John Coleman, Project Manager
c/o Cellco Partnership d/b/a Verizon Wireless
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379
Mobile: (240) 615 -7389
JColeman@clinellc.com

October 20, 2021

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

RE: Notice of Exempt Modification // Site: BARKHAMSTED CT (ATC: 411181)
50 RUST ROAD, BARKHAMSTED, CT 06063
N 41.89380 // W -72.99647

Dear Ms. Bachman,

Cellco Partnership d/b/a Verizon Wireless currently maintains twelve (12) antenna at the 134-ft level on the existing 152ft Monopole tower, located at 50 Rust Road, Barkhamsted, CT. The tower is owned by American Tower. The property is owned by Regional Refuse Disposal Dist. Office. The Council approved Verizon Wireless use of the existing tower in 2012. Verizon Wireless now intends to remove three (3) antenna, six (6) RRH's and install three (3) new antenna for the LTE (3700 MHz) replacements for its 5G upgrade. Additionally, Verizon Wireless intends to install six (6) new Remote Radio Heads (RRHs); altogether updating leased equipment rights, as reflected by the final configuration outlined in the structural analysis and proposed hereby).

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 Donald Stein, First Selectman, its Building Official, James Koplar, American Tower, the tower owner, and the property owner, Regional Refuse Disposal Dist. Office.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2). Enclosed to accommodate this filing are construction drawings dated October 21, 2021, by Dewberry Engineers Inc, a structural analysis dated August 26, 2021, by American Tower Corporation, and a structural mount analysis by Maser Consulting Connecticut date July 2, 2021, and radio frequency (RF) analysis table showing worst-case RF emission calculation by Verizon Wireless RF Design Engineering.

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

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

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

4. The operation of the new antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications 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, as shown in the attached structural analysis by American Tower Corp., dated August 26, 2021, and a structural mount analysis by Maser Consulting Connecticut, dated July 2, 2021, pursuant to certain conditions defined therein. Design and engineering are fully illustrated within final construction drawings, signed and stamped dated October 21, 2021.

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

Sincerely,

John Coleman

_____

John Coleman, Project Manager
c/o Cellco Partnership d/b/a Verizon Wireless
Centerline Communications, LLC
750 West Center Street, Floor 3
West Bridgewater, MA 02379
Mobile: (240) 615 -7389
JColeman@clinellc.com

Attachments
cc: Donald Stein – First Selectman – Chief Elected Official
James Koplar, Building Official - as P&Z official
American Tower Corporation - as tower owner
Regional Refuse Disposal Dist. Office – as ground owner

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

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NORTH EASTON ,MA 02356

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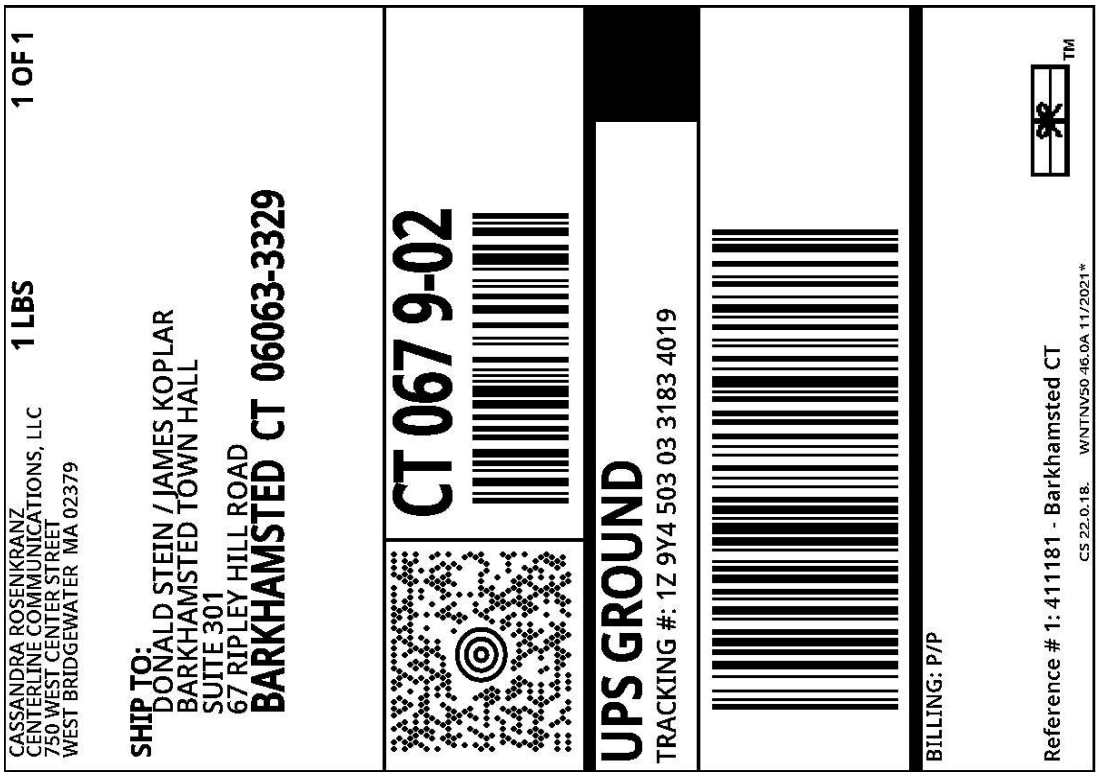
450 E CENTER ST
WEST BRIDGEWATER ,MA 02379

FOLD HERE



Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number
1Z9Y45030331834019

Weight
1.00 LBS

Service

UPS Ground

Shipped / Billed On
11/08/2021

Delivered On

11/18/2021 1:18 P.M.

Delivered To
BARKHAMSTED, CT, US

Received By

DYNDIUK

Left At
Office

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 12/02/2021 10:23 A.M. EST

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1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

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3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
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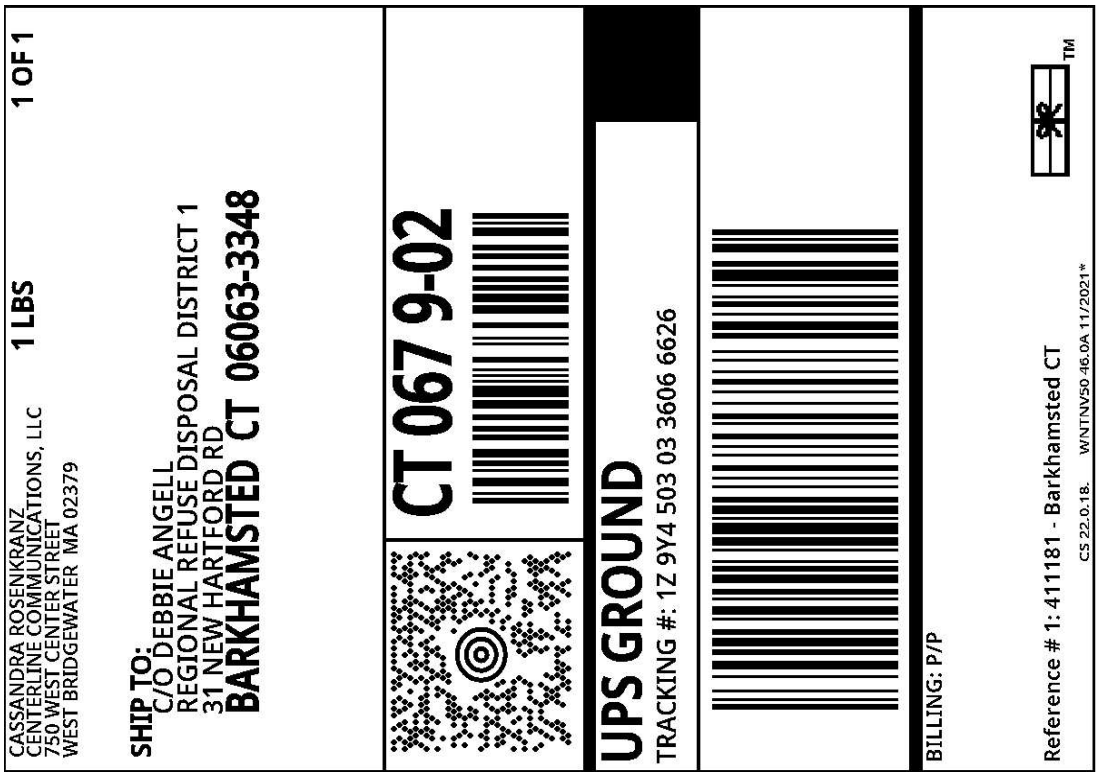


From: UPS
To: John Coleman
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030336066626
Date: Friday, November 19, 2021 2:21:15 PM

Hello, your package has been delivered.

Delivery Date: Friday, 11/19/2021
Delivery Time: 2:19 PM
Left At: OFFICE
Signed by: ANGELL

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030336066626
Ship To:	REGIONAL REFUSE DISPOSAL DISTRICT 1 31 NEW HARTFORD RD BARKHAMSTED, CT 060633348 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	411181 - BARKHAMSTED CT

Download the UPS mobile app

DOCKET NO. 182 - An application by Litchfield Acquisition Corporation d/b/a AT&T Wireless Services for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications tower and associated equipment located at 127 New Hartford Road, or approximately 440 feet southeast from the end of Rust Road, Barkhamsted, Connecticut.

Connecticut Siting Council

June 25, 1998

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed alternate two site (A-2) in Barkhamsted, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Litchfield Acquisition Corporation d/b/a AT&T Wireless Services (AT&T) for the construction, operation, and maintenance of a telecommunications tower, associated equipment, and buildings at the proposed alternate two site (A-2), approximately 840 feet south from the end of Rust Road, in the Town of Barkhamsted, Connecticut. We deny certification of the proposed prime site and alternate one site (A-1), without prejudice.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T, Springwich Cellular Limited Partnership (Springwich), Nextel Communications of the Mid-Atlantic, Inc. (Nextel), and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level (AGL).

2. The tower and antennas shall be camouflaged as a tree with such camouflaging subject to Council approval through Section 3 of this Decision and Order.

3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower, tower foundation, antennas, architecturally-treated equipment buildings, security fence, access road, and underground utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;

provisions for the prevention and containment of spills and/or other discharge into surface water and groundwater bodies; and specifications for camouflaging the tower and antennas as a tree.

4. The Certificate Holder shall maintain all portions of the access road in a condition accessible for emergency access. Any damage to private roads caused by vehicles accessing the site shall be promptly repaired to pre-existing conditions.

5. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

6. The Certificate Holder shall provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

7. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

8. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

9. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.

10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant and Litchfield County Times.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant

Litchfield Acquisition Corporation d/b/a AT&T Wireless Services

Its Representative

Douglas A. Cohen, Esq.
Brown, Rudnick, Freed & Gesmer, P.C.
185 Asylum Street, CityPlace I
Hartford, CT 06103-3402 (860) 509-6511

Mitchell HolmgrenSite Development Coordinator AT&T Wireless Services
15 East Midland Avenue
Paramus, NJ 07652 (201) 967-3130

Intervenor

Springwich Cellular Limited Partnership

Its Representative

Peter J. Tyrrell Senior Counsel
Springwich Cellular Limited Partnership
500 Enterprise Drive
Rocky Hill, CT 06067-3900 (860) 513-7673

Intervenor

Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications

Its Representative

Christopher B. Fisher
Cuddy, Feder & Worby
90 Maple Avenue
White Plains, NY 10601-5196 (914) 761-1300

ROBINSON & COLE LLP

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

December 28, 2012

Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-082-120829 – 393 Jackson Hill Road, Middlefield, Connecticut**
EM-VER-079-120807 – 175 South Main Street, Marlborough, Connecticut
EM-VER-005-120217B – 127 New Hartford Road, Barkhamsted, Connecticut
EM-VER-086-120216 – 41 Beckwith Road, Montville, Connecticut
EM-VER-036-120627 – 15 Pent Road, Deep River, Connecticut
EM-VER-041-120405 – 135 Honey Hill Road, East Haddam, Connecticut

Completion of Construction Activity

Dear Ms. Roberts:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced Cellco Partnership d/b/a Verizon Wireless telecommunications facilities has been completed.

If you have any questions or need any additional information regarding this facility please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Copy to:
Sandy M. Carter

12012136-v1

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

March 6, 2012

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **EM-VER-005-120217B** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at New Hartford Road (aka Rust Road), Barkhamsted, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated February 16, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Donald S. Stein, First Selectman, Town of Barkhamsted
Karl Nilsen, Zoning Enforcement Officer, Town of Barkhamsted

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

February 21, 2012

The Honorable Donald S. Stein
First Selectman
Town of Barkhamsted
Town Hall
67 Ripley Hill Road
P. O. Box 558
Pleasant Valley, CT 06063

RE: **EM-VER-005-120217B** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at New Hartford Road (aka Rust Road), Barkhamsted, Connecticut.

Dear First Selectman Stein:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by March 6, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Karl Nilsen, Zoning Enforcement Officer, Town of Barkhamsted

CSC
CONNECTICUT SITING COUNCIL

ROBINSON & COLE LLP

EM-VER-005-120217B

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

February 16, 2012

Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap**
New Hartford Road (aka Rust Road), Barkhamsted, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 133-foot level the existing 145-foot tower at the above-referenced address. The tower is owned by Cellco. The Council approved Cellco's use of the existing tower in 2004. Cellco now intends to modify its installation by replacing six (6) of its existing antennas with two (2) model BXA-171063-8BF PCS antennas; one (1) model BXA-171085-8BF PCS antenna; and three (3) model BXA-70063-6CF LTE antennas, all at the same 133-foot level on the tower. Cellco also intends to install six (6) coax cable diplexers on its antenna platform. Attached behind Tab 1 are the specifications for the proposed replacement antennas and cable diplexers.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Donald S. Stein, First Selectman of the Town of Barkhamsted. A copy of this letter is also being sent to Regional Refuse/Dist. One, the owner of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the overall height of the existing tower. Cellco's replacement antennas and diplexers will be located at the same 133-foot level on the 145-foot tower.

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

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower and foundation can support Cellco's proposed modifications. (See Tab 3).

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Donald S. Stein, Barkhamsted First Selectman
Regional Refuse/Dist. One
Sandy M. Carter

Amphenol ANTENNA SOLUTIONS

BXA-171063-8BF-EDIN-X

Replace "X" with desired electrical downtilt

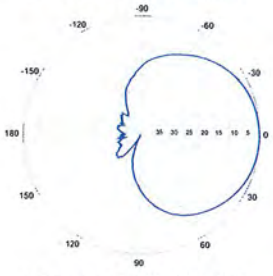
X-Pol | FET Panel | 63° | 17.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	7°	7°	7°
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi
Electrical downtilt (X)	0, 2, 4, 8		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

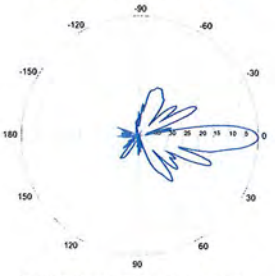
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-8BF-EDIN-X-FP		

BXA-171063-8BF-EDIN-X



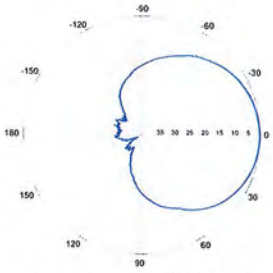
Horizontal | 1710-1880 MHz

BXA-171063-8BF-EDIN-0



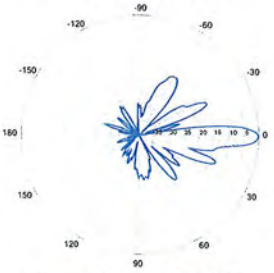
0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-X



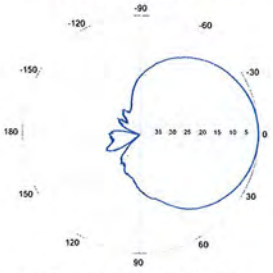
Horizontal | 1850-1990 MHz

BXA-171063-8BF-EDIN-0



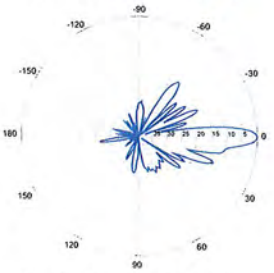
0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



Horizontal | 1920-2170 MHz

BXA-171063-8BF-EDIN-0

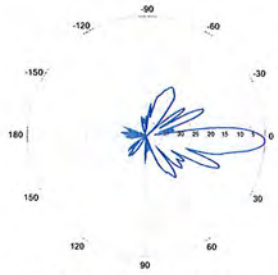


0° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-X

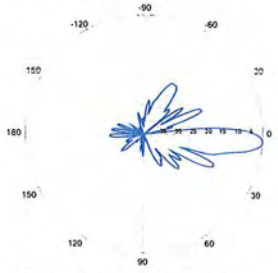
X-Pol | FET Panel | 63° | 17.4 dBi

BXA-171063-8BF-EDIN-2



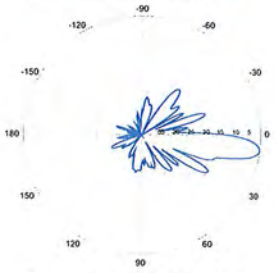
2° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-4



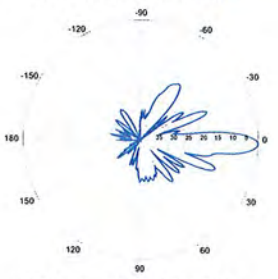
4° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-8



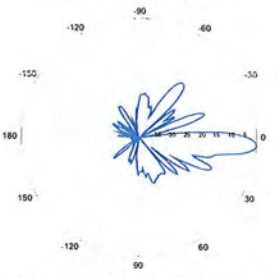
8° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-2



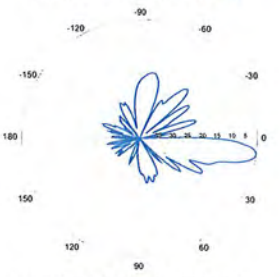
2° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-4



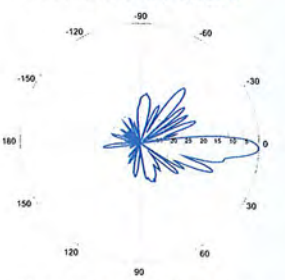
4° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-8



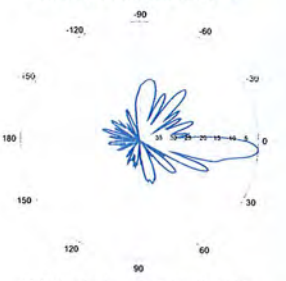
8° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-2



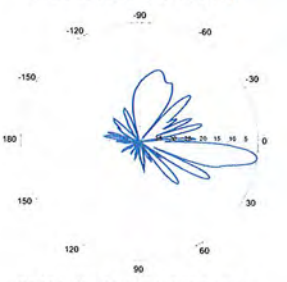
2° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-8



8° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-171085-8BF-EDIN-X

Replace 'X' with desired electrical downtilt.

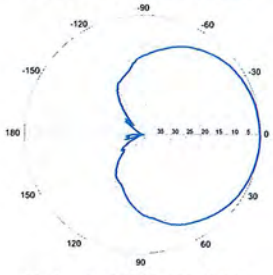
X-Pol | FET Panel | 85° | 16.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

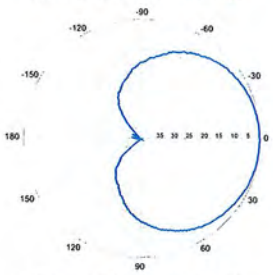
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-8BF-EDIN-X-FP		

BXA-171085-8BF-EDIN-X



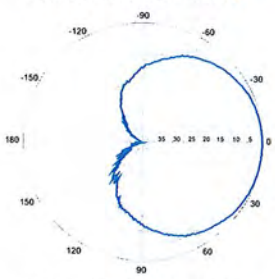
Horizontal | 1710-1880 MHz

BXA-171085-8BF-EDIN-X



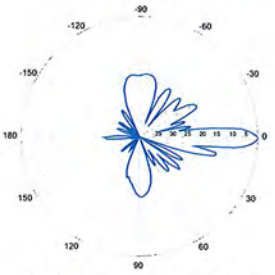
Horizontal | 1850-1990 MHz

BXA-171085-8BF-EDIN-X



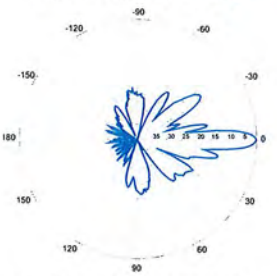
Horizontal | 1920-2170 MHz

BXA-171085-8BF-EDIN-0



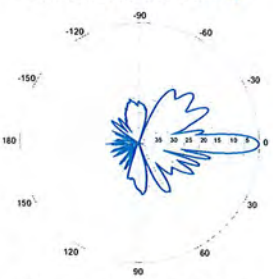
0° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-0

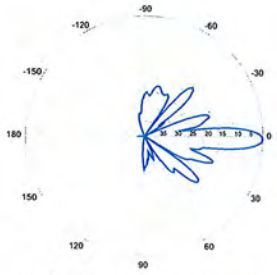


0° | Vertical | 1920-2170 MHz

BXA-171085-8BF-EDIN-X

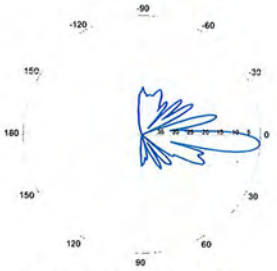
X-Pol | FET Panel | 85° | 16.4 dBi

BXA-171085-8BF-EDIN-2



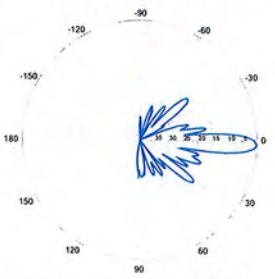
2° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-4



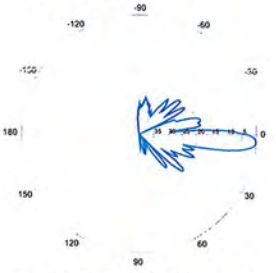
4° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-2



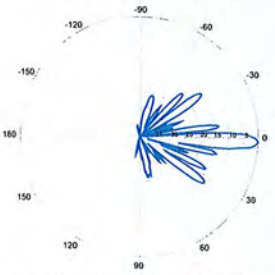
2° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-4



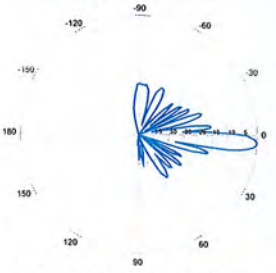
4° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171085-8BF-EDIN-4



4° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

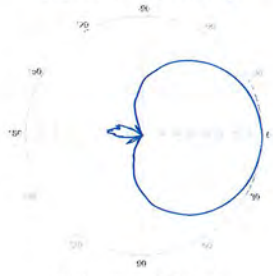
Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in
Depth with z-brackets	172 mm	6.8 in
Weight without mounting brackets	7.9 kg	17 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.51 m² Side: 0.24 m²	Front: 5.5 ft² Side: 2.6 ft²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

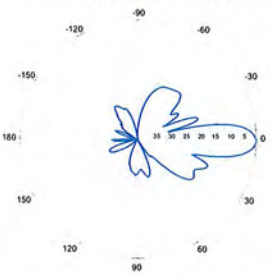
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



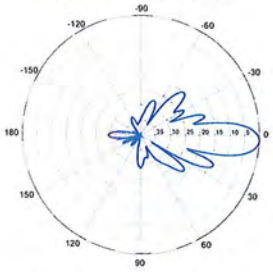
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

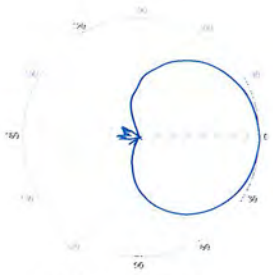


0° | Vertical | 750 MHz

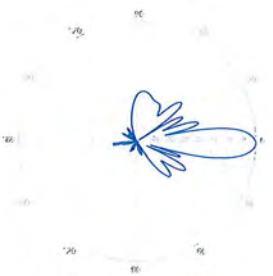
BXA-70063-6CF-EDIN-2



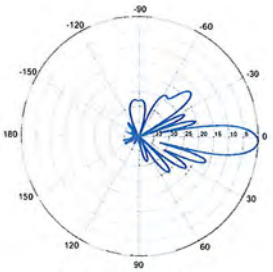
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



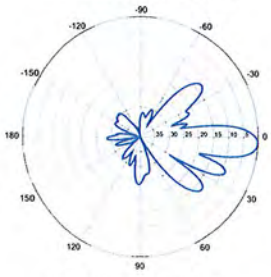
2° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-70063-6CF-EDIN-X

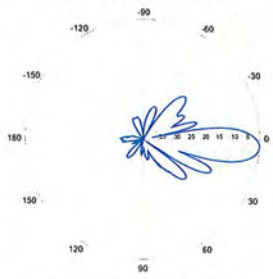
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



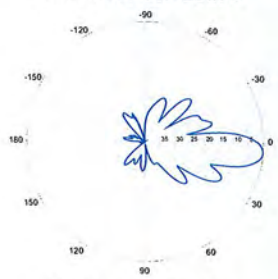
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

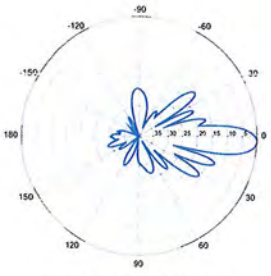


4° | Vertical | 750 MHz

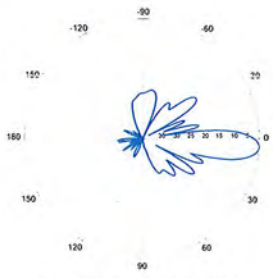
BXA-70063-6CF-EDIN-5



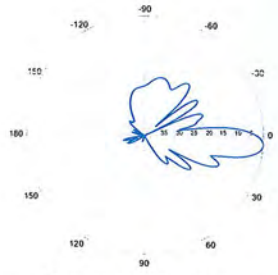
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

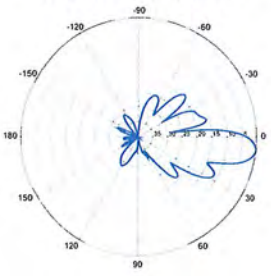


4° | Vertical | 850 MHz



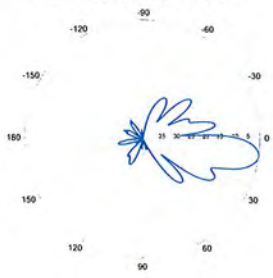
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



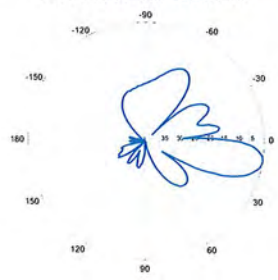
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

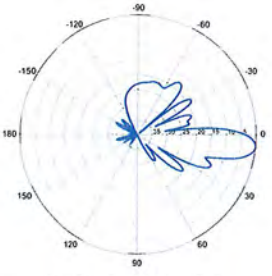


8° | Vertical | 750 MHz

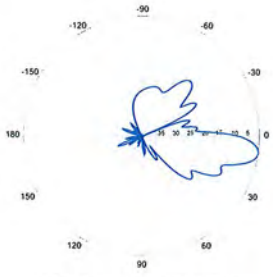
BXA-70063-6CF-EDIN-10



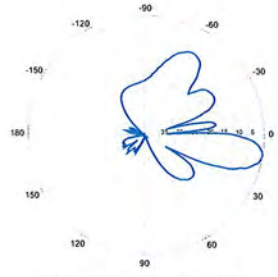
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

Product Data Sheet **FD9R6004/2C-3L**

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.

Features/Benefits

- **LTE ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **Very compact & small size design – Easy installation and reduced tower load**
- **In-line long-neck connectors for easy connection & waterproofing**
- **Exceptional reliability & environmental protection (IP 67)**
- **Equipped with 1 * Breathable Vent – Prevent any humidity inside the product**
- **Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)**
- **Grounding already provided through the mounting bracket**
- **Kit available for easy dual mount**

Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Frequency Range 1, MHz	698-960
Frequency Range 2, MHz	1710-2200
Application	LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Return Loss All Ports Min/Typ, dB	19/23
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss, Path 1, dB	0.07 typ.
Insertion Loss, Path 2, dB	0.13 typ.
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 60/70@1710-2200MHz
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

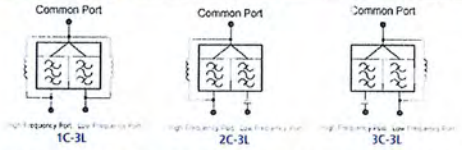
Notes

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Other Documentation

FD9R6004/2C-3L Installation Instructions: Wideband_Diplexer_Installation_Rev5.pdf

Selection Guide Diplexer 698-960 / 1710-2200MHz					
	Model Number	Full DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single	FD9R6004/1C-3L				X
	FD9R6004/2C-3L				X
	FD9R6004/3C-3L				X
Dual	KIT-FD9R6004/1C-DL				X
	KIT-FD9R6004/2C-DL				X
	KIT-FD9R6004/3C-DL				X



The FD9R6004 Series is upgradeable to a Dual Diplexer kit by means of 2 diplexers and mounting hardware kits SEM2-1A and SEM2-3

Mounting Hardware and Ground Cable Ordering Information		
Model Number	Description	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FD9R6004/xC-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 2m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	

	General	Power	Density					
Site Name: Barkhamsted S								
Tower Height: Verizon @ 133ft								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*Cingular UMTS	1	500	114	0.0138	880	0.5867	2.36%	
*Cingular GSM	4	296	114	0.0328	880	0.5867	5.58%	
*Cingular GSM	2	427	114	0.0236	1900	1.0000	2.36%	
*Pocket	3	631	93	0.0787	2130	1.0000	7.87%	
*T-Mobile	8	168	101.5	0.0469	1945	1.0000	4.69%	
*Sprint	11	338.55	142	0.0664	1962.5	1.0000	6.64%	
*Nextel	9	100	127	0.0201	851	0.5673	3.54%	
Verizon PCS	**11**	**254**	**133**	**0.0568**	**1970**	**1.0000**	**5.68%**	
Verizon Cellular	**9**	**260**	**133**	**0.0476**	**869**	**0.5793**	**8.21%**	
Verizon AWS	**1**	**670**	**133**	**0.0136**	**2145**	**1.0000**	**1.36%**	
Verizon 700	**1**	**849**	**133**	**0.0173**	**698**	**0.4653**	**3.71%**	
								52.00%
* Source: Siting Council								

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

145-ft Existing Summit Monopine

Proposed Verizon Wireless
Antenna Upgrade

Verizon Site Ref: Barkhamsted South

Rust Road
Barkhamsted, CT

Centek Project No. 12001.CO3

Date: December 27, 2011

Prepared for:

Verizon Wireless
99 East River Road, 9th Floor
East Hartford, CT 06108

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by Verizon Wireless on the existing monopine (tower) located in Barkhamsted, CT.

The host tower is a 145-ft tall, four-section, eighteen sided, tapered monopole, originally manufactured by Summit Manufacturing and designed by Paul J. Ford and Company job no; 29200-1316, dated September 7, 2000. The tower geometry, structure member sizes and foundation system information were obtained from a previous structural report prepared by Centek (Formally Natcomm) job no. 09009.CO11 dated May 14, 2009. Antenna and appurtenance information were obtained from the aforementioned Centek structural report, visual verification from grade by Centek personnel on December 14, 2011 and a Verizon RF data sheet.

The tower is made up of four (4) tapered vertical sections consisting of A607-65 pole sections. The vertical tower sections are slip joint connected. The diameter of the pole (flat-flat) is 25.41-in at the top and 66.05-in at the base.

Verizon proposes the removal of six (6) panel antennas and the installation of six (6) panel antennas and six (6) Diplexers mounted to the existing three (3) T-Arms. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- SPRINT (EXISTING):
  Antennas: Six (6) Andrew DB980F90E-M panel antennas mounted on three (3) existing T-Arms with a RAD center elevation of 144-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the inside of the existing tower.
- NEXTEL (EXISTING):
  Antennas: Twelve (12) Andrew DB844H90E-XY panel antennas mounted on three (3) existing T-Arms with a RAD center elevation of 124-ft above grade.
  Coax Cables: Twelve (12) 7/8" ∅ coax cables running on the inside of the existing tower.
- AT&T (EXISTING):
  Antennas: Six (6) Powerwave 7770 panel antennas, six (6) Powerwave LGP21401 TMA's and six (6) Powerwave LGP21901 Diplexers mounted on three (3) existing T-Arms with a RAD center elevation of 114-ft above grade.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables running on the inside of the existing tower.
- T-MOBILE (EXISTING):
  Antennas: Three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas and six (6) TMA's mounted on three (3) existing T-Arms with a RAD center elevation of 103-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on the inside of the existing tower.

- T-MOBILE (RESERVED):
  Antennas: Six (6) RFS APX16DWV-16DWVS-E-A20 panel antennas mounted on three (3) existing T-Arms with a RAD center elevation of 103-ft above grade.
- METROPCS (EXISTING):
  Antennas: Three (3) RFS APXV18-206517-C panel antennas flush mounted with a RAD center elevation of 93-ft above grade.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on the inside of the existing tower.
- VERIZON (EXISTING TO REMAIN):
  Antennas: Four (4) Antel LPA-80063-4CF and two (2) Antel LPA-80080-4CF panel antennas mounted on three (3) existing T-Arms with a RAD center elevation of 133-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on the inside of the existing tower.
- VERIZON (EXISTING TO REMOVE):
  Antennas: Four (4) Andrew DB948F65E-M and two (2) Andrew DB948G85E-M panel antennas mounted on three (3) existing T-Arms with a RAD center elevation of 133-ft above grade.
- **VERIZON (PROPOSED):**
  Antennas: Three (3) Antel BXA-70063-6CF panel antennas, two (2) Antel BXA-171063-8BF panel antennas, one (1) BXA-171085-8BF panel antenna and six (6) RFS FD9R6004/2C-3L Diplexers mounted on three (3) existing T-Arms with a RAD center elevation of 133-ft above grade.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All existing coax cables to be installed as indicated in this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for 80 mph basic wind speed (fastest mile) with no ice and 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice tower structure and its components.

Basic Wind Speed:	Litchfield; v = 80 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Barkhamsted; v = 90 mph (3 second gust) equivalent to v = 75 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA-222-F wind speed controls.	
Load Cases:	Load Case 1; 80 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design of monopole towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 69 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 69 mph wind speed velocity represents 75% of the wind pressure generated by the 80 mph wind speed. This load case typically controls the design of lattice towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type*

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software RISATower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

- Calculated stresses were found to be within allowable limits. In Load Case 1, per RISATower "Section Capacity Table", this tower was found to be at **74.9%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Pole Shaft (L4)	1.00'-43.00'	74.9%	**PASS**

Foundation and Anchors

The existing foundation consists of a 8-ft square x 5.5-ft long reinforced concrete pier on a 31.5-ft square x 4.0-ft thick reinforced concrete pad. The sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned structural report prepared by Centek job no. 09009.CO11 dated May 14, 2009. The base of the tower is connected to the foundation by means of (24) 2.25"∅, ASTM A615-75 anchor bolts embedded approximately 7-ft into the concrete foundation structure.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower base reactions developed from the governing Load Case 1 were used in the verification of the foundation and its anchors:

Location	Vector	Proposed Reactions
Base	Shear	53 kips
	Compression	54 kips
	Moment	5385 kip-ft

- The foundation was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS)[1]	Proposed Loading (FS)[1]	Result
Reinforced Concrete Pad and Pier	OTM[2]	2.0	2.08	**PASS**

Note 1: FS denotes Factor of Safety.
Note 2: OTM denotes Overturning Moment

- The anchor bolts and base plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Flange Bolts	Tension	59.0%	**PASS**
Flange Plate	Bending	22.5%	**PASS**
Anchor Bolts	Compression	75.7%	**PASS**
Base Plate	Bending	60.8%	**PASS**

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer

Prepared by:

Timothy J. Lynn, EIT
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

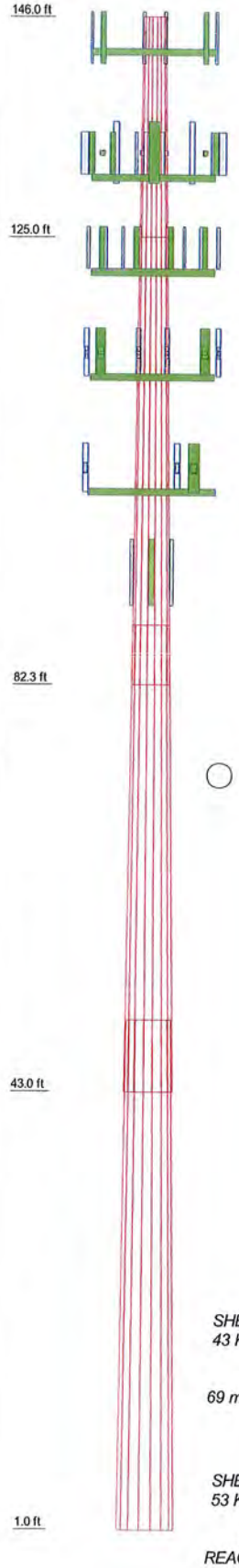
RISATower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, RISATower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

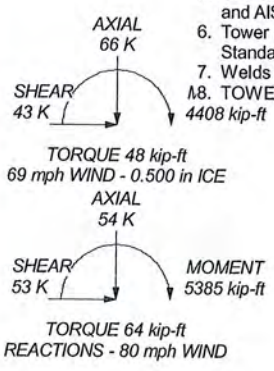
RISATower Features:

- RISATower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- RISATower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	1	2	3	4
Length (ft)	21.000	42.750	45.000	49.000
Number of Sides	18	18	18	18
Thickness (in)	0.250	0.375	0.438	0.500
Socket Length (ft)		5.750	7.000	
Top Dia (in)	25.410	32.508	42.251	52.154
Bot Dia (in)	32.508	44.632	55.014	66.050
Grade	A607-65			
Weight (K)	1.6	6.6	10.2	15.5

Total Weight: 34.0 K





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Barhamsted Branch 1	153.26	(2) 7770.00 (ATI - Existing)	114
(2) DB980F90E-M (Sprint - Existing)	144	(2) 7770.00 (ATI - Existing)	114
(2) DB980F90E-M (Sprint - Existing)	144	EEI 10' Universal T-Arm (ATI - Existing)	112
(2) DB980F90E-M (Sprint - Existing)	144	EEI 10' Universal T-Arm (ATI - Existing)	112
Valmont T-Arm (1) (Sprint - Existing)	143	EEI 10' Universal T-Arm (ATI - Existing)	112
Valmont T-Arm (1) (Sprint - Existing)	143	Barhamsted Branch 4	109.85
Valmont T-Arm (1) (Sprint - Existing)	143	ATMAA1412D-1A20 TMA (T-Mobile - Existing)	103
Barhamsted Branch 2	138.16	ATMAA1412D-1A20 TMA (T-Mobile - Existing)	103
BXA-70063/6CF (Verizon - Proposed)	133	ETW190VS12UB TMA (T-Mobile - Existing)	103
LPA-80063/4CF (Verizon - Existing)	133	ETW190VS12UB TMA (T-Mobile - Existing)	103
LPA-80063/4CF (Verizon - Existing)	133	ETW190VS12UB TMA (T-Mobile - Existing)	103
BXA-171063/8BF (Verizon - Proposed)	133	(2) APX16DWV-16DWVS-E-A20 (T-Mobile - Reserved)	103
BXA-70063/6CF (Verizon - Proposed)	133	(2) APX16DWV-16DWVS-E-A20 (T-Mobile - Reserved)	103
LPA-80063/4CF (Verizon - Existing)	133	(2) APX16DWV-16DWVS-E-A20 (T-Mobile - Reserved)	103
LPA-80080-4CF (Verizon - Existing)	133	APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	103
BXA-171085-8BF (Verizon - Proposed)	133	APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	103
BXA-70063/6CF (Verizon - Proposed)	133	APX16DWV-16DWVS-E-A20 (T-Mobile - Existing)	103
LPA-80080-4CF (Verizon - Existing)	133	ATMAA1412D-1A20 TMA (T-Mobile - Existing)	103
(2) FD9R6004/2C-3L Diplexer (Verizon - Proposed)	133	Valmont T-Arm (1) (T-Mobile - Existing)	101
(2) FD9R6004/2C-3L Diplexer (Verizon - Proposed)	133	Valmont T-Arm (1) (T-Mobile - Existing)	101
(2) FD9R6004/2C-3L Diplexer (Verizon - Proposed)	133	Valmont T-Arm (1) (T-Mobile - Existing)	101
LPA-80063/4CF (Verizon - Existing)	133	APXV18-206517-C (MetroPCS - Existing)	93
BXA-171063/8BF (Verizon - Proposed)	133	APXV18-206517-C (MetroPCS - Existing)	93
Valmont T-Arm (1) (Verizon - Existing)	131	Valmont Uni-Tri Bracket (MetroPCS - Existing)	93
Valmont T-Arm (1) (Verizon - Existing)	131	APXV18-206517-C (MetroPCS - Existing)	93
Valmont T-Arm (1) (Verizon - Existing)	131	Barhamsted Branch 5	91.6
(4) DB844H90E-XY (Nextel - Existing)	124	Barhamsted Branch 6	82.8
(4) DB844H90E-XY (Nextel - Existing)	124		
(4) DB844H90E-XY (Nextel - Existing)	124		
EEI 10' Universal T-Arm (Nextel - Existing)	122		
EEI 10' Universal T-Arm (Nextel - Existing)	122		
EEI 10' Universal T-Arm (Nextel - Existing)	122		
Barhamsted Branch 3	121.39		
(2) LGP21401 TMA (ATI - Existing)	114		
(2) LGP21401 TMA (ATI - Existing)	114		
(2) LGP21401 TMA (ATI - Existing)	114		
(2) LGP21901 Diplexer (ATI - Existing)	114		
(2) LGP21901 Diplexer (ATI - Existing)	114		
(2) LGP21901 Diplexer (ATI - Existing)	114		
(2) 7770.00 (ATI - Existing)	114		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 74.9%

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: *12001.CO3 - Barkhamsted South*			
Project: *145-ft Summit Monopine - Rust Rd., Barkhamsted, CT*			
Client: Verizon Wireless	Drawn by: TJL	App'd:	
Code: TIA/EIA-222-F	Date: 12/27/11	Scale: NTS	
Path: J:\Jobs\12000-12100\12001.CO3 - Barkhamsted South\Cad\SUR Files\145 Summit Monopine - Barkhamsted CT.sr		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 80 mph.
Nominal ice thickness of 0.500 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Calculate Redundant Bracing Forces
Use Moment Magnification	Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	Use Azimuth Dish Coefficients	Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	√ 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
Add IBC .6D+W Combination		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	146.000-125.000	21.000	0.000	18	25.410	32.508	0.250	1.000	A607-65 (65 ksi)
L2	125.000-82.250	42.750	5.750	18	32.508	44.632	0.375	1.500	A607-65 (65 ksi)
L3	82.250-43.000	45.000	7.000	18	42.251	55.014	0.438	1.750	A607-65 (65 ksi)

RISATower	Job: 12001.CO3 - Barkhamsted South	Page: 2 of 22
Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Project: 145-ft Summit Monopine - Rust Rd., Barkhamsted, CT	Date: 09:44:54 12/27/11
	Client: Verizon Wireless	Designed by: TJL

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L4	43.000-1.000	49.000		18	52.154	66.050	0.500	2.000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	25.802	19.964	1596.674	8.932	12.908	123.694	3195.449	9.984	4.032	16.129
	33.009	25.597	3365.090	11.452	16.514	203.771	6734.608	12.801	5.281	21.126
L2	33.009	38.246	4989.183	11.407	16.514	302.117	9984.932	19.127	5.061	13.497
	45.321	52.677	13035.316	15.711	22.673	574.925	26087.784	26.343	7.195	19.187
L3	44.559	58.064	12825.695	14.844	21.464	597.554	25668.266	29.037	6.666	15.237
	55.863	75.786	28519.340	19.375	27.947	1020.475	57076.207	37.900	8.912	20.371
L4	54.974	81.974	27632.387	18.337	26.494	1042.965	55301.134	40.995	8.299	16.598
	67.069	104.028	56471.908	23.270	33.553	1683.046	113018.124	52.024	10.745	21.49

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
L1 146.000-125.000				1	1	1		
L2 125.000-82.250				1	1	1		
L3 82.250-43.000				1	1	1		
L4 43.000-1.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1 5/8 (Sprint - Existing)	B	No	Inside Pole	145.000 - 4.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1 5/8 (Verizon - Existing)	B	No	Inside Pole	134.000 - 4.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
7/8 (Nextel - Existing)	B	No	Inside Pole	125.000 - 4.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1 1/4 (AT&T - Existing)	B	No	Inside Pole	115.000 - 4.000	I2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1 5/8 (T-Mobile - Existing)	B	No	Inside Pole	104.000 - 4.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
I 5/8 (MetroPCS - Existing)	B	No	Inside Pole	94.000 - 4.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001

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	146.000-125.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.237
		C	0.000	0.000	0.000	0.000	0.000
L2	125.000-82.250	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.681
		C	0.000	0.000	0.000	0.000	0.000
L3	82.250-43.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	2.035
		C	0.000	0.000	0.000	0.000	0.000
L4	43.000-1.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	2.022
		C	0.000	0.000	0.000	0.000	0.000

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	146.000-125.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.237
		C		0.000	0.000	0.000	0.000	0.000
L2	125.000-82.250	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	1.681
		C		0.000	0.000	0.000	0.000	0.000
L3	82.250-43.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	2.035
		C		0.000	0.000	0.000	0.000	0.000
L4	43.000-1.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	2.022
		C		0.000	0.000	0.000	0.000	0.000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) DB980F90E-M (Sprint - Existing)	A	From Face	3.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice	3.896 4.276	2.292 2.654	0.009 0.029
(2) DB980F90E-M (Sprint - Existing)	B	From Face	3.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice	3.896 4.276	2.292 2.654	0.009 0.029
(2) DB980F90E-M (Sprint - Existing)	C	From Face	3.000 0.000 0.000	0.000	144.000	No Ice 1/2" Ice	3.896 4.276	2.292 2.654	0.009 0.029
Valmont T-Arm (1) (Sprint - Existing)	A	From Face	2.000 0.000	0.000	143.000	No Ice 1/2" Ice	10.540 14.450	10.540 14.450	0.336 0.412

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
			0.000						
Valmont T-Arm (1)	B	From Face	2.000	0.000	143.000	No Ice	10.540	10.540	0.336
(Sprint - Existing)			0.000			1/2" Ice	14.450	14.450	0.412
			0.000						
Valmont T-Arm (1)	C	From Face	2.000	0.000	143.000	No Ice	10.540	10.540	0.336
(Sprint - Existing)			0.000			1/2" Ice	14.450	14.450	0.412
			0.000						
LPA-80063/4CF	A	From Face	3.000	0.000	133.000	No Ice	7.005	6.083	0.020
(Verizon - Existing)			6.000			1/2" Ice	7.415	6.480	0.073
			0.000						
BXA-171063/8BF	A	From Face	3.000	0.000	133.000	No Ice	2.941	2.156	0.011
(Verizon - Proposed)			4.000			1/2" Ice	3.255	2.458	0.029
			0.000						
BXA-70063/6CF	A	From Face	3.000	0.000	133.000	No Ice	7.731	4.158	0.017
(Verizon - Proposed)			0.000			1/2" Ice	8.268	4.595	0.059
			0.000						
LPA-80063/4CF	A	From Face	3.000	0.000	133.000	No Ice	7.005	6.083	0.020
(Verizon - Existing)			-6.000			1/2" Ice	7.415	6.480	0.073
			0.000						
LPA-80063/4CF	B	From Face	3.000	0.000	133.000	No Ice	7.005	6.083	0.020
(Verizon - Existing)			6.000			1/2" Ice	7.415	6.480	0.073
			0.000						
BXA-171063/8BF	B	From Face	3.000	0.000	133.000	No Ice	2.941	2.156	0.011
(Verizon - Proposed)			4.000			1/2" Ice	3.255	2.458	0.029
			0.000						
BXA-70063/6CF	B	From Face	3.000	0.000	133.000	No Ice	7.731	4.158	0.017
(Verizon - Proposed)			0.000			1/2" Ice	8.268	4.595	0.059
			0.000						
LPA-80063/4CF	B	From Face	3.000	0.000	133.000	No Ice	7.005	6.083	0.020
(Verizon - Existing)			-6.000			1/2" Ice	7.415	6.480	0.073
			0.000						
LPA-80080-4CF	C	From Face	3.000	0.000	133.000	No Ice	2.619	6.057	0.012
(Verizon - Existing)			6.000			1/2" Ice	2.922	6.453	0.045
			0.000						
BXA-171085-8BF	C	From Face	3.000	0.000	133.000	No Ice	2.941	2.156	0.011
(Verizon - Proposed)			4.000			1/2" Ice	3.255	2.458	0.029
			0.000						
BXA-70063/6CF	C	From Face	3.000	0.000	133.000	No Ice	7.731	4.158	0.017
(Verizon - Proposed)			0.000			1/2" Ice	8.268	4.595	0.059
			0.000						
LPA-80080-4CF	C	From Face	3.000	0.000	133.000	No Ice	2.619	6.057	0.012
(Verizon - Existing)			-6.000			1/2" Ice	2.922	6.453	0.045
			0.000						
(2) FD9R6004/2C-3L	A	From Face	3.000	0.000	133.000	No Ice	0.367	0.085	0.003
Diplexer			0.000			1/2" Ice	0.451	0.136	0.005
(Verizon - Proposed)			0.000						
(2) FD9R6004/2C-3L	B	From Face	3.000	0.000	133.000	No Ice	0.367	0.085	0.003
Diplexer			0.000			1/2" Ice	0.451	0.136	0.005
(Verizon - Proposed)			0.000						
(2) FD9R6004/2C-3L	C	From Face	3.000	0.000	133.000	No Ice	0.367	0.085	0.003
Diplexer			0.000			1/2" Ice	0.451	0.136	0.005
(Verizon - Proposed)			0.000						
Valmont T-Arm (1)	A	From Face	2.000	0.000	131.000	No Ice	10.540	10.540	0.336
(Verizon - Existing)			0.000			1/2" Ice	14.450	14.450	0.412
			0.000						
Valmont T-Arm (1)	B	From Face	2.000	0.000	131.000	No Ice	10.540	10.540	0.336
(Verizon - Existing)			0.000			1/2" Ice	14.450	14.450	0.412

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000						
Valmont T-Arm (1)	C	From Face	2.000	0.000	131.000	No Ice	10.540	10.540	0.336
(Verizon - Existing)			0.000			1/2" Ice	14.450	14.450	0.412
			0.000						
(4) DB844H90E-XY	A	From Face	3.000	0.000	124.000	No Ice	2.867	3.733	0.010
(Nextel - Existing)			0.000			1/2" Ice	3.177	4.101	0.035
			0.000						
(4) DB844H90E-XY	B	From Face	3.000	0.000	124.000	No Ice	2.867	3.733	0.010
(Nextel - Existing)			0.000			1/2" Ice	3.177	4.101	0.035
			0.000						
(4) DB844H90E-XY	C	From Face	3.000	0.000	124.000	No Ice	2.867	3.733	0.010
(Nextel - Existing)			0.000			1/2" Ice	3.177	4.101	0.035
			0.000						
EEI 10' Universal T-Arm	A	None		0.000	122.000	No Ice	13.340	13.340	0.450
(Nextel - Existing)						1/2" Ice	16.800	16.800	0.600
EEI 10' Universal T-Arm	B	None		0.000	122.000	No Ice	13.340	13.340	0.450
(Nextel - Existing)						1/2" Ice	16.800	16.800	0.600
EEI 10' Universal T-Arm	C	None		0.000	122.000	No Ice	13.340	13.340	0.450
(Nextel - Existing)						1/2" Ice	16.800	16.800	0.600
(2) 7770.00	A	From Face	3.000	0.000	114.000	No Ice	5.882	2.928	0.035
(AT&T - Existing)			0.000			1/2" Ice	6.314	3.273	0.068
			0.000						
(2) 7770.00	B	From Face	3.000	0.000	114.000	No Ice	5.882	2.928	0.035
(AT&T - Existing)			0.000			1/2" Ice	6.314	3.273	0.068
			0.000						
(2) 7770.00	C	From Face	3.000	0.000	114.000	No Ice	5.882	2.928	0.035
(AT&T - Existing)			0.000			1/2" Ice	6.314	3.273	0.068
			0.000						
(2) LGP21401 TMA	A	From Face	3.000	0.000	114.000	No Ice	0.953	0.367	0.018
(AT&T - Existing)			0.000			1/2" Ice	1.093	0.480	0.023
			0.000						
(2) LGP21401 TMA	B	From Face	3.000	0.000	114.000	No Ice	0.953	0.367	0.018
(AT&T - Existing)			0.000			1/2" Ice	1.093	0.480	0.023
			0.000						
(2) LGP21401 TMA	C	From Face	3.000	0.000	114.000	No Ice	0.953	0.367	0.018
(AT&T - Existing)			0.000			1/2" Ice	1.093	0.480	0.023
			0.000						
(2) LGP21901 Diplexer	A	From Face	3.000	0.000	114.000	No Ice	0.233	0.117	0.006
(AT&T - Existing)			0.000			1/2" Ice	0.302	0.166	0.008
			0.000						
(2) LGP21901 Diplexer	B	From Face	3.000	0.000	114.000	No Ice	0.233	0.117	0.006
(AT&T - Existing)			0.000			1/2" Ice	0.302	0.166	0.008
			0.000						
(2) LGP21901 Diplexer	C	From Face	3.000	0.000	114.000	No Ice	0.233	0.117	0.006
(AT&T - Existing)			0.000			1/2" Ice	0.302	0.166	0.008
			0.000						
EEI 10' Universal T-Arm	A	None		0.000	112.000	No Ice	13.340	13.340	0.450
(AT&T - Existing)						1/2" Ice	16.800	16.800	0.600
EEI 10' Universal T-Arm	B	None		0.000	112.000	No Ice	13.340	13.340	0.450
(AT&T - Existing)						1/2" Ice	16.800	16.800	0.600
EEI 10' Universal T-Arm	C	None		0.000	112.000	No Ice	13.340	13.340	0.450
(AT&T - Existing)						1/2" Ice	16.800	16.800	0.600
APX16DWV-16DWVS-E-A	A	From Face	3.500	0.000	103.000	No Ice	7.065	2.150	0.041
20			-4.000			1/2" Ice	7.516	2.490	0.074
(T-Mobile - Existing)			0.000						
APX16DWV-16DWVS-E-A	B	From Face	3.500	0.000	103.000	No Ice	7.065	2.150	0.041
20			-4.000			1/2" Ice	7.516	2.490	0.074

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(T-Mobile - Existing)			0.000						
APX16DWV-16DWVS-E-A 20	C	From Face	3.500 -4.000	0.000	103.000	No Ice 1/2" Ice	7.065 7.516	2.150 2.490	0.041 0.074
(T-Mobile - Existing)			0.000						
ATMAA1412D-1A20 TMA	A	From Face	3.500	0.000	103.000	No Ice	1.167	0.467	0.013
(T-Mobile - Existing)			-4.000 0.000			1/2" Ice	1.314	0.575	0.021
ATMAA1412D-1A20 TMA	B	From Face	3.500	0.000	103.000	No Ice	1.167	0.467	0.013
(T-Mobile - Existing)			-4.000 0.000			1/2" Ice	1.314	0.575	0.021
ATMAA1412D-1A20 TMA	C	From Face	3.500	0.000	103.000	No Ice	1.167	0.467	0.013
(T-Mobile - Existing)			-4.000 0.000			1/2" Ice	1.314	0.575	0.021
ETW190VS12UB TMA	A	From Face	3.500	0.000	103.000	No Ice	0.664	0.367	0.015
(T-Mobile - Existing)			-4.000 0.000			1/2" Ice	0.778	0.461	0.020
ETW190VS12UB TMA	B	From Face	3.500	0.000	103.000	No Ice	0.664	0.367	0.015
(T-Mobile - Existing)			-4.000 0.000			1/2" Ice	0.778	0.461	0.020
ETW190VS12UB TMA	C	From Face	3.500	0.000	103.000	No Ice	0.664	0.367	0.015
(T-Mobile - Existing)			-4.000 0.000			1/2" Ice	0.778	0.461	0.020
(2) APX16DWV-16DWVS-E-A 20	A	None		0.000	103.000	No Ice	7.065	2.150	0.041
(T-Mobile - Reserved)						1/2" Ice	7.516	2.490	0.074
(2) APX16DWV-16DWVS-E-A 20	B	None		0.000	103.000	No Ice	7.065	2.150	0.041
(T-Mobile - Reserved)						1/2" Ice	7.516	2.490	0.074
(2) APX16DWV-16DWVS-E-A 20	C	None		0.000	103.000	No Ice	7.065	2.150	0.041
(T-Mobile - Reserved)						1/2" Ice	7.516	2.490	0.074
Valmont T-Arm (1)	A	From Face	2.000	0.000	101.000	No Ice	10.540	10.540	0.336
(T-Mobile - Existing)			0.000 0.000			1/2" Ice	14.450	14.450	0.412
Valmont T-Arm (1)	B	From Face	2.000	0.000	101.000	No Ice	10.540	10.540	0.336
(T-Mobile - Existing)			0.000 0.000			1/2" Ice	14.450	14.450	0.412
Valmont T-Arm (1)	C	From Face	2.000	0.000	101.000	No Ice	10.540	10.540	0.336
(T-Mobile - Existing)			0.000 0.000			1/2" Ice	14.450	14.450	0.412
APXV18-206517-C	A	From Face	0.500	0.000	93.000	No Ice	5.513	3.929	0.022
(MetroPCS - Existing)			0.000 0.000			1/2" Ice	5.983	4.385	0.053
APXV18-206517-C	B	From Face	0.500	0.000	93.000	No Ice	5.513	3.929	0.022
(MetroPCS - Existing)			0.000 0.000			1/2" Ice	5.983	4.385	0.053
APXV18-206517-C	C	From Face	0.500	0.000	93.000	No Ice	5.513	3.929	0.022
(MetroPCS - Existing)			0.000 0.000			1/2" Ice	5.983	4.385	0.053
Valmont Uni-Tri Bracket	A	From Face	0.500	0.000	93.000	No Ice	1.750	1.750	0.290
(MetroPCS - Existing)			0.000 0.000			1/2" Ice	1.940	1.940	0.306
Barhamsted Branch 1	A	From Face	3.000	0.000	153.260	No Ice	48.510	48.510	0.320
			0.000			1/2" Ice	48.150	48.510	0.730

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000						
Barhamsted Branch 2	A	From Face	3.000	0.000	138.160	No Ice	120.490	120.490	2.290
			0.000			1/2" Ice	120.490	120.490	3.830
			0.000						
Barhamsted Branch 3	A	From Face	3.000	0.000	121.390	No Ice	13.860	13.860	0.090
			0.000			1/2" Ice	13.860	13.860	0.210
			0.000						
Barhamsted Branch 4	A	From Face	3.000	0.000	109.850	No Ice	134.660	134.660	2.560
			0.000			1/2" Ice	134.660	134.660	4.280
			0.000						
Barhamsted Branch 5	A	From Face	3.000	0.000	91.600	No Ice	28.620	28.620	0.900
			0.000			1/2" Ice	28.620	28.620	1.440
			0.000						
Barhamsted Branch 6	A	From Face	3.000	0.000	82.800	No Ice	22.070	22.070	0.770
			0.000			1/2" Ice	22.070	22.070	1.300
			0.000						

