.25
25	MP2B	X	-19.262	0.25
26	MP2B	Z	11.121	0.25
27	MP2B	Mx	-0.015	0.25
28	MP2B	X	-19.262	4.25
29	MP2B	Z	11.121	4.25
30	MP2B	Mx	-0.015	4.25
31	MP2C	X	-22.134	0.25
32	MP2C	Z	12.779	0.25
33	MP2C	Mx	0.017	0.25
34	MP2C	X	-22.134	4.25
35	MP2C	Z	12.779	4.25
36	MP2C	Mx	0.017	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
37	MP1A	X	-7.496	1.25
38	MP1A	Z	4.328	1.25
39	MP1A	Mx	0.004	1.25
40	MP1A	X	-7.496	3.25
41	MP1A	Z	4.328	3.25
42	MP1A	Mx	0.004	3.25
43	MP1B	X	-6.491	1.25
44	MP1B	Z	3.748	1.25
45	MP1B	Mx	-0.004	1.25
46	MP1B	X	-6.491	3.25
47	MP1B	Z	3.748	3.25
48	MP1B	Mx	-0.004	3.25
49	MP1C	X	-13.163	1.25
50	MP1C	Z	7.6	1.25
51	MP1C	Mx	0	1.25
52	MP1C	X	-13.163	3.25
53	MP1C	Z	7.6	3.25
54	MP1C	Mx	0	3.25
55	M122	X	-19.882	1
56	M122	Z	11.479	1
57	M122	Mx	0	1
58	MP2A	X	-8.561	1
59	MP2A	Z	4.943	1
60	MP2A	Mx	-0.004	1
61	MP2B	X	-8.112	1
62	MP2B	Z	4.684	1
63	MP2B	Mx	0.004	1
64	MP2C	X	-10.992	1
65	MP2C	Z	6.346	1
66	MP2C	Mx	-0.001	1
67	MP3A	X	-8.663	1
68	MP3A	Z	5.001	1
69	MP3A	Mx	-0.004	1
70	MP3B	X	-8.232	1
71	MP3B	Z	4.752	1
72	MP3B	Mx	0.004	1
73	MP3C	X	-10.996	1
74	MP3C	Z	6.349	1
75	MP3C	Mx	-0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-21.787	0.25
2	MP2A	Z	0	0.25
3	MP2A	Mx	0.011	0.25
4	MP2A	X	-21.787	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	0.011	4.25
7	MP2B	X	-24.069	0.25
8	MP2B	Z	0	0.25
9	MP2B	Mx	0.003	0.25
10	MP2B	X	-24.069	4.25
11	MP2B	Z	0	4.25
12	MP2B	Mx	0.003	4.25
13	MP2C	X	-25.221	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
14	MP2C	Z	0	0.25
15	MP2C	Mx	-0.018	0.25
16	MP2C	X	-25.221	4.25
17	MP2C	Z	0	4.25
18	MP2C	Mx	-0.018	4.25
19	MP2A	X	-21.787	0.25
20	MP2A	Z	0	0.25
21	MP2A	Mx	0.011	0.25
22	MP2A	X	-21.787	4.25
23	MP2A	Z	0	4.25
24	MP2A	Mx	0.011	4.25
25	MP2B	X	-24.069	0.25
26	MP2B	Z	0	0.25
27	MP2B	Mx	-0.018	0.25
28	MP2B	X	-24.069	4.25
29	MP2B	Z	0	4.25
30	MP2B	Mx	-0.018	4.25
31	MP2C	X	-25.221	0.25
32	MP2C	Z	0	0.25
33	MP2C	Mx	0.01	0.25
34	MP2C	X	-25.221	4.25
35	MP2C	Z	0	4.25
36	MP2C	Mx	0.01	4.25
37	MP1A	X	-6.475	1.25
38	MP1A	Z	0	1.25
39	MP1A	Mx	0.003	1.25
40	MP1A	X	-6.475	3.25
41	MP1A	Z	0	3.25
42	MP1A	Mx	0.003	3.25
43	MP1B	X	-11.594	1.25
44	MP1B	Z	0	1.25
45	MP1B	Mx	-0.004	1.25
46	MP1B	X	-11.594	3.25
47	MP1B	Z	0	3.25
48	MP1B	Mx	-0.004	3.25
49	MP1C	X	-13.018	1.25
50	MP1C	Z	0	1.25
51	MP1C	Mx	-0.003	1.25
52	MP1C	X	-13.018	3.25
53	MP1C	Z	0	3.25
54	MP1C	Mx	-0.003	3.25
55	M122	X	-20.76	1
56	M122	Z	0	1
57	M122	Mx	0	1
58	MP2A	X	-8.911	1
59	MP2A	Z	0	1
60	MP2A	Mx	-0.004	1
61	MP2B	X	-11.199	1
62	MP2B	Z	0	1
63	MP2B	Mx	0.004	1
64	MP2C	X	-12.354	1
65	MP2C	Z	0	1
66	MP2C	Mx	0.002	1
67	MP3A	X	-9.067	1
68	MP3A	Z	0	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
69	MP3A	Mx	-0.005	1
70	MP3B	X	-11.264	1
71	MP3B	Z	0	1
72	MP3B	Mx	0.004	1
73	MP3C	X	-12.373	1
74	MP3C	Z	0	1
75	MP3C	Mx	0.002	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-19.71	0.25
2	MP2A	Z	-11.38	0.25
3	MP2A	Mx	0.003	0.25
4	MP2A	X	-19.71	4.25
5	MP2A	Z	-11.38	4.25
6	MP2A	Mx	0.003	4.25
7	MP2B	X	-22.134	0.25
8	MP2B	Z	-12.779	0.25
9	MP2B	Mx	0.012	0.25
10	MP2B	X	-22.134	4.25
11	MP2B	Z	-12.779	4.25
12	MP2B	Mx	0.012	4.25
13	MP2C	X	-20.26	0.25
14	MP2C	Z	-11.697	0.25
15	MP2C	Mx	-0.018	0.25
16	MP2C	X	-20.26	4.25
17	MP2C	Z	-11.697	4.25
18	MP2C	Mx	-0.018	4.25
19	MP2A	X	-19.71	0.25
20	MP2A	Z	-11.38	0.25
21	MP2A	Mx	0.016	0.25
22	MP2A	X	-19.71	4.25
23	MP2A	Z	-11.38	4.25
24	MP2A	Mx	0.016	4.25
25	MP2B	X	-22.134	0.25
26	MP2B	Z	-12.779	0.25
27	MP2B	Mx	-0.017	0.25
28	MP2B	X	-22.134	4.25
29	MP2B	Z	-12.779	4.25
30	MP2B	Mx	-0.017	4.25
31	MP2C	X	-20.26	0.25
32	MP2C	Z	-11.697	0.25
33	MP2C	Mx	-0.000189	0.25
34	MP2C	X	-20.26	4.25
35	MP2C	Z	-11.697	4.25
36	MP2C	Mx	-0.000189	4.25
37	MP1A	X	-7.496	1.25
38	MP1A	Z	-4.328	1.25
39	MP1A	Mx	0.004	1.25
40	MP1A	X	-7.496	3.25
41	MP1A	Z	-4.328	3.25
42	MP1A	Mx	0.004	3.25
43	MP1B	X	-12.935	1.25
44	MP1B	Z	-7.468	1.25
45	MP1B	Mx	-0.001	1.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
46	MP1B	X	-12.935	3.25
47	MP1B	Z	-7.468	3.25
48	MP1B	Mx	-0.001	3.25
49	MP1C	X	-7.496	1.25
50	MP1C	Z	-4.328	1.25
51	MP1C	Mx	-0.004	1.25
52	MP1C	X	-7.496	3.25
53	MP1C	Z	-4.328	3.25
54	MP1C	Mx	-0.004	3.25
55	M122	X	-18.41	1
56	M122	Z	-10.629	1
57	M122	Mx	0	1
58	MP2A	X	-8.561	1
59	MP2A	Z	-4.943	1
60	MP2A	Mx	-0.004	1
61	MP2B	X	-10.992	1
62	MP2B	Z	-6.346	1
63	MP2B	Mx	0.001	1
64	MP2C	X	-9.112	1
65	MP2C	Z	-5.261	1
66	MP2C	Mx	0.004	1
67	MP3A	X	-8.663	1
68	MP3A	Z	-5.001	1
69	MP3A	Mx	-0.004	1
70	MP3B	X	-10.996	1
71	MP3B	Z	-6.349	1
72	MP3B	Mx	0.001	1
73	MP3C	X	-9.192	1
74	MP3C	Z	-5.307	1
75	MP3C	Mx	0.004	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-12.352	0.25
2	MP2A	Z	-21.394	0.25
3	MP2A	Mx	-0.006	0.25
4	MP2A	X	-12.352	4.25
5	MP2A	Z	-21.394	4.25
6	MP2A	Mx	-0.006	4.25
7	MP2B	X	-12.61	0.25
8	MP2B	Z	-21.842	0.25
9	MP2B	Mx	0.018	0.25
10	MP2B	X	-12.61	4.25
11	MP2B	Z	-21.842	4.25
12	MP2B	Mx	0.018	4.25
13	MP2C	X	-10.952	0.25
14	MP2C	Z	-18.97	0.25
15	MP2C	Mx	-0.013	0.25
16	MP2C	X	-10.952	4.25
17	MP2C	Z	-18.97	4.25
18	MP2C	Mx	-0.013	4.25
19	MP2A	X	-12.352	0.25
20	MP2A	Z	-21.394	0.25
21	MP2A	Mx	0.019	0.25
22	MP2A	X	-12.352	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP2A	Z	-21.394	4.25
24	MP2A	Mx	0.019	4.25
25	MP2B	X	-12.61	0.25
26	MP2B	Z	-21.842	0.25
27	MP2B	Mx	-0.01	0.25
28	MP2B	X	-12.61	4.25
29	MP2B	Z	-21.842	4.25
30	MP2B	Mx	-0.01	4.25
31	MP2C	X	-10.952	0.25
32	MP2C	Z	-18.97	0.25
33	MP2C	Mx	-0.009	0.25
34	MP2C	X	-10.952	4.25
35	MP2C	Z	-18.97	4.25
36	MP2C	Mx	-0.009	4.25
37	MP1A	X	-6.509	1.25
38	MP1A	Z	-11.274	1.25
39	MP1A	Mx	0.003	1.25
40	MP1A	X	-6.509	3.25
41	MP1A	Z	-11.274	3.25
42	MP1A	Mx	0.003	3.25
43	MP1B	X	-7.089	1.25
44	MP1B	Z	-12.279	1.25
45	MP1B	Mx	0.002	1.25
46	MP1B	X	-7.089	3.25
47	MP1B	Z	-12.279	3.25
48	MP1B	Mx	0.002	3.25
49	MP1C	X	-3.237	1.25
50	MP1C	Z	-5.607	1.25
51	MP1C	Mx	-0.003	1.25
52	MP1C	X	-3.237	3.25
53	MP1C	Z	-5.607	3.25
54	MP1C	Mx	-0.003	3.25
55	M122	X	-11.977	1
56	M122	Z	-20.745	1
57	M122	Mx	0	1
58	MP2A	X	-5.918	1
59	MP2A	Z	-10.25	1
60	MP2A	Mx	-0.003	1
61	MP2B	X	-6.177	1
62	MP2B	Z	-10.699	1
63	MP2B	Mx	-0.002	1
64	MP2C	X	-4.514	1
65	MP2C	Z	-7.819	1
66	MP2C	Mx	0.004	1
67	MP3A	X	-5.937	1
68	MP3A	Z	-10.284	1
69	MP3A	Mx	-0.003	1
70	MP3B	X	-6.186	1
71	MP3B	Z	-10.715	1
72	MP3B	Mx	-0.002	1
73	MP3C	X	-4.59	1
74	MP3C	Z	-7.95	1
75	MP3C	Mx	0.005	1

Member Point Loads (BLC 27 : Antenna Wm (0 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	0.25
2	MP2A	Z	-8.378	0.25
3	MP2A	Mx	-0.005	0.25
4	MP2A	X	0	4.25
5	MP2A	Z	-8.378	4.25
6	MP2A	Mx	-0.005	4.25
7	MP2B	X	0	0.25
8	MP2B	Z	-7.573	0.25
9	MP2B	Mx	0.006	0.25
10	MP2B	X	0	4.25
11	MP2B	Z	-7.573	4.25
12	MP2B	Mx	0.006	4.25
13	MP2C	X	0	0.25
14	MP2C	Z	-7.168	0.25
15	MP2C	Mx	-0.002	0.25
16	MP2C	X	0	4.25
17	MP2C	Z	-7.168	4.25
18	MP2C	Mx	-0.002	4.25
19	MP2A	X	0	0.25
20	MP2A	Z	-8.378	0.25
21	MP2A	Mx	0.005	0.25
22	MP2A	X	0	4.25
23	MP2A	Z	-8.378	4.25
24	MP2A	Mx	0.005	4.25
25	MP2B	X	0	0.25
26	MP2B	Z	-7.573	0.25
27	MP2B	Mx	6.1e-5	0.25
28	MP2B	X	0	4.25
29	MP2B	Z	-7.573	4.25
30	MP2B	Mx	6.1e-5	4.25
31	MP2C	X	0	0.25
32	MP2C	Z	-7.168	0.25
33	MP2C	Mx	-0.005	0.25
34	MP2C	X	0	4.25
35	MP2C	Z	-7.168	4.25
36	MP2C	Mx	-0.005	4.25
37	MP1A	X	0	1.25
38	MP1A	Z	-4.039	1.25
39	MP1A	Mx	0	1.25
40	MP1A	X	0	3.25
41	MP1A	Z	-4.039	3.25
42	MP1A	Mx	0	3.25
43	MP1B	X	0	1.25
44	MP1B	Z	-2.485	1.25
45	MP1B	Mx	0.000952	1.25
46	MP1B	X	0	3.25
47	MP1B	Z	-2.485	3.25
48	MP1B	Mx	0.000952	3.25
49	MP1C	X	0	1.25
50	MP1C	Z	-2.053	1.25
51	MP1C	Mx	-0.000889	1.25
52	MP1C	X	0	3.25
53	MP1C	Z	-2.053	3.25
54	MP1C	Mx	-0.000889	3.25
55	M122	X	0	1

Member Point Loads (BLC 27 : Antenna Wm (0 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
56	M122	Z	-6.486	1
57	M122	Mx	0	1
58	MP2A	X	0	1
59	MP2A	Z	-3.194	1
60	MP2A	Mx	0	1
61	MP2B	X	0	1
62	MP2B	Z	-2.578	1
63	MP2B	Mx	-0.000987	1
64	MP2C	X	0	1
65	MP2C	Z	-2.266	1
66	MP2C	Mx	0.001	1
67	MP3A	X	0	1
68	MP3A	Z	-3.854	1
69	MP3A	Mx	0	1
70	MP3B	X	0	1
71	MP3B	Z	-3.134	1
72	MP3B	Mx	-0.001	1
73	MP3C	X	0	1
74	MP3C	Z	-2.771	1
75	MP3C	Mx	0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	4.018	0.25
2	MP2A	Z	-6.959	0.25
3	MP2A	Mx	-0.006	0.25
4	MP2A	X	4.018	4.25
5	MP2A	Z	-6.959	4.25
6	MP2A	Mx	-0.006	4.25
7	MP2B	X	3.524	0.25
8	MP2B	Z	-6.104	0.25
9	MP2B	Mx	0.004	0.25
10	MP2B	X	3.524	4.25
11	MP2B	Z	-6.104	4.25
12	MP2B	Mx	0.004	4.25
13	MP2C	X	3.906	0.25
14	MP2C	Z	-6.765	0.25
15	MP2C	Mx	0.00098	0.25
16	MP2C	X	3.906	4.25
17	MP2C	Z	-6.765	4.25
18	MP2C	Mx	0.00098	4.25
19	MP2A	X	4.018	0.25
20	MP2A	Z	-6.959	0.25
21	MP2A	Mx	0.002	0.25
22	MP2A	X	4.018	4.25
23	MP2A	Z	-6.959	4.25
24	MP2A	Mx	0.002	4.25
25	MP2B	X	3.524	0.25
26	MP2B	Z	-6.104	0.25
27	MP2B	Mx	0.003	0.25
28	MP2B	X	3.524	4.25
29	MP2B	Z	-6.104	4.25
30	MP2B	Mx	0.003	4.25
31	MP2C	X	3.906	0.25
32	MP2C	Z	-6.765	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
33	MP2C	Mx	-0.006	0.25
34	MP2C	X	3.906	4.25
35	MP2C	Z	-6.765	4.25
36	MP2C	Mx	-0.006	4.25
37	MP1A	X	1.689	1.25
38	MP1A	Z	-2.925	1.25
39	MP1A	Mx	-0.000844	1.25
40	MP1A	X	1.689	3.25
41	MP1A	Z	-2.925	3.25
42	MP1A	Mx	-0.000844	3.25
43	MP1B	X	0.735	1.25
44	MP1B	Z	-1.274	1.25
45	MP1B	Mx	0.000724	1.25
46	MP1B	X	0.735	3.25
47	MP1B	Z	-1.274	3.25
48	MP1B	Mx	0.000724	3.25
49	MP1C	X	1.689	1.25
50	MP1C	Z	-2.925	1.25
51	MP1C	Mx	-0.000844	1.25
52	MP1C	X	1.689	3.25
53	MP1C	Z	-2.925	3.25
54	MP1C	Mx	-0.000844	3.25
55	M122	X	3.175	1
56	M122	Z	-5.499	1
57	M122	Mx	0	1
58	MP2A	X	1.466	1
59	MP2A	Z	-2.539	1
60	MP2A	Mx	0.000733	1
61	MP2B	X	1.088	1
62	MP2B	Z	-1.884	1
63	MP2B	Mx	-0.001	1
64	MP2C	X	1.38	1
65	MP2C	Z	-2.39	1
66	MP2C	Mx	0.000887	1
67	MP3A	X	1.774	1
68	MP3A	Z	-3.072	1
69	MP3A	Mx	0.000887	1
70	MP3B	X	1.332	1
71	MP3B	Z	-2.308	1
72	MP3B	Mx	-0.001	1
73	MP3C	X	1.674	1
74	MP3C	Z	-2.899	1
75	MP3C	Mx	0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	6.365	0.25
2	MP2A	Z	-3.675	0.25
3	MP2A	Mx	-0.005	0.25
4	MP2A	X	6.365	4.25
5	MP2A	Z	-3.675	4.25
6	MP2A	Mx	-0.005	4.25
7	MP2B	X	6.207	0.25
8	MP2B	Z	-3.584	0.25
9	MP2B	Mx	0.002	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
10	MP2B	X	6.207	4.25
11	MP2B	Z	-3.584	4.25
12	MP2B	Mx	0.002	4.25
13	MP2C	X	7.22	0.25
14	MP2C	Z	-4.168	0.25
15	MP2C	Mx	0.004	0.25
16	MP2C	X	7.22	4.25
17	MP2C	Z	-4.168	4.25
18	MP2C	Mx	0.004	4.25
19	MP2A	X	6.365	0.25
20	MP2A	Z	-3.675	0.25
21	MP2A	Mx	-0.001	0.25
22	MP2A	X	6.365	4.25
23	MP2A	Z	-3.675	4.25
24	MP2A	Mx	-0.001	4.25
25	MP2B	X	6.207	0.25
26	MP2B	Z	-3.584	0.25
27	MP2B	Mx	0.005	0.25
28	MP2B	X	6.207	4.25
29	MP2B	Z	-3.584	4.25
30	MP2B	Mx	0.005	4.25
31	MP2C	X	7.22	0.25
32	MP2C	Z	-4.168	0.25
33	MP2C	Mx	-0.006	0.25
34	MP2C	X	7.22	4.25
35	MP2C	Z	-4.168	4.25
36	MP2C	Mx	-0.006	4.25
37	MP1A	X	1.778	1.25
38	MP1A	Z	-1.027	1.25
39	MP1A	Mx	-0.000889	1.25
40	MP1A	X	1.778	3.25
41	MP1A	Z	-1.027	3.25
42	MP1A	Mx	-0.000889	3.25
43	MP1B	X	1.473	1.25
44	MP1B	Z	-0.85	1.25
45	MP1B	Mx	0.000799	1.25
46	MP1B	X	1.473	3.25
47	MP1B	Z	-0.85	3.25
48	MP1B	Mx	0.000799	3.25
49	MP1C	X	3.498	1.25
50	MP1C	Z	-2.02	1.25
51	MP1C	Mx	0	1.25
52	MP1C	X	3.498	3.25
53	MP1C	Z	-2.02	3.25
54	MP1C	Mx	0	3.25
55	M122	X	4.862	1
56	M122	Z	-2.807	1
57	M122	Mx	0	1
58	MP2A	X	2.084	1
59	MP2A	Z	-1.203	1
60	MP2A	Mx	0.001	1
61	MP2B	X	1.963	1
62	MP2B	Z	-1.133	1
63	MP2B	Mx	-0.001	1
64	MP2C	X	2.739	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
65	MP2C	Z	-1.581	1
66	MP2C	Mx	0.000274	1
67	MP3A	X	2.541	1
68	MP3A	Z	-1.467	1
69	MP3A	Mx	0.001	1
70	MP3B	X	2.4	1
71	MP3B	Z	-1.386	1
72	MP3B	Mx	-0.001	1
73	MP3C	X	3.306	1
74	MP3C	Z	-1.908	1
75	MP3C	Mx	0.000331	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	7.007	0.25
2	MP2A	Z	0	0.25
3	MP2A	Mx	-0.004	0.25
4	MP2A	X	7.007	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	-0.004	4.25
7	MP2B	X	7.811	0.25
8	MP2B	Z	0	0.25
9	MP2B	Mx	-0.00098	0.25
10	MP2B	X	7.811	4.25
11	MP2B	Z	0	4.25
12	MP2B	Mx	-0.00098	4.25
13	MP2C	X	8.217	0.25
14	MP2C	Z	0	0.25
15	MP2C	Mx	0.006	0.25
16	MP2C	X	8.217	4.25
17	MP2C	Z	0	4.25
18	MP2C	Mx	0.006	4.25
19	MP2A	X	7.007	0.25
20	MP2A	Z	0	0.25
21	MP2A	Mx	-0.004	0.25
22	MP2A	X	7.007	4.25
23	MP2A	Z	0	4.25
24	MP2A	Mx	-0.004	4.25
25	MP2B	X	7.811	0.25
26	MP2B	Z	0	0.25
27	MP2B	Mx	0.006	0.25
28	MP2B	X	7.811	4.25
29	MP2B	Z	0	4.25
30	MP2B	Mx	0.006	4.25
31	MP2C	X	8.217	0.25
32	MP2C	Z	0	0.25
33	MP2C	Mx	-0.003	0.25
34	MP2C	X	8.217	4.25
35	MP2C	Z	0	4.25
36	MP2C	Mx	-0.003	4.25
37	MP1A	X	1.391	1.25
38	MP1A	Z	0	1.25
39	MP1A	Mx	-0.000696	1.25
40	MP1A	X	1.391	3.25
41	MP1A	Z	0	3.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
42	MP1A	Mx	-0.000696	3.25
43	MP1B	X	2.945	1.25
44	MP1B	Z	0	1.25
45	MP1B	Mx	0.000947	1.25
46	MP1B	X	2.945	3.25
47	MP1B	Z	0	3.25
48	MP1B	Mx	0.000947	3.25
49	MP1C	X	3.377	1.25
50	MP1C	Z	0	1.25
51	MP1C	Mx	0.000844	1.25
52	MP1C	X	3.377	3.25
53	MP1C	Z	0	3.25
54	MP1C	Mx	0.000844	3.25
55	M122	X	5.014	1
56	M122	Z	0	1
57	M122	Mx	0	1
58	MP2A	X	2.143	1
59	MP2A	Z	0	1
60	MP2A	Mx	0.001	1
61	MP2B	X	2.76	1
62	MP2B	Z	0	1
63	MP2B	Mx	-0.000887	1
64	MP2C	X	3.071	1
65	MP2C	Z	0	1
66	MP2C	Mx	-0.000525	1
67	MP3A	X	2.628	1
68	MP3A	Z	0	1
69	MP3A	Mx	0.001	1
70	MP3B	X	3.347	1
71	MP3B	Z	0	1
72	MP3B	Mx	-0.001	1
73	MP3C	X	3.711	1
74	MP3C	Z	0	1
75	MP3C	Mx	-0.000635	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	6.365	0.25
2	MP2A	Z	3.675	0.25
3	MP2A	Mx	-0.001	0.25
4	MP2A	X	6.365	4.25
5	MP2A	Z	3.675	4.25
6	MP2A	Mx	-0.001	4.25
7	MP2B	X	7.22	0.25
8	MP2B	Z	4.168	0.25
9	MP2B	Mx	-0.004	0.25
10	MP2B	X	7.22	4.25
11	MP2B	Z	4.168	4.25
12	MP2B	Mx	-0.004	4.25
13	MP2C	X	6.559	0.25
14	MP2C	Z	3.787	0.25
15	MP2C	Mx	0.006	0.25
16	MP2C	X	6.559	4.25
17	MP2C	Z	3.787	4.25
18	MP2C	Mx	0.006	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
19	MP2A	X	6.365	0.25
20	MP2A	Z	3.675	0.25
21	MP2A	Mx	-0.005	0.25
22	MP2A	X	6.365	4.25
23	MP2A	Z	3.675	4.25
24	MP2A	Mx	-0.005	4.25
25	MP2B	X	7.22	0.25
26	MP2B	Z	4.168	0.25
27	MP2B	Mx	0.006	0.25
28	MP2B	X	7.22	4.25
29	MP2B	Z	4.168	4.25
30	MP2B	Mx	0.006	4.25
31	MP2C	X	6.559	0.25
32	MP2C	Z	3.787	0.25
33	MP2C	Mx	6.1e-5	0.25
34	MP2C	X	6.559	4.25
35	MP2C	Z	3.787	4.25
36	MP2C	Mx	6.1e-5	4.25
37	MP1A	X	1.778	1.25
38	MP1A	Z	1.027	1.25
39	MP1A	Mx	-0.000889	1.25
40	MP1A	X	1.778	3.25
41	MP1A	Z	1.027	3.25
42	MP1A	Mx	-0.000889	3.25
43	MP1B	X	3.429	1.25
44	MP1B	Z	1.98	1.25
45	MP1B	Mx	0.000344	1.25
46	MP1B	X	3.429	3.25
47	MP1B	Z	1.98	3.25
48	MP1B	Mx	0.000344	3.25
49	MP1C	X	1.778	1.25
50	MP1C	Z	1.027	1.25
51	MP1C	Mx	0.000889	1.25
52	MP1C	X	1.778	3.25
53	MP1C	Z	1.027	3.25
54	MP1C	Mx	0.000889	3.25
55	M122	X	4.46	1
56	M122	Z	2.575	1
57	M122	Mx	0	1
58	MP2A	X	2.084	1
59	MP2A	Z	1.203	1
60	MP2A	Mx	0.001	1
61	MP2B	X	2.739	1
62	MP2B	Z	1.581	1
63	MP2B	Mx	-0.000275	1
64	MP2C	X	2.232	1
65	MP2C	Z	1.289	1
66	MP2C	Mx	-0.000987	1
67	MP3A	X	2.541	1
68	MP3A	Z	1.467	1
69	MP3A	Mx	0.001	1
70	MP3B	X	3.306	1
71	MP3B	Z	1.908	1
72	MP3B	Mx	-0.000332	1
73	MP3C	X	2.714	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
74	MP3C	Z	1.567	1
75	MP3C	Mx	-0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	4.018	0.25
2	MP2A	Z	6.959	0.25
3	MP2A	Mx	0.002	0.25
4	MP2A	X	4.018	4.25
5	MP2A	Z	6.959	4.25
6	MP2A	Mx	0.002	4.25
7	MP2B	X	4.109	0.25
8	MP2B	Z	7.116	0.25
9	MP2B	Mx	-0.006	0.25
10	MP2B	X	4.109	4.25
11	MP2B	Z	7.116	4.25
12	MP2B	Mx	-0.006	4.25
13	MP2C	X	3.524	0.25
14	MP2C	Z	6.104	0.25
15	MP2C	Mx	0.004	0.25
16	MP2C	X	3.524	4.25
17	MP2C	Z	6.104	4.25
18	MP2C	Mx	0.004	4.25
19	MP2A	X	4.018	0.25
20	MP2A	Z	6.959	0.25
21	MP2A	Mx	-0.006	0.25
22	MP2A	X	4.018	4.25
23	MP2A	Z	6.959	4.25
24	MP2A	Mx	-0.006	4.25
25	MP2B	X	4.109	0.25
26	MP2B	Z	7.116	0.25
27	MP2B	Mx	0.003	0.25
28	MP2B	X	4.109	4.25
29	MP2B	Z	7.116	4.25
30	MP2B	Mx	0.003	4.25
31	MP2C	X	3.524	0.25
32	MP2C	Z	6.104	0.25
33	MP2C	Mx	0.003	0.25
34	MP2C	X	3.524	4.25
35	MP2C	Z	6.104	4.25
36	MP2C	Mx	0.003	4.25
37	MP1A	X	1.689	1.25
38	MP1A	Z	2.925	1.25
39	MP1A	Mx	-0.000844	1.25
40	MP1A	X	1.689	3.25
41	MP1A	Z	2.925	3.25
42	MP1A	Mx	-0.000844	3.25
43	MP1B	X	1.865	1.25
44	MP1B	Z	3.23	1.25
45	MP1B	Mx	-0.000638	1.25
46	MP1B	X	1.865	3.25
47	MP1B	Z	3.23	3.25
48	MP1B	Mx	-0.000638	3.25
49	MP1C	X	0.696	1.25
50	MP1C	Z	1.205	1.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
51	MP1C	Mx	0.000696	1.25
52	MP1C	X	0.696	3.25
53	MP1C	Z	1.205	3.25
54	MP1C	Mx	0.000696	3.25
55	M122	X	2.943	1
56	M122	Z	5.097	1
57	M122	Mx	0	1
58	MP2A	X	1.466	1
59	MP2A	Z	2.539	1
60	MP2A	Mx	0.000733	1
61	MP2B	X	1.536	1
62	MP2B	Z	2.66	1
63	MP2B	Mx	0.000525	1
64	MP2C	X	1.088	1
65	MP2C	Z	1.884	1
66	MP2C	Mx	-0.001	1
67	MP3A	X	1.774	1
68	MP3A	Z	3.072	1
69	MP3A	Mx	0.000887	1
70	MP3B	X	1.855	1
71	MP3B	Z	3.213	1
72	MP3B	Mx	0.000634	1
73	MP3C	X	1.332	1
74	MP3C	Z	2.308	1
75	MP3C	Mx	-0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	0	0.25
2	MP2A	Z	8.378	0.25
3	MP2A	Mx	0.005	0.25
4	MP2A	X	0	4.25
5	MP2A	Z	8.378	4.25
6	MP2A	Mx	0.005	4.25
7	MP2B	X	0	0.25
8	MP2B	Z	7.573	0.25
9	MP2B	Mx	-0.006	0.25
10	MP2B	X	0	4.25
11	MP2B	Z	7.573	4.25
12	MP2B	Mx	-0.006	4.25
13	MP2C	X	0	0.25
14	MP2C	Z	7.168	0.25
15	MP2C	Mx	0.002	0.25
16	MP2C	X	0	4.25
17	MP2C	Z	7.168	4.25
18	MP2C	Mx	0.002	4.25
19	MP2A	X	0	0.25
20	MP2A	Z	8.378	0.25
21	MP2A	Mx	-0.005	0.25
22	MP2A	X	0	4.25
23	MP2A	Z	8.378	4.25
24	MP2A	Mx	-0.005	4.25
25	MP2B	X	0	0.25
26	MP2B	Z	7.573	0.25
27	MP2B	Mx	-6.1e-5	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
28	MP2B	X	0	4.25
29	MP2B	Z	7.573	4.25
30	MP2B	Mx	-6.1e-5	4.25
31	MP2C	X	0	0.25
32	MP2C	Z	7.168	0.25
33	MP2C	Mx	0.005	0.25
34	MP2C	X	0	4.25
35	MP2C	Z	7.168	4.25
36	MP2C	Mx	0.005	4.25
37	MP1A	X	0	1.25
38	MP1A	Z	4.039	1.25
39	MP1A	Mx	0	1.25
40	MP1A	X	0	3.25
41	MP1A	Z	4.039	3.25
42	MP1A	Mx	0	3.25
43	MP1B	X	0	1.25
44	MP1B	Z	2.485	1.25
45	MP1B	Mx	-0.000952	1.25
46	MP1B	X	0	3.25
47	MP1B	Z	2.485	3.25
48	MP1B	Mx	-0.000952	3.25
49	MP1C	X	0	1.25
50	MP1C	Z	2.053	1.25
51	MP1C	Mx	0.000889	1.25
52	MP1C	X	0	3.25
53	MP1C	Z	2.053	3.25
54	MP1C	Mx	0.000889	3.25
55	M122	X	0	1
56	M122	Z	6.486	1
57	M122	Mx	0	1
58	MP2A	X	0	1
59	MP2A	Z	3.194	1
60	MP2A	Mx	0	1
61	MP2B	X	0	1
62	MP2B	Z	2.578	1
63	MP2B	Mx	0.000987	1
64	MP2C	X	0	1
65	MP2C	Z	2.266	1
66	MP2C	Mx	-0.001	1
67	MP3A	X	0	1
68	MP3A	Z	3.854	1
69	MP3A	Mx	0	1
70	MP3B	X	0	1
71	MP3B	Z	3.134	1
72	MP3B	Mx	0.001	1
73	MP3C	X	0	1
74	MP3C	Z	2.771	1
75	MP3C	Mx	-0.001	1