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	135.071	1.496	0.025	50.678	A	0.000	50.678	50.678	100.00	0.000	0.000
146.000-125.0					B	0.000	50.678		100.00	0.000	0.000
00					C	0.000	50.678		100.00	0.000	0.000
L2	102.819	1.384	0.023	137.406	A	0.000	137.406	137.406	100.00	0.000	0.000
125.000-82.25					B	0.000	137.406		100.00	0.000	0.000
0					C	0.000	137.406		100.00	0.000	0.000
L3	62.331	1.199	0.020	161.736	A	0.000	161.736	161.736	100.00	0.000	0.000
82.250-43.000					B	0.000	161.736		100.00	0.000	0.000
					C	0.000	161.736		100.00	0.000	0.000
L4	21.306	1	0.016	210.331	A	0.000	210.331	210.331	100.00	0.000	0.000
43.000-1.000					B	0.000	210.331		100.00	0.000	0.000
					C	0.000	210.331		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	135.071	1.496	0.018	0.500	52.428	A	0.000	52.428	52.428	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
146.000-125.000						B	0.000	52.428		100.00	0.000	0.000
						C	0.000	52.428		100.00	0.000	0.000
L2	102.819	1.384	0.017	0.500	140.968	A	0.000	140.968	140.968	100.00	0.000	0.000
125.000-82.250						B	0.000	140.968		100.00	0.000	0.000
						C	0.000	140.968		100.00	0.000	0.000
L3	62.331	1.199	0.015	0.500	165.007	A	0.000	165.007	165.007	100.00	0.000	0.000
82.250-43.000						B	0.000	165.007		100.00	0.000	0.000
						C	0.000	165.007		100.00	0.000	0.000
L4 43.000-1.000	21.306	1	0.012	0.500	213.831	A	0.000	213.831	213.831	100.00	0.000	0.000
						B	0.000	213.831		100.00	0.000	0.000
						C	0.000	213.831		100.00	0.000	0.000

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1	135.071	1.496	0.010	50.678	A	0.000	50.678	50.678	100.00	0.000	0.000
146.000-125.0					B	0.000	50.678		100.00	0.000	0.000
00					C	0.000	50.678		100.00	0.000	0.000
L2	102.819	1.384	0.009	137.406	A	0.000	137.406	137.406	100.00	0.000	0.000
125.000-82.25					B	0.000	137.406		100.00	0.000	0.000
0					C	0.000	137.406		100.00	0.000	0.000
L3	62.331	1.199	0.008	161.736	A	0.000	161.736	161.736	100.00	0.000	0.000
82.250-43.000					B	0.000	161.736		100.00	0.000	0.000
					C	0.000	161.736		100.00	0.000	0.000
L4	21.306	1	0.006	210.331	A	0.000	210.331	210.331	100.00	0.000	0.000
43.000-1.000					B	0.000	210.331		100.00	0.000	0.000
					C	0.000	210.331		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	2.519	0.120	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	6.305	0.147	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	6.415	0.163	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	6.989	0.166	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	1514.985	22.227		

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
									kip-ft			

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	2.519	0.120	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	6.305	0.147	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	6.415	0.163	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	6.989	0.166	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	1514.985 kip-ft	22.227		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	2.519	0.120	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	6.305	0.147	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	6.415	0.163	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	6.989	0.166	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	1514.985 kip-ft	22.227		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	2.519	0.120	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	6.305	0.147	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	6.415	0.163	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	6.989	0.166	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	1514.985 kip-ft	22.227		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	2.010	A	1	1.2	1	1	1	52.428	1.954	0.093	C
146.000-125.0			B	1	1.2	1	1	1	52.428			
00			C	1	1.2	1	1	1	52.428			
L2	1.681	7.644	A	1	1.2	1	1	1	140.968	4.851	0.113	C
125.000-82.25			B	1	1.2	1	1	1	140.968			
0			C	1	1.2	1	1	1	140.968			
L3	2.035	11.458	A	1	1.2	1	1	1	165.007	4.909	0.125	C
82.250-43.000			B	1	1.2	1	1	1	165.007			
			C	1	1.2	1	1	1	165.007			
L4	2.022	17.077	A	1	1.2	1	1	1	213.831	5.329	0.127	C
43.000-1.000			B	1	1.2	1	1	1	213.831			
			C	1	1.2	1	1	1	213.831			
Sum Weight:	5.975	38.189						OTM	1165.205 kip-ft	17.043		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	2.010	A	1	1.2	1	1	1	52.428	1.954	0.093	C
146.000-125.0			B	1	1.2	1	1	1	52.428			
00			C	1	1.2	1	1	1	52.428			
L2	1.681	7.644	A	1	1.2	1	1	1	140.968	4.851	0.113	C
125.000-82.25			B	1	1.2	1	1	1	140.968			
0			C	1	1.2	1	1	1	140.968			
L3	2.035	11.458	A	1	1.2	1	1	1	165.007	4.909	0.125	C
82.250-43.000			B	1	1.2	1	1	1	165.007			
			C	1	1.2	1	1	1	165.007			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L4	2.022	17.077	A	1	1.2	1	1	1	213.831	5.329	0.127	C
43.000-1.000			B	1	1.2	1	1	1	213.831			
			C	1	1.2	1	1	1	213.831			
Sum Weight:	5.975	38.189						OTM	1165.205 kip-ft	17.043		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	2.010	A	1	1.2	1	1	1	52.428	1.954	0.093	C
146.000-125.0			B	1	1.2	1	1	1	52.428			
00			C	1	1.2	1	1	1	52.428			
L2	1.681	7.644	A	1	1.2	1	1	1	140.968	4.851	0.113	C
125.000-82.25			B	1	1.2	1	1	1	140.968			
0			C	1	1.2	1	1	1	140.968			
L3	2.035	11.458	A	1	1.2	1	1	1	165.007	4.909	0.125	C
82.250-43.000			B	1	1.2	1	1	1	165.007			
			C	1	1.2	1	1	1	165.007			
L4	2.022	17.077	A	1	1.2	1	1	1	213.831	5.329	0.127	C
43.000-1.000			B	1	1.2	1	1	1	213.831			
			C	1	1.2	1	1	1	213.831			
Sum Weight:	5.975	38.189						OTM	1165.205 kip-ft	17.043		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	2.010	A	1	1.2	1	1	1	52.428	1.954	0.093	C
146.000-125.0			B	1	1.2	1	1	1	52.428			
00			C	1	1.2	1	1	1	52.428			
L2	1.681	7.644	A	1	1.2	1	1	1	140.968	4.851	0.113	C
125.000-82.25			B	1	1.2	1	1	1	140.968			
0			C	1	1.2	1	1	1	140.968			
L3	2.035	11.458	A	1	1.2	1	1	1	165.007	4.909	0.125	C
82.250-43.000			B	1	1.2	1	1	1	165.007			
			C	1	1.2	1	1	1	165.007			
L4	2.022	17.077	A	1	1.2	1	1	1	213.831	5.329	0.127	C
43.000-1.000			B	1	1.2	1	1	1	213.831			
			C	1	1.2	1	1	1	213.831			
Sum Weight:	5.975	38.189						OTM	1165.205 kip-ft	17.043		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	0.984	0.047	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	2.463	0.058	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	2.506	0.064	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	2.730	0.065	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	591.791 kip-ft	8.682		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	0.984	0.047	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	2.463	0.058	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	2.506	0.064	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	2.730	0.065	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	591.791 kip-ft	8.682		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	0.984	0.047	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	2.463	0.058	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	2.506	0.064	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	2.730	0.065	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	591.791 kip-ft	8.682		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	0.237	1.628	A	1	1.2	1	1	1	50.678	0.984	0.047	C
146.000-125.0			B	1	1.2	1	1	1	50.678			
00			C	1	1.2	1	1	1	50.678			
L2	1.681	6.613	A	1	1.2	1	1	1	137.406	2.463	0.058	C
125.000-82.25			B	1	1.2	1	1	1	137.406			
0			C	1	1.2	1	1	1	137.406			
L3	2.035	10.248	A	1	1.2	1	1	1	161.736	2.506	0.064	C
82.250-43.000			B	1	1.2	1	1	1	161.736			
			C	1	1.2	1	1	1	161.736			
L4	2.022	15.507	A	1	1.2	1	1	1	210.331	2.730	0.065	C
43.000-1.000			B	1	1.2	1	1	1	210.331			
			C	1	1.2	1	1	1	210.331			
Sum Weight:	5.975	33.996						OTM	591.791 kip-ft	8.682		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	33.996					
Bracing Weight	0.000					
Total Member Self-Weight	33.996			-15.821	27.285	
Total Weight	54.168			-15.821	27.285	
Wind 0 deg - No Ice		0.000	-52.906	-5235.748	27.285	-56.048
Wind 30 deg - No Ice		26.633	-45.818	-4536.410	-2606.409	-64.723
Wind 45 deg - No Ice		37.665	-37.411	-3706.867	-3697.322	-62.519
Wind 60 deg - No Ice		46.130	-26.453	-2625.784	-4534.408	-56.055
Wind 90 deg - No Ice		53.266	0.000	-15.821	-5240.104	-32.368
Wind 120 deg - No Ice		46.130	26.453	2594.142	-4534.408	-0.008
Wind 135 deg - No Ice		37.665	37.411	3675.224	-3697.322	16.744
Wind 150 deg - No Ice		26.633	45.818	4504.768	-2606.409	32.355
Wind 180 deg - No Ice		0.000	52.906	5204.105	27.285	56.048
Wind 210 deg - No Ice		-26.633	45.818	4504.768	2660.980	64.723
Wind 225 deg - No Ice		-37.665	37.411	3675.224	3751.892	62.519

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 240 deg - No Ice		-46.130	26.453	2594.142	4588.979	56.055
Wind 270 deg - No Ice		-53.266	0.000	-15.821	5294.675	32.368
Wind 300 deg - No Ice		-46.130	-26.453	-2625.784	4588.979	0.008
Wind 315 deg - No Ice		-37.665	-37.411	-3706.867	3751.892	-16.744
Wind 330 deg - No Ice		-26.633	-45.818	-4536.410	2660.980	-32.355
Member Ice	4.193					
Total Weight Ice	66.390			-26.778	45.977	
Wind 0 deg - Ice		0.005	-42.361	-4249.823	45.212	-42.046
Wind 30 deg - Ice		21.320	-36.688	-3684.424	-2083.997	-48.554
Wind 45 deg - Ice		30.149	-29.957	-3013.462	-2965.865	-46.901
Wind 60 deg - Ice		36.923	-21.185	-2138.962	-3642.482	-42.052
Wind 90 deg - Ice		42.632	-0.005	-27.542	-4212.647	-24.282
Wind 120 deg - Ice		36.918	21.176	2084.083	-3641.717	-0.006
Wind 135 deg - Ice		30.142	29.950	2958.825	-2964.784	12.561
Wind 150 deg - Ice		21.311	36.683	3630.104	-2082.673	24.272
Wind 180 deg - Ice		-0.005	42.361	4196.267	46.741	42.046
Wind 210 deg - Ice		-21.320	36.688	3630.868	2175.951	48.554
Wind 225 deg - Ice		-30.149	29.957	2959.906	3057.819	46.901
Wind 240 deg - Ice		-36.923	21.185	2085.406	3734.435	42.052
Wind 270 deg - Ice		-42.632	0.005	-26.014	4304.601	24.282
Wind 300 deg - Ice		-36.918	-21.176	-2137.638	3733.671	0.006
Wind 315 deg - Ice		-30.142	-29.950	-3012.381	3056.738	-12.561
Wind 330 deg - Ice		-21.311	-36.683	-3683.660	2174.627	-24.272
Total Weight	54.168			-15.821	27.285	
Wind 0 deg - Service		0.000	-20.667	-2054.855	27.285	-21.894
Wind 30 deg - Service		10.404	-17.898	-1781.676	-1001.502	-25.282
Wind 45 deg - Service		14.713	-14.613	-1457.636	-1427.639	-24.422
Wind 60 deg - Service		18.019	-10.333	-1035.338	-1754.626	-21.897
Wind 90 deg - Service		20.807	0.000	-15.821	-2030.289	-12.644
Wind 120 deg - Service		18.019	10.333	1003.696	-1754.626	-0.003
Wind 135 deg - Service		14.713	14.613	1425.994	-1427.639	6.541
Wind 150 deg - Service		10.404	17.898	1750.034	-1001.502	12.639
Wind 180 deg - Service		0.000	20.667	2023.213	27.285	21.894
Wind 210 deg - Service		-10.404	17.898	1750.034	1056.072	25.282
Wind 225 deg - Service		-14.713	14.613	1425.994	1482.210	24.422
Wind 240 deg - Service		-18.019	10.333	1003.696	1809.197	21.897
Wind 270 deg - Service		-20.807	0.000	-15.821	2084.859	12.644
Wind 300 deg - Service		-18.019	-10.333	-1035.338	1809.197	0.003
Wind 315 deg - Service		-14.713	-14.613	-1457.636	1482.210	-6.541
Wind 330 deg - Service		-10.404	-17.898	-1781.676	1056.072	-12.639

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice

Comb. No.	Description
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	146 - 125	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-10.134	16.591	9.814
			Max. Mx	14	-5.821	232.697	4.973
			Max. My	2	-5.858	8.505	225.858
			Max. Vy	14	-16.127	232.697	4.973
			Max. Vx	2	-15.762	8.505	225.858
			Max. Torque	3			29.133
L2	125 - 82.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-31.103	41.489	24.193
			Max. Mx	14	-20.672	1325.709	13.653
			Max. My	2	-20.712	23.534	1299.008
			Max. Vy	14	-39.071	1325.709	13.653
			Max. Vx	2	-38.698	23.534	1299.008
			Max. Torque	3			60.525

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	82.25 - 43	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-44.920	47.648	27.752
			Max. Mx	14	-33.434	2955.593	16.089
			Max. My	2	-33.455	27.749	2913.408
			Max. Vy	14	-45.891	2955.593	16.089
			Max. Vx	2	-45.521	27.749	2913.408
			Max. Torque	3			64.436
L4	43 - 1	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-66.390	47.936	27.920
			Max. Mx	14	-54.140	5385.305	16.220
			Max. My	2	-54.140	27.976	5325.216
			Max. Vy	14	-53.295	5385.305	16.220
			Max. Vx	2	-52.935	27.976	5325.216
			Max. Torque	3			64.364

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	31	66.390	42.632	-0.005
	Max. H_x	14	54.168	53.266	0.000
	Max. H_z	2	54.168	0.000	52.906
	Max. M_x	2	5325.216	0.000	52.906
	Max. M_z	6	5329.247	-53.266	0.000
	Max. Torsion	3	64.333	-26.633	45.818
	Min. Vert	1	54.168	0.000	0.000
	Min. H_x	6	54.168	-53.266	0.000
	Min. H_z	10	54.168	0.000	-52.906
	Min. M_x	10	-5292.708	0.000	-52.906
	Min. M_z	14	-5385.305	53.266	0.000
	Min. Torsion	11	-64.323	26.633	-45.818

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	54.168	-0.000	-0.000	-16.283	28.081	-0.000
Dead+Wind 0 deg - No Ice	54.168	0.000	-52.906	-5325.216	27.968	-55.704
Dead+Wind 30 deg - No Ice	54.168	26.633	-45.818	-4613.901	-2650.693	-64.333
Dead+Wind 45 deg - No Ice	54.168	37.665	-37.411	-3770.187	-3760.207	-62.145
Dead+Wind 60 deg - No Ice	54.168	46.130	-26.453	-2670.659	-4611.552	-55.719
Dead+Wind 90 deg - No Ice	54.168	53.266	0.000	-16.218	-5329.247	-32.171
Dead+Wind 120 deg - No Ice	54.168	46.130	26.453	2638.204	-4611.520	-0.001
Dead+Wind 135 deg - No Ice	54.168	37.665	37.411	3737.714	-3760.170	16.652
Dead+Wind 150 deg - No Ice	54.168	26.633	45.818	4581.411	-2650.660	32.169
Dead+Wind 180 deg - No Ice	54.168	0.000	52.906	5292.708	27.971	55.713
Dead+Wind 210 deg - No Ice	54.168	-26.633	45.818	4581.466	2706.631	64.323
Dead+Wind 225 deg - No Ice	54.168	-37.665	37.411	3737.779	3816.170	62.128
Dead+Wind 240 deg - No Ice	54.168	-46.130	26.453	2638.261	4667.550	55.701
Dead+Wind 270 deg - No Ice	54.168	-53.266	0.000	-16.215	5385.305	32.162
Dead+Wind 300 deg - No Ice	54.168	-46.130	-26.453	-2670.710	4667.579	0.011

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+Wind 315 deg - No Ice	54.168	-37.665	-37.411	-3770.248	3816.204	-16.635
Dead+Wind 330 deg - No Ice	54.168	-26.633	-45.818	-4613.954	2706.659	-32.150
Dead+Ice+Temp	66.390	-0.000	-0.000	-27.920	47.936	-0.000
Dead+Wind 0 deg+Ice+Temp	66.390	0.005	-42.361	-4351.459	47.033	-41.809
Dead+Wind 30 deg+Ice+Temp	66.390	21.320	-36.688	-3772.574	-2132.914	-48.287
Dead+Wind 45 deg+Ice+Temp	66.390	30.149	-29.957	-3085.628	-3035.783	-46.646
Dead+Wind 60 deg+Ice+Temp	66.390	36.923	-21.185	-2190.307	-3728.504	-41.824
Dead+Wind 90 deg+Ice+Temp	66.390	42.632	-0.005	-28.644	-4312.225	-24.149
Dead+Wind 120 deg+Ice+Temp	66.390	36.918	21.176	2133.221	-3727.697	0.002
Dead+Wind 135 deg+Ice+Temp	66.390	30.142	29.950	3028.783	-3034.646	12.502
Dead+Wind 150 deg+Ice+Temp	66.390	21.311	36.683	3716.045	-2131.528	24.150
Dead+Wind 180 deg+Ice+Temp	66.390	-0.005	42.361	4295.708	48.613	41.821
Dead+Wind 210 deg+Ice+Temp	66.390	-21.320	36.688	3716.867	2228.560	48.281
Dead+Wind 225 deg+Ice+Temp	66.390	-30.149	29.957	3029.937	3131.443	46.632
Dead+Wind 240 deg+Ice+Temp	66.390	-36.923	21.185	2134.621	3824.183	41.806
Dead+Wind 270 deg+Ice+Temp	66.390	-42.632	0.005	-27.063	4407.940	24.136
Dead+Wind 300 deg+Ice+Temp	66.390	-36.918	-21.176	-2188.971	3823.412	0.004
Dead+Wind 315 deg+Ice+Temp	66.390	-30.142	-29.950	-3084.549	3130.347	-12.489
Dead+Wind 330 deg+Ice+Temp	66.390	-21.311	-36.683	-3771.818	2227.209	-24.132
Dead+Wind 0 deg - Service	54.168	0.000	-20.667	-2091.046	28.110	-21.834
Dead+Wind 30 deg - Service	54.168	10.404	-17.898	-1813.078	-1018.714	-25.215
Dead+Wind 45 deg - Service	54.168	14.713	-14.613	-1483.360	-1452.320	-24.357
Dead+Wind 60 deg - Service	54.168	18.019	-10.333	-1053.666	-1785.036	-21.838
Dead+Wind 90 deg - Service	54.168	20.807	-0.000	-16.300	-2065.525	-12.609
Dead+Wind 120 deg - Service	54.168	18.019	10.333	1021.064	-1785.030	-0.001
Dead+Wind 135 deg - Service	54.168	14.713	14.613	1450.755	-1452.314	6.525
Dead+Wind 150 deg - Service	54.168	10.404	17.898	1780.470	-1018.708	12.606
Dead+Wind 180 deg - Service	54.168	0.000	20.667	2058.436	28.111	21.836
Dead+Wind 210 deg - Service	54.168	-10.404	17.898	1780.479	1074.934	25.213
Dead+Wind 225 deg - Service	54.168	-14.713	14.613	1450.765	1508.544	24.354
Dead+Wind 240 deg - Service	54.168	-18.019	10.333	1021.073	1841.265	21.835
Dead+Wind 270 deg - Service	54.168	-20.807	-0.000	-16.299	2121.764	12.608
Dead+Wind 300 deg - Service	54.168	-18.019	-10.333	-1053.674	1841.269	0.003
Dead+Wind 315 deg - Service	54.168	-14.713	-14.613	-1483.369	1508.549	-6.522
Dead+Wind 330 deg - Service	54.168	-10.404	-17.898	-1813.085	1074.938	-12.604

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-54.168	0.000	0.000	54.168	0.000	0.000%
2	0.000	-54.168	-52.906	0.000	54.168	52.906	0.000%
3	26.633	-54.168	-45.818	-26.633	54.168	45.818	0.000%
4	37.665	-54.168	-37.411	-37.665	54.168	37.411	0.000%
5	46.130	-54.168	-26.453	-46.130	54.168	26.453	0.000%
6	53.266	-54.168	0.000	-53.266	54.168	0.000	0.000%
7	46.130	-54.168	26.453	-46.130	54.168	-26.453	0.000%
8	37.665	-54.168	37.411	-37.665	54.168	-37.411	0.000%
9	26.633	-54.168	45.818	-26.633	54.168	-45.818	0.000%
10	0.000	-54.168	52.906	0.000	54.168	-52.906	0.000%
11	-26.633	-54.168	45.818	26.633	54.168	-45.818	0.000%
12	-37.665	-54.168	37.411	37.665	54.168	-37.411	0.000%
13	-46.130	-54.168	26.453	46.130	54.168	-26.453	0.000%
14	-53.266	-54.168	0.000	53.266	54.168	0.000	0.000%
15	-46.130	-54.168	-26.453	46.130	54.168	26.453	0.000%
16	-37.665	-54.168	-37.411	37.665	54.168	37.411	0.000%
17	-26.633	-54.168	-45.818	26.633	54.168	45.818	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
18	0.000	-66.390	0.000	0.000	66.390	0.000	0.000%
19	0.005	-66.390	-42.361	-0.005	66.390	42.361	0.000%
20	21.320	-66.390	-36.688	-21.320	66.390	36.688	0.000%
21	30.149	-66.390	-29.957	-30.149	66.390	29.957	0.000%
22	36.923	-66.390	-21.185	-36.923	66.390	21.185	0.000%
23	42.632	-66.390	-0.005	-42.632	66.390	0.005	0.000%
24	36.918	-66.390	21.176	-36.918	66.390	-21.176	0.000%
25	30.142	-66.390	29.950	-30.142	66.390	-29.950	0.000%
26	21.311	-66.390	36.683	-21.311	66.390	-36.683	0.000%
27	-0.005	-66.390	42.361	0.005	66.390	-42.361	0.000%
28	-21.320	-66.390	36.688	21.320	66.390	-36.688	0.000%
29	-30.149	-66.390	29.957	30.149	66.390	-29.957	0.000%
30	-36.923	-66.390	21.185	36.923	66.390	-21.185	0.000%
31	-42.632	-66.390	0.005	42.632	66.390	-0.005	0.000%
32	-36.918	-66.390	-21.176	36.918	66.390	21.176	0.000%
33	-30.142	-66.390	-29.950	30.142	66.390	29.950	0.000%
34	-21.311	-66.390	-36.683	21.311	66.390	36.683	0.000%
35	0.000	-54.168	-20.667	0.000	54.168	20.667	0.000%
36	10.404	-54.168	-17.898	-10.404	54.168	17.898	0.000%
37	14.713	-54.168	-14.613	-14.713	54.168	14.613	0.000%
38	18.019	-54.168	-10.333	-18.019	54.168	10.333	0.000%
39	20.807	-54.168	0.000	-20.807	54.168	0.000	0.000%
40	18.019	-54.168	10.333	-18.019	54.168	-10.333	0.000%
41	14.713	-54.168	14.613	-14.713	54.168	-14.613	0.000%
42	10.404	-54.168	17.898	-10.404	54.168	-17.898	0.000%
43	0.000	-54.168	20.667	0.000	54.168	-20.667	0.000%
44	-10.404	-54.168	17.898	10.404	54.168	-17.898	0.000%
45	-14.713	-54.168	14.613	14.713	54.168	-14.613	0.000%
46	-18.019	-54.168	10.333	18.019	54.168	-10.333	0.000%
47	-20.807	-54.168	0.000	20.807	54.168	0.000	0.000%
48	-18.019	-54.168	-10.333	18.019	54.168	10.333	0.000%
49	-14.713	-54.168	-14.613	14.713	54.168	14.613	0.000%
50	-10.404	-54.168	-17.898	10.404	54.168	17.898	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00009936
3	Yes	5	0.00000001	0.00010661
4	Yes	5	0.00000001	0.00013353
5	Yes	5	0.00000001	0.00013870
6	Yes	5	0.00000001	0.00005719
7	Yes	5	0.00000001	0.00005065
8	Yes	5	0.00000001	0.00006521
9	Yes	5	0.00000001	0.00005649
10	Yes	5	0.00000001	0.00009897
11	Yes	5	0.00000001	0.00015412
12	Yes	5	0.00000001	0.00013305
13	Yes	5	0.00000001	0.00009110
14	Yes	5	0.00000001	0.00005757
15	Yes	5	0.00000001	0.00005407
16	Yes	5	0.00000001	0.00006777
17	Yes	5	0.00000001	0.00009978
18	Yes	4	0.00000001	0.00005511

19	Yes	5	0.00000001	0.00018315
20	Yes	5	0.00000001	0.00019734
21	Yes	5	0.00000001	0.00023871
22	Yes	5	0.00000001	0.00024363
23	Yes	5	0.00000001	0.00011009
24	Yes	5	0.00000001	0.00011441
25	Yes	5	0.00000001	0.00013915
26	Yes	5	0.00000001	0.00012399
27	Yes	5	0.00000001	0.00017983
28	Yes	5	0.00000001	0.00027118
29	Yes	5	0.00000001	0.00024112
30	Yes	5	0.00000001	0.00017663
31	Yes	5	0.00000001	0.00011356
32	Yes	5	0.00000001	0.00012902
33	Yes	5	0.00000001	0.00015408
34	Yes	5	0.00000001	0.00019122
35	Yes	5	0.00000001	0.00002595
36	Yes	5	0.00000001	0.00002701
37	Yes	5	0.00000001	0.00002894
38	Yes	5	0.00000001	0.00002836
39	Yes	4	0.00000001	0.00066529
40	Yes	4	0.00000001	0.00024589
41	Yes	4	0.00000001	0.00044221
42	Yes	4	0.00000001	0.00057781
43	Yes	5	0.00000001	0.00002521
44	Yes	5	0.00000001	0.00003259
45	Yes	5	0.00000001	0.00002930
46	Yes	5	0.00000001	0.00002341
47	Yes	4	0.00000001	0.00070083
48	Yes	4	0.00000001	0.00030481
49	Yes	4	0.00000001	0.00049587
50	Yes	4	0.00000001	0.00087217

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	146 - 125	24.154	48	1.428	0.084
L2	125 - 82.25	18.023	48	1.333	0.058
L3	88 - 43	8.891	48	0.976	0.028
L4	50 - 1	2.793	48	0.521	0.011

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
153.260	Barhamsted Branch 1	48	24.154	1.428	0.084	31366
144.000	(2) DB980F90E-M	48	23.559	1.420	0.081	31366
143.000	Valmont T-Arm (1)	48	23.262	1.417	0.080	31366
138.160	Barhamsted Branch 2	48	21.827	1.398	0.074	20004
133.000	LPA-80063/4CF	48	20.313	1.376	0.067	12063
131.000	Valmont T-Arm (1)	48	19.733	1.366	0.065	10455
124.000	(4) DB844H90E-XY	48	17.743	1.326	0.057	7499
122.000	EEI 10' Universal T-Arm	48	17.188	1.313	0.055	7237

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
121.390	Barhamsted Branch 3	48	17.020	1.309	0.054	7180
114.000	(2) 7770.00	48	15.037	1.250	0.047	6643
112.000	EEI 10' Universal T-Arm	48	14.516	1.232	0.046	6512
109.850	Barhamsted Branch 4	48	13.965	1.212	0.044	6378
103.000	APX16DWV-16DWVS-E-A20	48	12.269	1.144	0.038	5983
101.000	Valmont T-Arm (1)	48	11.791	1.123	0.037	5876
93.000	APXV18-206517-C	48	9.963	1.034	0.031	5487
91.600	Barhamsted Branch 5	48	9.657	1.018	0.030	5424
82.800	Barhamsted Branch 6	48	7.836	0.914	0.025	5029

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	146 - 125	60.590	14	3.545	0.214
L2	125 - 82.25	45.338	14	3.330	0.149
L3	88 - 43	22.456	14	2.456	0.072
L4	50 - 1	7.074	14	1.319	0.027

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
153.260	Barhamsted Branch 1	14	60.590	3.545	0.214	13382
144.000	(2) DB980F90E-M	14	59.111	3.529	0.207	13382
143.000	Valmont T-Arm (1)	14	58.372	3.521	0.204	13382
138.160	Barhamsted Branch 2	14	54.807	3.480	0.188	8534
133.000	LPA-80063/4CF	14	51.042	3.430	0.172	5146
131.000	Valmont T-Arm (1)	14	49.598	3.408	0.166	4460
124.000	(4) DB844H90E-XY	14	44.640	3.315	0.146	3189
122.000	EEI 10' Universal T-Arm	14	43.255	3.283	0.141	3068
121.390	Barhamsted Branch 3	14	42.836	3.273	0.139	3040
114.000	(2) 7770.00	14	37.879	3.131	0.121	2778
112.000	EEI 10' Universal T-Arm	14	36.577	3.088	0.116	2715
109.850	Barhamsted Branch 4	14	35.198	3.039	0.112	2650
103.000	APX16DWV-16DWVS-E-A20	14	30.945	2.872	0.098	2462
101.000	Valmont T-Arm (1)	14	29.746	2.820	0.094	2412
93.000	APXV18-206517-C	14	25.153	2.600	0.080	2230
91.600	Barhamsted Branch 5	14	24.384	2.561	0.077	2201
82.800	Barhamsted Branch 6	14	19.801	2.303	0.064	2026

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	146 - 125 (1)	TP32.508x25.41x0.25	21.000	0.000	0.0	39.000	25.597	-5.827	998.272	0.006
L2	125 - 82.25 (2)	TP44.632x32.508x0.375	42.750	0.000	0.0	39.000	50.736	-20.672	1978.700	0.010
L3	82.25 - 43 (3)	TP55.014x42.251x0.438	45.000	0.000	0.0	39.000	73.029	-33.434	2848.150	0.012
L4	43 - 1 (4)	TP66.05x52.154x0.5	49.000	0.000	0.0	39.000	104.028	-54.140	4057.090	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	146 - 125 (1)	TP32.508x25.41x0.25	233.465	13.749	39.000	0.353	0.000	0.000	39.000	0.000
L2	125 - 82.25 (2)	TP44.632x32.508x0.375	1325.775	29.839	39.000	0.765	0.000	0.000	39.000	0.000
L3	82.25 - 43 (3)	TP55.014x42.251x0.438	2955.633	37.441	39.000	0.960	0.000	0.000	39.000	0.000
L4	43 - 1 (4)	TP66.05x52.154x0.5	5385.333	38.397	39.000	0.985	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	146 - 125 (1)	TP32.508x25.41x0.25	16.038	0.627	26.000	0.048	0.010	0.000	26.000	0.000
L2	125 - 82.25 (2)	TP44.632x32.508x0.375	39.071	0.770	26.000	0.059	30.258	0.332	26.000	0.013
L3	82.25 - 43 (3)	TP55.014x42.251x0.438	45.891	0.628	26.000	0.048	32.182	0.199	26.000	0.008
L4	43 - 1 (4)	TP66.05x52.154x0.5	53.295	0.512	26.000	0.039	32.162	0.112	26.000	0.004

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	146 - 125 (1)	0.006	0.353	0.000	0.048	0.000	0.359 ✔	1.333	H1-3+VT ✔
L2	125 - 82.25 (2)	0.010	0.765	0.000	0.059	0.013	0.777 ✔	1.333	H1-3+VT ✔
L3	82.25 - 43 (3)	0.012	0.960	0.000	0.048	0.008	0.973 ✔	1.333	H1-3+VT ✔
L4	43 - 1 (4)	0.013	0.985	0.000	0.039	0.004	0.998 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
L1	146 - 125	Pole	TP32.508x25.41x0.25	1	-5.827	1330.697	26.9	Pass
L2	125 - 82.25	Pole	TP44.632x32.508x0.375	2	-20.672	2637.607	58.3	Pass
L3	82.25 - 43	Pole	TP55.014x42.251x0.438	3	-33.434	3796.584	73.0	Pass
L4	43 - 1	Pole	TP66.05x52.154x0.5	4	-54.140	5408.101	74.9	Pass
							Summary	
						Pole (L4)	74.9	Pass
						RATING =	**74.9**	**Pass**

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Subject: Flange Bolts and Flangeplate Analysis

Location: 145-ft Summit Monopine
Barkhamsted, CT

Rev. 0: 12/27/11

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 12001.CO3

Flange Bolt and Flange Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 233·ft·kips	(Input From RisaTower)
Shear Force =	Shear := 16.2·kips	(Input From RisaTower)
Axial Force =	Axial := 10.2·kips	(Input From RisaTower)

Flange Bolt Data:

Use ASTM A325

Number of Flange Bolts =	N := 12	(User Input)
Diameter of Bolt Circle =	D_{bc} := 37.0·in	(User Input)
Bolt Ultimate Strength =	F_u := 120·ksi	(User Input)
Bolt Yield Strength =	F_y := 92·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Flange Bolts =	D := 1.0·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Flange Plate Data:

Use ASTM A572 Mod 50

Plate Yield Strength =	Fy_{bp} := 50·ksi	(User Input)
Flange Plate Thickness =	t_{bp} := 1.25·in	(User Input)
Flange Plate Diameter =	D_{bp} := 41.0·in	(User Input)
Outer Pole Diameter =	D_{pole} := 32.51·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 18.5 \cdot in$

Distance to Bolts = $i := 1 .. N$

$$d_i := \left| \begin{array}{l} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{array} \right.$$

$d_1 = 9.25 \cdot in$ $d_7 = -9.25 \cdot in$

$d_2 = 16.02 \cdot in$ $d_8 = -16.02 \cdot in$

$d_3 = 18.50 \cdot in$ $d_9 = -18.50 \cdot in$

$d_4 = 16.02 \cdot in$ $d_{10} = -16.02 \cdot in$

$d_5 = 9.25 \cdot in$ $d_{11} = -9.25 \cdot in$

$d_6 = 0.00 \cdot in$ $d_{12} = -0.00 \cdot in$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 16.3 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 0.00 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 2.25 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.00 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 0.00 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 0.00 \cdot in$ $MA_{12} = 0.00 \cdot in$

Effective Width of Flangeplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 20 \cdot in$

Flange Bolt Analysis:

Calculated Flange Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 2.053 \times 10^3 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot in^3$

Check Flange Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 24.3 \cdot kips$

Allowable Tensile Force = $T_{ALL.Gross} := 1.333 \cdot \left(0.33 \cdot A_g \cdot F_u\right) = 41.5 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Gross}} = 59 \cdot \%$

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Gross}} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Flange Plate Analysis:

Force from Bolts =

$$C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$$

$C_1 = 13.4 \cdot kips$ $C_7 = -11.7 \cdot kips$

$C_2 = 22.7 \cdot kips$ $C_8 = -21.0 \cdot kips$

$C_3 = 26.0 \cdot kips$ $C_9 = -24.3 \cdot kips$

$C_4 = 22.7 \cdot kips$ $C_{10} = -21.0 \cdot kips$

$C_5 = 13.4 \cdot kips$ $C_{11} = -11.7 \cdot kips$

$C_6 = 0.9 \cdot kips$ $C_{12} = 0.8 \cdot kips$

Maximum Bending Stress in Plate =

$$f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^2\right)} = 11.2 \cdot ksi$$

Allowable Bending Stress in Plate =

$$F_{bp} := 1.33 \cdot 0.75 \cdot Fy_{bp} = 49.9 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 22.5 \cdot \%$$

Condition3 =

$$Condition2 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$$

Condition2 = "Ok"

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Subject:		Anchor Bolt and Baseplate Analysis
Location:		145-ft Summit Monopine Barkhamsted, CT
	Rev. 0: 12/27/11	Prepared by: T.J.L. Checked by: C.F.C. Job No. 12001.CO3

Anchor Bolt and Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 5385·ft·kips	(Input From RisaTower)
Shear Force =	Shear := 53·kips	(Input From RisaTower)
Axial Force =	Axial := 54·kips	(Input From RisaTower)

Anchor Bolt Data:

Use ASTM A615 Grade 75

Number of Anchor Bolts =	N := 24	(User Input)
Bolt "Column" Distance =	l := 3.0·in	(User Input)
Bolt Ultimate Strength =	F_u := 100·ksi	(User Input)
Bolt Yield Strength =	F_y := 75·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 2.25·in	(User Input)
Threads per Inch =	n := 4.5	(User Input)

Base Plate Data:

Use ASTM A572 Gr. 55

Plate Yield Strength =	Fy_{bp} := 55·ksi	(User Input)
Base Plate Thickness =	t_{bp} := 3.25·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

$d_1 := 36.875in$ (User Input)

$d_2 := 35.75in$ (User Input)

$d_3 := 33.75in$ (User Input)

$d_4 := 15.125in$ (User Input)

$d_5 := 9.375in$ (User Input)

$d_6 := 3.0in$ (User Input)

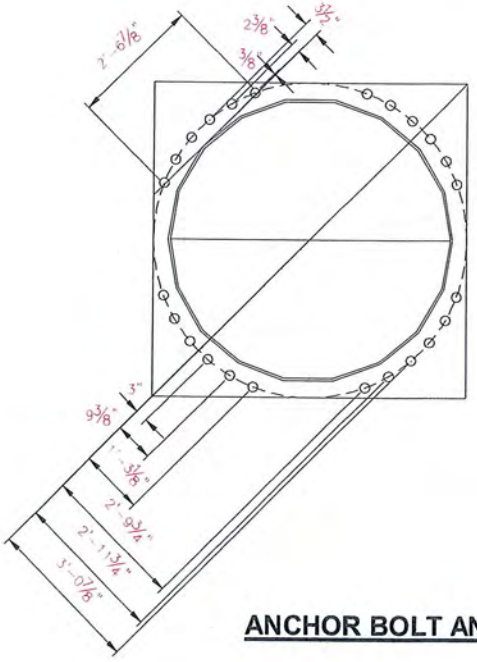
Critical Distances For Bending in Plate:

$ma_1 := 3.5in$ (User Input)

$ma_2 := 2.375in$ (User Input)

$ma_3 := 0.375in$ (User Input)

Effective Width of Baseplate for Bending = $B_{eff} := 30.875in$ (User Input)



ANCHOR BOLT AND PLATE GEOMETRY

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \left[(d_1)^2 \cdot 4 + (d_2)^2 \cdot 4 + (d_3)^2 \cdot 4 + (d_4)^2 \cdot 4 + (d_5)^2 \cdot 4 + (d_6)^2 \cdot 4 \right] = 16410 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 3.976 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 3.248 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 2.033 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.508 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.826 \cdot in^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{d_1}{I_p} - \frac{Axial}{N} = 143 \cdot kips$

Allowable Tensile Force (Gross Area) = $T_{ALL.Gross} := 1.333 \cdot \left(0.33 \cdot A_g \cdot F_u \right) = 174.9 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Allowable Tensile Force (Net Area) = $T_{ALL.Net} := 1.333 \cdot \left(0.60 \cdot A_n \cdot F_y \right) = 194.812 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} = 73.4 \cdot \%$ Bolts are "upset bolts". Use net area per AISC

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Net}} \le 1.00, "OK", "Overstressed" \right)$

Condition1 = "OK" Note Shear stress is negligible

Check Anchor Bolt Bending Stress:

Maximum Bending Moment = $M_x := \left(\frac{Shear}{N} \right) \cdot l = 0.552 \cdot ft \cdot kips$

Maximum Bending Stress = $f_{bx} := \frac{M_x}{S_x} = 8 \cdot ksi$

Allowable Bending Stress = $F_{bx} := 1.333 \cdot 0.6 \cdot F_y = 60 \cdot ksi$ (1.333 increase allowed per TIA/EIA)

Check Combined Stress Requirement:

Per ASCE Manual 72: "If the clearance between the base plate and concrete does not exceed two times the bolt diameter a bending stress analysis of the bolts is NOT normally required.

$$l := \begin{cases} l & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 0 \cdot in$$

$$f_{bx} := \begin{cases} f_{bx} & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 0 \cdot ksi$$

Check Anchor Bolt Compression/Combined Stress:

Applied Compressive Force =

$$C_{Max} := OM \cdot \frac{d_1}{I_p} + \frac{Axial}{N} = 147.5 \cdot kips$$

Applied Compressive Stress =

$$f_a := \frac{C_{Max}}{A_n} = 45.4 \cdot ksi$$

$$K := 0.65$$

$$C_c := \sqrt{\frac{2 \cdot \pi^2 \cdot E}{F_y}} = 87.364$$

$$F_a := \begin{cases} \dfrac{\left[1 - \dfrac{\left(\frac{K \cdot l}{r}\right)^2}{2 \cdot C_c^2}\right] \cdot F_y}{\dfrac{5}{3} + \dfrac{3 \cdot \left(\frac{K \cdot l}{r}\right)}{8 \cdot C_c} - \dfrac{\left(\frac{K \cdot l}{r}\right)^3}{8 \cdot C_c^3}} & \text{if } \dfrac{K \cdot l}{r} \le C_c \\ \dfrac{12 \cdot \pi^2 \cdot E}{23 \cdot \left(\frac{K \cdot l}{r}\right)^2} & \text{if } \dfrac{K \cdot l}{r} > C_c \end{cases} = 45 \cdot ksi$$

Allowable Compressive Stress =

$$F_a := 1.333 \cdot F_a = 60 \cdot ksi$$

(1.333 increase allowed per TIA/EIA)

Combined Stress % of Capacity =

$$\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}}\right) = 75.7 \cdot \%$$

Condition 2 =

$$Condition2 := if\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} \le 1.00, "OK", "Overstressed"\right)$$

Condition2 = "OK"

Base Plate Analysis:

Force from Bolts =

$$C_1 := \frac{OM \cdot d_1}{I_p} + \frac{Axial}{N} = 147.456 \cdot kips$$

$$C_2 := \frac{OM \cdot d_2}{I_p} + \frac{Axial}{N} = 143.026 \cdot kips$$

$$C_3 := \frac{OM \cdot d_3}{I_p} + \frac{Axial}{N} = 135.151 \cdot kips$$

Applied Bending Stress in Plate =

$$f_{bp} := \frac{6 \cdot \left(2C_1 \cdot ma_1 + 2C_2 \cdot ma_2 + 2C_3 \cdot ma_3\right)}{B_{eff} \cdot t_{bp}^{\,2}} = 33.35 \cdot ksi$$

Allowable Bending Stress in Plate =

$$F_{bp} := 1.33 \cdot 0.75 \cdot Fy_{bp} = 54.9 \cdot ksi$$

Plate Bending Stress % of Capacity =

$$\frac{f_{bp}}{F_{bp}} = 60.8 \cdot \%$$

Condition3 =

$$Condition3 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$$

Condition3 = "Ok"

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Subject: FOUNDATION ANALYSIS

Location: 145-ft Summit Monopine
Barkhamsted, CT

Rev. 0: 12/27/11

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 12001.CO3

Standard Monopole Foundation:

Input Data:

Tower Data

Overturning Moment =	OM := 5385·ft·kips	(User Input from RISATower)	
Shear Force =	Shear := 53·kip	(User Input from RISATower)	
Axial Force =	Axial := 54·kip	(User Input from RISATower)	
Tower Height =	H_t := 145·ft	(User Input)	

Footing Data:

Overall Depth of Footing =	D_f := 9.0·ft	(User Input)	
Length of Pier =	L_p := 5.5·ft	(User Input)	
Extension of Pier Above Grade =	L_{pag} := 0.5·ft	(User Input)	
Diameter of Pier =	d_p := 8.0·ft	(User Input)	
Thickness of Footing =	T_f := 4·ft	(User Input)	
Width of Footing =	W_f := 31.5·ft	(User Input)	

Anchor Bolt Data:

Length of Anchor Bolts =	L_{st} := 96·in	(User Input)	
Projection of Anchor Bolts Above Pier =	A_{BP} := 12·in	(User Input)	
Anchor Bolt Diameter =	d_{anchor} := 2.25·in	(User Input)	
Base Plate Bolt Circle =	MP := 74.0·in	(User Input)	

Material Properties:

Concrete Compressive Strength =	f_c := 3000·psi	(User Input)	
Steel Reinforcment Yield Strength =	f_y := 60000·psi	(User Input)	
Anchor Bolt Yield Strength =	f_{ya} := 75000·psi	(User Input)	
Internal Friction Angle of Soil =	Φ_s := 30·deg	(User Input)	
Allowable Soil Bearing Capacity =	q_s := 4000·psf	(User Input)	
Unit Weight of Soil =	γ_{soil} := 120·pcf	(User Input)	
Unit Weight of Concrete =	γ_{conc} := 150·pcf	(User Input)	
Foundation Bouyancy =	Bouyancy := 1	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	n := 1·ft	(User Input)	
Cohesion of Clay Type Soil =	c := 0·ksf	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	Z := 2	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	μ := 0.45	(User Input)	

Pier Reinforcement:

Bar Size =	$BS_{pier} := 11$	(User Input)	
Bar Diameter =	$d_{bpier} := 1.41 \cdot in$	(User Input)	
Number of Bars =	$NB_{pier} := 60$	(User Input)	
Clear Cover of Reinforcement =	$Cvr_{pier} := 3 \cdot in$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pier} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Diameter of Tie =	$d_{Tie} := 3 \cdot in$	(User Input)	

Pad Reinforcement:

Bar Size =	$BS_{top} := 11$	(User Input)	(Top of Pad)
Bar Diameter =	$d_{btop} := 1.41 \cdot in$	(User Input)	(Top of Pad)
Number of Bars =	$NB_{top} := 48$	(User Input)	(Top of Pad)
Bar Size =	$BS_{bot} := 11$	(User Input)	(Bottom of Pad)
Bar Diameter =	$d_{bbot} := 1.41 \cdot in$	(User Input)	(Bottom of Pad)
Number of Bars =	$NB_{bot} := 48$	(User Input)	(Bottom of Pad)
Clear Cover of Reinforcement =	$Cvr_{pad} := 3.0 \cdot in$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)

Calculated Factors:

Pier Reinforcement Bar Area =

$$A_{bpier} := \frac{\pi \cdot d_{bpier}^2}{4} = 1.561 \cdot in^2$$

Pad Top Reinforcement Bar Area =

$$A_{btop} := \frac{\pi \cdot d_{btop}^2}{4} = 1.561 \cdot in^2$$

Pad Bottom Reinforcement Bar Area =

$$A_{bbot} := \frac{\pi \cdot d_{bbot}^2}{4} = 1.561 \cdot in^2$$

Coefficient of Lateral Soil Pressure =

$$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$$

Load Factor =

$$LF := \begin{cases} 1.333 & \text{if } H_t \le 700 \cdot ft \\ 1.7 & \text{if } H_t \ge 1200 \cdot ft \\ 1.333 + \left(\frac{H_t - 700ft}{1200ft - 700ft}\right) \cdot 0.4 & \text{otherwise} \end{cases} = 1.333$$

Stability of Footing:

Adjusted Concrete Unit Weight =

$$\gamma_c := \text{if}(\text{Bouyancy} = 1, \gamma_{conc} - 62.4\text{pcf}, \gamma_{conc}) = 87.6\cdot\text{pcf}$$

Adjusted Soil Unit Weight =

$$\gamma_s := \text{if}(\text{Bouyancy} = 1, \gamma_{soil} - 62.4\text{pcf}, \gamma_{soil}) = 57.6\cdot\text{pcf}$$

Passive Pressure =

$$P_{pn} := K_p\cdot\gamma_s\cdot n + c\cdot 2\cdot\sqrt{K_p} = 0.173\cdot\text{ksf}$$

$$P_{pt} := K_p\cdot\gamma_s\cdot(D_f - T_f) + c\cdot 2\cdot\sqrt{K_p} = 0.864\cdot\text{ksf}$$

$$P_{top} := \text{if}[n < (D_f - T_f), P_{pt}, P_{pn}] = 0.864\cdot\text{ksf}$$

$$P_{bot} := K_p\cdot\gamma_s\cdot D_f + c\cdot 2\cdot\sqrt{K_p} = 1.555\cdot\text{ksf}$$

$$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.21\cdot\text{ksf}$$

$$T_p := \text{if}[n < (D_f - T_f), T_f, (D_f - n)] = 4$$

$$A_p := W_f\cdot T_p = 126$$

Ultimate Shear =

$$S_u := P_{ave}\cdot A_p = 152.41\cdot\text{kip}$$

Weight of Concrete Pad =

$$WT_c := \left[\left(W_f^2\cdot T_f\right) + \frac{d_p^2\cdot\pi}{4}L_p\right]\cdot\gamma_c = 371.902\cdot\text{kip}$$

Weight of Soil Above Footing =

$$WT_{s1} := \left[\left(W_f^2 - \frac{d_p^2\cdot\pi}{4}\right)\cdot\left(\left|L_p - L_{pag} - n\right|\right)\right]\cdot\gamma_s = 217.03\cdot\text{kip}$$

Weight of Soil Wedge at Back Face =

$$WT_{s2} := \left(\frac{D_f^2\cdot\tan(\Phi_s)}{2}\cdot W_f\right)\cdot\gamma_s = 42.426\cdot\text{kip}$$

Weight of Soil Wedge at back face Corners =

$$WT_{s3} := 2\cdot\left[(D_f)^3\cdot\frac{\tan(\Phi_s)}{3}\right]\cdot\gamma_s = 16.162\cdot\text{kips}$$

Total Weight =

$$WT_{tot} := WT_c + WT_{s1} + \text{Axial} = 642.936\cdot\text{kip}$$

Resisting Moment =

$$M_r := \left(WT_{tot}\right)\cdot\frac{W_f}{2} + S_u\cdot\frac{T_f}{3} + \left[\left(WT_{s2} + WT_{s3}\right)\cdot\left(W_f + \frac{D_f\cdot\tan(\Phi_s)}{3}\right)\right] = 12276\cdot\text{kip}\cdot\text{ft}$$

Overturning Moment =

$$M_{ot} := \text{OM} + \text{Shear}\cdot(L_p + T_f) = 5889\cdot\text{kip}\cdot\text{ft}$$

Factor of Safety Actual =

$$FS := \frac{M_r}{M_{ot}} = 2.08$$

Factor of Safety Required =

$$FS_{req} := 2$$

$$\text{OverTurning\_Moment\_Check} := \text{if}(FS \geq FS_{req}, \text{"Okay"}, \text{"No Good"})$$

OverTurning_Moment_Check = "Okay"

Shear Capacity in Pier:

Shear Resistance of Pier =

$$S_p := \frac{P_{ave} \cdot A_p + \mu \cdot WT_{tot}}{FS_{req}} = 220.865 \cdot kips$$

$$Shear\_Check := if(S_p > Shear, "Okay", "No Good")$$

Shear_Check = "Okay"

Bearing Pressure Caused by Footing:

Area of the Mat =

$$A_{mat} := W_f^{\,2} = 992.25$$

Section Modulus of Mat =

$$S := \frac{W_f^{\,3}}{6} = 5209.31 \cdot ft^3$$

Maximum Pressure in Mat =

$$P_{max} := \frac{WT_{tot}}{A_{mat}} + \frac{M_{ot}}{S} = 1.778 \cdot ksf$$

$$Max\_Pressure\_Check := if(P_{max} < q_s, "Okay", "No Good")$$

Max_Pressure_Check = "Okay"

Minimum Pressure in Mat =

$$P_{min} := \frac{WT_{tot}}{A_{mat}} - \frac{M_{ot}}{S} = -0.482 \cdot ksf$$

$$Min\_Pressure\_Check := if[(P_{min} \geq 0) \cdot (P_{min} < q_s), "Okay", "No Good"]$$

Min_Pressure_Check = "No Good"

Distance to Resultant of Pressure Distribution =

$$X_p := \frac{P_{max}}{\frac{P_{max} - P_{min}}{W_f}} \cdot \frac{1}{3} = 8.259$$

Distance to Kern =

$$X_k := \frac{W_f}{6} = 5.25$$

Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity =

$$e := \frac{M_{ot}}{WT_{tot}} = 9.159$$

Adjusted Soil Pressure =

$$P_a := \frac{2 \cdot WT_{tot}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)} = 2.064 \cdot ksf$$

$$q_{adj} := if(P_{min} < 0, P_a, P_{max}) = 2.064 \cdot ksf$$

$$Pressure\_Check := if(q_{adj} < q_s, "Okay", "No Good")$$

Pressure_Check = "Okay"

Concrete Bearing Capacity:

Strength Reduction Factor =

$\Phi_c := 0.65$ (ACI-2008 9.3.2.2)

Bearing Strength Between Pier and Pad =

$P_b := \Phi_c \cdot 0.85 \cdot f_c \cdot \frac{\pi \cdot d_p^2}{4} = 1.2 \times 10^4 \cdot kips$ (ACI-2008 10.14)

$Bearing\_Check := if(P_b > LF \cdot Axial, "Okay", "No Good")$

Bearing_Check = "Okay"

Shear Strength of Concrete:

Beam Shear:

(Critical section located at a distance d from the face of Pier) (ACI 11.3.1.1)

$\phi_c := 0.85$ (ACI 9.3.2.5)

$d := T_f - Cvr_{pad} - d_{bbot}$

$d_1 := \frac{W_f}{2} - \frac{d_p}{2}$

$d_2 := d_1 - d$

$L := \left(\frac{W_f}{2} - e\right) \cdot 3$

$Slope := if\left(L > W_f, \frac{P_{max} - P_{min}}{W_f}, \frac{q_{adj}}{L}\right)$

$V_{req} := LF \cdot \left[\left(q_{adj} - Slope \cdot d_1\right) + \left(\frac{Slope \cdot d_1}{2}\right)\right] \cdot W_f \cdot d_1$

$V_{Avail} := \phi_c \cdot 2 \cdot \sqrt{f_c \cdot psi} \cdot W_f \cdot d$ (ACI-2008 11.2.1.1)

$Beam\_Shear\_Check := if(V_{req} < V_{Avail}, "Okay", "No Good")$

Beam_Shear_Check = "Okay"

Punching Shear:

(Critical Section Located at a distance of d/2 from the face of pier) (ACI 11.11.1.2)

Critical Perimeter of Punching Shear =

$b_o := \left(d_p + d\right) \cdot \pi = 36.5$

Area Included Inside Perimeter =

$A_{bo} := \frac{\pi \cdot \left(d_p + d\right)^2}{4} = 106.3$

Area Outside of Perimeter =

$A_{out} := A_{mat} - A_{bo} = 886$

Guess Value = $v_u := 1ksf$ (From "Foundation Analysis and design", By Joseph Bowles, Eq. 8-9)

Given $d^2 + d_p \cdot d = \frac{WT_{tot}}{\pi \cdot v_u}$

$v_u := \text{Find}(v_u) = 4.8 \cdot ksf$

$V_u := v_u \cdot d \cdot W_f = 554.2 \cdot kips$

Required Shear Strength = $V_{req} := LF \cdot V_u = 738.7 \cdot kips$

Available Shear Strength = $V_{Avail} := \phi_c \cdot 4 \cdot \sqrt{f_c \cdot psi} \cdot b_o \cdot d = 3559.8 \cdot kip$ (ACI-2008 11.11.2.1)

$Punching\_Shear\_Check := \text{if}(V_{req} < V_{Avail}, \text{"Okay"}, \text{"No Good"})$

$Punching\_Shear\_Check = \text{"Okay"}$

Steel Reinforcement in Pad:

Required Reinforcement for Bending:

Strength Reduction Factor = $\phi_m := .90$ (ACI-2008 9.3.2.1)

$q_b := q_{adj} - d_1 \cdot Slope = 0.838 \cdot ksf$

Maximum Bending at Face of Pier = $M_n := \frac{1}{LF \cdot \phi_m} \cdot \left[\left(q_{adj} - q_b \right) \cdot \frac{d_1^2}{3} + q_b \cdot \frac{d_1^2}{2} \right] \cdot W_f = 3000.7 \cdot kip \cdot ft$

$$\beta := \begin{cases} 0.85 \text{ if } 2500 \cdot psi \le f_c \le 4000 \cdot psi \\ 0.65 \text{ if } f_c > 8000 \cdot psi \\ \left[0.85 - \left[\frac{\left(\frac{f_c}{psi} - 4000 \right)}{1000} \right] \cdot 0.5 \right] \text{ otherwise} \end{cases} = 0.85$$

(ACI-200810.2.7.3)

$R_u := \frac{M_n}{\phi_m \cdot W_f \cdot d^2} = 55.7 \cdot psi$

$\rho := \frac{0.85 \cdot f_c}{f_y} \left(1 - \sqrt{1 - \frac{2 \cdot R_u}{0.85 \cdot f_c}} \right) = 0.0009$

$\rho_{min} := 1.333 \cdot \rho = 0.00125$

Required Reinforcement for Temperature and Shrinkage:

$$\rho_{sh} := \begin{cases} .0018 & \text{if } f_y \geq 60000 \cdot psi \\ .0020 & \text{otherwise} \end{cases}$$ (ACI -2008 7.12.2.1)

Check Bottom Bars:

$As := \max(\rho, \rho_{min}, \rho_{sh}) \cdot W_f \cdot d = 29.7 \cdot in^2$

$As_{prov} := A_{bbot} \cdot NB_{bot} = 74.9 \cdot in^2$

$Pad\_Reinforcement\_Bot := if(As_{prov} > As, "Okay", "No Good")$

Pad_Reinforcement_Bot = "Okay"

Check top Bars:

$As := \rho_{sh} \cdot (W_f \cdot d) = 29.7 \cdot in^2$

$As_{prov} := A_{btop} \cdot NB_{top} = 74.9 \cdot in^2$

$Pad\_Reinforcement\_Top := if(As_{prov} > As, "Okay", "No Good")$

Pad_Reinforcement_Top = "Okay"

Developement Length Pad Reinforcement:

Bar Spacing =

$$B_{sPad} := \frac{W_f - 2 \cdot Cvr_{pad} - NB_{bot} \cdot d_{bbot}}{NB_{bot} - 1} = 6.47 \cdot in$$

Spacing or Cover Dimension =

$$c := if\left(Cvr_{pad} < \frac{B_{sPad}}{2}, Cvr_{pad}, \frac{B_{sPad}}{2}\right) = 3 \cdot in$$

Transverse Reinforcement Index =

$k_{tr} := 0$ (ACI-2008 12.2.3)

$$L_{dbt} := \frac{3 \cdot f_y \alpha_{pad} \cdot \beta_{pad} \cdot \gamma_{pad} \cdot \lambda_{pad}}{40 \cdot \sqrt{f_c \cdot psi} \cdot \frac{c + k_{tr}}{d_{bbot}}} \cdot d_{bbot} = 54.4 \cdot in$$

Minimum Development Length =

$L_{dbmin} := 12 \cdot in$ (ACI-2008 12.2.1)

$L_{dbtCheck} := if(L_{dbt} \geq L_{dbmin}, "Use L.dbt", "Use L.dbmin")$

Available Length in Pad =

$$L_{Pad} := \frac{W_f}{2} - \frac{d_p}{2} - Cvr_{pad} = 138 \cdot in$$

$Lpad\_Check := if(L_{Pad} > L_{dbt}, "Okay", "No Good")$

Lpad_Check = "Okay"

Steel Reinforcement in Pier:

Area of Pier = $A_p := \frac{\pi \cdot d_p^2}{4} = 7238.23 \cdot in^2$

$A_{smin} := 0.01 \cdot 0.05 \cdot A_p = 3.62 \cdot in^2$ (ACI-2008 10.8.4 & 10.9.1)

$A_{sprov} := NB_{pier} \cdot A_{bpier} = 93.69 \cdot in^2$

$Steel\_Area\_Check := if(A_{sprov} > A_{smin}, "Okay", "No Good")$

Steel_Area_Check = "Okay"

Bar Spacing In Pier = $B_{sPier} := \frac{d_p \cdot \pi}{NB_{pier}} - d_{bpier} = 3.617 \cdot in$

Diameter of Reinforcement Cage = $Diam_{cage} := d_p - 2 \cdot Cvr_{pier} = 90 \cdot in$

Maximum Moment in Pier = $M_p := \left[OM + Shear \cdot \left(L_p + \frac{A_{BP}}{2} \right) \right] \cdot LF = 91225.2 \cdot in \cdot kips$

Pier Check evaluated from outside program and results are listed below;

$(D \ N \ n \ P_u \ M_{xu}) := \left(d_p \cdot 12 \ NB_{pier} \ BS_{pier} \ \frac{Axial \cdot 1.333}{kips} \ \frac{M_p}{in \cdot kips} \right)$

$(D \ N \ n \ P_u \ M_{xu}) = (96 \ 60 \ 11 \ 72 \ 91225.2)$

$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := (0 \ 0 \ 0 \ 0)$

$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := \phi P'_n(D, N, n, P_u, M_{xu})^T$

$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) = (150.3 \ 1.9 \times 10^5 \ -60 \ 0)$

$Axial\_Load\_Check := if(\phi P_n \geq P_u, "Okay", "No Good")$

Axial_Load_Check = "Okay"

$Bending\_Check := if(\phi M_{xn} \geq M_{xu}, "Okay", "No Good")$

Bending_Check = "Okay"

Development Length Pier Reinforcement:

Available Length in Foundation:

$L_{pier} := L_p - Cvr_{pier} = 63 \cdot in$

$L_{pad} := T_f - Cvr_{pad} = 45 \cdot in$

Tension: (ACI-2008 12.2.3)

Spacing or Cover Dimension =

$c := if\left(Cvr_{pier} < \frac{B_{sPier}}{2}, Cvr_{pier}, \frac{B_{sPier}}{2}\right) = 1.808 \cdot in$

Transverse Reinforcement =

$k_{tr} := 0$ (ACI-2008 12.2.3)

$L_{dbt} := \frac{3 \cdot f_y \cdot \alpha_{pier} \cdot \beta_{pier} \cdot \gamma_{pier} \cdot \lambda_{pier}}{40 \cdot \sqrt{f_c \cdot psi} \cdot \left(\frac{c + k_{tr}}{d_{bpier}}\right)} \cdot d_{bpier} = 90.33 \cdot in$

Minimum Development Length =

$L_{dh} := \frac{1200 \cdot d_{bpier}}{\sqrt{\frac{f_c}{psi}}} \cdot .7 = 21.624 \cdot in$ (ACI 12.2.1)

Pier reinforcement bars are standard 90 degree hooks and therefore developement in the pad is computed as follows:

$L_{db} := \max\left(L_{dbt}, L_{dbmin}\right)$

$L_{tension\_Check} := if\left(L_{pier} + L_{pad} > L_{dbt}, "Okay", "No Good"\right)$

$L_{tension\_Check} = "Okay"$

Compression: (ACI-2008 12.3.2)

$L_{dbc1} := \frac{.02 \cdot d_{bpier} \cdot f_y}{\sqrt{f_c \cdot psi}} = 30.892 \cdot in$

$L_{dbmin} := 0.0003 \cdot \frac{in^2}{lb} \cdot \left(d_{bpier} \cdot f_y\right) = 25.38 \cdot in$

$L_{dbc} := if\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right) = 30.892 \cdot in$

$L_{compression\_Check} := if\left(L_{pier} + L_{pad} > L_{dbc}, "Okay", "No Good"\right)$

$L_{compression\_Check} = "Okay"$

Tie Size and Spacing in Column:

Minimum Tie Size =

$Tie_{min} := if(BS_{pier} \le 10, 3, 4) = 4$

Used #3 Ties

Seismic Factor =

$z := if(Z \le 2, 1, 0.5) = 1$ (ACI-2008 21.10.5)

$s_{lim1} := 16 \cdot d_{bpier} \cdot z = 22.56 \cdot in$

$s_{lim2} := \frac{48 \cdot d_{Tie}}{8} \cdot z = 18 \cdot in$

$s_{lim3} := D_f \cdot z = 108 \cdot in$

$s_{lim4} := 18in$

Maximum Spacing =

$s_{tie} := \min\left(\begin{pmatrix} s_{lim1} \\ s_{lim2} \\ s_{lim3} \\ s_{lim4} \end{pmatrix}\right) = 18 \cdot in$

Number of Ties Required =

$n_{tie} := \frac{L_{pier} - 3 \cdot in}{s_{tie}} + 1 = 4.333$

Check Anchor Steel Embedment:

Depth Available =

$D_{ab} := L_{st} - A_{BP} = 7 \cdot ft$

Length of Anchor Bolt =

$L_{anchor} := \frac{(0.11 \cdot f_{ya}) \cdot in}{\sqrt{f_c \cdot psi}} = 12.552 \cdot ft$

$Depth\_Check := if(D_{ab} \ge L_{anchor}, "Okay", "No Good")$

Depth_Check = "No Good"

Note: Anchor plate is provided

SITE NAME	BARKHAMSTED S CT	ECP - CELL #	2	482
LATITUDE	41-53-37.72 N	LONGITUDE	72-59-47.34 W	
Additional Comments: LTE antenna add keeping with 12 antennas and adding diplexers to the main lines		SAVE BUTTON		
		STRUCTURE TYPE	MONOPINE	

700 Mhz - LTE ANTENNA ADD	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	eNodeB	eNodeB	eNodeB
ANTENNA TYPE	BXA-70063-6CF_2	BXA-70063-6CF_2	BXA-70063-6CF_2
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	10	110	230
DOWN TILT (MECH/DEG)	5	3	4
RAD CTR (FT AGL)	127.5	127.5	127.5
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			

850 Celluar - Current Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	#N/A	#N/A	#N/A
ANTENNA TYPE	LPA-80063/4CF	LPA-80063/4CF 5	LPA-80080/4CF
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	10	110	230
DOWN TILT (MECH/DEG)	5	3	4
RAD CTR (FT AGL)	127.5	127.5	127.5
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			

850 Celluar - Future Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	#N/A	#N/A	#N/A
ANTENNA TYPE	LPA-80063/4CF	LPA-80063/4CF 5	LPA-80080/4CF
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	10	110	230
DOWN TILT (MECH/DEG)	5	3	4
RAD CTR (FT AGL)	127.5	127.5	127.5
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL	2 FD9R6004/2C-3L	2 FD9R6004/2C-3L	2 FD9R6004/2C-3L
DIPLEX WITH LTE CABLE			

1900 PCS - Current Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	#N/A	#N/A	#N/A
ANTENNA TYPE	DB948F65E-M_0	DB948F65E-M_0	DB948G85E-M_0
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	10	110	230
DOWN TILT (MECH/DEG)	5	5	2
RAD CTR (FT AGL)	127.5	127.5	127.5
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			

1900 PCS - Future Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	#N/A	#N/A	#N/A
ANTENNA TYPE	BXA-171063-8BF_2	BXA-171063-8BF_2	BXA-171085-8BF_2
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	10	110	230
DOWN TILT (MECH/DEG)	3	3	0
RAD CTR (FT AGL)	127.5	127.5	127.5
TMA - QTY / MODEL			
DIPLEX WITH CELLULAR CABLE	Diplex with cellular cable	Diplex with cellular cable	Diplex with cellular cable

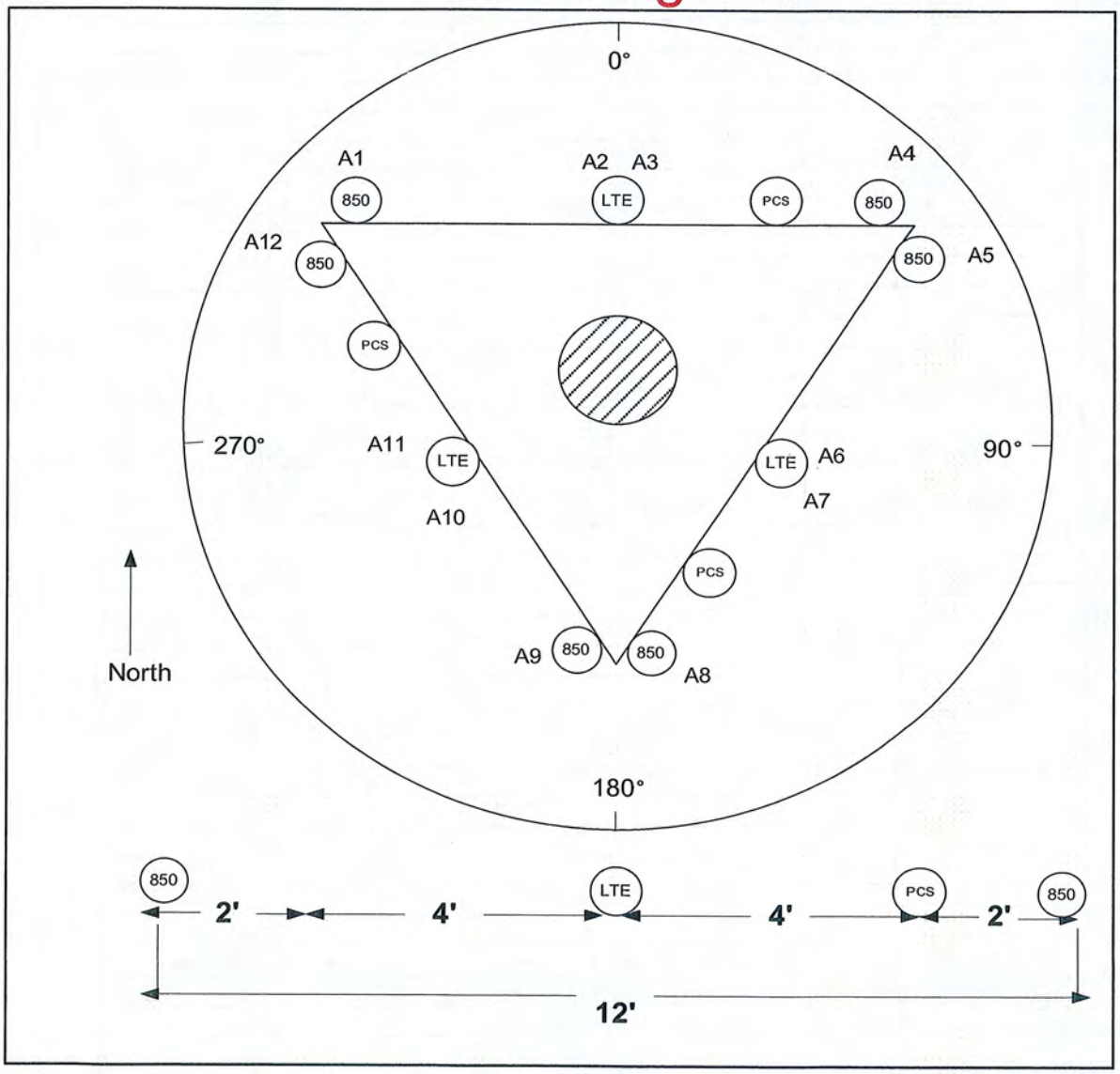
NUMBER OF CABLE'S NEEDED					ESTIMATED CABLE LENGTH			
MAINLINE SIZE	1 5/8"	TOTAL # OF MAINLINES		12	MAINLINE (FT)			
JUMPER SIZE	1/2 "	TOTAL # OF TOP JUMPERS		12	TOP JUMPER (FT)			12
Equipment Cable Ordering		MAIN CABLE	12 +	0	TOP JUMPER #	12	+	6

TX / RX FREQUENCIES			TX POWER OUTPUT	
Cellular A-Band	PCS F / AWS-Band	700 Mhz C - E	Cellular (Watts)	20
TX - 869-880,890-891.5 MHz	TX - 1970-1975 / 2145-21	TX - 746-757	PCS (Watts)	16
RX - 824-835,845-846.5 MHz	RX - 1890-1895 / 1745-17	RX - 776-787	LTE (Watts)	40

ALPHA				BETA				GAMMA			
Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code
A1	800	Tx1/Rx0	RED	A7	800	Tx2/Rx0	BLUE	A13	800	Tx3/Rx0	GREEN
A2	1900	Tx1/Rx0	RED/ WHITE	A8	1900	Tx2/Rx0	BLUE/ WHITE	A14	1900	Tx3/Rx0	GREEN/WHITE
A3	700	Tx1/Rx0	RED/ ORANGE	A9	700	Tx2/Rx0	BLUE/ ORANGE	A15	700	Tx3/Rx0	GREEN/ORANGE
A4	700	Tx4/Rx1	RED/RED/ ORANGE	A10	700	Tx5/Rx1	BLUE/BLUE/ ORANGE	A16	700	Tx6/Rx1	GREEN/GREEN/ ORANGE
A5	1900	Tx4/Rx1	RED/RED/ WHITE	A11	1900	Tx5/Rx1	BLUE/BLUE/ WHITE	A17	1900	Tx6/Rx1	GREEN/GREEN/ WHITE
A6	800	Tx4/Rx1	RED/RED	A12	800	Tx5/Rx1	BLUE/BLUE	A18	800	Tx6/Rx1	GREEN/GREEN

RF ENGINEER	RF MANAGER	INITIALS	DATE
Prepared By: Mark Brauer	Steve Weatherbee	MB	8/31/2011

Site Configuration



Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

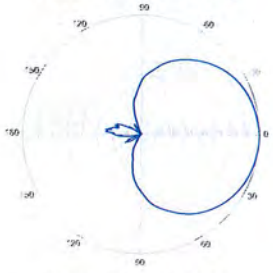
Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in
Depth with z-brackets	172 mm	6.8 in
Weight without mounting brackets	7.9 kg	17 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.51 m² Side: 0.24 m²	Front: 5.5 ft² Side: 2.6 ft²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

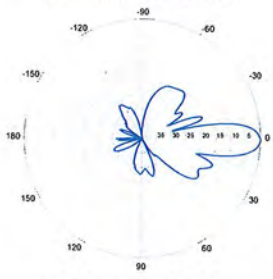
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



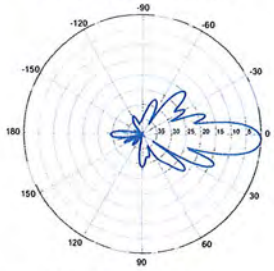
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

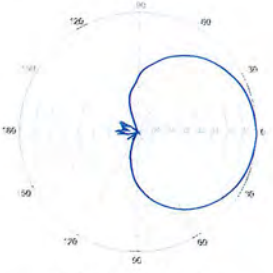


0° | Vertical | 750 MHz

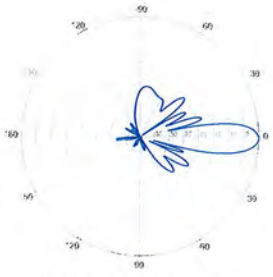
BXA-70063-6CF-EDIN-2



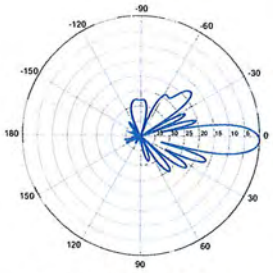
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



2° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Amphenol ANTENNA SOLUTIONS

LPA-80080-4CF-EDIN-X

V-Pol | Log Periodic | 80° | 12.5 dBd

Replace "X" with desired electrical downtilt.

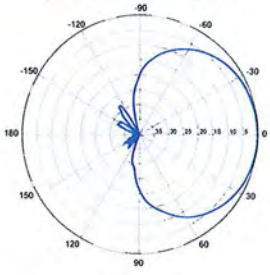
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	80°
Vertical beamwidth	15°
Gain	12.5 dBd (14.6 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-14.2 dB
Front-to-back ratio (+/-30°)	-34.7 dB
Null fill	15% (-16.48 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)

Mechanical Characteristics		
Dimensions Length x Width x Depth	1200 x 140 x 335 mm	47.2 x 5.5 x 13.2 in
Depth of antenna with z-bracket	375 mm	14.8 in
Weight without mounting brackets	5.4 kg	12 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.17 m² Side: 0.40 m²	Front: 1.8 ft² Side: 4.3 ft²
Wind load @ 161 km/hr (100 mph)	Front: 254 N Side: 574 N	Front: 57 lbf Side: 129 lbf

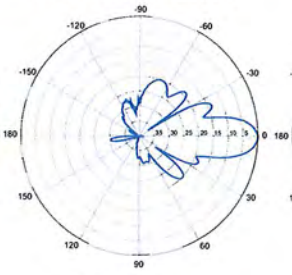
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80080-4CF-EDIN-X



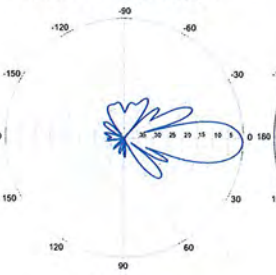
Horizontal

LPA-80080-4CF-EDIN-0



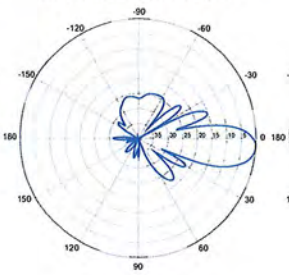
0° | Vertical

LPA-80080-4CF-EDIN-2



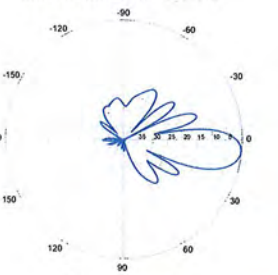
2° | Vertical

LPA-80080-4CF-EDIN-4



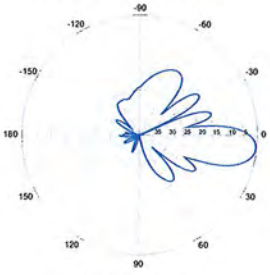
2° | Vertical

LPA-80080-4CF-EDIN-5



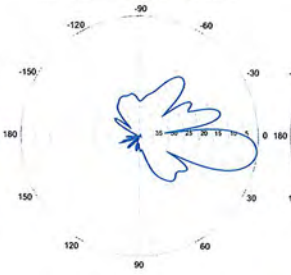
5° | Vertical

LPA-80080-4CF-EDIN-6



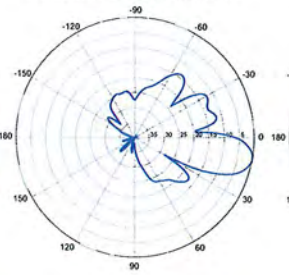
6° | Vertical

LPA-80080-4CF-EDIN-8



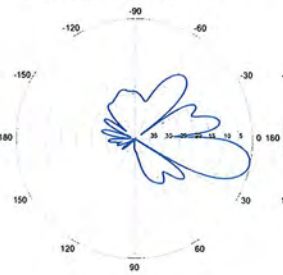
8° | Vertical

LPA-80080-4CF-EDIN-10



10° | Vertical

LPA-80080-4CF-EDIN-12



12° | Vertical

LPA-80080-4CF-EDIN-14

14° | Vertical

Amphenol ANTENNA SOLUTIONS

LPA-80063-4CF-EDIN-X

V-Pol | Log Periodic | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt.

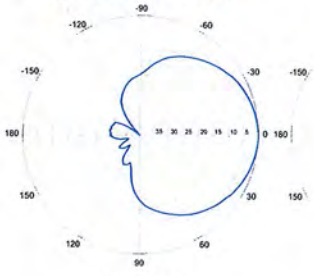
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	63°
Vertical beamwidth	15°
Gain	13.0 dBd (15.1 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-15.7 dB
Front-to-back ratio (+/-30°)	-31.7 dB
Null fill	5% (-26.02 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)

Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 385 x 332 mm	47.4 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	9.1 kg	20 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.46 m² Side: 0.39 m²	Front: 5.0 ft² Side: 4.2 ft²
Wind load @ 161 km/hr (100 mph)	Front: 660 N Side: 550 N	Front: 149 lbf Side: 124 lbf

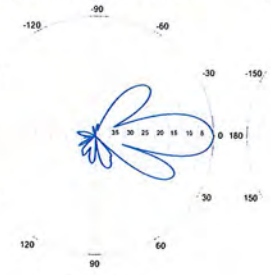
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80063-4CF-EDIN-X



Horizontal

LPA-80063-4CF-EDIN-0

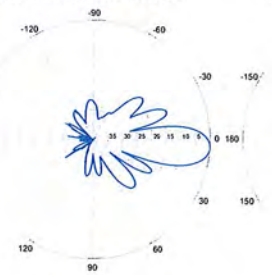


0° | Vertical

LPA-80063-4CF-EDIN-2

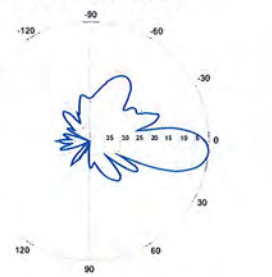
2° | Vertical

LPA-80063-4CF-EDIN-4



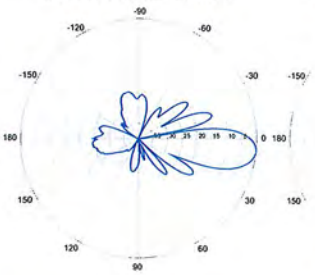
4° | Vertical

LPA-80063-4CF-EDIN-5



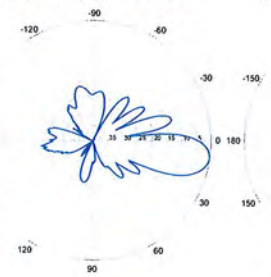
5° | Vertical

LPA-80063-4CF-EDIN-6



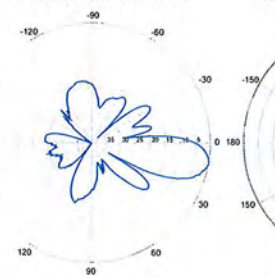
6° | Vertical

LPA-80063-4CF-EDIN-8



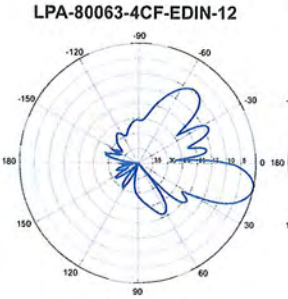
8° | Vertical

LPA-80063-4CF-EDIN-10



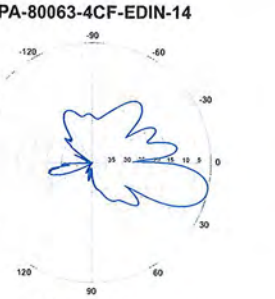
10° | Vertical

LPA-80063-4CF-EDIN-12



12° | Vertical

LPA-80063-4CF-EDIN-14



14° | Vertical

Amphenol ANTENNA SOLUTIONS

BXA-171063-8BF-EDIN-X

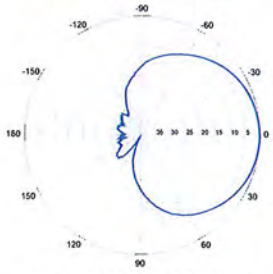
Replace 'X' with desired electrical downtilt.

X-Pol | FET Panel | 63° | 17.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	7°	7°	7°
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi
Electrical downtilt (X)	0, 2, 4, 8		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1232 x 154 x 105 mm		48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm		5.2 in
Weight without mounting brackets	4.8 kg		10.5 lbs
Survival wind speed	296 km/hr		184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²		Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N		Front: 63 lbf Side: 50 lbf

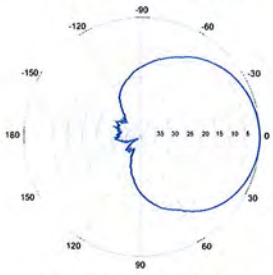
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-8BF-EDIN-X-FP		

BXA-171063-8BF-EDIN-X



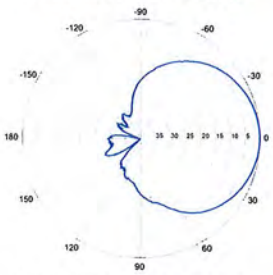
Horizontal | 1710-1880 MHz

BXA-171063-8BF-EDIN-X



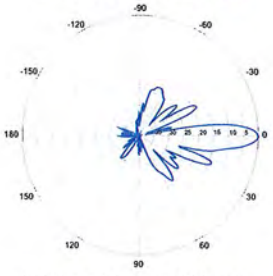
Horizontal | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



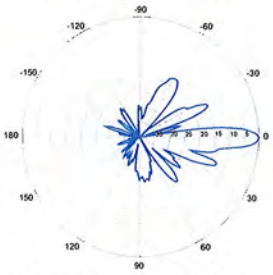
Horizontal | 1920-2170 MHz

BXA-171063-8BF-EDIN-0



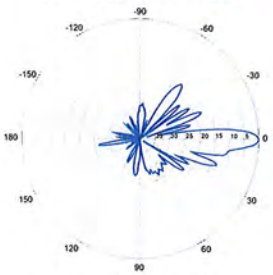
0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-0



0° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-171085-8BF-EDIN-X

Replace "X" with desired electrical downtilt.

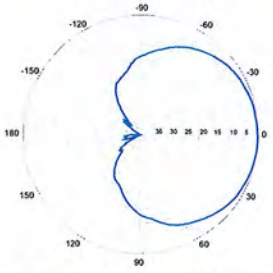
X-Pol | FET Panel | 85° | 16.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

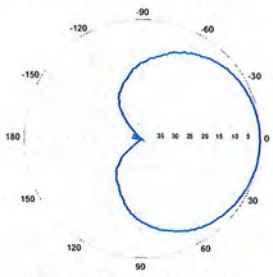
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-8BF-EDIN-X-FP		

BXA-171085-8BF-EDIN-X



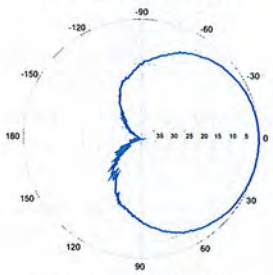
Horizontal | 1710-1880 MHz

BXA-171085-8BF-EDIN-X



Horizontal | 1850-1990 MHz

BXA-171085-8BF-EDIN-X



Horizontal | 1920-2170 MHz

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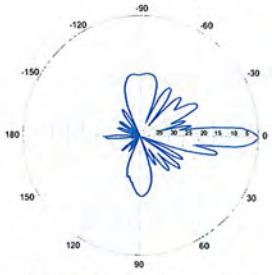
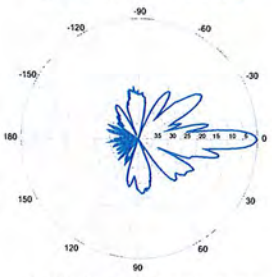


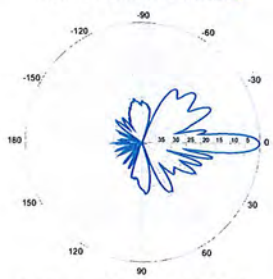
0° | Vertical | 1710-1880 MHz

BXA-171085-8BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171085-8BF-EDIN-0



0° | Vertical | 1920-2170 MHz

Product Data Sheet FD9R6004/2C-3L

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.

Features/Benefits

- **LTE ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **Very compact & small size design – Easy installation and reduced tower load**
- **In-line long-neck connectors for easy connection & waterproofing**
- **Exceptional reliability & environmental protection (IP 67)**
- **Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)**
- **Grounding already provided through the mounting bracket**
- **Kit available for easy dual mount**

Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Frequency Band, MHz	698-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710 - 2170 MHz path, with mounting hardware SEM2-1A
Mounting	Wall, pole
Frequency Range Low Frequency Path, MHz	698-960
Frequency Range High Frequency Path, MHz	1710-2200
Return Loss All Ports, Min, dB	19
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss 698-960 MHz Path, Typ, dB	0.07
Insertion Loss 1710-2200MHz path, Typ, dB	0.13
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 60/70@1710-2200MHz
Rejection between Bands, Min, dB	60
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Application	LTE 700MHz, GSM900/3G/UMTS, GSM900/GSM1800, Cellular 800/PCS
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

Notes

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**145 ft Monopole**
ATC Site Name	:	**Barkhamstead CT,CT**
ATC Site Number	:	**411181**
Engineering Number	:	**13714933_C3_02**
Proposed Carrier	:	**VERIZON WIRELESS**
Carrier Site Name	:	**BARKHAMSTED SOUTH**
Carrier Site Number	:	**467180**
Site Location	:	**50 Rust Road** **BARKHAMSTED, CT 06063-3314** **41.8938, -72.9965**
County	:	**Litchfield**
Date	:	**August 26, 2021**
Max Usage	:	**56%**
Result	:	**Pass**

Prepared By:

Jennifer Yu
Structural Engineer II

Reviewed By:

COA : PEC.0001553

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 145 ft Monopole to reflect the change in loading by VERIZON WIRELESS.

Supporting Documents

Tower Drawings	Summit, PJF Job #29200-1316, dated September 5, 2000 Mapping by Geostructural Site #411181, dated February 22, 2016
Foundation Drawing	Summit, PJF Job #29200-1316, dated September 5, 2000
Geotechnical Report	Clarence Welti Project: AT&T Tower Site, dated March 27, 2000

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	115 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.00" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	B
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	Ss = 0.17, S_1 = 0.05
Site Class:	D - Stiff Soil - Default

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
146.0	3	Ericsson Radio 4460 B25+B66	T-Arm	(3) 1.99" (50.7mm) Hybrid	SPRINT NEXTEL
	3	Ericsson Radio 4480 B71+B85A			
	3	RFS APXVAALL24 43-U-NA20			
	3	RFS APX16DWV-16DWVS-E-A20			
	3	Ericsson Air6449 B41			
136.0	3	Commscope SBNHH-1D65B (72.9")	T-Arm	(9) 1 5/8" Coax	VERIZON WIRELESS
	2	Antel LPA-80080/4CF ___			
	4	Antel LPA-80063/4CF			
133.0	3	Commscope SBNHH-1D65B (72.9")			
131.0	1	VZW Unused Reserve (17134.86 sqin)			
117.0	3	Ericsson RRUS 4478 B14	T-Arm	(2) 0.39" (10mm) Fiber Trunk (6) 0.78" (19.7mm) 8 AWG 6 (12) 1 1/4" Coax (2) 2" conduit (3) 3" conduit	AT&T MOBILITY
	1	Raycap DC6-48-60-18-8C			
	1	Raycap DC6-48-60-18-8C-EV			
	3	Powerwave Allgon 7770.00			
	2	Kathrein Scala 80010964			
	4	Kathrein Scala 80010965			
	1	Raycap DC6-48-60-18-8F(32.8 lbs)			
	3	Ericsson RRUS 8843 B2, B66A			
	3	Ericsson RRUS 4449 B5, B12			
	1	Andrew ABT-DMDF-ADBH			
	6	Powerwave Allgon LGP21901			
	6	Powerwave Allgon TT19-08BP111-001			
104.0	3	Ericsson KRY 112 71	T-Arm	(18) 1 5/8" Coax (1) 1/2" Coax	T-MOBILE
	1	Generic E-911 GPS			
	3	Commscope LNX-6515DS-A1M (50.3 lb)			
	6	RFS APX16DWV-16DWV-S-E-ACU			
	3	RFS ATMAP1412D-1A20			
50.0	1	PCTEL GPS-TMG-HR-26N	Flush	(1) 1/2" Coax	SPRINT NEXTEL

Equipment to be Removed

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
134.0	3	Alcatel-Lucent B66A RRH4x45-4R w/ Solar Shield	-	-	VERIZON WIRELESS
	2	Raycap RC2DC-3315-PF-48			
	3	Alcatel-Lucent B13 RRH4X30-4R w/ Solar Shield (57.2 lbs)			
131.0	-	-		(2) 1 5/8" Hybriflex	

Proposed Equipment

Elev.[1] (ft)	Qty	Equipment	Mount Type	Lines	Carrier
134.0	3	Samsung B2/B66A RRH-BR049	T-Arm	(2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	1	RFS DB-C1-12C-24AB-0Z			
	3	Samsung MT6407-77A			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

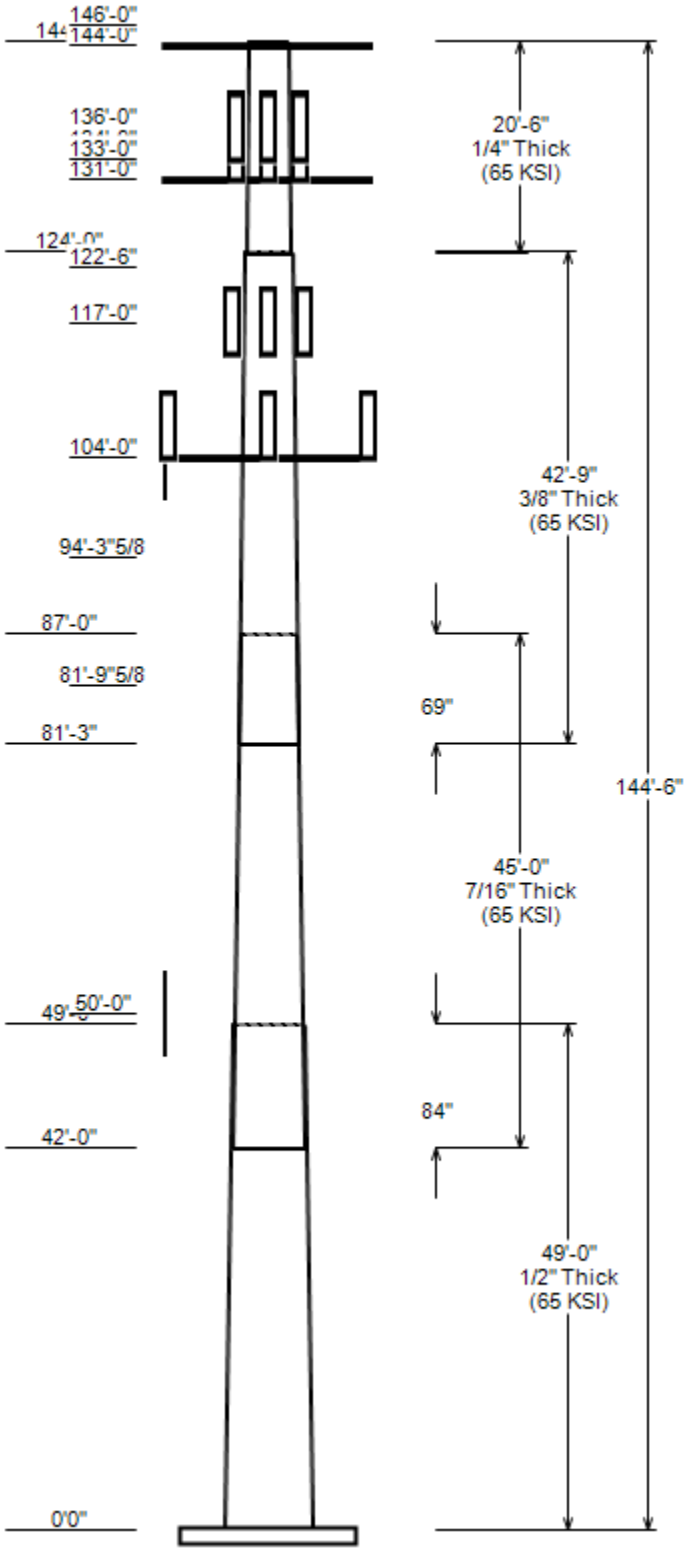
All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset :	411181, Barkhamstead CT	Height :	144.5 ft
Client :	VERIZON WIRELESS	Base Width :	66.05
Code :	ANSI/TIA-222-H	Shape :	18 Sides



SITE PARAMETERS

Base Elev (ft):	0.00	Structure Class:	II
Taper :	0.28400 (In/ft)	Exposure :	B
Topographic Category :	1	Topographic Feature:	
Topo Method :	Method 1		

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in) Across Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	49.000	52.15	66.05	0.500		0.000	18 Sides	65
2	45.000	42.25	55.01	0.438	Slip Joint	84.000	18 Sides	65
3	42.750	32.50	44.63	0.375	Slip Joint	69.000	18 Sides	65
4	20.500	24.00	32.50	0.250	Butt Joint	0.000	18 Sides	65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
146.0	146.0	3	Ericsson Radio 4460 B25+B66
146.0	146.0	3	Ericsson Radio 4480 B71+B85A
146.0	146.0	3	Ericsson Air6449 B41
146.0	146.0	3	RFS APX16DWV-16DWVS-E-A20
146.0	146.0	3	RFS APXVAALL24 43-U-NA20
144.5	144.5	1	Pine Tree Branches
144.0	144.0	3	Round T-Arm
136.0	136.0	2	Antel LPA-80080/4CF ___
136.0	136.0	4	Antel LPA-80063/4CF
136.0	136.0	3	Commscope SBNHH-1D65B (72.9")
134.0	134.0	3	Samsung B5/B13 RRH-BR04C
134.0	134.0	3	Samsung B2/B66A RRH-BR049
134.0	134.0	1	RFS DB-C1-12C-24AB-0Z
134.0	134.0	3	Samsung MT6407-77A
133.0	136.0	3	Commscope SBNHH-1D65B (72.9")
131.0	131.0	3	Round T-Arm
131.0	131.0	1	VZW Unused Reserve (17134.86 s
122.5	122.5	1	Pine Tree Branches
117.0	117.0	1	Andrew ABT-DMDF-ADBH
117.0	117.0	6	Powerwave Allgon LGP21901
117.0	117.0	6	Powerwave Allgon TT19-08BP111-
117.0	117.0	1	Raycap DC6-48-60-18-8F(32.8 lb
117.0	117.0	3	Ericsson RRUS 8843 B2, B66A
117.0	117.0	3	Ericsson RRUS 4449 B5, B12
117.0	117.0	3	Ericsson RRUS 4478 B14
117.0	117.0	1	Raycap DC6-48-60-18-8C
117.0	117.0	1	Raycap DC6-48-60-18-8C-EV
117.0	117.0	3	Powerwave Allgon 7770.00
117.0	117.0	2	Kathrein Scala 80010964
117.0	117.0	4	Kathrein Scala 80010965
117.0	117.0	3	T-Arm with Site Pro 1 PRK-1245
104.0	104.0	1	Generic E-911 GPS
104.0	108.0	3	Ericsson KRY 112 71
104.0	108.0	3	RFS ATMAP1412D-1A20
104.0	108.0	6	RFS APX16DWV-16DWV-S-E-ACU
104.0	108.0	3	Commscope LNX-6515DS-A1M (50.3
104.0	104.0	3	Flat T-Arm
94.3	94.3	1	Pine Tree Branches
81.8	81.8	1	Pine Tree Branches
50.0	50.0	1	PCTEL GPS-TMG-HR-26N

JOB INFORMATION

Asset :	411181, Barkhamstead CT	Height :	144.5 ft
Client :	VERIZON WIRELESS	Base Width :	66.05
Code :	ANSI/TIA-222-H	Shape :	18 Sides

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	146.0	1.99" (50.7mm) Hybrid	No
0.0	136.0	1 5/8" Coax	No
0.0	134.0	1 5/8" Hybriflex	No
0.0	117.0	3" conduit	No
0.0	117.0	3" conduit	No
0.0	117.0	2" conduit	No
0.0	117.0	1 1/4" Coax	No
0.0	117.0	0.78" (19.7mm) 8 AWG 6	No
0.0	117.0	0.39" (10mm) Fiber Trunk	No
0.0	104.0	1/2" Coax	No
0.0	104.0	1 5/8" Coax	No
0.0	50.0	1/2" Coax	No

LOAD CASES

1.2D + 1.0W	115 mph wind with no ice
0.9D + 1.0W	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W	5290.47	49.35	68.83
0.9D + 1.0W	5258.55	49.33	51.61
1.2D + 1.0Di + 1.0Wi	1458.28	13.75	86.58
1.2D + 1.0Ev + 1.0Eh	217.97	2.02	68.37
0.9D - 1.0Ev + 1.0Eh	216.41	2.02	47.75
1.0D + 1.0W	1283.93	12.02	57.40

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)

ANALYSIS PARAMETERS

Location:	Litchfield County,CT	Height:	144.5 ft
Type and Shape:	Custom, 18 Sides	Base Diameter:	66.05 in
Manufacturer:	Undetermined	Top Diameter:	24.00 in
K_d (non-service):	0.95	Taper:	0.2840 in/ft
K_e:	0.97	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	B	Design Wind Speed w/o Ice:	115 mph
Risk Category:	II	Design Wind Speed w/Ice:	50 mph
Topo Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.00 in
Crest Height:	0 ft	HMSL:	793.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method				
Site Class:	D - Stiff Soil			Period Based on Rayleigh Method (sec):	1.64
T_L (sec):	6	P:	1	$C_{s:}$	0.035
$S_{s:}$	0.171	$S_{1:}$	0.054	C_s Max:	0.035
$F_{a:}$	1.600	$F_{v:}$	2.400	C_s Min:	0.030
$S_{ds:}$	0.182	$S_{d1:}$	0.086		

LOAD CASES

1.2D + 1.0W	115 mph wind with no ice
0.9D + 1.0W	115 mph wind with no ice
1.2D + 1.0Di + 1.0Wi	50 mph wind with 1" radial ice
1.2D + 1.0Ev + 1.0Eh	Seismic
0.9D - 1.0Ev + 1.0Eh	Seismic (Reduced DL)
1.0D + 1.0W	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (in)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
									104.0							27,624.4			
1-18	49.00	0.5000	65		0.00	15,506	66.05	0.000	2	56,471.9	21.53	132.10	52.15	49.00	81.96		16.63	104.30	0.2837
2-18	45.00	0.4375	65	Slip	84.00	10,247	55.01	42.000	75.78	28,512.4	20.41	125.74	42.25	87.00	58.05	12,818.2	15.26	96.56	0.2837
3-18	42.75	0.3750	65	Slip	69.00	6,612	44.63	81.250	52.67	13,028.6	19.22	119.01	32.50	124.00	38.23	4,983.7	13.52	86.67	0.2837
4-18	20.50	0.2500	65	Butt	0.00	1,550	32.50	124.000	25.59	3,362.6	21.16	130.00	24.00	144.50	18.85	1,343.1	15.16	96.00	0.4146
				Shaft Weight		33,915													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
146.00	RFS APX16DWV-16DWVS-E-A20	3	0.80	0.000	40.70	6.586	0.67	118.43	8.027	0.67
146.00	Ericsson Air6449 B41	3	0.80	0.000	104.00	5.682	0.67	194.69	6.738	0.67
146.00	Ericsson Radio 4480 B71+B85A	3	0.80	0.000	84.00	2.852	0.50	134.27	3.595	0.50
146.00	Ericsson Radio 4460 B25+B66	3	0.80	0.000	109.00	2.564	0.50	167.82	3.265	0.50
146.00	RFS APXVAALL24 43-U-NA20	3	0.80	0.000	122.80	20.243	0.67	381.99	22.711	0.67
144.50	Pine Tree Branches	1	1.00	0.000	337.50	11.700	1.00	493.96	17.124	1.00
144.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	388.85	15.177	0.67
136.00	Commscope SBNHH-1D65B (72.9")	3	0.80	0.000	40.60	8.200	0.67	157.24	10.070	0.67
136.00	Antel LPA-80063/4CF	4	0.80	0.000	20.00	6.142	0.67	148.89	6.814	0.67
136.00	Antel LPA-80080/4CF ___	2	0.80	0.000	12.00	5.399	0.67	95.03	3.162	0.67
134.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.67	148.90	5.712	0.67
134.00	RFS DB-C1-12C-24AB-0Z	1	0.80	0.000	32.00	4.056	0.50	115.92	4.957	0.50
134.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	108.07	2.471	0.50
134.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	126.52	2.471	0.50
133.00	Commscope SBNHH-1D65B (72.9")	3	0.80	3.000	40.60	8.200	0.67	156.93	10.065	0.67
131.00	VZW Unused Reserve (17134.86 s	1	0.80	0.000	1411.50	118.992	0.90	2059.31	173.604	0.90
131.00	Round T-Arm	3	0.75	0.000	250.00	9.700	0.67	387.69	15.131	0.67
122.50	Pine Tree Branches	1	1.00	0.000	3300.00	383.240	1.00	4803.46	557.841	1.00
117.00	T-Arm with Site Pro 1 PRK-1245	3	0.75	0.000	450.00	17.900	0.67	654.11	26.019	0.67
117.00	Andrew ABT-DMDF-ADBH	1	0.80	0.000	1.10	0.045	0.50	2.55	0.158	0.50
117.00	Raycap DC6-48-60-18-8F(32.8 lb	1	0.80	0.000	32.80	1.470	0.50	72.97	1.925	0.50
117.00	Powerwave Allgon TT19-08BP111-	6	0.80	0.000	16.00	0.553	0.50	29.15	0.886	0.50
117.00	Kathrein Scala 80010965	4	0.80	0.000	97.60	13.814	0.67	271.18	15.800	0.67
117.00	Kathrein Scala 80010964	2	0.80	0.000	83.80	9.997	0.67	216.99	11.534	0.67
117.00	Powerwave Allgon 7770.00	3	0.80	0.000	35.00	5.508	0.67	115.93	6.177	0.67
117.00	Raycap DC6-48-60-18-8C-EV	1	0.80	0.000	16.00	4.788	0.50	100.08	5.746	0.50
117.00	Raycap DC6-48-60-18-8C	1	0.80	0.000	16.00	2.030	0.50	53.90	2.524	0.50
117.00	Ericsson RRUS 4478 B14	3	0.80	0.000	59.40	2.021	0.50	99.36	2.635	0.50
117.00	Powerwave Allgon LGP21901	6	0.80	0.000	5.50	0.200	0.50	10.50	0.408	0.50
117.00	Ericsson RRUS 8843 B2, B66A	3	0.80	0.000	72.00	1.639	0.50	111.91	2.189	0.50
117.00	Ericsson RRUS 4449 B5, B12	3	0.80	0.000	71.00	1.969	0.50	112.96	2.576	0.50
104.00	Flat T-Arm	3	0.75	0.000	250.00	12.900	0.67	384.34	18.157	0.67
104.00	Commscope LNX-6515DS-A1M (50.3	3	0.80	4.000	50.30	11.440	0.67	199.02	13.530	0.67
104.00	RFS APX16DWV-16DWV-S-E-ACU	6	0.80	4.000	39.60	6.077	0.67	92.32	7.399	0.67
104.00	RFS ATMAP1412D-1A20	3	0.80	4.000	13.00	1.000	0.50	30.05	1.429	0.50
104.00	Generic E-911 GPS	1	0.80	0.000	5.00	0.580	0.50	21.47	0.864	0.50
104.00	Ericsson KRY 112 71	3	0.80	4.000	13.20	0.583	0.50	24.97	0.939	0.50
94.30	Pine Tree Branches	1	1.00	0.000	937.50	138.580	1.00	1353.06	200.007	1.00
81.80	Pine Tree Branches	1	1.00	0.000	937.50	146.250	1.00	1348.00	210.287	1.00
50.00	PCTEL GPS-TMG-HR-26N	1	1.00	0.000	0.60	0.090	1.00	3.50	0.198	1.00
Totals	Num Loadings: 40	105			14,931.80			26,136.47		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	146.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	SPRINT NEXTEL

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax/ Row	Dist Between Rows(in)	Dist Between Cols(in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	136.00	9	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	134.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	117.00	12	1 1/4" Coax	1.55	0.63	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	6	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	2	0.39" (10mm) Fiber Tr	0.39	0.06	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	2	2" conduit	2.38	3.65	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	2	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	117.00	1	3" conduit	3.5	7.58	N	0	0	0	0	0	N	AT&T MOBILITY
0.00	104.00	18	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	T-MOBILE
0.00	104.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	T-MOBILE
0.00	50.00	1	1/2" Coax	0.63	0.15	N	0	0	0	0	0	N	SPRINT NEXTEL

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.5000	66.050	104.024	56,471.90	21.53	132.10	76.1	1684.0	0.0	0.0
5.00		0.5000	64.632	101.773	52,884.50	21.03	129.26	76.7	1611.6	0.0	1,750.7
10.00		0.5000	63.213	99.522	49,452.40	20.53	126.43	77.3	1540.9	0.0	1,712.4
15.00		0.5000	61.795	97.271	46,172.00	20.03	123.59	77.8	1471.7	0.0	1,674.1
20.00		0.5000	60.376	95.020	43,040.00	19.53	120.75	78.4	1404.1	0.0	1,635.8
25.00		0.5000	58.958	92.769	40,053.00	19.03	117.92	79	1338.1	0.0	1,597.5
30.00		0.5000	57.539	90.518	37,207.50	18.53	115.08	79.6	1273.6	0.0	1,559.2
35.00		0.5000	56.121	88.267	34,500.00	18.03	112.24	80.2	1210.8	0.0	1,520.9
40.00		0.5000	54.702	86.015	31,927.20	17.53	109.40	80.8	1149.6	0.0	1,482.6
42.00	Bot - Section 2	0.5000	54.135	85.115	30,935.00	17.33	108.27	81	1125.5	0.0	582.3
45.00		0.5000	53.284	83.764	29,485.50	17.03	106.57	81.4	1089.9	0.0	1,629.5
49.00	Top - Section 1	0.4375	53.024	73.020	25,511.60	19.61	121.20	78.3	947.7	0.0	2,132.5
50.00		0.4375	52.740	72.626	25,100.90	19.49	120.55	78.5	937.4	0.0	247.8
55.00		0.4375	51.322	70.656	23,113.50	18.92	117.31	79.1	887.1	0.0	1,218.9
60.00		0.4375	49.903	68.687	21,233.90	18.35	114.06	79.8	838.1	0.0	1,185.4
65.00		0.4375	48.485	66.717	19,459.00	17.78	110.82	80.5	790.5	0.0	1,151.9
70.00		0.4375	47.066	64.747	17,785.90	17.21	107.58	81.2	744.3	0.0	1,118.4
75.00		0.4375	45.648	62.777	16,211.60	16.63	104.34	81.8	699.5	0.0	1,084.8
80.00		0.4375	44.229	60.808	14,733.00	16.06	101.09	82.5	656.1	0.0	1,051.3
81.25	Bot - Section 3	0.4375	43.874	60.315	14,378.00	15.92	100.28	82.6	645.5	0.0	257.6
81.80		0.4375	43.718	60.099	14,223.60	15.86	99.93	82.6	640.8	0.0	211.1
85.00		0.4375	42.811	58.838	13,347.20	15.49	97.85	82.6	614.1	0.0	1,213.1
87.00	Top - Section 2	0.3750	42.993	50.724	11,640.10	18.45	114.65	79.7	533.3	0.0	745.3
90.00		0.3750	42.142	49.711	10,956.60	18.05	112.38	80.2	512.1	0.0	512.6
94.30		0.3750	40.922	48.259	10,024.30	17.48	109.13	80.8	482.5	0.0	716.8
95.00		0.3750	40.724	48.023	9,877.70	17.39	108.60	81	477.7	0.0	114.7
100.00		0.3750	39.305	46.335	8,872.10	16.72	104.81	81.7	444.6	0.0	802.7
104.00		0.3750	38.170	44.984	8,118.70	16.18	101.79	82.4	418.9	0.0	621.5
105.00		0.3750	37.887	44.646	7,937.20	16.05	101.03	82.5	412.6	0.0	152.5
110.00		0.3750	36.468	42.958	7,070.40	15.38	97.25	82.6	381.9	0.0	745.2
115.00		0.3750	35.050	41.270	6,269.10	14.72	93.47	82.6	352.3	0.0	716.5
117.00		0.3750	34.482	40.595	5,966.40	14.45	91.95	82.6	340.8	0.0	278.6
120.00		0.3750	33.631	39.582	5,530.80	14.05	89.68	82.6	323.9	0.0	409.2
122.50		0.3750	32.922	38.737	5,184.40	13.72	87.79	82.6	310.2	0.0	333.1
124.00	Top - Section 3	0.3750	32.496	38.231	4,983.70	13.52	86.66	82.6	302.1	0.0	196.4
124.00	Bot - Section 4	0.2500	32.500	25.589	3,362.60	21.16	130.00	76.5	203.8	0.0	
125.00		0.2500	32.085	25.260	3,234.60	20.87	128.34	76.9	198.6	0.0	86.5
130.00		0.2500	30.012	23.616	2,642.90	19.40	120.05	78.6	173.4	0.0	415.8
131.00		0.2500	29.598	23.287	2,534.00	19.11	118.39	78.9	168.6	0.0	79.8
133.00		0.2500	28.769	22.629	2,325.20	18.53	115.07	79.6	159.2	0.0	156.2
134.00		0.2500	28.354	22.300	2,225.30	18.24	113.42	80	154.6	0.0	76.4
135.00		0.2500	27.939	21.971	2,128.30	17.94	111.76	80.3	150.0	0.0	75.3
136.00		0.2500	27.525	21.642	2,034.10	17.65	110.10	80.6	145.6	0.0	74.2
140.00		0.2500	25.866	20.326	1,685.20	16.48	103.47	82	128.3	0.0	285.6
144.00		0.2500	24.208	19.010	1,378.60	15.31	96.83	82.6	112.2	0.0	267.7
144.50		0.2500	24.001	18.846	1,343.10	15.16	96.00	82.6	110.2	0.0	32.2
									Totals:		33,912.6

Load Case: 1.2D + 1.0W 115 mph wind with no ice 21 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.20
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-68.83	-49.35	0.00	-5,290.5	0.00	5,290.47	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.561
5.00	-66.18	-49.02	0.00	-5,043.7	0.00	5,043.73	7,022.32	1,786.12	10,346.10	9,266.86	0.07	-0.13	0.554
10.00	-63.59	-48.69	0.00	-4,798.6	0.00	4,798.65	6,919.69	1,746.61	9,893.54	8,927.89	0.28	-0.26	0.547
15.00	-61.03	-48.36	0.00	-4,555.2	0.00	4,555.21	6,814.69	1,707.10	9,451.09	8,591.96	0.63	-0.4	0.540
20.00	-58.53	-48.03	0.00	-4,313.4	0.00	4,313.42	6,707.29	1,667.60	9,018.76	8,259.27	1.12	-0.53	0.532
25.00	-56.07	-47.71	0.00	-4,073.3	0.00	4,073.27	6,597.52	1,628.09	8,596.56	7,930.04	1.75	-0.67	0.523
30.00	-53.65	-47.38	0.00	-3,834.7	0.00	3,834.74	6,485.35	1,588.58	8,184.47	7,604.46	2.53	-0.81	0.513
35.00	-51.29	-47.03	0.00	-3,597.9	0.00	3,597.87	6,370.81	1,549.08	7,782.51	7,282.76	3.46	-0.95	0.503
40.00	-49.00	-46.77	0.00	-3,362.7	0.00	3,362.72	6,253.88	1,509.57	7,390.66	6,965.15	4.54	-1.1	0.492
42.00	-48.07	-46.59	0.00	-3,269.2	0.00	3,269.18	6,206.44	1,493.77	7,236.76	6,839.29	5.01	-1.16	0.487
45.00	-45.78	-46.31	0.00	-3,129.4	0.00	3,129.40	6,134.57	1,470.07	7,008.94	6,651.83	5.77	-1.25	0.479
49.00	-42.82	-46.07	0.00	-2,944.2	0.00	2,944.16	5,148.29	1,281.50	6,086.85	5,567.88	6.86	-1.36	0.538
50.00	-42.37	-45.86	0.00	-2,898.1	0.00	2,898.09	5,129.30	1,274.59	6,021.36	5,517.17	7.15	-1.39	0.535
55.00	-40.36	-45.47	0.00	-2,668.8	0.00	2,668.80	5,032.95	1,240.02	5,699.22	5,265.49	8.7	-1.55	0.516
60.00	-38.40	-45.07	0.00	-2,441.5	0.00	2,441.47	4,934.21	1,205.45	5,385.93	5,017.06	10.41	-1.71	0.496
65.00	-36.48	-44.66	0.00	-2,216.1	0.00	2,216.13	4,833.09	1,170.88	5,081.50	4,772.08	12.28	-1.86	0.473
70.00	-34.61	-44.25	0.00	-1,992.8	0.00	1,992.83	4,729.59	1,136.31	4,785.93	4,530.77	14.32	-2.02	0.449
75.00	-32.78	-43.83	0.00	-1,771.6	0.00	1,771.60	4,623.70	1,101.74	4,499.21	4,293.33	16.51	-2.17	0.421
80.00	-31.03	-43.54	0.00	-1,552.5	0.00	1,552.46	4,515.42	1,067.18	4,221.34	4,059.98	18.86	-2.31	0.391
81.25	-30.59	-43.46	0.00	-1,498.0	0.00	1,498.04	4,481.13	1,058.53	4,153.26	3,996.20	19.47	-2.35	0.383
81.80	-29.33	-38.57	0.00	-1,474.1	0.00	1,474.14	4,465.03	1,054.73	4,123.48	3,967.40	19.75	-2.37	0.379
85.00	-27.57	-38.31	0.00	-1,350.7	0.00	1,350.71	4,371.38	1,032.61	3,952.34	3,801.89	21.36	-2.46	0.363
87.00	-26.46	-38.08	0.00	-1,274.1	0.00	1,274.09	3,638.34	890.21	3,426.86	3,187.47	22.41	-2.51	0.409
90.00	-25.54	-37.77	0.00	-1,159.9	0.00	1,159.87	3,586.74	872.43	3,291.38	3,078.96	24.01	-2.59	0.386
94.30	-23.37	-32.85	0.00	-997.4	0.00	997.45	3,511.28	846.95	3,101.94	2,925.37	26.41	-2.71	0.349
95.00	-23.14	-32.64	0.00	-974.5	0.00	974.46	3,498.83	842.80	3,071.64	2,900.59	26.81	-2.73	0.344
100.00	-21.70	-32.24	0.00	-811.3	0.00	811.28	3,408.54	813.18	2,859.49	2,725.48	29.74	-2.86	0.306
104.00	-19.23	-29.87	0.00	-676.8	0.00	676.79	3,334.59	789.47	2,695.23	2,587.88	32.18	-2.96	0.269
105.00	-18.96	-29.64	0.00	-646.9	0.00	646.92	3,315.86	783.55	2,654.93	2,553.84	32.8	-2.98	0.260
110.00	-17.70	-29.21	0.00	-498.7	0.00	498.74	3,191.58	753.92	2,457.96	2,364.24	35.98	-3.08	0.218
115.00	-16.49	-28.89	0.00	-352.7	0.00	352.70	3,066.14	724.29	2,268.59	2,181.14	39.26	-3.17	0.169
117.00	-12.81	-25.37	0.00	-294.9	0.00	294.92	3,015.97	712.43	2,194.96	2,109.97	40.6	-3.2	0.145
120.00	-12.26	-25.14	0.00	-218.8	0.00	218.81	2,940.71	694.66	2,086.80	2,005.42	42.62	-3.24	0.115
122.50	-8.65	-10.97	0.00	-156.0	0.00	155.96	2,877.99	679.84	1,998.76	1,920.33	44.32	-3.26	0.084
124.00	-8.39	-10.87	0.00	-139.5	0.00	139.50	2,840.36	670.95	1,946.84	1,870.16	45.35	-3.27	0.078
124.00	-8.39	-10.87	0.00	-139.5	0.00	139.50	1,762.15	449.09	1,308.17	1,169.42	45.35	-3.27	0.125
125.00	-8.28	-10.65	0.00	-128.6	0.00	128.63	1,747.31	443.32	1,274.75	1,144.56	46.04	-3.28	0.118
130.00	-7.69	-10.42	0.00	-75.4	0.00	75.36	1,670.08	414.45	1,114.16	1,022.18	49.5	-3.33	0.079
131.00	-5.21	-6.48	0.00	-65.0	0.00	64.95	1,654.03	408.68	1,083.34	998.13	50.19	-3.33	0.068
133.00	-4.87	-5.88	0.00	-50.5	0.00	50.51	1,621.30	397.13	1,022.99	950.51	51.59	-3.35	0.056
134.00	-3.90	-5.25	0.00	-44.6	0.00	44.64	1,604.63	391.36	993.47	926.94	52.29	-3.35	0.051
135.00	-3.80	-5.18	0.00	-39.4	0.00	39.39	1,587.76	385.59	964.38	903.54	53	-3.36	0.046
136.00	-3.51	-3.81	0.00	-34.2	0.00	34.21	1,570.69	379.81	935.72	880.32	53.7	-3.36	0.041
140.00	-3.15	-3.55	0.00	-19.0	0.00	18.95	1,500.35	356.72	825.40	789.31	56.52	-3.38	0.026
144.00	-1.94	-2.80	0.00	-4.7	0.00	4.74	1,412.35	333.63	722.00	694.44	59.35	-3.39	0.008
144.50	0.00	-2.68	0.00	-3.3	0.00	3.34	1,400.13	330.74	709.57	682.42	59.71	-3.39	0.005