Member Point Loads (BLC 34 : Antenna Wm (210 Deg))

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-4.018	0.25
2	MP2A	Z	6.959	0.25
3	MP2A	Mx	0.006	0.25
4	MP2A	X	-4.018	4.25

Member Point Loads (BLC 34 : Antenna Wm (210 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
5	MP2A	Z	6.959	4.25
6	MP2A	Mx	0.006	4.25
7	MP2B	X	-3.524	0.25
8	MP2B	Z	6.104	0.25
9	MP2B	Mx	-0.004	0.25
10	MP2B	X	-3.524	4.25
11	MP2B	Z	6.104	4.25
12	MP2B	Mx	-0.004	4.25
13	MP2C	X	-3.906	0.25
14	MP2C	Z	6.765	0.25
15	MP2C	Mx	-0.00098	0.25
16	MP2C	X	-3.906	4.25
17	MP2C	Z	6.765	4.25
18	MP2C	Mx	-0.00098	4.25
19	MP2A	X	-4.018	0.25
20	MP2A	Z	6.959	0.25
21	MP2A	Mx	-0.002	0.25
22	MP2A	X	-4.018	4.25
23	MP2A	Z	6.959	4.25
24	MP2A	Mx	-0.002	4.25
25	MP2B	X	-3.524	0.25
26	MP2B	Z	6.104	0.25
27	MP2B	Mx	-0.003	0.25
28	MP2B	X	-3.524	4.25
29	MP2B	Z	6.104	4.25
30	MP2B	Mx	-0.003	4.25
31	MP2C	X	-3.906	0.25
32	MP2C	Z	6.765	0.25
33	MP2C	Mx	0.006	0.25
34	MP2C	X	-3.906	4.25
35	MP2C	Z	6.765	4.25
36	MP2C	Mx	0.006	4.25
37	MP1A	X	-1.689	1.25
38	MP1A	Z	2.925	1.25
39	MP1A	Mx	0.000844	1.25
40	MP1A	X	-1.689	3.25
41	MP1A	Z	2.925	3.25
42	MP1A	Mx	0.000844	3.25
43	MP1B	X	-0.735	1.25
44	MP1B	Z	1.274	1.25
45	MP1B	Mx	-0.000724	1.25
46	MP1B	X	-0.735	3.25
47	MP1B	Z	1.274	3.25
48	MP1B	Mx	-0.000724	3.25
49	MP1C	X	-1.689	1.25
50	MP1C	Z	2.925	1.25
51	MP1C	Mx	0.000844	1.25
52	MP1C	X	-1.689	3.25
53	MP1C	Z	2.925	3.25
54	MP1C	Mx	0.000844	3.25
55	M122	X	-3.175	1
56	M122	Z	5.499	1
57	M122	Mx	0	1
58	MP2A	X	-1.466	1
59	MP2A	Z	2.539	1

Member Point Loads (BLC 34 : Antenna Wm (210 Deg)) (Continued)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
60	MP2A	Mx	-0.000733	1
61	MP2B	X	-1.088	1
62	MP2B	Z	1.884	1
63	MP2B	Mx	0.001	1
64	MP2C	X	-1.38	1
65	MP2C	Z	2.39	1
66	MP2C	Mx	-0.000887	1
67	MP3A	X	-1.774	1
68	MP3A	Z	3.072	1
69	MP3A	Mx	-0.000887	1
70	MP3B	X	-1.332	1
71	MP3B	Z	2.308	1
72	MP3B	Mx	0.001	1
73	MP3C	X	-1.674	1
74	MP3C	Z	2.899	1
75	MP3C	Mx	-0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-6.365	0.25
2	MP2A	Z	3.675	0.25
3	MP2A	Mx	0.005	0.25
4	MP2A	X	-6.365	4.25
5	MP2A	Z	3.675	4.25
6	MP2A	Mx	0.005	4.25
7	MP2B	X	-6.207	0.25
8	MP2B	Z	3.584	0.25
9	MP2B	Mx	-0.002	0.25
10	MP2B	X	-6.207	4.25
11	MP2B	Z	3.584	4.25
12	MP2B	Mx	-0.002	4.25
13	MP2C	X	-7.22	0.25
14	MP2C	Z	4.168	0.25
15	MP2C	Mx	-0.004	0.25
16	MP2C	X	-7.22	4.25
17	MP2C	Z	4.168	4.25
18	MP2C	Mx	-0.004	4.25
19	MP2A	X	-6.365	0.25
20	MP2A	Z	3.675	0.25
21	MP2A	Mx	0.001	0.25
22	MP2A	X	-6.365	4.25
23	MP2A	Z	3.675	4.25
24	MP2A	Mx	0.001	4.25
25	MP2B	X	-6.207	0.25
26	MP2B	Z	3.584	0.25
27	MP2B	Mx	-0.005	0.25
28	MP2B	X	-6.207	4.25
29	MP2B	Z	3.584	4.25
30	MP2B	Mx	-0.005	4.25
31	MP2C	X	-7.22	0.25
32	MP2C	Z	4.168	0.25
33	MP2C	Mx	0.006	0.25
34	MP2C	X	-7.22	4.25
35	MP2C	Z	4.168	4.25
36	MP2C	Mx	0.006	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
37	MP1A	X	-1.778	1.25
38	MP1A	Z	1.027	1.25
39	MP1A	Mx	0.000889	1.25
40	MP1A	X	-1.778	3.25
41	MP1A	Z	1.027	3.25
42	MP1A	Mx	0.000889	3.25
43	MP1B	X	-1.473	1.25
44	MP1B	Z	0.85	1.25
45	MP1B	Mx	-0.000799	1.25
46	MP1B	X	-1.473	3.25
47	MP1B	Z	0.85	3.25
48	MP1B	Mx	-0.000799	3.25
49	MP1C	X	-3.498	1.25
50	MP1C	Z	2.02	1.25
51	MP1C	Mx	0	1.25
52	MP1C	X	-3.498	3.25
53	MP1C	Z	2.02	3.25
54	MP1C	Mx	0	3.25
55	M122	X	-4.862	1
56	M122	Z	2.807	1
57	M122	Mx	0	1
58	MP2A	X	-2.084	1
59	MP2A	Z	1.203	1
60	MP2A	Mx	-0.001	1
61	MP2B	X	-1.963	1
62	MP2B	Z	1.133	1
63	MP2B	Mx	0.001	1
64	MP2C	X	-2.739	1
65	MP2C	Z	1.581	1
66	MP2C	Mx	-0.000274	1
67	MP3A	X	-2.541	1
68	MP3A	Z	1.467	1
69	MP3A	Mx	-0.001	1
70	MP3B	X	-2.4	1
71	MP3B	Z	1.386	1
72	MP3B	Mx	0.001	1
73	MP3C	X	-3.306	1
74	MP3C	Z	1.908	1
75	MP3C	Mx	-0.000331	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-7.007	0.25
2	MP2A	Z	0	0.25
3	MP2A	Mx	0.004	0.25
4	MP2A	X	-7.007	4.25
5	MP2A	Z	0	4.25
6	MP2A	Mx	0.004	4.25
7	MP2B	X	-7.811	0.25
8	MP2B	Z	0	0.25
9	MP2B	Mx	0.00098	0.25
10	MP2B	X	-7.811	4.25
11	MP2B	Z	0	4.25
12	MP2B	Mx	0.00098	4.25
13	MP2C	X	-8.217	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
14	MP2C	Z	0	0.25
15	MP2C	Mx	-0.006	0.25
16	MP2C	X	-8.217	4.25
17	MP2C	Z	0	4.25
18	MP2C	Mx	-0.006	4.25
19	MP2A	X	-7.007	0.25
20	MP2A	Z	0	0.25
21	MP2A	Mx	0.004	0.25
22	MP2A	X	-7.007	4.25
23	MP2A	Z	0	4.25
24	MP2A	Mx	0.004	4.25
25	MP2B	X	-7.811	0.25
26	MP2B	Z	0	0.25
27	MP2B	Mx	-0.006	0.25
28	MP2B	X	-7.811	4.25
29	MP2B	Z	0	4.25
30	MP2B	Mx	-0.006	4.25
31	MP2C	X	-8.217	0.25
32	MP2C	Z	0	0.25
33	MP2C	Mx	0.003	0.25
34	MP2C	X	-8.217	4.25
35	MP2C	Z	0	4.25
36	MP2C	Mx	0.003	4.25
37	MP1A	X	-1.391	1.25
38	MP1A	Z	0	1.25
39	MP1A	Mx	0.000696	1.25
40	MP1A	X	-1.391	3.25
41	MP1A	Z	0	3.25
42	MP1A	Mx	0.000696	3.25
43	MP1B	X	-2.945	1.25
44	MP1B	Z	0	1.25
45	MP1B	Mx	-0.000947	1.25
46	MP1B	X	-2.945	3.25
47	MP1B	Z	0	3.25
48	MP1B	Mx	-0.000947	3.25
49	MP1C	X	-3.377	1.25
50	MP1C	Z	0	1.25
51	MP1C	Mx	-0.000844	1.25
52	MP1C	X	-3.377	3.25
53	MP1C	Z	0	3.25
54	MP1C	Mx	-0.000844	3.25
55	M122	X	-5.014	1
56	M122	Z	0	1
57	M122	Mx	0	1
58	MP2A	X	-2.143	1
59	MP2A	Z	0	1
60	MP2A	Mx	-0.001	1
61	MP2B	X	-2.76	1
62	MP2B	Z	0	1
63	MP2B	Mx	0.000887	1
64	MP2C	X	-3.071	1
65	MP2C	Z	0	1
66	MP2C	Mx	0.000525	1
67	MP3A	X	-2.628	1
68	MP3A	Z	0	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
69	MP3A	Mx	-0.001	1
70	MP3B	X	-3.347	1
71	MP3B	Z	0	1
72	MP3B	Mx	0.001	1
73	MP3C	X	-3.711	1
74	MP3C	Z	0	1
75	MP3C	Mx	0.000635	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-6.365	0.25
2	MP2A	Z	-3.675	0.25
3	MP2A	Mx	0.001	0.25
4	MP2A	X	-6.365	4.25
5	MP2A	Z	-3.675	4.25
6	MP2A	Mx	0.001	4.25
7	MP2B	X	-7.22	0.25
8	MP2B	Z	-4.168	0.25
9	MP2B	Mx	0.004	0.25
10	MP2B	X	-7.22	4.25
11	MP2B	Z	-4.168	4.25
12	MP2B	Mx	0.004	4.25
13	MP2C	X	-6.559	0.25
14	MP2C	Z	-3.787	0.25
15	MP2C	Mx	-0.006	0.25
16	MP2C	X	-6.559	4.25
17	MP2C	Z	-3.787	4.25
18	MP2C	Mx	-0.006	4.25
19	MP2A	X	-6.365	0.25
20	MP2A	Z	-3.675	0.25
21	MP2A	Mx	0.005	0.25
22	MP2A	X	-6.365	4.25
23	MP2A	Z	-3.675	4.25
24	MP2A	Mx	0.005	4.25
25	MP2B	X	-7.22	0.25
26	MP2B	Z	-4.168	0.25
27	MP2B	Mx	-0.006	0.25
28	MP2B	X	-7.22	4.25
29	MP2B	Z	-4.168	4.25
30	MP2B	Mx	-0.006	4.25
31	MP2C	X	-6.559	0.25
32	MP2C	Z	-3.787	0.25
33	MP2C	Mx	-6.1e-5	0.25
34	MP2C	X	-6.559	4.25
35	MP2C	Z	-3.787	4.25
36	MP2C	Mx	-6.1e-5	4.25
37	MP1A	X	-1.778	1.25
38	MP1A	Z	-1.027	1.25
39	MP1A	Mx	0.000889	1.25
40	MP1A	X	-1.778	3.25
41	MP1A	Z	-1.027	3.25
42	MP1A	Mx	0.000889	3.25
43	MP1B	X	-3.429	1.25
44	MP1B	Z	-1.98	1.25
45	MP1B	Mx	-0.000344	1.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
46	MP1B	X	-3.429	3.25
47	MP1B	Z	-1.98	3.25
48	MP1B	Mx	-0.000344	3.25
49	MP1C	X	-1.778	1.25
50	MP1C	Z	-1.027	1.25
51	MP1C	Mx	-0.000889	1.25
52	MP1C	X	-1.778	3.25
53	MP1C	Z	-1.027	3.25
54	MP1C	Mx	-0.000889	3.25
55	M122	X	-4.46	1
56	M122	Z	-2.575	1
57	M122	Mx	0	1
58	MP2A	X	-2.084	1
59	MP2A	Z	-1.203	1
60	MP2A	Mx	-0.001	1
61	MP2B	X	-2.739	1
62	MP2B	Z	-1.581	1
63	MP2B	Mx	0.000275	1
64	MP2C	X	-2.232	1
65	MP2C	Z	-1.289	1
66	MP2C	Mx	0.000987	1
67	MP3A	X	-2.541	1
68	MP3A	Z	-1.467	1
69	MP3A	Mx	-0.001	1
70	MP3B	X	-3.306	1
71	MP3B	Z	-1.908	1
72	MP3B	Mx	0.000332	1
73	MP3C	X	-2.714	1
74	MP3C	Z	-1.567	1
75	MP3C	Mx	0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	-4.018	0.25
2	MP2A	Z	-6.959	0.25
3	MP2A	Mx	-0.002	0.25
4	MP2A	X	-4.018	4.25
5	MP2A	Z	-6.959	4.25
6	MP2A	Mx	-0.002	4.25
7	MP2B	X	-4.109	0.25
8	MP2B	Z	-7.116	0.25
9	MP2B	Mx	0.006	0.25
10	MP2B	X	-4.109	4.25
11	MP2B	Z	-7.116	4.25
12	MP2B	Mx	0.006	4.25
13	MP2C	X	-3.524	0.25
14	MP2C	Z	-6.104	0.25
15	MP2C	Mx	-0.004	0.25
16	MP2C	X	-3.524	4.25
17	MP2C	Z	-6.104	4.25
18	MP2C	Mx	-0.004	4.25
19	MP2A	X	-4.018	0.25
20	MP2A	Z	-6.959	0.25
21	MP2A	Mx	0.006	0.25
22	MP2A	X	-4.018	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
23	MP2A	Z	-6.959	4.25
24	MP2A	Mx	0.006	4.25
25	MP2B	X	-4.109	0.25
26	MP2B	Z	-7.116	0.25
27	MP2B	Mx	-0.003	0.25
28	MP2B	X	-4.109	4.25
29	MP2B	Z	-7.116	4.25
30	MP2B	Mx	-0.003	4.25
31	MP2C	X	-3.524	0.25
32	MP2C	Z	-6.104	0.25
33	MP2C	Mx	-0.003	0.25
34	MP2C	X	-3.524	4.25
35	MP2C	Z	-6.104	4.25
36	MP2C	Mx	-0.003	4.25
37	MP1A	X	-1.689	1.25
38	MP1A	Z	-2.925	1.25
39	MP1A	Mx	0.000844	1.25
40	MP1A	X	-1.689	3.25
41	MP1A	Z	-2.925	3.25
42	MP1A	Mx	0.000844	3.25
43	MP1B	X	-1.865	1.25
44	MP1B	Z	-3.23	1.25
45	MP1B	Mx	0.000638	1.25
46	MP1B	X	-1.865	3.25
47	MP1B	Z	-3.23	3.25
48	MP1B	Mx	0.000638	3.25
49	MP1C	X	-0.696	1.25
50	MP1C	Z	-1.205	1.25
51	MP1C	Mx	-0.000696	1.25
52	MP1C	X	-0.696	3.25
53	MP1C	Z	-1.205	3.25
54	MP1C	Mx	-0.000696	3.25
55	M122	X	-2.943	1
56	M122	Z	-5.097	1
57	M122	Mx	0	1
58	MP2A	X	-1.466	1
59	MP2A	Z	-2.539	1
60	MP2A	Mx	-0.000733	1
61	MP2B	X	-1.536	1
62	MP2B	Z	-2.66	1
63	MP2B	Mx	-0.000525	1
64	MP2C	X	-1.088	1
65	MP2C	Z	-1.884	1
66	MP2C	Mx	0.001	1
67	MP3A	X	-1.774	1
68	MP3A	Z	-3.072	1
69	MP3A	Mx	-0.000887	1
70	MP3B	X	-1.855	1
71	MP3B	Z	-3.213	1
72	MP3B	Mx	-0.000634	1
73	MP3C	X	-1.332	1
74	MP3C	Z	-2.308	1
75	MP3C	Mx	0.001	1

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M98	Y	-500	0

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M99	Y	-500	0

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M1	Y	-250	%50

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	M1	Y	-250	%100

Member Point Loads (BLC 81 : Antenna Ev)

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Y	-1.22	0.25
2	MP2A	My	-0.00061	0.25
3	MP2A	Mz	0.000712	0.25
4	MP2A	Y	-1.22	4.25
5	MP2A	My	-0.00061	4.25
6	MP2A	Mz	0.000712	4.25
7	MP2B	Y	-1.22	0.25
8	MP2B	My	-0.000153	0.25
9	MP2B	Mz	-0.000925	0.25
10	MP2B	Y	-1.22	4.25
11	MP2B	My	-0.000153	4.25
12	MP2B	Mz	-0.000925	4.25
13	MP2C	Y	-1.22	0.25
14	MP2C	My	0.000878	0.25
15	MP2C	Mz	0.00033	0.25
16	MP2C	Y	-1.22	4.25
17	MP2C	My	0.000878	4.25
18	MP2C	Mz	0.00033	4.25
19	MP2A	Y	-1.22	0.25
20	MP2A	My	-0.00061	0.25
21	MP2A	Mz	-0.000712	0.25
22	MP2A	Y	-1.22	4.25
23	MP2A	My	-0.00061	4.25
24	MP2A	Mz	-0.000712	4.25
25	MP2B	Y	-1.22	0.25
26	MP2B	My	0.000937	0.25
27	MP2B	Mz	-1e-5	0.25
28	MP2B	Y	-1.22	4.25
29	MP2B	My	0.000937	4.25
30	MP2B	Mz	-1e-5	4.25
31	MP2C	Y	-1.22	0.25
32	MP2C	My	-0.00046	0.25
33	MP2C	Mz	0.000817	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
34	MP2C	Y	-1.22	4.25
35	MP2C	My	-0.00046	4.25
36	MP2C	Mz	0.000817	4.25
37	MP1A	Y	-1.635	1.25
38	MP1A	My	-0.000818	1.25
39	MP1A	Mz	0	1.25
40	MP1A	Y	-1.635	3.25
41	MP1A	My	-0.000818	3.25
42	MP1A	Mz	0	3.25
43	MP1B	Y	-1.635	1.25
44	MP1B	My	0.000526	1.25
45	MP1B	Mz	-0.000626	1.25
46	MP1B	Y	-1.635	3.25
47	MP1B	My	0.000526	3.25
48	MP1B	Mz	-0.000626	3.25
49	MP1C	Y	-1.635	1.25
50	MP1C	My	0.000409	1.25
51	MP1C	Mz	0.000708	1.25
52	MP1C	Y	-1.635	3.25
53	MP1C	My	0.000409	3.25
54	MP1C	Mz	0.000708	3.25
55	M122	Y	-1.201	1
56	M122	My	0	1
57	M122	Mz	0	1
58	MP2A	Y	-2.805	1
59	MP2A	My	0.001	1
60	MP2A	Mz	0	1
61	MP2B	Y	-2.805	1
62	MP2B	My	-0.000901	1
63	MP2B	Mz	0.001	1
64	MP2C	Y	-2.805	1
65	MP2C	My	-0.00048	1
66	MP2C	Mz	-0.001	1
67	MP3A	Y	-2.97	1
68	MP3A	My	0.001	1
69	MP3A	Mz	0	1
70	MP3B	Y	-2.97	1
71	MP3B	My	-0.000955	1
72	MP3B	Mz	0.001	1
73	MP3C	Y	-2.97	1
74	MP3C	My	-0.000508	1
75	MP3C	Mz	-0.001	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	Z	-3.051	0.25
2	MP2A	Mx	-0.002	0.25
3	MP2A	Z	-3.051	4.25
4	MP2A	Mx	-0.002	4.25
5	MP2B	Z	-3.051	0.25
6	MP2B	Mx	0.002	0.25
7	MP2B	Z	-3.051	4.25
8	MP2B	Mx	0.002	4.25
9	MP2C	Z	-3.051	0.25
10	MP2C	Mx	-0.000825	0.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
11	MP2C	Z	-3.051	4.25
12	MP2C	Mx	-0.000825	4.25
13	MP2A	Z	-3.051	0.25
14	MP2A	Mx	0.002	0.25
15	MP2A	Z	-3.051	4.25
16	MP2A	Mx	0.002	4.25
17	MP2B	Z	-3.051	0.25
18	MP2B	Mx	2.5e-5	0.25
19	MP2B	Z	-3.051	4.25
20	MP2B	Mx	2.5e-5	4.25
21	MP2C	Z	-3.051	0.25
22	MP2C	Mx	-0.002	0.25
23	MP2C	Z	-3.051	4.25
24	MP2C	Mx	-0.002	4.25
25	MP1A	Z	-4.088	1.25
26	MP1A	Mx	0	1.25
27	MP1A	Z	-4.088	3.25
28	MP1A	Mx	0	3.25
29	MP1B	Z	-4.088	1.25
30	MP1B	Mx	0.002	1.25
31	MP1B	Z	-4.088	3.25
32	MP1B	Mx	0.002	3.25
33	MP1C	Z	-4.088	1.25
34	MP1C	Mx	-0.002	1.25
35	MP1C	Z	-4.088	3.25
36	MP1C	Mx	-0.002	3.25
37	M122	Z	-3.004	1
38	M122	Mx	0	1
39	MP2A	Z	-7.012	1
40	MP2A	Mx	0	1
41	MP2B	Z	-7.012	1
42	MP2B	Mx	-0.003	1
43	MP2C	Z	-7.012	1
44	MP2C	Mx	0.003	1
45	MP3A	Z	-7.425	1
46	MP3A	Mx	0	1
47	MP3B	Z	-7.425	1
48	MP3B	Mx	-0.003	1
49	MP3C	Z	-7.425	1
50	MP3C	Mx	0.003	1

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
1	MP2A	X	3.051	0.25
2	MP2A	Mx	-0.002	0.25
3	MP2A	X	3.051	4.25
4	MP2A	Mx	-0.002	4.25
5	MP2B	X	3.051	0.25
6	MP2B	Mx	-0.000383	0.25
7	MP2B	X	3.051	4.25
8	MP2B	Mx	-0.000383	4.25
9	MP2C	X	3.051	0.25
10	MP2C	Mx	0.002	0.25
11	MP2C	X	3.051	4.25
12	MP2C	Mx	0.002	4.25

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

	Member Label	Direction	Magnitude [lb, k-ft]	Location [(ft, %)]
13	MP2A	X	3.051	0.25
14	MP2A	Mx	-0.002	0.25
15	MP2A	X	3.051	4.25
16	MP2A	Mx	-0.002	4.25
17	MP2B	X	3.051	0.25
18	MP2B	Mx	0.002	0.25
19	MP2B	X	3.051	4.25
20	MP2B	Mx	0.002	4.25
21	MP2C	X	3.051	0.25
22	MP2C	Mx	-0.001	0.25
23	MP2C	X	3.051	4.25
24	MP2C	Mx	-0.001	4.25
25	MP1A	X	4.088	1.25
26	MP1A	Mx	-0.002	1.25
27	MP1A	X	4.088	3.25
28	MP1A	Mx	-0.002	3.25
29	MP1B	X	4.088	1.25
30	MP1B	Mx	0.001	1.25
31	MP1B	X	4.088	3.25
32	MP1B	Mx	0.001	3.25
33	MP1C	X	4.088	1.25
34	MP1C	Mx	0.001	1.25
35	MP1C	X	4.088	3.25
36	MP1C	Mx	0.001	3.25
37	M122	X	3.004	1
38	M122	Mx	0	1
39	MP2A	X	7.012	1
40	MP2A	Mx	0.004	1
41	MP2B	X	7.012	1
42	MP2B	Mx	-0.002	1
43	MP2C	X	7.012	1
44	MP2C	Mx	-0.001	1
45	MP3A	X	7.425	1
46	MP3A	Mx	0.004	1
47	MP3B	X	7.425	1
48	MP3B	Mx	-0.002	1
49	MP3C	X	7.425	1
50	MP3C	Mx	-0.001	1

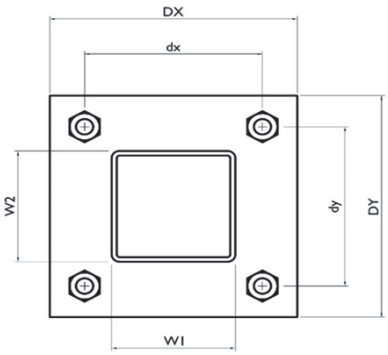
VzW SMART Tool© Vendor

Client:	VERIZON WIRELESS	Date:	11/15/2023
Site Name:	TORRINGTON S CT		
MDG #:	5000247545		
Fuze ID #:	16227597	Page:	1

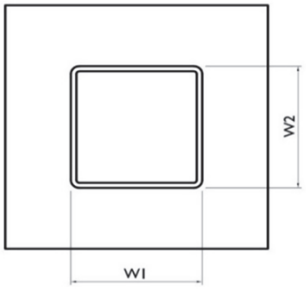
Version 1.01

I. Mount-to-Tower Connection Check

Custom Orientation Required	No
Tower Connection Bolt Checks	Yes
Bolt Orientation	Parallel
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	8
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	8
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength / bolt (kips):	3.8
Required Shear Strength / bolt (kips):	0.6
Tensile Capacity / bolt (kips):	20.7
Shear Capacity / bolt (kips):	12.4
Bolt Overall Utilization:	**18.4%**



Tower Connection Baseplate Checks	Yes
Connecting Standoff Member Shape:	Rect Tube
Weld Stiffener Configuration:	No Stiffeners
Plate Width, D_x (in):	10
Plate Height, D_y (in):	10
W1(in):	4
W2 (in):	4
Member Thickness (in):	0.25
Stiffener location a_1 (in):	
Stiffener location b_1 (in):	
Stiffener location a_2 (in):	
Stiffener location b_2 (in):	
F_y (ksi, plate):	36
Plate Thickness (in):	0.625
Length of Yield Line, L_y (in):	7.85
Bolt Eccentricity, e (in):	3.06
M_u (kip-in):	11.66
Phi*M_n (kip-in):	24.84
Plate Bending Utilization:	**46.9%**



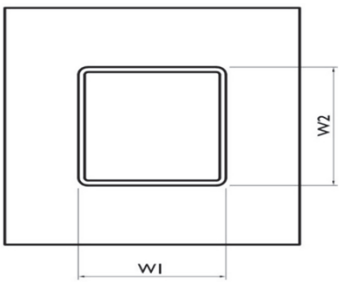
VzW SMART Tool© Vendor

Client:	VERIZON WIRELESS	Date:	11/15/2023
Site Name:	TORRINGTON S CT		
MDG #:	5000247545		
Fuze ID #:	16227597	Page:	2

Version 1.01

Tower Connection Weld Checks	Yes

Weld Shape:	Rectangle
Weld Stiffener Configuration:	None
Weld Size (1/16 in):	6
W1 (in):	4
W2 (in):	4
Weld Total Length (in):	16.00
Z_x (in^3/in):	21.33
Z_y (in^3/in):	21.33
J_p (in^4/in):	85.33
c_x (in)	2.25
c_y (in)	2.25
Required combined strength (kip/in):	1.91
Weld Capacity (kip/in):	8.35
Weld Utilization:	**22.9%**



Date: **February 16, 2024**

MORRISON HERSHFIELD

Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 379-8500

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Site Number:	5000247545
	Site Name:	Torrington S CT
Crown Castle Designation:	**BU Number:**	828540
	Site Name:	Torrington/RT 8
	JDE Job Number:	2107964
	Work Order Number:	2283619
	Order Number:	662918 Rev. 0
Engineering Firm Designation:	**Morrison Hershfield Project Number:** CN8-315R2 / 2400001	
Site Data:	**218 Wheeler Road, Torrington, Litchfield County, CT 06790** **Latitude *41° 46' 50.33"*, Longitude *-73° 8' 10.02"*** **160 Foot – PiRod Monopole Tower**	

Morrison Hershfield 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 – 49.1%**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 – Analysis Criteria

Respectfully submitted by:

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer

G. Lance Cooke
2024.02.16 09:56:50-08'00'

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160 ft monopole tower designed by PiRod Manufactures Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	115 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
140.0	140.0	3	samsung telecommunications	MT6407-77A_CCIV2 w/ Mount Pipe	8 1	1-5/8 7/8
		6	quintel technology	QS6656-5D		
		1	gps	GPS_A		
		1	raycap	RCMDC-6627-PF-48		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4461D-13A		
		3	-	3' Corner Bracket [#VZWSMART-PLK3]		
		1	-	3' OVP Pipe [#2.0 STD]		
		3	-	7' Mount Pipe [#2.5 STD]		
		3	-	13.25' Support Rail Pipe [#2.5 STD]		
		1	-	Platform Mount [LP 304-1]		

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)
160.0	170.0	1	rfi antennas	OA40-41	8 3 2	1-5/8 1-1/4 7/8
	160.0	3	ericsson	AIR 32 B2A B66AA w/ Mount Pipe		
		3	ericsson	AIR6449 B41		
		3	ericsson	ERICSSON AIR 21 B2A B4P		
		3	rfs/celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	ericsson	RRUS 4415 B25		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
160.0	160.0	3	ericsson	KRY 112 144/1	-	-
		1	-	Platform Mount [LP 405-1_HR-1]		
130.0	130.0	1	andrew	SBNHH-1D65A w/ Mount Pipe	12 2 1 1	1-5/8 3/4 3/8 2C
		2	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe		
		1	kathrein	800 10764 w/ Mount Pipe		
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe		
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		6	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B2		
		6	powerwave technologies	LGP21401		
		1	raycap	DC6-48-60-18-8F		
		1	-	Platform Mount [LP 304-1]		
120.0	120.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	towermounts	Commscope MC-PK8-DSH		
100.0	100.0	2	maxrad	MPRC2449	4	1/4
		2	-	Side Arm Mount [SO 203-1]		
79.0	79.0	1	gps	GPS_A	1	1/2
		1	-	Side Arm Mount [SO 702-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	3463255	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	3464896	CCISITES
4-TOWER MANUFACTURER DRAWINGS	3463264	CCISITES

3.1) Analysis Method

tnxTower (version 8.2.2.0), 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) 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. Morrison Hershfield should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	160 - 140	Pole	P36x0.375	1	-8.97	1564.60	7.3	Pass
L2	140 - 120	Pole	P42x0.375	2	-20.37	1752.31	16.9	Pass
L3	120 - 100	Pole	P48x0.375	3	-29.11	1939.86	26.2	Pass
L4	100 - 80	Pole	P54x0.375	4	-35.61	2127.30	32.6	Pass
L5	80 - 60	Pole	P60x0.375	5	-42.40	2314.65	37.2	Pass
L6	60 - 40	Pole	P60x0.5	6	-51.07	3281.97	35.5	Pass
L7	40 - 20	Pole	P60x0.5	7	-59.78	3281.97	44.4	Pass
L8	20 - 0	Pole	P60x0.625	8	-70.38	4346.11	42.0	Pass
							Summary	
						Pole (L7)	44.4	Pass
						Rating =	44.4	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	140.0	7.8	Pass
1,2	Flange Connection	120.0	16.9	Pass
1,2	Flange Connection	100.0	26.2	Pass
1,2	Flange Connection	80.0	32.6	Pass
1,2	Flange Connection	60.0	37.2	Pass
1,2	Flange Connection	40.0	35.5	Pass
1	Flange Connection	20.0	49.1	Pass
1	Anchor Rods	0	36.6	Pass
1,2	Base Plate	0	42.0	Pass
1	Base Foundation (Structure)	0	38.6	Pass
1	Base Foundation (Soil Interaction)	0	37.2	Pass

Structure Rating (max from all components) =	**49.1%***

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) The base and flange plates have been considered to have the same capacity as their respective shaft.
3) *Rating per TIA-222-H, Section 15.5.