Load Case: 0.9D + 1.0W 115 mph wind with no ice 21 Iterations
Gust Response Factor: 1.10
Dead load Factor: 0.90
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.61	-49.33	0.00	-5,258.6	0.00	5,258.55	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.555
5.00	-49.60	-48.96	0.00	-5,011.9	0.00	5,011.90	7,022.32	1,786.12	10,346.10	9,266.86	0.07	-0.13	0.549
10.00	-47.62	-48.59	0.00	-4,767.1	0.00	4,767.11	6,919.69	1,746.61	9,893.54	8,927.89	0.28	-0.26	0.542
15.00	-45.68	-48.23	0.00	-4,524.2	0.00	4,524.15	6,814.69	1,707.10	9,451.09	8,591.96	0.62	-0.39	0.534
20.00	-43.77	-47.87	0.00	-4,283.0	0.00	4,282.99	6,707.29	1,667.60	9,018.76	8,259.27	1.11	-0.53	0.526
25.00	-41.90	-47.52	0.00	-4,043.6	0.00	4,043.63	6,597.52	1,628.09	8,596.56	7,930.04	1.74	-0.67	0.517
30.00	-40.06	-47.16	0.00	-3,806.0	0.00	3,806.05	6,485.35	1,588.58	8,184.47	7,604.46	2.51	-0.81	0.508
35.00	-38.26	-46.79	0.00	-3,570.2	0.00	3,570.25	6,370.81	1,549.08	7,782.51	7,282.76	3.44	-0.95	0.497
40.00	-36.53	-46.52	0.00	-3,336.3	0.00	3,336.29	6,253.88	1,509.57	7,390.66	6,965.15	4.51	-1.09	0.486
42.00	-35.82	-46.33	0.00	-3,243.2	0.00	3,243.25	6,206.44	1,493.77	7,236.76	6,839.29	4.98	-1.15	0.481
45.00	-34.08	-46.04	0.00	-3,104.3	0.00	3,104.26	6,134.57	1,470.07	7,008.94	6,651.83	5.73	-1.24	0.473
49.00	-31.85	-45.80	0.00	-2,920.1	0.00	2,920.11	5,148.29	1,281.50	6,086.85	5,567.88	6.82	-1.35	0.532
50.00	-31.50	-45.57	0.00	-2,874.3	0.00	2,874.31	5,129.30	1,274.59	6,021.36	5,517.17	7.1	-1.38	0.528
55.00	-29.97	-45.16	0.00	-2,646.4	0.00	2,646.45	5,032.95	1,240.02	5,699.22	5,265.49	8.64	-1.54	0.510
60.00	-28.47	-44.75	0.00	-2,420.6	0.00	2,420.63	4,934.21	1,205.45	5,385.93	5,017.06	10.33	-1.7	0.490
65.00	-27.00	-44.33	0.00	-2,196.9	0.00	2,196.88	4,833.09	1,170.88	5,081.50	4,772.08	12.19	-1.85	0.467
70.00	-25.57	-43.91	0.00	-1,975.2	0.00	1,975.22	4,729.59	1,136.31	4,785.93	4,530.77	14.21	-2	0.443
75.00	-24.18	-43.48	0.00	-1,755.7	0.00	1,755.68	4,623.70	1,101.74	4,499.21	4,293.33	16.39	-2.15	0.416
80.00	-22.85	-43.20	0.00	-1,538.3	0.00	1,538.27	4,515.42	1,067.18	4,221.34	4,059.98	18.73	-2.3	0.386
81.25	-22.53	-43.12	0.00	-1,484.3	0.00	1,484.27	4,481.13	1,058.53	4,153.26	3,996.20	19.33	-2.33	0.378
81.80	-21.62	-38.24	0.00	-1,460.6	0.00	1,460.56	4,465.03	1,054.73	4,123.48	3,967.40	19.6	-2.35	0.374
85.00	-20.28	-37.98	0.00	-1,338.2	0.00	1,338.19	4,371.38	1,032.61	3,952.34	3,801.89	21.21	-2.44	0.358
87.00	-19.45	-37.76	0.00	-1,262.2	0.00	1,262.23	3,638.34	890.21	3,426.86	3,187.47	22.24	-2.49	0.403
90.00	-18.74	-37.45	0.00	-1,149.0	0.00	1,148.96	3,586.74	872.43	3,291.38	3,078.96	23.83	-2.57	0.380
94.30	-17.16	-32.55	0.00	-987.9	0.00	987.94	3,511.28	846.95	3,101.94	2,925.37	26.21	-2.69	0.344
95.00	-16.98	-32.33	0.00	-965.2	0.00	965.15	3,498.83	842.80	3,071.64	2,900.59	26.61	-2.71	0.339
100.00	-15.89	-31.94	0.00	-803.5	0.00	803.51	3,408.54	813.18	2,859.49	2,725.48	29.52	-2.84	0.301
104.00	-14.06	-29.59	0.00	-670.2	0.00	670.24	3,334.59	789.47	2,695.23	2,587.88	31.94	-2.93	0.265
105.00	-13.85	-29.36	0.00	-640.6	0.00	640.64	3,315.86	783.55	2,654.93	2,553.84	32.56	-2.96	0.256
110.00	-12.90	-28.94	0.00	-493.8	0.00	493.85	3,191.58	753.92	2,457.96	2,364.24	35.71	-3.06	0.214
115.00	-11.99	-28.63	0.00	-349.2	0.00	349.15	3,066.14	724.29	2,268.59	2,181.14	38.96	-3.14	0.166
117.00	-9.28	-25.17	0.00	-291.9	0.00	291.89	3,015.97	712.43	2,194.96	2,109.97	40.29	-3.17	0.143
120.00	-8.86	-24.94	0.00	-216.4	0.00	216.39	2,940.71	694.66	2,086.80	2,005.42	42.29	-3.21	0.112
122.50	-6.35	-10.84	0.00	-154.0	0.00	154.04	2,877.99	679.84	1,998.76	1,920.33	43.98	-3.23	0.083
124.00	-6.15	-10.74	0.00	-137.8	0.00	137.78	2,840.36	670.95	1,946.84	1,870.16	45	-3.25	0.076
124.00	-6.15	-10.74	0.00	-137.8	0.00	137.78	1,762.15	449.09	1,308.17	1,169.42	45	-3.25	0.122
125.00	-6.07	-10.52	0.00	-127.0	0.00	127.05	1,747.31	443.32	1,274.75	1,144.56	45.68	-3.25	0.115
130.00	-5.63	-10.29	0.00	-74.4	0.00	74.43	1,670.08	414.45	1,114.16	1,022.18	49.11	-3.3	0.077
131.00	-3.82	-6.40	0.00	-64.1	0.00	64.14	1,654.03	408.68	1,083.34	998.13	49.8	-3.3	0.067
133.00	-3.57	-5.80	0.00	-49.9	0.00	49.87	1,621.30	397.13	1,022.99	950.51	51.19	-3.32	0.055
134.00	-2.86	-5.19	0.00	-44.1	0.00	44.07	1,604.63	391.36	993.47	926.94	51.88	-3.32	0.049
135.00	-2.78	-5.12	0.00	-38.9	0.00	38.88	1,587.76	385.59	964.38	903.54	52.58	-3.33	0.045
136.00	-2.58	-3.76	0.00	-33.8	0.00	33.77	1,570.69	379.81	935.72	880.32	53.28	-3.33	0.040
140.00	-2.31	-3.50	0.00	-18.7	0.00	18.73	1,500.35	356.72	825.40	789.31	56.07	-3.35	0.025
144.00	-1.42	-2.77	0.00	-4.7	0.00	4.72	1,412.35	333.63	722.00	694.44	58.88	-3.36	0.008
144.50	0.00	-2.68	0.00	-3.3	0.00	3.34	1,400.13	330.74	709.57	682.42	59.23	-3.36	0.005

Load Case: 1.2D + 1.0Di + 1.0Wi		50 mph wind with 1" radial ice			20 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00		
Dead load Factor:	1.20			Ice Importance Factor	1.00
Wind Load Factor:	1.00				

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-86.58	-13.75	0.00	-1,458.3	0.00	1,458.28	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.164
5.00	-83.72	-13.65	0.00	-1,389.5	0.00	1,389.54	7,022.32	1,786.12	10,346.10	9,266.86	0.02	-0.04	0.162
10.00	-80.88	-13.55	0.00	-1,321.3	0.00	1,321.30	6,919.69	1,746.61	9,893.54	8,927.89	0.08	-0.07	0.160
15.00	-78.07	-13.45	0.00	-1,253.6	0.00	1,253.57	6,814.69	1,707.10	9,451.09	8,591.96	0.17	-0.11	0.157
20.00	-75.31	-13.35	0.00	-1,186.3	0.00	1,186.34	6,707.29	1,667.60	9,018.76	8,259.27	0.31	-0.15	0.155
25.00	-72.59	-13.25	0.00	-1,119.6	0.00	1,119.61	6,597.52	1,628.09	8,596.56	7,930.04	0.48	-0.19	0.152
30.00	-69.92	-13.14	0.00	-1,053.4	0.00	1,053.39	6,485.35	1,588.58	8,184.47	7,604.46	0.7	-0.22	0.149
35.00	-67.30	-13.04	0.00	-987.7	0.00	987.66	6,370.81	1,549.08	7,782.51	7,282.76	0.95	-0.26	0.146
40.00	-64.73	-12.96	0.00	-922.5	0.00	922.47	6,253.88	1,509.57	7,390.66	6,965.15	1.25	-0.3	0.143
42.00	-63.71	-12.90	0.00	-896.6	0.00	896.55	6,206.44	1,493.77	7,236.76	6,839.29	1.38	-0.32	0.141
45.00	-61.28	-12.82	0.00	-857.8	0.00	857.84	6,134.57	1,470.07	7,008.94	6,651.83	1.59	-0.34	0.139
49.00	-58.09	-12.75	0.00	-806.6	0.00	806.57	5,148.29	1,281.50	6,086.85	5,567.88	1.89	-0.37	0.156
50.00	-57.63	-12.68	0.00	-793.8	0.00	793.82	5,129.30	1,274.59	6,021.36	5,517.17	1.97	-0.38	0.155
55.00	-55.38	-12.56	0.00	-730.4	0.00	730.43	5,032.95	1,240.02	5,699.22	5,265.49	2.39	-0.43	0.150
60.00	-53.18	-12.43	0.00	-667.6	0.00	667.64	4,934.21	1,205.45	5,385.93	5,017.06	2.86	-0.47	0.144
65.00	-51.03	-12.31	0.00	-605.5	0.00	605.47	4,833.09	1,170.88	5,081.50	4,772.08	3.38	-0.51	0.138
70.00	-48.92	-12.18	0.00	-543.9	0.00	543.93	4,729.59	1,136.31	4,785.93	4,530.77	3.94	-0.55	0.131
75.00	-46.87	-12.05	0.00	-483.0	0.00	483.03	4,623.70	1,101.74	4,499.21	4,293.33	4.54	-0.59	0.123
80.00	-44.86	-11.96	0.00	-422.8	0.00	422.79	4,515.42	1,067.18	4,221.34	4,059.98	5.18	-0.63	0.114
81.25	-44.37	-11.93	0.00	-407.8	0.00	407.85	4,481.13	1,058.53	4,153.26	3,996.20	5.35	-0.64	0.112
81.80	-42.60	-10.59	0.00	-401.3	0.00	401.28	4,465.03	1,054.73	4,123.48	3,967.40	5.42	-0.65	0.111
85.00	-40.67	-10.51	0.00	-367.4	0.00	367.39	4,371.38	1,032.61	3,952.34	3,801.89	5.87	-0.67	0.106
87.00	-39.48	-10.44	0.00	-346.4	0.00	346.36	3,638.34	890.21	3,426.86	3,187.47	6.15	-0.69	0.120
90.00	-38.42	-10.34	0.00	-315.0	0.00	315.05	3,586.74	872.43	3,291.38	3,078.96	6.59	-0.71	0.113
94.30	-35.51	-8.98	0.00	-270.6	0.00	270.57	3,511.28	846.95	3,101.94	2,925.37	7.25	-0.74	0.103
95.00	-35.27	-8.92	0.00	-264.3	0.00	264.29	3,498.83	842.80	3,071.64	2,900.59	7.36	-0.75	0.101
100.00	-33.59	-8.79	0.00	-219.7	0.00	219.71	3,408.54	813.18	2,859.49	2,725.48	8.16	-0.78	0.091
104.00	-29.83	-8.18	0.00	-183.3	0.00	183.28	3,334.59	789.47	2,695.23	2,587.88	8.83	-0.81	0.080
105.00	-29.52	-8.11	0.00	-175.1	0.00	175.10	3,315.86	783.55	2,654.93	2,553.84	9	-0.82	0.078
110.00	-28.02	-7.97	0.00	-134.6	0.00	134.56	3,191.58	753.92	2,457.96	2,364.24	9.87	-0.84	0.066
115.00	-26.56	-7.86	0.00	-94.7	0.00	94.73	3,066.14	724.29	2,268.59	2,181.14	10.77	-0.87	0.052
117.00	-20.66	-6.97	0.00	-79.0	0.00	79.00	3,015.97	712.43	2,194.96	2,109.97	11.13	-0.87	0.044
120.00	-19.96	-6.89	0.00	-58.1	0.00	58.10	2,940.71	694.66	2,086.80	2,005.42	11.69	-0.88	0.036
122.50	-14.32	-2.96	0.00	-40.9	0.00	40.88	2,877.99	679.84	1,998.76	1,920.33	12.15	-0.89	0.026
124.00	-13.99	-2.92	0.00	-36.4	0.00	36.44	2,840.36	670.95	1,946.84	1,870.16	12.43	-0.89	0.024
124.00	-13.99	-2.92	0.00	-36.4	0.00	36.44	1,762.15	449.09	1,308.17	1,169.42	12.43	-0.89	0.039
125.00	-13.82	-2.85	0.00	-33.5	0.00	33.52	1,747.31	443.32	1,274.75	1,144.56	12.62	-0.9	0.037
130.00	-13.00	-2.77	0.00	-19.3	0.00	19.26	1,670.08	414.45	1,114.16	1,022.18	13.57	-0.91	0.027
131.00	-9.44	-1.66	0.00	-16.5	0.00	16.49	1,654.03	408.68	1,083.34	998.13	13.76	-0.91	0.022
133.00	-8.71	-1.50	0.00	-12.8	0.00	12.84	1,621.30	397.13	1,022.99	950.51	14.14	-0.91	0.019
134.00	-7.26	-1.33	0.00	-11.3	0.00	11.34	1,604.63	391.36	993.47	926.94	14.33	-0.91	0.017
135.00	-7.11	-1.31	0.00	-10.0	0.00	10.00	1,587.76	385.59	964.38	903.54	14.52	-0.92	0.016
136.00	-5.74	-1.00	0.00	-8.7	0.00	8.69	1,570.69	379.81	935.72	880.32	14.71	-0.92	0.014
140.00	-5.22	-0.91	0.00	-4.7	0.00	4.70	1,500.35	356.72	825.40	789.31	15.48	-0.92	0.009
144.00	-3.50	-0.67	0.00	-1.1	0.00	1.07	1,412.35	333.63	722.00	694.44	16.25	-0.92	0.004
144.50	0.00	-0.62	0.00	-0.7	0.00	0.74	1,400.13	330.74	709.57	682.42	16.35	-0.92	0.001

Load Case: 1.0D + 1.0W 60 mph Wind with No Ice 20 Iterations
Gust Response Factor: 1.10
Dead load Factor: 1.00
Wind Load Factor: 1.00

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-57.40	-12.02	0.00	-1,283.9	0.00	1,283.93	7,122.56	1,825.62	10,808.79	9,608.64	0	0	0.142
5.00	-55.29	-11.93	0.00	-1,223.8	0.00	1,223.85	7,022.32	1,786.12	10,346.10	9,266.86	0.02	-0.03	0.140
10.00	-53.21	-11.84	0.00	-1,164.2	0.00	1,164.21	6,919.69	1,746.61	9,893.54	8,927.89	0.07	-0.06	0.138
15.00	-51.17	-11.76	0.00	-1,105.0	0.00	1,105.00	6,814.69	1,707.10	9,451.09	8,591.96	0.15	-0.1	0.136
20.00	-49.16	-11.67	0.00	-1,046.2	0.00	1,046.21	6,707.29	1,667.60	9,018.76	8,259.27	0.27	-0.13	0.134
25.00	-47.20	-11.59	0.00	-987.8	0.00	987.85	6,597.52	1,628.09	8,596.56	7,930.04	0.42	-0.16	0.132
30.00	-45.27	-11.50	0.00	-929.9	0.00	929.91	6,485.35	1,588.58	8,184.47	7,604.46	0.61	-0.2	0.129
35.00	-43.39	-11.42	0.00	-872.4	0.00	872.39	6,370.81	1,549.08	7,782.51	7,282.76	0.84	-0.23	0.127
40.00	-41.54	-11.35	0.00	-815.3	0.00	815.30	6,253.88	1,509.57	7,390.66	6,965.15	1.1	-0.27	0.124
42.00	-40.81	-11.31	0.00	-792.6	0.00	792.60	6,206.44	1,493.77	7,236.76	6,839.29	1.22	-0.28	0.123
45.00	-38.96	-11.24	0.00	-758.7	0.00	758.68	6,134.57	1,470.07	7,008.94	6,651.83	1.4	-0.3	0.120
49.00	-36.54	-11.18	0.00	-713.7	0.00	713.73	5,148.29	1,281.50	6,086.85	5,567.88	1.66	-0.33	0.135
50.00	-36.21	-11.13	0.00	-702.6	0.00	702.55	5,129.30	1,274.59	6,021.36	5,517.17	1.73	-0.34	0.134
55.00	-34.63	-11.03	0.00	-646.9	0.00	646.92	5,032.95	1,240.02	5,699.22	5,265.49	2.11	-0.38	0.130
60.00	-33.08	-10.93	0.00	-591.8	0.00	591.78	4,934.21	1,205.45	5,385.93	5,017.06	2.52	-0.41	0.125
65.00	-31.56	-10.83	0.00	-537.1	0.00	537.13	4,833.09	1,170.88	5,081.50	4,772.08	2.98	-0.45	0.119
70.00	-30.07	-10.73	0.00	-483.0	0.00	482.99	4,729.59	1,136.31	4,785.93	4,530.77	3.47	-0.49	0.113
75.00	-28.62	-10.63	0.00	-429.4	0.00	429.35	4,623.70	1,101.74	4,499.21	4,293.33	4.01	-0.53	0.106
80.00	-27.21	-10.56	0.00	-376.2	0.00	376.22	4,515.42	1,067.18	4,221.34	4,059.98	4.58	-0.56	0.099
81.25	-26.86	-10.54	0.00	-363.0	0.00	363.03	4,481.13	1,058.53	4,153.26	3,996.20	4.72	-0.57	0.097
81.80	-25.68	-9.35	0.00	-357.2	0.00	357.23	4,465.03	1,054.73	4,123.48	3,967.40	4.79	-0.57	0.096
85.00	-24.24	-9.29	0.00	-327.3	0.00	327.32	4,371.38	1,032.61	3,952.34	3,801.89	5.18	-0.6	0.092
87.00	-23.35	-9.23	0.00	-308.8	0.00	308.75	3,638.34	890.21	3,426.86	3,187.47	5.43	-0.61	0.103
90.00	-22.62	-9.16	0.00	-281.1	0.00	281.06	3,586.74	872.43	3,291.38	3,078.96	5.82	-0.63	0.098
94.30	-20.66	-7.96	0.00	-241.7	0.00	241.69	3,511.28	846.95	3,101.94	2,925.37	6.4	-0.66	0.089
95.00	-20.50	-7.91	0.00	-236.1	0.00	236.12	3,498.83	842.80	3,071.64	2,900.59	6.5	-0.66	0.087
100.00	-19.33	-7.81	0.00	-196.6	0.00	196.59	3,408.54	813.18	2,859.49	2,725.48	7.21	-0.69	0.078
104.00	-17.21	-7.24	0.00	-164.0	0.00	163.99	3,334.59	789.47	2,695.23	2,587.88	7.81	-0.72	0.069
105.00	-17.00	-7.18	0.00	-156.8	0.00	156.75	3,315.86	783.55	2,654.93	2,553.84	7.96	-0.72	0.067
110.00	-15.97	-7.08	0.00	-120.8	0.00	120.84	3,191.58	753.92	2,457.96	2,364.24	8.73	-0.75	0.056
115.00	-14.96	-7.00	0.00	-85.4	0.00	85.45	3,066.14	724.29	2,268.59	2,181.14	9.52	-0.77	0.044
117.00	-11.77	-6.15	0.00	-71.4	0.00	71.44	3,015.97	712.43	2,194.96	2,109.97	9.85	-0.78	0.038
120.00	-11.31	-6.10	0.00	-53.0	0.00	52.97	2,940.71	694.66	2,086.80	2,005.42	10.34	-0.78	0.030
122.50	-7.68	-2.65	0.00	-37.7	0.00	37.73	2,877.99	679.84	1,998.76	1,920.33	10.75	-0.79	0.022
124.00	-7.46	-2.63	0.00	-33.7	0.00	33.74	2,840.36	670.95	1,946.84	1,870.16	11	-0.79	0.021
124.00	-7.46	-2.63	0.00	-33.7	0.00	33.74	1,762.15	449.09	1,308.17	1,169.42	11	-0.79	0.033
125.00	-7.36	-2.58	0.00	-31.1	0.00	31.12	1,747.31	443.32	1,274.75	1,144.56	11.17	-0.8	0.031
130.00	-6.87	-2.52	0.00	-18.2	0.00	18.23	1,670.08	414.45	1,114.16	1,022.18	12.01	-0.81	0.022
131.00	-4.63	-1.57	0.00	-15.7	0.00	15.71	1,654.03	408.68	1,083.34	998.13	12.17	-0.81	0.019
133.00	-4.32	-1.42	0.00	-12.2	0.00	12.21	1,621.30	397.13	1,022.99	950.51	12.51	-0.81	0.016
134.00	-3.49	-1.27	0.00	-10.8	0.00	10.79	1,604.63	391.36	993.47	926.94	12.68	-0.81	0.014
135.00	-3.40	-1.25	0.00	-9.5	0.00	9.52	1,587.76	385.59	964.38	903.54	12.85	-0.81	0.013
136.00	-3.09	-0.92	0.00	-8.3	0.00	8.27	1,570.69	379.81	935.72	880.32	13.02	-0.81	0.011
140.00	-2.78	-0.86	0.00	-4.6	0.00	4.59	1,500.35	356.72	825.40	789.31	13.71	-0.82	0.008
144.00	-1.74	-0.68	0.00	-1.2	0.00	1.15	1,412.35	333.63	722.00	694.44	14.4	-0.82	0.003
144.50	0.00	-0.65	0.00	-0.8	0.00	0.81	1,400.13	330.74	709.57	682.42	14.48	-0.82	0.001

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.171
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a:	1.600
Site Coefficient F_v:	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.182
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.035
Upper Limit C_S:	0.035
Lower Limit C_S:	0.030
Period based on Rayleigh Method (sec):	1.640
Redundancy Factor (p):	1.000
Seismic Force Distribution Exponent (k):	1.570
Total Unfactored Dead Load:	57.410 k
Seismic Base Shear (E):	2.010 k

1.2D + 1.0Ev + 1.0Eh **Seismic**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
44	144.25	35	86	0.002	3	43
43	142	291	698	0.012	25	359
42	138	308	709	0.012	25	381
41	135.5	87	195	0.003	7	108
40	134.5	88	195	0.003	7	109
39	133.5	92	201	0.004	7	114
38	132	188	402	0.007	14	232
37	130.5	95	201	0.004	7	118
36	127.5	494	1,003	0.018	35	611
35	124.5	102	200	0.004	7	126
34	123.25	220	423	0.007	15	272
33	121.25	372	698	0.012	25	460
32	118.5	456	825	0.014	29	564
31	116	392	686	0.012	24	485
30	112.5	1,001	1,669	0.029	59	1,238
29	107.5	1,030	1,599	0.028	57	1,274
28	104.5	209	311	0.006	11	259
27	102	909	1,299	0.023	46	1,124
26	97.5	1,162	1,547	0.027	55	1,437
25	94.65	165	210	0.004	7	204
24	92.15	1,026	1,250	0.022	44	1,268
23	88.5	728	833	0.015	29	900
22	86	889	972	0.017	34	1,099
21	83.4	1,443	1,503	0.026	53	1,784
20	81.525	251	252	0.004	9	310
19	80.625	347	343	0.006	12	430
18	77.5	1,411	1,310	0.023	46	1,744
17	72.5	1,444	1,207	0.021	43	1,786
16	67.5	1,478	1,104	0.019	39	1,827
15	62.5	1,511	1,001	0.018	35	1,868
14	57.5	1,545	897	0.016	32	1,910
13	52.5	1,578	795	0.014	28	1,951
12	49.5	320	147	0.003	5	395
11	47	2,420	1,024	0.018	36	2,993

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
10	43.5	1,846	692	0.012	24	2,282
9	41	726	248	0.004	9	898
8	37.5	1,843	547	0.010	19	2,278
7	32.5	1,881	446	0.008	16	2,326
6	27.5	1,919	350	0.006	12	2,373
5	22.5	1,958	260	0.005	9	2,420
4	17.5	1,996	179	0.003	6	2,468
3	12.5	2,034	107	0.002	4	2,515
2	7.5	2,072	49	0.001	2	2,562
1	2.5	2,111	9	0.000	0	2,610
Ericsson Radio 4460 B25+B66	144.5	327	808	0.014	29	404
Ericsson Radio 4480 B71+B85A	144.5	252	622	0.011	22	312
Ericsson Air6449 B41	144.5	312	771	0.014	27	386
RFS APX16DWV-16DWVS-E-A20	144.5	122	302	0.005	11	151
RFS APXVAALL24 43-U-NA20	144.5	368	910	0.016	32	456
Pine Tree Branches	144.5	338	834	0.015	29	417
Pine Tree Branches	122.5	3,300	6,289	0.110	222	4,080
Pine Tree Branches	94.3	938	1,184	0.021	42	1,159
Pine Tree Branches	81.8	938	947	0.017	34	1,159
Round T-Arm	144	750	1,843	0.032	65	927
Round T-Arm	131	750	1,588	0.028	56	927
Antel LPA-80080/4CF ___	136	24	54	0.001	2	30
Antel LPA-80063/4CF	136	80	180	0.003	6	99
Commscope SBNHH-1D65B (72.9")	136	122	274	0.005	10	151
Commscope SBNHH-1D65B (72.9")	133	122	264	0.005	9	151
Samsung B2/B66A RRH-BR049	134	253	556	0.010	20	313
Samsung B5/B13 RRH-BR04C	134	211	463	0.008	16	261
RFS DB-C1-12C-24AB-0Z	134	32	70	0.001	2	40
Samsung MT6407-77A	134	245	537	0.009	19	303
VZW Unused Reserve (17134.86 sqin)	131	1,412	2,989	0.052	106	1,745
Andrew ABT-DMDF-ADBH	117	1	2	0.000	0	1
Powerwave Allgon LGP21901	117	33	59	0.001	2	41
Powerwave Allgon TT19-08BP111-001	117	96	170	0.003	6	119
Raycap DC6-48-60-18-8F(32.8 lbs)	117	33	58	0.001	2	41
Ericsson RRUS 8843 B2, B66A	117	216	383	0.007	14	267
Ericsson RRUS 4449 B5, B12	117	213	378	0.007	13	263
Ericsson RRUS 4478 B14	117	178	316	0.006	11	220
Raycap DC6-48-60-18-8C	117	16	28	0.000	1	20
Raycap DC6-48-60-18-8C-EV	117	16	28	0.000	1	20
Powerwave Allgon 7770.00	117	105	186	0.003	7	130
Kathrein Scala 80010964	117	168	297	0.005	11	207
Kathrein Scala 80010965	117	390	692	0.012	24	483
T-Arm with Site Pro 1 PRK-1245	117	1,350	2,394	0.042	85	1,669
Generic E-911 GPS	104	5	7	0.000	0	6
Ericsson KRY 112 71	104	40	58	0.001	2	49
RFS ATMAP1412D-1A20	104	39	57	0.001	2	48
RFS APX16DWV-16DWV-S-E-ACU	104	238	350	0.006	12	294
Commscope LNX-6515DS-A1M (50.3 lb)	104	151	222	0.004	8	187
Flat T-Arm	104	750	1,105	0.019	39	927
PCTEL GPS-TMG-HR-26N	50	1	0	0.000	0	1
		57,406	56,957	1.000	2,014	70,981

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
44	144.25	35	86	0.002	3	30
43	142	291	698	0.012	25	251
42	138	308	709	0.012	25	266
41	135.5	87	195	0.003	7	75
40	134.5	88	195	0.003	7	76
39	133.5	92	201	0.004	7	80
38	132	188	402	0.007	14	162

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
37	130.5	95	201	0.004	7	82
36	127.5	494	1,003	0.018	35	427
35	124.5	102	200	0.004	7	88
34	123.25	220	423	0.007	15	190
33	121.25	372	698	0.012	25	322
32	118.5	456	825	0.014	29	394
31	116	392	686	0.012	24	339
30	112.5	1,001	1,669	0.029	59	865
29	107.5	1,030	1,599	0.028	57	889
28	104.5	209	311	0.006	11	181
27	102	909	1,299	0.023	46	785
26	97.5	1,162	1,547	0.027	55	1,003
25	94.65	165	210	0.004	7	142
24	92.15	1,026	1,250	0.022	44	886
23	88.5	728	833	0.015	29	629
22	86	889	972	0.017	34	768
21	83.4	1,443	1,503	0.026	53	1,246
20	81.525	251	252	0.004	9	216
19	80.625	347	343	0.006	12	300
18	77.5	1,411	1,310	0.023	46	1,218
17	72.5	1,444	1,207	0.021	43	1,247
16	67.5	1,478	1,104	0.019	39	1,276
15	62.5	1,511	1,001	0.018	35	1,305
14	57.5	1,545	897	0.016	32	1,334
13	52.5	1,578	795	0.014	28	1,363
12	49.5	320	147	0.003	5	276
11	47	2,420	1,024	0.018	36	2,090
10	43.5	1,846	692	0.012	24	1,594
9	41	726	248	0.004	9	627
8	37.5	1,843	547	0.010	19	1,591
7	32.5	1,881	446	0.008	16	1,624
6	27.5	1,919	350	0.006	12	1,657
5	22.5	1,958	260	0.005	9	1,690
4	17.5	1,996	179	0.003	6	1,723
3	12.5	2,034	107	0.002	4	1,756
2	7.5	2,072	49	0.001	2	1,790
1	2.5	2,111	9	0.000	0	1,823
Ericsson Radio 4460 B25+B66	144.5	327	808	0.014	29	282
Ericsson Radio 4480 B71+B85A	144.5	252	622	0.011	22	218
Ericsson Air6449 B41	144.5	312	771	0.014	27	269
RFS APX16DWV-16DWVS-E-A20	144.5	122	302	0.005	11	105
RFS APXVAALL24 43-U-NA20	144.5	368	910	0.016	32	318
Pine Tree Branches	144.5	338	834	0.015	29	291
Pine Tree Branches	122.5	3,300	6,289	0.110	222	2,850
Pine Tree Branches	94.3	938	1,184	0.021	42	810
Pine Tree Branches	81.8	938	947	0.017	34	810
Round T-Arm	144	750	1,843	0.032	65	648
Round T-Arm	131	750	1,588	0.028	56	648
Antel LPA-80080/4CF ___	136	24	54	0.001	2	21
Antel LPA-80063/4CF	136	80	180	0.003	6	69
Commscope SBNHH-1D65B (72.9")	136	122	274	0.005	10	105
Commscope SBNHH-1D65B (72.9")	133	122	264	0.005	9	105
Samsung B2/B66A RRH-BR049	134	253	556	0.010	20	219
Samsung B5/B13 RRH-BR04C	134	211	463	0.008	16	182
RFS DB-C1-12C-24AB-0Z	134	32	70	0.001	2	28
Samsung MT6407-77A	134	245	537	0.009	19	211
VZW Unused Reserve (17134.86 sqin)	131	1,412	2,989	0.052	106	1,219
Andrew ABT-DMDF-ADBH	117	1	2	0.000	0	1
Powerwave Allgon LGP21901	117	33	59	0.001	2	28
Powerwave Allgon TT19-08BP111-001	117	96	170	0.003	6	83
Raycap DC6-48-60-18-8F(32.8 lbs)	117	33	58	0.001	2	28
Ericsson RRUS 8843 B2, B66A	117	216	383	0.007	14	187
Ericsson RRUS 4449 B5, B12	117	213	378	0.007	13	184
Ericsson RRUS 4478 B14	117	178	316	0.006	11	154
Raycap DC6-48-60-18-8C	117	16	28	0.000	1	14
Raycap DC6-48-60-18-8C-EV	117	16	28	0.000	1	14
Powerwave Allgon 7770.00	117	105	186	0.003	7	91
Kathrein Scala 80010964	117	168	297	0.005	11	145
Kathrein Scala 80010965	117	390	692	0.012	24	337
T-Arm with Site Pro 1 PRK-1245	117	1,350	2,394	0.042	85	1,166

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
Generic E-911 GPS	104	5	7	0.000	0	4
Ericsson KRY 112 71	104	40	58	0.001	2	34
RFS ATMAP1412D-1A20	104	39	57	0.001	2	34
RFS APX16DWV-16DWV-S-E-ACU	104	238	350	0.006	12	205
Commscope LNX-6515DS-A1M (50.3 lb)	104	151	222	0.004	8	130
Flat T-Arm	104	750	1,105	0.019	39	648
PCTEL GPS-TMG-HR-26N	50	1	0	0.000	0	1
		57,406	56,957	1.000	2,014	49,571

1.2D + 1.0Ev + 1.0Eh **Seismic**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-68.37	-2.02	0.00	-217.97	0.00	217.97	7,122.56	1,825.62	10,809	9,608.64	0.00	0.00	0.03
5.00	-65.81	-2.02	0.00	-207.88	0.00	207.88	7,022.32	1,786.12	10,346	9,266.86	0.00	-0.01	0.03
10.00	-63.29	-2.02	0.00	-197.78	0.00	197.78	6,919.69	1,746.61	9,894	8,927.89	0.01	-0.01	0.03
15.00	-60.83	-2.02	0.00	-187.66	0.00	187.66	6,814.69	1,707.10	9,451	8,591.96	0.03	-0.02	0.03
20.00	-58.40	-2.02	0.00	-177.55	0.00	177.55	6,707.29	1,667.60	9,019	8,259.27	0.05	-0.02	0.03
25.00	-56.03	-2.01	0.00	-167.47	0.00	167.47	6,597.52	1,628.09	8,597	7,930.04	0.07	-0.03	0.03
30.00	-53.71	-2.00	0.00	-157.42	0.00	157.42	6,485.35	1,588.58	8,184	7,604.46	0.10	-0.03	0.03
35.00	-51.43	-1.98	0.00	-147.42	0.00	147.42	6,370.81	1,549.08	7,783	7,282.76	0.14	-0.04	0.03
40.00	-50.53	-1.98	0.00	-137.51	0.00	137.51	6,253.88	1,509.57	7,391	6,965.15	0.19	-0.05	0.03
42.00	-48.25	-1.95	0.00	-133.56	0.00	133.56	6,206.44	1,493.77	7,237	6,839.29	0.21	-0.05	0.03
45.00	-45.25	-1.92	0.00	-127.70	0.00	127.70	6,134.57	1,470.07	7,009	6,651.83	0.24	-0.05	0.03
49.00	-44.86	-1.91	0.00	-120.03	0.00	120.03	5,148.29	1,281.50	6,087	5,567.88	0.28	-0.06	0.03
50.00	-42.91	-1.89	0.00	-118.11	0.00	118.11	5,129.30	1,274.59	6,021	5,517.17	0.29	-0.06	0.03
55.00	-41.00	-1.86	0.00	-108.67	0.00	108.67	5,032.95	1,240.02	5,699	5,265.49	0.36	-0.06	0.03
60.00	-39.13	-1.83	0.00	-99.38	0.00	99.38	4,934.21	1,205.45	5,386	5,017.06	0.43	-0.07	0.03
65.00	-37.30	-1.79	0.00	-90.26	0.00	90.26	4,833.09	1,170.88	5,082	4,772.08	0.50	-0.08	0.03
70.00	-35.51	-1.75	0.00	-81.32	0.00	81.32	4,729.59	1,136.31	4,786	4,530.77	0.59	-0.08	0.03
75.00	-33.77	-1.70	0.00	-72.59	0.00	72.59	4,623.70	1,101.74	4,499	4,293.33	0.68	-0.09	0.02
80.00	-33.34	-1.69	0.00	-64.08	0.00	64.08	4,515.42	1,067.18	4,221	4,059.98	0.77	-0.09	0.02
81.25	-33.03	-1.68	0.00	-61.97	0.00	61.97	4,481.13	1,058.53	4,153	3,996.20	0.80	-0.10	0.02
81.80	-30.09	-1.59	0.00	-61.04	0.00	61.04	4,465.03	1,054.73	4,123	3,967.40	0.81	-0.10	0.02
85.00	-28.99	-1.56	0.00	-55.95	0.00	55.95	4,371.38	1,032.61	3,952	3,801.89	0.88	-0.10	0.02
87.00	-28.09	-1.53	0.00	-52.84	0.00	52.84	3,638.34	890.21	3,427	3,187.47	0.92	-0.10	0.02
90.00	-26.82	-1.48	0.00	-48.26	0.00	48.26	3,586.74	872.43	3,291	3,078.96	0.99	-0.11	0.02
94.30	-25.46	-1.43	0.00	-41.88	0.00	41.88	3,511.28	846.95	3,102	2,925.37	1.08	-0.11	0.02
95.00	-24.02	-1.38	0.00	-40.88	0.00	40.88	3,498.83	842.80	3,072	2,900.59	1.10	-0.11	0.02
100.00	-22.90	-1.33	0.00	-34.00	0.00	34.00	3,408.54	813.18	2,859	2,725.48	1.22	-0.12	0.02
104.00	-21.13	-1.25	0.00	-28.69	0.00	28.69	3,334.59	789.47	2,695	2,587.88	1.32	-0.12	0.02
105.00	-19.85	-1.19	0.00	-27.44	0.00	27.44	3,315.86	783.55	2,655	2,553.84	1.35	-0.12	0.02
110.00	-18.61	-1.13	0.00	-21.47	0.00	21.47	3,191.58	753.92	2,458	2,364.24	1.48	-0.13	0.02
115.00	-18.13	-1.11	0.00	-15.80	0.00	15.80	3,066.14	724.29	2,269	2,181.14	1.61	-0.13	0.01
117.00	-14.08	-0.89	0.00	-13.59	0.00	13.59	3,015.97	712.43	2,195	2,109.97	1.67	-0.13	0.01
120.00	-13.62	-0.87	0.00	-10.90	0.00	10.90	2,940.71	694.66	2,087	2,005.42	1.75	-0.13	0.01
122.50	-9.27	-0.62	0.00	-8.73	0.00	8.73	2,877.99	679.84	1,999	1,920.33	1.82	-0.14	0.01
124.00	-9.15	-0.61	0.00	-7.80	0.00	7.80	2,840.36	670.95	1,947	1,870.16	1.86	-0.14	0.01
124.00	-9.15	-0.61	0.00	-7.80	0.00	7.80	1,762.15	449.09	1,308	1,169.42	1.86	-0.14	0.01
125.00	-8.54	-0.58	0.00	-7.19	0.00	7.19	1,747.31	443.32	1,275	1,144.56	1.89	-0.14	0.01
130.00	-8.42	-0.57	0.00	-4.30	0.00	4.30	1,670.08	414.45	1,114	1,022.18	2.04	-0.14	0.01
131.00	-5.51	-0.39	0.00	-3.73	0.00	3.73	1,654.03	408.68	1,083	998.13	2.07	-0.14	0.01
133.00	-5.25	-0.37	0.00	-2.96	0.00	2.96	1,621.30	397.13	1,023	950.51	2.12	-0.14	0.01
134.00	-4.22	-0.30	0.00	-2.59	0.00	2.59	1,604.63	391.36	993	926.94	2.15	-0.14	0.01
135.00	-4.12	-0.30	0.00	-2.28	0.00	2.28	1,587.76	385.59	964	903.54	2.18	-0.14	0.01
136.00	-3.45	-0.25	0.00	-1.99	0.00	1.99	1,570.69	379.81	936	880.32	2.21	-0.14	0.00
140.00	-3.10	-0.23	0.00	-0.98	0.00	0.98	1,500.35	356.72	825	789.31	2.33	-0.14	0.00
144.00	-2.13	-0.16	0.00	-0.08	0.00	0.08	1,412.35	333.63	722	694.44	2.45	-0.14	0.00
144.50	0.00	-0.15	0.00	0.00	0.00	0.00	1,400.13	330.74	710	682.42	2.47	-0.14	0.00

0.9D - 1.0Ev + 1.0Eh **Seismic (Reduced DL)**

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-47.75	-2.02	0.00	-216.41	0.00	216.41	7,122.56	1,825.62	10,809	9,608.64	0.00	0.00	0.03
5.00	-45.96	-2.02	0.00	-206.33	0.00	206.33	7,022.32	1,786.12	10,346	9,266.86	0.00	-0.01	0.03
10.00	-44.20	-2.02	0.00	-196.24	0.00	196.24	6,919.69	1,746.61	9,894	8,927.89	0.01	-0.01	0.03
15.00	-42.48	-2.02	0.00	-186.15	0.00	186.15	6,814.69	1,707.10	9,451	8,591.96	0.03	-0.02	0.03
20.00	-40.79	-2.01	0.00	-176.07	0.00	176.07	6,707.29	1,667.60	9,019	8,259.27	0.05	-0.02	0.03
25.00	-39.13	-2.00	0.00	-166.02	0.00	166.02	6,597.52	1,628.09	8,597	7,930.04	0.07	-0.03	0.03
30.00	-37.51	-1.99	0.00	-156.02	0.00	156.02	6,485.35	1,588.58	8,184	7,604.46	0.10	-0.03	0.03
35.00	-35.91	-1.97	0.00	-146.08	0.00	146.08	6,370.81	1,549.08	7,783	7,282.76	0.14	-0.04	0.03
40.00	-35.29	-1.96	0.00	-136.22	0.00	136.22	6,253.88	1,509.57	7,391	6,965.15	0.19	-0.04	0.03
42.00	-33.69	-1.94	0.00	-132.29	0.00	132.29	6,206.44	1,493.77	7,237	6,839.29	0.20	-0.05	0.03
45.00	-31.60	-1.90	0.00	-126.47	0.00	126.47	6,134.57	1,470.07	7,009	6,651.83	0.24	-0.05	0.02
49.00	-31.33	-1.90	0.00	-118.85	0.00	118.85	5,148.29	1,281.50	6,087	5,567.88	0.28	-0.06	0.03
50.00	-29.96	-1.87	0.00	-116.95	0.00	116.95	5,129.30	1,274.59	6,021	5,517.17	0.29	-0.06	0.03
55.00	-28.63	-1.84	0.00	-107.59	0.00	107.59	5,032.95	1,240.02	5,699	5,265.49	0.35	-0.06	0.03
60.00	-27.32	-1.81	0.00	-98.37	0.00	98.37	4,934.21	1,205.45	5,386	5,017.06	0.42	-0.07	0.03
65.00	-26.05	-1.77	0.00	-89.32	0.00	89.32	4,833.09	1,170.88	5,082	4,772.08	0.50	-0.08	0.02
70.00	-24.80	-1.73	0.00	-80.46	0.00	80.46	4,729.59	1,136.31	4,786	4,530.77	0.58	-0.08	0.02
75.00	-23.58	-1.68	0.00	-71.81	0.00	71.81	4,623.70	1,101.74	4,499	4,293.33	0.67	-0.09	0.02
80.00	-23.28	-1.67	0.00	-63.39	0.00	63.39	4,515.42	1,067.18	4,221	4,059.98	0.77	-0.09	0.02
81.25	-23.07	-1.66	0.00	-61.30	0.00	61.30	4,481.13	1,058.53	4,153	3,996.20	0.79	-0.10	0.02
81.80	-21.01	-1.58	0.00	-60.38	0.00	60.38	4,465.03	1,054.73	4,123	3,967.40	0.80	-0.10	0.02
85.00	-20.24	-1.54	0.00	-55.34	0.00	55.34	4,371.38	1,032.61	3,952	3,801.89	0.87	-0.10	0.02
87.00	-19.61	-1.51	0.00	-52.26	0.00	52.26	3,638.34	890.21	3,427	3,187.47	0.91	-0.10	0.02
90.00	-18.73	-1.47	0.00	-47.73	0.00	47.73	3,586.74	872.43	3,291	3,078.96	0.98	-0.11	0.02
94.30	-17.78	-1.42	0.00	-41.42	0.00	41.42	3,511.28	846.95	3,102	2,925.37	1.07	-0.11	0.02
95.00	-16.77	-1.36	0.00	-40.43	0.00	40.43	3,498.83	842.80	3,072	2,900.59	1.09	-0.11	0.02
100.00	-15.99	-1.31	0.00	-33.63	0.00	33.63	3,408.54	813.18	2,859	2,725.48	1.21	-0.12	0.02
104.00	-14.75	-1.24	0.00	-28.37	0.00	28.37	3,334.59	789.47	2,695	2,587.88	1.31	-0.12	0.02
105.00	-13.86	-1.18	0.00	-27.13	0.00	27.13	3,315.86	783.55	2,655	2,553.84	1.33	-0.12	0.02
110.00	-13.00	-1.12	0.00	-21.23	0.00	21.23	3,191.58	753.92	2,458	2,364.24	1.46	-0.13	0.01
115.00	-12.66	-1.10	0.00	-15.63	0.00	15.63	3,066.14	724.29	2,269	2,181.14	1.60	-0.13	0.01
117.00	-9.84	-0.88	0.00	-13.44	0.00	13.44	3,015.97	712.43	2,195	2,109.97	1.65	-0.13	0.01
120.00	-9.51	-0.86	0.00	-10.79	0.00	10.79	2,940.71	694.66	2,087	2,005.42	1.74	-0.13	0.01
122.50	-6.48	-0.61	0.00	-8.64	0.00	8.64	2,877.99	679.84	1,999	1,920.33	1.81	-0.13	0.01
124.00	-6.39	-0.61	0.00	-7.72	0.00	7.72	2,840.36	670.95	1,947	1,870.16	1.85	-0.13	0.01
124.00	-6.39	-0.61	0.00	-7.72	0.00	7.72	1,762.15	449.09	1,308	1,169.42	1.85	-0.13	0.01
125.00	-5.96	-0.57	0.00	-7.11	0.00	7.11	1,747.31	443.32	1,275	1,144.56	1.88	-0.13	0.01
130.00	-5.88	-0.56	0.00	-4.26	0.00	4.26	1,670.08	414.45	1,114	1,022.18	2.02	-0.14	0.01
131.00	-3.85	-0.38	0.00	-3.69	0.00	3.69	1,654.03	408.68	1,083	998.13	2.05	-0.14	0.01
133.00	-3.67	-0.37	0.00	-2.93	0.00	2.93	1,621.30	397.13	1,023	950.51	2.11	-0.14	0.01
134.00	-2.95	-0.30	0.00	-2.56	0.00	2.56	1,604.63	391.36	993	926.94	2.13	-0.14	0.01
135.00	-2.87	-0.29	0.00	-2.26	0.00	2.26	1,587.76	385.59	964	903.54	2.16	-0.14	0.00
136.00	-2.41	-0.25	0.00	-1.97	0.00	1.97	1,570.69	379.81	936	880.32	2.19	-0.14	0.00
140.00	-2.16	-0.22	0.00	-0.97	0.00	0.97	1,500.35	356.72	825	789.31	2.31	-0.14	0.00
144.00	-1.48	-0.15	0.00	-0.08	0.00	0.08	1,412.35	333.63	722	694.44	2.43	-0.14	0.00
144.50	0.00	-0.15	0.00	0.00	0.00	0.00	1,400.13	330.74	710	682.42	2.44	-0.14	0.00

ANALYSIS SUMMARY

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W	49.35	0.00	68.83	0.00	0.00	5290.47	0.00	0.56
0.9D + 1.0W	49.33	0.00	51.61	0.00	0.00	5258.55	0.00	0.56
1.2D + 1.0Di + 1.0Wi	13.75	0.00	86.58	0.00	0.00	1458.28	0.00	0.16
1.2D + 1.0Ev + 1.0Eh	2.02	0.00	68.37	0.00	0.00	217.97	0.00	0.03
0.9D - 1.0Ev + 1.0Eh	2.02	0.00	47.75	0.00	0.00	216.41	0.00	0.03
1.0D + 1.0W	12.02	0.00	57.40	0.00	0.00	1283.93	0.00	0.14

Maser Consulting Connecticut
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Mt. Laurel, NJ 08054
(856) 797-0412
peter.albano@colliersengineering.com

Post-Mod Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10065183
Maser Consulting Connecticut Project #: 21777222A

July 2, 2021

Site Information	*Site ID:*	*467180-VZW / BARKHAMSTED S CT*
	Site Name:	*BARKHAMSTED S CT*
	Carrier Name:	*Verizon Wireless*
	Address:	*127 New Hartford Rd* *Barkhamsted, Connecticut 06063* *Litchfield County*
	Latitude:	*41.893808°*
	Longitude:	*-72.996472°*
Structure Information	*Tower Type:*	*Monopole*
	Mount Type:	*13.50-Ft T-Arm*

FUZE ID # 16272039

Analysis Results

T-Arm: **35.0% Pass**

******Contractor PMI Requirements*:**
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
Contractor - Please Review Specific Site PMI Requirements Upon Award
Requirements also Noted on Mount Modification Drawings
Requirements may also be Noted on A & E drawings

Report Prepared By: Cody Sherman

Digitally signed by Derek Hartzell
Date: 2021.07.02 10:55:43-07'00'

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: 323419, dated November 16, 2020*
Mount Mapping Report	*Roaming Networks Inc., Site ID: 476180, dated March 26, 2021*
Previous Mount Analysis	*Maser Consulting Connecticut Project #:2177722A, dated April 20, 2021*
Mount Modification Drawings	*Maser Consulting Connecticut Project #:2177722A, dated July 2, 2021*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H	
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:	0.972
Seismic Parameters:	S_S:	0.171
	S_1:	0.054
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Live Load, Lv:	250 lbs.
	Maintenance Live Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17)	

Final Loading Configuration:

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

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
126.50	127.50	3	Samsung	MT6407-77A	Added
		3	Samsung	B2/B66A RRH-BR049	
		3	Samsung	B5/B13 RRH-BR04C	
		1	Raycap	RVZDC-6627-PF-48	
		6	Andrew	SBNHH-1D65B	Retained
		2	Antel	LPA-80063/4CF	
		2	Antel	LPA-80063/4CF 5	
		2	Antel	LPA-80080/4CF	

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

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

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut 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 Maser Consulting Connecticut 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 by Maser Consulting Connecticut, 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. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

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

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
Proposed Standoff Horizontal	31.0%	Pass
Proposed Face Horizontal	35.0%	Pass
Mount Connection	34.1%	Pass
Existing Standoff	34.0%	Pass
Existing Face Horizontal	32.0%	Pass
Mount Pipe	30.0%	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**35.0%**

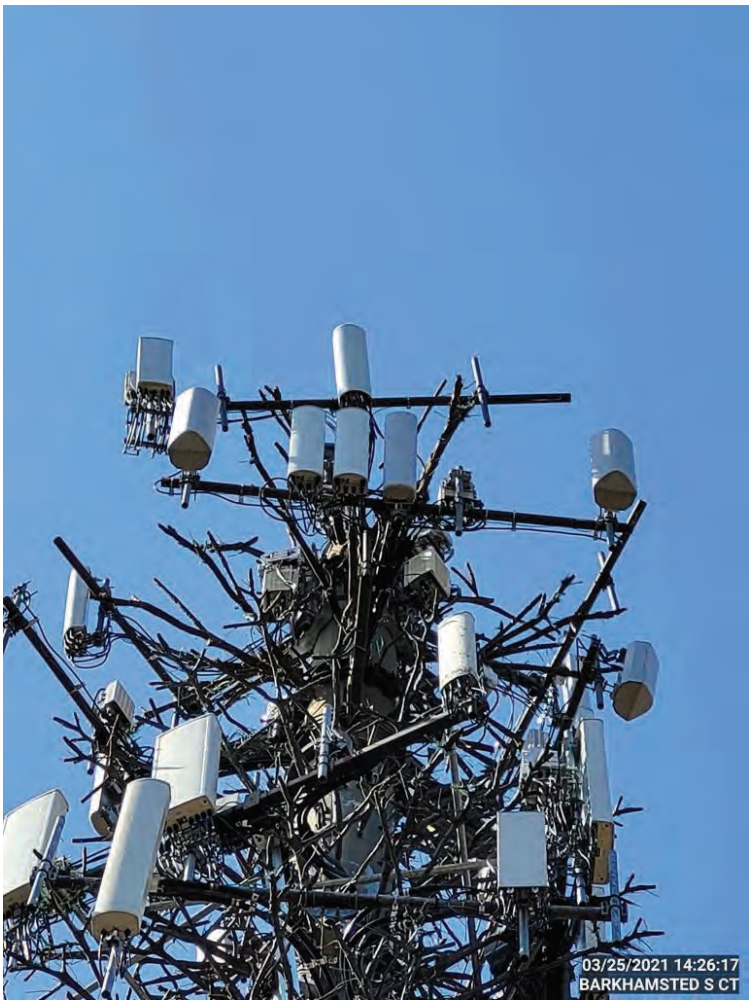
Recommendation:

The existing mounts will be **SUFFICIENT** for the final loading after the proposed modifications 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. Mount Photos
2. Mount Mapping Report (for reference only)
3. Analysis Calculations
4. **Contractor Required PMI Report Deliverables**
5. Antenna Placement Diagrams
6. TIA Adoption and Wind Speed Usage Letter


03/25/2021 14:26:17
BARKHAMSTED S CT


03/25/2021 16:06:03
-72.96599297222222, 41.886124
BARKHAMSTED S CT

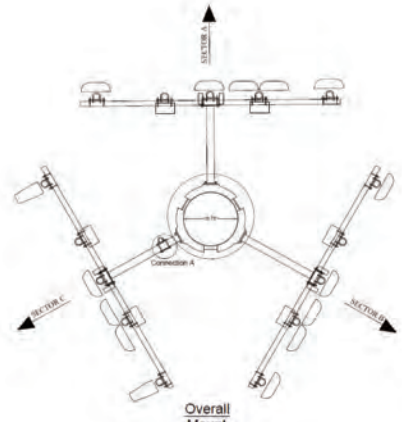
V3.0 Updated on 8-31-2020

PAUL J. FORD & COMPANY

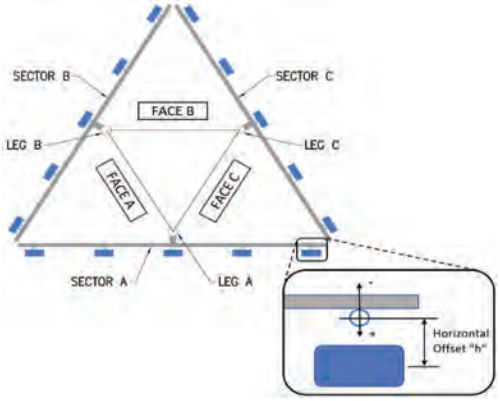
Antenna Mount Mapping Form (PATENT PENDING)

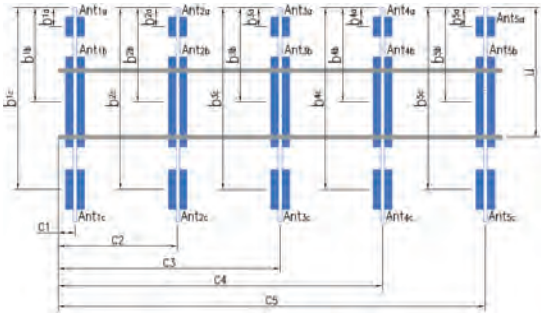
FCC #
N/A

Tower Owner:	AMERICAN TOWER	**Mapping Date:**	03.26.2021.
Site Name:	AT:BARKHAMSTED CT, VZW: BARKHAMSTED S CT	**Tower Type:**	Monopole
Site Number or ID:	476180	**Tower Height (Ft.):**	N/A
Mapping Contractor:	Roaming Networks inc.	**Mount Elevation (Ft.):**	133



Overall Mount Schematic





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	PIPE 2.35"Ø x 0.14" x 72"	41.00	12.00	C1	PIPE 2.35"Ø x 0.14" x 72"	41.00	12.00
A2	PIPE 2.35"Ø x 0.14" x 72"	38.50	64.00	C2	PIPE 2.35"Ø x 0.14" x 72"	38.50	64.00
A3	PIPE 2.35"Ø x 0.15" x 72"	45.00	81.00	C3	PIPE 2.35"Ø x 0.15" x 72"	45.00	81.00
A4	PIPE 2.35"Ø x 0.14" x 72"	40.00	109.00	C4	PIPE 2.35"Ø x 0.14" x 72"	40.00	109.00
A5	PIPE 2.35"Ø x 0.14" x 72"	40.00	152.00	C5	PIPE 2.35"Ø x 0.14" x 72"	40.00	152.00
A6				C6			
B1	PIPE 2.35"Ø x 0.14" x 72"	41.00	12.00	D1			
B2	PIPE 2.35"Ø x 0.14" x 72"	38.50	64.00	D2			
B3	PIPE 2.35"Ø x 0.15" x 72"	45.00	81.00	D3			
B4	PIPE 2.35"Ø x 0.14" x 72"	40.00	109.00	D4			
B5	PIPE 2.35"Ø x 0.14" x 72"	40.00	152.00	D5			
B6				D6			

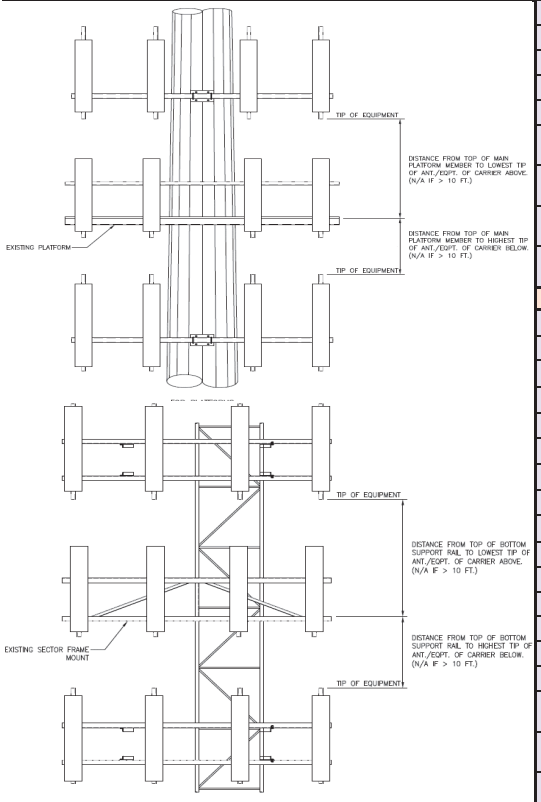
Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :	
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :	6.4
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :	
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.):	31.84

	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}	UNKNOWN	14.00	12.00	48.00		134.083	28.00	15.00	3.00	62
Ant_{1b}										
Ant_{1c}										
Ant_{2a}	B13 RRH 4x30	12.00	9.00	21.60		134.708	18.00	15.00		62
Ant_{2b}										
Ant_{2c}										
Ant_{3a}	BXA-70063-6CF-EDIN-	11.30	6.00	71.00		134.917	22.00	26.00	3.00	4, 62
Ant_{3b}	2xUNKNOWN	6.50	0.60	5.50		133.75	36.00			62
Ant_{3c}										
Ant_{4a}	SBNHH-1D65B	11.85	7.09	72.87		133.833	30.00	9.00	3.00	63
Ant_{4b}	SBNHH-1D65B	11.85	7.09	72.87		133.833	30.00	9.00	3.00	63
Ant_{4c}	B66A RRH4x45	11.80	7.20	25.80		134.833	18.00	7.00		63
Ant_{5a}	UNKNOWN	14.00	12.00	48.00		133.833	30.00	15.00		63
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:	3.00	Deg	Leg A:		Deg
Sector B:	125.00	Deg	Leg B:		Deg
Sector C:	226.00	Deg	Leg C:		Deg
Sector D:		Deg	Leg D:		Deg

Climbing Facility Information		
Location:	Deg	Sector C
Climbing Facility	Corrosion Type:	Good condition.
	Access:	Climbing path was unobstructed.
	Condition:	Good condition.



Sector B										
Ant_{1a}	UNKNOWN	14.00	12.00	48.00		134.083	28.00	15.00	125.00	170
Ant_{1b}										
Ant_{1c}										
Ant_{2a}	B13 RRH 4x30	12.00	9.00	21.60		134.708	18.00	15.00		70, 170
Ant_{2b}										
Ant_{2c}										
Ant_{3a}	BXA-70063-6CF-EDIN-	11.30	6.00	71.00		134.917	22.00	26.00	125.00	170
Ant_{3b}	2xUNKNOWN	6.50	0.60	5.50		133.75	36.00			74, 170
Ant_{3c}										
Ant_{4a}	SBNHH-1D65B	11.85	7.09	72.87		133.833	30.00	9.00	125.00	78, 171
Ant_{4b}	SBNHH-1D65B	11.85	7.09	72.87		133.833	30.00	9.00	125.00	80, 171
Ant_{4c}	B66A RRH4x45	11.80	7.20	25.80		134.833	18.00	7.00		79, 171
Ant_{5a}	UNKNOWN	14.00	12.00	48.00		133.833	30.00	15.00	125.00	171
Ant_{5b}										
Ant_{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										
Sector C										
Ant_{1a}	UNKNOWN	6.00	13.00	49.00		134.083	28.00	15.00	226.00	187
Ant_{1b}										
Ant_{1c}										
Ant_{2a}	B13 RRH 4x30	12.00	9.00	21.60		134.708	18.00	15.00		187
Ant_{2b}										
Ant_{2c}										
Ant_{3a}	BXA-70063-6CF-EDIN-	11.30	6.00	71.00		134.917	22.00	26.00	226.00	188
Ant_{3b}	2xUNKNOWN	6.50	0.60	5.50		133.75	36.00			188
Ant_{3c}										
Ant_{4a}	SBNHH-1D65B	11.85	7.09	72.87		133.833	30.00	9.00	226.00	188
Ant_{4b}	SBNHH-1D65B	11.85	7.09	72.87		133.833	30.00	9.00	226.00	188
Ant_{4c}	B66A RRH4x45	11.80	7.20	25.80		134.833	18.00	7.00		188
Ant_{5a}	UNKNOWN	6.00	13.00	49.00		133.833	30.00	15.00	226.00	189
Ant_{5b}										
Ant_{5c}										
Ant on Standoff	RRFDC-6627-PF-48	21.00	18.00	35.00						206, 207
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		

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.

V3.0 Updated on 8-31-2020

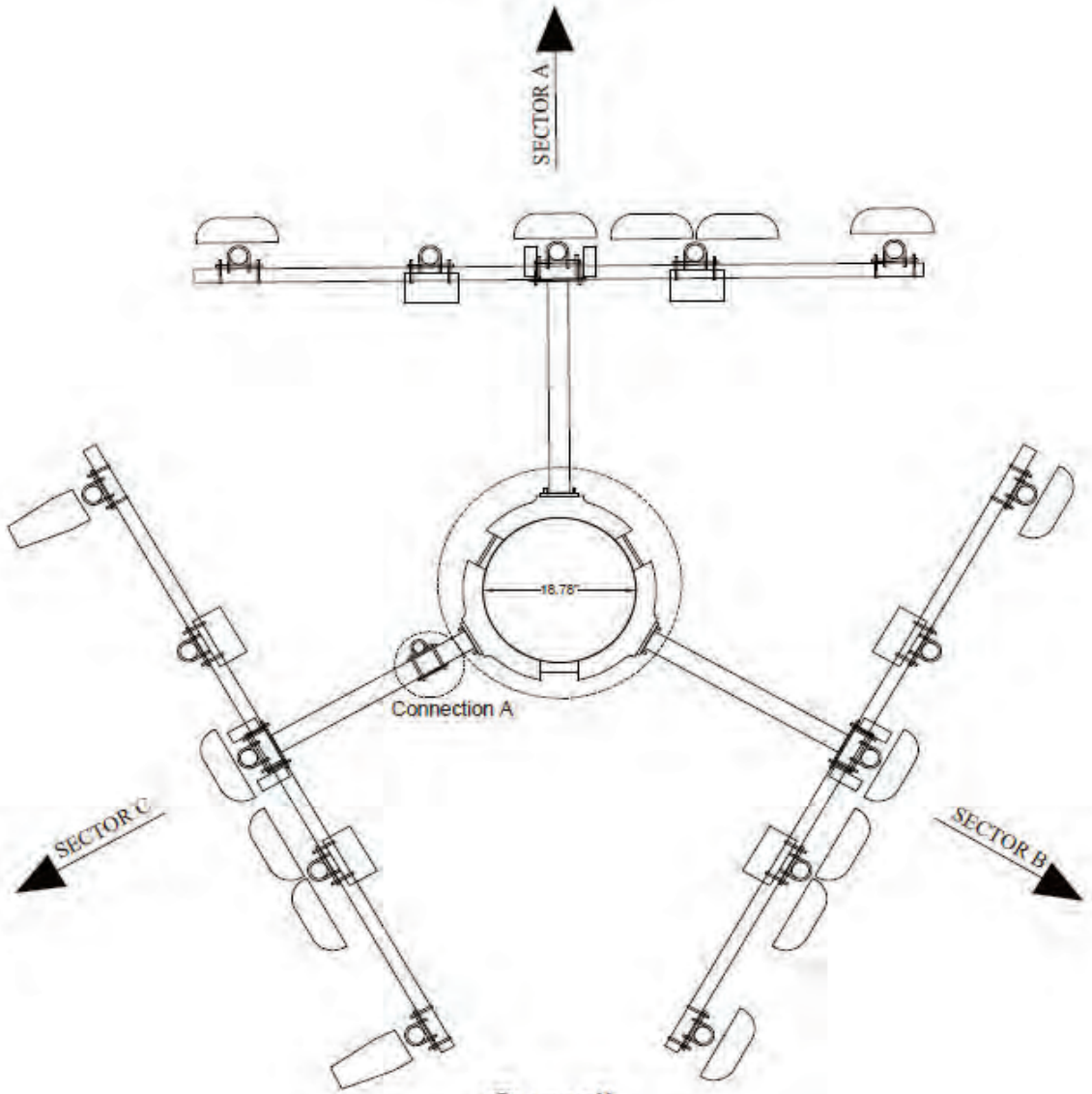
PAUL J. FORD & COMPANY

Antenna Mount Mapping Form (PATENT PENDING)

FCC #
N/A

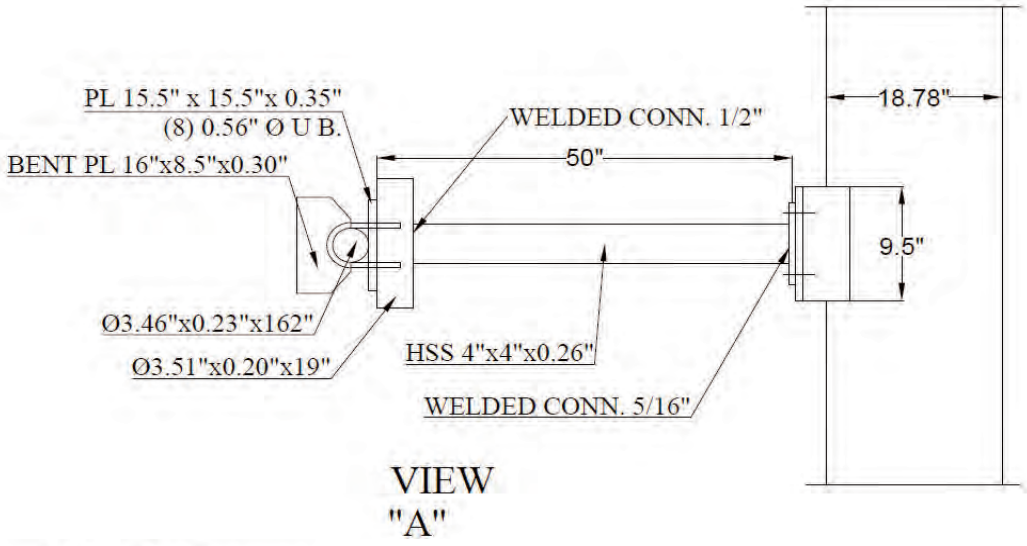
Tower Owner:	AMERICAN TOWER	**Mapping Date:**	03.26.2021.
Site Name:	AT:BARKHAMSTED CT, VZW: BARKHAMSTED S CT	**Tower Type:**	Monopole
Site Number or ID:	476180	**Tower Height (Ft.):**	N/A
Mapping Contractor:	Roaming Networks inc.	**Mount Elevation (Ft.):**	133

Please Insert Sketches of the Antenna Mount



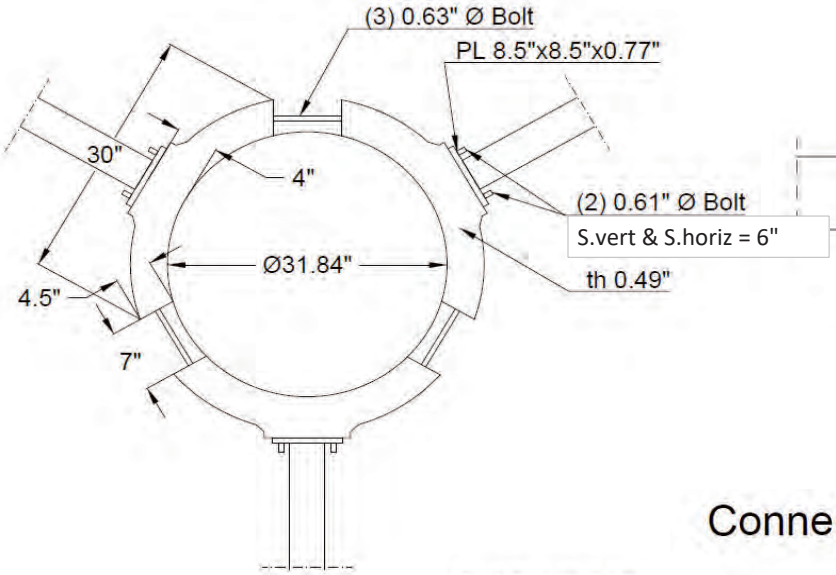
Overall Mount Schematic

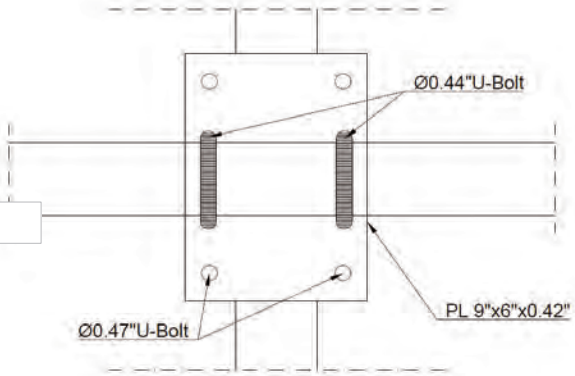
Please Insert Sketches of the Antenna Mount, cont'd



VIEW "A"

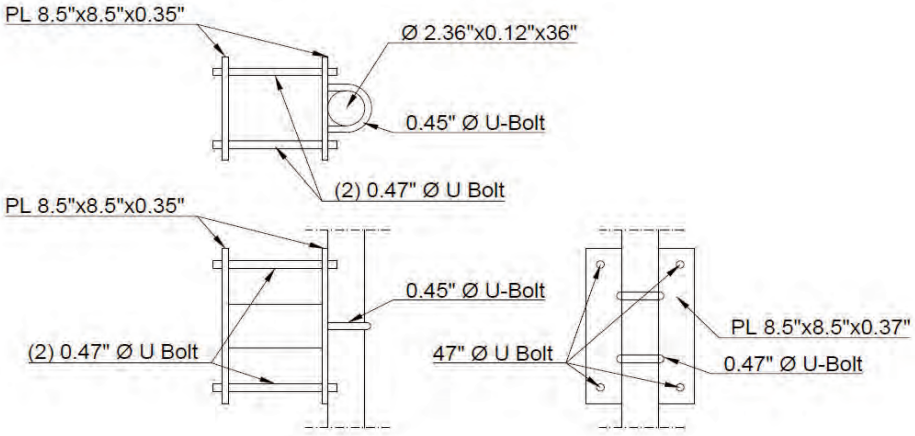
Mount to Tower Connection



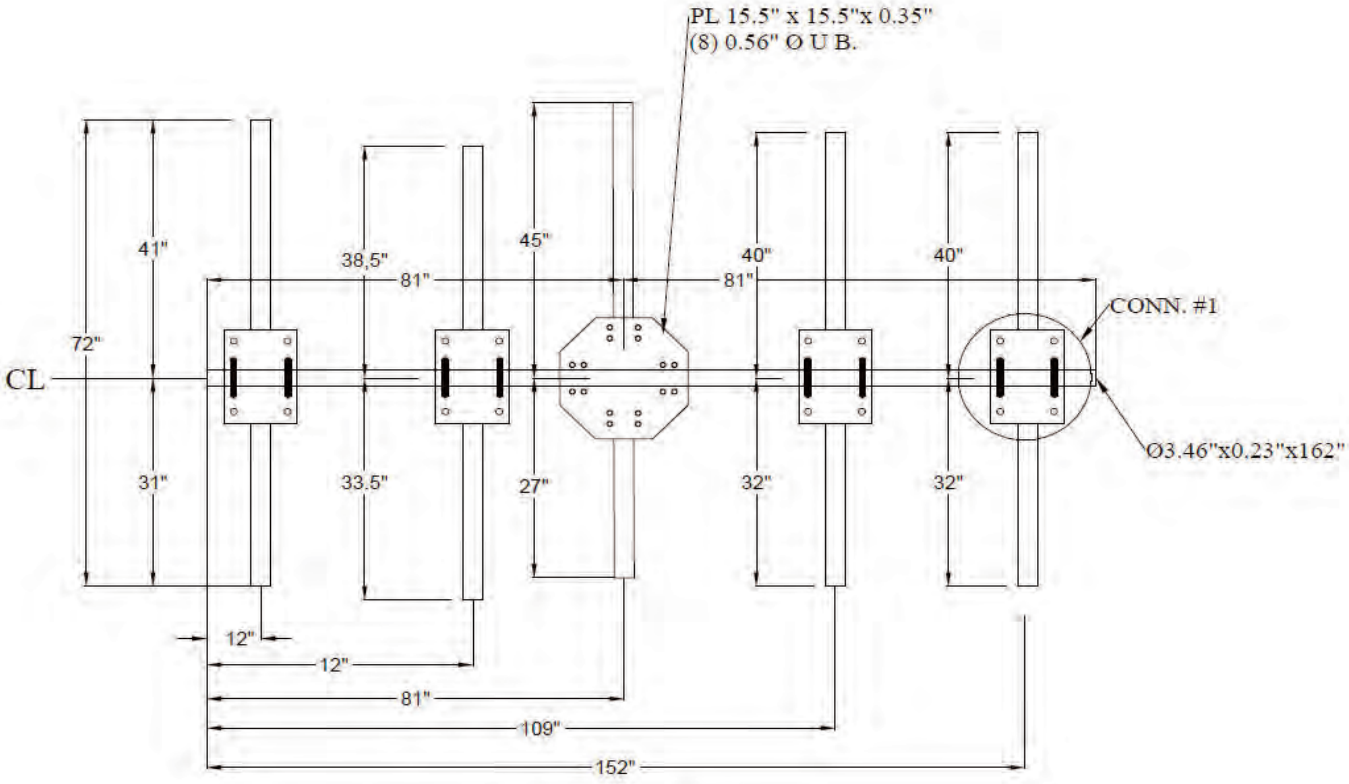


CONN. #1

Connection A

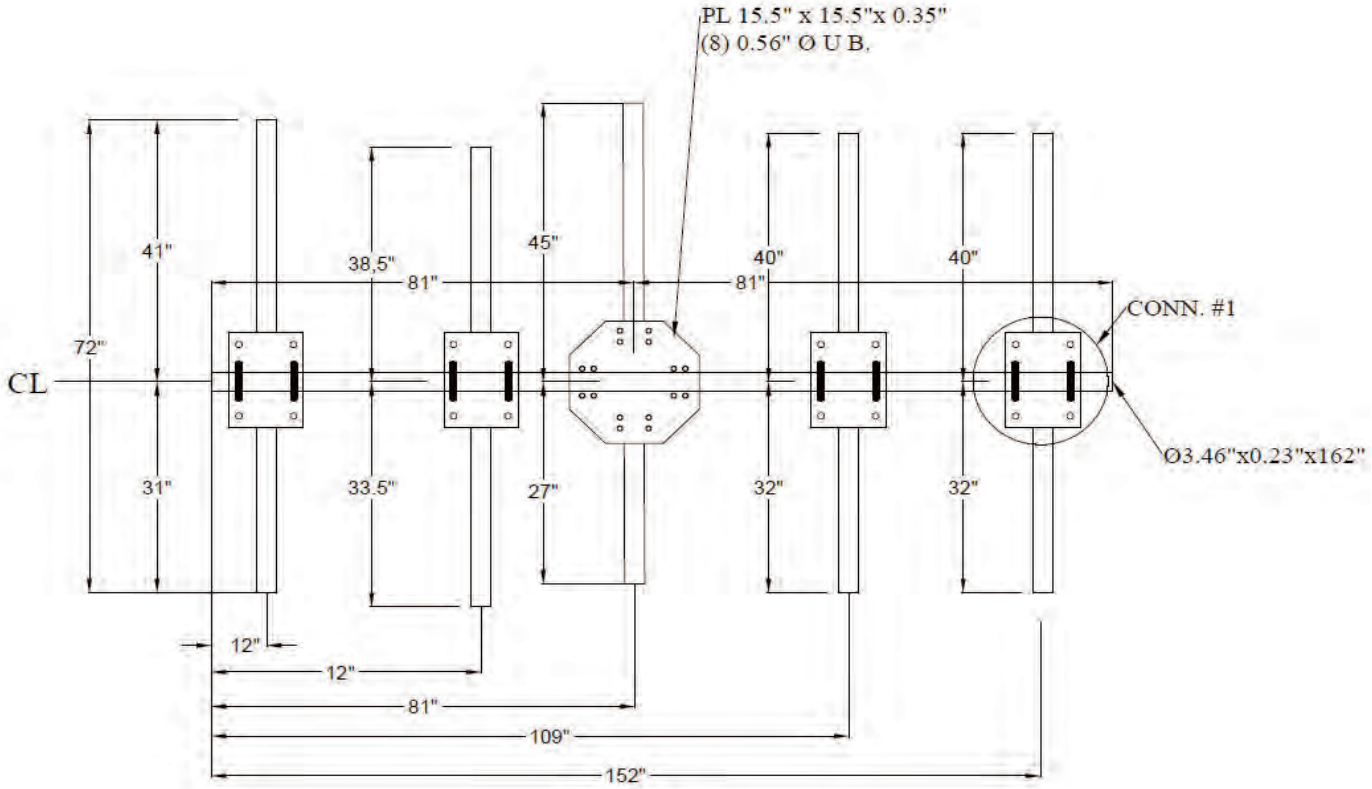


Please Insert Sketches of the Antenna Mount, cont'd



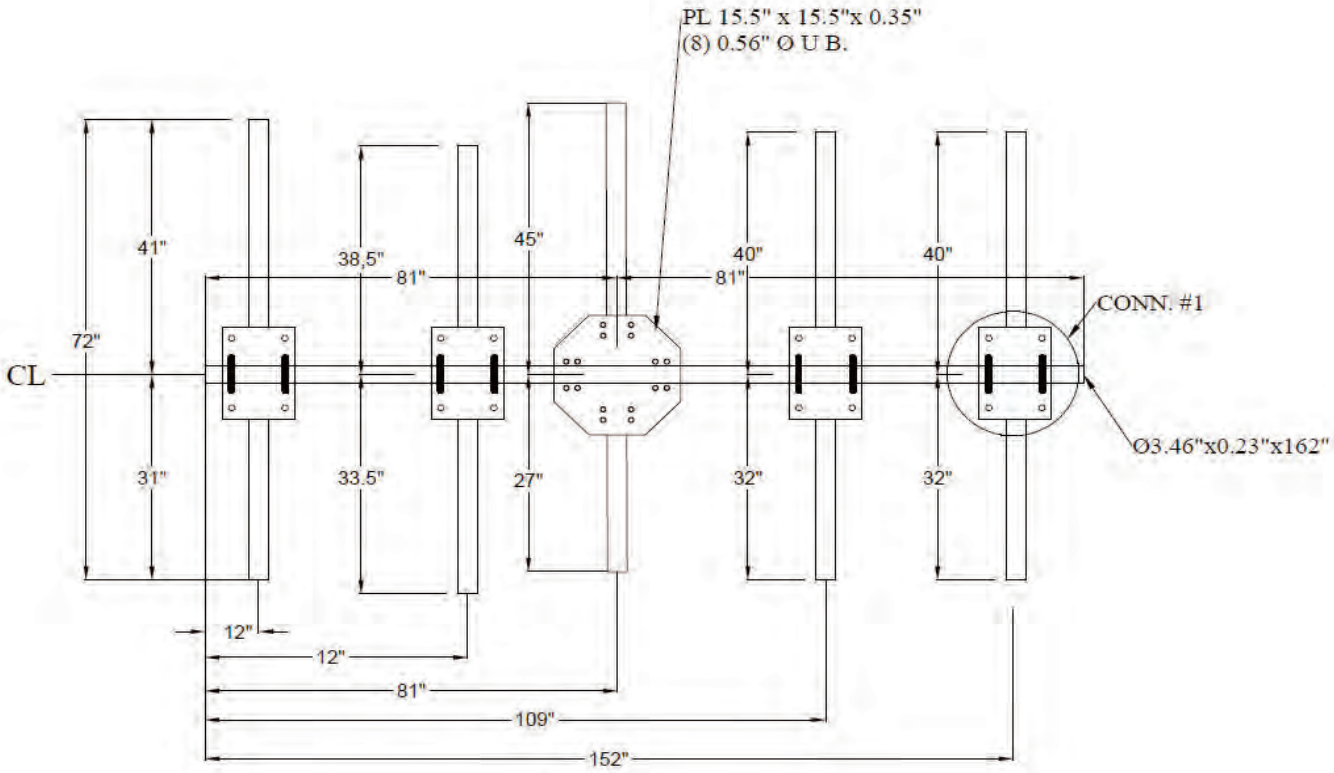
SECTOR A

Please Insert Sketches of the Antenna Mount, cont'd

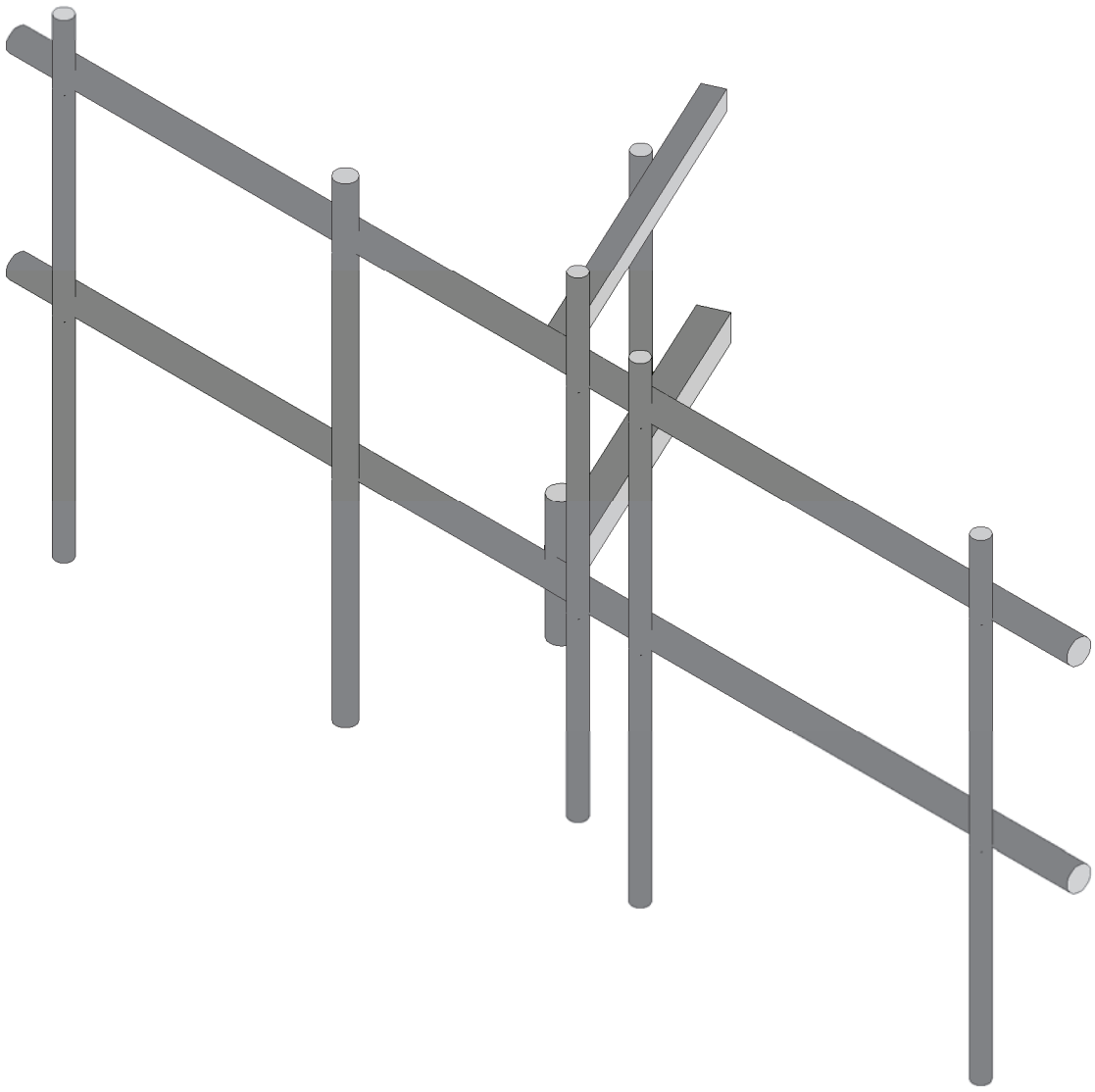


SECTOR B

Please Insert Sketches of the Antenna Mount, cont'd

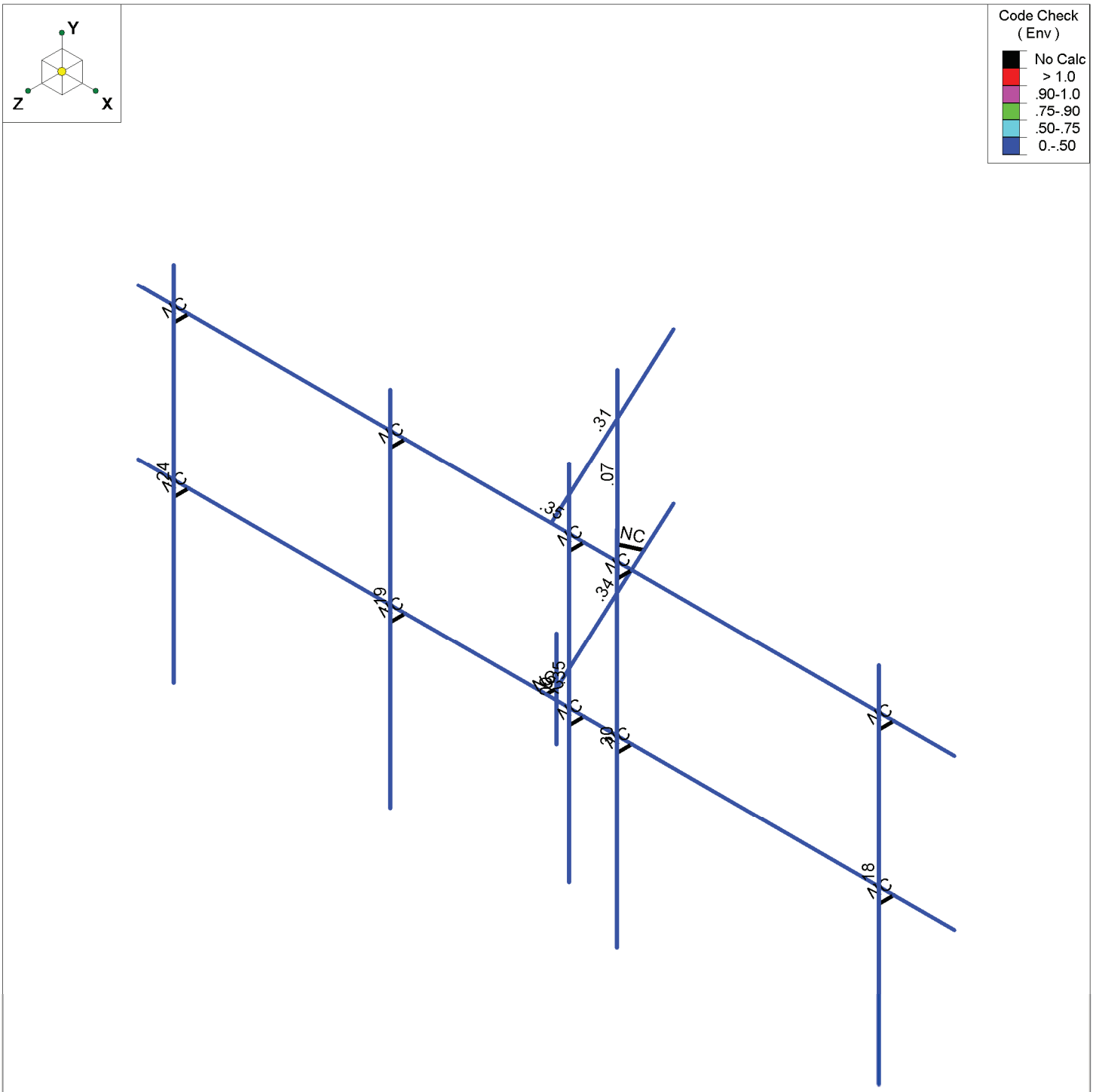


SECTOR C



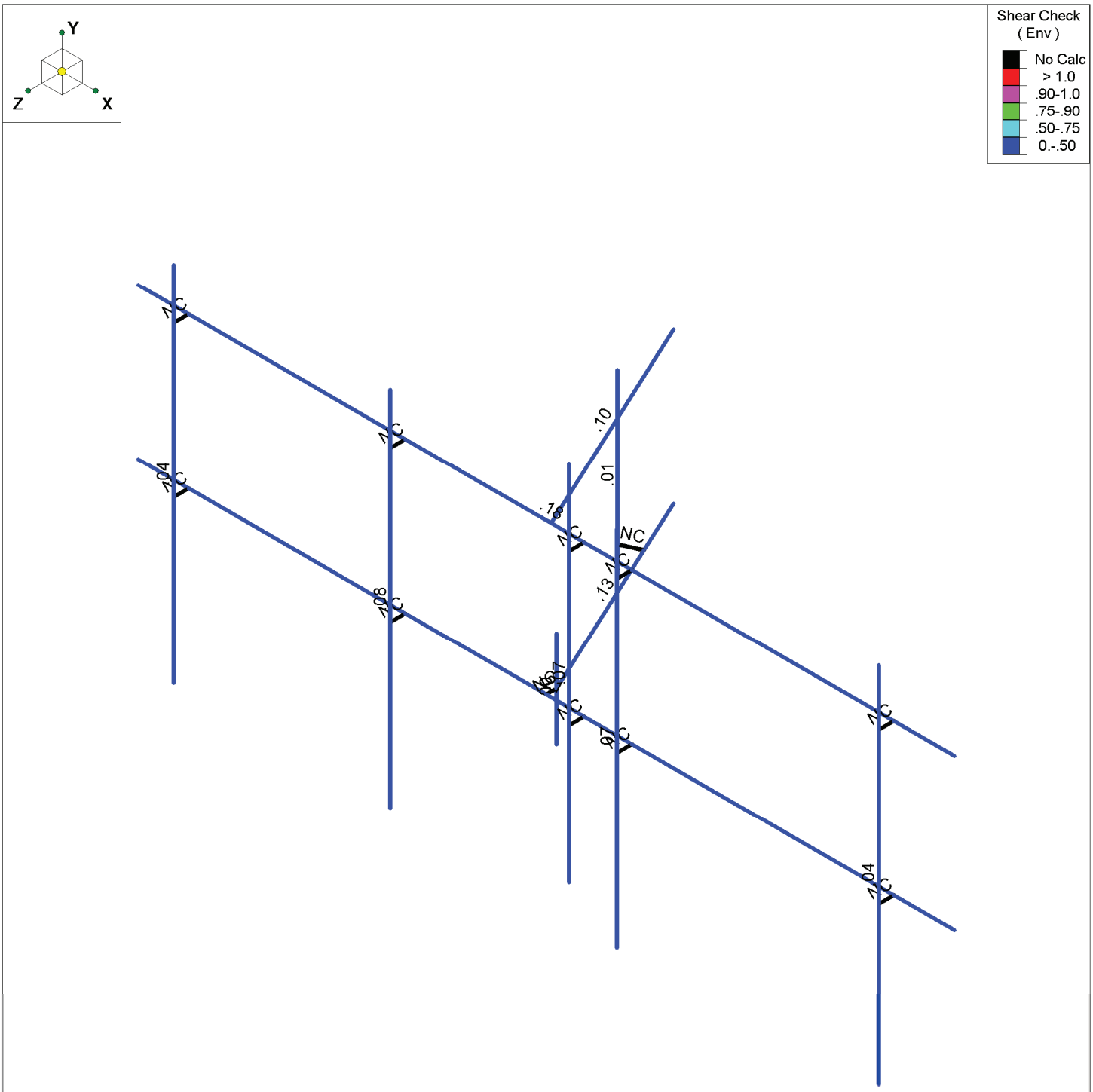
Envelope Only Solution

Maser Consulting	467180-VZW_MT_LOT_SectorA_H	SK - 1
		June 28, 2021 at 1:34 PM
		467180-VZW_MT_LOT_A_H.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting	467180-VZW_MT_LOT_SectorA_H	SK - 2
		June 28, 2021 at 1:34 PM
		467180-VZW_MT_LOT_A_H.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting	467180-VZW_MT_LOT_SectorA_H	SK - 3
		June 28, 2021 at 1:34 PM
		467180-VZW_MT_LOT_A_H.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Antenna D	None					39			
2	Antenna Di	None					39			
3	Antenna Wo (0 Deg)	None					39			
4	Antenna Wo (30 Deg)	None					39			
5	Antenna Wo (60 Deg)	None					39			
6	Antenna Wo (90 Deg)	None					39			
7	Antenna Wo (120 Deg)	None					39			
8	Antenna Wo (150 Deg)	None					39			
9	Antenna Wo (180 Deg)	None					39			
10	Antenna Wo (210 Deg)	None					39			
11	Antenna Wo (240 Deg)	None					39			
12	Antenna Wo (270 Deg)	None					39			
13	Antenna Wo (300 Deg)	None					39			
14	Antenna Wo (330 Deg)	None					39			
15	Antenna Wi (0 Deg)	None					39			
16	Antenna Wi (30 Deg)	None					39			
17	Antenna Wi (60 Deg)	None					39			
18	Antenna Wi (90 Deg)	None					39			
19	Antenna Wi (120 Deg)	None					39			
20	Antenna Wi (150 Deg)	None					39			
21	Antenna Wi (180 Deg)	None					39			
22	Antenna Wi (210 Deg)	None					39			
23	Antenna Wi (240 Deg)	None					39			
24	Antenna Wi (270 Deg)	None					39			
25	Antenna Wi (300 Deg)	None					39			
26	Antenna Wi (330 Deg)	None					39			
27	Antenna Wm (0 Deg)	None					39			
28	Antenna Wm (30 Deg)	None					39			
29	Antenna Wm (60 Deg)	None					39			
30	Antenna Wm (90 Deg)	None					39			
31	Antenna Wm (120 Deg)	None					39			
32	Antenna Wm (150 Deg)	None					39			
33	Antenna Wm (180 Deg)	None					39			
34	Antenna Wm (210 Deg)	None					39			
35	Antenna Wm (240 Deg)	None					39			
36	Antenna Wm (270 Deg)	None					39			
37	Antenna Wm (300 Deg)	None					39			
38	Antenna Wm (330 Deg)	None					39			
39	Structure D	None		-1						
40	Structure Di	None						11		
41	Structure Wo (0 Deg)	None						22		
42	Structure Wo (30 Deg)	None						22		
43	Structure Wo (60 Deg)	None						22		
44	Structure Wo (90 Deg)	None						22		
45	Structure Wo (120 Deg)	None						22		
46	Structure Wo (150 Deg)	None						22		
47	Structure Wo (180 Deg)	None						22		
48	Structure Wo (210 Deg)	None						22		
49	Structure Wo (240 Deg)	None						22		
50	Structure Wo (270 Deg)	None						22		
51	Structure Wo (300 Deg)	None						22		
52	Structure Wo (330 Deg)	None						22		
53	Structure Wi (0 Deg)	None						22		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
54	Structure Wi (30 Deg)	None						22		
55	Structure Wi (60 Deg)	None						22		
56	Structure Wi (90 Deg)	None						22		
57	Structure Wi (120 Deg)	None						22		
58	Structure Wi (150 Deg)	None						22		
59	Structure Wi (180 Deg)	None						22		
60	Structure Wi (210 Deg)	None						22		
61	Structure Wi (240 Deg)	None						22		
62	Structure Wi (270 Deg)	None						22		
63	Structure Wi (300 Deg)	None						22		
64	Structure Wi (330 Deg)	None						22		
65	Structure Wm (0 Deg)	None						22		
66	Structure Wm (30 Deg)	None						22		
67	Structure Wm (60 Deg)	None						22		
68	Structure Wm (90 Deg)	None						22		
69	Structure Wm (120 Deg)	None						22		
70	Structure Wm (150 Deg)	None						22		
71	Structure Wm (180 Deg)	None						22		
72	Structure Wm (210 Deg)	None						22		
73	Structure Wm (240 Deg)	None						22		
74	Structure Wm (270 Deg)	None						22		
75	Structure Wm (300 Deg)	None						22		
76	Structure Wm (330 Deg)	None						22		
77	Lm1	None					1			
78	Lm2	None					1			
79	Lv1	None					1			
80	Lv2	None					1			

Load Combinations

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
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 ...	Yes	Y		1	1.2	39	1.2	2	1	40	1	15	1	53	1												
14	1.2D + 1.0Di + 1.0Wi (30...	Yes	Y		1	1.2	39	1.2	2	1	40	1	16	1	54	1												
15	1.2D + 1.0Di + 1.0Wi (60...	Yes	Y		1	1.2	39	1.2	2	1	40	1	17	1	55	1												
16	1.2D + 1.0Di + 1.0Wi (90...	Yes	Y		1	1.2	39	1.2	2	1	40	1	18	1	56	1												
17	1.2D + 1.0Di + 1.0Wi (12...	Yes	Y		1	1.2	39	1.2	2	1	40	1	19	1	57	1												
18	1.2D + 1.0Di + 1.0Wi (15...	Yes	Y		1	1.2	39	1.2	2	1	40	1	20	1	58	1												
19	1.2D + 1.0Di + 1.0Wi (18...	Yes	Y		1	1.2	39	1.2	2	1	40	1	21	1	59	1												
20	1.2D + 1.0Di + 1.0Wi (21...	Yes	Y		1	1.2	39	1.2	2	1	40	1	22	1	60	1												
21	1.2D + 1.0Di + 1.0Wi (24...	Yes	Y		1	1.2	39	1.2	2	1	40	1	23	1	61	1												
22	1.2D + 1.0Di + 1.0Wi (27...	Yes	Y		1	1.2	39	1.2	2	1	40	1	24	1	62	1												
23	1.2D + 1.0Di + 1.0Wi (30...	Yes	Y		1	1.2	39	1.2	2	1	40	1	25	1	63	1												
24	1.2D + 1.0Di + 1.0Wi (33...	Yes	Y		1	1.2	39	1.2	2	1	40	1	26	1	64	1												
25	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	27	1	65	1														

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
26	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	28	1	66	1										
27	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	29	1	67	1										
28	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	30	1	68	1										
29	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	31	1	69	1										
30	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	32	1	70	1										
31	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	33	1	71	1										
32	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	34	1	72	1										
33	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	35	1	73	1										
34	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	36	1	74	1										
35	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	37	1	75	1										
36	1.2D + 1.5Lm1 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	77	1.5	38	1	76	1										
37	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	27	1	65	1										
38	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	28	1	66	1										
39	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	29	1	67	1										
40	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	30	1	68	1										
41	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	31	1	69	1										
42	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	32	1	70	1										
43	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	33	1	71	1										
44	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	34	1	72	1										
45	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	35	1	73	1										
46	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	36	1	74	1										
47	1.2D + 1.5Lm2 + 1.0Wm...	Yes	Y		1	1.2	39	1.2	78	1.5	37	1	75	1										
48	1.2D + 1.5Lm2 + 1.0Wm...	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																

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	CP	-2.394837	0	0.530923	0	
2	N2	-1.690473	0	2.041436	0	
3	N3	0	0	5.666667	0	
4	N4	0	0.791667	5.666667	0	
5	N5	0	-0.791667	5.666667	0	
6	N6	0	0	5.833333	0	
7	N7	6.75	0	5.833333	0	
8	N8	-6.75	0	5.833333	0	
9	N9	5.75	0	5.833333	0	
10	N10	5.75	0	6.083333	0	
11	N11	5.75	3.416667	6.083333	0	
12	N12	5.75	-2.583333	6.083333	0	
13	N13	1.416667	0	5.833333	0	
14	N14	1.416667	0	6.083333	0	
15	N15	1.416667	3.208333	6.083333	0	
16	N16	1.416667	-2.791667	6.083333	0	
17	N21	-2.333333	0	5.833333	0	
18	N22	-2.333333	0	6.083333	0	
19	N23	-2.333333	3.333333	6.083333	0	
20	N24	-2.333333	-2.666667	6.083333	0	
21	N25	-5.916667	0	5.833333	0	
22	N26	-5.916667	0	6.083333	0	
23	N27	-5.916667	3.333333	6.083333	0	
24	N28	-5.916667	-2.666667	6.083333	0	
25	N28A	.625	0	5.833333	0	
26	N29	.625	0	6.083333	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
27	N30	.625	3.75	6.083333	0	
28	N31	.625	-2.25	6.083333	0	
29	N29A	-1.267855	0	2.947743	0	
30	N30A	-1.569957	0	3.088616	0	
31	N31A	-1.569957	2.5	3.088616	0	
32	N32	-1.569957	-.5	3.088616	0	
33	N33	-1.690473	2.5	2.041436	0	
34	N34	0.077718	2.5	5.833333	0	
35	N35	6.75	2.5	5.833333	0	
36	N36	-6.75	2.5	5.833333	0	
37	N37	5.75	2.5	5.833333	0	
38	N38	5.75	2.5	6.083333	0	
39	N39	1.416667	2.5	5.833333	0	
40	N40	1.416667	2.5	6.083333	0	
41	N41	-2.333333	2.5	5.833333	0	
42	N42	-2.333333	2.5	6.083333	0	
43	N43	-5.916667	2.5	5.833333	0	
44	N44	-5.916667	2.5	6.083333	0	
45	N45	.625	2.5	5.833333	0	
46	N46	.625	2.5	6.083333	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff	HSS4X4X4	Beam	Tube	A500 Gr. B 46	Typical	3.37	7.8	7.8	12.8
2	Mast Pipe	PIPE_3.0	Column	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
3	Face Horizontal	PIPE_3.0	Beam	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
4	Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr. B	Typical	1.02	.627	.627	1.25
5	Dual Mount Pipe	PIPE_2.5	Column	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
6	Secondary Horizontal	PIPE_3.0	Beam	Pipe	A53 Gr. B	Typical	2.07	2.85	2.85	5.69
7	T-Arm Kit	HSS3X3X4	Beam	Tube	A500 Gr. B 46	Typical	2.44	3.02	3.02	5.08

Hot Rolled Steel Properties

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

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N2	N3			Standoff	Beam	Tube	A500 Gr. ...	Typical
2	M2	N4	N5			Mast Pipe	Column	Pipe	A53 Gr. B	Typical
3	M3	N3	N6			RIGID	None	None	RIGID	Typical
4	M4	N8	N7			Face Horizontal	Beam	Pipe	A53 Gr. B	Typical
5	M5	N9	N10			RIGID	None	None	RIGID	Typical
6	MP1A	N11	N12			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
7	M7	N13	N14			RIGID	None	None	RIGID	Typical
8	MP2A	N15	N16			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
9	M11	N21	N22			RIGID	None	None	RIGID	Typical
10	MP4A	N23	N24			Dual Mount Pipe	Column	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
11	M13	N25	N26			RIGID	None	None	RIGID	Typical
12	MP5A	N27	N28			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
13	M15	N28A	N29			RIGID	None	None	RIGID	Typical
14	MP3A	N30	N31			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
15	M15A	N30A	N29A			RIGID	None	None	RIGID	Typical
16	M16	N31A	N32			Mount Pipe	Column	Pipe	A53 Gr. B	Typical
17	M17	N33	N34			T-Arm Kit	Beam	Tube	A500 Gr. ...	Typical
18	M18	N36	N35			Secondary Hor...	Beam	Pipe	A53 Gr. B	Typical
19	M19	N37	N38			RIGID	None	None	RIGID	Typical
20	M20	N39	N40			RIGID	None	None	RIGID	Typical
21	M21	N41	N42			RIGID	None	None	RIGID	Typical
22	M22	N43	N44			RIGID	None	None	RIGID	Typical
23	M23	N45	N46			RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes	** NA **			None
3	M3	OOOOXO					Yes	** NA **			None
4	M4						Yes				None
5	M5						Yes	** NA **			None
6	MP1A						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	MP2A						Yes	** NA **			None
9	M11						Yes	** NA **			None
10	MP4A						Yes	** NA **			None
11	M13						Yes	** NA **			None
12	MP5A						Yes	** NA **			None
13	M15						Yes	** NA **			None
14	MP3A						Yes	** NA **			None
15	M15A						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes				None
18	M18						Yes				None
19	M19						Yes	** NA **			None
20	M20						Yes	** NA **			None
21	M21						Yes	** NA **			None
22	M22						Yes	** NA **			None
23	M23						Yes	** NA **			None

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-43.55	1.75
2	MP2A	My	-.022	1.75
3	MP2A	Mz	0	1.75
4	MP2A	Y	-43.55	3.25
5	MP2A	My	-.022	3.25
6	MP2A	Mz	0	3.25
7	MP3A	Y	-84.4	2
8	MP3A	My	.042	2
9	MP3A	Mz	0	2
10	MP4A	Y	-70.3	2
11	MP4A	My	-.035	2
12	MP4A	Mz	0	2

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
13	M16	Y	-32	1.5
14	M16	My	0	1.5
15	M16	Mz	0	1.5
16	MP4A	Y	-20	.5
17	MP4A	My	-.01	.5
18	MP4A	Mz	.012	.5
19	MP4A	Y	-20	4.5
20	MP4A	My	-.01	4.5
21	MP4A	Mz	.012	4.5
22	MP4A	Y	-20	.5
23	MP4A	My	-.01	.5
24	MP4A	Mz	-.012	.5
25	MP4A	Y	-20	4.5
26	MP4A	My	-.01	4.5
27	MP4A	Mz	-.012	4.5
28	MP1A	Y	-10	1
29	MP1A	My	-.005	1
30	MP1A	Mz	0	1
31	MP1A	Y	-10	4
32	MP1A	My	-.005	4
33	MP1A	Mz	0	4
34	MP5A	Y	-10	1
35	MP5A	My	-.005	1
36	MP5A	Mz	0	1
37	MP5A	Y	-10	4
38	MP5A	My	-.005	4
39	MP5A	Mz	0	4