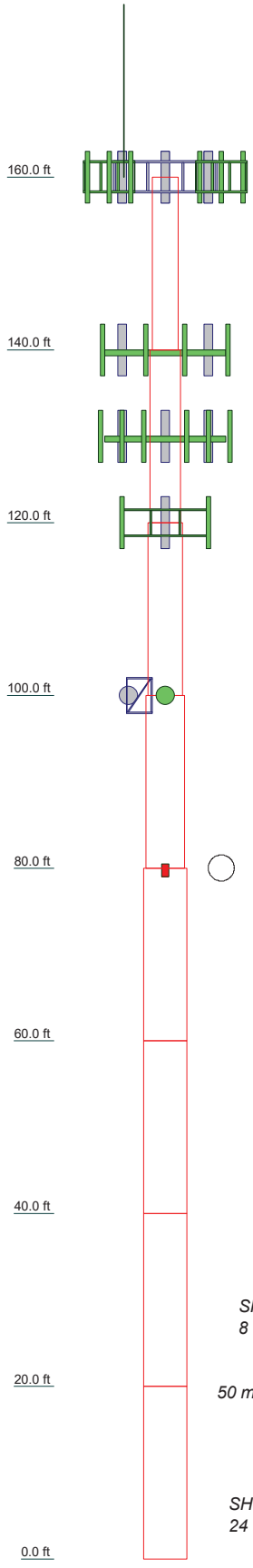
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Size	Length (ft)	Grade	Weight (K)
1	P36x0.375	20.00	A53-B-42	2.9
2	P42x0.375	20.00		3.3
3	P48x0.375	20.00		3.8
4	P54x0.375	20.00		4.3
5	P60x0.375	20.00		4.8
6	P60x0.5	20.00		6.4
7	P60x0.5	20.00		6.4
8	P60x0.625	20.00		7.9
				39.7



ALL REACTIONS ARE FACTORED

AXIAL 95 K

SHEAR 8 K

MOMENT 854 kip-ft

TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 70 K

SHEAR 24 K

MOMENT 2629 kip-ft

TORQUE 1 kip-ft
REACTIONS - 115 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 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: 44.4%

Morrison Hershfield
Consulting Engineers
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
Phone: (770) 379-8500
FAX: (770) 379-8501

Job:	CN8-315R2 / 2400001		
Project:	828540 / Torrington/RT 8		
Client: Crown Castle USA		Drawn by: ANS	App'd:
Code: TIA-222-H		Date: 02/16/24	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 Litchfield County, Connecticut.
Tower base elevation above sea level: 1026.00 ft.
Basic wind speed of 115 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

Section	*Elevation*	*Section Length*	*Pole Size*	*Pole Grade*	*Socket Length*
	ft	*ft*			*ft*
L1	160.00-140.00	20.00	P36x0.375	A53-B-42 (42 ksi)	
L2	140.00-120.00	20.00	P42x0.375	A53-B-42 (42 ksi)	
L3	120.00-100.00	20.00	P48x0.375	A53-B-42 (42 ksi)	
L4	100.00-80.00	20.00	P54x0.375	A53-B-42 (42 ksi)	
L5	80.00-60.00	20.00	P60x0.375	A53-B-42	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L6	60.00-40.00	20.00	P60x0.5	(42 ksi) A53-B-42 (42 ksi)	
L7	40.00-20.00	20.00	P60x0.5	A53-B-42 (42 ksi)	
L8	20.00-0.00	20.00	P60x0.625	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 160.00-140.00				1	1	1			
L2 140.00-120.00				1	1	1			
L3 120.00-100.00				1	1	1			
L4 100.00-80.00				1	1	1			
L5 80.00-60.00				1	1	1			
L6 60.00-40.00				1	1	1			
L7 40.00-20.00				1	1	1			
L8 20.00-0.00				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
******										
PiRod Ladder	A	No	Surface Ar (CaAa)	160.00 - 0.00	1	1	0.500 0.500	0.5400		2.00
Safety Line 3/8	A	No	Surface Ar (CaAa)	160.00 - 0.00	1	1	0.500 0.500	0.3750		0.22
******										
810921-001(7/8)	C	No	Surface Ar (CaAa)	160.00 - 0.00	2	2	-0.300 -0.250	1.1120		0.40
******										
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	140.00 - 0.00	6	6	-0.100 0.170	1.9800		0.82
LDF5-50A(7/8)	C	No	Surface Ar (CaAa)	140.00 - 0.00	1	1	0.180 0.180	1.0900		0.33
***										
HB158-21U6S12-XXXM-01(1-5/8)	C	No	Surface Ar (CaAa)	140.00 - 0.00	2	2	0.190 0.270	1.9900		1.90
***										
CU12PSM9P6XXX(1-1/2)	B	No	Surface Ar (CaAa)	120.00 - 0.00	1	1	-0.300 -0.300	1.6000		2.35
******										
CAT5E(1/4)	C	No	Surface Ar (CaAa)	100.00 - 0.00	4	1	-0.260 -0.200	0.2500		0.10
******										
LDF4-50A(1/2)	B	No	Surface Ar (CaAa)	79.00 - 0.00	1	1	-0.100 -0.100	0.6250		0.15
******										

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
******									
HCS 6X12 4AWG(1-5/8)	A	No	No	Inside Pole	160.00 - 0.00	3	No Ice	0.00	2.40
							1/2" Ice	0.00	2.40
							1" Ice	0.00	2.40
LDF7-50A(1-5/8)	A	No	No	Inside Pole	160.00 - 0.00	3	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
LDF6-50A(1-1/4)	A	No	No	Inside Pole	160.00 - 0.00	3	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	A	No	No	Inside Pole	160.00 - 0.00	2	No Ice	0.00	1.07
							1/2" Ice	0.00	1.07
							1" Ice	0.00	1.07
******									
******									
AVA7-50(1-5/8)	A	No	No	Inside Pole	130.00 - 0.00	12	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
FB-L98-002-XXX(3/8)	A	No	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
WR-VG86T(3/4)	A	No	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	0.53
							1/2" Ice	0.00	0.53
							1" Ice	0.00	0.53
Conduit(2)	A	No	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
******									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-140.00	A	0.000	0.000	1.830	0.000	0.32
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	4.448	0.000	0.02
L2	140.00-120.00	A	0.000	0.000	1.830	0.000	0.44
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	38.348	0.000	0.20
L3	120.00-100.00	A	0.000	0.000	1.830	0.000	0.56
		B	0.000	0.000	3.200	0.000	0.05
		C	0.000	0.000	38.348	0.000	0.20
L4	100.00-80.00	A	0.000	0.000	1.830	0.000	0.56
		B	0.000	0.000	3.200	0.000	0.05
		C	0.000	0.000	38.848	0.000	0.20
L5	80.00-60.00	A	0.000	0.000	1.830	0.000	0.56
		B	0.000	0.000	4.388	0.000	0.05
		C	0.000	0.000	38.848	0.000	0.20
L6	60.00-40.00	A	0.000	0.000	1.830	0.000	0.56
		B	0.000	0.000	4.450	0.000	0.05
		C	0.000	0.000	38.848	0.000	0.20
L7	40.00-20.00	A	0.000	0.000	1.830	0.000	0.56
		B	0.000	0.000	4.450	0.000	0.05
		C	0.000	0.000	38.848	0.000	0.20
L8	20.00-0.00	A	0.000	0.000	1.830	0.000	0.56
		B	0.000	0.000	4.450	0.000	0.05
		C	0.000	0.000	38.848	0.000	0.20

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-140.00	A	0.989	0.000	0.000	9.742	0.000	0.39
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	10.505	0.000	0.09
L2	140.00-120.00	A	0.975	0.000	0.000	9.629	0.000	0.51
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	65.913	0.000	0.68
L3	120.00-100.00	A	0.959	0.000	0.000	9.500	0.000	0.63
		B		0.000	0.000	7.035	0.000	0.11
		C		0.000	0.000	65.606	0.000	0.67
L4	100.00-80.00	A	0.940	0.000	0.000	9.348	0.000	0.63
		B		0.000	0.000	6.959	0.000	0.11
		C		0.000	0.000	69.503	0.000	0.77
L5	80.00-60.00	A	0.916	0.000	0.000	9.161	0.000	0.62
		B		0.000	0.000	11.535	0.000	0.14
		C		0.000	0.000	68.967	0.000	0.76
L6	60.00-40.00	A	0.886	0.000	0.000	8.919	0.000	0.62
		B		0.000	0.000	11.539	0.000	0.14
		C		0.000	0.000	68.269	0.000	0.73
L7	40.00-20.00	A	0.842	0.000	0.000	8.565	0.000	0.62
		B		0.000	0.000	11.185	0.000	0.13
		C		0.000	0.000	67.255	0.000	0.70
L8	20.00-0.00	A	0.754	0.000	0.000	7.865	0.000	0.61
		B		0.000	0.000	10.485	0.000	0.12
		C		0.000	0.000	65.240	0.000	0.64

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.00-140.00	1.0633	0.8479	1.0215	-0.1358
L2	140.00-120.00	-1.0276	9.2659	-0.6944	6.0450
L3	120.00-100.00	-0.6959	8.6781	-0.3768	5.4873
L4	100.00-80.00	-0.6615	9.1996	-0.1507	6.1744
L5	80.00-60.00	-0.4266	9.2604	0.2779	5.9737
L6	60.00-40.00	-0.4129	9.2428	0.2836	5.9645
L7	40.00-20.00	-0.4129	9.2428	0.2582	5.9906
L8	20.00-0.00	-0.4129	9.2428	0.2062	6.0443

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	PiRod Ladder	140.00 - 160.00	1.0000	1.0000
L1	3	Safety Line 3/8	140.00 - 160.00	1.0000	1.0000
L1	10	810921-001(7/8)	140.00 - 160.00	1.0000	1.0000
L2	2	PiRod Ladder	120.00 - 140.00	1.0000	1.0000
L2	3	Safety Line 3/8	120.00 - 140.00	1.0000	1.0000
L2	10	810921-001(7/8)	120.00 - 140.00	1.0000	1.0000
L2	15	LDF7-50A(1-5/8)	120.00 - 140.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	17	LDF5-50A(7/8)	120.00 - 140.00	1.0000	1.0000
L2	19	HB158-21U6S12-XXXM-01(1-5/8)	120.00 - 140.00	1.0000	1.0000
L3	2	PiRod Ladder	100.00 - 120.00	1.0000	1.0000
L3	3	Safety Line 3/8	100.00 - 120.00	1.0000	1.0000
L3	10	810921-001(7/8)	100.00 - 120.00	1.0000	1.0000
L3	15	LDF7-50A(1-5/8)	100.00 - 120.00	1.0000	1.0000
L3	17	LDF5-50A(7/8)	100.00 - 120.00	1.0000	1.0000
L3	19	HB158-21U6S12-XXXM-01(1-5/8)	100.00 - 120.00	1.0000	1.0000
L3	28	CU12PSM9P6XXX(1-1/2)	100.00 - 120.00	1.0000	1.0000
L4	2	PiRod Ladder	80.00 - 100.00	1.0000	1.0000
L4	3	Safety Line 3/8	80.00 - 100.00	1.0000	1.0000
L4	10	810921-001(7/8)	80.00 - 100.00	1.0000	1.0000
L4	15	LDF7-50A(1-5/8)	80.00 - 100.00	1.0000	1.0000
L4	17	LDF5-50A(7/8)	80.00 - 100.00	1.0000	1.0000
L4	19	HB158-21U6S12-XXXM-01(1-5/8)	80.00 - 100.00	1.0000	1.0000
L4	28	CU12PSM9P6XXX(1-1/2)	80.00 - 100.00	1.0000	1.0000
L4	30	CAT5E(1/4)	80.00 - 100.00	1.0000	1.0000
L5	2	PiRod Ladder	60.00 - 80.00	1.0000	1.0000
L5	3	Safety Line 3/8	60.00 - 80.00	1.0000	1.0000
L5	10	810921-001(7/8)	60.00 - 80.00	1.0000	1.0000
L5	15	LDF7-50A(1-5/8)	60.00 - 80.00	1.0000	1.0000
L5	17	LDF5-50A(7/8)	60.00 - 80.00	1.0000	1.0000
L5	19	HB158-21U6S12-XXXM-01(1-5/8)	60.00 - 80.00	1.0000	1.0000
L5	28	CU12PSM9P6XXX(1-1/2)	60.00 - 80.00	1.0000	1.0000
L5	30	CAT5E(1/4)	60.00 - 80.00	1.0000	1.0000
L5	32	LDF4-50A(1/2)	60.00 - 79.00	1.0000	1.0000
L6	2	PiRod Ladder	40.00 - 60.00	1.0000	1.0000
L6	3	Safety Line 3/8	40.00 - 60.00	1.0000	1.0000
L6	10	810921-001(7/8)	40.00 - 60.00	1.0000	1.0000
L6	15	LDF7-50A(1-5/8)	40.00 - 60.00	1.0000	1.0000
L6	17	LDF5-50A(7/8)	40.00 - 60.00	1.0000	1.0000
L6	19	HB158-21U6S12-XXXM-01(1-5/8)	40.00 - 60.00	1.0000	1.0000
L6	28	CU12PSM9P6XXX(1-1/2)	40.00 - 60.00	1.0000	1.0000
L6	30	CAT5E(1/4)	40.00 - 60.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L6	32	LDF4-50A(1/2)	40.00 - 60.00	1.0000	1.0000
L7	2	PiRod Ladder	20.00 - 40.00	1.0000	1.0000
L7	3	Safety Line 3/8	20.00 - 40.00	1.0000	1.0000
L7	10	810921-001(7/8)	20.00 - 40.00	1.0000	1.0000
L7	15	LDF7-50A(1-5/8)	20.00 - 40.00	1.0000	1.0000
L7	17	LDF5-50A(7/8)	20.00 - 40.00	1.0000	1.0000
L7	19	HB158-21U6S12-XXXM-01(1-5/8)	20.00 - 40.00	1.0000	1.0000
L7	28	CU12PSM9P6XXX(1-1/2)	20.00 - 40.00	1.0000	1.0000
L7	30	CAT5E(1/4)	20.00 - 40.00	1.0000	1.0000
L7	32	LDF4-50A(1/2)	20.00 - 40.00	1.0000	1.0000
L8	2	PiRod Ladder	0.00 - 20.00	1.0000	1.0000
L8	3	Safety Line 3/8	0.00 - 20.00	1.0000	1.0000
L8	10	810921-001(7/8)	0.00 - 20.00	1.0000	1.0000
L8	15	LDF7-50A(1-5/8)	0.00 - 20.00	1.0000	1.0000
L8	17	LDF5-50A(7/8)	0.00 - 20.00	1.0000	1.0000
L8	19	HB158-21U6S12-XXXM-01(1-5/8)	0.00 - 20.00	1.0000	1.0000
L8	28	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	1.0000	1.0000
L8	30	CAT5E(1/4)	0.00 - 20.00	1.0000	1.0000
L8	32	LDF4-50A(1/2)	0.00 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
******									
ERICSSON AIR 21 B2A B4P	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.19 3.52 3.85	1.98 2.28 2.59	0.09 0.13 0.18
ERICSSON AIR 21 B2A B4P	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.19 3.52 3.85	1.98 2.28 2.59	0.09 0.13 0.18
ERICSSON AIR 21 B2A B4P	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.19 3.52 3.85	1.98 2.28 2.59	0.09 0.13 0.18
AIR6449 B41	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	5.28 5.71 6.15	2.05 2.38 2.72	0.10 0.14 0.19
AIR6449 B41	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	5.28 5.71 6.15	2.05 2.38 2.72	0.10 0.14 0.19
AIR6449 B41	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	5.28 5.71 6.15	2.05 2.38 2.72	0.10 0.14 0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
AIR 32 B2A B66AA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
AIR 32 B2A B66AA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
AIR 32 B2A B66AA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.76 4.12 4.48	3.15 3.49 3.84	0.19 0.25 0.32
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
KRY 112 144/1	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
KRY 112 144/1	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30	0.01 0.01 0.02
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RRUS 4415 B25	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	0.68 0.79 0.91	0.04 0.06 0.07
4' x 2" Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.79 1.03 1.28	0.79 1.03 1.28	0.03 0.04 0.04
4' x 2" Pipe Mount	B	From Leg	4.00	0.0000	160.00	No Ice	0.79	0.79	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	1.03	1.03	0.04
			0.00				1" Ice	1.28	1.28	0.04
4' x 2" Pipe Mount	C	From Leg	4.00		0.0000	160.00	No Ice	0.79	0.79	0.03
			0.00				1/2" Ice	1.03	1.03	0.04
			0.00				1" Ice	1.28	1.28	0.04
8' x 2" Mount Pipe	A	From Leg	4.00		0.0000	160.00	No Ice	1.90	1.90	0.03
			0.00				1/2" Ice	2.73	2.73	0.04
			0.00				1" Ice	3.40	3.40	0.06
8' x 2" Mount Pipe	B	From Leg	4.00		0.0000	160.00	No Ice	1.90	1.90	0.03
			0.00				1/2" Ice	2.73	2.73	0.04
			0.00				1" Ice	3.40	3.40	0.06
8' x 2" Mount Pipe	C	From Leg	4.00		0.0000	160.00	No Ice	1.90	1.90	0.03
			0.00				1/2" Ice	2.73	2.73	0.04
			0.00				1" Ice	3.40	3.40	0.06
Platform Mount [LP 405-1_HR-1]	A	None			0.0000	160.00	No Ice	25.33	25.33	2.06
							1/2" Ice	33.79	33.79	2.63
							1" Ice	42.16	42.16	3.36
******										
OA40-41	C	From Leg	4.00		0.0000	160.00	No Ice	5.27	5.27	0.05
			0.00				1/2" Ice	7.04	7.04	0.09
			10.00				1" Ice	8.83	8.83	0.14
6' x 2" Mount Pipe	C	From Leg	4.00		0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
******										
******										
******										
GPS_A	B	From Leg	4.00		0.0000	140.00	No Ice	0.26	0.26	0.00
			0.00				1/2" Ice	0.32	0.32	0.00
			0.00				1" Ice	0.39	0.39	0.01
Platform Mount [LP 304-1]	A	None			0.0000	140.00	No Ice	17.49	17.49	1.35
							1/2" Ice	21.37	21.37	1.71
							1" Ice	25.28	25.28	2.13
***										
MT6407-77A_CCIV2 w/ Mount Pipe	A	From Leg	4.00		0.0000	140.00	No Ice	5.94	3.10	0.10
			0.00				1/2" Ice	6.47	3.55	0.13
			0.00				1" Ice	7.02	4.02	0.18
MT6407-77A_CCIV2 w/ Mount Pipe	B	From Leg	4.00		0.0000	140.00	No Ice	5.94	3.10	0.10
			0.00				1/2" Ice	6.47	3.55	0.13
			0.00				1" Ice	7.02	4.02	0.18
MT6407-77A_CCIV2 w/ Mount Pipe	C	From Leg	4.00		0.0000	140.00	No Ice	5.94	3.10	0.10
			0.00				1/2" Ice	6.47	3.55	0.13
			0.00				1" Ice	7.02	4.02	0.18
(2) QS6656-5D	A	From Leg	4.00		0.0000	140.00	No Ice	4.01	3.37	0.09
			0.00				1/2" Ice	4.41	3.76	0.15
			0.00				1" Ice	4.81	4.15	0.21
(2) QS6656-5D	B	From Leg	4.00		0.0000	140.00	No Ice	4.01	3.37	0.09
			0.00				1/2" Ice	4.41	3.76	0.15
			0.00				1" Ice	4.81	4.15	0.21
(2) QS6656-5D	C	From Leg	4.00		0.0000	140.00	No Ice	4.01	3.37	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	4.41	3.76	0.15
			0.00			1" Ice	4.81	4.15	0.21
RF4439D-25A	A	From Leg	4.00	0.0000	140.00	No Ice	1.87	1.25	0.07
			0.00			1/2" Ice	2.03	1.39	0.09
			0.00			1" Ice	2.21	1.54	0.11
RF4439D-25A	B	From Leg	4.00	0.0000	140.00	No Ice	1.87	1.25	0.07
			0.00			1/2" Ice	2.03	1.39	0.09
			0.00			1" Ice	2.21	1.54	0.11
RF4439D-25A	C	From Leg	4.00	0.0000	140.00	No Ice	1.87	1.25	0.07
			0.00			1/2" Ice	2.03	1.39	0.09
			0.00			1" Ice	2.21	1.54	0.11
(3) RF4461D-13A	A	From Leg	4.00	0.0000	140.00	No Ice	1.87	1.28	0.08
			0.00			1/2" Ice	2.03	1.42	0.10
			0.00			1" Ice	2.21	1.57	0.12
RCMDC-6627-PF-48	A	From Leg	4.00	0.0000	140.00	No Ice	4.06	3.10	0.03
			0.00			1/2" Ice	4.32	3.34	0.07
			0.00			1" Ice	4.58	3.58	0.11
(2) 6' x 2'' Mount Pipe	A	From Leg	4.00	0.0000	140.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) 6' x 2'' Mount Pipe	B	From Leg	4.00	0.0000	140.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) 6' x 2'' Mount Pipe	C	From Leg	4.00	0.0000	140.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
7' Mount Pipe [#2.5 STD]	A	From Leg	4.00	0.0000	140.00	No Ice	2.01	2.01	0.04
			0.00			1/2" Ice	2.59	2.59	0.06
			0.00			1" Ice	3.02	3.02	0.07
7' Mount Pipe [#2.5 STD]	B	From Leg	4.00	0.0000	140.00	No Ice	2.01	2.01	0.04
			0.00			1/2" Ice	2.59	2.59	0.06
			0.00			1" Ice	3.02	3.02	0.07
7' Mount Pipe [#2.5 STD]	C	From Leg	4.00	0.0000	140.00	No Ice	2.01	2.01	0.04
			0.00			1/2" Ice	2.59	2.59	0.06
			0.00			1" Ice	3.02	3.02	0.07
13.25' Support Rail Pipe [#2.5 STD]	A	From Leg	4.00	0.0000	140.00	No Ice	3.81	0.01	0.08
			0.00			1/2" Ice	5.17	0.06	0.10
			0.00			1" Ice	6.52	0.10	0.12
13.25' Support Rail Pipe [#2.5 STD]	B	From Leg	4.00	0.0000	140.00	No Ice	3.81	0.01	0.08
			0.00			1/2" Ice	5.17	0.06	0.10
			0.00			1" Ice	6.52	0.10	0.12
13.25' Support Rail Pipe [#2.5 STD]	C	From Leg	4.00	0.0000	140.00	No Ice	3.81	0.01	0.08
			0.00			1/2" Ice	5.17	0.06	0.10
			0.00			1" Ice	6.52	0.10	0.12
3' OVP Pipe [#2.0 STD]	A	From Leg	2.00	0.0000	140.00	No Ice	0.58	0.58	0.01
			0.00			1/2" Ice	0.77	0.77	0.02
			0.00			1" Ice	0.97	0.97	0.02
3' Corner Bracket [#VZWSMART-PLK3]	A	From Leg	4.00	0.0000	140.00	No Ice	1.70	0.02	0.02
			0.00				1.91	0.08	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.14	0.15	0.05
						1" Ice			
3' Corner Bracket [#VZWSMART-PLK3]	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.70 1.91 2.14	0.02 0.08 0.15	0.02 0.03 0.05
3' Corner Bracket [#VZWSMART-PLK3]	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.70 1.91 2.14	0.02 0.08 0.15	0.02 0.03 0.05
******									
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.39 3.75 4.12	2.32 2.66 3.02	0.06 0.10 0.15
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.39 3.75 4.12	2.32 2.66 3.02	0.06 0.10 0.15
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.39 3.75 4.12	2.32 2.66 3.02	0.06 0.10 0.15
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	4.63 5.06 5.51	3.27 3.69 4.12	0.07 0.13 0.20
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	4.63 5.06 5.51	3.27 3.69 4.12	0.07 0.13 0.20
800 10764 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	4.33 4.77 5.22	3.12 3.53 3.96	0.07 0.11 0.17
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) RRUS 11	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
(2) RRUS 11	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
(2) RRUS 11	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
Platform Mount [LP 304-1]	A	None		0.0000	130.00	No Ice	17.49	17.49	1.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1/2" Ice	21.37 25.28	21.37 25.28	1.71 2.13
						1" Ice			
***									
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	9.22 9.98 10.76	6.25 6.96 7.70	0.07 0.14 0.22
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	9.22 9.98 10.76	6.25 6.96 7.70	0.07 0.14 0.22
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.04 3.34 3.65	2.45 2.75 3.05	0.05 0.10 0.16
RRUS 32 B2	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
****** ******									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	2.01 2.19 2.37	1.17 1.31 1.46	0.02 0.04 0.06
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Commscope MC-PK8-DSH	C	None		0.0000	120.00	No Ice 1/2" Ice 1" Ice	34.24 62.95 91.66	34.24 62.95 91.66	1.75 2.10 2.45
******									
Side Arm Mount [SO 203-1]	A	From Leg	1.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.78 2.24 2.75	3.79 4.47 5.21	0.12 0.15 0.19
Side Arm Mount [SO 203-1]	C	From Leg	1.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.78 2.24 2.75	3.79 4.47 5.21	0.12 0.15 0.19
******									
GPS_A	A	From Leg	6.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	0.26 0.32 0.39	0.26 0.32 0.39	0.00 0.00 0.01
Side Arm Mount [SO 702-1]	A	From Leg	3.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	0.62 0.74 0.89	1.49 2.07 2.54	0.03 0.04 0.06
******									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
******											
MPRC2449	A	Paraboloid w/Radome	From Leg	3.00 0.00 0.00	7.0000		100.00	2.17	No Ice 1/2" Ice 1" Ice	3.69 3.98 4.27	0.02 0.04 0.06
MPRC2449	C	Paraboloid w/Shroud (HP)	From Leg	3.00 0.00 0.00	63.0000		100.00	2.17	No Ice 1/2" Ice 1" Ice	3.69 3.98 4.27	0.02 0.04 0.06
******											

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 140	Pole	Max Tension	26	0.00	0.00	0.00
			Max. Compression	26	-13.64	1.10	-0.59
			Max. Mx	20	-8.97	94.43	-0.20
			Max. My	14	-8.97	0.45	-94.20
			Max. Vy	8	5.29	-93.49	-0.20
			Max. Vx	2	-5.29	0.44	93.76
			Max. Torque	24			1.35
L2	140 - 120	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-31.61	0.44	1.24
			Max. Mx	20	-20.37	293.22	1.54
			Max. My	2	-20.37	0.55	296.15
			Max. Vy	8	11.89	-292.71	0.94
			Max. Vx	14	12.01	-0.04	-293.66
			Max. Torque	24			1.35
L3	120 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.79	0.44	0.37
			Max. Mx	20	-29.11	593.50	1.90
			Max. My	2	-29.11	1.15	598.93
			Max. Vy	8	15.82	-593.00	0.09
			Max. Vx	14	15.96	-0.63	-596.93
			Max. Torque	18			-1.01
L4	100 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.43	1.35	-1.77
			Max. Mx	20	-35.61	934.85	0.58
			Max. My	14	-35.61	0.55	-940.55
			Max. Vy	8	17.94	-934.58	0.05
			Max. Vx	14	17.98	0.55	-940.55
			Max. Torque	18			-1.01
L5	80 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.28	1.27	-3.05
			Max. Mx	8	-42.40	-1311.47	0.44
			Max. My	14	-42.40	1.17	-1317.95
			Max. Vy	8	19.69	-1311.47	0.44
			Max. Vx	14	19.70	1.17	-1317.95
			Max. Torque	16			-1.09
L6	60 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.89	1.18	-4.72
			Max. Mx	8	-51.07	-1720.38	0.66
			Max. My	14	-51.07	1.79	-1727.51
			Max. Vy	8	21.19	-1720.38	0.66
			Max. Vx	14	21.20	1.79	-1727.51
			Max. Torque	16			-1.09
L7	40 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.39	1.11	-6.32
			Max. Mx	8	-59.78	-2155.98	0.87
			Max. My	14	-59.78	2.41	-2163.76
			Max. Vy	8	22.36	-2155.98	0.87
			Max. Vx	14	22.37	2.41	-2163.76
			Max. Torque	16			-1.09
L8	20 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.56	1.04	-7.78
			Max. Mx	8	-70.38	-2614.08	1.08
			Max. My	14	-70.38	3.02	-2622.49
			Max. Vy	8	23.44	-2614.08	1.08
			Max. Vx	14	23.45	3.02	-2622.49
			Max. Torque	16			-1.09

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	94.56	0.00	0.00
	Max. H_x	20	70.39	23.37	-0.03
	Max. H_z	2	70.39	-0.07	23.41
	Max. M_x	2	2616.09	-0.07	23.41
	Max. M_z	8	2614.08	-23.43	0.03
	Max. Torsion	4	0.92	-11.74	20.28
	Min. Vert	19	52.79	20.23	-11.72
	Min. H_x	8	70.39	-23.43	0.03
	Min. H_z	14	70.39	0.03	-23.44
	Min. M_x	14	-2622.49	0.03	-23.44
	Min. M_z	20	-2608.90	23.37	-0.03

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Torsion	16	-1.09	11.70	-20.28

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	58.66	0.00	0.00	1.28	0.61	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	70.39	0.07	-23.41	-2616.09	-5.08	-0.74
0.9 Dead+1.0 Wind 0 deg - No Ice	52.79	0.07	-23.41	-2599.17	-5.25	-0.73
1.2 Dead+1.0 Wind 30 deg - No Ice	70.39	11.74	-20.28	-2265.22	-1308.39	-0.92
0.9 Dead+1.0 Wind 30 deg - No Ice	52.79	11.74	-20.28	-2250.62	-1299.95	-0.91
1.2 Dead+1.0 Wind 60 deg - No Ice	70.39	20.28	-11.72	-1308.51	-2262.20	-0.89
0.9 Dead+1.0 Wind 60 deg - No Ice	52.79	20.28	-11.72	-1300.24	-2247.45	-0.88
1.2 Dead+1.0 Wind 90 deg - No Ice	70.39	23.43	-0.03	-1.08	-2614.08	-0.51
0.9 Dead+1.0 Wind 90 deg - No Ice	52.79	23.43	-0.03	-1.46	-2597.01	-0.50
1.2 Dead+1.0 Wind 120 deg - No Ice	70.39	20.41	11.74	1314.84	-2276.72	0.18
0.9 Dead+1.0 Wind 120 deg - No Ice	52.79	20.41	11.74	1305.76	-2261.88	0.18
1.2 Dead+1.0 Wind 150 deg - No Ice	70.39	11.69	20.31	2272.50	-1304.23	0.64
0.9 Dead+1.0 Wind 150 deg - No Ice	52.79	11.69	20.31	2257.09	-1295.80	0.64
1.2 Dead+1.0 Wind 180 deg - No Ice	70.39	-0.03	23.44	2622.49	3.02	0.98
0.9 Dead+1.0 Wind 180 deg - No Ice	52.79	-0.03	23.44	2604.77	2.81	0.97
1.2 Dead+1.0 Wind 210 deg - No Ice	70.39	-11.70	20.28	2268.58	1305.33	1.09
0.9 Dead+1.0 Wind 210 deg - No Ice	52.79	-11.70	20.28	2253.20	1296.52	1.08
1.2 Dead+1.0 Wind 240 deg - No Ice	70.39	-20.23	11.72	1310.99	2257.85	1.01
0.9 Dead+1.0 Wind 240 deg - No Ice	52.79	-20.23	11.72	1301.94	2242.73	1.00
1.2 Dead+1.0 Wind 270 deg - No Ice	70.39	-23.37	0.03	3.47	2608.90	0.60
0.9 Dead+1.0 Wind 270 deg - No Ice	52.79	-23.37	0.03	3.07	2591.47	0.59
1.2 Dead+1.0 Wind 300 deg - No Ice	70.39	-20.37	-11.74	-1312.16	2274.18	-0.07
0.9 Dead+1.0 Wind 300 deg - No Ice	52.79	-20.37	-11.74	-1303.86	2258.97	-0.07
1.2 Dead+1.0 Wind 330 deg - No Ice	70.39	-11.69	-20.27	-2266.00	1306.15	-0.70
0.9 Dead+1.0 Wind 330 deg - No Ice	52.79	-11.69	-20.27	-2251.38	1297.32	-0.70
1.2 Dead+1.0 Ice+1.0 Temp	94.56	0.00	0.00	7.78	1.04	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	94.56	0.02	-7.87	-837.54	-0.30	-0.27
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	94.56	3.94	-6.81	-724.28	-422.16	-0.28
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	94.56	6.82	-3.94	-415.13	-730.89	-0.23
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	94.56	7.88	-0.01	7.33	-844.46	-0.09

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	94.56	6.82	3.93	430.17	-731.34	0.11
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	94.56	3.93	6.82	741.13	-421.03	0.24
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	94.56	-0.01	7.87	854.32	1.74	0.32
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	94.56	-3.94	6.81	740.40	423.38	0.32
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	94.56	-6.81	3.94	431.06	731.83	0.25
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	94.56	-7.86	0.01	8.58	845.21	0.11
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	94.56	-6.81	-3.93	-414.20	732.67	-0.09
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	94.56	-3.93	-6.81	-724.32	423.34	-0.26
Dead+Wind 0 deg - Service	58.66	0.02	-6.00	-667.06	-0.86	-0.18
Dead+Wind 30 deg - Service	58.66	3.01	-5.20	-577.47	-333.63	-0.23
Dead+Wind 60 deg - Service	58.66	5.20	-3.01	-333.20	-577.16	-0.22
Dead+Wind 90 deg - Service	58.66	6.01	-0.01	0.62	-667.01	-0.13
Dead+Wind 120 deg - Service	58.66	5.23	3.01	336.61	-580.87	0.05
Dead+Wind 150 deg - Service	58.66	3.00	5.21	581.12	-332.56	0.16
Dead+Wind 180 deg - Service	58.66	-0.01	6.01	670.48	1.21	0.24
Dead+Wind 210 deg - Service	58.66	-3.00	5.20	580.12	333.73	0.27
Dead+Wind 240 deg - Service	58.66	-5.19	3.00	335.62	576.93	0.25
Dead+Wind 270 deg - Service	58.66	-5.99	0.01	1.78	666.56	0.15
Dead+Wind 300 deg - Service	58.66	-5.22	-3.01	-334.13	581.10	-0.02
Dead+Wind 330 deg - Service	58.66	-3.00	-5.20	-577.67	333.94	-0.18

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-58.66	0.00	0.00	58.66	0.00	0.000%
2	0.07	-70.39	-23.41	-0.07	70.39	23.41	0.000%
3	0.07	-52.79	-23.41	-0.07	52.79	23.41	0.000%
4	11.74	-70.39	-20.28	-11.74	70.39	20.28	0.000%
5	11.74	-52.79	-20.28	-11.74	52.79	20.28	0.000%
6	20.28	-70.39	-11.72	-20.28	70.39	11.72	0.000%
7	20.28	-52.79	-11.72	-20.28	52.79	11.72	0.000%
8	23.43	-70.39	-0.03	-23.43	70.39	0.03	0.000%
9	23.43	-52.79	-0.03	-23.43	52.79	0.03	0.000%
10	20.41	-70.39	11.74	-20.41	70.39	-11.74	0.000%
11	20.41	-52.79	11.74	-20.41	52.79	-11.74	0.000%
12	11.69	-70.39	20.31	-11.69	70.39	-20.31	0.000%
13	11.69	-52.79	20.31	-11.69	52.79	-20.31	0.000%
14	-0.03	-70.39	23.44	0.03	70.39	-23.44	0.000%
15	-0.03	-52.79	23.44	0.03	52.79	-23.44	0.000%
16	-11.70	-70.39	20.28	11.70	70.39	-20.28	0.000%
17	-11.70	-52.79	20.28	11.70	52.79	-20.28	0.000%
18	-20.23	-70.39	11.72	20.23	70.39	-11.72	0.000%
19	-20.23	-52.79	11.72	20.23	52.79	-11.72	0.000%
20	-23.37	-70.39	0.03	23.37	70.39	-0.03	0.000%
21	-23.37	-52.79	0.03	23.37	52.79	-0.03	0.000%
22	-20.37	-70.39	-11.74	20.37	70.39	11.74	0.000%
23	-20.37	-52.79	-11.74	20.37	52.79	11.74	0.000%
24	-11.69	-70.39	-20.27	11.69	70.39	20.27	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
25	-11.69	-52.79	-20.27	11.69	52.79	20.27	0.000%
26	0.00	-94.56	0.00	0.00	94.56	0.00	0.000%
27	0.02	-94.56	-7.87	-0.02	94.56	7.87	0.000%
28	3.94	-94.56	-6.81	-3.94	94.56	6.81	0.000%
29	6.82	-94.56	-3.94	-6.82	94.56	3.94	0.000%
30	7.88	-94.56	-0.01	-7.88	94.56	0.01	0.000%
31	6.82	-94.56	3.93	-6.82	94.56	-3.93	0.000%
32	3.93	-94.56	6.82	-3.93	94.56	-6.82	0.000%
33	-0.01	-94.56	7.87	0.01	94.56	-7.87	0.000%
34	-3.94	-94.56	6.81	3.94	94.56	-6.81	0.000%
35	-6.81	-94.56	3.94	6.81	94.56	-3.94	0.000%
36	-7.86	-94.56	0.01	7.86	94.56	-0.01	0.000%
37	-6.81	-94.56	-3.93	6.81	94.56	3.93	0.000%
38	-3.93	-94.56	-6.81	3.93	94.56	6.81	0.000%
39	0.02	-58.66	-6.00	-0.02	58.66	6.00	0.000%
40	3.01	-58.66	-5.20	-3.01	58.66	5.20	0.000%
41	5.20	-58.66	-3.01	-5.20	58.66	3.01	0.000%
42	6.01	-58.66	-0.01	-6.01	58.66	0.01	0.000%
43	5.23	-58.66	3.01	-5.23	58.66	-3.01	0.000%
44	3.00	-58.66	5.21	-3.00	58.66	-5.21	0.000%
45	-0.01	-58.66	6.01	0.01	58.66	-6.01	0.000%
46	-3.00	-58.66	5.20	3.00	58.66	-5.20	0.000%
47	-5.19	-58.66	3.00	5.19	58.66	-3.00	0.000%
48	-5.99	-58.66	0.01	5.99	58.66	-0.01	0.000%
49	-5.22	-58.66	-3.01	5.22	58.66	3.01	0.000%
50	-3.00	-58.66	-5.20	3.00	58.66	5.20	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	4	0.00000001	0.00037059
3	Yes	4	0.00000001	0.00022436
4	Yes	5	0.00000001	0.00008289
5	Yes	5	0.00000001	0.00004241
6	Yes	5	0.00000001	0.00009067
7	Yes	5	0.00000001	0.00004662
8	Yes	4	0.00000001	0.00033270
9	Yes	4	0.00000001	0.00019189
10	Yes	5	0.00000001	0.00008811
11	Yes	5	0.00000001	0.00004521
12	Yes	5	0.00000001	0.00008420
13	Yes	5	0.00000001	0.00004310
14	Yes	4	0.00000001	0.00041509
15	Yes	4	0.00000001	0.00026062
16	Yes	5	0.00000001	0.00009188
17	Yes	5	0.00000001	0.00004726
18	Yes	5	0.00000001	0.00008244
19	Yes	5	0.00000001	0.00004216
20	Yes	4	0.00000001	0.00033876
21	Yes	4	0.00000001	0.00019721
22	Yes	5	0.00000001	0.00008735
23	Yes	5	0.00000001	0.00004474
24	Yes	5	0.00000001	0.00009002
25	Yes	5	0.00000001	0.00004625
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00015115
28	Yes	5	0.00000001	0.00015556
29	Yes	5	0.00000001	0.00015568
30	Yes	5	0.00000001	0.00015160
31	Yes	5	0.00000001	0.00015703
32	Yes	5	0.00000001	0.00015764
33	Yes	5	0.00000001	0.00015346
34	Yes	5	0.00000001	0.00015809
35	Yes	5	0.00000001	0.00015756
36	Yes	5	0.00000001	0.00015225
37	Yes	5	0.00000001	0.00015634
38	Yes	5	0.00000001	0.00015613
39	Yes	4	0.00000001	0.00005897
40	Yes	4	0.00000001	0.00008550
41	Yes	4	0.00000001	0.00009186
42	Yes	4	0.00000001	0.00005784
43	Yes	4	0.00000001	0.00008875
44	Yes	4	0.00000001	0.00008595
45	Yes	4	0.00000001	0.00005991
46	Yes	4	0.00000001	0.00009360
47	Yes	4	0.00000001	0.00008556
48	Yes	4	0.00000001	0.00005809
49	Yes	4	0.00000001	0.00008823
50	Yes	4	0.00000001	0.00009118

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 140	7.587	49	0.3674	0.0008
L2	140 - 120	6.062	49	0.3572	0.0005
L3	120 - 100	4.610	49	0.3315	0.0004
L4	100 - 80	3.297	49	0.2909	0.0003
L5	80 - 60	2.175	43	0.2419	0.0002
L6	60 - 40	1.266	43	0.1894	0.0001
L7	40 - 20	0.579	43	0.1361	0.0001
L8	20 - 0	0.146	43	0.0678	0.0000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	ERICSSON AIR 21 B2A B4P	49	7.587	0.3674	0.0008	259865
140.00	GPS_A	49	6.062	0.3572	0.0005	65220
130.00	7770.00 w/ Mount Pipe	49	5.323	0.3465	0.0004	44471
120.00	MX08FRO665-21 w/ Mount Pipe	49	4.610	0.3315	0.0004	33817
100.00	MPRC2449	49	3.297	0.2909	0.0003	24729
79.00	GPS_A	43	2.124	0.2392	0.0002	22129

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 140	29.708	22	1.4372	0.0031
L2	140 - 120	23.749	10	1.3979	0.0022
L3	120 - 100	18.070	10	1.2981	0.0015
L4	100 - 80	12.928	10	1.1398	0.0011
L5	80 - 60	8.526	10	0.9481	0.0008
L6	60 - 40	4.960	10	0.7428	0.0005
L7	40 - 20	2.268	10	0.5334	0.0004
L8	20 - 0	0.574	10	0.2655	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	ERICSSON AIR 21 B2A B4P	22	29.708	1.4372	0.0031	67450
140.00	GPS_A	10	23.749	1.3979	0.0022	16914
130.00	7770.00 w/ Mount Pipe	10	20.858	1.3566	0.0018	11487
120.00	MX08FRO665-21 w/ Mount Pipe	10	18.070	1.2981	0.0015	8732
100.00	MPRC2449	10	12.928	1.1398	0.0011	6325
79.00	GPS_A	10	8.327	0.9380	0.0008	5655

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	160 - 140 (1)	P36x0.375	20.00	0.00	0.0	41.9697	-8.97	1490.10	0.006
L2	140 - 120 (2)	P42x0.375	20.00	0.00	0.0	49.0383	-20.37	1668.87	0.012
L3	120 - 100 (3)	P48x0.375	20.00	0.00	0.0	56.1069	-29.11	1847.49	0.016

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L4	100 - 80 (4)	P54x0.375	20.00	0.00	0.0	63.1755	-35.61	2026.00	0.018
L5	80 - 60 (5)	P60x0.375	20.00	0.00	0.0	70.2440	-42.40	2204.43	0.019
L6	60 - 40 (6)	P60x0.5	20.00	0.00	0.0	93.4624	-51.07	3125.69	0.016
L7	40 - 20 (7)	P60x0.5	20.00	0.00	0.0	93.4624	-59.78	3125.69	0.019
L8	20 - 0 (8)	P60x0.625	20.00	0.00	0.0	116.5830	-70.38	4139.15	0.017

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	160 - 140 (1)	P36x0.375	94.48	1338.81	0.071	0.00	1338.81	0.000
L2	140 - 120 (2)	P42x0.375	296.15	1796.56	0.165	0.00	1796.56	0.000
L3	120 - 100 (3)	P48x0.375	598.93	2321.11	0.258	0.00	2321.11	0.000
L4	100 - 80 (4)	P54x0.375	940.83	2912.46	0.323	0.00	2912.46	0.000
L5	80 - 60 (5)	P60x0.375	1319.13	3570.61	0.369	0.00	3570.61	0.000
L6	60 - 40 (6)	P60x0.5	1730.53	4860.41	0.356	0.00	4860.41	0.000
L7	40 - 20 (7)	P60x0.5	2168.58	4860.41	0.446	0.00	4860.41	0.000
L8	20 - 0 (8)	P60x0.625	2629.12	6198.18	0.424	0.00	6198.18	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	160 - 140 (1)	P36x0.375	5.29	454.19	0.012	0.00	1094.28	0.000
L2	140 - 120 (2)	P42x0.375	12.01	421.13	0.029	0.46	1185.51	0.000
L3	120 - 100 (3)	P48x0.375	15.96	430.23	0.037	0.46	1384.85	0.000
L4	100 - 80 (4)	P54x0.375	18.03	443.48	0.041	0.34	1607.33	0.000
L5	80 - 60 (5)	P60x0.375	19.80	455.63	0.043	0.18	1836.15	0.000
L6	60 - 40 (6)	P60x0.5	21.30	868.59	0.025	0.18	3492.99	0.000
L7	40 - 20 (7)	P60x0.5	22.47	868.59	0.026	0.18	3492.99	0.000
L8	20 - 0 (8)	P60x0.625	23.55	1322.05	0.018	0.18	5746.70	0.000

Pole Interaction Design Data

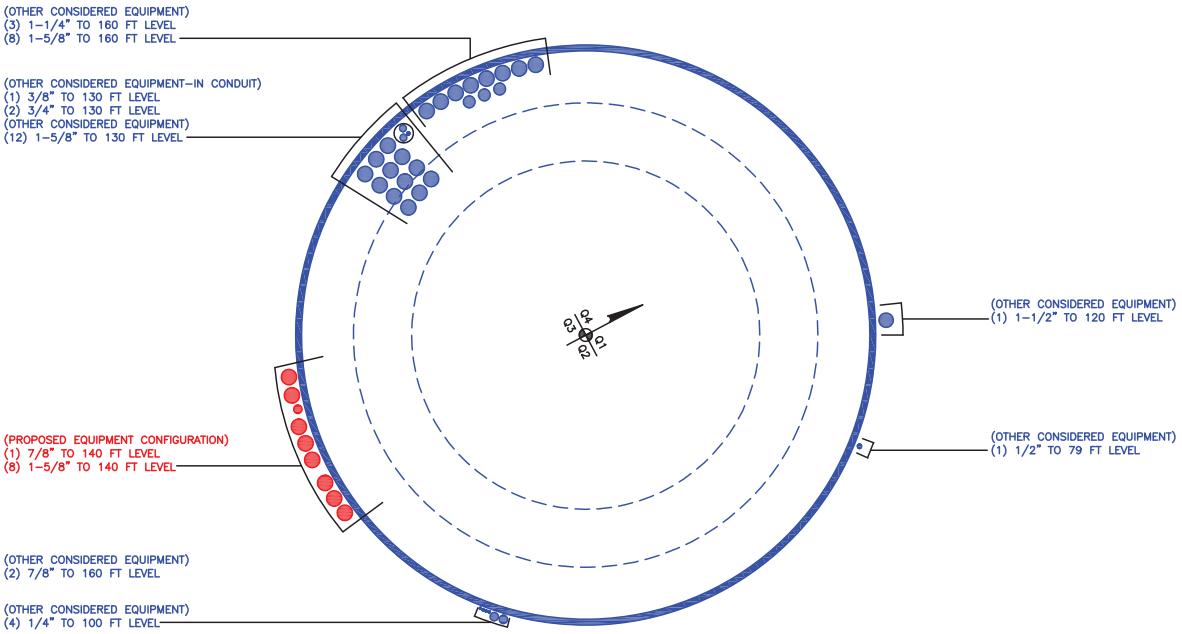
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	160 - 140 (1)	0.006	0.071	0.000	0.012	0.000	0.077	1.050	
L2	140 - 120 (2)	0.012	0.165	0.000	0.029	0.000	0.178	1.050	
L3	120 - 100 (3)	0.016	0.258	0.000	0.037	0.000	0.275	1.050	
L4	100 - 80 (4)	0.018	0.323	0.000	0.041	0.000	0.342	1.050	
L5	80 - 60 (5)	0.019	0.369	0.000	0.043	0.000	0.391	1.050	
L6	60 - 40 (6)	0.016	0.356	0.000	0.025	0.000	0.373	1.050	
L7	40 - 20 (7)	0.019	0.446	0.000	0.026	0.000	0.466	1.050	
L8	20 - 0 (8)	0.017	0.424	0.000	0.018	0.000	0.441	1.050	

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 140	Pole	P36x0.375	1	-8.97	1564.60	7.3	Pass
L2	140 - 120	Pole	P42x0.375	2	-20.37	1752.31	16.9	Pass
L3	120 - 100	Pole	P48x0.375	3	-29.11	1939.86	26.2	Pass
L4	100 - 80	Pole	P54x0.375	4	-35.61	2127.30	32.6	Pass
L5	80 - 60	Pole	P60x0.375	5	-42.40	2314.65	37.2	Pass
L6	60 - 40	Pole	P60x0.5	6	-51.07	3281.97	35.5	Pass
L7	40 - 20	Pole	P60x0.5	7	-59.78	3281.97	44.4	Pass
L8	20 - 0	Pole	P60x0.625	8	-70.38	4346.11	42.0	Pass
							Summary	
						Pole (L7)	44.4	Pass
						RATING =	**44.4**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 828540 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Monopole Flange Plate Connection

Elevation = 140 ft.

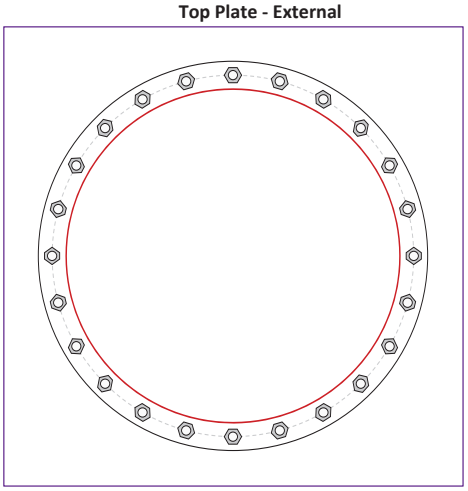
BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0

TIA-222 Revision	H

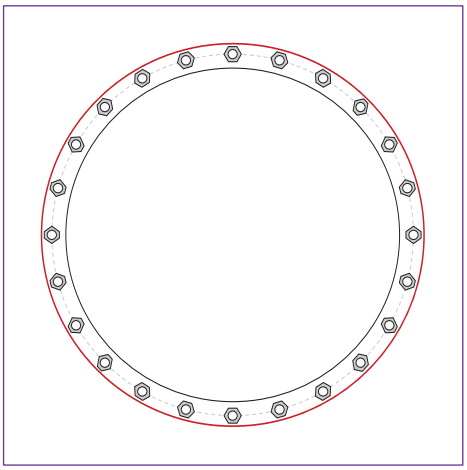
Applied Loads	
Moment (kip-ft)	94.48
Axial Force (kips)	8.97
Shear Force (kips)	5.29

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(24) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 39" BC

Top Plate Data

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

Bottom Plate Data

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

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	4.47	
Allowable (kips)	54.54	
Stress Rating:	**7.8%**	**Pass**

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 120 ft.

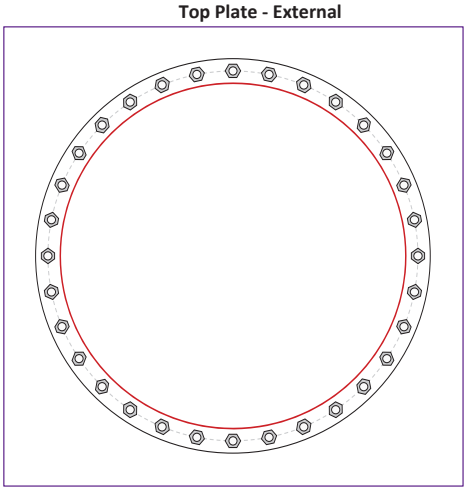
BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0

TIA-222 Revision	H

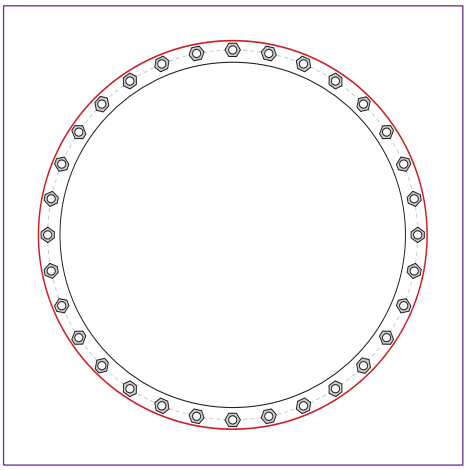
Applied Loads	
Moment (kip-ft)	296.15
Axial Force (kips)	20.37
Shear Force (kips)	12.01

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

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

Top Plate Data

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

Bottom Plate Data

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

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	9.23	
Allowable (kips)	54.54	
Stress Rating:	**16.1%**	**Pass**

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 100 ft.

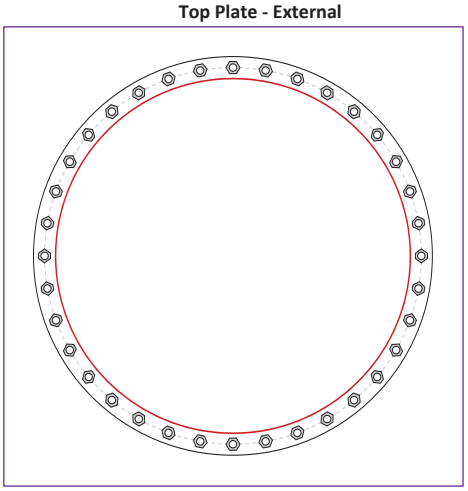
BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0

TIA-222 Revision	H

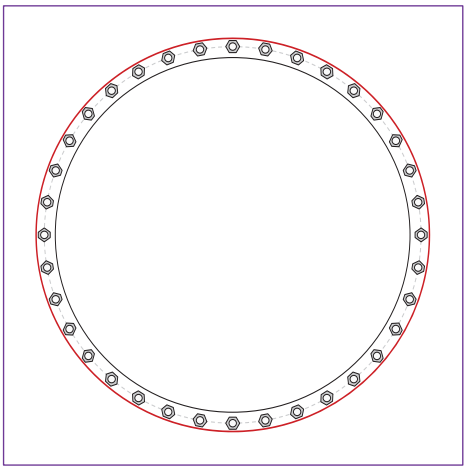
Applied Loads	
Moment (kip-ft)	598.93
Axial Force (kips)	29.11
Shear Force (kips)	15.96

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

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

Top Plate Data

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

Bottom Plate Data

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

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	14.85	
Allowable (kips)	54.54	
Stress Rating:	**25.9%**	Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

Elevation = 80 ft.

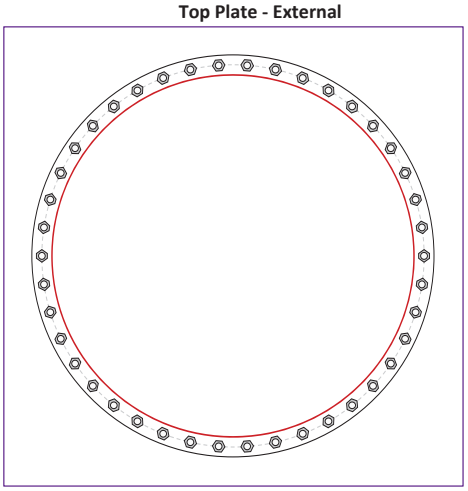
BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0

TIA-222 Revision	H

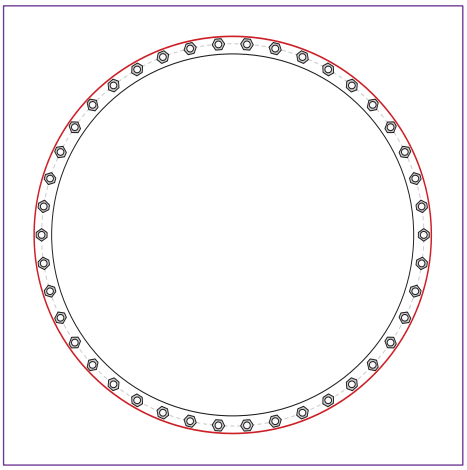
Applied Loads	
Moment (kip-ft)	940.83
Axial Force (kips)	35.61
Shear Force (kips)	18.03

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - Internal



Connection Properties

Bolt Data

(42) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 57" BC

Top Plate Data

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

Bottom Plate Data

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

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

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

Bottom Pole Data

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

Analysis Results

Bolt Capacity

Max Load (kips)	18.01	
Allowable (kips)	54.54	
Stress Rating:	**31.5%**	Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

Monopole Flange Plate Connection

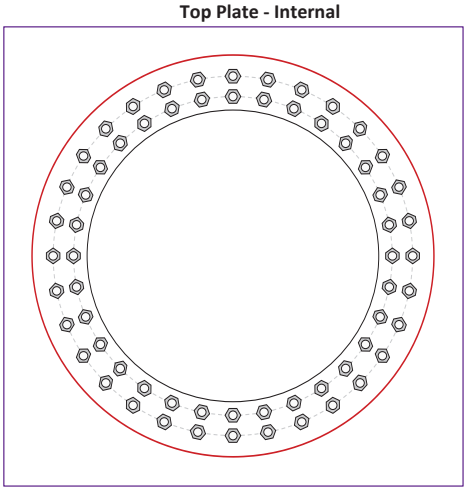
Elevation = 60 ft.

BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0
TIA-222 Revision	H

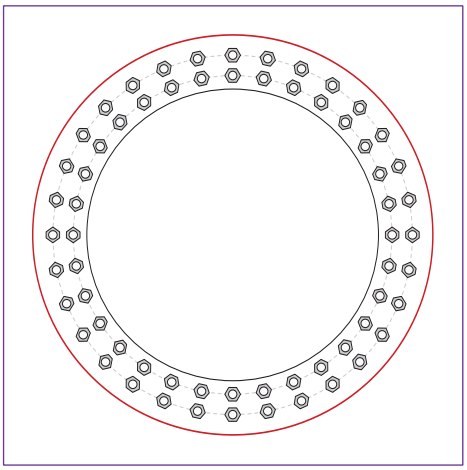
Applied Loads	
Moment (kip-ft)	1319.14
Axial Force (kips)	42.40
Shear Force (kips)	19.80

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 47" BC

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

Bottom Plate Data
43" ID x 1.25" Plate (A307; Fy=36 ksi, Fu=60 ksi)

Top Stiffener Data
N/A

Bottom Stiffener Data
N/A

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

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

Analysis Results

Bolt Capacity

Max Load (kips)	20.23	
Allowable (kips)	87.21	
Stress Rating:	**22.1%**	**Pass**

Top Plate Capacity

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

Bottom Plate Capacity

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

CCIplate

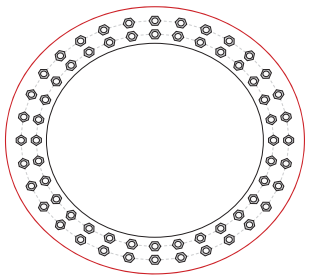
Elevation (ft)	60	*(Flange)*

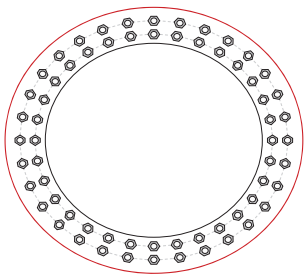
Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending
1	Yes	Yes	Yes
2	Yes	Yes	Yes

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{sr} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	1.25	A325	53	0.5	0	N-Included		No
2	1	11.25	1.25	A325	53	0.5	0	N-Included		No
3	1	22.5	1.25	A325	53	0.5	0	N-Included		No
4	1	33.75	1.25	A325	53	0.5	0	N-Included		No
5	1	45	1.25	A325	53	0.5	0	N-Included		No
6	1	56.25	1.25	A325	53	0.5	0	N-Included		No
7	1	67.5	1.25	A325	53	0.5	0	N-Included		No
8	1	78.75	1.25	A325	53	0.5	0	N-Included		No
9	1	90	1.25	A325	53	0.5	0	N-Included		No
10	1	101.25	1.25	A325	53	0.5	0	N-Included		No
11	1	112.5	1.25	A325	53	0.5	0	N-Included		No
12	1	123.75	1.25	A325	53	0.5	0	N-Included		No
13	1	135	1.25	A325	53	0.5	0	N-Included		No
14	1	146.25	1.25	A325	53	0.5	0	N-Included		No
15	1	157.5	1.25	A325	53	0.5	0	N-Included		No
16	1	168.75	1.25	A325	53	0.5	0	N-Included		No
17	1	180	1.25	A325	53	0.5	0	N-Included		No
18	1	191.25	1.25	A325	53	0.5	0	N-Included		No
19	1	202.5	1.25	A325	53	0.5	0	N-Included		No
20	1	213.75	1.25	A325	53	0.5	0	N-Included		No
21	1	225	1.25	A325	53	0.5	0	N-Included		No
22	1	236.25	1.25	A325	53	0.5	0	N-Included		No
23	1	247.5	1.25	A325	53	0.5	0	N-Included		No
24	1	258.75	1.25	A325	53	0.5	0	N-Included		No
25	1	270	1.25	A325	53	0.5	0	N-Included		No
26	1	281.25	1.25	A325	53	0.5	0	N-Included		No
27	1	292.5	1.25	A325	53	0.5	0	N-Included		No
28	1	303.75	1.25	A325	53	0.5	0	N-Included		No
29	1	315	1.25	A325	53	0.5	0	N-Included		No
30	1	326.25	1.25	A325	53	0.5	0	N-Included		No
31	1	337.5	1.25	A325	53	0.5	0	N-Included		No
32	1	348.75	1.25	A325	53	0.5	0	N-Included		No
33	2	0	1.25	A325	47	0.5	0	N-Included		No
34	2	11.25	1.25	A325	47	0.5	0	N-Included		No
35	2	22.5	1.25	A325	47	0.5	0	N-Included		No
36	2	33.75	1.25	A325	47	0.5	0	N-Included		No
37	2	45	1.25	A325	47	0.5	0	N-Included		No
38	2	56.25	1.25	A325	47	0.5	0	N-Included		No
39	2	67.5	1.25	A325	47	0.5	0	N-Included		No
40	2	78.75	1.25	A325	47	0.5	0	N-Included		No
41	2	90	1.25	A325	47	0.5	0	N-Included		No
42	2	101.25	1.25	A325	47	0.5	0	N-Included		No
43	2	112.5	1.25	A325	47	0.5	0	N-Included		No
44	2	123.75	1.25	A325	47	0.5	0	N-Included		No
45	2	135	1.25	A325	47	0.5	0	N-Included		No
46	2	146.25	1.25	A325	47	0.5	0	N-Included		No
47	2	157.5	1.25	A325	47	0.5	0	N-Included		No
48	2	168.75	1.25	A325	47	0.5	0	N-Included		No
49	2	180	1.25	A325	47	0.5	0	N-Included		No
50	2	191.25	1.25	A325	47	0.5	0	N-Included		No
51	2	202.5	1.25	A325	47	0.5	0	N-Included		No
52	2	213.75	1.25	A325	47	0.5	0	N-Included		No
53	2	225	1.25	A325	47	0.5	0	N-Included		No
54	2	236.25	1.25	A325	47	0.5	0	N-Included		No
55	2	247.5	1.25	A325	47	0.5	0	N-Included		No
56	2	258.75	1.25	A325	47	0.5	0	N-Included		No
57	2	270	1.25	A325	47	0.5	0	N-Included		No
58	2	281.25	1.25	A325	47	0.5	0	N-Included		No
59	2	292.5	1.25	A325	47	0.5	0	N-Included		No
60	2	303.75	1.25	A325	47	0.5	0	N-Included		No
61	2	315	1.25	A325	47	0.5	0	N-Included		No
62	2	326.25	1.25	A325	47	0.5	0	N-Included		No
63	2	337.5	1.25	A325	47	0.5	0	N-Included		No
64	2	348.75	1.25	A325	47	0.5	0	N-Included		No

Plot Graphic





Monopole Flange Plate Connection

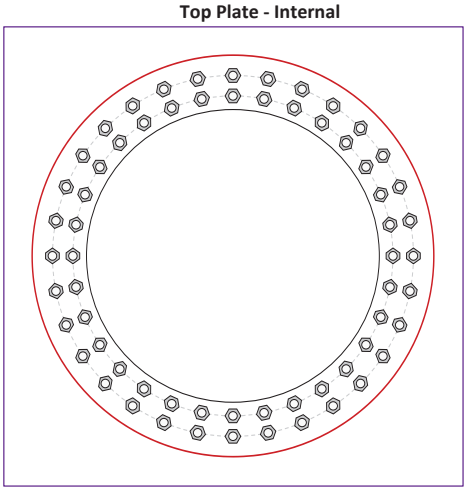
Elevation = 40 ft.

BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0
TIA-222 Revision	H

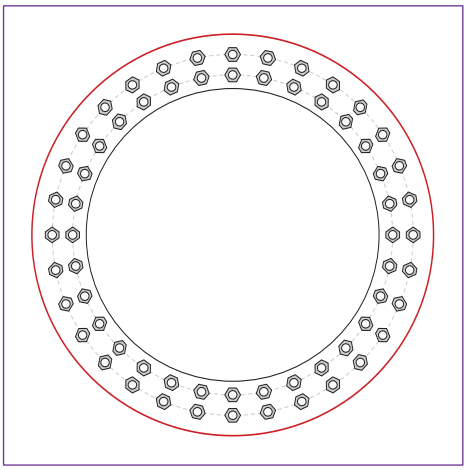
Applied Loads	
Moment (kip-ft)	1730.52
Axial Force (kips)	51.07
Shear Force (kips)	21.30

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 47" BC

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

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

Top Stiffener Data
N/A

Bottom Stiffener Data
N/A

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

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

Analysis Results

Bolt Capacity

Max Load (kips)	26.61	
Allowable (kips)	87.21	
Stress Rating:	**29.1%**	**Pass**

Top Plate Capacity

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

Bottom Plate Capacity

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

CCIplate

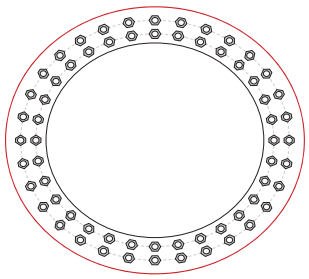
Elevation (ft)	40	*(Flange)*

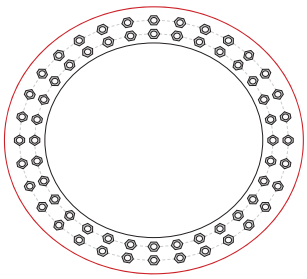
Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending
1	Yes	Yes	Yes
2	Yes	Yes	Yes

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	1.25	A325	53	0.5	0	N-Included		No
2	1	11.25	1.25	A325	53	0.5	0	N-Included		No
3	1	22.5	1.25	A325	53	0.5	0	N-Included		No
4	1	33.75	1.25	A325	53	0.5	0	N-Included		No
5	1	45	1.25	A325	53	0.5	0	N-Included		No
6	1	56.25	1.25	A325	53	0.5	0	N-Included		No
7	1	67.5	1.25	A325	53	0.5	0	N-Included		No
8	1	78.75	1.25	A325	53	0.5	0	N-Included		No
9	1	90	1.25	A325	53	0.5	0	N-Included		No
10	1	101.25	1.25	A325	53	0.5	0	N-Included		No
11	1	112.5	1.25	A325	53	0.5	0	N-Included		No
12	1	123.75	1.25	A325	53	0.5	0	N-Included		No
13	1	135	1.25	A325	53	0.5	0	N-Included		No
14	1	146.25	1.25	A325	53	0.5	0	N-Included		No
15	1	157.5	1.25	A325	53	0.5	0	N-Included		No
16	1	168.75	1.25	A325	53	0.5	0	N-Included		No
17	1	180	1.25	A325	53	0.5	0	N-Included		No
18	1	191.25	1.25	A325	53	0.5	0	N-Included		No
19	1	202.5	1.25	A325	53	0.5	0	N-Included		No
20	1	213.75	1.25	A325	53	0.5	0	N-Included		No
21	1	225	1.25	A325	53	0.5	0	N-Included		No
22	1	236.25	1.25	A325	53	0.5	0	N-Included		No
23	1	247.5	1.25	A325	53	0.5	0	N-Included		No
24	1	258.75	1.25	A325	53	0.5	0	N-Included		No
25	1	270	1.25	A325	53	0.5	0	N-Included		No
26	1	281.25	1.25	A325	53	0.5	0	N-Included		No
27	1	292.5	1.25	A325	53	0.5	0	N-Included		No
28	1	303.75	1.25	A325	53	0.5	0	N-Included		No
29	1	315	1.25	A325	53	0.5	0	N-Included		No
30	1	326.25	1.25	A325	53	0.5	0	N-Included		No
31	1	337.5	1.25	A325	53	0.5	0	N-Included		No
32	1	348.75	1.25	A325	53	0.5	0	N-Included		No
33	2	0	1.25	A325	47	0.5	0	N-Included		No
34	2	11.25	1.25	A325	47	0.5	0	N-Included		No
35	2	22.5	1.25	A325	47	0.5	0	N-Included		No
36	2	33.75	1.25	A325	47	0.5	0	N-Included		No
37	2	45	1.25	A325	47	0.5	0	N-Included		No
38	2	56.25	1.25	A325	47	0.5	0	N-Included		No
39	2	67.5	1.25	A325	47	0.5	0	N-Included		No
40	2	78.75	1.25	A325	47	0.5	0	N-Included		No
41	2	90	1.25	A325	47	0.5	0	N-Included		No
42	2	101.25	1.25	A325	47	0.5	0	N-Included		No
43	2	112.5	1.25	A325	47	0.5	0	N-Included		No
44	2	123.75	1.25	A325	47	0.5	0	N-Included		No
45	2	135	1.25	A325	47	0.5	0	N-Included		No
46	2	146.25	1.25	A325	47	0.5	0	N-Included		No
47	2	157.5	1.25	A325	47	0.5	0	N-Included		No
48	2	168.75	1.25	A325	47	0.5	0	N-Included		No
49	2	180	1.25	A325	47	0.5	0	N-Included		No
50	2	191.25	1.25	A325	47	0.5	0	N-Included		No
51	2	202.5	1.25	A325	47	0.5	0	N-Included		No
52	2	213.75	1.25	A325	47	0.5	0	N-Included		No
53	2	225	1.25	A325	47	0.5	0	N-Included		No
54	2	236.25	1.25	A325	47	0.5	0	N-Included		No
55	2	247.5	1.25	A325	47	0.5	0	N-Included		No
56	2	258.75	1.25	A325	47	0.5	0	N-Included		No
57	2	270	1.25	A325	47	0.5	0	N-Included		No
58	2	281.25	1.25	A325	47	0.5	0	N-Included		No
59	2	292.5	1.25	A325	47	0.5	0	N-Included		No
60	2	303.75	1.25	A325	47	0.5	0	N-Included		No
61	2	315	1.25	A325	47	0.5	0	N-Included		No
62	2	326.25	1.25	A325	47	0.5	0	N-Included		No
63	2	337.5	1.25	A325	47	0.5	0	N-Included		No
64	2	348.75	1.25	A325	47	0.5	0	N-Included		No

Plot Graphic





Monopole Flange Plate Connection

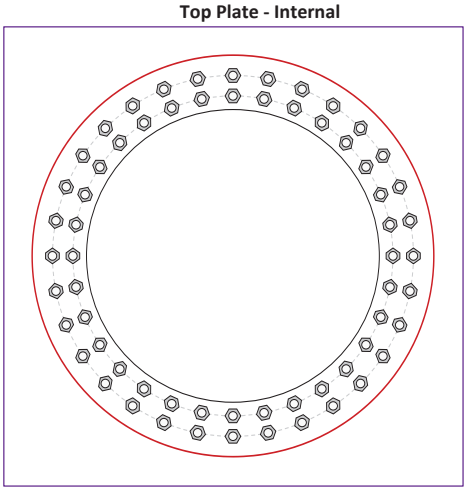
Elevation = 20 ft.

BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0
TIA-222 Revision	H

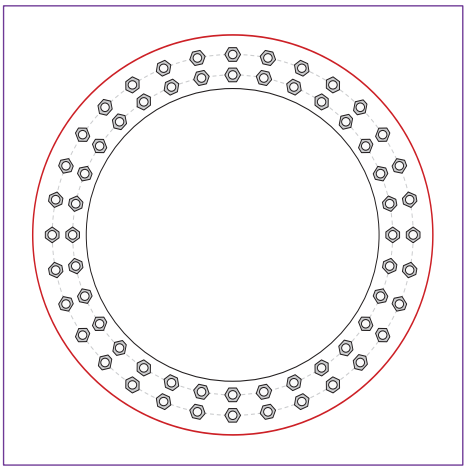
Applied Loads	
Moment (kip-ft)	2168.58
Axial Force (kips)	59.78
Shear Force (kips)	22.47

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

GROUP 1: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 53" BC
GROUP 2: (32) 1-1/4" ø bolts (A325 N; Fy=81 ksi, Fu=120 ksi) on 47" BC

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

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

Top Stiffener Data
N/A

Bottom Stiffener Data
N/A

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

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

Analysis Results

Bolt Capacity

Max Load (kips)	44.94	
Allowable (kips)	87.21	
Stress Rating:	**49.1%**	Pass

Top Plate Capacity

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

Bottom Plate Capacity

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

CCIplate

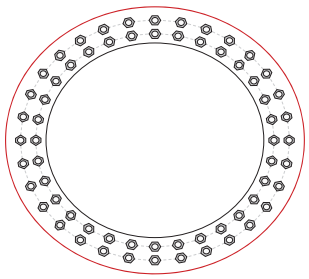
Elevation (ft)	20	*(Flange)*

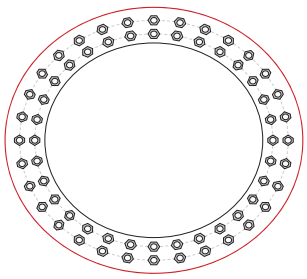
Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending
1	Yes	Yes	Yes
2	Yes	Yes	Yes

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, n:	l_{sr} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	1.25	A325	53	0.5	0	N-Included		No
2	1	11.25	1.25	A325	53	0.5	0	N-Included		No
3	1	22.5	1.25	A325	53	0.5	0	N-Included		No
4	1	33.75	1.25	A325	53	0.5	0	N-Included		No
5	1	45	1.25	A325	53	0.5	0	N-Included		No
6	1	56.25	1.25	A325	53	0.5	0	N-Included		No
7	1	67.5	1.25	A325	53	0.5	0	N-Included		No
8	1	78.75	1.25	A325	53	0.5	0	N-Included		No
9	1	90	1.25	A325	53	0.5	0	N-Included		No
10	1	101.25	1.25	A325	53	0.5	0	N-Included		No
11	1	112.5	1.25	A325	53	0.5	0	N-Included		No
12	1	123.75	1.25	A325	53	0.5	0	N-Included		No
13	1	135	1.25	A325	53	0.5	0	N-Included		No
14	1	146.25	1.25	A325	53	0.5	0	N-Included		No
15	1	157.5	1.25	A325	53	0.5	0	N-Included		No
16	1	168.75	1.25	A325	53	0.5	0	N-Included		No
17	1	180	1.25	A325	53	0.5	0	N-Included		No
18	1	191.25	1.25	A325	53	0.5	0	N-Included		No
19	1	202.5	1.25	A325	53	0.5	0	N-Included		No
20	1	213.75	1.25	A325	53	0.5	0	N-Included		No
21	1	225	1.25	A325	53	0.5	0	N-Included		No
22	1	236.25	1.25	A325	53	0.5	0	N-Included		No
23	1	247.5	1.25	A325	53	0.5	0	N-Included		No
24	1	258.75	1.25	A325	53	0.5	0	N-Included		No
25	1	270	1.25	A325	53	0.5	0	N-Included		No
26	1	281.25	1.25	A325	53	0.5	0	N-Included		No
27	1	292.5	1.25	A325	53	0.5	0	N-Included		No
28	1	303.75	1.25	A325	53	0.5	0	N-Included		No
29	1	315	1.25	A325	53	0.5	0	N-Included		No
30	1	326.25	1.25	A325	53	0.5	0	N-Included		No
31	1	337.5	1.25	A325	53	0.5	0	N-Included		No
32	1	348.75	1.25	A325	53	0.5	0	N-Included		No
33	2	0	1.25	A325	47	0.5	0	N-Included		No
34	2	11.25	1.25	A325	47	0.5	0	N-Included		No
35	2	22.5	1.25	A325	47	0.5	0	N-Included		No
36	2	33.75	1.25	A325	47	0.5	0	N-Included		No
37	2	45	1.25	A325	47	0.5	0	N-Included		No
38	2	56.25	1.25	A325	47	0.5	0	N-Included		No
39	2	67.5	1.25	A325	47	0.5	0	N-Included		No
40	2	78.75	1.25	A325	47	0.5	0	N-Included		No
41	2	90	1.25	A325	47	0.5	0	N-Included		No
42	2	101.25	1.25	A325	47	0.5	0	N-Included		No
43	2	112.5	1.25	A325	47	0.5	0	N-Included		No
44	2	123.75	1.25	A325	47	0.5	0	N-Included		No
45	2	135	1.25	A325	47	0.5	0	N-Included		No
46	2	146.25	1.25	A325	47	0.5	0	N-Included		No
47	2	157.5	1.25	A325	47	0.5	0	N-Included		No
48	2	168.75	1.25	A325	47	0.5	0	N-Included		No
49	2	180	1.25	A325	47	0.5	0	N-Included		No
50	2	191.25	1.25	A325	47	0.5	0	N-Included		No
51	2	202.5	1.25	A325	47	0.5	0	N-Included		No
52	2	213.75	1.25	A325	47	0.5	0	N-Included		No
53	2	225	1.25	A325	47	0.5	0	N-Included		No
54	2	236.25	1.25	A325	47	0.5	0	N-Included		No
55	2	247.5	1.25	A325	47	0.5	0	N-Included		No
56	2	258.75	1.25	A325	47	0.5	0	N-Included		No
57	2	270	1.25	A325	47	0.5	0	N-Included		No
58	2	281.25	1.25	A325	47	0.5	0	N-Included		No
59	2	292.5	1.25	A325	47	0.5	0	N-Included		No
60	2	303.75	1.25	A325	47	0.5	0	N-Included		No
61	2	315	1.25	A325	47	0.5	0	N-Included		No
62	2	326.25	1.25	A325	47	0.5	0	N-Included		No
63	2	337.5	1.25	A325	47	0.5	0	N-Included		No
64	2	348.75	1.25	A325	47	0.5	0	N-Included		No

Plot Graphic





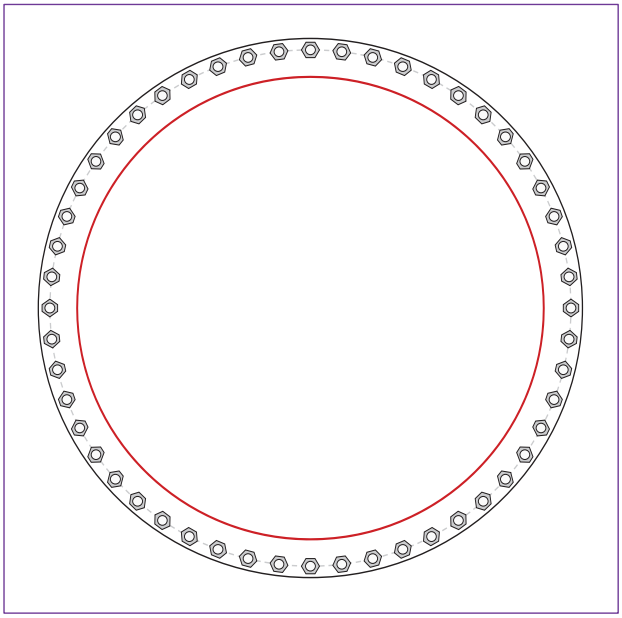
Monopole Base Plate Connection

Site Info	
BU #	828540
Site Name	Torrington/RT 8
Order #	662918 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.375

Applied Loads	
Moment (kip-ft)	2629.12
Axial Force (kips)	70.38
Shear Force (kips)	23.55

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

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

Base Plate Data

70" OD x 1.25" Plate (A307; Fy=36 ksi, Fu=60 ksi)

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

Pu_t = 34.86	ϕPn_t = 90.84	**Stress Rating**
Vu = 0.45	ϕVn = 57.52	**36.6%**
Mu = 0.4	ϕMn = 30.76	**Pass**

Base Plate Summary

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

Pier and Pad Foundation

BU # :	828540
Site Name:	Torrington/RT 8
App. Number:	662918 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	70.39	kips
Base Shear, Vu_comp:	23.55	kips
Moment, M_u:	2629.12	ft-kips
Tower Height, **H**:	160	ft
BP Dist. Above Fdn, bp_{dist}:	2.625	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	2.5	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	42	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	8	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	28	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	45	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	125	pcf
Ultimate Gross Bearing, Qult:	16.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	6	
Base Friction, μ:	0.5	
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)	260.74	23.55	**8.6%**	**Pass**
Bearing Pressure (ksf)	12.00	1.50	**11.9%**	**Pass**
*Overturning (kip*ft)*	7563.83	2810.90	**37.2%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	6750.44	2735.10	**38.6%**	**Pass**
Pier Compression (kip)	24494.62	101.56	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	3763.88	1066.61	**27.0%**	**Pass**
Pad Shear - 1-way (kips)	1010.06	146.88	**13.8%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.031	**15.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4294.03	1641.06	**36.4%**	**Pass**

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

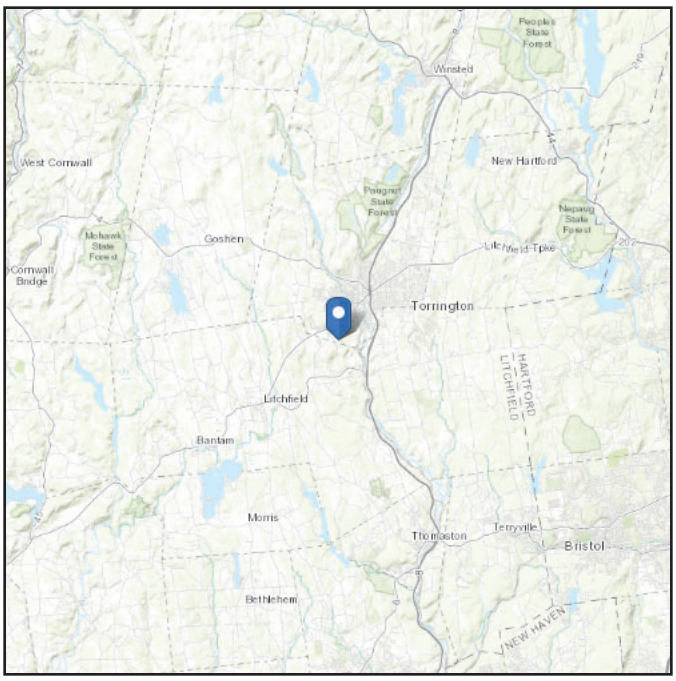
Structural Rating*:	**38.6%**
Soil Rating*:	**37.2%**

ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 41.780647
Longitude: -73.136117
Elevation: 1025.6078252308666 ft (NAVD 88)



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	95 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Feb 15 2024

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

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

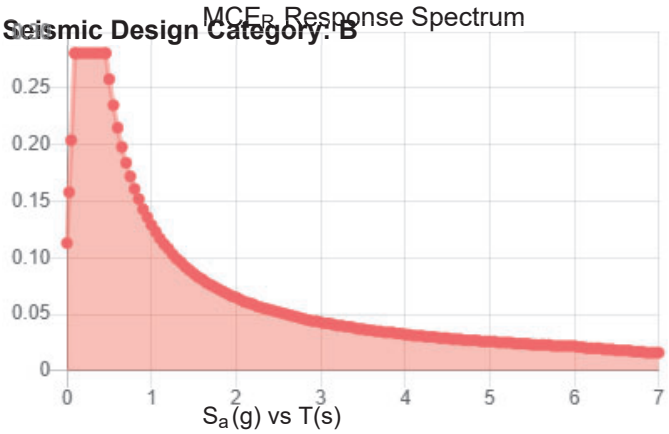
Seismic

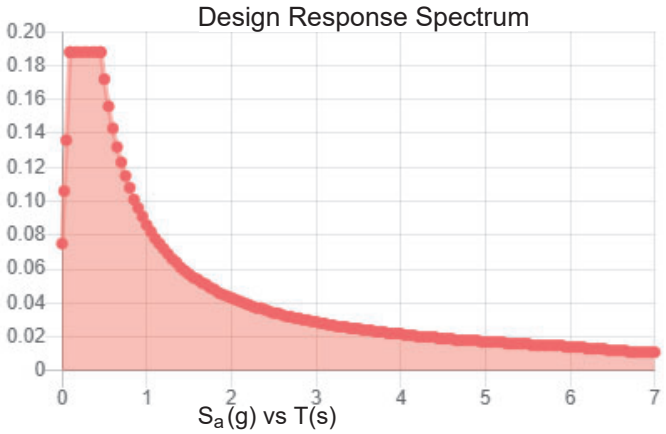
Site Soil Class: D - Stiff Soil

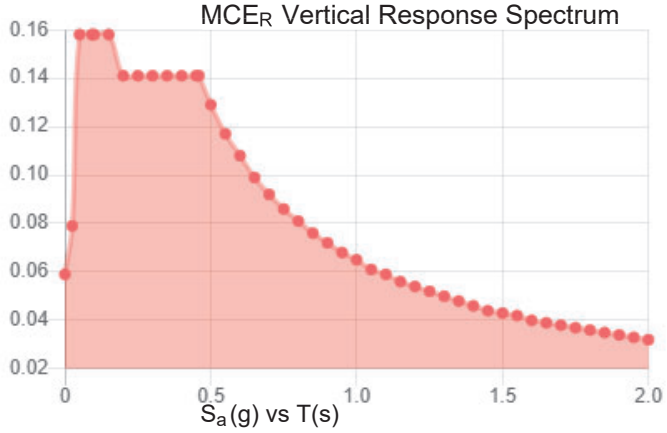
Results:

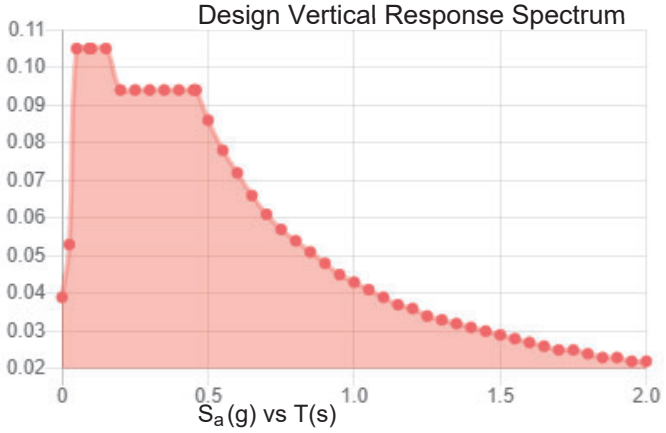
S_S :	0.176	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.094
F_v :	2.4	PGA_M :	0.15
S_{MS} :	0.281	F_{PGA} :	1.6
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.188	C_v :	0.7

Seismic Design Category: B









Data Accessed: Thu Feb 15 2024

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Feb 15 2024

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

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

FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

Prepared for:

CROWN CASTLE

verizon

Crown Site ID: 828540_Torrington / Rt 8

Verizon Wireless Site Name: Torrington S CT

Verizon Wireless FUZE ID: 16227597

Site Address:

218 Wheeler Road

Torrington, CT 06790

April 25, 2024

Fox Hill Telecom Project Number: 240105

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.17 %

Fox Hill Telecom, Inc Worcester MA 01609

FOX HILL TELECOM

April 25, 2024

Crown Castle
1800 W. Park Drive
Westborough, MA 01581

Emissions Analysis for:

Crown Castle Site: **828540 – Torrington / Rt 8**

Verizon Wireless Site: Torrington S CT

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades for Verizon Wireless to the Crown Castle facility located at **218 Wheeler Road, Torrington, CT**, for the purpose of determining whether the emissions from the Proposed Verizon Wireless Antenna Installation, in addition to all existing radio systems located on this property, are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 MHz band & the 850 MHz cellular band are approximately 497 $\mu W/cm^2$ and 586 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 3700 MHz (C band) frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the Crown Castle facility for Verizon Wireless located at **218 Wheeler Road, Torrington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the far field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **far field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors considered, the worst case **far field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each Verizon Wireless sector, the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	700 MHz	4	40
LTE / 5G	850 MHz	4	40
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	40
5G	3700 MHz (C Band)	8	20

Table 1: Channel Data Table

The following **Verizon Wireless** antennas listed in *Table 2 – Antenna Data* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 3700 MHz (C Band) frequency bands. This is based on feedback from Verizon Wireless regarding anticipated antenna selection. Maximum gain values for all antennas are listed in *Table 3 – Verizon Wireless Inventory and Power Data* below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Quintel QS6656-5D	140
A	2	Quintel QS6656-5D	140
A	3	Samsung MT6407-77A	140
B	1	Quintel QS6656-5D	140
B	2	Quintel QS6656-5D	140
B	3	Samsung MT6407-77A	140
C	1	Quintel QS6656-5D	140
C	2	Quintel QS6656-5D	140
C	3	Samsung MT6407-77A	140

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed Verizon Wireless configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Quintel QS6656-5D	700 MHz / 850 MHz	11.35 / 11.25	8	320	4,316.97	2.50
Antenna A2	Quintel QS6656-5D	1900 MHz (PCS) / 2100 MHz (AWS)	23.15 / 15.55	8	320	38,788.83	1.28
Antenna A3	Samsung MT6407-77A	3700 MHz (C Band)	23.15	2	320	66,092.16	2.55
						Sector A Composite MPE%	**6.33**
Antenna B1	Quintel QS6656-5D	700 MHz / 850 MHz	11.35 / 11.25	8	320	4,316.97	2.50
Antenna B2	Quintel QS6656-5D	1900 MHz (PCS) / 2100 MHz (AWS)	23.15 / 15.55	8	320	38,788.83	1.28
Antenna B3	Samsung MT6407-77A	3700 MHz (C Band)	23.15	2	320	66,092.16	2.55
						Sector B Composite MPE%	**6.33**
Antenna C1	Quintel QS6656-5D	700 MHz / 850 MHz	11.35 / 11.25	8	320	4,316.97	2.50
Antenna C2	Quintel QS6656-5D	1900 MHz (PCS) / 2100 MHz (AWS)	23.15 / 15.55	8	320	10,980.20	1.28
Antenna C3	Samsung MT6407-77A	3700 MHz (C Band)	23.15	2	320	66,092.16	2.55
						Sector C Composite MPE%	**6.33**

Table 3: Verizon Wireless Inventory and Power Data table

Table 4: All Carrier MPE Contributions shows all additional identified carriers on site and their emissions contribution estimates, along with the newly calculated maximum Verizon Wireless far field emissions contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas the highest recorded sector value be used for composite site emissions values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three Verizon Wireless sectors have the same configuration yielding the same results for all three sectors. *Table 5* below shows a summary for each Verizon Wireless Sector as well as the composite estimated emissions value for the site.