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-35.264	1.75
2	MP2A	My	-.018	1.75
3	MP2A	Mz	0	1.75
4	MP2A	Y	-35.264	3.25
5	MP2A	My	-.018	3.25
6	MP2A	Mz	0	3.25
7	MP3A	Y	-44.453	2
8	MP3A	My	.022	2
9	MP3A	Mz	0	2
10	MP4A	Y	-39.974	2
11	MP4A	My	-.02	2
12	MP4A	Mz	0	2
13	M16	Y	-75.211	1.5
14	M16	My	0	1.5
15	M16	Mz	0	1.5
16	MP4A	Y	-60.466	.5
17	MP4A	My	-.03	.5
18	MP4A	Mz	.035	.5
19	MP4A	Y	-60.466	4.5
20	MP4A	My	-.03	4.5
21	MP4A	Mz	.035	4.5
22	MP4A	Y	-60.466	.5
23	MP4A	My	-.03	.5
24	MP4A	Mz	-.035	.5
25	MP4A	Y	-60.466	4.5
26	MP4A	My	-.03	4.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
27	MP4A	Mz	-.035	4.5
28	MP1A	Y	-62.487	1
29	MP1A	My	-.031	1
30	MP1A	Mz	0	1
31	MP1A	Y	-62.487	4
32	MP1A	My	-.031	4
33	MP1A	Mz	0	4
34	MP5A	Y	-62.487	1
35	MP5A	My	-.031	1
36	MP5A	Mz	0	1
37	MP5A	Y	-62.487	4
38	MP5A	My	-.031	4
39	MP5A	Mz	0	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1.75
2	MP2A	Z	-69.87	1.75
3	MP2A	Mx	0	1.75
4	MP2A	X	0	3.25
5	MP2A	Z	-69.87	3.25
6	MP2A	Mx	0	3.25
7	MP3A	X	0	2
8	MP3A	Z	-55.599	2
9	MP3A	Mx	0	2
10	MP4A	X	0	2
11	MP4A	Z	-55.599	2
12	MP4A	Mx	0	2
13	M16	X	0	1.5
14	M16	Z	-111.535	1.5
15	M16	Mx	0	1.5
16	MP4A	X	0	.5
17	MP4A	Z	-121.306	.5
18	MP4A	Mx	-.071	.5
19	MP4A	X	0	4.5
20	MP4A	Z	-121.306	4.5
21	MP4A	Mx	-.071	4.5
22	MP4A	X	0	.5
23	MP4A	Z	-121.306	.5
24	MP4A	Mx	.071	.5
25	MP4A	X	0	4.5
26	MP4A	Z	-121.306	4.5
27	MP4A	Mx	.071	4.5
28	MP1A	X	0	1
29	MP1A	Z	-91.426	1
30	MP1A	Mx	0	1
31	MP1A	X	0	4
32	MP1A	Z	-91.426	4
33	MP1A	Mx	0	4
34	MP5A	X	0	1
35	MP5A	Z	-91.426	1
36	MP5A	Mx	0	1
37	MP5A	X	0	4
38	MP5A	Z	-91.426	4
39	MP5A	Mx	0	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	29.62	1.75
2	MP2A	Z	-51.304	1.75
3	MP2A	Mx	-.015	1.75
4	MP2A	X	29.62	3.25
5	MP2A	Z	-51.304	3.25
6	MP2A	Mx	-.015	3.25
7	MP3A	X	25.495	2
8	MP3A	Z	-44.159	2
9	MP3A	Mx	.013	2
10	MP4A	X	24.612	2
11	MP4A	Z	-42.63	2
12	MP4A	Mx	-.012	2
13	M16	X	48.472	1.5
14	M16	Z	-83.956	1.5
15	M16	Mx	0	1.5
16	MP4A	X	55.517	.5
17	MP4A	Z	-96.159	.5
18	MP4A	Mx	-.084	.5
19	MP4A	X	55.517	4.5
20	MP4A	Z	-96.159	4.5
21	MP4A	Mx	-.084	4.5
22	MP4A	X	55.517	.5
23	MP4A	Z	-96.159	.5
24	MP4A	Mx	.028	.5
25	MP4A	X	55.517	4.5
26	MP4A	Z	-96.159	4.5
27	MP4A	Mx	.028	4.5
28	MP1A	X	44.365	1
29	MP1A	Z	-76.842	1
30	MP1A	Mx	-.022	1
31	MP1A	X	44.365	4
32	MP1A	Z	-76.842	4
33	MP1A	Mx	-.022	4
34	MP5A	X	44.365	1
35	MP5A	Z	-76.842	1
36	MP5A	Mx	-.022	1
37	MP5A	X	44.365	4
38	MP5A	Z	-76.842	4
39	MP5A	Mx	-.022	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	32.894	1.75
2	MP2A	Z	-18.991	1.75
3	MP2A	Mx	-.016	1.75
4	MP2A	X	32.894	3.25
5	MP2A	Z	-18.991	3.25
6	MP2A	Mx	-.016	3.25
7	MP3A	X	36.177	2
8	MP3A	Z	-20.887	2
9	MP3A	Mx	.018	2
10	MP4A	X	31.59	2
11	MP4A	Z	-18.239	2
12	MP4A	Mx	-.016	2
13	M16	X	68.454	1.5
14	M16	Z	-39.522	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	78.368	.5
17	MP4A	Z	-45.246	.5
18	MP4A	Mx	-.066	.5
19	MP4A	X	78.368	4.5
20	MP4A	Z	-45.246	4.5
21	MP4A	Mx	-.066	4.5
22	MP4A	X	78.368	.5
23	MP4A	Z	-45.246	.5
24	MP4A	Mx	-.013	.5
25	MP4A	X	78.368	4.5
26	MP4A	Z	-45.246	4.5
27	MP4A	Mx	-.013	4.5
28	MP1A	X	72.173	1
29	MP1A	Z	-41.669	1
30	MP1A	Mx	-.036	1
31	MP1A	X	72.173	4
32	MP1A	Z	-41.669	4
33	MP1A	Mx	-.036	4
34	MP5A	X	72.173	1
35	MP5A	Z	-41.669	1
36	MP5A	Mx	-.036	1
37	MP5A	X	72.173	4
38	MP5A	Z	-41.669	4
39	MP5A	Mx	-.036	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	27.354	1.75
2	MP2A	Z	0	1.75
3	MP2A	Mx	-.014	1.75
4	MP2A	X	27.354	3.25
5	MP2A	Z	0	3.25
6	MP2A	Mx	-.014	3.25
7	MP3A	X	37.165	2
8	MP3A	Z	0	2
9	MP3A	Mx	.019	2
10	MP4A	X	30.104	2
11	MP4A	Z	0	2
12	MP4A	Mx	-.015	2
13	M16	X	75.737	1.5
14	M16	Z	0	1.5
15	M16	Mx	0	1.5
16	MP4A	X	80.221	.5
17	MP4A	Z	0	.5
18	MP4A	Mx	-.04	.5
19	MP4A	X	80.221	4.5
20	MP4A	Z	0	4.5
21	MP4A	Mx	-.04	4.5
22	MP4A	X	80.221	.5
23	MP4A	Z	0	.5
24	MP4A	Mx	-.04	.5
25	MP4A	X	80.221	4.5
26	MP4A	Z	0	4.5
27	MP4A	Mx	-.04	4.5
28	MP1A	X	80.643	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	0	1
30	MP1A	Mx	-.04	1
31	MP1A	X	80.643	4
32	MP1A	Z	0	4
33	MP1A	Mx	-.04	4
34	MP5A	X	80.643	1
35	MP5A	Z	0	1
36	MP5A	Mx	-.04	1
37	MP5A	X	80.643	4
38	MP5A	Z	0	4
39	MP5A	Mx	-.04	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	32.894	1.75
2	MP2A	Z	18.991	1.75
3	MP2A	Mx	-.016	1.75
4	MP2A	X	32.894	3.25
5	MP2A	Z	18.991	3.25
6	MP2A	Mx	-.016	3.25
7	MP3A	X	36.177	2
8	MP3A	Z	20.887	2
9	MP3A	Mx	.018	2
10	MP4A	X	31.59	2
11	MP4A	Z	18.239	2
12	MP4A	Mx	-.016	2
13	M16	X	78.226	1.5
14	M16	Z	45.164	1.5
15	M16	Mx	0	1.5
16	MP4A	X	78.368	.5
17	MP4A	Z	45.246	.5
18	MP4A	Mx	-.013	.5
19	MP4A	X	78.368	4.5
20	MP4A	Z	45.246	4.5
21	MP4A	Mx	-.013	4.5
22	MP4A	X	78.368	.5
23	MP4A	Z	45.246	.5
24	MP4A	Mx	-.066	.5
25	MP4A	X	78.368	4.5
26	MP4A	Z	45.246	4.5
27	MP4A	Mx	-.066	4.5
28	MP1A	X	72.173	1
29	MP1A	Z	41.669	1
30	MP1A	Mx	-.036	1
31	MP1A	X	72.173	4
32	MP1A	Z	41.669	4
33	MP1A	Mx	-.036	4
34	MP5A	X	72.173	1
35	MP5A	Z	41.669	1
36	MP5A	Mx	-.036	1
37	MP5A	X	72.173	4
38	MP5A	Z	41.669	4
39	MP5A	Mx	-.036	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	29.62	1.75
2	MP2A	Z	51.304	1.75
3	MP2A	Mx	-.015	1.75
4	MP2A	X	29.62	3.25
5	MP2A	Z	51.304	3.25
6	MP2A	Mx	-.015	3.25
7	MP3A	X	25.495	2
8	MP3A	Z	44.159	2
9	MP3A	Mx	.013	2
10	MP4A	X	24.612	2
11	MP4A	Z	42.63	2
12	MP4A	Mx	-.012	2
13	M16	X	54.114	1.5
14	M16	Z	93.728	1.5
15	M16	Mx	0	1.5
16	MP4A	X	55.517	.5
17	MP4A	Z	96.159	.5
18	MP4A	Mx	.028	.5
19	MP4A	X	55.517	4.5
20	MP4A	Z	96.159	4.5
21	MP4A	Mx	.028	4.5
22	MP4A	X	55.517	.5
23	MP4A	Z	96.159	.5
24	MP4A	Mx	-.084	.5
25	MP4A	X	55.517	4.5
26	MP4A	Z	96.159	4.5
27	MP4A	Mx	-.084	4.5
28	MP1A	X	44.365	1
29	MP1A	Z	76.842	1
30	MP1A	Mx	-.022	1
31	MP1A	X	44.365	4
32	MP1A	Z	76.842	4
33	MP1A	Mx	-.022	4
34	MP5A	X	44.365	1
35	MP5A	Z	76.842	1
36	MP5A	Mx	-.022	1
37	MP5A	X	44.365	4
38	MP5A	Z	76.842	4
39	MP5A	Mx	-.022	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1.75
2	MP2A	Z	69.87	1.75
3	MP2A	Mx	0	1.75
4	MP2A	X	0	3.25
5	MP2A	Z	69.87	3.25
6	MP2A	Mx	0	3.25
7	MP3A	X	0	2
8	MP3A	Z	55.599	2
9	MP3A	Mx	0	2
10	MP4A	X	0	2
11	MP4A	Z	55.599	2
12	MP4A	Mx	0	2
13	M16	X	0	1.5
14	M16	Z	111.535	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	0	.5
17	MP4A	Z	121.306	.5
18	MP4A	Mx	.071	.5
19	MP4A	X	0	4.5
20	MP4A	Z	121.306	4.5
21	MP4A	Mx	.071	4.5
22	MP4A	X	0	.5
23	MP4A	Z	121.306	.5
24	MP4A	Mx	-.071	.5
25	MP4A	X	0	4.5
26	MP4A	Z	121.306	4.5
27	MP4A	Mx	-.071	4.5
28	MP1A	X	0	1
29	MP1A	Z	91.426	1
30	MP1A	Mx	0	1
31	MP1A	X	0	4
32	MP1A	Z	91.426	4
33	MP1A	Mx	0	4
34	MP5A	X	0	1
35	MP5A	Z	91.426	1
36	MP5A	Mx	0	1
37	MP5A	X	0	4
38	MP5A	Z	91.426	4
39	MP5A	Mx	0	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-29.62	1.75
2	MP2A	Z	51.304	1.75
3	MP2A	Mx	.015	1.75
4	MP2A	X	-29.62	3.25
5	MP2A	Z	51.304	3.25
6	MP2A	Mx	.015	3.25
7	MP3A	X	-25.495	2
8	MP3A	Z	44.159	2
9	MP3A	Mx	-.013	2
10	MP4A	X	-24.612	2
11	MP4A	Z	42.63	2
12	MP4A	Mx	.012	2
13	M16	X	-48.472	1.5
14	M16	Z	83.956	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-55.517	.5
17	MP4A	Z	96.159	.5
18	MP4A	Mx	.084	.5
19	MP4A	X	-55.517	4.5
20	MP4A	Z	96.159	4.5
21	MP4A	Mx	.084	4.5
22	MP4A	X	-55.517	.5
23	MP4A	Z	96.159	.5
24	MP4A	Mx	-.028	.5
25	MP4A	X	-55.517	4.5
26	MP4A	Z	96.159	4.5
27	MP4A	Mx	-.028	4.5
28	MP1A	X	-44.365	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	76.842	1
30	MP1A	Mx	.022	1
31	MP1A	X	-44.365	4
32	MP1A	Z	76.842	4
33	MP1A	Mx	.022	4
34	MP5A	X	-44.365	1
35	MP5A	Z	76.842	1
36	MP5A	Mx	.022	1
37	MP5A	X	-44.365	4
38	MP5A	Z	76.842	4
39	MP5A	Mx	.022	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-32.894	1.75
2	MP2A	Z	18.991	1.75
3	MP2A	Mx	.016	1.75
4	MP2A	X	-32.894	3.25
5	MP2A	Z	18.991	3.25
6	MP2A	Mx	.016	3.25
7	MP3A	X	-36.177	2
8	MP3A	Z	20.887	2
9	MP3A	Mx	-.018	2
10	MP4A	X	-31.59	2
11	MP4A	Z	18.239	2
12	MP4A	Mx	.016	2
13	M16	X	-68.454	1.5
14	M16	Z	39.522	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-78.368	.5
17	MP4A	Z	45.246	.5
18	MP4A	Mx	.066	.5
19	MP4A	X	-78.368	4.5
20	MP4A	Z	45.246	4.5
21	MP4A	Mx	.066	4.5
22	MP4A	X	-78.368	.5
23	MP4A	Z	45.246	.5
24	MP4A	Mx	.013	.5
25	MP4A	X	-78.368	4.5
26	MP4A	Z	45.246	4.5
27	MP4A	Mx	.013	4.5
28	MP1A	X	-72.173	1
29	MP1A	Z	41.669	1
30	MP1A	Mx	.036	1
31	MP1A	X	-72.173	4
32	MP1A	Z	41.669	4
33	MP1A	Mx	.036	4
34	MP5A	X	-72.173	1
35	MP5A	Z	41.669	1
36	MP5A	Mx	.036	1
37	MP5A	X	-72.173	4
38	MP5A	Z	41.669	4
39	MP5A	Mx	.036	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-27.354	1.75
2	MP2A	Z	0	1.75
3	MP2A	Mx	.014	1.75
4	MP2A	X	-27.354	3.25
5	MP2A	Z	0	3.25
6	MP2A	Mx	.014	3.25
7	MP3A	X	-37.165	2
8	MP3A	Z	0	2
9	MP3A	Mx	-.019	2
10	MP4A	X	-30.104	2
11	MP4A	Z	0	2
12	MP4A	Mx	.015	2
13	M16	X	-75.737	1.5
14	M16	Z	0	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-80.221	.5
17	MP4A	Z	0	.5
18	MP4A	Mx	.04	.5
19	MP4A	X	-80.221	4.5
20	MP4A	Z	0	4.5
21	MP4A	Mx	.04	4.5
22	MP4A	X	-80.221	.5
23	MP4A	Z	0	.5
24	MP4A	Mx	.04	.5
25	MP4A	X	-80.221	4.5
26	MP4A	Z	0	4.5
27	MP4A	Mx	.04	4.5
28	MP1A	X	-80.643	1
29	MP1A	Z	0	1
30	MP1A	Mx	.04	1
31	MP1A	X	-80.643	4
32	MP1A	Z	0	4
33	MP1A	Mx	.04	4
34	MP5A	X	-80.643	1
35	MP5A	Z	0	1
36	MP5A	Mx	.04	1
37	MP5A	X	-80.643	4
38	MP5A	Z	0	4
39	MP5A	Mx	.04	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-32.894	1.75
2	MP2A	Z	-18.991	1.75
3	MP2A	Mx	.016	1.75
4	MP2A	X	-32.894	3.25
5	MP2A	Z	-18.991	3.25
6	MP2A	Mx	.016	3.25
7	MP3A	X	-36.177	2
8	MP3A	Z	-20.887	2
9	MP3A	Mx	-.018	2
10	MP4A	X	-31.59	2
11	MP4A	Z	-18.239	2
12	MP4A	Mx	.016	2
13	M16	X	-78.226	1.5
14	M16	Z	-45.164	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	-78.368	.5
17	MP4A	Z	-45.246	.5
18	MP4A	Mx	.013	.5
19	MP4A	X	-78.368	4.5
20	MP4A	Z	-45.246	4.5
21	MP4A	Mx	.013	4.5
22	MP4A	X	-78.368	.5
23	MP4A	Z	-45.246	.5
24	MP4A	Mx	.066	.5
25	MP4A	X	-78.368	4.5
26	MP4A	Z	-45.246	4.5
27	MP4A	Mx	.066	4.5
28	MP1A	X	-72.173	1
29	MP1A	Z	-41.669	1
30	MP1A	Mx	.036	1
31	MP1A	X	-72.173	4
32	MP1A	Z	-41.669	4
33	MP1A	Mx	.036	4
34	MP5A	X	-72.173	1
35	MP5A	Z	-41.669	1
36	MP5A	Mx	.036	1
37	MP5A	X	-72.173	4
38	MP5A	Z	-41.669	4
39	MP5A	Mx	.036	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-29.62	1.75
2	MP2A	Z	-51.304	1.75
3	MP2A	Mx	.015	1.75
4	MP2A	X	-29.62	3.25
5	MP2A	Z	-51.304	3.25
6	MP2A	Mx	.015	3.25
7	MP3A	X	-25.495	2
8	MP3A	Z	-44.159	2
9	MP3A	Mx	-.013	2
10	MP4A	X	-24.612	2
11	MP4A	Z	-42.63	2
12	MP4A	Mx	.012	2
13	M16	X	-54.114	1.5
14	M16	Z	-93.728	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-55.517	.5
17	MP4A	Z	-96.159	.5
18	MP4A	Mx	-.028	.5
19	MP4A	X	-55.517	4.5
20	MP4A	Z	-96.159	4.5
21	MP4A	Mx	-.028	4.5
22	MP4A	X	-55.517	.5
23	MP4A	Z	-96.159	.5
24	MP4A	Mx	.084	.5
25	MP4A	X	-55.517	4.5
26	MP4A	Z	-96.159	4.5
27	MP4A	Mx	.084	4.5
28	MP1A	X	-44.365	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	-76.842	1
30	MP1A	Mx	.022	1
31	MP1A	X	-44.365	4
32	MP1A	Z	-76.842	4
33	MP1A	Mx	.022	4
34	MP5A	X	-44.365	1
35	MP5A	Z	-76.842	1
36	MP5A	Mx	.022	1
37	MP5A	X	-44.365	4
38	MP5A	Z	-76.842	4
39	MP5A	Mx	.022	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1.75
2	MP2A	Z	-14.905	1.75
3	MP2A	Mx	0	1.75
4	MP2A	X	0	3.25
5	MP2A	Z	-14.905	3.25
6	MP2A	Mx	0	3.25
7	MP3A	X	0	2
8	MP3A	Z	-12.556	2
9	MP3A	Mx	0	2
10	MP4A	X	0	2
11	MP4A	Z	-12.556	2
12	MP4A	Mx	0	2
13	M16	X	0	1.5
14	M16	Z	-23.951	1.5
15	M16	Mx	0	1.5
16	MP4A	X	0	.5
17	MP4A	Z	-25.265	.5
18	MP4A	Mx	-.015	.5
19	MP4A	X	0	4.5
20	MP4A	Z	-25.265	4.5
21	MP4A	Mx	-.015	4.5
22	MP4A	X	0	.5
23	MP4A	Z	-25.265	.5
24	MP4A	Mx	.015	.5
25	MP4A	X	0	4.5
26	MP4A	Z	-25.265	4.5
27	MP4A	Mx	.015	4.5
28	MP1A	X	0	1
29	MP1A	Z	-19.135	1
30	MP1A	Mx	0	1
31	MP1A	X	0	4
32	MP1A	Z	-19.135	4
33	MP1A	Mx	0	4
34	MP5A	X	0	1
35	MP5A	Z	-19.135	1
36	MP5A	Mx	0	1
37	MP5A	X	0	4
38	MP5A	Z	-19.135	4
39	MP5A	Mx	0	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	6.383	1.75
2	MP2A	Z	-11.055	1.75
3	MP2A	Mx	-.003	1.75
4	MP2A	X	6.383	3.25
5	MP2A	Z	-11.055	3.25
6	MP2A	Mx	-.003	3.25
7	MP3A	X	5.8	2
8	MP3A	Z	-10.046	2
9	MP3A	Mx	.003	2
10	MP4A	X	5.618	2
11	MP4A	Z	-9.731	2
12	MP4A	Mx	-.003	2
13	M16	X	10.511	1.5
14	M16	Z	-18.206	1.5
15	M16	Mx	0	1.5
16	MP4A	X	11.652	.5
17	MP4A	Z	-20.182	.5
18	MP4A	Mx	-.018	.5
19	MP4A	X	11.652	4.5
20	MP4A	Z	-20.182	4.5
21	MP4A	Mx	-.018	4.5
22	MP4A	X	11.652	.5
23	MP4A	Z	-20.182	.5
24	MP4A	Mx	.006	.5
25	MP4A	X	11.652	4.5
26	MP4A	Z	-20.182	4.5
27	MP4A	Mx	.006	4.5
28	MP1A	X	9.307	1
29	MP1A	Z	-16.119	1
30	MP1A	Mx	-.005	1
31	MP1A	X	9.307	4
32	MP1A	Z	-16.119	4
33	MP1A	Mx	-.005	4
34	MP5A	X	9.307	1
35	MP5A	Z	-16.119	1
36	MP5A	Mx	-.005	1
37	MP5A	X	9.307	4
38	MP5A	Z	-16.119	4
39	MP5A	Mx	-.005	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	7.348	1.75
2	MP2A	Z	-4.242	1.75
3	MP2A	Mx	-.004	1.75
4	MP2A	X	7.348	3.25
5	MP2A	Z	-4.242	3.25
6	MP2A	Mx	-.004	3.25
7	MP3A	X	8.389	2
8	MP3A	Z	-4.844	2
9	MP3A	Mx	.004	2
10	MP4A	X	7.445	2
11	MP4A	Z	-4.299	2
12	MP4A	Mx	-.004	2
13	M16	X	15.094	1.5
14	M16	Z	-8.715	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	16.784	.5
17	MP4A	Z	-9.69	.5
18	MP4A	Mx	-.014	.5
19	MP4A	X	16.784	4.5
20	MP4A	Z	-9.69	4.5
21	MP4A	Mx	-.014	4.5
22	MP4A	X	16.784	.5
23	MP4A	Z	-9.69	.5
24	MP4A	Mx	-.003	.5
25	MP4A	X	16.784	4.5
26	MP4A	Z	-9.69	4.5
27	MP4A	Mx	-.003	4.5
28	MP1A	X	15.215	1
29	MP1A	Z	-8.784	1
30	MP1A	Mx	-.008	1
31	MP1A	X	15.215	4
32	MP1A	Z	-8.784	4
33	MP1A	Mx	-.008	4
34	MP5A	X	15.215	1
35	MP5A	Z	-8.784	1
36	MP5A	Mx	-.008	1
37	MP5A	X	15.215	4
38	MP5A	Z	-8.784	4
39	MP5A	Mx	-.008	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	6.344	1.75
2	MP2A	Z	0	1.75
3	MP2A	Mx	-.003	1.75
4	MP2A	X	6.344	3.25
5	MP2A	Z	0	3.25
6	MP2A	Mx	-.003	3.25
7	MP3A	X	8.731	2
8	MP3A	Z	0	2
9	MP3A	Mx	.004	2
10	MP4A	X	7.277	2
11	MP4A	Z	0	2
12	MP4A	Mx	-.004	2
13	M16	X	16.765	1.5
14	M16	Z	0	1.5
15	M16	Mx	0	1.5
16	MP4A	X	17.418	.5
17	MP4A	Z	0	.5
18	MP4A	Mx	-.009	.5
19	MP4A	X	17.418	4.5
20	MP4A	Z	0	4.5
21	MP4A	Mx	-.009	4.5
22	MP4A	X	17.418	.5
23	MP4A	Z	0	.5
24	MP4A	Mx	-.009	.5
25	MP4A	X	17.418	4.5
26	MP4A	Z	0	4.5
27	MP4A	Mx	-.009	4.5
28	MP1A	X	17.046	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	0	1
30	MP1A	Mx	-.009	1
31	MP1A	X	17.046	4
32	MP1A	Z	0	4
33	MP1A	Mx	-.009	4
34	MP5A	X	17.046	1
35	MP5A	Z	0	1
36	MP5A	Mx	-.009	1
37	MP5A	X	17.046	4
38	MP5A	Z	0	4
39	MP5A	Mx	-.009	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	7.348	1.75
2	MP2A	Z	4.242	1.75
3	MP2A	Mx	-.004	1.75
4	MP2A	X	7.348	3.25
5	MP2A	Z	4.242	3.25
6	MP2A	Mx	-.004	3.25
7	MP3A	X	8.389	2
8	MP3A	Z	4.844	2
9	MP3A	Mx	.004	2
10	MP4A	X	7.445	2
11	MP4A	Z	4.299	2
12	MP4A	Mx	-.004	2
13	M16	X	17.056	1.5
14	M16	Z	9.847	1.5
15	M16	Mx	0	1.5
16	MP4A	X	16.784	.5
17	MP4A	Z	9.69	.5
18	MP4A	Mx	-.003	.5
19	MP4A	X	16.784	4.5
20	MP4A	Z	9.69	4.5
21	MP4A	Mx	-.003	4.5
22	MP4A	X	16.784	.5
23	MP4A	Z	9.69	.5
24	MP4A	Mx	-.014	.5
25	MP4A	X	16.784	4.5
26	MP4A	Z	9.69	4.5
27	MP4A	Mx	-.014	4.5
28	MP1A	X	15.215	1
29	MP1A	Z	8.784	1
30	MP1A	Mx	-.008	1
31	MP1A	X	15.215	4
32	MP1A	Z	8.784	4
33	MP1A	Mx	-.008	4
34	MP5A	X	15.215	1
35	MP5A	Z	8.784	1
36	MP5A	Mx	-.008	1
37	MP5A	X	15.215	4
38	MP5A	Z	8.784	4
39	MP5A	Mx	-.008	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	6.383	1.75
2	MP2A	Z	11.055	1.75
3	MP2A	Mx	-.003	1.75
4	MP2A	X	6.383	3.25
5	MP2A	Z	11.055	3.25
6	MP2A	Mx	-.003	3.25
7	MP3A	X	5.8	2
8	MP3A	Z	10.046	2
9	MP3A	Mx	.003	2
10	MP4A	X	5.618	2
11	MP4A	Z	9.731	2
12	MP4A	Mx	-.003	2
13	M16	X	11.644	1.5
14	M16	Z	20.167	1.5
15	M16	Mx	0	1.5
16	MP4A	X	11.652	.5
17	MP4A	Z	20.182	.5
18	MP4A	Mx	.006	.5
19	MP4A	X	11.652	4.5
20	MP4A	Z	20.182	4.5
21	MP4A	Mx	.006	4.5
22	MP4A	X	11.652	.5
23	MP4A	Z	20.182	.5
24	MP4A	Mx	-.018	.5
25	MP4A	X	11.652	4.5
26	MP4A	Z	20.182	4.5
27	MP4A	Mx	-.018	4.5
28	MP1A	X	9.307	1
29	MP1A	Z	16.119	1
30	MP1A	Mx	-.005	1
31	MP1A	X	9.307	4
32	MP1A	Z	16.119	4
33	MP1A	Mx	-.005	4
34	MP5A	X	9.307	1
35	MP5A	Z	16.119	1
36	MP5A	Mx	-.005	1
37	MP5A	X	9.307	4
38	MP5A	Z	16.119	4
39	MP5A	Mx	-.005	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1.75
2	MP2A	Z	14.905	1.75
3	MP2A	Mx	0	1.75
4	MP2A	X	0	3.25
5	MP2A	Z	14.905	3.25
6	MP2A	Mx	0	3.25
7	MP3A	X	0	2
8	MP3A	Z	12.556	2
9	MP3A	Mx	0	2
10	MP4A	X	0	2
11	MP4A	Z	12.556	2
12	MP4A	Mx	0	2
13	M16	X	0	1.5
14	M16	Z	23.951	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	0	.5
17	MP4A	Z	25.265	.5
18	MP4A	Mx	.015	.5
19	MP4A	X	0	4.5
20	MP4A	Z	25.265	4.5
21	MP4A	Mx	.015	4.5
22	MP4A	X	0	.5
23	MP4A	Z	25.265	.5
24	MP4A	Mx	-.015	.5
25	MP4A	X	0	4.5
26	MP4A	Z	25.265	4.5
27	MP4A	Mx	-.015	4.5
28	MP1A	X	0	1
29	MP1A	Z	19.135	1
30	MP1A	Mx	0	1
31	MP1A	X	0	4
32	MP1A	Z	19.135	4
33	MP1A	Mx	0	4
34	MP5A	X	0	1
35	MP5A	Z	19.135	1
36	MP5A	Mx	0	1
37	MP5A	X	0	4
38	MP5A	Z	19.135	4
39	MP5A	Mx	0	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-6.383	1.75
2	MP2A	Z	11.055	1.75
3	MP2A	Mx	.003	1.75
4	MP2A	X	-6.383	3.25
5	MP2A	Z	11.055	3.25
6	MP2A	Mx	.003	3.25
7	MP3A	X	-5.8	2
8	MP3A	Z	10.046	2
9	MP3A	Mx	-.003	2
10	MP4A	X	-5.618	2
11	MP4A	Z	9.731	2
12	MP4A	Mx	.003	2
13	M16	X	-10.511	1.5
14	M16	Z	18.206	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-11.652	.5
17	MP4A	Z	20.182	.5
18	MP4A	Mx	.018	.5
19	MP4A	X	-11.652	4.5
20	MP4A	Z	20.182	4.5
21	MP4A	Mx	.018	4.5
22	MP4A	X	-11.652	.5
23	MP4A	Z	20.182	.5
24	MP4A	Mx	-.006	.5
25	MP4A	X	-11.652	4.5
26	MP4A	Z	20.182	4.5
27	MP4A	Mx	-.006	4.5
28	MP1A	X	-9.307	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	16.119	1
30	MP1A	Mx	.005	1
31	MP1A	X	-9.307	4
32	MP1A	Z	16.119	4
33	MP1A	Mx	.005	4
34	MP5A	X	-9.307	1
35	MP5A	Z	16.119	1
36	MP5A	Mx	.005	1
37	MP5A	X	-9.307	4
38	MP5A	Z	16.119	4
39	MP5A	Mx	.005	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-7.348	1.75
2	MP2A	Z	4.242	1.75
3	MP2A	Mx	.004	1.75
4	MP2A	X	-7.348	3.25
5	MP2A	Z	4.242	3.25
6	MP2A	Mx	.004	3.25
7	MP3A	X	-8.389	2
8	MP3A	Z	4.844	2
9	MP3A	Mx	-.004	2
10	MP4A	X	-7.445	2
11	MP4A	Z	4.299	2
12	MP4A	Mx	.004	2
13	M16	X	-15.094	1.5
14	M16	Z	8.715	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-16.784	.5
17	MP4A	Z	9.69	.5
18	MP4A	Mx	.014	.5
19	MP4A	X	-16.784	4.5
20	MP4A	Z	9.69	4.5
21	MP4A	Mx	.014	4.5
22	MP4A	X	-16.784	.5
23	MP4A	Z	9.69	.5
24	MP4A	Mx	.003	.5
25	MP4A	X	-16.784	4.5
26	MP4A	Z	9.69	4.5
27	MP4A	Mx	.003	4.5
28	MP1A	X	-15.215	1
29	MP1A	Z	8.784	1
30	MP1A	Mx	.008	1
31	MP1A	X	-15.215	4
32	MP1A	Z	8.784	4
33	MP1A	Mx	.008	4
34	MP5A	X	-15.215	1
35	MP5A	Z	8.784	1
36	MP5A	Mx	.008	1
37	MP5A	X	-15.215	4
38	MP5A	Z	8.784	4
39	MP5A	Mx	.008	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-6.344	1.75
2	MP2A	Z	0	1.75
3	MP2A	Mx	.003	1.75
4	MP2A	X	-6.344	3.25
5	MP2A	Z	0	3.25
6	MP2A	Mx	.003	3.25
7	MP3A	X	-8.731	2
8	MP3A	Z	0	2
9	MP3A	Mx	-.004	2
10	MP4A	X	-7.277	2
11	MP4A	Z	0	2
12	MP4A	Mx	.004	2
13	M16	X	-16.765	1.5
14	M16	Z	0	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-17.418	.5
17	MP4A	Z	0	.5
18	MP4A	Mx	.009	.5
19	MP4A	X	-17.418	4.5
20	MP4A	Z	0	4.5
21	MP4A	Mx	.009	4.5
22	MP4A	X	-17.418	.5
23	MP4A	Z	0	.5
24	MP4A	Mx	.009	.5
25	MP4A	X	-17.418	4.5
26	MP4A	Z	0	4.5
27	MP4A	Mx	.009	4.5
28	MP1A	X	-17.046	1
29	MP1A	Z	0	1
30	MP1A	Mx	.009	1
31	MP1A	X	-17.046	4
32	MP1A	Z	0	4
33	MP1A	Mx	.009	4
34	MP5A	X	-17.046	1
35	MP5A	Z	0	1
36	MP5A	Mx	.009	1
37	MP5A	X	-17.046	4
38	MP5A	Z	0	4
39	MP5A	Mx	.009	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-7.348	1.75
2	MP2A	Z	-4.242	1.75
3	MP2A	Mx	.004	1.75
4	MP2A	X	-7.348	3.25
5	MP2A	Z	-4.242	3.25
6	MP2A	Mx	.004	3.25
7	MP3A	X	-8.389	2
8	MP3A	Z	-4.844	2
9	MP3A	Mx	-.004	2
10	MP4A	X	-7.445	2
11	MP4A	Z	-4.299	2
12	MP4A	Mx	.004	2
13	M16	X	-17.056	1.5
14	M16	Z	-9.847	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	-16.784	.5
17	MP4A	Z	-9.69	.5
18	MP4A	Mx	.003	.5
19	MP4A	X	-16.784	4.5
20	MP4A	Z	-9.69	4.5
21	MP4A	Mx	.003	4.5
22	MP4A	X	-16.784	.5
23	MP4A	Z	-9.69	.5
24	MP4A	Mx	.014	.5
25	MP4A	X	-16.784	4.5
26	MP4A	Z	-9.69	4.5
27	MP4A	Mx	.014	4.5
28	MP1A	X	-15.215	1
29	MP1A	Z	-8.784	1
30	MP1A	Mx	.008	1
31	MP1A	X	-15.215	4
32	MP1A	Z	-8.784	4
33	MP1A	Mx	.008	4
34	MP5A	X	-15.215	1
35	MP5A	Z	-8.784	1
36	MP5A	Mx	.008	1
37	MP5A	X	-15.215	4
38	MP5A	Z	-8.784	4
39	MP5A	Mx	.008	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-6.383	1.75
2	MP2A	Z	-11.055	1.75
3	MP2A	Mx	.003	1.75
4	MP2A	X	-6.383	3.25
5	MP2A	Z	-11.055	3.25
6	MP2A	Mx	.003	3.25
7	MP3A	X	-5.8	2
8	MP3A	Z	-10.046	2
9	MP3A	Mx	-.003	2
10	MP4A	X	-5.618	2
11	MP4A	Z	-9.731	2
12	MP4A	Mx	.003	2
13	M16	X	-11.644	1.5
14	M16	Z	-20.167	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-11.652	.5
17	MP4A	Z	-20.182	.5
18	MP4A	Mx	-.006	.5
19	MP4A	X	-11.652	4.5
20	MP4A	Z	-20.182	4.5
21	MP4A	Mx	-.006	4.5
22	MP4A	X	-11.652	.5
23	MP4A	Z	-20.182	.5
24	MP4A	Mx	.018	.5
25	MP4A	X	-11.652	4.5
26	MP4A	Z	-20.182	4.5
27	MP4A	Mx	.018	4.5
28	MP1A	X	-9.307	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	-16.119	1
30	MP1A	Mx	.005	1
31	MP1A	X	-9.307	4
32	MP1A	Z	-16.119	4
33	MP1A	Mx	.005	4
34	MP5A	X	-9.307	1
35	MP5A	Z	-16.119	1
36	MP5A	Mx	.005	1
37	MP5A	X	-9.307	4
38	MP5A	Z	-16.119	4
39	MP5A	Mx	.005	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1.75
2	MP2A	Z	-4.755	1.75
3	MP2A	Mx	0	1.75
4	MP2A	X	0	3.25
5	MP2A	Z	-4.755	3.25
6	MP2A	Mx	0	3.25
7	MP3A	X	0	2
8	MP3A	Z	-3.784	2
9	MP3A	Mx	0	2
10	MP4A	X	0	2
11	MP4A	Z	-3.784	2
12	MP4A	Mx	0	2
13	M16	X	0	1.5
14	M16	Z	-7.59	1.5
15	M16	Mx	0	1.5
16	MP4A	X	0	.5
17	MP4A	Z	-8.255	.5
18	MP4A	Mx	-.005	.5
19	MP4A	X	0	4.5
20	MP4A	Z	-8.255	4.5
21	MP4A	Mx	-.005	4.5
22	MP4A	X	0	.5
23	MP4A	Z	-8.255	.5
24	MP4A	Mx	.005	.5
25	MP4A	X	0	4.5
26	MP4A	Z	-8.255	4.5
27	MP4A	Mx	.005	4.5
28	MP1A	X	0	1
29	MP1A	Z	-6.222	1
30	MP1A	Mx	0	1
31	MP1A	X	0	4
32	MP1A	Z	-6.222	4
33	MP1A	Mx	0	4
34	MP5A	X	0	1
35	MP5A	Z	-6.222	1
36	MP5A	Mx	0	1
37	MP5A	X	0	4
38	MP5A	Z	-6.222	4
39	MP5A	Mx	0	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	2.016	1.75
2	MP2A	Z	-3.491	1.75
3	MP2A	Mx	-.001	1.75
4	MP2A	X	2.016	3.25
5	MP2A	Z	-3.491	3.25
6	MP2A	Mx	-.001	3.25
7	MP3A	X	1.735	2
8	MP3A	Z	-3.005	2
9	MP3A	Mx	.000868	2
10	MP4A	X	1.675	2
11	MP4A	Z	-2.901	2
12	MP4A	Mx	-.000838	2
13	M16	X	3.299	1.5
14	M16	Z	-5.713	1.5
15	M16	Mx	0	1.5
16	MP4A	X	3.778	.5
17	MP4A	Z	-6.544	.5
18	MP4A	Mx	-.006	.5
19	MP4A	X	3.778	4.5
20	MP4A	Z	-6.544	4.5
21	MP4A	Mx	-.006	4.5
22	MP4A	X	3.778	.5
23	MP4A	Z	-6.544	.5
24	MP4A	Mx	.002	.5
25	MP4A	X	3.778	4.5
26	MP4A	Z	-6.544	4.5
27	MP4A	Mx	.002	4.5
28	MP1A	X	3.019	1
29	MP1A	Z	-5.229	1
30	MP1A	Mx	-.002	1
31	MP1A	X	3.019	4
32	MP1A	Z	-5.229	4
33	MP1A	Mx	-.002	4
34	MP5A	X	3.019	1
35	MP5A	Z	-5.229	1
36	MP5A	Mx	-.002	1
37	MP5A	X	3.019	4
38	MP5A	Z	-5.229	4
39	MP5A	Mx	-.002	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	2.239	1.75
2	MP2A	Z	-1.292	1.75
3	MP2A	Mx	-.001	1.75
4	MP2A	X	2.239	3.25
5	MP2A	Z	-1.292	3.25
6	MP2A	Mx	-.001	3.25
7	MP3A	X	2.462	2
8	MP3A	Z	-1.421	2
9	MP3A	Mx	.001	2
10	MP4A	X	2.15	2
11	MP4A	Z	-1.241	2
12	MP4A	Mx	-.001	2
13	M16	X	4.659	1.5
14	M16	Z	-2.69	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	5.333	.5
17	MP4A	Z	-3.079	.5
18	MP4A	Mx	-.004	.5
19	MP4A	X	5.333	4.5
20	MP4A	Z	-3.079	4.5
21	MP4A	Mx	-.004	4.5
22	MP4A	X	5.333	.5
23	MP4A	Z	-3.079	.5
24	MP4A	Mx	-.00087	.5
25	MP4A	X	5.333	4.5
26	MP4A	Z	-3.079	4.5
27	MP4A	Mx	-.00087	4.5
28	MP1A	X	4.912	1
29	MP1A	Z	-2.836	1
30	MP1A	Mx	-.002	1
31	MP1A	X	4.912	4
32	MP1A	Z	-2.836	4
33	MP1A	Mx	-.002	4
34	MP5A	X	4.912	1
35	MP5A	Z	-2.836	1
36	MP5A	Mx	-.002	1
37	MP5A	X	4.912	4
38	MP5A	Z	-2.836	4
39	MP5A	Mx	-.002	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	1.862	1.75
2	MP2A	Z	0	1.75
3	MP2A	Mx	-.000931	1.75
4	MP2A	X	1.862	3.25
5	MP2A	Z	0	3.25
6	MP2A	Mx	-.000931	3.25
7	MP3A	X	2.529	2
8	MP3A	Z	0	2
9	MP3A	Mx	.001	2
10	MP4A	X	2.049	2
11	MP4A	Z	0	2
12	MP4A	Mx	-.001	2
13	M16	X	5.154	1.5
14	M16	Z	0	1.5
15	M16	Mx	0	1.5
16	MP4A	X	5.459	.5
17	MP4A	Z	0	.5
18	MP4A	Mx	-.003	.5
19	MP4A	X	5.459	4.5
20	MP4A	Z	0	4.5
21	MP4A	Mx	-.003	4.5
22	MP4A	X	5.459	.5
23	MP4A	Z	0	.5
24	MP4A	Mx	-.003	.5
25	MP4A	X	5.459	4.5
26	MP4A	Z	0	4.5
27	MP4A	Mx	-.003	4.5
28	MP1A	X	5.488	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	0	1
30	MP1A	Mx	-.003	1
31	MP1A	X	5.488	4
32	MP1A	Z	0	4
33	MP1A	Mx	-.003	4
34	MP5A	X	5.488	1
35	MP5A	Z	0	1
36	MP5A	Mx	-.003	1
37	MP5A	X	5.488	4
38	MP5A	Z	0	4
39	MP5A	Mx	-.003	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	2.239	1.75
2	MP2A	Z	1.292	1.75
3	MP2A	Mx	-.001	1.75
4	MP2A	X	2.239	3.25
5	MP2A	Z	1.292	3.25
6	MP2A	Mx	-.001	3.25
7	MP3A	X	2.462	2
8	MP3A	Z	1.421	2
9	MP3A	Mx	.001	2
10	MP4A	X	2.15	2
11	MP4A	Z	1.241	2
12	MP4A	Mx	-.001	2
13	M16	X	5.324	1.5
14	M16	Z	3.074	1.5
15	M16	Mx	0	1.5
16	MP4A	X	5.333	.5
17	MP4A	Z	3.079	.5
18	MP4A	Mx	-.00087	.5
19	MP4A	X	5.333	4.5
20	MP4A	Z	3.079	4.5
21	MP4A	Mx	-.00087	4.5
22	MP4A	X	5.333	.5
23	MP4A	Z	3.079	.5
24	MP4A	Mx	-.004	.5
25	MP4A	X	5.333	4.5
26	MP4A	Z	3.079	4.5
27	MP4A	Mx	-.004	4.5
28	MP1A	X	4.912	1
29	MP1A	Z	2.836	1
30	MP1A	Mx	-.002	1
31	MP1A	X	4.912	4
32	MP1A	Z	2.836	4
33	MP1A	Mx	-.002	4
34	MP5A	X	4.912	1
35	MP5A	Z	2.836	1
36	MP5A	Mx	-.002	1
37	MP5A	X	4.912	4
38	MP5A	Z	2.836	4
39	MP5A	Mx	-.002	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	2.016	1.75
2	MP2A	Z	3.491	1.75
3	MP2A	Mx	-.001	1.75
4	MP2A	X	2.016	3.25
5	MP2A	Z	3.491	3.25
6	MP2A	Mx	-.001	3.25
7	MP3A	X	1.735	2
8	MP3A	Z	3.005	2
9	MP3A	Mx	.000868	2
10	MP4A	X	1.675	2
11	MP4A	Z	2.901	2
12	MP4A	Mx	-.000838	2
13	M16	X	3.683	1.5
14	M16	Z	6.378	1.5
15	M16	Mx	0	1.5
16	MP4A	X	3.778	.5
17	MP4A	Z	6.544	.5
18	MP4A	Mx	.002	.5
19	MP4A	X	3.778	4.5
20	MP4A	Z	6.544	4.5
21	MP4A	Mx	.002	4.5
22	MP4A	X	3.778	.5
23	MP4A	Z	6.544	.5
24	MP4A	Mx	-.006	.5
25	MP4A	X	3.778	4.5
26	MP4A	Z	6.544	4.5
27	MP4A	Mx	-.006	4.5
28	MP1A	X	3.019	1
29	MP1A	Z	5.229	1
30	MP1A	Mx	-.002	1
31	MP1A	X	3.019	4
32	MP1A	Z	5.229	4
33	MP1A	Mx	-.002	4
34	MP5A	X	3.019	1
35	MP5A	Z	5.229	1
36	MP5A	Mx	-.002	1
37	MP5A	X	3.019	4
38	MP5A	Z	5.229	4
39	MP5A	Mx	-.002	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	0	1.75
2	MP2A	Z	4.755	1.75
3	MP2A	Mx	0	1.75
4	MP2A	X	0	3.25
5	MP2A	Z	4.755	3.25
6	MP2A	Mx	0	3.25
7	MP3A	X	0	2
8	MP3A	Z	3.784	2
9	MP3A	Mx	0	2
10	MP4A	X	0	2
11	MP4A	Z	3.784	2
12	MP4A	Mx	0	2
13	M16	X	0	1.5
14	M16	Z	7.59	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	0	.5
17	MP4A	Z	8.255	.5
18	MP4A	Mx	.005	.5
19	MP4A	X	0	4.5
20	MP4A	Z	8.255	4.5
21	MP4A	Mx	.005	4.5
22	MP4A	X	0	.5
23	MP4A	Z	8.255	.5
24	MP4A	Mx	-.005	.5
25	MP4A	X	0	4.5
26	MP4A	Z	8.255	4.5
27	MP4A	Mx	-.005	4.5
28	MP1A	X	0	1
29	MP1A	Z	6.222	1
30	MP1A	Mx	0	1
31	MP1A	X	0	4
32	MP1A	Z	6.222	4
33	MP1A	Mx	0	4
34	MP5A	X	0	1
35	MP5A	Z	6.222	1
36	MP5A	Mx	0	1
37	MP5A	X	0	4
38	MP5A	Z	6.222	4
39	MP5A	Mx	0	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-2.016	1.75
2	MP2A	Z	3.491	1.75
3	MP2A	Mx	.001	1.75
4	MP2A	X	-2.016	3.25
5	MP2A	Z	3.491	3.25
6	MP2A	Mx	.001	3.25
7	MP3A	X	-1.735	2
8	MP3A	Z	3.005	2
9	MP3A	Mx	-.000868	2
10	MP4A	X	-1.675	2
11	MP4A	Z	2.901	2
12	MP4A	Mx	.000838	2
13	M16	X	-3.299	1.5
14	M16	Z	5.713	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-3.778	.5
17	MP4A	Z	6.544	.5
18	MP4A	Mx	.006	.5
19	MP4A	X	-3.778	4.5
20	MP4A	Z	6.544	4.5
21	MP4A	Mx	.006	4.5
22	MP4A	X	-3.778	.5
23	MP4A	Z	6.544	.5
24	MP4A	Mx	-.002	.5
25	MP4A	X	-3.778	4.5
26	MP4A	Z	6.544	4.5
27	MP4A	Mx	-.002	4.5
28	MP1A	X	-3.019	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	5.229	1
30	MP1A	Mx	.002	1
31	MP1A	X	-3.019	4
32	MP1A	Z	5.229	4
33	MP1A	Mx	.002	4
34	MP5A	X	-3.019	1
35	MP5A	Z	5.229	1
36	MP5A	Mx	.002	1
37	MP5A	X	-3.019	4
38	MP5A	Z	5.229	4
39	MP5A	Mx	.002	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-2.239	1.75
2	MP2A	Z	1.292	1.75
3	MP2A	Mx	.001	1.75
4	MP2A	X	-2.239	3.25
5	MP2A	Z	1.292	3.25
6	MP2A	Mx	.001	3.25
7	MP3A	X	-2.462	2
8	MP3A	Z	1.421	2
9	MP3A	Mx	-.001	2
10	MP4A	X	-2.15	2
11	MP4A	Z	1.241	2
12	MP4A	Mx	.001	2
13	M16	X	-4.659	1.5
14	M16	Z	2.69	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-5.333	.5
17	MP4A	Z	3.079	.5
18	MP4A	Mx	.004	.5
19	MP4A	X	-5.333	4.5
20	MP4A	Z	3.079	4.5
21	MP4A	Mx	.004	4.5
22	MP4A	X	-5.333	.5
23	MP4A	Z	3.079	.5
24	MP4A	Mx	.00087	.5
25	MP4A	X	-5.333	4.5
26	MP4A	Z	3.079	4.5
27	MP4A	Mx	.00087	4.5
28	MP1A	X	-4.912	1
29	MP1A	Z	2.836	1
30	MP1A	Mx	.002	1
31	MP1A	X	-4.912	4
32	MP1A	Z	2.836	4
33	MP1A	Mx	.002	4
34	MP5A	X	-4.912	1
35	MP5A	Z	2.836	1
36	MP5A	Mx	.002	1
37	MP5A	X	-4.912	4
38	MP5A	Z	2.836	4
39	MP5A	Mx	.002	4

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

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-1.862	1.75
2	MP2A	Z	0	1.75
3	MP2A	Mx	.000931	1.75
4	MP2A	X	-1.862	3.25
5	MP2A	Z	0	3.25
6	MP2A	Mx	.000931	3.25
7	MP3A	X	-2.529	2
8	MP3A	Z	0	2
9	MP3A	Mx	-.001	2
10	MP4A	X	-2.049	2
11	MP4A	Z	0	2
12	MP4A	Mx	.001	2
13	M16	X	-5.154	1.5
14	M16	Z	0	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-5.459	.5
17	MP4A	Z	0	.5
18	MP4A	Mx	.003	.5
19	MP4A	X	-5.459	4.5
20	MP4A	Z	0	4.5
21	MP4A	Mx	.003	4.5
22	MP4A	X	-5.459	.5
23	MP4A	Z	0	.5
24	MP4A	Mx	.003	.5
25	MP4A	X	-5.459	4.5
26	MP4A	Z	0	4.5
27	MP4A	Mx	.003	4.5
28	MP1A	X	-5.488	1
29	MP1A	Z	0	1
30	MP1A	Mx	.003	1
31	MP1A	X	-5.488	4
32	MP1A	Z	0	4
33	MP1A	Mx	.003	4
34	MP5A	X	-5.488	1
35	MP5A	Z	0	1
36	MP5A	Mx	.003	1
37	MP5A	X	-5.488	4
38	MP5A	Z	0	4
39	MP5A	Mx	.003	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-2.239	1.75
2	MP2A	Z	-1.292	1.75
3	MP2A	Mx	.001	1.75
4	MP2A	X	-2.239	3.25
5	MP2A	Z	-1.292	3.25
6	MP2A	Mx	.001	3.25
7	MP3A	X	-2.462	2
8	MP3A	Z	-1.421	2
9	MP3A	Mx	-.001	2
10	MP4A	X	-2.15	2
11	MP4A	Z	-1.241	2
12	MP4A	Mx	.001	2
13	M16	X	-5.324	1.5
14	M16	Z	-3.074	1.5

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
15	M16	Mx	0	1.5
16	MP4A	X	-5.333	.5
17	MP4A	Z	-3.079	.5
18	MP4A	Mx	.00087	.5
19	MP4A	X	-5.333	4.5
20	MP4A	Z	-3.079	4.5
21	MP4A	Mx	.00087	4.5
22	MP4A	X	-5.333	.5
23	MP4A	Z	-3.079	.5
24	MP4A	Mx	.004	.5
25	MP4A	X	-5.333	4.5
26	MP4A	Z	-3.079	4.5
27	MP4A	Mx	.004	4.5
28	MP1A	X	-4.912	1
29	MP1A	Z	-2.836	1
30	MP1A	Mx	.002	1
31	MP1A	X	-4.912	4
32	MP1A	Z	-2.836	4
33	MP1A	Mx	.002	4
34	MP5A	X	-4.912	1
35	MP5A	Z	-2.836	1
36	MP5A	Mx	.002	1
37	MP5A	X	-4.912	4
38	MP5A	Z	-2.836	4
39	MP5A	Mx	.002	4

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	-2.016	1.75
2	MP2A	Z	-3.491	1.75
3	MP2A	Mx	.001	1.75
4	MP2A	X	-2.016	3.25
5	MP2A	Z	-3.491	3.25
6	MP2A	Mx	.001	3.25
7	MP3A	X	-1.735	2
8	MP3A	Z	-3.005	2
9	MP3A	Mx	-.000868	2
10	MP4A	X	-1.675	2
11	MP4A	Z	-2.901	2
12	MP4A	Mx	.000838	2
13	M16	X	-3.683	1.5
14	M16	Z	-6.378	1.5
15	M16	Mx	0	1.5
16	MP4A	X	-3.778	.5
17	MP4A	Z	-6.544	.5
18	MP4A	Mx	-.002	.5
19	MP4A	X	-3.778	4.5
20	MP4A	Z	-6.544	4.5
21	MP4A	Mx	-.002	4.5
22	MP4A	X	-3.778	.5
23	MP4A	Z	-6.544	.5
24	MP4A	Mx	.006	.5
25	MP4A	X	-3.778	4.5
26	MP4A	Z	-6.544	4.5
27	MP4A	Mx	.006	4.5
28	MP1A	X	-3.019	1

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

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
29	MP1A	Z	-5.229	1
30	MP1A	Mx	.002	1
31	MP1A	X	-3.019	4
32	MP1A	Z	-5.229	4
33	MP1A	Mx	.002	4
34	MP5A	X	-3.019	1
35	MP5A	Z	-5.229	1
36	MP5A	Mx	.002	1
37	MP5A	X	-3.019	4
38	MP5A	Z	-5.229	4
39	MP5A	Mx	.002	4

Member Point Loads (BLC 77 : Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-500	%33

Member Point Loads (BLC 78 : Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-500	%60

Member Point Loads (BLC 79 : Lv1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	0

Member Point Loads (BLC 80 : Lv2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M4	Y	-250	%50

Member Distributed Loads (BLC 40 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	Y	-9.504	-9.504	0	%100
2	M2	Y	-6.489	-6.489	0	%100
3	M4	Y	-6.489	-6.489	0	%100
4	MP1A	Y	-4.917	-4.917	0	%100
5	MP2A	Y	-4.917	-4.917	0	%100
6	MP4A	Y	-5.616	-5.616	0	%100
7	MP5A	Y	-4.917	-4.917	0	%100
8	MP3A	Y	-4.917	-4.917	0	%100
9	M16	Y	-4.917	-4.917	0	%100
10	M17	Y	-7.527	-7.527	0	%100
11	M18	Y	-6.489	-6.489	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	-1.765	-1.765	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	-6.635	-6.635	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	-10.406	-10.406	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	-7.061	-7.061	0	%100
9	MP2A	X	0	0	0	%100

Member Distributed Loads (BLC 41 : Structure Wo (0 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
10	MP2A	Z	-7.061	-7.061	0	%100
11	MP4A	X	0	0	0	%100
12	MP4A	Z	-8.548	-8.548	0	%100
13	MP5A	X	0	0	0	%100
14	MP5A	Z	-7.061	-7.061	0	%100
15	MP3A	X	0	0	0	%100
16	MP3A	Z	-7.061	-7.061	0	%100
17	M16	X	0	0	0	%100
18	M16	Z	-5.774	-5.774	0	%100
19	M17	X	0	0	0	%100
20	M17	Z	-1.446	-1.446	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	-10.406	-10.406	0	%100

Member Distributed Loads (BLC 42 : Structure Wo (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	3.316	3.316	0	%100
2	M1	Z	-5.743	-5.743	0	%100
3	M2	X	3.317	3.317	0	%100
4	M2	Z	-5.746	-5.746	0	%100
5	M4	X	3.902	3.902	0	%100
6	M4	Z	-6.759	-6.759	0	%100
7	MP1A	X	3.531	3.531	0	%100
8	MP1A	Z	-6.115	-6.115	0	%100
9	MP2A	X	3.531	3.531	0	%100
10	MP2A	Z	-6.115	-6.115	0	%100
11	MP4A	X	4.274	4.274	0	%100
12	MP4A	Z	-7.403	-7.403	0	%100
13	MP5A	X	3.531	3.531	0	%100
14	MP5A	Z	-6.115	-6.115	0	%100
15	MP3A	X	3.531	3.531	0	%100
16	MP3A	Z	-6.115	-6.115	0	%100
17	M16	X	2.887	2.887	0	%100
18	M16	Z	-5.001	-5.001	0	%100
19	M17	X	2.717	2.717	0	%100
20	M17	Z	-4.705	-4.705	0	%100
21	M18	X	3.902	3.902	0	%100
22	M18	Z	-6.759	-6.759	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	8.494	8.494	0	%100
2	M1	Z	-4.904	-4.904	0	%100
3	M2	X	5.746	5.746	0	%100
4	M2	Z	-3.317	-3.317	0	%100
5	M4	X	2.253	2.253	0	%100
6	M4	Z	-1.301	-1.301	0	%100
7	MP1A	X	6.115	6.115	0	%100
8	MP1A	Z	-3.531	-3.531	0	%100
9	MP2A	X	6.115	6.115	0	%100
10	MP2A	Z	-3.531	-3.531	0	%100
11	MP4A	X	7.403	7.403	0	%100
12	MP4A	Z	-4.274	-4.274	0	%100
13	MP5A	X	6.115	6.115	0	%100
14	MP5A	Z	-3.531	-3.531	0	%100
15	MP3A	X	6.115	6.115	0	%100

Member Distributed Loads (BLC 43 : Structure Wo (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
16	MP3A	Z	-3.531	-3.531	0	%100
17	M16	X	5.001	5.001	0	%100
18	M16	Z	-2.887	-2.887	0	%100
19	M17	X	6.959	6.959	0	%100
20	M17	Z	-4.018	-4.018	0	%100
21	M18	X	2.253	2.253	0	%100
22	M18	Z	-1.301	-1.301	0	%100

Member Distributed Loads (BLC 44 : Structure Wo (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	8.118	8.118	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	6.635	6.635	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	7.061	7.061	0	%100
8	MP1A	Z	0	0	0	%100
9	MP2A	X	7.061	7.061	0	%100
10	MP2A	Z	0	0	0	%100
11	MP4A	X	8.548	8.548	0	%100
12	MP4A	Z	0	0	0	%100
13	MP5A	X	7.061	7.061	0	%100
14	MP5A	Z	0	0	0	%100
15	MP3A	X	7.061	7.061	0	%100
16	MP3A	Z	0	0	0	%100
17	M16	X	5.774	5.774	0	%100
18	M16	Z	0	0	0	%100
19	M17	X	6.651	6.651	0	%100
20	M17	Z	0	0	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	0	0	0	%100

Member Distributed Loads (BLC 45 : Structure Wo (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	2.816	2.816	0	%100
2	M1	Z	1.626	1.626	0	%100
3	M2	X	5.746	5.746	0	%100
4	M2	Z	3.317	3.317	0	%100
5	M4	X	2.253	2.253	0	%100
6	M4	Z	1.301	1.301	0	%100
7	MP1A	X	6.115	6.115	0	%100
8	MP1A	Z	3.531	3.531	0	%100
9	MP2A	X	6.115	6.115	0	%100
10	MP2A	Z	3.531	3.531	0	%100
11	MP4A	X	7.403	7.403	0	%100
12	MP4A	Z	4.274	4.274	0	%100
13	MP5A	X	6.115	6.115	0	%100
14	MP5A	Z	3.531	3.531	0	%100
15	MP3A	X	6.115	6.115	0	%100
16	MP3A	Z	3.531	3.531	0	%100
17	M16	X	5.001	5.001	0	%100
18	M16	Z	2.887	2.887	0	%100
19	M17	X	2.307	2.307	0	%100
20	M17	Z	1.332	1.332	0	%100
21	M18	X	2.253	2.253	0	%100

Member Distributed Loads (BLC 45 : Structure Wo (120 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
22	M18	Z	1.301	1.301	0	%100

Member Distributed Loads (BLC 46 : Structure Wo (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.038	.038	0	%100
2	M1	Z	.065	.065	0	%100
3	M2	X	3.317	3.317	0	%100
4	M2	Z	5.746	5.746	0	%100
5	M4	X	3.902	3.902	0	%100
6	M4	Z	6.759	6.759	0	%100
7	MP1A	X	3.531	3.531	0	%100
8	MP1A	Z	6.115	6.115	0	%100
9	MP2A	X	3.531	3.531	0	%100
10	MP2A	Z	6.115	6.115	0	%100
11	MP4A	X	4.274	4.274	0	%100
12	MP4A	Z	7.403	7.403	0	%100
13	MP5A	X	3.531	3.531	0	%100
14	MP5A	Z	6.115	6.115	0	%100
15	MP3A	X	3.531	3.531	0	%100
16	MP3A	Z	6.115	6.115	0	%100
17	M16	X	2.887	2.887	0	%100
18	M16	Z	5.001	5.001	0	%100
19	M17	X	.031	.031	0	%100
20	M17	Z	.053	.053	0	%100
21	M18	X	3.902	3.902	0	%100
22	M18	Z	6.759	6.759	0	%100

Member Distributed Loads (BLC 47 : Structure Wo (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	1.765	1.765	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	6.635	6.635	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	10.406	10.406	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	7.061	7.061	0	%100
9	MP2A	X	0	0	0	%100
10	MP2A	Z	7.061	7.061	0	%100
11	MP4A	X	0	0	0	%100
12	MP4A	Z	8.548	8.548	0	%100
13	MP5A	X	0	0	0	%100
14	MP5A	Z	7.061	7.061	0	%100
15	MP3A	X	0	0	0	%100
16	MP3A	Z	7.061	7.061	0	%100
17	M16	X	0	0	0	%100
18	M16	Z	5.774	5.774	0	%100
19	M17	X	0	0	0	%100
20	M17	Z	1.446	1.446	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	10.406	10.406	0	%100

Member Distributed Loads (BLC 48 : Structure Wo (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-3.316	-3.316	0	%100

Member Distributed Loads (BLC 48 : Structure Wo (210 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
2	M1	Z	5.743	5.743	0	%100
3	M2	X	-3.317	-3.317	0	%100
4	M2	Z	5.746	5.746	0	%100
5	M4	X	-3.902	-3.902	0	%100
6	M4	Z	6.759	6.759	0	%100
7	MP1A	X	-3.531	-3.531	0	%100
8	MP1A	Z	6.115	6.115	0	%100
9	MP2A	X	-3.531	-3.531	0	%100
10	MP2A	Z	6.115	6.115	0	%100
11	MP4A	X	-4.274	-4.274	0	%100
12	MP4A	Z	7.403	7.403	0	%100
13	MP5A	X	-3.531	-3.531	0	%100
14	MP5A	Z	6.115	6.115	0	%100
15	MP3A	X	-3.531	-3.531	0	%100
16	MP3A	Z	6.115	6.115	0	%100
17	M16	X	-2.887	-2.887	0	%100
18	M16	Z	5.001	5.001	0	%100
19	M17	X	-2.717	-2.717	0	%100
20	M17	Z	4.705	4.705	0	%100
21	M18	X	-3.902	-3.902	0	%100
22	M18	Z	6.759	6.759	0	%100

Member Distributed Loads (BLC 49 : Structure Wo (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-8.494	-8.494	0	%100
2	M1	Z	4.904	4.904	0	%100
3	M2	X	-5.746	-5.746	0	%100
4	M2	Z	3.317	3.317	0	%100
5	M4	X	-2.253	-2.253	0	%100
6	M4	Z	1.301	1.301	0	%100
7	MP1A	X	-6.115	-6.115	0	%100
8	MP1A	Z	3.531	3.531	0	%100
9	MP2A	X	-6.115	-6.115	0	%100
10	MP2A	Z	3.531	3.531	0	%100
11	MP4A	X	-7.403	-7.403	0	%100
12	MP4A	Z	4.274	4.274	0	%100
13	MP5A	X	-6.115	-6.115	0	%100
14	MP5A	Z	3.531	3.531	0	%100
15	MP3A	X	-6.115	-6.115	0	%100
16	MP3A	Z	3.531	3.531	0	%100
17	M16	X	-5.001	-5.001	0	%100
18	M16	Z	2.887	2.887	0	%100
19	M17	X	-6.959	-6.959	0	%100
20	M17	Z	4.018	4.018	0	%100
21	M18	X	-2.253	-2.253	0	%100
22	M18	Z	1.301	1.301	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-8.118	-8.118	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	-6.635	-6.635	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	-7.061	-7.061	0	%100

Member Distributed Loads (BLC 50 : Structure Wo (270 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
8	MP1A	Z	0	0	0	%100
9	MP2A	X	-7.061	-7.061	0	%100
10	MP2A	Z	0	0	0	%100
11	MP4A	X	-8.548	-8.548	0	%100
12	MP4A	Z	0	0	0	%100
13	MP5A	X	-7.061	-7.061	0	%100
14	MP5A	Z	0	0	0	%100
15	MP3A	X	-7.061	-7.061	0	%100
16	MP3A	Z	0	0	0	%100
17	M16	X	-5.774	-5.774	0	%100
18	M16	Z	0	0	0	%100
19	M17	X	-6.651	-6.651	0	%100
20	M17	Z	0	0	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	0	0	0	%100