Site Composite MPE%	
Carrier	**MPE%**
Verizon Wireless – Max Per Sector Value	**6.33 %**
T-Mobile	2.84 %
Site Total MPE %:	**9.17 %**

Table 4: All Carrier MPE Contributions

Verizon Wireless Sector A Total:	6.33 %
Verizon Wireless Sector B Total:	6.33 %
Verizon Wireless Sector C Total:	6.33 %
Site Total:	9.17 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated Verizon sector(s). For this site, all three Verizon Wireless sectors have the same configuration yielding the same results for all three sectors.

Verizon Wireless _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Verizon Wireless 700 MHz LTE	4	545.83	140	6.81	700 MHz	497	1.37%
Verizon Wireless 850 MHz LTE / 5G	4	533.41	140	6.62	850 MHz	586	1.13%
Verizon Wireless 1900 MHz (PCS) LTE	4	8,261.52	140	6.40	1900 MHz (PCS)	1000	0.64%
Verizon Wireless 2100 MHz (AWS) LTE	4	1,435.69	140	6.40	2100 MHz (AWS)	1000	0.64%
Verizon Wireless 3700 MHz (C Band) 5G	2	33,046.08	140	25.50	3700 MHz (C Band)	1000	2.55%
						Total:	**6.33 %**

Table 6: Verizon Wireless Maximum Sector MPE Power Values

Summary

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

The anticipated maximum composite contributions from the Verizon Wireless facility as well as the site composite emissions estimates value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Verizon Wireless Sector	Power Density Value (%)
Sector A:	6.33 %
Sector B:	6.33 %
Sector C:	6.33 %
Verizon Wireless Maximum Total (per sector):	6.33 %
Site Total:	9.17 %
Site Compliance Status:	**COMPLIANT**

The estimated composite emissions value for this site, assuming all carriers present, is **9.17 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

VERIZON SITE NUMBER: 5000247545
VERIZON SITE NAME: TORRINGTON S CT
VERIZON PROJECT: 16227597
SITE TYPE: MONOPOLE
TOWER HEIGHT: 160'-0"

BUSINESS UNIT #: 828540
SITE ADDRESS: 218 WHEELER RD, LITCHFIELD, CT 06759
COUNTY: LITCHFIELD
JURISDICTION: CONNECTICUT SITTING COUNCIL

SITE INFORMATION

CROWN CASTLE USA INC.
SITE NAME: TORRINGTON/RT 8
BU NUMBER: 828540

TOWER OWNER: CROWN CASTLE, 2000 CORPORATE DRIVE, CANONSBURG, PA 15317

CARRIER/APPLICANT: VERIZON WIRELESS, 20 ALEXANDER DRIVE, WALLINGFORD, CT 06492

SITE ADDRESS: 218 WHEELER RD, LITCHFIELD, CT 06759
COUNTY: LITCHFIELD

LATITUDE: 41° 46' 50.34" / 41.7806°
LONGITUDE: -73° 8' 10.032" / -73.1361°
LAT/LONG TYPE: NAD83
GROUND ELEVATION: 1026'+/- AMSL

AREA OF CONSTRUCTION: EXISTING
CURRENT ZONING: -
MAP/PARCEL #: LITC-000012-000101

OCCUPANCY CLASSIFICATION: U
TYPE OF CONSTRUCTION: IIB
A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

PROPERTY OWNER: ROBERT LEFEBVRE, 203 STODDARD RD, LAKESIDE, CT 06758

JURISDICTION: CONNECTICUT SITTING COUNCIL, TEN FRANKLIN SQUARE, NEW BRITAIN, CT 06051

ELECTRIC PROVIDER: CONNECTICUT LIGHT & POWER CO, (800) 286-2000

TELCO PROVIDER: LIGHTOWER, (978) 264-6000

PROJECT TEAM

A&E FIRM: CROWN CASTLE, 2000 CORPORATE DRIVE, CANONSBURG, PA 15317

CROWN CASTLE USA INC. DISTRICT CONTACTS: 2000 CORPORATE DRIVE, CANONSBURG, PA 15317

ALEXANDER MABBETT - PROJECT MANAGER
ALEXANDER.MABBETT@CROWNCASTLE.COM

HEATHER MILLER - AES
HEATHER.MILLER@CROWNCASTLE.COM

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	GENERAL NOTES
C-1	SITE PLAN
C-2	TOWER ELEVATIONS
C-3	ANTENNA PLANS
C-4	FINAL EQUIPMENT SCHEDULE
C-5	RFDS PLUMBING DIAGRAMS
C-6	EQUIPMENT DETAILS & SPECIFICATIONS
C-6.1	EQUIPMENT DETAILS & SPECIFICATIONS
C-7	COLOR CODE MATRIX
G-1	GROUNDING DETAILS
ATTACHED	MOUNT MODIFICATION (BY OTHERS)

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22X34. 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.

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

CONTRACTOR PMI REQUIREMENTS

PMI ACCESSED AT: https://pmi.vzwsmart.com
SMART TOOL VENDOR PROJECT NUMBER: 10213430
VzW LOCATION CODE (PSLC): 467790

*** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

MOUNT MODIFICATION REQUIRED	Y

VzW APPROVED SMART KIT VENDORS

REFER TO MOUNT MODIFICATION DRAWINGS PAGE FOR VzW SMART KIT APPROVED VENDORS

APPROVALS

VERIZON SIGNATURE BLOCK

APPROVAL	SIGNATURE	DATE
SITE ACQUISITION		
CONSTRUCTION		
RADIO		
MICROWAVE		
TELCO		
EQUIPMENT		
PROJECT ADMINISTRATOR		
WO ADMINISTRATOR		

CROWN CASTLE USA INC. SINGNATURE BLOCK

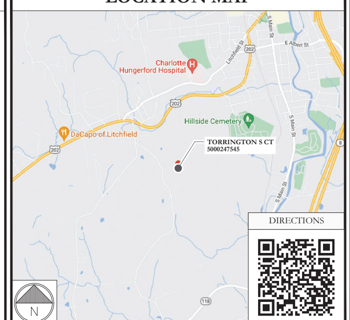
APPROVAL	SIGNATURE	DATE
SITE ACQUISITION		
PLANNER		
CONSTRUCTION		
PROJECT MANAGER		
UTILITY MANAGER		
LANDLORD		

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 (4) SWEDCOM - SC-E 6014 REV2 ANTENNAS
- REMOVE (3) SWEDCOM - SLXW 5512 ANTENNAS
- REMOVE (2) ANTEL - LPA-80063/6CF ANTENNAS
- REMOVE (3) ANTEL - BXA-171063/12CF ANTENNAS
- REMOVE (3) NOKIA - UHBA B13 RRH 4X30 RADIOS
- REMOVE (6) RFS/CELWAVE - FD9R6004/2C-3L DIPLEXERS
- REMOVE (6) ANDREW - LDF7-50A 1 5/8" COAX CABLES
- INSTALL (3) SAMSUNG - MT6407-77A ANTENNA
- INSTALL (6) QUINTEL - QS6656-5D ANTENNA
- INSTALL (3) SAMSUNG - B2/B66A RRH ORAN (RF4439D-25A) RADIOS
- INSTALL (3) SAMSUNG - RF4461D-13A RADIOS
- INSTALL (1) RAYCAP - 12 OVP
- INSTALL (2) RFS/CELWAVE - HB158-21U6S12-XXXM-01 HYBRID CABLES

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	2021 IBC
MECHANICAL	2021 IMC
ELECTRICAL	2020 NEC

REFERENCE DOCUMENTS:
STRUCTURAL ANALYSIS: MORRISON HERSHFIELD
DATED: 2/16/24
MOUNT ANALYSIS: COLLIERS ENGINEERING & DESIGN
DATED: 11/17/23
RFDS REVISION: REV2
DATED: 8/14/23
ORDER ID: 662918
REVISION: 0

VERIZON SITE NUMBER: **5000247545**

BU #: **828540**

CROWN CASTLE SITE NAME **TORRINGTON/RT 8**

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1
REVISION: 0

VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

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: VERIZON
   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–POTENTIAL 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. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC ON STRAIGHTS AND SCHEDULE 80 PVC UNDER ALL TRAFFIC EASEMENTS AND ALL ELBOWS/90s. ABOVE GRADE CONDUIT TO BE SCH 80 PVC OR IMC/RMC CONDUIT. EMT IS ALLOWED AT STUB UP LOCATIONS AND INDOORS ONLY.
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 "VERIZON".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

verizon

CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

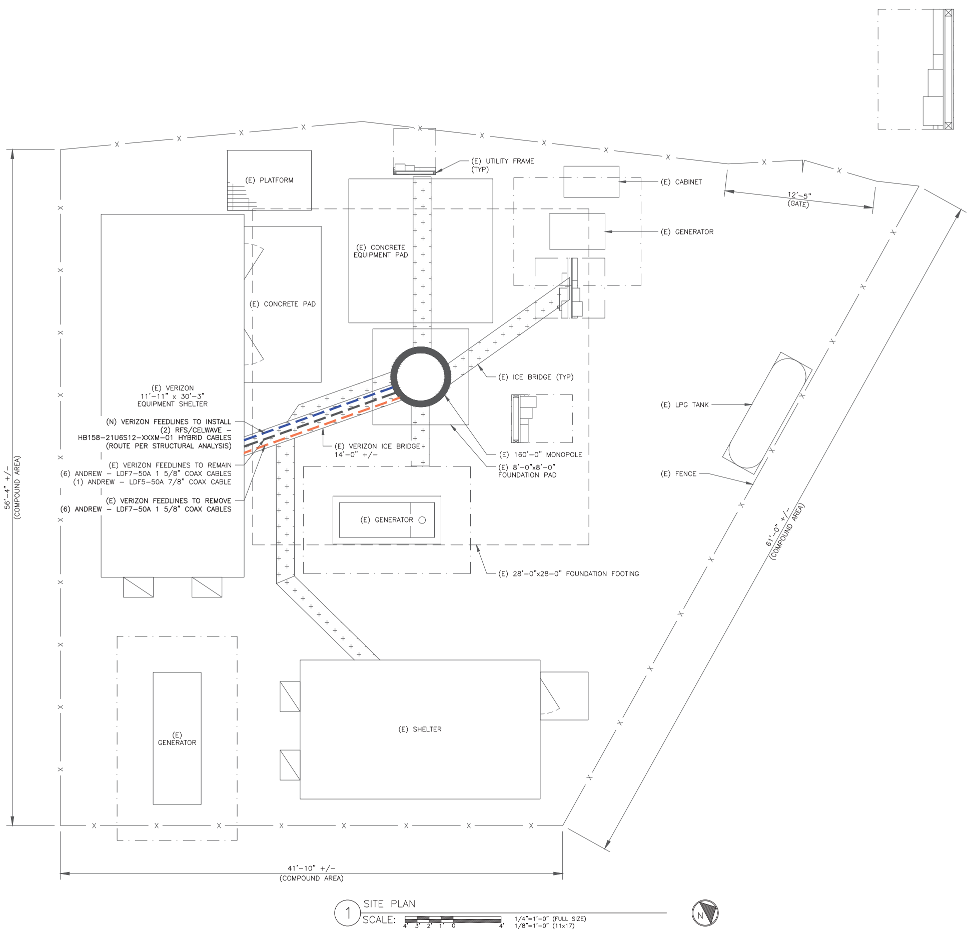
DocuSigned by:
STATE OF CONNECTICUT · MARIBEL DENTINGER · 23524 · LICENSED PROFESSIONAL ENGINEER
3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101

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

SHEET NUMBER: T-2

REVISION: 0



verizon

CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

STATE OF CONNECTICUT · MICHAEL DENTINGER · 23524 · LICENSED PROFESSIONAL ENGINEER

3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101

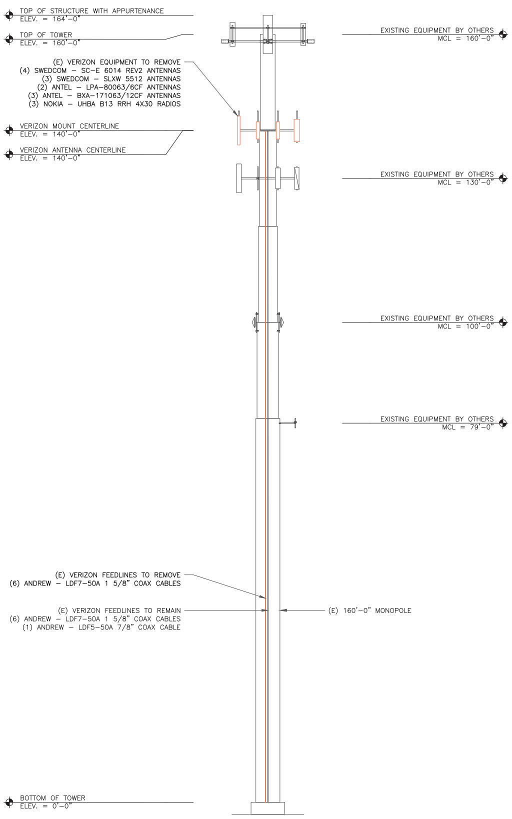
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: C-1

REVISION: 0

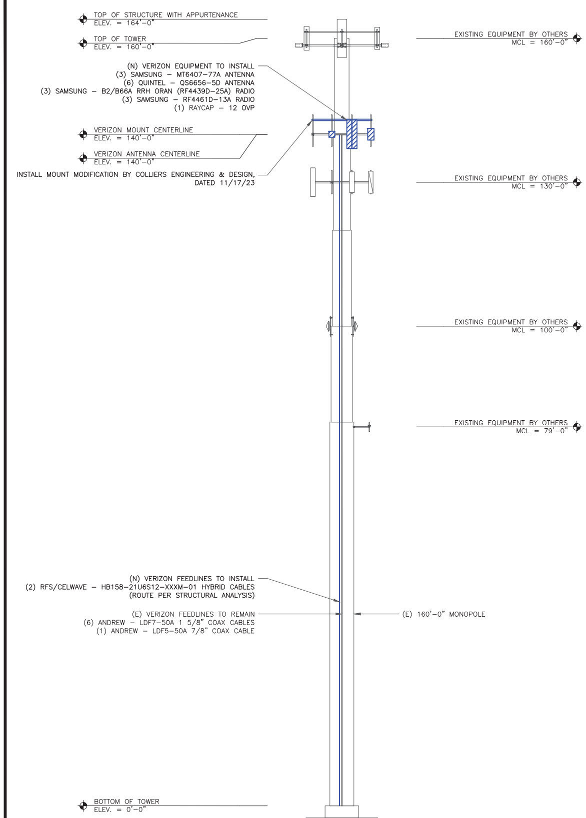
VERIZON EQUIPMENT
ANTENNA CL: 140'-0"
MOUNT CL: 140'-0"

INSTALLER NOTE:
NO PROPOSED LOADING TO BE ADDED UNTIL MOUNT MODIFICATIONS ARE INSTALLED PER MOUNT MODIFICATION DESIGN BY COLLIERS ENGINEERING & DESIGN DATED 11/17/23.



TOP OF STRUCTURE WITH APPURTENANCE
ELEV. = 164'-0"
TOP OF TOWER
ELEV. = 160'-0"
(E) VERIZON EQUIPMENT TO REMOVE
(4) SWEDCOM – SC-E 6014 REV2 ANTENNAS
(3) SWEDCOM – SLXW 5512 ANTENNAS
(2) ANTEL – LPA-80063/6CF ANTENNAS
(3) ANTEL – BXA-171063/12CF ANTENNAS
(3) NOKIA – UHBA B13 RRH 4X30 RADIOS
VERIZON MOUNT CENTERLINE
ELEV. = 140'-0"
VERIZON ANTENNA CENTERLINE
ELEV. = 140'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 160'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 130'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 100'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 79'-0"
(E) VERIZON FEEDLINES TO REMOVE
(6) ANDREW – LDF7-50A 1 5/8" COAX CABLES
(E) VERIZON FEEDLINES TO REMAIN
(6) ANDREW – LDF7-50A 1 5/8" COAX CABLES
(1) ANDREW – LDF5-50A 7/8" COAX CABLE
(E) 160'-0" MONOPOLE
BOTTOM OF TOWER
ELEV. = 0'-0"

1 EXISTING TOWER ELEVATION
SCALE: 1"=10'-0" (FULL SIZE) 1"=20'-0" (11x17)



TOP OF STRUCTURE WITH APPURTENANCE
ELEV. = 164'-0"
TOP OF TOWER
ELEV. = 160'-0"
(N) VERIZON EQUIPMENT TO INSTALL
(3) SAMSUNG – MT6407-77A ANTENNA
(6) QUINTEL – QS6656-5D ANTENNA
(3) SAMSUNG – B2/B66A RRH ORAN (RF4439D-25A) RADIO
(3) SAMSUNG – RF4461D-13A RADIO
(1) RAYCAP – 12 OVP
VERIZON MOUNT CENTERLINE
ELEV. = 140'-0"
VERIZON ANTENNA CENTERLINE
ELEV. = 140'-0"
INSTALL MOUNT MODIFICATION BY COLLIERS ENGINEERING & DESIGN, DATED 11/17/23
EXISTING EQUIPMENT BY OTHERS
MCL = 160'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 130'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 100'-0"
EXISTING EQUIPMENT BY OTHERS
MCL = 79'-0"
(N) VERIZON FEEDLINES TO INSTALL
(2) RFS/CELWAVE – HB158-21U6S12-XXXM-01 HYBRID CABLES
(ROUTE PER STRUCTURAL ANALYSIS)
(E) VERIZON FEEDLINES TO REMAIN
(6) ANDREW – LDF7-50A 1 5/8" COAX CABLES
(1) ANDREW – LDF5-50A 7/8" COAX CABLE
(E) 160'-0" MONOPOLE
BOTTOM OF TOWER
ELEV. = 0'-0"

2 FINAL TOWER ELEVATION
SCALE: 1"=10'-0" (FULL SIZE) 1"=20'-0" (11x17)

VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

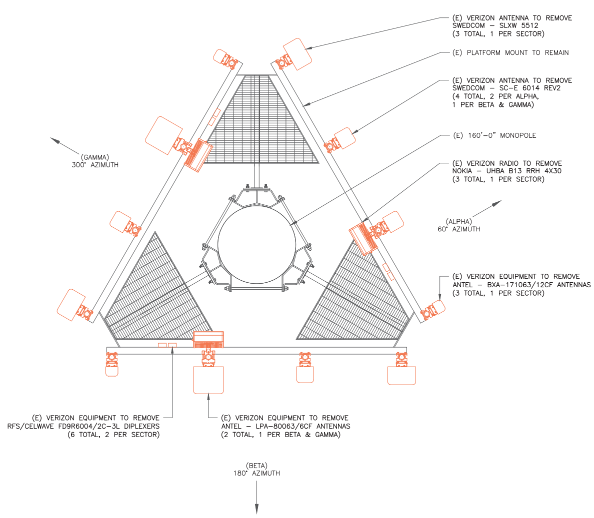
3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

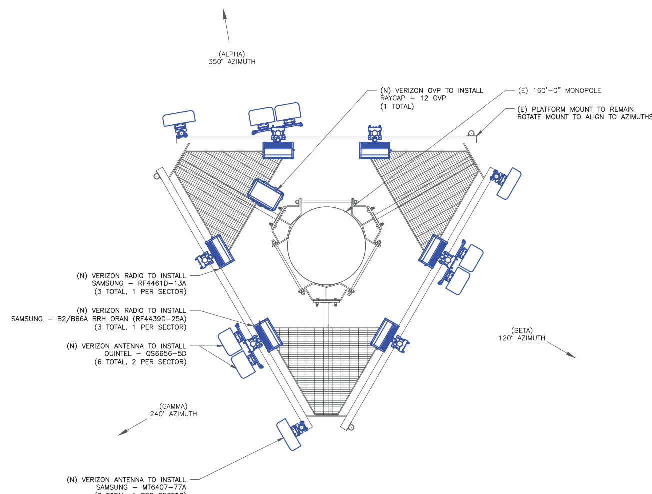
SHEET NUMBER: C-2
REVISION: 0

INSTALLER NOTE:

NO PROPOSED LOADING TO BE ADDED UNTIL MOUNT MODIFICATIONS ARE INSTALLED PER MOUNT MODIFICATION DESIGN BY COLLIERS ENGINEERING & DESIGN DATED 11/17/23.



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



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

VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

verizon

CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: C-3
REVISION: 0

FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
A1	5G	(N) SAMSUNG – MT6407-77A	350°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	–	–	–
A2	1900	(N) QUINTEL – QS6656-5D (N) QUINTEL – QS6656-5D	350° 350°	140'-0" 140'-0"	1	(N) SAMSUNG – B2/B66A RRH ORAN (RF4439D-25A)	TOWER	–	–	–	–	–	1	(N) RAYCAP – 12 OVP	2	(N) HYBRID CABLE	–	–
A3	700 850	–	–	–	1	(N) SAMSUNG – RF4461D-13A	TOWER	–	–	–	–	–	–	–	–	–	–	–
B1	5G	(N) SAMSUNG – MT6407-77A	120°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	–	–	–
B2	1900	(N) QUINTEL – QS6656-5D (N) QUINTEL – QS6656-5D	120° 120°	140'-0" 140'-0"	1	(N) SAMSUNG – B2/B66A RRH ORAN (RF4439D-25A)	TOWER	–	–	–	–	–	–	–	–	–	–	–
B3	700 850	–	–	–	1	(N) SAMSUNG – RF4461D-13A	TOWER	–	–	–	–	–	–	–	–	–	–	–
G1	5G	(N) SAMSUNG – MT6407-77A	240°	140'-0"	–	–	–	–	–	–	–	–	–	–	–	–	–	–
G2	1900	(N) QUINTEL – QS6656-5D (N) QUINTEL – QS6656-5D	240° 240°	140'-0" 140'-0"	1	(N) SAMSUNG – B2/B66A RRH ORAN (RF4439D-25A)	TOWER	–	–	–	–	–	–	–	–	–	–	–
G3	700 850	–	–	–	1	(N) SAMSUNG – RF4461D-13A	TOWER	–	–	–	–	–	–	–	–	–	–	–

UNUSED FEEDLINES

6	LDF7-50A	1 5/8"	COAX
1	LDF5-50A	7/8"	COAX

1 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

verizon

CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

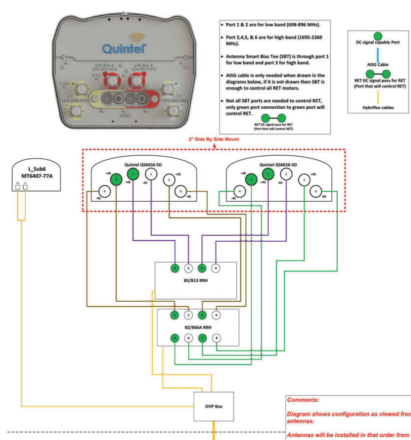
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

DocuSigned by:
STATE OF CONNECTICUT
MANUEL DENTINGER
23524
LICENSED
PROFESSIONAL ENGINEER
3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: **C-4**
REVISION: **0**



Comments:

Diagram shows configuration as viewed from standing behind the antennas.

Antennas will be installed in that order from left to right.

Cap and weatherproof unused antenna ports.

All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)

1 RFDS PLUMBING DIAGRAM
SCALE: NOT TO SCALE

verizon

CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

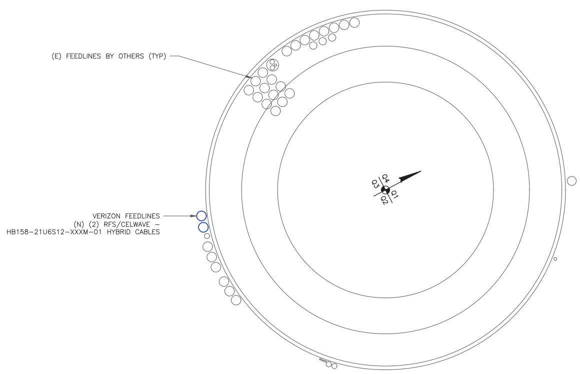
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

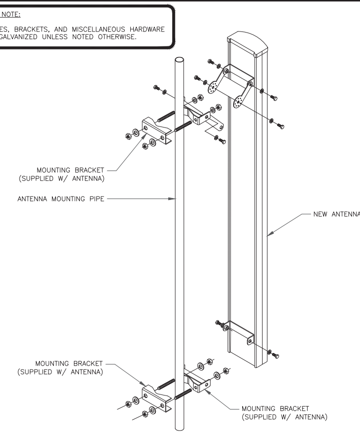
CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: C-5
REVISION: 0

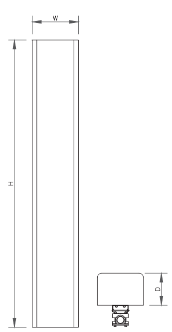


1 BASE LEVEL DETAIL
SCALE: NOT TO SCALE

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



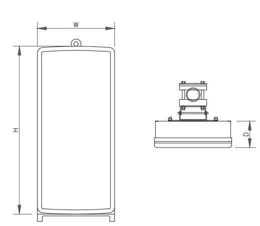
2 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE



ANTENNA SPECS

MANUFACTURER	QUINTEL
MODEL #	QS6656-5D
HxWxD	72" x 12" x 9.6"
WEIGHT	88 LBS

3 QUINTEL – QS6656-5D
SCALE: NOT TO SCALE



ANTENNA SPECS

MANUFACTURER	SAMSUNG
MODEL #	MT6407-77A
HxWxD	35.06" x 16.06" x 5.51"
WEIGHT	81.6 LBS

4 SAMSUNG – MT6407-77A
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

verizon
CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

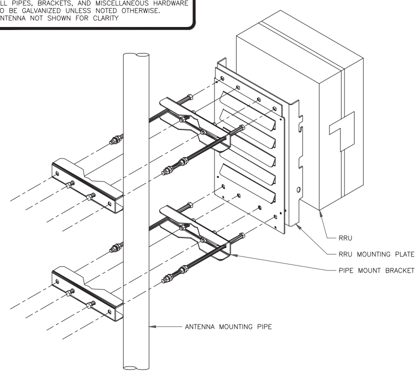
CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: C-6
REVISION: 0

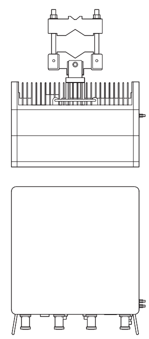
VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

INSTALLER NOTES:

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



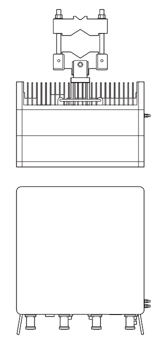
1 RRU MOUNTING DETAIL
SCALE: NOT TO SCALE



RADIO SPECS

MANUFACTURER	SAMSUNG
MODEL #	RF4439D-25A
HxWxD	14.96" x 14.96" x 10.04"
WEIGHT	74.7 LBS

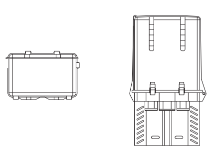
2 SAMSUNG – RF4439D-25A
SCALE: NOT TO SCALE



RADIO SPECS

MANUFACTURER	SAMSUNG
MODEL #	RF4461D-13A
HxWxD	14.96" x 14.96" x 10.23"
WEIGHT	79.1 LBS

3 SAMSUNG – RF4461D-13A
SCALE: NOT TO SCALE



RAYCAP – RCMDC-6627-PF-48
WEIGHT (WITHOUT MOUNTING HARDWARE): 32.0 LBS
SIZE (HxWxD): 28.9x15.7x10.3 IN.