Member Distributed Loads (BLC 51 : Structure Wo (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-2.816	-2.816	0	%100
2	M1	Z	-1.626	-1.626	0	%100
3	M2	X	-5.746	-5.746	0	%100
4	M2	Z	-3.317	-3.317	0	%100
5	M4	X	-2.253	-2.253	0	%100
6	M4	Z	-1.301	-1.301	0	%100
7	MP1A	X	-6.115	-6.115	0	%100
8	MP1A	Z	-3.531	-3.531	0	%100
9	MP2A	X	-6.115	-6.115	0	%100
10	MP2A	Z	-3.531	-3.531	0	%100
11	MP4A	X	-7.403	-7.403	0	%100
12	MP4A	Z	-4.274	-4.274	0	%100
13	MP5A	X	-6.115	-6.115	0	%100
14	MP5A	Z	-3.531	-3.531	0	%100
15	MP3A	X	-6.115	-6.115	0	%100
16	MP3A	Z	-3.531	-3.531	0	%100
17	M16	X	-5.001	-5.001	0	%100
18	M16	Z	-2.887	-2.887	0	%100
19	M17	X	-2.307	-2.307	0	%100
20	M17	Z	-1.332	-1.332	0	%100
21	M18	X	-2.253	-2.253	0	%100
22	M18	Z	-1.301	-1.301	0	%100

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.038	-.038	0	%100
2	M1	Z	-.065	-.065	0	%100
3	M2	X	-3.317	-3.317	0	%100
4	M2	Z	-5.746	-5.746	0	%100
5	M4	X	-3.902	-3.902	0	%100
6	M4	Z	-6.759	-6.759	0	%100
7	MP1A	X	-3.531	-3.531	0	%100
8	MP1A	Z	-6.115	-6.115	0	%100
9	MP2A	X	-3.531	-3.531	0	%100
10	MP2A	Z	-6.115	-6.115	0	%100
11	MP4A	X	-4.274	-4.274	0	%100
12	MP4A	Z	-7.403	-7.403	0	%100
13	MP5A	X	-3.531	-3.531	0	%100

Member Distributed Loads (BLC 52 : Structure Wo (330 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
14	MP5A	Z	-6.115	-6.115	0	%100
15	MP3A	X	-3.531	-3.531	0	%100
16	MP3A	Z	-6.115	-6.115	0	%100
17	M16	X	-2.887	-2.887	0	%100
18	M16	Z	-5.001	-5.001	0	%100
19	M17	X	-.031	-.031	0	%100
20	M17	Z	-.053	-.053	0	%100
21	M18	X	-3.902	-3.902	0	%100
22	M18	Z	-6.759	-6.759	0	%100

Member Distributed Loads (BLC 53 : Structure Wi (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	-.546	-.546	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	-2.142	-2.142	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	-3.253	-3.253	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	-2.621	-2.621	0	%100
9	MP2A	X	0	0	0	%100
10	MP2A	Z	-2.621	-2.621	0	%100
11	MP4A	X	0	0	0	%100
12	MP4A	Z	-2.902	-2.902	0	%100
13	MP5A	X	0	0	0	%100
14	MP5A	Z	-2.621	-2.621	0	%100
15	MP3A	X	0	0	0	%100
16	MP3A	Z	-2.621	-2.621	0	%100
17	M16	X	0	0	0	%100
18	M16	Z	-2.157	-2.157	0	%100
19	M17	X	0	0	0	%100
20	M17	Z	-.49	-.49	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	-3.253	-3.253	0	%100

Member Distributed Loads (BLC 54 : Structure Wi (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	1.026	1.026	0	%100
2	M1	Z	-1.777	-1.777	0	%100
3	M2	X	1.071	1.071	0	%100
4	M2	Z	-1.855	-1.855	0	%100
5	M4	X	1.22	1.22	0	%100
6	M4	Z	-2.113	-2.113	0	%100
7	MP1A	X	1.31	1.31	0	%100
8	MP1A	Z	-2.269	-2.269	0	%100
9	MP2A	X	1.31	1.31	0	%100
10	MP2A	Z	-2.269	-2.269	0	%100
11	MP4A	X	1.451	1.451	0	%100
12	MP4A	Z	-2.513	-2.513	0	%100
13	MP5A	X	1.31	1.31	0	%100
14	MP5A	Z	-2.269	-2.269	0	%100
15	MP3A	X	1.31	1.31	0	%100
16	MP3A	Z	-2.269	-2.269	0	%100
17	M16	X	1.078	1.078	0	%100
18	M16	Z	-1.868	-1.868	0	%100
19	M17	X	.921	.921	0	%100

Member Distributed Loads (BLC 54 : Structure Wi (30 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
20	M17	Z	-1.594	-1.594	0	%100
21	M18	X	1.22	1.22	0	%100
22	M18	Z	-2.113	-2.113	0	%100

Member Distributed Loads (BLC 55 : Structure Wi (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	2.628	2.628	0	%100
2	M1	Z	-1.518	-1.518	0	%100
3	M2	X	1.855	1.855	0	%100
4	M2	Z	-1.071	-1.071	0	%100
5	M4	X	.704	.704	0	%100
6	M4	Z	-.407	-.407	0	%100
7	MP1A	X	2.269	2.269	0	%100
8	MP1A	Z	-1.31	-1.31	0	%100
9	MP2A	X	2.269	2.269	0	%100
10	MP2A	Z	-1.31	-1.31	0	%100
11	MP4A	X	2.513	2.513	0	%100
12	MP4A	Z	-1.451	-1.451	0	%100
13	MP5A	X	2.269	2.269	0	%100
14	MP5A	Z	-1.31	-1.31	0	%100
15	MP3A	X	2.269	2.269	0	%100
16	MP3A	Z	-1.31	-1.31	0	%100
17	M16	X	1.868	1.868	0	%100
18	M16	Z	-1.078	-1.078	0	%100
19	M17	X	2.358	2.358	0	%100
20	M17	Z	-1.361	-1.361	0	%100
21	M18	X	.704	.704	0	%100
22	M18	Z	-.407	-.407	0	%100

Member Distributed Loads (BLC 56 : Structure Wi (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	2.512	2.512	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	2.142	2.142	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	2.621	2.621	0	%100
8	MP1A	Z	0	0	0	%100
9	MP2A	X	2.621	2.621	0	%100
10	MP2A	Z	0	0	0	%100
11	MP4A	X	2.902	2.902	0	%100
12	MP4A	Z	0	0	0	%100
13	MP5A	X	2.621	2.621	0	%100
14	MP5A	Z	0	0	0	%100
15	MP3A	X	2.621	2.621	0	%100
16	MP3A	Z	0	0	0	%100
17	M16	X	2.157	2.157	0	%100
18	M16	Z	0	0	0	%100
19	M17	X	2.254	2.254	0	%100
20	M17	Z	0	0	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	0	0	0	%100

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg))

Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]

Member Distributed Loads (BLC 57 : Structure Wi (120 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.871	.871	0	%100
2	M1	Z	.503	.503	0	%100
3	M2	X	1.855	1.855	0	%100
4	M2	Z	1.071	1.071	0	%100
5	M4	X	.704	.704	0	%100
6	M4	Z	.407	.407	0	%100
7	MP1A	X	2.269	2.269	0	%100
8	MP1A	Z	1.31	1.31	0	%100
9	MP2A	X	2.269	2.269	0	%100
10	MP2A	Z	1.31	1.31	0	%100
11	MP4A	X	2.513	2.513	0	%100
12	MP4A	Z	1.451	1.451	0	%100
13	MP5A	X	2.269	2.269	0	%100
14	MP5A	Z	1.31	1.31	0	%100
15	MP3A	X	2.269	2.269	0	%100
16	MP3A	Z	1.31	1.31	0	%100
17	M16	X	1.868	1.868	0	%100
18	M16	Z	1.078	1.078	0	%100
19	M17	X	.782	.782	0	%100
20	M17	Z	.451	.451	0	%100
21	M18	X	.704	.704	0	%100
22	M18	Z	.407	.407	0	%100

Member Distributed Loads (BLC 58 : Structure Wi (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.012	.012	0	%100
2	M1	Z	.02	.02	0	%100
3	M2	X	1.071	1.071	0	%100
4	M2	Z	1.855	1.855	0	%100
5	M4	X	1.22	1.22	0	%100
6	M4	Z	2.113	2.113	0	%100
7	MP1A	X	1.31	1.31	0	%100
8	MP1A	Z	2.269	2.269	0	%100
9	MP2A	X	1.31	1.31	0	%100
10	MP2A	Z	2.269	2.269	0	%100
11	MP4A	X	1.451	1.451	0	%100
12	MP4A	Z	2.513	2.513	0	%100
13	MP5A	X	1.31	1.31	0	%100
14	MP5A	Z	2.269	2.269	0	%100
15	MP3A	X	1.31	1.31	0	%100
16	MP3A	Z	2.269	2.269	0	%100
17	M16	X	1.078	1.078	0	%100
18	M16	Z	1.868	1.868	0	%100
19	M17	X	.01	.01	0	%100
20	M17	Z	.018	.018	0	%100
21	M18	X	1.22	1.22	0	%100
22	M18	Z	2.113	2.113	0	%100

Member Distributed Loads (BLC 59 : Structure Wi (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	.546	.546	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	2.142	2.142	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	3.253	3.253	0	%100

Member Distributed Loads (BLC 59 : Structure Wi (180 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
7	MP1A	X	0	0	0	%100
8	MP1A	Z	2.621	2.621	0	%100
9	MP2A	X	0	0	0	%100
10	MP2A	Z	2.621	2.621	0	%100
11	MP4A	X	0	0	0	%100
12	MP4A	Z	2.902	2.902	0	%100
13	MP5A	X	0	0	0	%100
14	MP5A	Z	2.621	2.621	0	%100
15	MP3A	X	0	0	0	%100
16	MP3A	Z	2.621	2.621	0	%100
17	M16	X	0	0	0	%100
18	M16	Z	2.157	2.157	0	%100
19	M17	X	0	0	0	%100
20	M17	Z	.49	.49	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	3.253	3.253	0	%100

Member Distributed Loads (BLC 60 : Structure Wi (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-1.026	-1.026	0	%100
2	M1	Z	1.777	1.777	0	%100
3	M2	X	-1.071	-1.071	0	%100
4	M2	Z	1.855	1.855	0	%100
5	M4	X	-1.22	-1.22	0	%100
6	M4	Z	2.113	2.113	0	%100
7	MP1A	X	-1.31	-1.31	0	%100
8	MP1A	Z	2.269	2.269	0	%100
9	MP2A	X	-1.31	-1.31	0	%100
10	MP2A	Z	2.269	2.269	0	%100
11	MP4A	X	-1.451	-1.451	0	%100
12	MP4A	Z	2.513	2.513	0	%100
13	MP5A	X	-1.31	-1.31	0	%100
14	MP5A	Z	2.269	2.269	0	%100
15	MP3A	X	-1.31	-1.31	0	%100
16	MP3A	Z	2.269	2.269	0	%100
17	M16	X	-1.078	-1.078	0	%100
18	M16	Z	1.868	1.868	0	%100
19	M17	X	-.921	-.921	0	%100
20	M17	Z	1.594	1.594	0	%100
21	M18	X	-1.22	-1.22	0	%100
22	M18	Z	2.113	2.113	0	%100

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-2.628	-2.628	0	%100
2	M1	Z	1.518	1.518	0	%100
3	M2	X	-1.855	-1.855	0	%100
4	M2	Z	1.071	1.071	0	%100
5	M4	X	-.704	-.704	0	%100
6	M4	Z	.407	.407	0	%100
7	MP1A	X	-2.269	-2.269	0	%100
8	MP1A	Z	1.31	1.31	0	%100
9	MP2A	X	-2.269	-2.269	0	%100
10	MP2A	Z	1.31	1.31	0	%100
11	MP4A	X	-2.513	-2.513	0	%100
12	MP4A	Z	1.451	1.451	0	%100

Member Distributed Loads (BLC 61 : Structure Wi (240 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
13	MP5A	X	-2.269	-2.269	0	%100
14	MP5A	Z	1.31	1.31	0	%100
15	MP3A	X	-2.269	-2.269	0	%100
16	MP3A	Z	1.31	1.31	0	%100
17	M16	X	-1.868	-1.868	0	%100
18	M16	Z	1.078	1.078	0	%100
19	M17	X	-2.358	-2.358	0	%100
20	M17	Z	1.361	1.361	0	%100
21	M18	X	-.704	-.704	0	%100
22	M18	Z	.407	.407	0	%100

Member Distributed Loads (BLC 62 : Structure Wi (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-2.512	-2.512	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	-2.142	-2.142	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	-2.621	-2.621	0	%100
8	MP1A	Z	0	0	0	%100
9	MP2A	X	-2.621	-2.621	0	%100
10	MP2A	Z	0	0	0	%100
11	MP4A	X	-2.902	-2.902	0	%100
12	MP4A	Z	0	0	0	%100
13	MP5A	X	-2.621	-2.621	0	%100
14	MP5A	Z	0	0	0	%100
15	MP3A	X	-2.621	-2.621	0	%100
16	MP3A	Z	0	0	0	%100
17	M16	X	-2.157	-2.157	0	%100
18	M16	Z	0	0	0	%100
19	M17	X	-2.254	-2.254	0	%100
20	M17	Z	0	0	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	0	0	0	%100

Member Distributed Loads (BLC 63 : Structure Wi (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.871	-.871	0	%100
2	M1	Z	-.503	-.503	0	%100
3	M2	X	-1.855	-1.855	0	%100
4	M2	Z	-1.071	-1.071	0	%100
5	M4	X	-.704	-.704	0	%100
6	M4	Z	-.407	-.407	0	%100
7	MP1A	X	-2.269	-2.269	0	%100
8	MP1A	Z	-1.31	-1.31	0	%100
9	MP2A	X	-2.269	-2.269	0	%100
10	MP2A	Z	-1.31	-1.31	0	%100
11	MP4A	X	-2.513	-2.513	0	%100
12	MP4A	Z	-1.451	-1.451	0	%100
13	MP5A	X	-2.269	-2.269	0	%100
14	MP5A	Z	-1.31	-1.31	0	%100
15	MP3A	X	-2.269	-2.269	0	%100
16	MP3A	Z	-1.31	-1.31	0	%100
17	M16	X	-1.868	-1.868	0	%100
18	M16	Z	-1.078	-1.078	0	%100

Member Distributed Loads (BLC 63 : Structure Wi (300 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
19	M17	X	-.782	-.782	0	%100
20	M17	Z	-.451	-.451	0	%100
21	M18	X	-.704	-.704	0	%100
22	M18	Z	-.407	-.407	0	%100

Member Distributed Loads (BLC 64 : Structure Wi (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.012	-.012	0	%100
2	M1	Z	-.02	-.02	0	%100
3	M2	X	-1.071	-1.071	0	%100
4	M2	Z	-1.855	-1.855	0	%100
5	M4	X	-1.22	-1.22	0	%100
6	M4	Z	-2.113	-2.113	0	%100
7	MP1A	X	-1.31	-1.31	0	%100
8	MP1A	Z	-2.269	-2.269	0	%100
9	MP2A	X	-1.31	-1.31	0	%100
10	MP2A	Z	-2.269	-2.269	0	%100
11	MP4A	X	-1.451	-1.451	0	%100
12	MP4A	Z	-2.513	-2.513	0	%100
13	MP5A	X	-1.31	-1.31	0	%100
14	MP5A	Z	-2.269	-2.269	0	%100
15	MP3A	X	-1.31	-1.31	0	%100
16	MP3A	Z	-2.269	-2.269	0	%100
17	M16	X	-1.078	-1.078	0	%100
18	M16	Z	-1.868	-1.868	0	%100
19	M17	X	-.01	-.01	0	%100
20	M17	Z	-.018	-.018	0	%100
21	M18	X	-1.22	-1.22	0	%100
22	M18	Z	-2.113	-2.113	0	%100

Member Distributed Loads (BLC 65 : Structure Wm (0 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	-.12	-.12	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	-.452	-.452	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	-.708	-.708	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	-.481	-.481	0	%100
9	MP2A	X	0	0	0	%100
10	MP2A	Z	-.481	-.481	0	%100
11	MP4A	X	0	0	0	%100
12	MP4A	Z	-.582	-.582	0	%100
13	MP5A	X	0	0	0	%100
14	MP5A	Z	-.481	-.481	0	%100
15	MP3A	X	0	0	0	%100
16	MP3A	Z	-.481	-.481	0	%100
17	M16	X	0	0	0	%100
18	M16	Z	-.393	-.393	0	%100
19	M17	X	0	0	0	%100
20	M17	Z	-.098	-.098	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	-.708	-.708	0	%100

Member Distributed Loads (BLC 66 : Structure Wm (30 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.226	.226	0	%100
2	M1	Z	-.391	-.391	0	%100
3	M2	X	.226	.226	0	%100
4	M2	Z	-.391	-.391	0	%100
5	M4	X	.266	.266	0	%100
6	M4	Z	-.46	-.46	0	%100
7	MP1A	X	.24	.24	0	%100
8	MP1A	Z	-.416	-.416	0	%100
9	MP2A	X	.24	.24	0	%100
10	MP2A	Z	-.416	-.416	0	%100
11	MP4A	X	.291	.291	0	%100
12	MP4A	Z	-.504	-.504	0	%100
13	MP5A	X	.24	.24	0	%100
14	MP5A	Z	-.416	-.416	0	%100
15	MP3A	X	.24	.24	0	%100
16	MP3A	Z	-.416	-.416	0	%100
17	M16	X	.196	.196	0	%100
18	M16	Z	-.34	-.34	0	%100
19	M17	X	.185	.185	0	%100
20	M17	Z	-.32	-.32	0	%100
21	M18	X	.266	.266	0	%100
22	M18	Z	-.46	-.46	0	%100

Member Distributed Loads (BLC 67 : Structure Wm (60 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.578	.578	0	%100
2	M1	Z	-.334	-.334	0	%100
3	M2	X	.391	.391	0	%100
4	M2	Z	-.226	-.226	0	%100
5	M4	X	.153	.153	0	%100
6	M4	Z	-.089	-.089	0	%100
7	MP1A	X	.416	.416	0	%100
8	MP1A	Z	-.24	-.24	0	%100
9	MP2A	X	.416	.416	0	%100
10	MP2A	Z	-.24	-.24	0	%100
11	MP4A	X	.504	.504	0	%100
12	MP4A	Z	-.291	-.291	0	%100
13	MP5A	X	.416	.416	0	%100
14	MP5A	Z	-.24	-.24	0	%100
15	MP3A	X	.416	.416	0	%100
16	MP3A	Z	-.24	-.24	0	%100
17	M16	X	.34	.34	0	%100
18	M16	Z	-.196	-.196	0	%100
19	M17	X	.474	.474	0	%100
20	M17	Z	-.273	-.273	0	%100
21	M18	X	.153	.153	0	%100
22	M18	Z	-.089	-.089	0	%100

Member Distributed Loads (BLC 68 : Structure Wm (90 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.552	.552	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	.452	.452	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100

Member Distributed Loads (BLC 68 : Structure Wm (90 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
7	MP1A	X	.481	.481	0	%100
8	MP1A	Z	0	0	0	%100
9	MP2A	X	.481	.481	0	%100
10	MP2A	Z	0	0	0	%100
11	MP4A	X	.582	.582	0	%100
12	MP4A	Z	0	0	0	%100
13	MP5A	X	.481	.481	0	%100
14	MP5A	Z	0	0	0	%100
15	MP3A	X	.481	.481	0	%100
16	MP3A	Z	0	0	0	%100
17	M16	X	.393	.393	0	%100
18	M16	Z	0	0	0	%100
19	M17	X	.453	.453	0	%100
20	M17	Z	0	0	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	0	0	0	%100

Member Distributed Loads (BLC 69 : Structure Wm (120 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.192	.192	0	%100
2	M1	Z	.111	.111	0	%100
3	M2	X	.391	.391	0	%100
4	M2	Z	.226	.226	0	%100
5	M4	X	.153	.153	0	%100
6	M4	Z	.089	.089	0	%100
7	MP1A	X	.416	.416	0	%100
8	MP1A	Z	.24	.24	0	%100
9	MP2A	X	.416	.416	0	%100
10	MP2A	Z	.24	.24	0	%100
11	MP4A	X	.504	.504	0	%100
12	MP4A	Z	.291	.291	0	%100
13	MP5A	X	.416	.416	0	%100
14	MP5A	Z	.24	.24	0	%100
15	MP3A	X	.416	.416	0	%100
16	MP3A	Z	.24	.24	0	%100
17	M16	X	.34	.34	0	%100
18	M16	Z	.196	.196	0	%100
19	M17	X	.157	.157	0	%100
20	M17	Z	.091	.091	0	%100
21	M18	X	.153	.153	0	%100
22	M18	Z	.089	.089	0	%100

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	.003	.003	0	%100
2	M1	Z	.004	.004	0	%100
3	M2	X	.226	.226	0	%100
4	M2	Z	.391	.391	0	%100
5	M4	X	.266	.266	0	%100
6	M4	Z	.46	.46	0	%100
7	MP1A	X	.24	.24	0	%100
8	MP1A	Z	.416	.416	0	%100
9	MP2A	X	.24	.24	0	%100
10	MP2A	Z	.416	.416	0	%100
11	MP4A	X	.291	.291	0	%100
12	MP4A	Z	.504	.504	0	%100

Member Distributed Loads (BLC 70 : Structure Wm (150 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
13	MP5A	X	.24	.24	0	%100
14	MP5A	Z	.416	.416	0	%100
15	MP3A	X	.24	.24	0	%100
16	MP3A	Z	.416	.416	0	%100
17	M16	X	.196	.196	0	%100
18	M16	Z	.34	.34	0	%100
19	M17	X	.002	.002	0	%100
20	M17	Z	.004	.004	0	%100
21	M18	X	.266	.266	0	%100
22	M18	Z	.46	.46	0	%100

Member Distributed Loads (BLC 71 : Structure Wm (180 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	0	0	0	%100
2	M1	Z	.12	.12	0	%100
3	M2	X	0	0	0	%100
4	M2	Z	.452	.452	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	.708	.708	0	%100
7	MP1A	X	0	0	0	%100
8	MP1A	Z	.481	.481	0	%100
9	MP2A	X	0	0	0	%100
10	MP2A	Z	.481	.481	0	%100
11	MP4A	X	0	0	0	%100
12	MP4A	Z	.582	.582	0	%100
13	MP5A	X	0	0	0	%100
14	MP5A	Z	.481	.481	0	%100
15	MP3A	X	0	0	0	%100
16	MP3A	Z	.481	.481	0	%100
17	M16	X	0	0	0	%100
18	M16	Z	.393	.393	0	%100
19	M17	X	0	0	0	%100
20	M17	Z	.098	.098	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	.708	.708	0	%100

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.226	-.226	0	%100
2	M1	Z	.391	.391	0	%100
3	M2	X	-.226	-.226	0	%100
4	M2	Z	.391	.391	0	%100
5	M4	X	-.266	-.266	0	%100
6	M4	Z	.46	.46	0	%100
7	MP1A	X	-.24	-.24	0	%100
8	MP1A	Z	.416	.416	0	%100
9	MP2A	X	-.24	-.24	0	%100
10	MP2A	Z	.416	.416	0	%100
11	MP4A	X	-.291	-.291	0	%100
12	MP4A	Z	.504	.504	0	%100
13	MP5A	X	-.24	-.24	0	%100
14	MP5A	Z	.416	.416	0	%100
15	MP3A	X	-.24	-.24	0	%100
16	MP3A	Z	.416	.416	0	%100
17	M16	X	-.196	-.196	0	%100
18	M16	Z	.34	.34	0	%100

Member Distributed Loads (BLC 72 : Structure Wm (210 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
19	M17	X	-.185	-.185	0	%100
20	M17	Z	.32	.32	0	%100
21	M18	X	-.266	-.266	0	%100
22	M18	Z	.46	.46	0	%100

Member Distributed Loads (BLC 73 : Structure Wm (240 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.578	-.578	0	%100
2	M1	Z	.334	.334	0	%100
3	M2	X	-.391	-.391	0	%100
4	M2	Z	.226	.226	0	%100
5	M4	X	-.153	-.153	0	%100
6	M4	Z	.089	.089	0	%100
7	MP1A	X	-.416	-.416	0	%100
8	MP1A	Z	.24	.24	0	%100
9	MP2A	X	-.416	-.416	0	%100
10	MP2A	Z	.24	.24	0	%100
11	MP4A	X	-.504	-.504	0	%100
12	MP4A	Z	.291	.291	0	%100
13	MP5A	X	-.416	-.416	0	%100
14	MP5A	Z	.24	.24	0	%100
15	MP3A	X	-.416	-.416	0	%100
16	MP3A	Z	.24	.24	0	%100
17	M16	X	-.34	-.34	0	%100
18	M16	Z	.196	.196	0	%100
19	M17	X	-.474	-.474	0	%100
20	M17	Z	.273	.273	0	%100
21	M18	X	-.153	-.153	0	%100
22	M18	Z	.089	.089	0	%100

Member Distributed Loads (BLC 74 : Structure Wm (270 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.552	-.552	0	%100
2	M1	Z	0	0	0	%100
3	M2	X	-.452	-.452	0	%100
4	M2	Z	0	0	0	%100
5	M4	X	0	0	0	%100
6	M4	Z	0	0	0	%100
7	MP1A	X	-.481	-.481	0	%100
8	MP1A	Z	0	0	0	%100
9	MP2A	X	-.481	-.481	0	%100
10	MP2A	Z	0	0	0	%100
11	MP4A	X	-.582	-.582	0	%100
12	MP4A	Z	0	0	0	%100
13	MP5A	X	-.481	-.481	0	%100
14	MP5A	Z	0	0	0	%100
15	MP3A	X	-.481	-.481	0	%100
16	MP3A	Z	0	0	0	%100
17	M16	X	-.393	-.393	0	%100
18	M16	Z	0	0	0	%100
19	M17	X	-.453	-.453	0	%100
20	M17	Z	0	0	0	%100
21	M18	X	0	0	0	%100
22	M18	Z	0	0	0	%100

Member Distributed Loads (BLC 75 : Structure Wm (300 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.192	-.192	0	%100
2	M1	Z	-.111	-.111	0	%100
3	M2	X	-.391	-.391	0	%100
4	M2	Z	-.226	-.226	0	%100
5	M4	X	-.153	-.153	0	%100
6	M4	Z	-.089	-.089	0	%100
7	MP1A	X	-.416	-.416	0	%100
8	MP1A	Z	-.24	-.24	0	%100
9	MP2A	X	-.416	-.416	0	%100
10	MP2A	Z	-.24	-.24	0	%100
11	MP4A	X	-.504	-.504	0	%100
12	MP4A	Z	-.291	-.291	0	%100
13	MP5A	X	-.416	-.416	0	%100
14	MP5A	Z	-.24	-.24	0	%100
15	MP3A	X	-.416	-.416	0	%100
16	MP3A	Z	-.24	-.24	0	%100
17	M16	X	-.34	-.34	0	%100
18	M16	Z	-.196	-.196	0	%100
19	M17	X	-.157	-.157	0	%100
20	M17	Z	-.091	-.091	0	%100
21	M18	X	-.153	-.153	0	%100
22	M18	Z	-.089	-.089	0	%100

Member Distributed Loads (BLC 76 : Structure Wm (330 Deg))

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitude[l...	Start Location[ft,...	End Location[ft,%]
1	M1	X	-.003	-.003	0	%100
2	M1	Z	-.004	-.004	0	%100
3	M2	X	-.226	-.226	0	%100
4	M2	Z	-.391	-.391	0	%100
5	M4	X	-.266	-.266	0	%100
6	M4	Z	-.46	-.46	0	%100
7	MP1A	X	-.24	-.24	0	%100
8	MP1A	Z	-.416	-.416	0	%100
9	MP2A	X	-.24	-.24	0	%100
10	MP2A	Z	-.416	-.416	0	%100
11	MP4A	X	-.291	-.291	0	%100
12	MP4A	Z	-.504	-.504	0	%100
13	MP5A	X	-.24	-.24	0	%100
14	MP5A	Z	-.416	-.416	0	%100
15	MP3A	X	-.24	-.24	0	%100
16	MP3A	Z	-.416	-.416	0	%100
17	M16	X	-.196	-.196	0	%100
18	M16	Z	-.34	-.34	0	%100
19	M17	X	-.002	-.002	0	%100
20	M17	Z	-.004	-.004	0	%100
21	M18	X	-.266	-.266	0	%100
22	M18	Z	-.46	-.46	0	%100

Member Area Loads

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

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N2	max	1138.482	11	1398.756	20	1511.541	1	-1.532	5	3.455	9	1.614	42
2		min	-807.62	5	617.955	3	-624.64	7	-3.827	23	-3.753	3	-.29	49
3	N33	max	130.847	49	714.067	14	244.511	1	-.687	6	1.661	9	.762	42
4		min	-479.608	39	317.601	9	-1170.932	19	-1.732	24	-1.375	3	-.069	49
5	Totals:	max	1150.068	10	2106.205	23	1756.052	1						
6		min	-1150.067	4	962.776	5	-1756.048	7						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [lb]	phi*...	phi*...	phi*...	...	Eqn
1	M18	PIPE_...	.349	6.75	7	.180	6.891		23	24533.227	65205	5.749	5.749	...	H1-...
2	MP3A	PIPE_...	.348	3.75	24	.068	3.75		12	20866.733	32130	1.872	1.872	...	H1-...
3	M1	HSS4X...	.343	0	3	.128	0	y	49	130481.58	1395...	16.1...	16.1...	...	H1-...
4	M4	PIPE_...	.315	6.75	1	.208	6.75		37	24533.227	65205	5.749	5.749	...	H1-...
5	M17	HSS3X...	.308	0	21	.095	0	y	49	88083.099	1010...	8.556	8.556	...	H1-...
6	MP2A	PIPE_...	.297	3.188	24	.065	.75		17	20866.733	32130	1.872	1.872	...	H1-...
7	MP5A	PIPE_...	.243	3.313	49	.044	.875		49	20866.733	32130	1.872	1.872	...	H1-...
8	MP4A	PIPE_...	.185	3.313	15	.077	3.313		14	37773.818	50715	3.596	3.596	...	H1-...
9	MP1A	PIPE_...	.180	3.375	23	.045	.938		15	20866.733	32130	1.872	1.872	...	H1-...
10	M16	PIPE_...	.070	2.5	7	.013	2.5		7	28843.414	32130	1.872	1.872	...	H1-...
11	M2	PIPE_...	.000	.792	5	.000	.792		5	64335.798	65205	5.749	5.749	...	H1-...

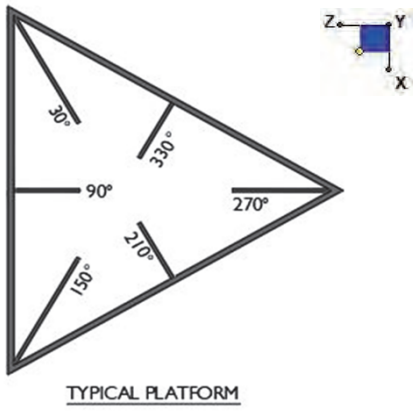
Client:	Verizon	Date:	6/28/2021
Site Name:	Barkhamsted S CT		
Project No.	21777222A		
Title:	Mount Fix	Page:	1

Version 3.1

I. Mount-to-Tower Connection Check

RISA Model Data

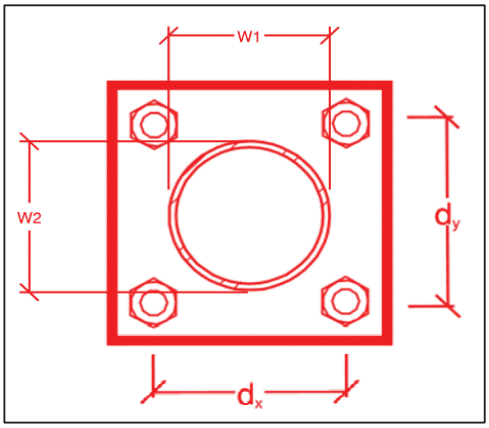
Nodes *(labeled per RISA)*	Orientation *(per graphic of typical platform)*
N2	120



TYPICAL PLATFORM

Tower Connection Bolt Checks

Any moment resistance?:	yes
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	6
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	6
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength (kips):	17.1
Required Shear Strength (kips):	7.5
Tensile Strength / bolt (kips):	20.7
Shear Strength / bolt (kips):	12.4
Tensile Capacity Overall:	**20.7%***
Shear Capacity Overall:	**15.1%**



**Note: Tension reduction not required if tension or shear capacity < 30%*

Tower Connection Plate and Weld Check

Connecting Standoff Member Shape:	Rect
Plate Width (in):	8.5
Plate Height (in):	8.5
W1 (in):	4
W2 (in):	4
Fy (ksi, plate):	36
t_{Plate} (in):	0.75
Weld Size (1/16 in):	5
Phi*Rn (kip/in):	6.96
Required Weld Strength (kip/in):	2.37
Plate Bending Capacity:	**29.0%**
Weld Capacity:	**34.1%**

Max Plate Bending Strengths

Mu_{xx} *(kip-in)* :	3.6
$Phi*Mn_{xx}$ *(kip-in)* :	38.7
Mu_{yy} *(kip-in)* :	7.7
$Phi*Mn_{yy}$ *(kip-in)* :	38.7

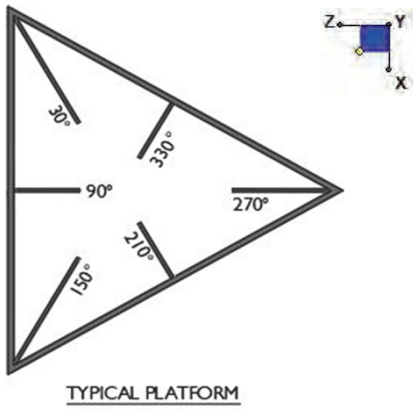
Client:	Verizon	Date:	6/28/2021
Site Name:	Barkhamsted S CT		
Project No.	21777222A		
Title:	Mount Fix	Page:	1

Version 3.1

I. Mount-to-Tower Connection Check

RISA Model Data

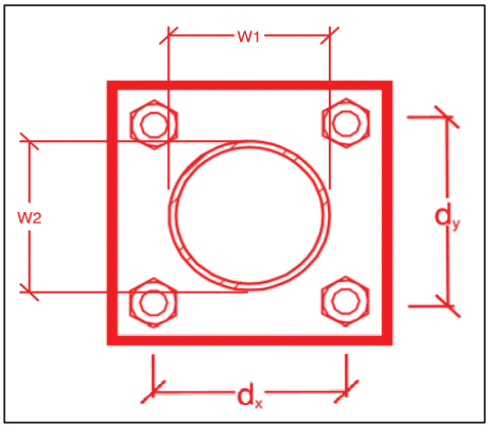
Nodes *(labeled per RISA)*	Orientation *(per graphic of typical platform)*
N33	120



TYPICAL PLATFORM

Tower Connection Bolt Checks

Any moment resistance?:	yes
Bolt Quantity per Reaction:	4
d_x (in) *(Delta X of typ. bolt config. sketch)* :	6
d_y (in) *(Delta Y of typ. bolt config. sketch)* :	6
Bolt Type:	A325N
Bolt Diameter (in):	0.625
Required Tensile Strength (kips):	8.7
Required Shear Strength (kips):	3.2
Tensile Strength / bolt (kips):	20.7
Shear Strength / bolt (kips):	12.4
Tensile Capacity Overall:	**10.6%***
Shear Capacity Overall:	**6.5%**



**Note: Tension reduction not required if tension or shear capacity < 30%*

Tower Connection Plate and Weld Check

Connecting Standoff Member Shape:	Rect
Plate Width (in):	8.25
Plate Height (in):	8.25
W1 (in):	3
W2 (in):	3
Fy (ksi, plate):	50
t_{Plate} (in):	0.75
Weld Size (1/16 in):	5
Phi*Rn (kip/in):	6.96
Required Weld Strength (kip/in):	2.04
Plate Bending Capacity:	**16.2%**
Weld Capacity:	**29.3%**

Max Plate Bending Strengths

Mu_{xx} *(kip-in)* :	5.7
$Phi*Mn_{xx}$ *(kip-in)* :	52.2
Mu_{yy} *(kip-in)* :	2.7
$Phi*Mn_{yy}$ *(kip-in)* :	52.2

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

Purpose – to provide Maser Consulting Connecticut the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the 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:

- 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) must be shown.
- Notation that all hardware was properly installed, and the existing hardware was inspected for any issues.
- Verification that loading is as communicated in the modification drawings. NOTE If loading is different than what is conveyed in the modification drawing contact Maser Consulting Connecticut immediately.
- Each photo should be time and date stamped
- Photos should be high resolution and submitted in a Zip File and should be organized in the file structure as depicted in Schedule A attached.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope.
- The photos in the file structure should be uploaded to **https://pmi.vzwsmart.com** as depicted on the drawings

Photo Requirements:

- *Base and "During Installation Photos"*
  - Base pictures include
    - Photo of Gate Signs showing the tower owner, site name, and number
    - Photo of carrier shelter showing the carrier site name and number if available
    - Photos of the galvanizing compound and/or paint used (if applicable), clearly showing the label and name
  - "During Installation Photos if provided - must be placed only in this folder
- *Photos taken at ground level*
  - Overall tower structure before and after installation of the modifications
  - Photos of the appropriate mount before and 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 each individual sector before and also after installation of modifications. Each entire sector must be in one photo to show in the inter-connection of members.
        - These photos should also certify that the placement and geometry of the equipment on the mount is as depicted on the sketch and table in the mount analysis
    - Close-up photos of each installed modification per the modification drawings; pictures should also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
    - Photos showing the measurements of the installed modification member sizes (i.e. lengths, widths, depths, diameters, thicknesses)
    - Photos showing the elevation or distances of the installed modifications from the appropriate reference locations shown in the modification drawings
    - Photos showing the installed modifications onto the tower with tape drop measurements (if applicable) (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, a tape drop measurement shall be provided before the elevation change
    - 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.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by Maser Consulting Connecticut.
    - If the drawings are as specified on the drawings
        - The contractor should provide the packing list or the materials utilized to perform the mount modification
    - If an equivalent is utilized
        - It is required that the Maser Consulting Connecticut certification of such is included in the contractor submission package. There may be an additional charge for this certification if the equivalent submission doesn't meet specifications as prescribed in the drawings.
- The contractor must certify that the materials meet these specifications by one of these methods.

☐ The Material utilized was as specified on the Maser Consulting Connecticut Mount Modification Drawings and included in the Material certification folder is a packing list or invoice for these materials

☐ The material utilized was an “equivalent” and included as part of the contractor submission is the Maser Consulting Connecticut certification, invoices, or specifications validating accepted status

Certifying Individual: Company _____

Name _____

Signature _____

Antenna & equipment placement and Geometry Confirmation:

- The contractor must certify that the antenna & equipment placement and geometry is in accordance with the antenna placement diagrams as included in this mount analysis.

☐ The contractor certifies that the photos support and the equipment on the mount is as depicted on the antenna placement diagrams as included in this mount analysis.

☐ The contractor notes that the equipment on the mount is not in accordance with the antenna placement diagrams and has accordingly marked up the diagrams or provided a diagram outlining the differences.

Certifying Individual: Company _____

Name _____

Signature _____

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

Issue:

Contractor to inspect climbing facilities at site and ensure that the safety climb wire rope does not or will not interfere with the existing or proposed mount connections. Contractor shall install safety climb wire rope guides around mount connections as needed. Contractor shall install the proposed OVP on the existing OVP pipe located on the standoff horizontal of the gamma sector t-arm. Contractor shall replace each of the existing rusted collar mount threaded rods with new 5/8" dia. A307 threaded rods.

Response:

Schedule A – Photo & Document File Structure

- VzW Site Number / Name
  - Base & “During Installation” Photos
  - Pre-Installation Photos
    - Alpha
    - Beta
    - Gamma
    - Ground Level
    - Tape Drop
  - Post-Installation Photos
    - Alpha
    - Beta
    - Gamma
    - Ground Level
    - Tape Drop
    - Photos of climbing facility and safety climb – If Present
  - Certifications – Submission of this document including certifications
  - Specific Required Additional Photos

Structure: 467180-VZW - BARKHAMSTED S CT

Sector: A
Structure Type: Monopole
Mount Elev: 126.50

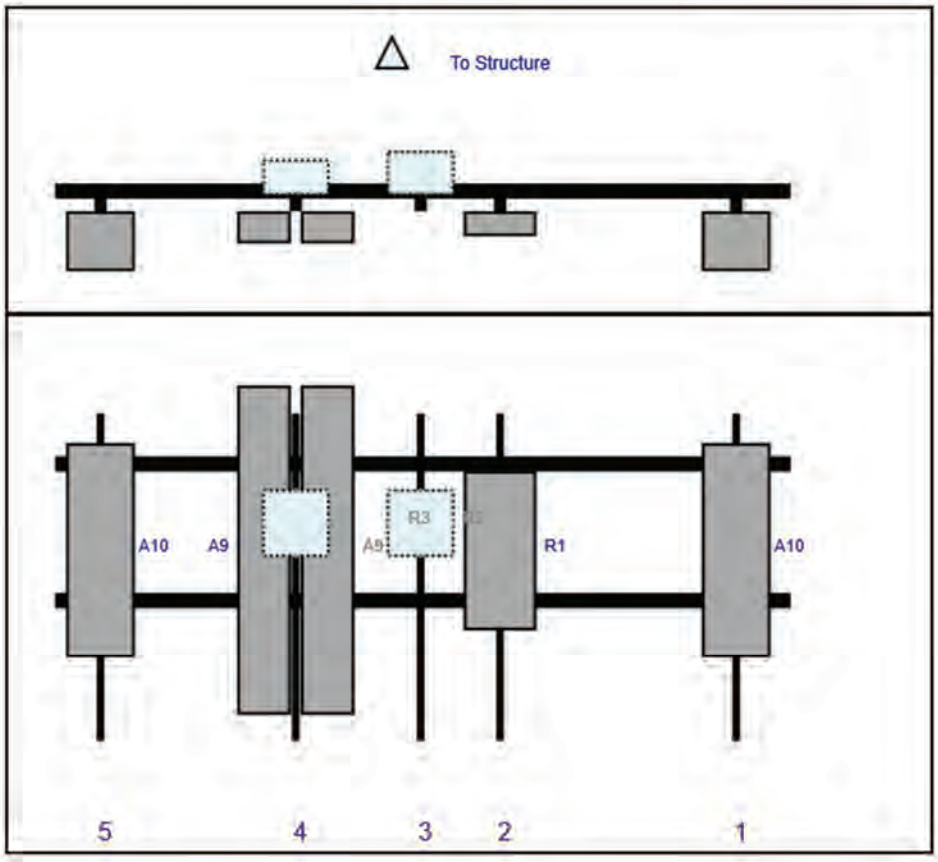
10065183

6/28/2021
Page: 1

MASER CONSULTING

Plan View

Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A10	LPA-80063/4CF	47.4	15.2	150	1	a	Front	30	0	Retained	03/26/2021
R1	MT6407-77A	35.1	16.1	98	2	a	Front	30	0	Added	
R2	B2/B66A RRH-BR049	15	15	80.5	3	a	Behind	24	0	Added	
A9	SBNHH-1D65B	72.6	11.9	53	4	a	Front	30	7	Retained	03/26/2021
A9	SBNHH-1D65B	72.6	11.9	53	4	b	Front	30	-7	Retained	03/26/2021
R3	B5/B13 RRH-BR04C	15	15	53	4	a	Behind	24	0	Added	
A10	LPA-80063/4CF	47.4	15.2	10	5	a	Front	30	0	Retained	03/26/2021

Structure: 467180-VZW - BARKHAMSTED S CT

Sector: B
Structure Type: Monopole
Mount Elev: 126.50

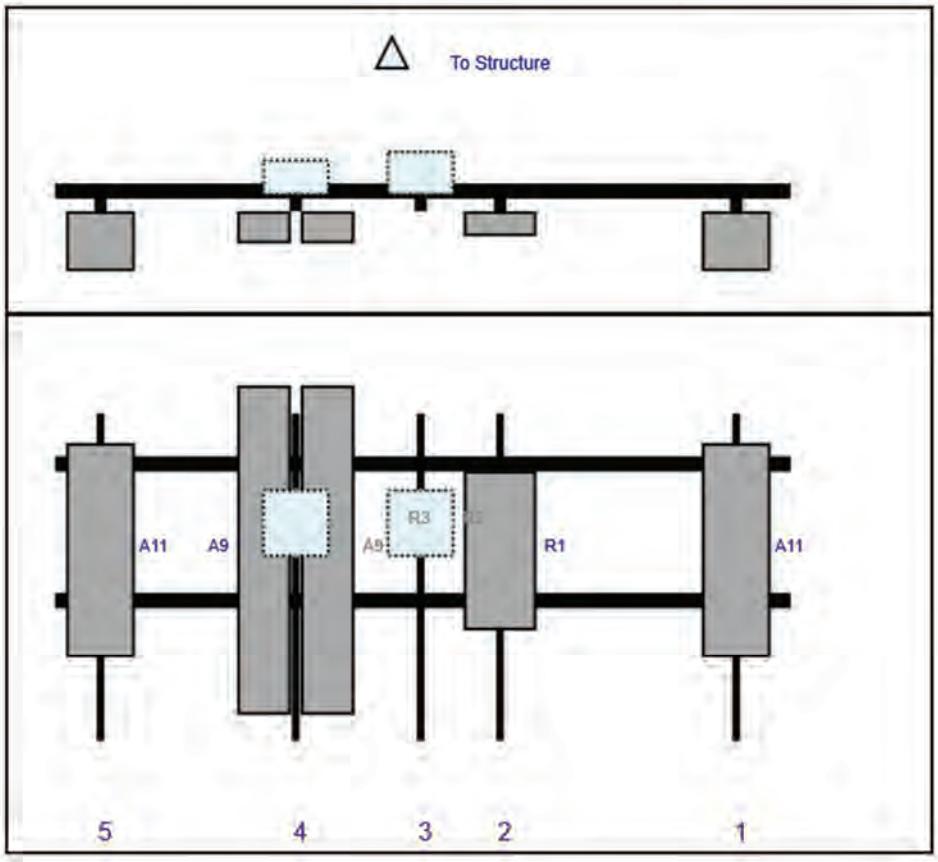
10065183

6/28/2021
Page: 2

MASER CONSULTING

Plan View

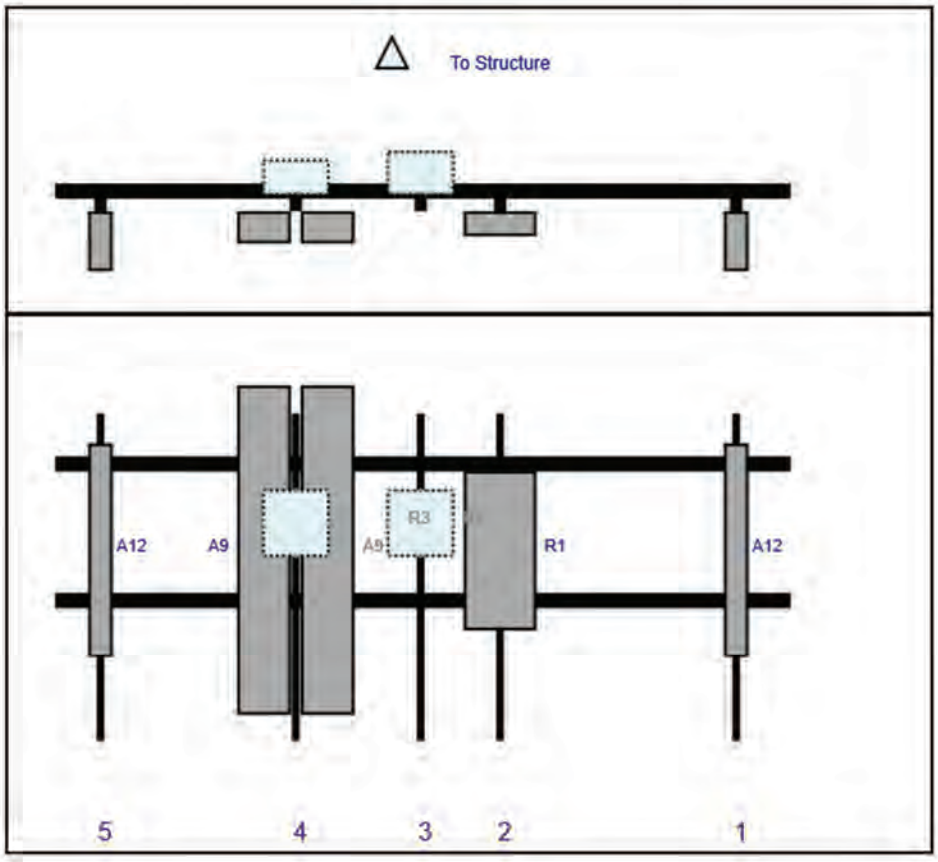
Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A11	LPA-80063/4CF 5	47.4	15.2	150	1	a	Front	30	0	Retained	03/26/2021
R1	MT6407-77A	35.1	16.1	98	2	a	Front	30	0	Added	
R2	B2/B66A RRH-BR049	15	15	80.5	3	a	Behind	24	0	Added	
A9	SBNHH-1D65B	72.6	11.9	53	4	a	Front	30	7	Retained	03/26/2021
A9	SBNHH-1D65B	72.6	11.9	53	4	b	Front	30	-7	Retained	03/26/2021
R3	B5/B13 RRH-BR04C	15	15	53	4	a	Behind	24	0	Added	
A11	LPA-80063/4CF 5	47.4	15.2	10	5	a	Front	30	0	Retained	03/26/2021

Plan View

Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A12	LPA-80080/4CF	47.2	5.5	150	1	a	Front	30	0	Retained	03/26/2021
R1	MT6407-77A	35.1	16.1	98	2	a	Front	30	0	Added	
R2	B2/B66A RRH-BR049	15	15	80.5	3	a	Behind	24	0	Added	
A9	SBNHH-1D65B	72.6	11.9	53	4	a	Front	30	7	Retained	03/26/2021
A9	SBNHH-1D65B	72.6	11.9	53	4	b	Front	30	-7	Retained	03/26/2021
R3	B5/B13 RRH-BR04C	15	15	53	4	a	Behind	24	0	Added	
A12	LPA-80080/4CF	47.2	5.5	10	5	a	Front	30	0	Retained	03/26/2021

Maser Consulting Connecticut

Subject	TIA-222-H Usage	
Site Information	Site ID:	467180-VZW / BARKHAMSTED S CT
	Site Name:	BARKHAMSTED S CT
	Carrier Name:	Verizon Wireless
	Address:	127 New Hartford Rd Barkhamsted, Connecticut 06063 Litchfield County
	Latitude:	41.893808°
	Longitude:	-72.996472°
Structure Information	Tower Type:	Monopole
	Mount Type:	13.50-Ft T-Arm

To Whom It May Concern,

We respectfully submit the above referenced Antenna Mount Structural Analysis report in conformance with ANSI/TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures.

The 2015 International Building Code states that, in Section 3108, telecommunication towers shall be designed and constructed in accordance with the provisions of TIA-222. TIA-222-H is the latest revision of the TIA-222 Standard, effective as of January 01, 2018.

As with all ANSI standards and engineering best practice is to apply the most current revision of the standard. This ensures the engineer is applying all updates. As an example, the TIA-222-H Standard includes updates to bring it in line with the latest AISC and ACI standards and it also incorporates the latest wind speed maps by ASCE 7 based on updated studies of the wind data.

The TIA-222-H standard clarifies these specific requirements for the antenna mount analysis such as modeling methods, seismic analysis, 30-degree increment wind directions and maintenance loading. Therefore, it is our opinion that TIA-222-H is the most appropriate standard for antenna mount structural analysis and is acceptable for use at this site to ensure the engineer is taking into account the most current engineering standard available.

Sincerely,

Derek Hartzell, PE
Technical Specialist

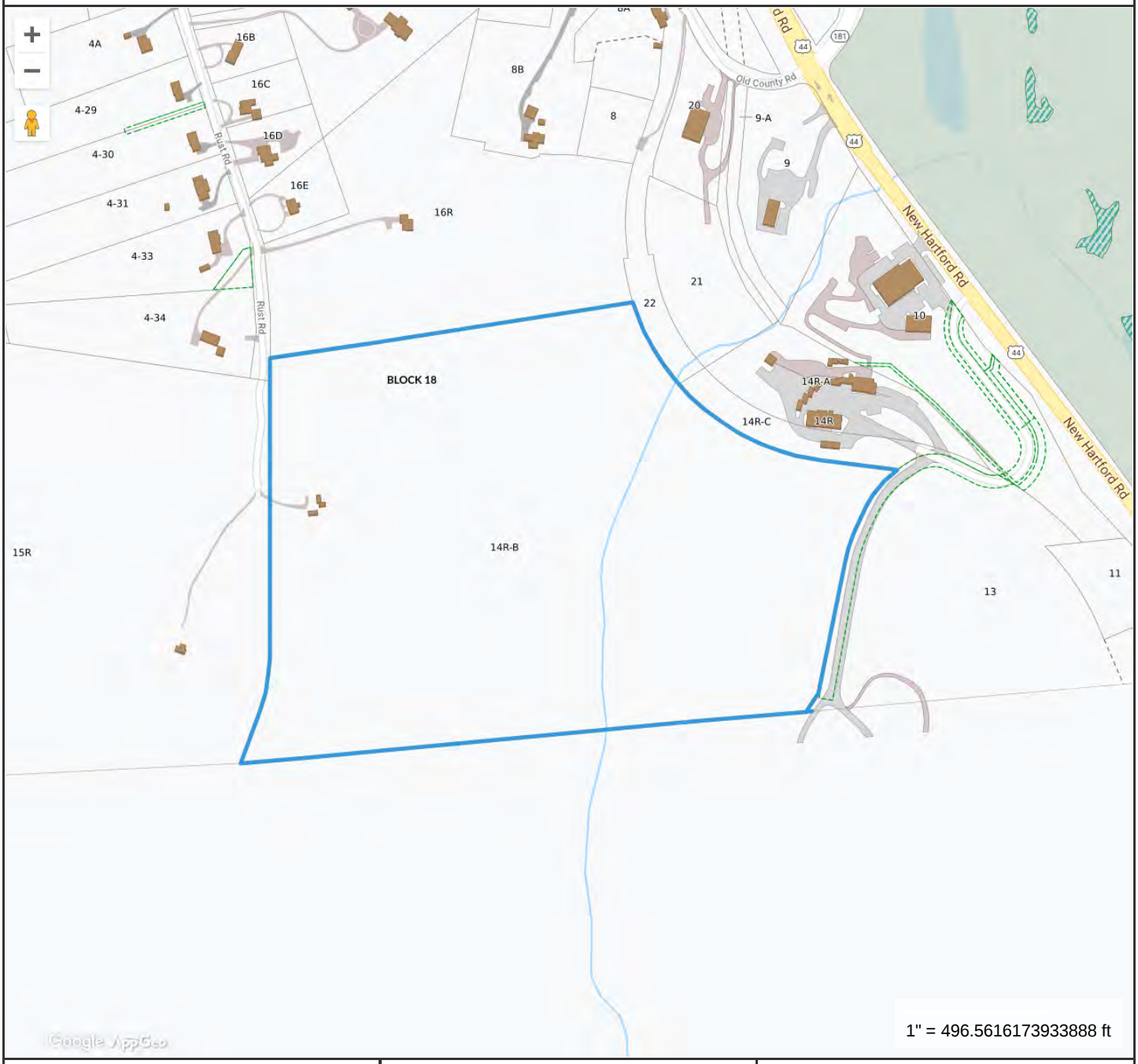
Site Name: ***BARKHAMSTED S CT***
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW 700	751	4	697	2788	134	0.0056	0.5007	1.12%
VZW CDMA	878.49	2	416	832	134	0.0017	0.5857	0.28%
VZW Cellular	874	4	822	3290	134	0.0066	0.5827	1.13%
VZW PCS	1975	4	977	3909	134	0.0078	1.0000	0.78%
VZW AWS	2120	4	2233	8931	134	0.0179	1.0000	1.79%
VZW CBAND	3730.08	4	6531	26125	134	0.0523	1.0000	5.23%
Total Percentage of Maximum Permissible Exposure								10.33%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992
**Calculation includes a -10 dB Off Beam Antenna Pattern Adjustment pursuant to Attachments B and C of the Siting Council's November 10, 2015 Memorandum for Exempt Modification filings

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.



Property Information

Property ID	49-18-14R-B
Location	31 B NEW HARTFORD RD
Owner	REGIONAL REFUSE DISPOSAL DISTRICT 1

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Barkhamsted, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 6/2/2021
Data updated 11/15/2018

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Property Location 31 B NEW HARTFORD RD | Map ID 49/ 18/ 14/R-B / | Bldg Name | State Use 300
Vision ID 1781 | Account # 00178500 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 2/4/2021 12:59:18 PM

CURRENT OWNER

REGIONAL REFUSE DISPOSAL DISTRICT 1

C/O DEBBIE ANGELL

31 NEW HARTFORD RD

BARKHAMSTED CT 06063

TOPO	UTILITIES	STRT / ROAD	LOCATION
4 Rolling			

SUPPLEMENTAL DATA

Alt Prcl ID 49-18-14R-B	DV Lot # B
B.P. Status	Solar Ener
Census Tr.	BAA
Interior	Callback
100 Yr Flo	PA490 Dat
DV Map # 942	
GIS ID	Assoc Pid#

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
IND LAND	3-1	375,000	262,500
VAC IN LN	5-3	1,156,550	809,580
	Total	1,531,550	1,072,080

6005

BARKHAMSTED, CT

VISION

RECORD OF OWNERSHIP

	BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
REGIONAL REFUSE DISPOSAL DISTRICT 1	0150	1047	08-15-2011	U	V	0	04
REGIONAL REFUSE DISP DISTR #1	0056	0050	04-02-1974		V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed	Year	Code	Assessed
2020	3-1	262,500	2019	3-1	262,500	2018	3-1	262,500
	5-3	809,580		5-3	809,580		5-3	809,580
	Total	1072080		Total	1072080		Total	1072080

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	Street Index Name	Tracing	Batch
0001				

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised Xf (B) Value (Bldg)	0
Appraised Ob (B) Value (Bldg)	0
Appraised Land Value (Card)	1,531,550
Total Appraised Parcel Value	1,531,550
Valuation Method	C
Total Appraised Parcel Value	1,531,550

NOTES

PARCEL B 51.76AC ON ORIGINAL DEED/MAP#48

PARCEL FKA 59AC FOR TOTAL OF ALL PARCELS

8/15/2011 NOTICE OF BOUNDARY LINE ADJUST

MAP #942 PROPOSED ECONOMIC DEV ZONE

LEASE V112/1020; V162/906

2008 ASGN OF LEASE VOL 142/924

2010 - LAND VALUED FOR CELL SITE

***ACCESS VIA RUST RD**

8/27/03 MAP 669 EASEMENT AREA

STATE LND USE LIMITATION

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments
19-104-E	05-20-2019	EL	Electric	25,000		100	02-20-2020	remv/repl 6 antennas; remv 3
18-297-E	10-25-2018	GN	Generator	13,500		100	04-30-2019	inst backup generator on existi
17-102-E	06-05-2017	EL	Electric	25,000		100		install new equipment pad, sett
17-87-E	05-18-2017	EL	Electric	15,000		100		Verizon wireless is looking to r
14-10-64	10-01-2014	OT	Other	15,000		100		add one antenna & one pipe m
14-08-50	08-13-2014	OT	Other	15,000		100		add 3 antennas etc
14-04-13	04-23-2014	OT	Other	7,500		100		replace 6 existing antennas &

VISIT / CHANGE HISTORY

Date	Id	Type	Is	Cd	Purpost/Result
12-10-2008	DW			94	Vacant w/Outbldgs
04-07-2008	JQ			99	Vacant Land

LAND LINE VALUATION SECTION

B	Use Code	Description	Zone	Land Type	Land Units		Unit Price	Size Adj	Site Index	Cond.	Nbhd.	Nbhd. Adj.	Notes	Special Use		Location Adjustment	Adj Unit Pri	Land Value
1	300	Industrial Vacant	I-1		2.000	AC	61,372	0.57143	5	0.60	NH	1.500	TOPO/USE		0	1.00		63,130
1	300	Industrial Vacant	I-1		51.340	AC	35,496	1.00000	0	0.60		1.000	TOPO/USE		0	1.00		1,093,420
1	350	Cell Tower	I-1		0.130	AC	0	1.00000	0	1.00		1.000	CELL TOWER SITE		0	0.00		375,000
		Total Card Land Units			53.470	AC	Parcel Total Land Area			53.4700		AC				Total Land Value		1,531,550

Property Location 31 B NEW HARTFORD RD | Map ID 49/ 18/ 14/R-B / | Bldg Name | State Use 300
Vision ID 1781 | Account # 00178500 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 2/4/2021 12:59:19 PM

CONSTRUCTION DETAIL

Element	Cd	Description
Style:	99	Vacant Land
Model	00	Vacant
Grade:		
Occupancy		
Exterior Wall 1		
Exterior Wall 2		
Roof Structure:		
Roof Cover		
Interior Wall 1		
Interior Wall 2		
Interior Flr 1		
Interior Flr 2		
Heat Fuel		
Heat Type:		
AC Type:		
Total Bedrooms		
Total Bthrms:		
Total Half Baths		
Total Rooms:		
Bath Style:		
Kitchen Style:		
Fireplace		
Whirlpool Tubs		
Fin Basement		
Fin Bsmt Qual		
Bsmt. Garages		

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd	Description

MIXED USE

Code	Description	Percentage
300	Industrial Vacant	100
		0
		0

COST / MARKET VALUATION

Adj. Base Rate	0
RCN	
Year Built	
Depreciation Code	
Remodel Rating	
Year Remodeled	
Depreciation %	
Functional Obsol	
External Obsol	
Cost Trend Factor	1
Condition	
Condition %	
Percent Good	
RCNLD	
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	

No Sketch

OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Cod	Description	Sub	Sub Desc	L/B	Units	Unit Price	Yr Blt	Cond.	% Gd	Grade	Grd A	Appr. Valu

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area
	Ttl Gross Liv / Lease Area	0	0

VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: BARKHAMSTEAD CT
ATC SITE NUMBER: 411181
VERIZON SITE NAME: BARKHAMSTED SOUTH
VERIZON SITE NUMBER:467180
SITE ADDRESS: 50 RUST ROAD
BARKHAMSTED, CT 06063

LOCATION MAP

VERIZON
5G L-SUB6 CARRIER ADD - ANTENNA AMENDMENT DRAWINGS

COMPLIANCE CODE

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

1. 2018 CONNECTICUT STATE BUILDING CODE-AMENDMENTS TO IBC 2015
2. INTERNATIONAL BUILDING CODE 2015, INTERNATIONAL CODE COUNCIL
3. TIA-222-G-4, STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
4. ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, AMERICAN SOCIETY OF CIVIL ENGINEERS
5. STEEL CONSTRUCTION MANUAL 14TH EDITION, AMERICAN INSTITUTE OF STEEL CONSTRUCTION
6. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: N/A
PHONE: N/A
TELEPHONE COMPANY: N/A
PHONE: N/A

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

PROJECT SUMMARY

SITE ADDRESS:

50 RUST ROAD

BARKHAMSTED, CT 06063

COUNTY: LITCHFIELD COUNTY

GEOGRAPHIC COORDINATES:

LATITUDE: 41.89380

LONGITUDE: -72.99647

GROUND ELEVATION: 793' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

APPLICANT:

VERIZON WIRELESS
118 FLANDERS ROAD
WESTBOROUGH, MA 01581

ENGINEER:

DEWBERRY ENGINEERS, INC.
99 SUMMER STREET
SUITE 700
BOSTON, MA 02110

PROPERTY OWNER:

REGIONAL REFUSE
DISPOSAL DIST OFFICE
C/O DEBBIE ANGELL
BARKHAMSTED, CT 06063

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:

REMOVE (3) ANTENNA(s) AND (6) RRH(s)

INSTALL (3) ANTENNA(s) AND (6) RRH(s)

EXISTING (12) ANTENNA(s), (1) OVP, (6) 1-5/8" COAX CABLES, AND (2) 6X12 HYBRID CABLES TO REMAIN

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).

PROJECT LOCATION DIRECTIONS

I-84 TO I-91 NORTH TO US-44 WEST...US 44 US 44-W BECOMES US-44/ MORGAN ST...TURN SLIGHT RIGHT ONTO US-44/MAIN ST...CONTINUE TO FOLLOW US-44W...US-44W BECOMES NEW HARTFORD RD...PROCEED ON NEW HARTFORD RD PAST THE TRANSFER STATION TO A LEFT ON THE NEXT DIRT RD (OLD COUNTRY RD).....FOLLOW OLD COUNTRY RD UPHILL TO A LEFT ON RUST RD & PROCEED TO SITE

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	10/21/21	FG
G-002	GENERAL NOTES	0	10/21/21	FG
C-101	DETAILED SITE PLAN	0	10/21/21	FG
C-201	TOWER ELEVATION	0	10/21/21	FG
C-401	ANTENNA INFORMATION & SCHEDULE	0	10/21/21	FG
C-501	CONSTRUCTION DETAILS	0	10/21/21	FG
E-501	GROUNDING DETAILS	0	10/21/21	FG
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			
	MOUNT MODIFICATION DRAWINGS (10 PAGES)			

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PHONE: 617.695.3400
FAX: 617.695.3310

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FG	09/03/21
B	FINAL	FG	10/21/21

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

VERIZON SITE NAME:
BARKHAMSTED SOUTH

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:

verizon

DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS. VERIZON "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL.
   - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   - B. AC/TELCO INTERFACE BOX (PPC)
   - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   - D. TOWERS, MONOPOLES
   - E. TOWER LIGHTING
   - F. GENERATORS & LIQUID PROPANE TANK
   - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
   - H. ANTENNAS (INSTALLED BY OTHERS)
   - I. TRANSMISSION LINE
   - J. TRANSMISSION LINE JUMPERS
   - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   - L. TRANSMISSION LINE GROUND KITS
   - M. HANGERS
   - N. HOISTING GRIPS
   - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS. PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF VERIZON TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE VERIZON REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE VERIZON REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE VERIZON REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE VERIZON CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE VERIZON REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH VERIZON AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH VERIZON REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH VERIZON REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY VERIZON MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH VERIZON SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO VERIZON FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO VERIZON SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY VERIZON REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE VERIZON REP. ANY WORK FOUND BY THE VERIZON REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. VERIZON FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE VERIZON WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. VERIZON OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS. EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO VERIZON OR THEIR ARCHITECT/ENGINEER.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
   - A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
   - B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
   - C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
   - D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
   - E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
   - A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
   - B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
   - C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
   - D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
   - E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
   - F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
   - G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING W/ BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
   - H. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.
   - I. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND T- MOBILE PROJECT MANAGER IN WRITING

SPECIAL CONSTRUCTION ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
   - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY VERIZON UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OD COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND
   - B. INSTALL ANTENNA AS INDICATE ON DRAWINGS AND VERIZON SPECIFICATIONS.
   - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS
   - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT TEST.
   - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
   - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
   - G. ANTENNA AND COAXIAL CABLE GROUNDING:
2. ALL EXTERIOR #6 GREED GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

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REV.	DESCRIPTION	BY	DATE
A	PRELIM	FG	09/03/21
0	FINAL	FG	10/21/21

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

VERIZON SITE NAME:
BARKHAMSTED SOUTH

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

SEAL:

verizon

DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

GENERAL NOTES

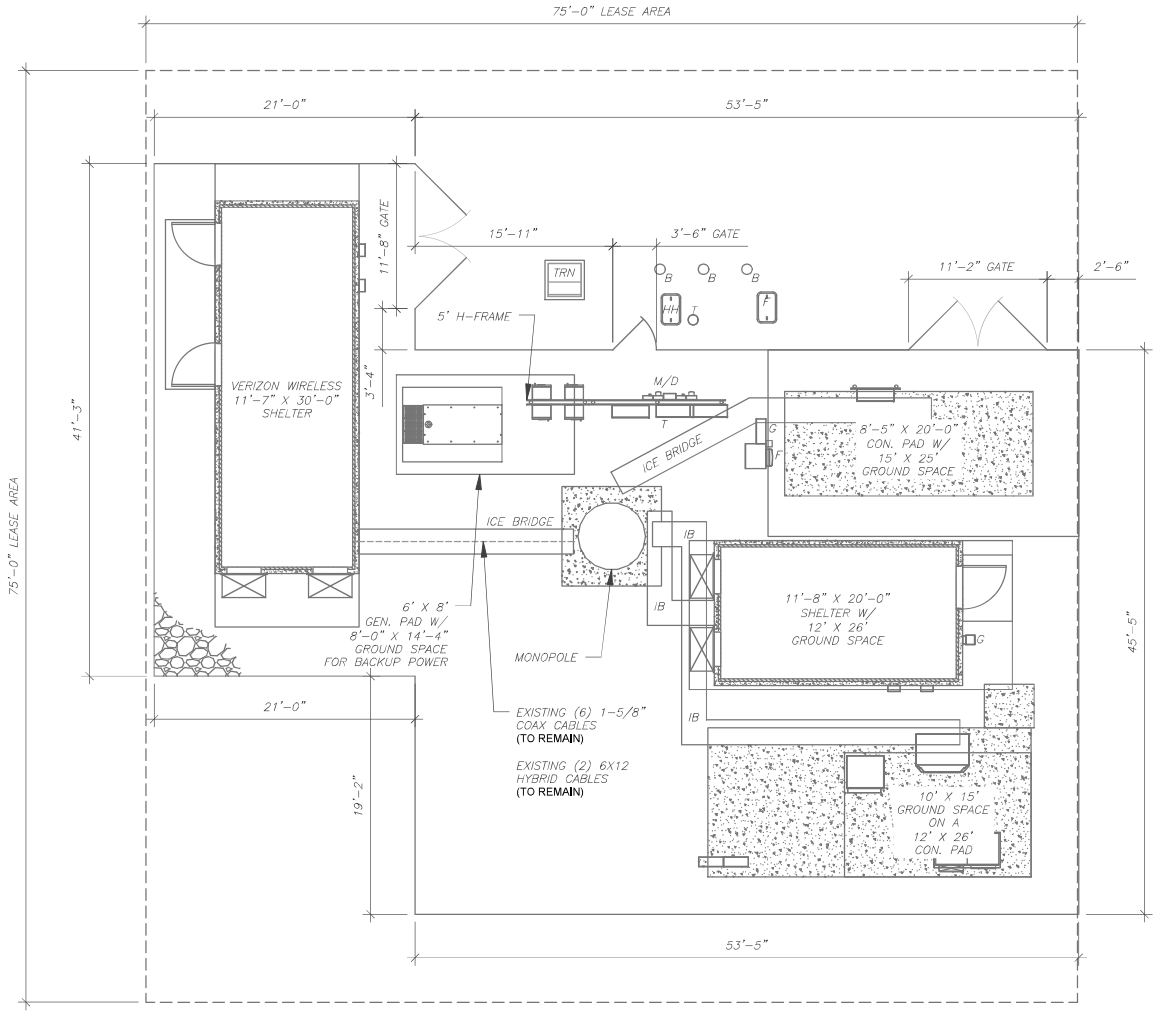
SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3. NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.

LEGEND

⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACAL
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
——×——	CHAINLINK FENCE



1 DETAILED SITE PLAN

GRAPHIC SCALE

10 0 5 10

(IN FEET)
1 UNIT = 10 FEET

N

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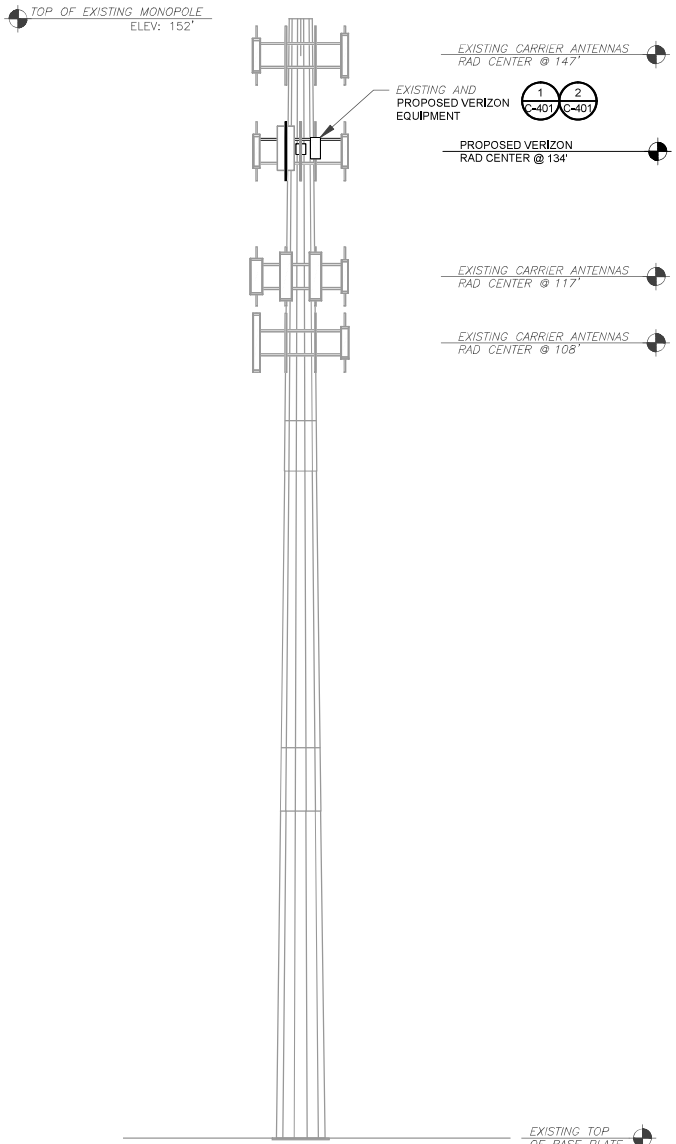
CUSTOMER #:	467180

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0



1 TOWER ELEVATION
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY MASER CONSULTING CONNECTICUT, DATED 09/22/21, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.

TOWER NOTE:
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC., SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

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verizon

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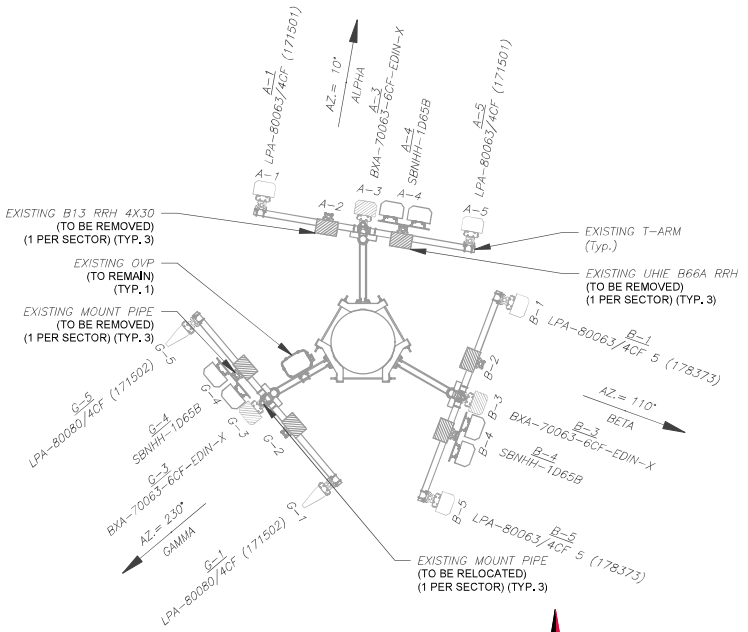
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

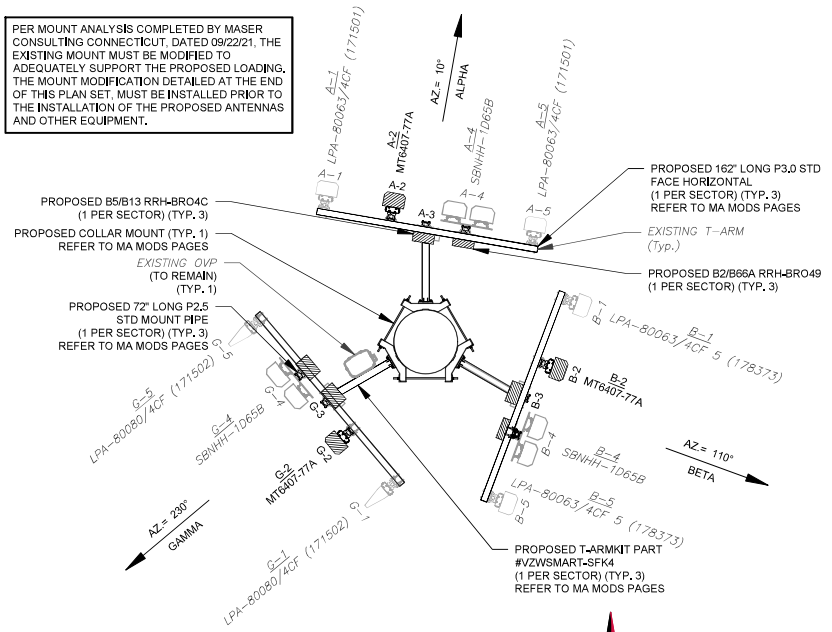
TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-201	0



1 EXISTING ANTENNA PLAN
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY MASER CONSULTING CONNECTICUT, DATED 09/22/21, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



2 FINAL ANTENNA PLAN
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY						NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	134'	10°	A1	LPA-80063/4CF (171501)	850 CDMA	5/0	RMN	-	-
			A2	-	-	-	-	UHBA B13 RRH 4X30	RMV
			A3	BXA-70063-6CF-EDIN-X	-	-	RMV	-	-
			A4	SBNHH-1D65B SBNHH-1D65B	700/AWS	0/4,3	RMN	UHIE B66A RRH	RMV
			A5	LPA-80063/4CF (171501)	850 CDMA	5/0	RMN	-	-
BETA	134'	110°	B1	LPA-80063/4CF 5 (178373)	850 CDMA	3/5	RMN	-	-
			B2	-	-	-	-	UHBA B13 RRH 4X30	RMV
			B3	BXA-70063-6CF-EDIN-X	-	-	RMV	-	-
			B4	SBNHH-1D65B SBNHH-1D65B	700/AWS	0/5,3	RMN	UHIE B66A RRH	RMV
			B5	LPA-80063/4CF 5 (178373)	850 CDMA	3/5	RMN	-	-
GAMMA	134'	230°	G1	LPA-80080/4CF (171502)	850 CDMA	4/0	RMN	-	-
			G2	-	-	-	-	UHBA B13 RRH 4X30	RMV
			G3	BXA-70063-6CF-EDIN-X	-	-	RMV	-	-
			G4	SBNHH-1D65B SBNHH-1D65B	700/AWS	0/2,3	RMN	UHIE B66A RRH	RMV
			G5	LPA-80080/4CF (171502)	850 CDMA	4/0	RMN	-	-

NOTES

1. CONFIRM WITH VERIZON REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO COMBINER: 10'
COMBINER TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE

LOCATION			ANTENNA SUMMARY						NON ANTENNA SUMMARY	
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	134'	10°	A1	LPA-80063/4CF (171501)	850 CDMA	5/0	RMN	-	-
			A2	MT6407-77A	L-SUB6	0/6	ADD	-	-
			A3	-	-	-	-	B5/B13 RRH-BR04C	ADD
			A4	SBNHH-1D65B SBNHH-1D65B	700/850/850 5G/1900/AWS	0/4,4,4,3,3	RMN	B2/B66A RRH-BR049	ADD
			A5	LPA-80063/4CF (171501)	850 CDMA	5/0	RMN	-	-
BETA	134'	110°	B1	LPA-80063/4CF (178373)	850 CDMA	3/5	RMN	-	-
			B2	MT6407-77A	L-SUB6	0/6	ADD	-	-
			B3	-	-	-	-	B5/B13 RRH-BR04C	ADD
			B4	SBNHH-1D65B SBNHH-1D65B	700/850/850 5G/1900/AWS	0/5,5,5,3,3	RMN	B2/B66A RRH-BR049	ADD
			B5	LPA-80063/4CF (178373)	850 CDMA	3/5	RMN	-	-
GAMMA	134'	230°	G1	LPA-80080/4CF (171502)	850 CDMA	4/0	RMN	-	-
			G2	MT6407-77A	L-SUB6	0/6	ADD	-	-
			G3	-	-	-	-	B5/B13 RRH-BR04C	ADD
			G4	SBNHH-1D65B SBNHH-1D65B	700/850/850 5G/1900/AWS	0/2,2,2,0,3	RMN	B2/B66A RRH-BR049	ADD
			G5	LPA-80080/4CF (171502)	850 CDMA	4/0	RMN	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
(1) DB-C1-12C-24AB-0Z	RMN	(6) 1-5/8"	(2) 6X12	RMN

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION/OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
(1) DB-C1-12C-24AB-0Z	RMN	(6) 1-5/8"	(2) 6X12	RMN
-	-	-	-	-

AMERICAN TOWER®

Dewberry®
Dewberry Engineers Inc.
99 SUMMER STREET
SUITE 700
BOSTON, MA 02110
PHONE: 617.695.3400
FAX: 617.695.3310

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FG	09/03/21
0	FINAL	FG	10/21/21

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

VERIZON SITE NAME:
BARKHAMSTED SOUTH

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

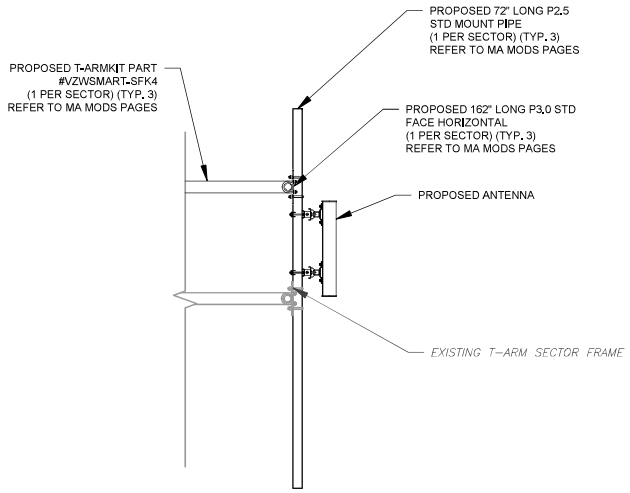
SEAL:

verizon

DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

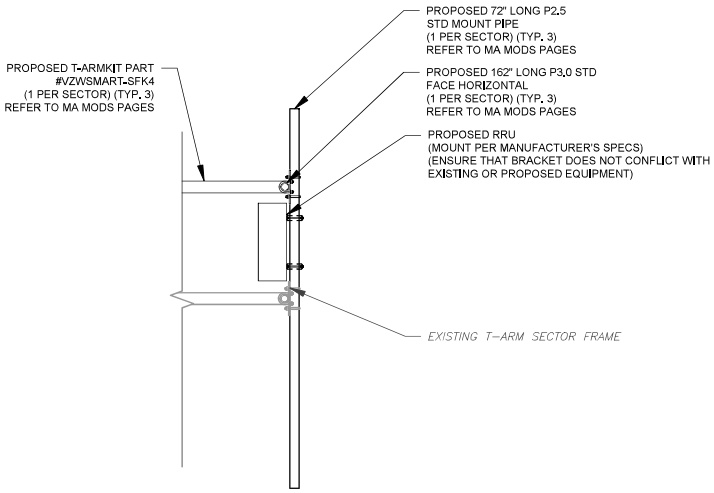
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-401	0



1 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.



2 PROPOSED RRU MOUNTING DETAIL - TYPICAL

SCALE: N.T.S.

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Dewberry Engineers Inc.
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SUITE 700
BOSTON, MA 02110
PHONE: 617.695.3400
FAX: 617.695.3310

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FG	09/03/21
0	FINAL	FG	10/21/21

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

VERIZON SITE NAME:
BARKHAMSTED SOUTH

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

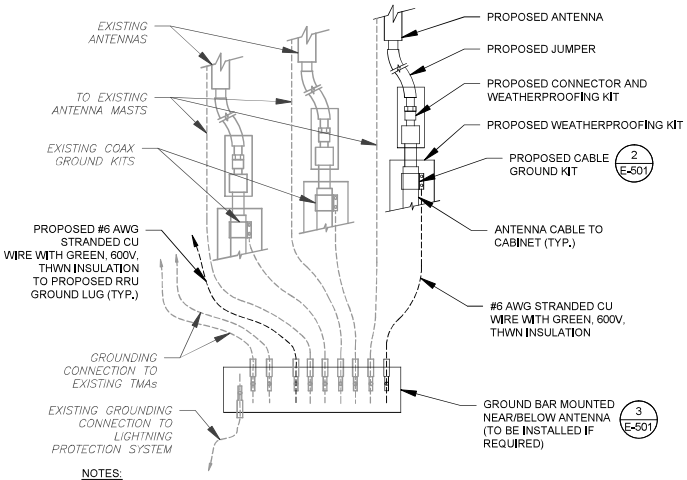
SEAL:

verizon

DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

CONSTRUCTION DETAILS

SHEET NUMBER:	REVISION:
C-501	0

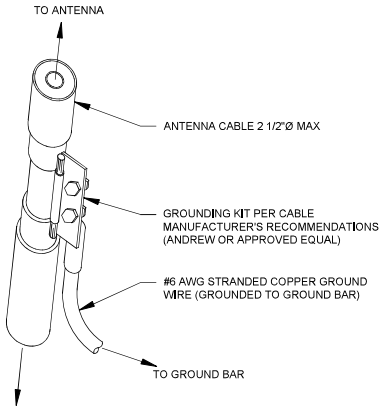


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH VERIZON GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH VERIZON GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: N.T.S.

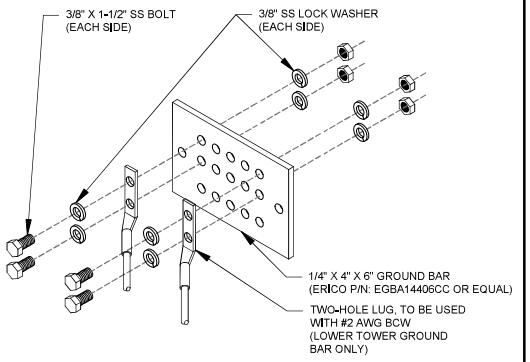


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: N.T.S.



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL

SCALE: N.T.S.

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Dewberry Engineers Inc.
99 SUMMER STREET
SUITE 700
BOSTON, MA 02110
PHONE: 617.695.3400
FAX: 617.695.3310

REV.	DESCRIPTION	BY	DATE
A	PRELIM	FG	09/03/21
0	FINAL	FG	10/21/21

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

VERIZON SITE NAME:
BARKHAMSTED SOUTH

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

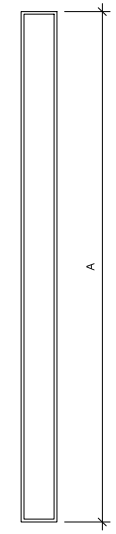
SEAL:

verizon

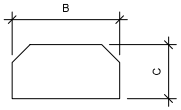
DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0



FRONT VIEW

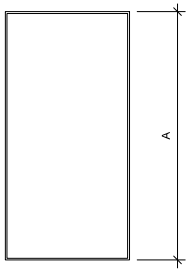


TOP VIEW

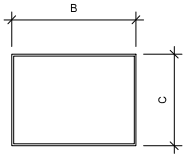
1 ANTENNA SPECIFICATIONS

FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
MT6407-77A	35.1"	16.1"	5.5"	81.6



FRONT VIEW



TOP VIEW

2 RRU SPECIFICATIONS

FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
B2/B66A RRH-BR049	15.0"	15.0"	10.0"	84.4
B5/B13 RRH-BR04C	15.0"	15.0"	8.1"	70.3

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verizon

DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

SUPPLEMENTAL

SHEET NUMBER:
R-601

Maser Consulting Connecticut
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
(856) 797-0412
peter.albano@colliersengineering.com

Post-Mod Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10065183
Maser Consulting Connecticut Project #: 21777222A (Rev. 1)

September 22, 2021

Site Information

Site ID:	*467180-VZW / BARKHAMSTED S CT*
Site Name:	*BARKHAMSTED S CT*
Carrier Name:	*Verizon Wireless*
Address:	*127 New Hartford Rd*
	Barkhamsted, Connecticut 06063
	Litchfield County
Latitude:	*41.893808°*
Longitude:	*-72.996472°*

Structure Information

Tower Type:	*Monopole*
Mount Type:	*13.50-Ft T-Arm*

FUZE ID # 16272039

Analysis Results

T-Arm: **35.4% Pass**

******Contractor PMI Requirements:***
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
Contractor - Please Review Specific Site PMI Requirements Upon Award
Requirements also Noted on Mount Modification Drawings
Requirements may also be Noted on A & E drawings

Report Prepared By: Selene Chen

STATE OF CONNECTICUT · DEJAN KUZMANOVIC · No. 33733 · LICENSED PROFESSIONAL ENGINEER · 09/22/2021

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut 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

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
Proposed Standoff Horizontal	30.9%	Pass
Proposed Face Horizontal	35.4%	Pass
Mount Connection	34.3%	Pass
Existing Standoff	34.6%	Pass
Existing Face Horizontal	31.9%	Pass
Mount Pipe	29.8%	Pass

Structure Rating – *(Controlling Utilization of all Components)*	**35.4%**

Recommendation:

The existing mounts will be **SUFFICIENT** for the final loading after the proposed modifications 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. Mount Photos
2. Mount Mapping Report (for reference only)
3. Analysis Calculations
4. **Contractor Required PMI Report Deliverables**
5. Antenna Placement Diagrams
6. TIA Adoption and Wind Speed Usage Letter

1 MOUNT ANALYSIS

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERYIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONTRUCTION.

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Dewberry Engineers Inc.
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BOSTON, MA 02110
PHONE: 617.695.3400
FAX: 617.695.3310

ATC SITE NUMBER:
411181

ATC SITE NAME:
BARKHAMSTEAD CT

VERIZON SITE NAME:
BARKHAMSTED SOUTH

SITE ADDRESS:
50 RUST ROAD
BARKHAMSTED, CT 06063

verizon

DATE DRAWN:	08/30/21
ATC JOB NO:	411181
CUSTOMER ID:	BARKHAMSTED SOUTH
CUSTOMER #:	467180

SUPPLEMENTAL

SHEET NUMBER:
R-602

PROJECT NOTES

1. SEE MODIFICATION NOTES
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
11. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).

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MOUNT MODIFICATION DRAWINGS
EXISTING 13.50' T-ARM

SITE NAME: BARKHAMSTED S CT
SITE NUMBER: 467180

127 NEW HARTFORD ROAD
BARKHAMSTED, CT 06063
LITCHFIELD COUNTY

PROJECT INFORMATION

SITE INFORMATION

LATITUDE:	41.893808° N
LONGITUDE:	72.996472° W
JURISDICTION:	LITCHFIELD COUNTY

APPLICANT/LESSEE

COMPANY:	VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY:	VERIZON WIRELESS
ADDRESS:	118 FLANDERS ROAD, THIRD FLOOR
CITY, STATE, ZIP:	WESTBOROUGH, MA 01581
CONTACT:	ANDREW CANDIELLO
EMAIL:	ANDREW.CANDIELLO@VERIZONWIRELESS.COM

PROJECT MANAGER

COMPANY:	MASER CONSULTING CONNECTICUT
CONTACT:	PETER ALBANO
PHONE:	856-797-0412
E-MAIL:	PETER.ALBANO@COLLIERSENGINEERING.COM

SHEET INDEX

SHEET	DESCRIPTION
T-1	TITLE SHEET
S-1	BILL OF MATERIALS
S-2	MODIFICATION NOTES
S-3	MODIFICATION NOTES
S-4	MODIFICATION DETAILS
S-5	MODIFICATION DETAILS
S-6	MOUNT PHOTOS
	SPECIFICATION SHEETS

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION:	HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #:	10065183
VZW LOCATION CODE (PSLC):	467180
FUZE ID:	16272039

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

REFERENCED DOCUMENTS

FAILING MOUNT ANALYSIS REPORT

SMART TOOL PROJECT #:	10044562
MASER CONSULTING PROJECT #:	21777222A
ANALYSIS DATE:	4/20/2021

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SCALE:	JOB NUMBER:
AS SHOWN	21777222A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	9/23/2021	ISSUED FOR CONSTRUCTION	SC	DK
0	7/2/2021	ISSUED FOR CONSTRUCTION	JRF	DL

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED PROFESSIONAL ENGINEER
09/22/2021

SITE NAME:

BARKHAMSTED S CT
467180

127 NEW HARTFORD RD
BARKHAMSTED, CT 06063
LITCHFIELD COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mount Laurel, NJ 08054
Phone: 856.797.0412
Fax: 856.722.1120

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BILL OF MATERIALS

VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES
3	VZWSMART	VZWSMART-SFK4	T-ARM KIT	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET S-2
1		VZWSMART-PLK7	MONOPOLE COLLAR MOUNT ASSEMBLY	
18		VZWSMART-MSK2	CROSSOVER PLATE	

OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES
3	-	-	162" LONG, P3.0 STD PIPE	GALVANIZED
3	-	-	72" LONG, P2.5 STD PIPE	GALVANIZED

NOTE: 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
METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM
PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM
SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM
SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

NOTE: WHEN SPECIFIED, VZWSMART KITS SHALL BE REQUIRED AND WILL BE VERIFIED DURING THE DESKTOP PMI

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SCALE: AS SHOWN | JOB NUMBER: 21777222A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	9/23/2021	ISSUED FOR CONSTRUCTION	SC	DK
0	7/2/2021	ISSUED FOR CONSTRUCTION	JFF	DL

STATE OF CONNECTICUT — DEJIAN XU — No. 33733 — LICENSED PROFESSIONAL ENGINEER
09/22/2021

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:

BARKHAMSTED S CT
467180

127 NEW HARTFORD RD
BARKHAMSTED, CT 06063
LITCHFIELD COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mount Laurel, NJ 08054
Phone: 856.797.0612
Fax: 856.722.1120

SHEET TITLE: BILL OF MATERIALS

SHEET NUMBER: S-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.

DESIGN LOADS

WIND LOADS

a. BASIC WIND SPEED (3 SECOND GUST), V = 115 MPH

b. EXPOSURE CATEGORY B

c. TOPOGRAPHIC CATEGORY 1

d. MEAN BASE ELEVATION (AMSL) = 789.15'

ICE LOADS

a. ICE WIND SPEED (3 SECOND GUST), V = 50 MPH

b. ICE THICKNESS = 1.00 IN

SEISMIC LOADS

a. SEISMIC DESIGN CATEGORY B

b. SHORT TERM MCER GROUND MOTION, S_s = .171

c. LONG TERM MCER GROUND MOTION, S_1 = .054

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@COLLIERSENGINEERING.COM
   b. PROVIDE MASER CONSULTING PROJECT # AND MASER CONSULTING 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 (ZINGA OR ZINC COTE), 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.

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SHEET TITLE:
MODIFICATION NOTES

SHEET NUMBER:
S-2

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

MODIFICATION INSPECTION NOTES

MI CHECKLIST	
CONSTRUCTION/ INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
PRE-CONSTRUCTION	
X	MI CHECKLIST DRAWING
X	EOR APPROVED SHOP DRAWINGS
NA	FABRICATION INSPECTION
NA	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
NA	CONTRACTOR'S CERTIFIED WELD INSPECTION AND NDE REPORTS
X	ON SITE COLD GALVANIZING VERIFICATION
X	GC AS-BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
X	VZW PMI DOCUMENTS
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT REQUIRED FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY.

MI INSPECTOR

THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GC INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO EOR.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MI INSPECTIONS INCLUDING FOUNDATION INSPECTIONS
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- IT MAY BE BENEFICIAL TO INSTALL ALL MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW THE FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH THE OWNER TO COORDINATE A REMEDIATION PLAN:

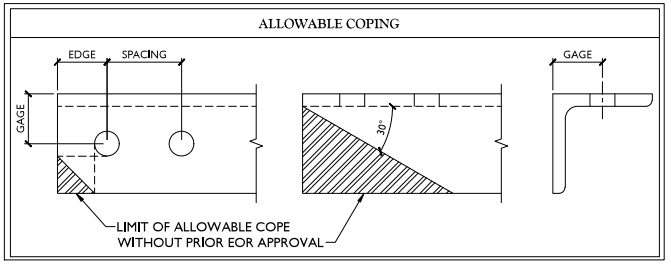
- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

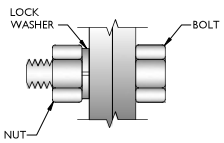
- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.



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.

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Fax: 856.722.1120

SHEET TITLE: MODIFICATION NOTES

SHEET NUMBER: S-3

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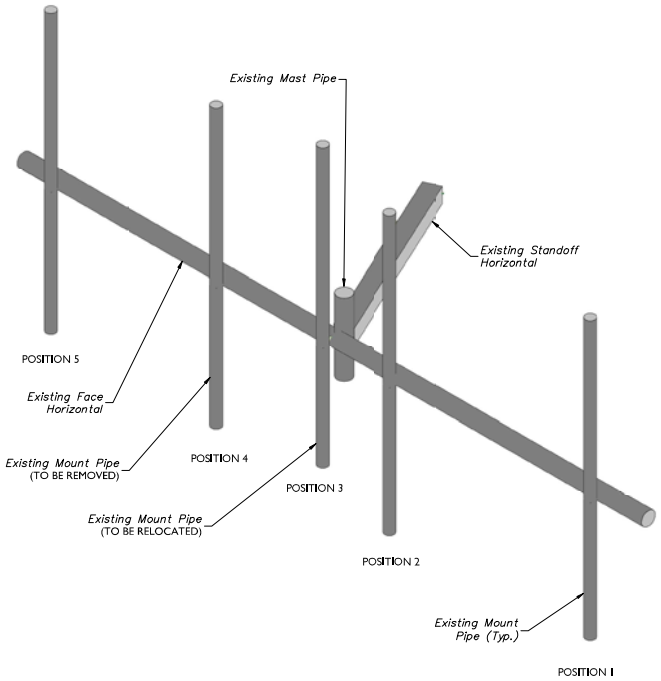
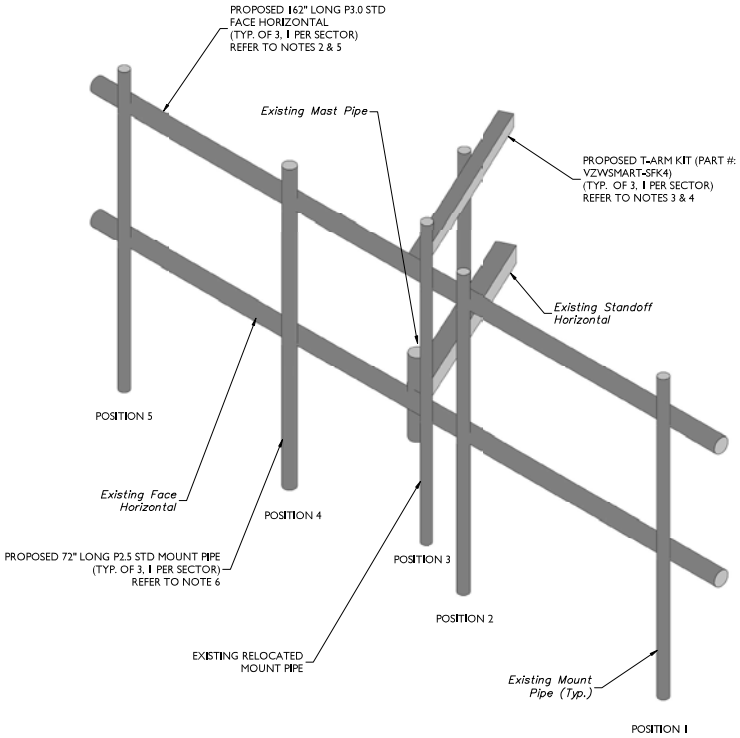


1 EXISTING T-ARM ISOMETRIC VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.



2 PROPOSED T-ARM ISOMETRIC VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY ROAMING NETWORKS INC. ON 3/26/2021, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (133'-0") ARE IN GOOD CONDITION. MASER 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.
3. CONTRACTOR TO WORK WITH TOWER OWNER TO REMOVE TOWER BRANCHES AS NEEDED TO INSTALL PROPOSED MOUNT CONNECTIONS.

MODIFICATION NOTES:

1. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2. 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.
3. CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET S-2.
4. CONNECT OTHER END OF T-ARM KIT TO MONOPOLE COLLAR MOUNT ASSEMBLY (PART #: VZWSMART-PLK7).
5. CONNECT NEW HORIZONTAL TO ALL EXISTING AND NEW VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).
6. CONNECT NEW MOUNT PIPE TO EXISTING HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).

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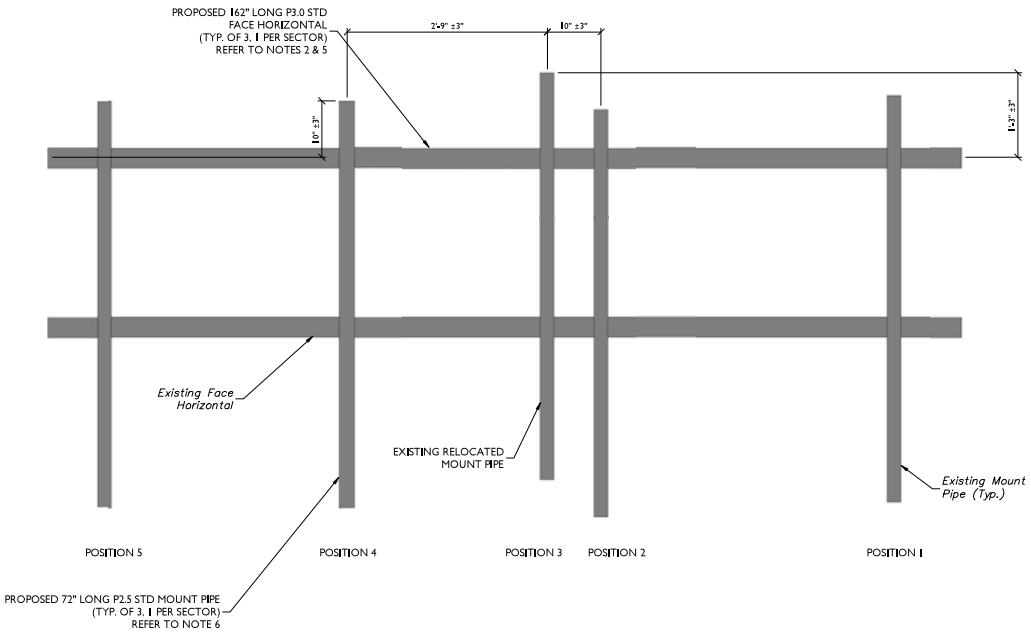
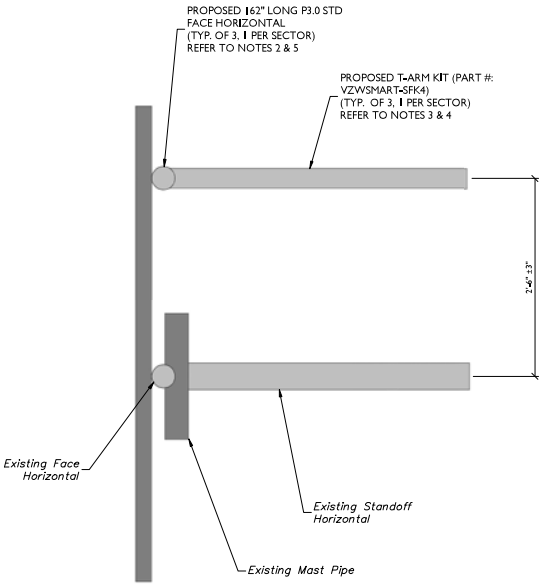
SHEET TITLE:
MODIFICATION DETAILS

SHEET NUMBER:
S-4



1 PROPOSED FRONT ELEVATION VIEW (TYP. EACH SECTOR)

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (TYP. EACH SECTOR)

SCALE : N.T.S.

MODIFICATION NOTES:

1. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.
2. 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.
3. CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET S-2.
4. CONNECT OTHER END OF T-ARM KIT TO MONOPOLE COLLAR MOUNT ASSEMBLY (PART #: VZWSMART-PLK7).
5. CONNECT NEW HORIZONTAL TO ALL EXISTING AND NEW VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).
6. CONNECT NEW MOUNT PIPE TO EXISTING HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK2).

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SCALE:	JOB NUMBER:
AS SHOWN	21777222A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	9/23/2021	ISSUED FOR CONSTRUCTION	SC	DK
0	7/2/2021	ISSUED FOR CONSTRUCTION	JFF	DL

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED PROFESSIONAL ENGINEER
09/22/2021

SITE NAME:

BARKHAMSTED S CT
467180

127 NEW HARTFORD RD
BARKHAMSTED, CT 06063
LITCHFIELD COUNTY

MT. LAUREL OFFICE
2000 Midlantic Drive
Suite 100
Mount Laurel, NJ 08054
Phone: 856.797.0612
Fax: 856.722.1120

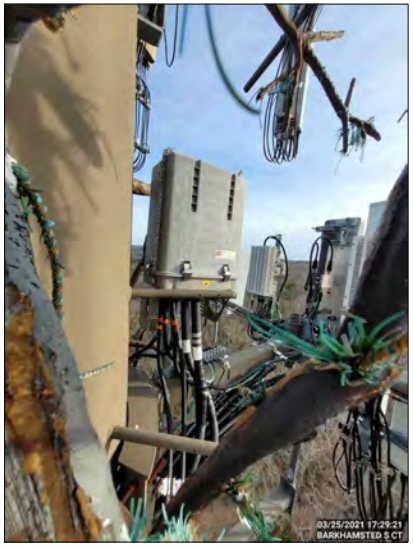
SHEET TITLE:
MODIFICATION DETAILS

SHEET NUMBER:
S-5

MOUNT PHOTO 1

MOUNT PHOTO 2

MOUNT PHOTO 3



MOUNT PHOTO 4

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AS SHOWN	21777222A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
1	9/23/2021	ISSUED FOR CONSTRUCTION	SC	DK
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STATE OF CONNECTICUT
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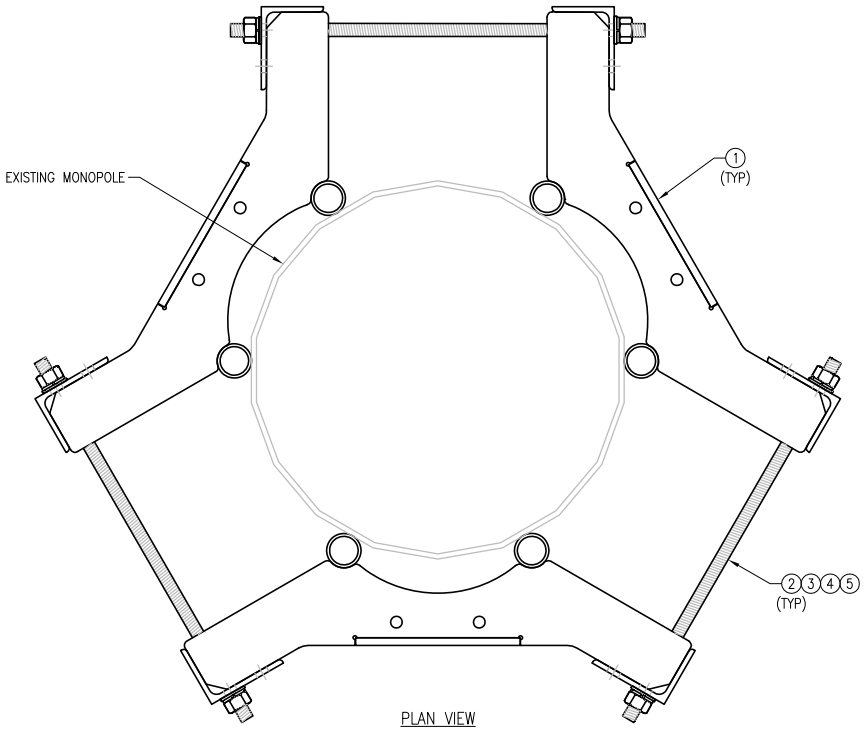
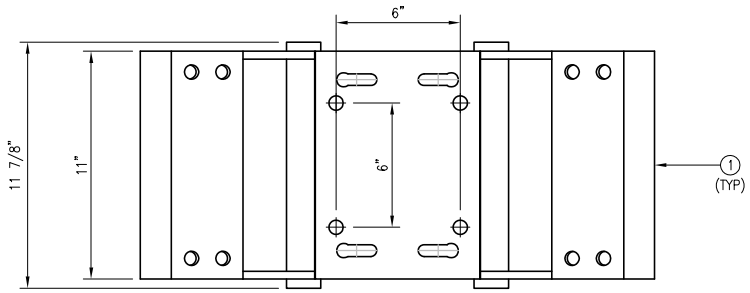
Phone: 856.797.0612
Fax: 856.722.1120

SHEET TITLE:
MOUNT PHOTOS

SHEET NUMBER:
S-6



PLAN VIEW
MONOPOLE COLLAR MOUNT ASSEMBLY



FRONT VIEW

NOTES:
1. FIT 12" TO 45" DIA MONOPOLE.
2. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-PLK7 (MONOPOLE COLLAR MOUNT ASSEMBLY)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	3	CM-1245	COLLAR MOUNT ASSEMBLY	PLK7-F1	147
2	6	---	THREADED ROD 5/8" X 4'-0" A193-B7	---	
3	12	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	12	LW-625	5/8" HDG LOCK WASHER	---	0
5	12	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	150

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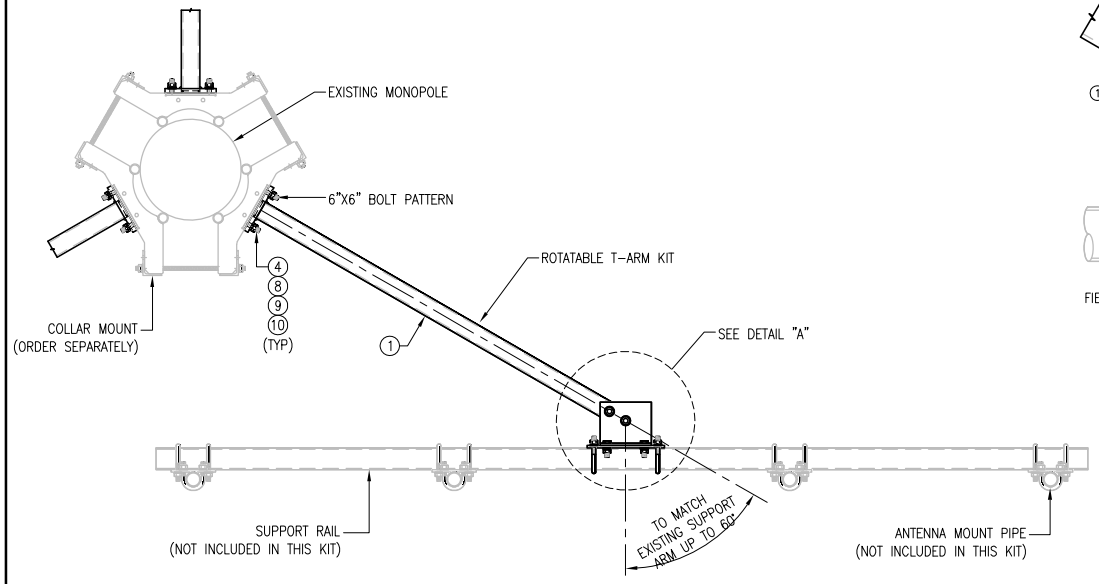
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BT	05/11/20

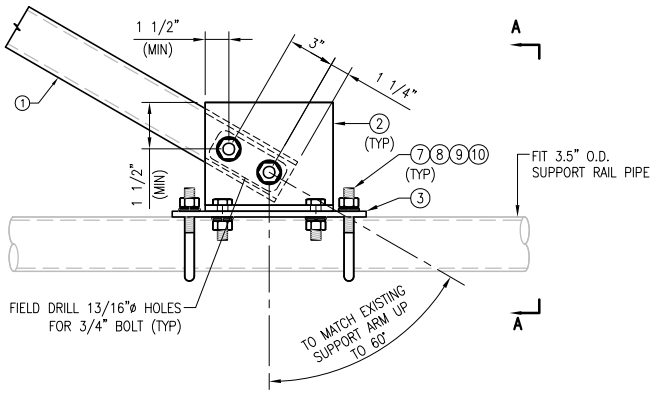
SHEET TITLE:
VZWSMART-PLK7
MONOPOLE COLLAR
MOUNT ASSEMBLY

SHEET NUMBER: VZWSMART-PLK7

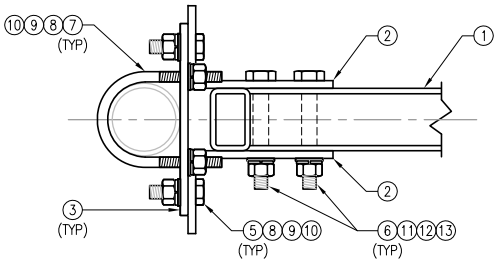
REV #: 0



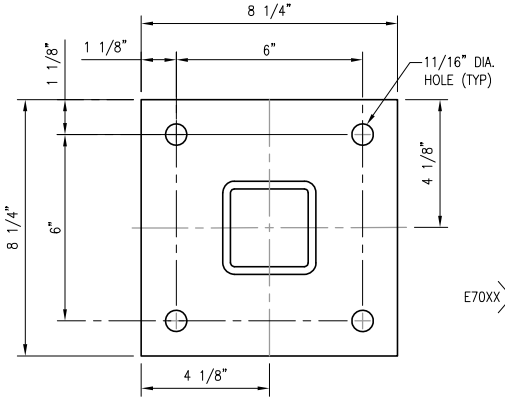
PLAN VIEW
T-ARM KIT



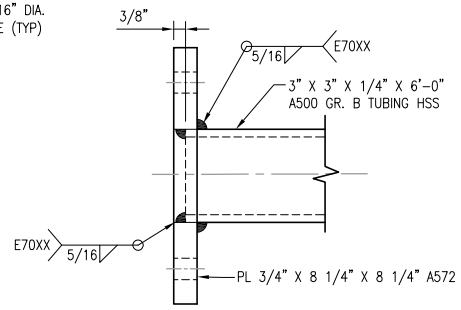
DETAIL "A"



SECTION "A-A"



FRONT VIEW



SIDE VIEW

RO-TAW-6 WELDMENT

VZWSMART-SFK4 (T-ARM KIT)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	RO-TAW-6	T-ARM WELDMENT	SFK4-F1	71
2	2	BP825-94375	PL 3/8" X 8 1/4" X 9 7/16" A36 BEND PLATE	SFK4-F2	17
3	1	PL375-92512025	PL 3/8" X 9 1/4" X 1'-0 1/2" A36	SFK4-F3	12
4	4	---	BOLT 5/8" X 2 1/4" A325	---	0
5	4	---	BOLT 5/8" X 2" A325	---	0
6	2	---	BOLT 3/4" X 5 1/4" A325	---	0
7	2	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	RBC-1	3
8	12	FW-625	5/8" HDG USS FLAT WASHER	---	1
9	12	LW-625	5/8" HDG LOCK WASHER	---	0
10	12	NUT-625	5/8" HDG HEX NUT	---	1
11	2	FW-75	3/4" HDG USS FLAT WASHER	---	0
12	2	LW-75	3/4" HDG LOCK WASHER	---	0
13	2	NUT-75	3/4" HDG HEX NUT	---	0
				GALVANIZED WT	106

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

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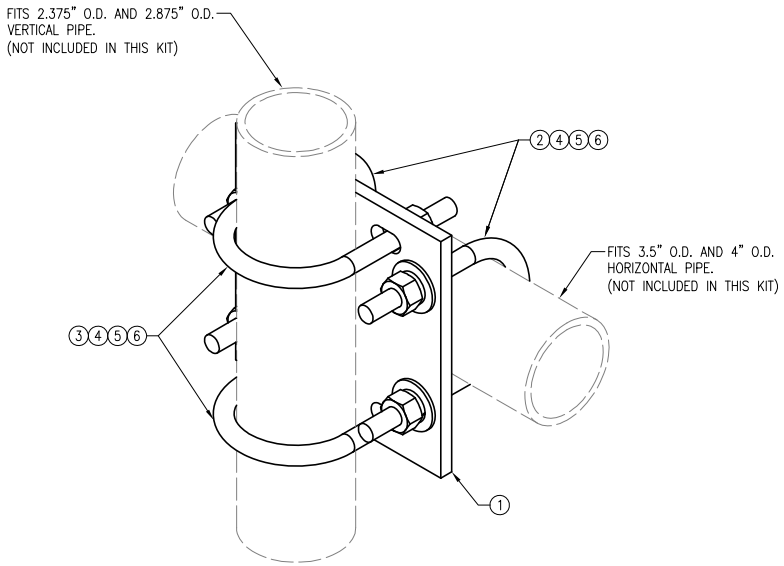
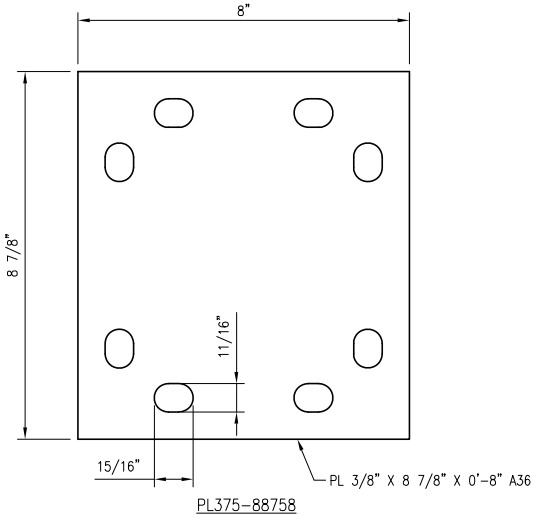
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BT	05/08/20

SHEET TITLE:
VZWSMART-SFK4
T-ARM KIT

SHEET NUMBER: VZWSMART-SFK4

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

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DRAWN BY: H.R	CHECKED BY: HMA

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

SHEET TITLE:
VZWSMART-MSK2
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK2

REV #: 0