RATED WIND VELOCITY: 150 MPH (SUSTAINED)
OPERATING TEMPERATURE: -40° C TO +80° C
NOMINAL OPERATING DC VOLTAGE: 48 VDC

4 RAYCAP – RCMDC-6627-PF-48
SCALE: NOT TO SCALE

VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

verizon

CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER:	REVISION:
C-6.1	0

Azimuth (1) Alpha					
Cell (850 CDMA)	Red				
PCS2 (1900 LTE)	Pink	Red	Pink		
700 LTE	Lt. Green	Red	Lt. Green		
850 LTE	Purple	Red	Purple		
2100 LTE	Orange	Red	Orange		
High Band Dual Band (Shared Lines)	Orange	Pink	Red	Pink	Orange
Low Band Dual Band (Shared Lines)	Purple	Lt. Green	Red	Lt. Green	Purple
5G 28GHz	Brown	Red	Brown		
5G 39GHz	Blue	Red	Blue		
LAA	Gray	Red	Gray		
CBRS	White	Red	White		
L-Sub6 (C-Band)	Red	Red	Red		

Azimuth (2) Beta					
Cell (850 CDMA)	Blue				
PCS2 (1900 LTE)	Pink	Blue	Pink		
700 LTE	Lt. Green	Blue	Lt. Green		
850 LTE	Purple	Blue	Purple		
2100 LTE	Orange	Blue	Orange		
High Band Dual Band (Shared Lines)	Orange	Pink	Blue	Pink	Orange
Low Band Dual Band (Shared Lines)	Purple	Lt. Green	Blue	Lt. Green	Purple
5G 28GHz	Brown	Blue	Brown		
5G 39GHz	Blue	Blue	Blue		
LAA	Gray	Blue	Gray		
CBRS	White	Blue	White		
L-Sub6 (C-Band)	Red	Blue	Red		

Azimuth (3) Gamma					
Cell (850 CDMA)	Yellow				
PCS2 (1900 LTE)	Pink	Yellow	Pink		
700 LTE	Lt. Green	Yellow	Lt. Green		
850 LTE	Purple	Yellow	Purple		
2100 LTE	Orange	Yellow	Orange		
High Band Dual Band (Shared Lines)	Orange	Pink	Yellow	Pink	Orange
Low Band Dual Band (Shared Lines)	Purple	Lt. Green	Yellow	Lt. Green	Purple
5G 28GHz	Brown	Yellow	Brown		
5G 39GHz	Blue	Yellow	Blue		
LAA	Gray	Yellow	Gray		
CBRS	White	Yellow	White		
L-Sub6 (C-Band)	Red	Yellow	Red		

Azimuth (4) Delta					
Cell (850 CDMA)	Orange				
PCS2 (1900 LTE)	Pink	Orange	Pink		
700 LTE	Lt. Green	Orange	Lt. Green		
850 LTE	Purple	Orange	Purple		
2100 LTE	Orange	Orange	Orange		
High Band Dual Band (Shared Lines)	Orange	Pink	Orange	Pink	Orange
Low Band Dual Band (Shared Lines)	Purple	Lt. Green	Orange	Lt. Green	Purple
5G 28GHz	Brown	Orange	Brown		
5G 39GHz	Blue	Orange	Blue		
LAA	Gray	Orange	Gray		
CBRS	White	Orange	White		
L-Sub6 (C-Band)	Red	Orange	Red		

Azimuth (5) Epsilon					
Cell (850 CDMA)	White				
PCS2 (1900 LTE)	Pink	White	Pink		
700 LTE	Lt. Green	White	Lt. Green		
850 LTE	Purple	White	Purple		
2100 LTE	Orange	White	Orange		
High Band Dual Band (Shared Lines)	Orange	Pink	White	Pink	Orange
Low Band Dual Band (Shared Lines)	Purple	Lt. Green	White	Lt. Green	Purple
5G 28GHz	Brown	White	Brown		
5G 39GHz	Blue	White	Blue		
LAA	Gray	White	Gray		
CBRS	White	White	White		
L-Sub6 (C-Band)	Red	White	Red		

Azimuth (6) Zeta					
Cell (850 CDMA)	Gray				
PCS2 (1900 LTE)	Pink	Gray	Pink		
700 LTE	Lt. Green	Gray	Lt. Green		
850 LTE	Purple	Gray	Purple		
2100 LTE	Orange	Gray	Orange		
High Band Dual Band (Shared Lines)	Orange	Pink	Gray	Pink	Orange
Low Band Dual Band (Shared Lines)	Purple	Lt. Green	Gray	Lt. Green	Purple
5G 28GHz	Brown	Gray	Brown		
5G 39GHz	Blue	Gray	Blue		
LAA	Gray	Gray	Gray		
CBRS	White	Gray	White		
L-Sub6 (C-Band)	Red	Gray	Red		

(1) COLOR CODE MATRIX
SCALE: NOT TO SCALE

VERIZON_WBV_SOVA_TRIST_ANTENNA AMENDMENT

verizon
CROWN CASTLE

VERIZON SITE NUMBER:
5000247545

BU #: 828540

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

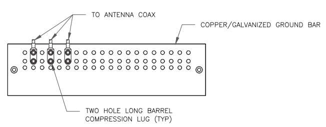
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

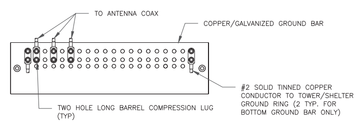
SHEET NUMBER:	REVISION:
C-7	0



NOTES:

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

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

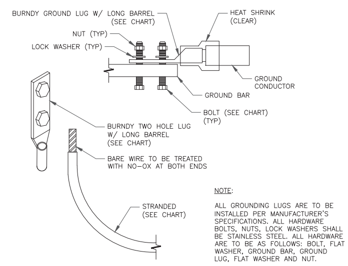


NOTES:

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

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

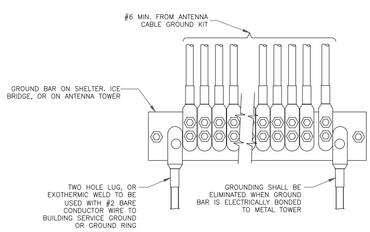
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



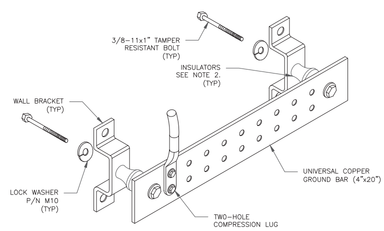
NOTE:

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

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

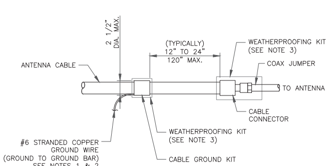


NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY 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.

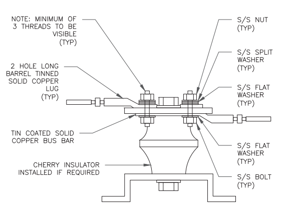
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



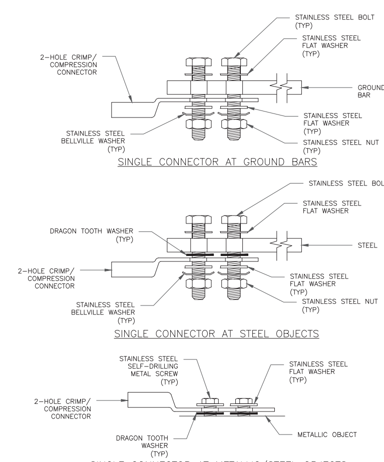
NOTES:

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

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

VERIZON SITE NUMBER:
5000247545

BU #: **828540**

CROWN CASTLE SITE NAME
TORRINGTON/RT 8

218 WHEELER RD
LITCHFIELD, CT 06759

EXISTING 160'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	3/11/24	MDW	CONSTRUCTION	MD

3/11/2024 | 2:44:59 PM CDT

CROWN CASTLE USA INC.
CERTIFICATE OF REGISTRATION #PEC.0001101

SHEET NUMBER: G-1
REVISION: 0

verizon

MOUNT MODIFICATION DRAWINGS
EXISTING 13.25' PLATFORM

TOWER OWNER: CROWN CASTLE
TOWER OWNER SITE NUMBER: 828540

CARRIER SITE NAME: TORRINGTON S CT
CARRIER SITE NUMBER: 5000247545
FUZE ID: 16227597

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

LATITUDE: 41.780653° N
LONGITUDE: 73.136119° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 115 MPH
EXPOSURE CATEGORY B
TOPOGRAPHIC CATEGORY: 1
TOPOGRAPHIC CONSIDERED: N/A
TOPOGRAPHIC METHOD: N/A
MEAN BASE ELEVATION (AMSL) = 1024.34'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_s = .176
LONG TERM MCER GROUND MOTION, S_1 = .054

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

COMPANY: COLLIERS ENGINEERING & DESIGN
CONTACT: PETER ALBANO
PHONE: 856.797.0412
E-MAIL: PETER.ALBANO@COLLIERSENG.COM

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION: HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #: 10213430
VZW MDG #: 5000247545
ANALYSIS DATE: 11/17/2023

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

Colliers Engineering & Design
www.colliersengineering.com

verizon

811 Know what's Below. Call before you dig.
PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE ANYWHERE IN ANY STATE
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE	JOB NUMBER
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DA
0	08/09/23	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. PC.0000131

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

SITE NAME:
TORRINGTON S CT
5000247545
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAINE CONSULTING

SHEET TITLE
TITLE SHEET

SHEET NUMBER
ST-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BILL OF MATERIALS

SECTION 1 - VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	VZWSMART	VZWSMART-PLK3	SUPPORT RAIL CORNER BRACKET		30	90
12		VZWSMART-MSK1	CROSSOVER PLATE		14	168
3		VZWSMART-MSK2	CROSSOVER PLATE		15	45
1		VZWSMART-MSK6	BACK TO BACK CROSSOVER PLATE		34	34

SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	-	-	159" LONG, PIPE 2 1/2 SCH40	GALVANIZED	77	231
3	-	-	84" LONG, PIPE 2 1/2 SCH40	GALVANIZED	40	120
1	-	-	36" LONG, PIPE 2 SCH40	GALVANIZED	11	11
3	-	-	36" LONG, L3X3X1/4	GALVANIZED	15	45

SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
1	PERFECT VISON	PV-SCRB-RM-U	ROUTING BRACKET	OR EOR APPROVED EQUIVALENT	-	-
1	PERFECT VISION	PV-CMX-CG-BO	WIRE ROPE GUIDE	OR EOR APPROVED EQUIVALENT	-	-
					TOTAL:	744

*FOR ACTUAL INSTALL WEIGHT PLEASE CHECK THE MA REPORT

NOTES:

1. THE MANUFACTURERS LISTED ARE THE APPROVED VENDORS FOR THE VZW MOUNT KITS. EACH MANUFACTURER WILL BE AWARE OF WHICH KITS HAVE BEEN THROUGH THE VZW APPROVAL PROCESS AND THEY ARE IN TURN APPROVED TO SELL. PLEASE NOTE THAT THE MATERIAL UTILIZED ON THE MOUNT MODIFICATIONS WILL BE REVIEWED AS A PART OF THE DESKTOP PMI COMPLETED BY THE SMART TOOL VENDOR. IT WILL BE REQUIRED THAT THE VZW KITS SPECIFIED ARE UTILIZED IN THE MODIFICATIONS.
2. ALL MATERIALS REQUIRED FOR THE DESIGNED MODIFICATIONS BUT NOT LISTED IN THIS SHEET ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

VZWSMART KITS - APPROVED VENDORS

COMMSCOPE

CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM

PERFECTVISION

CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM

SITE PRO 1

CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

BETTER METAL, LLC

CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM

METROSITE FABRICATORS, LLC

CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

SABRE INDUSTRIES, INC.

CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

NEWAVE

CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

Colliers Engineering & Design
www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE: AS SHOWN
JOB NUMBER: 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
-	-	-	-	-
-	-	-	-	-
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. (PC.0000131

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

SITE NAME:
TORRINGTON S CT
5000247545
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

Colliers Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: BILL OF MATERIALS

SHEET NUMBER: SBOM-1

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK, ORDERING MATERIAL, AND PREPARING OF SHOP DRAWINGS. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. 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/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
8. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.
9. ALL INSTALLATIONS PERFORMED ON THIS STRUCTURE SHALL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-322.
10. CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.
11. CONNECTIONS BETWEEN ITEMS SUPPORTED BY THE STRUCTURE AND THE STRUCTURE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH CONNECTIONS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SUBMIT SIGNED AND SEALED CALCULATIONS DURING SHOP DRAWING REVIEW.
12. DO NOT SCALE DRAWINGS.
13. DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
14. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZE AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
15. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
   a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
   b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   c. AISC CODE OF STANDARD PRACTICE
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

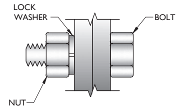
3. ALL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR VERIFYING THE SUBSTITUTE IS SUITABLE FOR USE AND MEETS ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
   a. SUBMIT SHOP DRAWINGS TO
      PETER.ALBANO@COLLIERSENG.COM
   b. PROVIDE COLLIERS ENGINEERING & DESIGN PROJECT # AND COLLIERS ENGINEERING & DESIGN PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
6. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
7. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
8. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.
9. WHERE CONNECTIONS ARE NOT FULLY DETAILED ON THESE DRAWINGS, FABRICATOR SHALL DESIGN CONNECTIONS TO RESIST LOADS AND FORCES WHERE SHOWN ON DRAWINGS AND AS OUTLINED IN SPECIFICATIONS.
10. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.
11. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
12. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
13. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
14. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINC COTE, OR EOR APPROVED EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
15. ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

BOLT SCHEDULE (IN.)

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

WORKABLE GAGES (IN.)

LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8

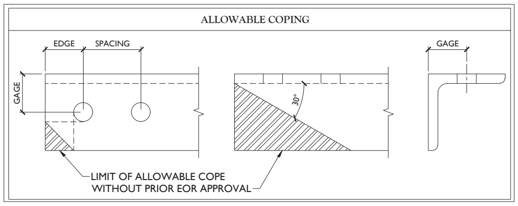


TYP. BOLT ASSEMBLY

NOTES:

1. ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.

ALLOWABLE COPING



Colliers Engineering & Design
www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
811 Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE: AS SHOWN | JOB NUMBER: 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
-	-	-	-	-
-	-	-	-	-
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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

SITE NAME:

TORRINGTON S CT
5000247545

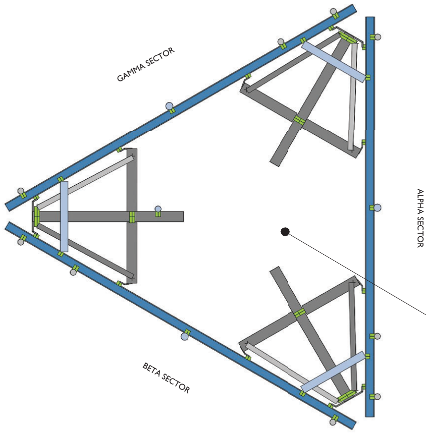
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
Colliers Engineering & Design
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: GENERAL NOTES

SHEET NUMBER: SGN-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

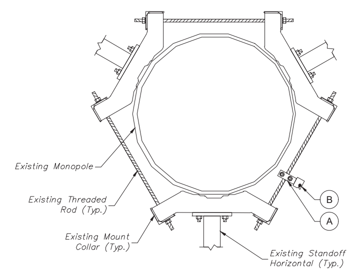


1 CLIMBING FACILITY LOCATION
SCALE : N.T.S.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY HUDSON DESIGN GROUP, LLC. ON 4/28/2021, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (139'-0") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

2. INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB, OR ANY SYSTEM INSTALLED ON THE STRUCTURE. TIMELY NOTICE AND DOCUMENTATION SHALL BE PROVIDED BY CONTRACTORS TO THE EOR (OF STRUCTURAL DESIGN) IF AN OBSTRUCTION WAS REQUIRED TO MEET THE RF SYSTEM DESIGN REQUIREMENTS AND PERFORMANCES.



ITEM #	QTY	PART NUMBER	DESCRIPTIONS
A	1	PV-SCRB-RM-U	ROUTING BRACKET (PERFECT VISION OR EOR APPROVED EQ.)
B	1	PV-CMX-CG-BO	WIRE ROPE GUIDE (PERFECT VISION OR EOR APPROVED EQ.)

2 PROPOSED WIRE ROPE GUIDE ATTACHMENT - PLAN VIEW
SCALE : N.T.S.

NOTE: CONTRACTOR SHALL ENSURE THAT WIRE ROPE GUIDE DOES NOT PUSH THE WIRE ROPE OUTSIDE OF THE VERTICAL PLANE OF THE SAFETY CLIMB. CONTRACT EOR WITH PHOTOS OF SAFETY CLIMB AND COLLAR FOR FURTHER DIRECTION IF NEEDED.

CLIMBING FACILITY PHOTO

Colliers Engineering & Design
www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE: AS SHOWN
JOB NUMBER: 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
-	-	-	-	-
-	-	-	-	-
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. PC.0000131

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

SITE NAME:
TORRINGTON S CT
5000247545
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

Colliers Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: CLIMBING FACILITY DETAIL

SHEET NUMBER: SCF-1

LEGEND:

- PROPOSED
- RELOCATED
- EXISTING

MOUNT MODIFICATION SCHEDULE

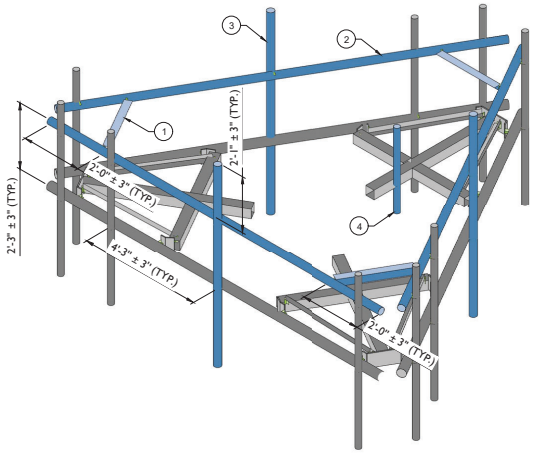
NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	139'-0"	3	PROPOSED SUPPORT RAIL CORNER BRACKET (PART #: VZWSMART-PLK3) WITH 36" LONG L3X3X1/4	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. CONTRACTOR SHALL CONNECT PROPOSED ANGLES TO SUPPORT RAIL CORNER BRACKET (PART #: VZWSMART-PLK3) USING THE PROVIDED (8) 5/8" DIA. BOLTS, (4) BOLTS PER CONNECTION.
2		3	PROPOSED 159" LONG, PIPE 2 1/2 SCH40 SUPPORT RAIL	RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE. CONNECT NEW SUPPORT RAIL TO ALL VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART #: VZWSMART-MSK1).
3		3	PROPOSED 84" LONG, PIPE 2 1/2 SCH40 MOUNT PIPE	CONNECT NEW MOUNT PIPE TO EXISTING HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).
4		1	PROPOSED 36" LONG, PIPE 2 SCH40 OVP PIPE	CONNECT NEW OVP PIPE TO EXISTING STANDOFF HORIZONTAL WITH BACK TO BACK CROSSOVER PLATE (VZWSMART-MSK6).

GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE MINOR CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR

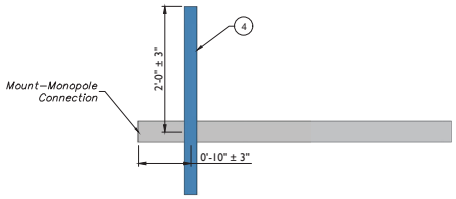
B. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINC KOTE, OR EOR APPROVED EQUAL).

C. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.



1 PROPOSED ISOMETRIC VIEW

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (BETWEEN BETA & GAMMA)

SCALE : N.T.S.

Colliers Engineering & Design

www.colliersengineering.com

verizon

811 Know what's below. Call before you dig.

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE ANYWHERE IN ANY STATE

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE	JOB NUMBER
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/22	ISSUED FOR CONSTRUCTION	SC	DA
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC 0000131

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

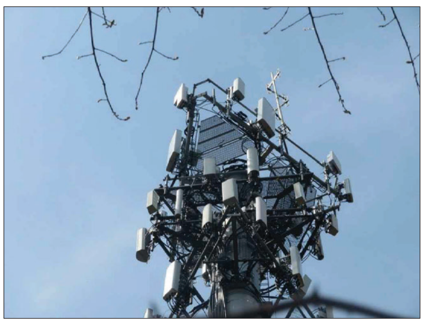
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE

MODIFICATION DETAILS

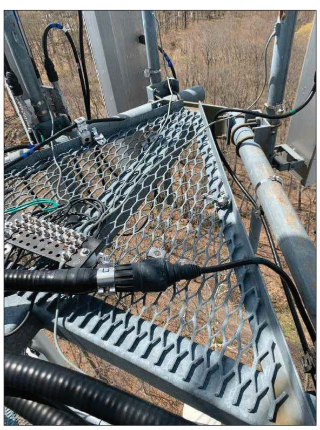
SHEET NUMBER

SS-1



MOUNT PHOTO 1

MOUNT PHOTO 2



MOUNT PHOTO 3

MOUNT PHOTO 4

Colliers Engineering & Design
www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

811 Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
-	-	-	-	-
-	-	-	-	-
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

COLLIERS ENGINEERING & DESIGN CT, P.C.
C.T. JPC.0000131

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

SITE NAME:

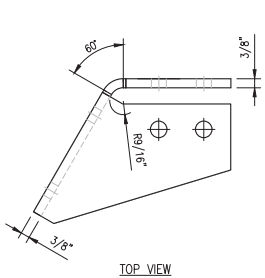
TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

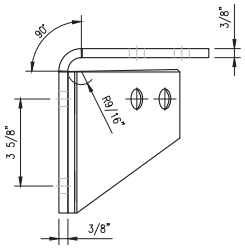
Colliers Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE:
MOUNT PHOTOS

SHEET NUMBER:
SS-2

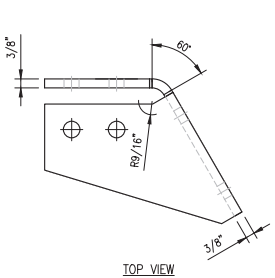


TOP VIEW

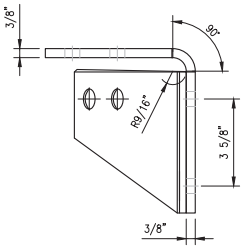


SIDE VIEW

CBP-L



TOP VIEW



SIDE VIEW

CBP-R

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-PLK3 (SUPPORT RAIL CORNER BRACKET)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	CBP-L	CORNER BENT PLATE BRACKET	PLK3-F1	9
2	1	CBP-R	CORNER BENT PLATE BRACKET	PLK3-F1	9
3	4	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	5
4	8	---	BOLT 5/8" X 2" A325	---	3
5	16	FW-625	5/8" HDG USS FLAT WASHER	---	1
6	16	LW-625	5/8" HDG LOCK WASHER	---	0
7	16	NUT-625	5/8" HDG HEX NUT	---	2
				GALVANIZED WT	30

VzW SMART Tool© Vendor

verizon

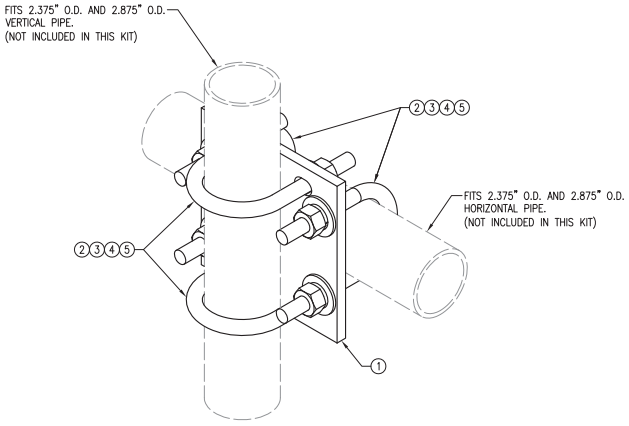
FOR REFERENCE ONLY

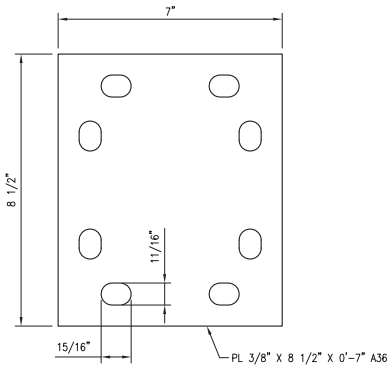
DRAWN BY: H.R | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART-PLK3
SUPPORT RAIL CORNER BRACKET

SHEET NUMBER: VZWSMART-PLK3 | REV #: 0





PL375-857

VZWSMART-MSK1 (CROSSOVER PLATE)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-857	PL 3/8" X 8 1/2" X 0'-7" A36	MSK1-F1	6
2	4	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	5
3	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	8	LW-625	5/8" HDG LOCK WASHER	---	0
5	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	14

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VzW SMART Tool© Vendor

verizon

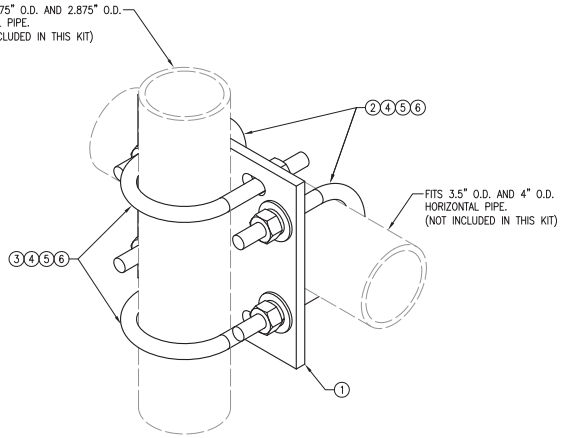
FOR REFERENCE ONLY

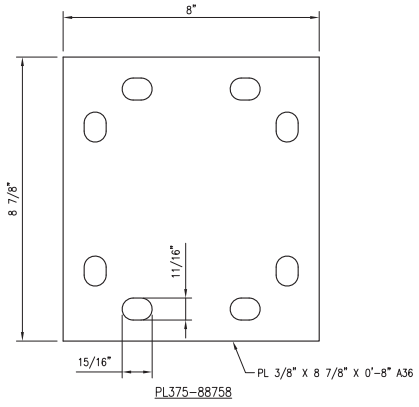
DRAWN BY: H.R	CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART-MSK1
CROSSOVER PLATE

SHEET NUMBER:	REV #:
VZWSMART-MSK1	0





PL375-88758

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-MSK2 (CROSSOVER PLATE)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-88758	PL 3/8" X 8 3/4" X 0'-8" A36	MSK2-F1	8
2	2	MS02-625-4125-600	RU-BOLT 5/8" X 4 1/8" I.W. X 6" I.L. A36 (OR EQUIV.)	RBC-1	3
3	2	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	3
4	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
5	8	LW-625	5/8" HDG LOCK WASHER	---	0
6	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	15

VzW SMART Tool© Vendor

verizon

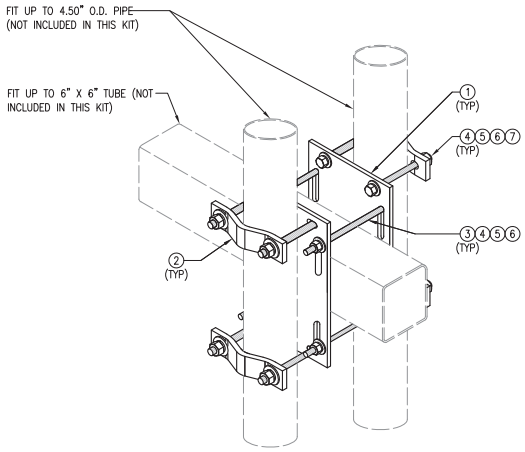
FOR REFERENCE ONLY

DRAWN BY: H.R | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART-MSK2
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK2 | REV #: 0



ISOMETRIC VIEW
BACK TO BACK CROSSOVER

VZWSMART–MSK6 (VZWSMART–MSK6 – BACK TO BACK CROSSOVER)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	2	PL375–8512	PL 3/8" X 8 1/2" X 1'–0" A36	MSK6–F2	20.7
2	4	VCP	PL 1/2" X 2" X 8 5/8" A36 BENT PLATE	MSK6–F1	9.6
3	4	---	THREADED ROD 5/8" DIA. X 10" F1554–36 HDG	---	---
4	16	NUT–625	5/8" HDG HEX NUT	---	2
5	16	FW–625	5/8" HDG USS FLAT WASHER	---	1
6	16	LW–625	5/8" HDG LOCK WASHER	---	0
7	8	---	BOLT 5/8" X 6" SAE GRADE 5 ALL THREAD	---	1
				GALVANIZED WT	34

NOTES:
1. HOT–DIPPED GALVANIZED PER ASTM A123.

VzW
SMART Tool©
Vendor

verizon

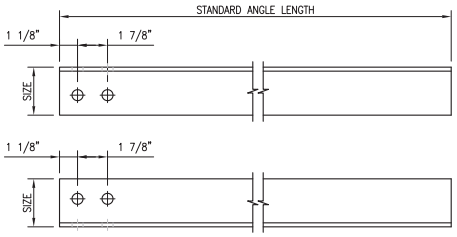
FOR REFERENCE ONLY

DRAWN BY: SK | CHECKED BY: BT/KW

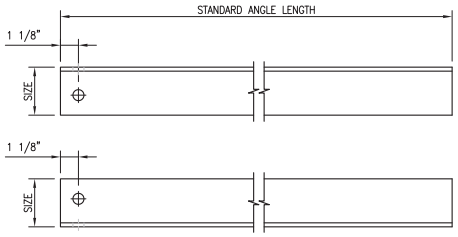
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	SK	05/08/20

SHEET TITLE:
VZWSMART–MSK6
BACK TO BACK
CROSSOVER

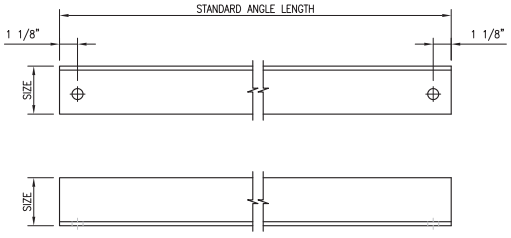
SHEET NUMBER: VZWSMART–MSK6 | REV #: 0



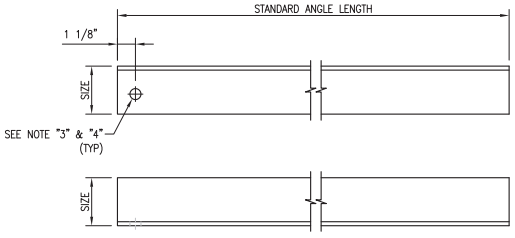
HOLE STYLE "A"



HOLE STYLE "B"



HOLE STYLE "C"



HOLE STYLE "D"

VZWSMART Standard Angle					
VZWSMART Number	Size	Length	Hole Style	Hole Gage	Also Used In:
A-PLK2-01	L 3" X 3" X 1/4"	96"	A	1-3/4"	VZWSMART-PLK2
A-PLK5-01	L 3"X 3" X 3/16"	96"	B	1-3/4"	VZWSMART-PLK5
A-SFK3-01	L 2-1/2" X 2-1/2" X 1/4"	96"	C	1-3/4"	VZWSMART-SFK3,-SFK3-SL, -PLK6, & -PLK8
A-L25X25X4X120	L 2-1/2" X 2-1/2" X 1/4"	120"	D	1-5/16"	
A-L25X25X4X240	L 2-1/2" X 2-1/2" X 1/4"	240"	D	1-5/16"	
A-L30X30X4X120	L 3" X 3" X 1/4"	120"	D	1-1/2"	
A-L30X30X4X240	L 3" X 3" X 1/4"	240"	D	1-1/2"	
A-L40X40X4X120	L 4" X 4" X 1/4"	120"	D	2"	
A-L40X40X4X240	L 4" X 4" X 1/4"	240"	D	2"	
A-L50X30X6X120	L 5" X 3" X 3/8"	120"	D	2-1/2"	
A-L50X50X6X120	L 5" X 5" X 3/8"	120"	D	2-1/2"	

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION ANGLES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL ANGLE GRADE A36 OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

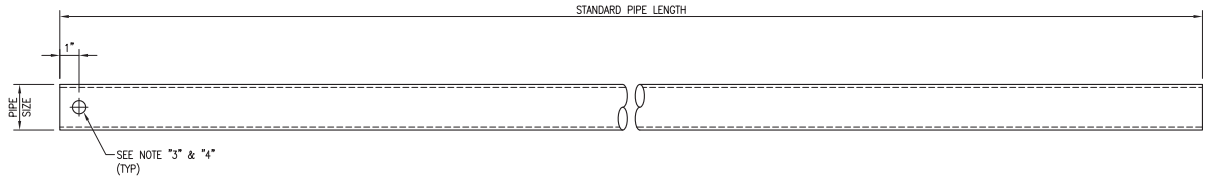
DRAWN BY: BT	CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD ANGLE

SHEET NUMBER: VZWSMART-ANGLE

REV #: 0



VZWSMART Standard Pipe		
VZWSMART Number	Size	Length
P40-238X048	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	48"
P40-238X072	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	72"
P40-238X096	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	96"
P40-238X120	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	120"
P40-238X126	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	126"
P40-238X150	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	150"
P40-238X174	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	174"
P40-278X048	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	48"
P40-278X072	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	72"
P40-278X096	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	96"
P40-278X120	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	120"
P40-278X126	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	126"
P40-278X150	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	150"
P40-278X174	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	174"
P40-312X048	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	48"
P40-312X072	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	72"
P40-312X126	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	126"
P40-312X150	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	150"
P40-312X174	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	174"

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION PIPES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL PIPE GRADE A53-B OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

DRAWN BY: BT	CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE

REV #: 0

verizon

MOUNT MODIFICATION DRAWINGS
EXISTING 13.25' PLATFORM

TOWER OWNER: CROWN CASTLE
TOWER OWNER SITE NUMBER: 828540

CARRIER SITE NAME: TORRINGTON S CT
CARRIER SITE NUMBER: 5000247545
FUZE ID: 16227597

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

LATITUDE: 41.780653° N
LONGITUDE: 73.136119° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 115 MPH
EXPOSURE CATEGORY B
TOPOGRAPHIC CATEGORY: 1
TOPOGRAPHIC CONSIDERED: N/A
TOPOGRAPHIC METHOD: N/A
MEAN BASE ELEVATION (AMSL) = 1024.34'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_S = .176
LONG TERM MCER GROUND MOTION, S_1 = .054

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

COMPANY: COLLIERS ENGINEERING & DESIGN
CONTACT: PETER ALBANO
PHONE: 856.797.0412
E-MAIL: PETER.ALBANO@COLLIERSENG.COM

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION: HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #: 10213430
VZW MDG #: 5000247545
ANALYSIS DATE: 11/17/2023

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

SHEET	DESCRIPTION
ST-1	TITLE SHEET
SBOM-1	BILL OF MATERIALS
SGN-1	GENERAL NOTES
SCF-1	CLIMBING FACILITY DETAIL
SS-1	MODIFICATION DETAILS
SS-2	MOUNT PHOTOS
	SPECIFICATION SHEETS

Colliers Engineering & Design
www.colliersengineering.com

verizon

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
811 Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE: AS SHOWN | JOB NUMBER: 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
-	-	-	-	-
-	-	-	-	-
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT DEJIAN XU No. 33733 LICENSED PROFESSIONAL ENGINEER
11/17/2023

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

SITE NAME:
TORRINGTON S CT
5000247545
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: TITLE SHEET

SHEET NUMBER: ST-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BILL OF MATERIALS

SECTION 1 - VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	VZWSMART	VZWSMART-PLK3	SUPPORT RAIL CORNER BRACKET		30	90
12		VZWSMART-MSK1	CROSSOVER PLATE		14	168
3		VZWSMART-MSK2	CROSSOVER PLATE		15	45
1		VZWSMART-MSK6	BACK TO BACK CROSSOVER PLATE		34	34

SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	-	-	159" LONG, PIPE 2 1/2 SCH40	GALVANIZED	77	231
3	-	-	84" LONG, PIPE 2 1/2 SCH40	GALVANIZED	40	120
1	-	-	36" LONG, PIPE 2 SCH40	GALVANIZED	11	11
3	-	-	36" LONG, L3X3X1/4	GALVANIZED	15	45

SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
1	PERFECT VISON	PV-SCRB-RM-U	ROUTING BRACKET	OR EOR APPROVED EQUIVALENT	-	-
1	PERFECT VISION	PV-CMX-CG-BO	WIRE ROPE GUIDE	OR EOR APPROVED EQUIVALENT	-	-
					TOTAL:	744

*FOR ACTUAL INSTALL WEIGHT PLEASE CHECK THE MA REPORT

NOTES:

1. THE MANUFACTURERS LISTED ARE THE APPROVED VENDORS FOR THE VZW MOUNT KITS. EACH MANUFACTURER WILL BE AWARE OF WHICH KITS HAVE BEEN THROUGH THE VZW APPROVAL PROCESS AND THEY ARE IN TURN APPROVED TO SELL. PLEASE NOTE THAT THE MATERIAL UTILIZED ON THE MOUNT MODIFICATIONS WILL BE REVIEWED AS A PART OF THE DESKTOP PMI COMPLETED BY THE SMART TOOL VENDOR. IT WILL BE REQUIRED THAT THE VZW KITS SPECIFIED ARE UTILIZED IN THE MODIFICATIONS.

2. ALL MATERIALS REQUIRED FOR THE DESIGNED MODIFICATIONS BUT NOT LISTED IN THIS SHEET ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

VZWSMART KITS - APPROVED VENDORS

COMMSCOPE	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM

PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM

SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

BETTER METAL, LLC	
CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM

METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

Colliers Engineering & Design

www.colliersengineering.com

verizon

811 Know what's below. Call before you dig.

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT DEJIAN XU No. 33733 LICENSED PROFESSIONAL ENGINEER

11/17/2023

COLLIERS ENGINEERING & DESIGN CT, P.C.

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

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

Colliers Engineering & Design

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING

SHEET TITLE: BILL OF MATERIALS

SHEET NUMBER: SBOM-1

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK, ORDERING MATERIAL, AND PREPARING OF SHOP DRAWINGS. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. 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/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
8. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.
9. ALL INSTALLATIONS PERFORMED ON THIS STRUCTURE SHALL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-322.
10. CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.
11. CONNECTIONS BETWEEN ITEMS SUPPORTED BY THE STRUCTURE AND THE STRUCTURE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH CONNECTIONS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SUBMIT SIGNED AND SEALED CALCULATIONS DURING SHOP DRAWING REVIEW.
12. DO NOT SCALE DRAWINGS.
13. DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
14. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZE AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
15. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
   a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
   b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   c. AISC CODE OF STANDARD PRACTICE
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

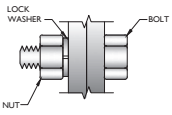
3. ALL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR VERIFYING THE SUBSTITUTE IS SUITABLE FOR USE AND MEETS ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
   a. SUBMIT SHOP DRAWINGS TO
      PETER.ALBANO@COLLIERSENG.COM
   b. PROVIDE COLLIERS ENGINEERING & DESIGN PROJECT # AND COLLIERS ENGINEERING & DESIGN PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
6. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
7. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
8. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.
9. WHERE CONNECTIONS ARE NOT FULLY DETAILED ON THESE DRAWINGS, FABRICATOR SHALL DESIGN CONNECTIONS TO RESIST LOADS AND FORCES WHERE SHOWN ON DRAWINGS AND AS OUTLINED IN SPECIFICATIONS.
10. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.
11. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
12. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
13. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
14. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINC COTE, OR EOR APPROVED EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
15. ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

BOLT SCHEDULE (IN.)

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

WORKABLE GAGES (IN.)

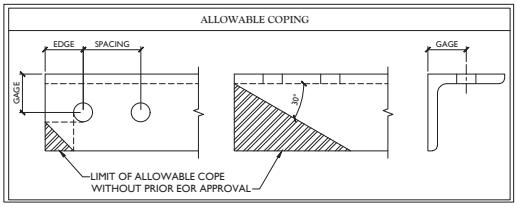
LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8



TYP. BOLT ASSEMBLY

NOTES:

1. ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.



Colliers Engineering & Design

www.colliersengineering.com

verizon

811 PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PLANNING EXCAVATION OR SURFACE DISTURBANCE IN ANY STATE
Know what's below. Call before you dig.
FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE: AS SHOWN	JOB NUMBER: 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DA
0	08/09/23	ISSUED FOR CONSTRUCTION	SC	DA

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED PROFESSIONAL ENGINEER
11/17/2023
COLLIERS ENGINEERING & DESIGN CT, P.C.

SITE NAME:

TORRINGTON S CT
5000247545

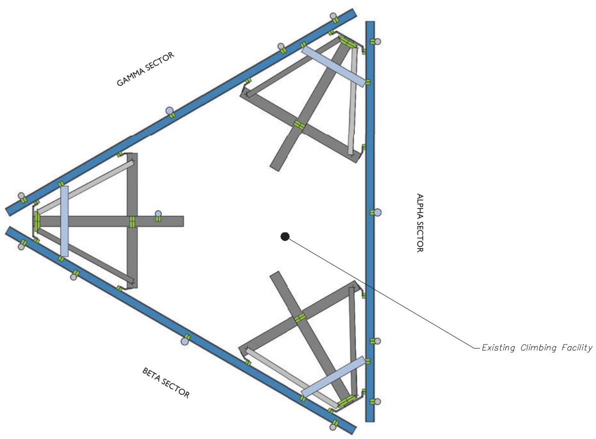
218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE: GENERAL NOTES

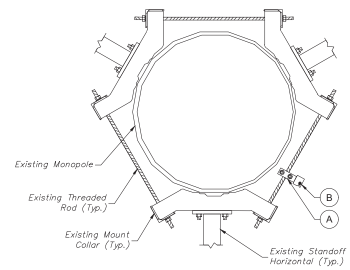
SHEET NUMBER: SGN-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



1 CLIMBING FACILITY LOCATION

SCALE : N.T.S.



ITEM #	QTY	PART NUMBER	DESCRIPTIONS
A	1	PV-SCRB-RM-U	ROUTING BRACKET (PERFECT VISION OR EOR APPROVED EQ.)
B	1	PV-CMX-CG-BO	WIRE ROPE GUIDE (PERFECT VISION OR EOR APPROVED EQ.)

2 PROPOSED WIRE ROPE GUIDE ATTACHMENT - PLAN VIEW

SCALE : N.T.S.

NOTE: CONTRACTOR SHALL ENSURE THAT WIRE ROPE GUIDE DOES NOT PUSH THE WIRE ROPE OUTSIDE OF THE VERTICAL PLANE OF THE SAFETY CLIMB. CONTRACT EOR WITH PHOTOS OF SAFETY CLIMB AND COLLAR FOR FURTHER DIRECTION IF NEEDED.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY HUDSON DESIGN GROUP, LLC. ON 4/28/2021, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (139'-0") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

2. INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB, OR ANY SYSTEM INSTALLED ON THE STRUCTURE. TIMELY NOTICE AND DOCUMENTATION SHALL BE PROVIDED BY CONTRACTORS TO THE EOR (OF STRUCTURAL DESIGN) IF AN OBSTRUCTION WAS REQUIRED TO MEET THE RF SYSTEM DESIGN REQUIREMENTS AND PERFORMANCES.

CLIMBING FACILITY PHOTO

Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE : AS SHOWN

JOB NUMBER : 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
-	-	-	-	-
-	-	-	-	-
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT DEJIAN XU No. 33733 LICENSED PROFESSIONAL ENGINEER

11/17/2023

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

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE : CLIMBING FACILITY DETAIL

SHEET NUMBER : SCF-1

LEGEND:

- PROPOSED
- RELOCATED
- EXISTING

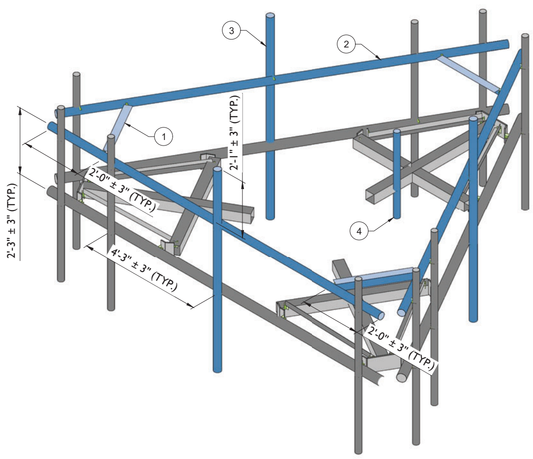
MOUNT MODIFICATION SCHEDULE				
NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	139'-0"	3	PROPOSED SUPPORT RAIL CORNER BRACKET (PART #: VZWSMART-PLK3) WITH 36" LONG L3X3X1/4	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. CONTRACTOR SHALL CONNECT PROPOSED ANGLES TO SUPPORT RAIL CORNER BRACKET (PART #: VZWSMART-PLK3) USING THE PROVIDED (8) 5/8" DIA. BOLTS, (4) BOLTS PER CONNECTION.
2		3	PROPOSED 159" LONG, PIPE 2 1/2 SCH40 SUPPORT RAIL	RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE. CONNECT NEW SUPPORT RAIL TO ALL VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART #: VZWSMART-MSK1).
3		3	PROPOSED 84" LONG, PIPE 2 1/2 SCH40 MOUNT PIPE	CONNECT NEW MOUNT PIPE TO EXISTING HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).
4		1	PROPOSED 36" LONG, PIPE 2 SCH40 OVP PIPE	CONNECT NEW OVP PIPE TO EXISTING STANDOFF HORIZONTAL WITH BACK TO BACK CROSSOVER PLATE (VZWSMART-MSK6).

GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE MINOR CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR

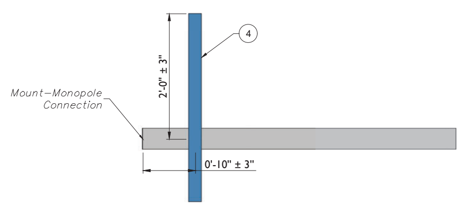
B. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINC KOTE, OR EOR APPROVED EQUAL).

C. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.



1 PROPOSED ISOMETRIC VIEW

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (BETWEEN BETA & GAMMA)

SCALE : N.T.S.

Colliers Engineering & Design

www.colliersengineering.com

verizon

PROTECT YOURSELF

ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE

811 Know what's below. Call before you dig.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE : AS SHOWN

JOB NUMBER : 21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DX
0	08/09/21	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT · DEJIAN XU · No. 33733 · LICENSED · PROFESSIONAL ENGINEER

11/17/2023

COLLIERS ENGINEERING & DESIGN CT, P.C.

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

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

Colliers Engineering & Design

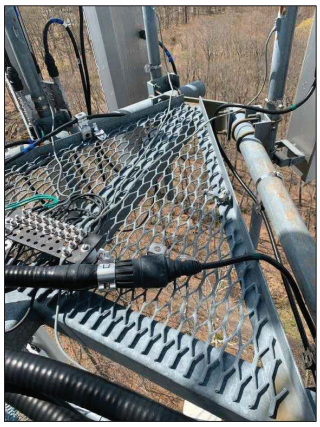
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE : MODIFICATION DETAILS

SHEET NUMBER : SS-1

MOUNT PHOTO 1

MOUNT PHOTO 2



MOUNT PHOTO 3

MOUNT PHOTO 4

Collier Engineering & Design

www.colliersengineering.com

verizon

811 Know what's below. Call before you dig.

PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO EXCAVATE, OR DISTURB THE SURFACE ANYWHERE IN ANY STATE.

FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE	AS SHOWN	JOB NUMBER	21777830

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	11/17/23	ISSUED FOR CONSTRUCTION	SC	DK
0	06/09/23	ISSUED FOR CONSTRUCTION	SC	EA

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED PROFESSIONAL ENGINEER
11/17/2023

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

SITE NAME:

TORRINGTON S CT
5000247545

218 WHEELER ROAD
TORRINGTON, CT 06790
LITCHFIELD COUNTY

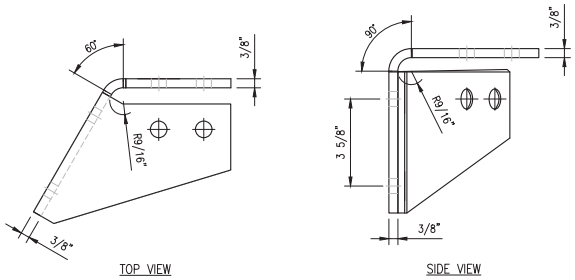
Collier Engineering & Design
STAMFORD
1055 Washington Boulevard
Stamford, CT 06901
Phone: 203.324.0800
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MAHER CONSULTING

SHEET TITLE

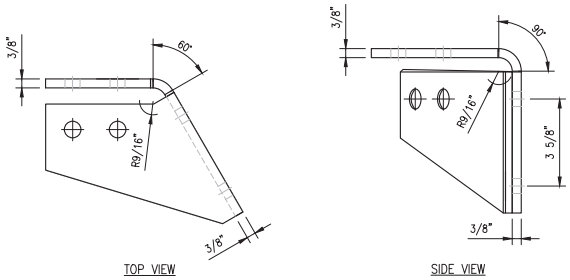
MOUNT PHOTOS

SHEET NUMBER

SS-2



CBP–L



CBP–R

NOTES:
1. HOT–DIPPED GALVANIZED PER ASTM A123.

VZWSMART–PLK3 (SUPPORT RAIL CORNER BRACKET)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	CBP–L	CORNER BENT PLATE BRACKET	PLK3–F1	9
2	1	CBP–R	CORNER BENT PLATE BRACKET	PLK3–F1	9
3	4	MS02–625–300–500	RU–BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC–1	5
4	8	---	BOLT 5/8" X 2" A325	---	3
5	16	FW–625	5/8" HDG USS FLAT WASHER	---	1
6	16	LW–625	5/8" HDG LOCK WASHER	---	0
7	16	NUT–625	5/8" HDG HEX NUT	---	2
				GALVANIZED WT	30

VzW SMART Tool© Vendor

verizon

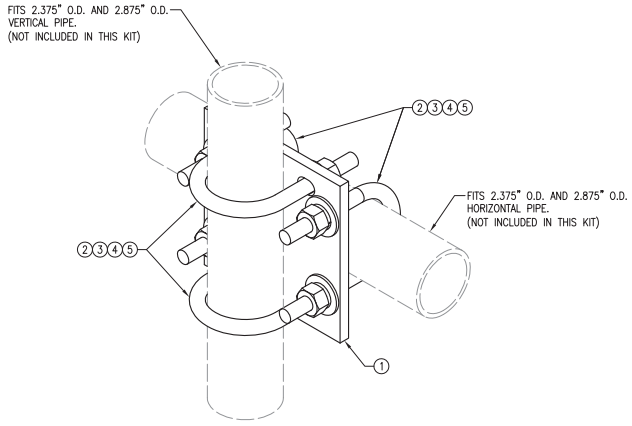
FOR REFERENCE ONLY

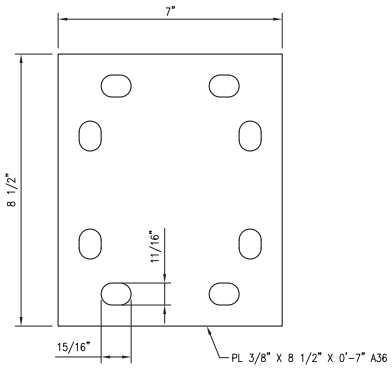
DRAWN BY: H.R | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART–PLK3
SUPPORT RAIL CORNER BRACKET

SHEET NUMBER: VZWSMART–PLK3 | REV #: 0





PL375-857

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-MSK1 (CROSSOVER PLATE)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-857	PL 3/8" X 8 1/2" X 0'-7" A36	MSK1-F1	6
2	4	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	5
3	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	8	LW-625	5/8" HDG LOCK WASHER	---	0
5	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	14

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

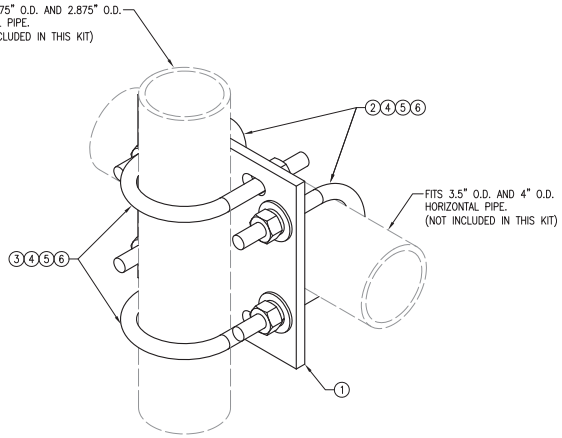
DRAWN BY: H.R | CHECKED BY: HMA

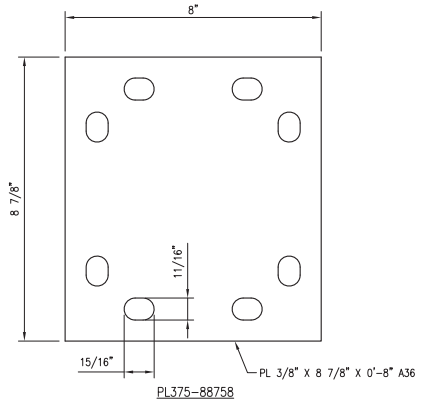
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:

VZWSMART-MSK1
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK1 | REV #: 0





PL375-88758

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-MSK2 (CROSSOVER PLATE)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-88758	PL 3/8" X 8 3/4" X 0'-8" A36	MSK2-F1	8
2	2	MS02-625-4125-600	RU-BOLT 5/8" X 4 1/8" I.W. X 6" I.L. A36 (OR EQUIV.)	RBC-1	3
3	2	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	3
4	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
5	8	LW-625	5/8" HDG LOCK WASHER	---	0
6	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	15

VzW SMART Tool© Vendor

verizon

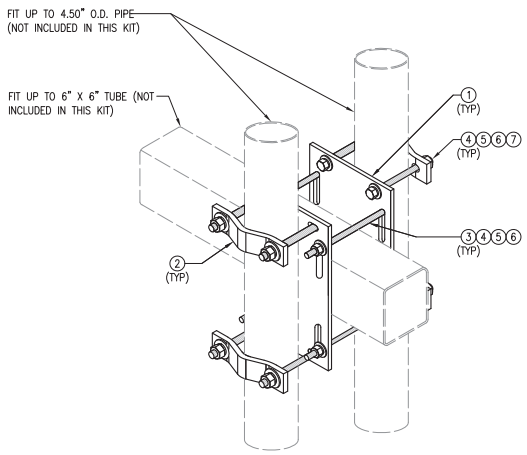
FOR REFERENCE ONLY

DRAWN BY: H.R | CHECKED BY: HMA

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART-MSK2
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK2 | REV #: 0



ISOMETRIC VIEW
BACK TO BACK CROSSOVER

VZWSMART–MSK6 (VZWSMART–MSK6 – BACK TO BACK CROSSOVER)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	2	PL375–8512	PL 3/8" X 8 1/2" X 1'–0" A36	MSK6–F2	20.7
2	4	VCP	PL 1/2" X 2" X 8 5/8" A36 BENT PLATE	MSK6–F1	9.6
3	4	---	THREADED ROD 5/8" DIA. X 10" F1554–36 HDG	---	---
4	16	NUT–625	5/8" HDG HEX NUT	---	2
5	16	FW–625	5/8" HDG USS FLAT WASHER	---	1
6	16	LW–625	5/8" HDG LOCK WASHER	---	0
7	8	---	BOLT 5/8" X 6" SAE GRADE 5 ALL THREAD	---	1
				GALVANIZED WT	34

NOTES:
1. HOT–DIPPED GALVANIZED PER ASTM A123.

VzW SMART Tool© Vendor

verizon

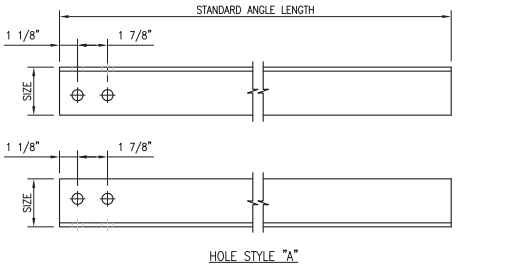
FOR REFERENCE ONLY

DRAWN BY: SK | CHECKED BY: BT/KW

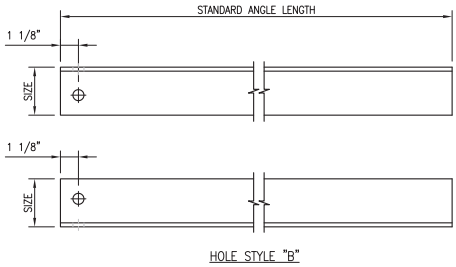
REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	SK	05/08/20

SHEET TITLE:
VZWSMART–MSK6
BACK TO BACK
CROSSOVER

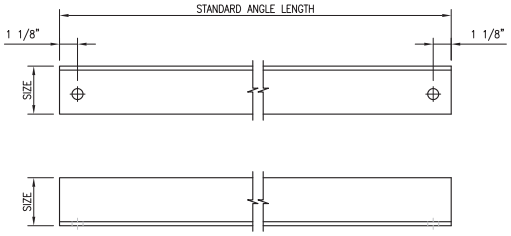
SHEET NUMBER: VZWSMART–MSK6 | REV #: 0



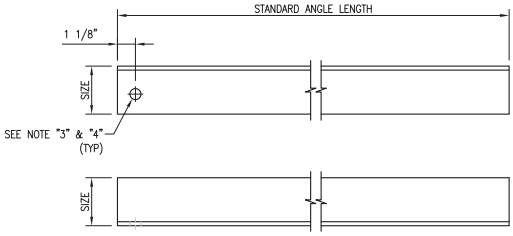
HOLE STYLE "A"



HOLE STYLE "B"



HOLE STYLE "C"



HOLE STYLE "D"

VZWSMART Standard Angle					
VZWSMART Number	Size	Length	Hole Style	Hole Gage	Also Used In:
A-PLK2-01	L 3" X 3" X 1/4"	96"	A	1-3/4"	VZWSMART-PLK2
A-PLK5-01	L 3"X 3" X 3/16"	96"	B	1-3/4"	VZWSMART-PLK5
A-SFK3-01	L 2-1/2" X 2-1/2" X 1/4"	96"	C	1-3/4"	VZWSMART-SFK3,-SFK3-SL, -PLK6, & -PLK8
A-L25X25X4X120	L 2-1/2" X 2-1/2" X 1/4"	120"	D	1-5/16"	
A-L25X25X4X240	L 2-1/2" X 2-1/2" X 1/4"	240"	D	1-5/16"	
A-L30X30X4X120	L 3" X 3" X 1/4"	120"	D	1-1/2"	
A-L30X30X4X240	L 3" X 3" X 1/4"	240"	D	1-1/2"	
A-L40X40X4X120	L 4" X 4" X 1/4"	120"	D	2"	
A-L40X40X4X240	L 4" X 4" X 1/4"	240"	D	2"	
A-L50X30X6X120	L 5" X 3" X 3/8"	120"	D	2-1/2"	
A-L50X50X6X120	L 5" X 5" X 3/8"	120"	D	2-1/2"	

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION ANGLES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL ANGLE GRADE A36 OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

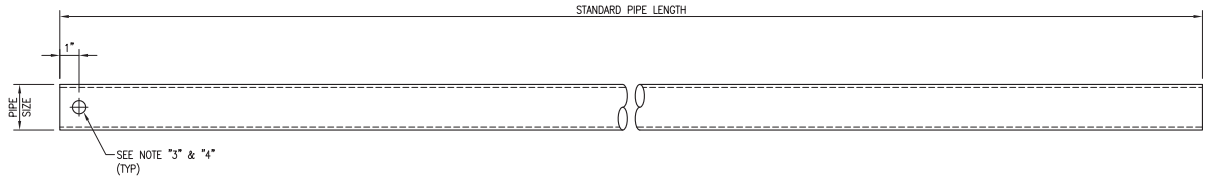
DRAWN BY: BT	CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD ANGLE

SHEET NUMBER: VZWSMART-ANGLE

REV #: 0



VZWSMART Standard Pipe		
VZWSMART Number	Size	Length
P40-238X048	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	48"
P40-238X072	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	72"
P40-238X096	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	96"
P40-238X120	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	120"
P40-238X126	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	126"
P40-238X150	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	150"
P40-238X174	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	174"
P40-278X048	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	48"
P40-278X072	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	72"
P40-278X096	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	96"
P40-278X120	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	120"
P40-278X126	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	126"
P40-278X150	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	150"
P40-278X174	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	174"
P40-312X048	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	48"
P40-312X072	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	72"
P40-312X126	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	126"
P40-312X150	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	150"
P40-312X174	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	174"

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION PIPES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL PIPE GRADE A53-B OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VzW SMART Tool© Vendor

verizon

FOR REFERENCE ONLY

DRAWN BY: BT	CHECKED BY: HMA/KW

REV.	DESCRIPTION	BY	DATE
1	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE

REV #: 0

THIS CHECK PRINTED ON DOCUCHECK GHOST PAPER AND HAS A GRAPHIC WATERMARK ON REVERSE SIDE

CROWN CASTLE USA INC.
2000 CORPORATE DRIVE
CANONSBURG PA 15317
724-416-2000

JPMorgan Chase Bank, N.A.
DALLAS TX
32-61/1110

2958116

SIX HUNDRED TWENTY FIVE AND 00/100** DATE 04/26/24 $*******625.00

Pay To The Order Of
Connecticut Siting Council
Ten Franklin Square
New Britain CT 06051

2695915

VP and Controller

VOID AFTER 180 DAYS

⑈2958116⑈ ⑆111000614⑆ 103410453⑈

Check No 2958116
Check Date 04/26/24

Stub 1 of 1

CKRQ 828540 662918 ZN APP	04/25/24	Invoice Summ	625.00	625.00
			625.00	625.00

Torrington